



**REGIONS FOR SUSTAINABLE CHANGE**

**BASELINE ASSESSMENT REPORT**

The Regional Climate Confidence Index

March 2010

© 2010 – Regions for Sustainable Change project, INTERREG IVC

## ACKNOWLEDGEMENTS

This baseline assessment report is a collaborative effort of the twelve partners participating in the INTERREG IVC co-funded “Regions for Sustainable Change” project (RSC). Through regional networking and cooperation, the RSC partnership aims to promote an EU-wide shift to climate-friendly economies by developing the potential of regions to stimulate mitigation and adaptation to climate change. The baseline assessment and this report represent the first major output of the partnership and will serve as a basis for implementing the rest of the project activities.

The baseline assessment team which prepared the assessment and the report are: Dora Almassy, Venelina Varbova and Ruslan Zhechkov from the Regional Environmental Center for Central and Eastern Europe (REC for CEE, the RSC project’s Lead Partner) and Jennifer McGuinn, advisor to the RSC Project Team. A working group of four partners – Cornwall Council, Liguria region, the REC, and the University of Debrecen – oversaw the process and designed the baseline questionnaire. The methodology for the Regional Climate Confidence Index was reviewed by Aleksandra Novikova PhD, (Senior Research Associate Climate Policy Initiative (CPI) at DIW Berlin, German Institute for Economic Research); many of her suggestions and comments have been incorporated into the report and will be taken into consideration in future project work.

All the RSC partners made outstanding efforts to supply complex data and information to the assessment team on a timely basis. Special credit goes to the contact persons listed below for each region and their team of experts who supplied the invaluable data, information and opinions that provided the basis for this report.

RSC region	Baseline questionnaire contact(s)
Cornwall, United Kingdom (UK)	Lindsay Knuckey, Cornwall Development Company
North Great Plain, Hungary (HU)	Zoltan Karacsonyi and Tunde Szabo, University of Debrecen, Centre for Environmental Management and Policy
Burgenland, Austria (AT)	Johann Binder, Technology Promotion Burgenland and Gottfried Lamers, Ministry of Agriculture and Forestry, Environment and Water Management
La Rioja, Spain (ES)	Susana Gómez and José María Infante, La Rioja Ministry of Tourism, Environment and Territorial Politics
South West Bulgaria (BG)	Margarita Atanasova, Bulgarian Ministry of Regional Development and Public Works
Marche, Italy (IT)	Cinzia Colangelo, Marche Regional Authority
Liguria, Italy (IT)	Matteo Graziani, Liguria Regional Authority
Piedmont, Italy (IT)	Valentina Scioneri, Lamoro and Francesco Matera, Piedmont Regional Authority
Malta (MT)	Sergei Golovkin, Michelle Borg, Christina Mallia, Stephen Saliba, Janice Gatt, Keith Cappello and Miraine Rizzo from the Malta Environment and Planning Authority
Lower Silesia, Poland (PL)	Dorota Wilusz, Municipality of Wroclaw

Last, but not least, the baseline assessment team wishes to express its gratitude to the Interreg IVC programme for financing the RSC Project and making this work possible.

## EXECUTIVE SUMMARY

### INTRODUCTION: THE RSC PARTNERSHIP AND “CLIMATE CONFIDENCE”

Climate change brings both risks and opportunities for regions; to manage the risks and take advantage of the opportunities requires sophisticated and precise policies, institutions, personnel, financial tools and many other assets. These attributes comprise the “**Climate Confidence**”<sup>1</sup> of European regions, the advancement of which is the goal of the INTERREG IVC-funded “Regions for Sustainable Change” (RSC) project.

The RSC project works to foster regions that are secure in their capability to reduce Greenhouse Gas (GHG) emissions and effectively manage climate change impacts and future risks, and through that management to take advantage of the sizeable economic opportunities of moving towards a low carbon economy. To do this, the RSC project will analyse regions’ progress, experience and good practices on a variety of climate and carbon related issues and carry out the following activities:

- develop a set of criteria and indicators for low-carbon regions;
- conduct a macro-economic analysis of three partner regions to identify structural changes required to achieve low-carbon status;
- investigate the use of Strategic Environmental Assessment (SEA) and sustainability assessment (SA) for integrating climate and low carbon objectives into regional planning;
- prepare a methodological handbook on integrating climate objectives into regional development programmes;
- hold capacity-building workshops and technical seminars;
- create and implement pilot actions to transfer the “low carbon region” development model in practice.

As the first step of the project, the baseline assessment examines and evaluates the “Climate Confidence” of the RSC partner regions and provides the foundation for the subsequent activities and outputs. The report identifies the key characteristics of climate confident regions and, through the “Regional Climate Confidence Index” (RCCI), evaluates the RSC partner regions’ positions, strengths and weaknesses in this regard.

### THE RSC PARTNER REGIONS

The RSC partnership is a diverse grouping of 12 partners representing ten regions<sup>2</sup> from eight countries: Burgenland (AT), Cornwall (UK), La Rioja (ES), Liguria (IT), Lower Silesia (PL), Malta,

---

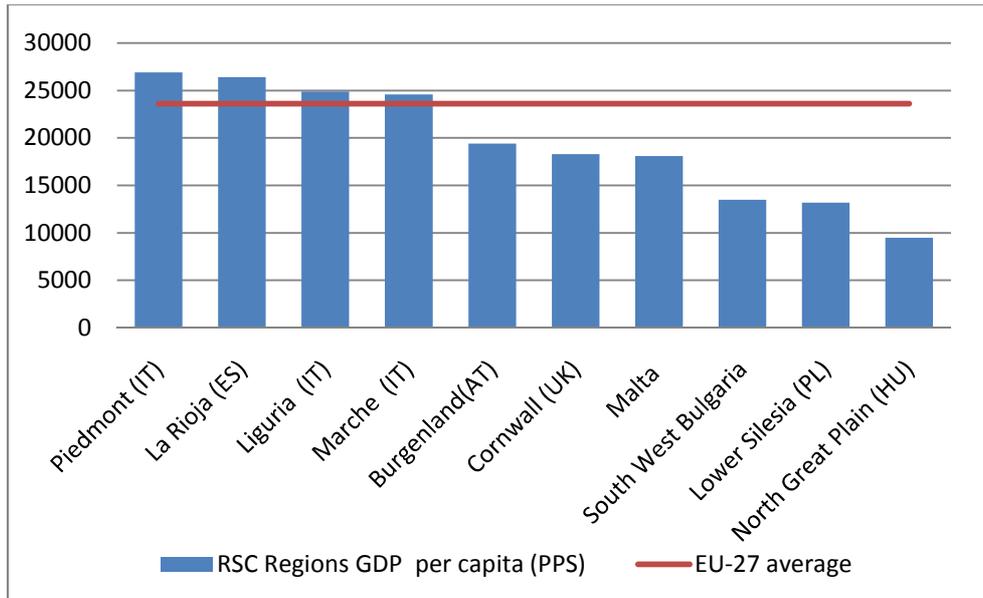
<sup>1</sup> The term “climate confidence” was used previously in a consumer index prepared by the bank HSBC in 2007. See [http://www.hsbc.com/1/PA\\_1\\_1\\_S5/content/assets/newsroom/hsbc\\_ccindex\\_p8.pdf](http://www.hsbc.com/1/PA_1_1_S5/content/assets/newsroom/hsbc_ccindex_p8.pdf)

<sup>2</sup> Although there are 12 project partners, only ten of them represent actual regions which are analyzed in the RCCI. The partnership includes Malta, which is an EU member state. References to Malta as a region and as a state are used interchangeably.

Marche (IT), North Great Plan (HU), Piedmont (IT), and South West Bulgaria. Six of these are from EU-15 countries and four are from the EU new member states (NMS).

The regions are quite diverse in terms of size – area and population – but most are below the EU average. Gross Domestic Product (GDP) per capita is also quite diverse; the Italian and Spanish regions are 4 – 14 percent above the EU average and the other regions are below the EU average by approximately 20 – 60 percent. Most RSC regions’ GDP accounts for less than ten percent of the national total.

**Figure 1: Economic performance of RSC regions in 2006**



## THE REGIONAL CLIMATE CONFIDENCE INDEX

The Regional Climate Confidence Index (RCCI) gives the RSC partner regions the opportunity to evaluate their capacities in managing adaptation to and mitigation of climate change within its territory and economy. The RCCI evaluates regions on seven key issues that are considered critical indicators of a region’s ability to respond to climate challenges. The issues, their composition and basis for scoring are presented in Table 1.

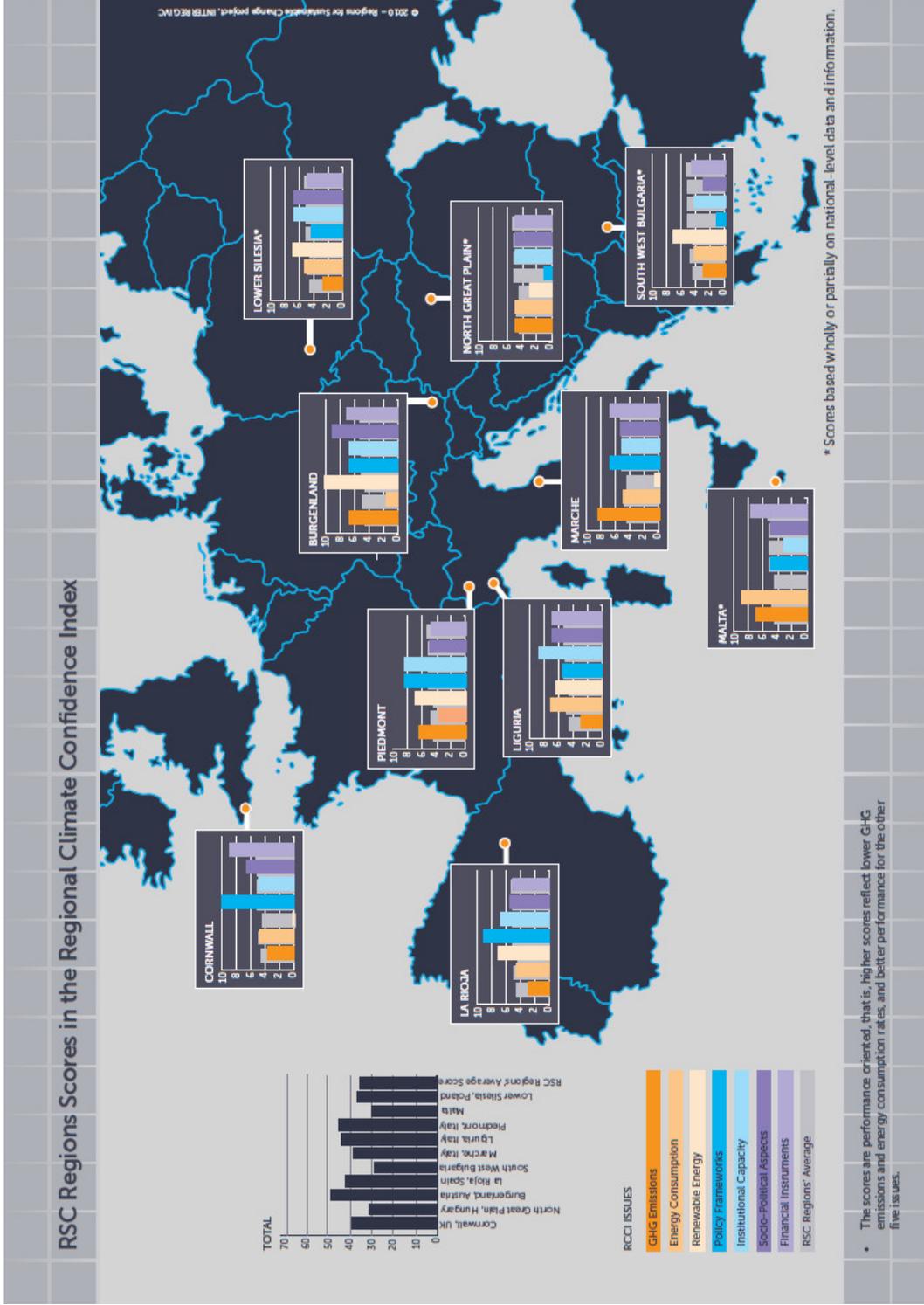
**Table 1: RCCI issues, sub-issues and score calculation basis**

Issues	Sub-issues	Score calculation basis
<b>1. Greenhouse Gas Emissions</b>	GHG emissions per capita	<i>Comparison to EU-27 average</i>
	GHG intensity (GHG emissions/GDP)	
<b>2. Energy Consumption</b>	Final Energy Consumption (FEC) per capita	<i>Comparison to EU-27 average</i>
	Energy intensity (FEC/GDP)	
<b>3. Renewable Energy</b>	Percent share of renewables in final energy consumption	<i>Comparison to EU-27 average</i>
<b>4. Policy Frameworks</b>	Adaptation: assessment of vulnerability to climate change and inclusion in policies	<i>Each sub-issue scored from 0 to 3 by RSC baseline assessment team</i>
	Regional-level climate change policy, strategy or action plan	
	Extent of integration of climate concerns into regional sectoral policy framework	
	Scope and ambition of regional-level policy objectives and targets	
<b>5. Institutional Capacity</b>	Experienced staff dedicated to working on climate change	<i>Each sub-issue self-scored from 0 to 3 by regions</i>
	Financial means available to institutions to manage climate	
	Regulatory mandate of institutions	
	Access to research capacity	
<b>6. Socio-Political Aspects</b>	Priority given to climate change on regional political agenda	<i>Each sub-issue self-scored from 0 to 3 by regions</i>
	Political leadership on climate change	
	Overall awareness of industry on reducing carbon footprint	
	Overall awareness of population on reducing carbon footprint	
<b>7. Financial Instruments</b>	Variety of financial instruments available to the region for supporting/encouraging climate-related actions	<i>Each sub-issue scored from 0 to 3 by RSC baseline assessment team</i>
	Integration of climate change issues into planning, programming, implementation of EU-funded programmes	
	Consideration of climate change in projects financed by regional development/investment programmes	

The information required to evaluate regions and develop the index was collected through a questionnaire completed by each region. The process of collecting the data and developing the index content and scoring methodology took place simultaneously, based on data actually available to the RSC regions.<sup>3</sup> This index is not meant to be viewed as a competition between regions, or as a judgment. It is intended that surveyed regions use the index to assess their own status and progress and determine where they need to make improvements, or target their efforts, based on the other regions' position and experience. Scores for the RSC regions are presented in Figure 2.

<sup>3</sup> During the process it became evident that many partners lack easily available, comparable and credible data and information, especially about energy and greenhouse gas emissions, and the index has been modified according to data availability.

Figure 2: RSC regions' RCCI scores



For the scores, please note the following:

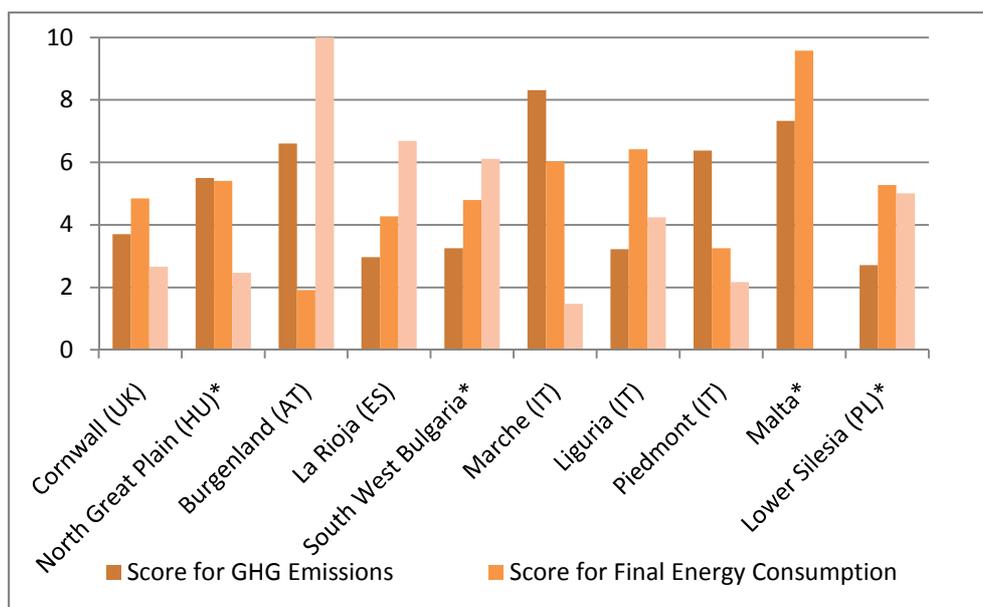
- For each issue, the highest score indicating the best performance is 10; the lowest score indicating the poorest performance is 0. If a score is 0 or 10 for issue 1-3, it means that the regions' performance exceeds or underperforms the EU average by more than 50%.
- Total is the sum of scores for each individual issue; the maximum total is 70 points.
- For issues 1 – 3, national-level data have been used to calculate scores for regions in the EU new member states (those marked with an asterisk), as the required energy and GHG emissions data were not available at the regional level.
- Issues 4 – 7 are qualitative assessments, so the scores are somewhat dependent upon the opinions and biases of the reviewer, either the RSC contact point for the region (Issues 5 and 6) or the RSC baseline assessment team (Issues 4 and 7).

To make the entire exercise manageable within a reasonable timeframe and to reduce the burden placed on partner regions to collect data, the index has certain limitations. Foremost among these are the lack of regional-level GHG emissions and energy data in the EU new member states; the difficulty to assess the results of adaptation actions; and the time lag between policy and other actions and results in terms of GHG emissions and energy consumption. Nevertheless, the RSC baseline assessment team feels that the general data presented give a good basis for regions to better understand their "Climate Confidence" and consider steps towards improvement.

## GHG EMISSIONS AND ENERGY RESULTS

In order to better understand the RSC regions' energy and emissions data and RCCI results, the baseline assessment report examines them in connection with seven external factors. Figure 3 contains an overview of the RCCI results for energy and GHG emissions (RCCI issues 1 – 3).

**Figure 3: Overview of RSC regions' performance for energy and GHG emissions issues in the RCCI**



\*Scores for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are based on national level data.

**1. Economic performance: the effects of GDP on energy and emissions.** RSC regions with higher GDP per capita tend to have higher total RCCI scores, particularly due to the higher scores for political, institutional, social and financial issues (4 – 7). For these issues, the top six scorers are also the six wealthiest regions. For GHG emissions and energy issues (1 – 3), however, the connection is less pronounced, as several of the wealthier economies have relatively high energy consumption and GHG emissions.

**2. Efficiency of use: the correlation between per capita and intensity rates.** In general, wealthier and more developed economies tend to be more energy efficient, i.e. have lower intensity rates. This may be due to more actual energy efficiency in the economy, to the structure of the economy, or to economies of scale owing to higher output. The EU new member states (except Malta) have lower GHG emissions and energy consumption on a per capita basis, but still have considerable catching up to do in both emissions intensity and energy intensity.

**3. Economic structure.** The RSC regions are mainly service-oriented economies. La Rioja (ES) has a relatively high level of industrial activity (38%) which may be linked to its relative high levels of GHG emissions and energy consumption.

**4. GHG emitters by sector.** Energy production is the leading source of GHG emissions in all RSC regions except Burgenland (AT) and Cornwall (UK), which produce very little energy. The two regions with the highest GHG emissions per capita – La Rioja (ES) and Liguria (IT) – have a very high percentage of emissions from the energy production sector.

**5. Energy consumption by fuel source.** In some cases, the data show that RSC regions with a higher share of gas tend to have higher energy consumption rates [Cornwall (UK) La Rioja (ES), Piedmont (IT)]. Regions with a higher share of oil in the energy mix [Liguria (IT), Malta] tend to have lower energy consumption rates and in particular lower energy intensity rates.

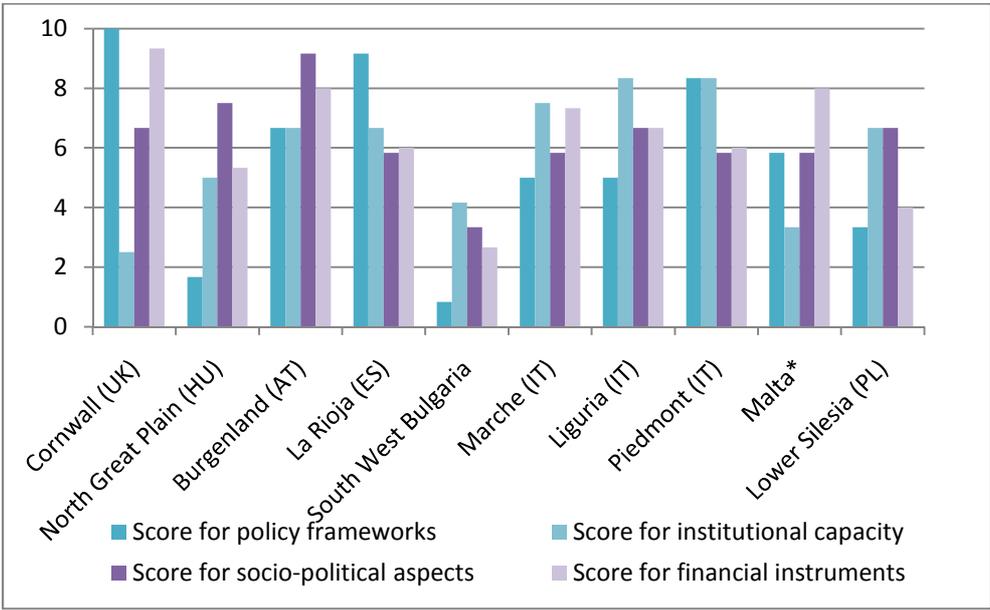
## **6. Renewable energy**

- **Targets:** Due to limited information available on regional targets, the analysis looks at the national targets for each RSC region. Austria has the most ambitious target (34%); but Spain's target is also relatively high (20%). The majority of the countries have a target around 15 percent, which means in general a ten to twelve percent increase compared with current renewable energy source (RES) shares in RSC regions.
- **Potentials:** Most RSC regions report good solar, biomass and geothermal potential and less wind and hydropower potential. Solar has the potential to be an important source of energy in southern regions and geothermal in EU new member state regions.
- **Barriers:** The most common barriers for further penetration of RES are the financial and market limitations in the RSC regions. A lack of strategic, political or long-term vision on the use of RES; lack of proper policies and legislative requirements; high costs of technology and lack of financial incentives to overcome this; and low awareness among key stakeholders were also listed among the main obstacles.

**7. Energy security: dependence on energy imports.** Energy import dependency is a serious issue across the partnership. According to the regions' self-assessment, their energy dependency from external sources is very high.

# POLITICAL, INSTITUTIONAL, SOCIO-POLITICAL AND FINANCIAL ISSUES

Figure 4: RSC regions' scores for qualitative issues in the RCCI



\*Scores for Malta are based on national level data.

## Integration of climate change planning into policies and planning

As summarised in Table 2, RSC regions can be grouped into 3 categories according to the status of the current policy framework. The table also indicates regional GDP per capita, which shows that wealthier regions are more likely to be further advanced in the development of climate change policy frameworks at the regional level.<sup>4</sup>

<sup>4</sup>Cornwall (UK) is exceptional, as it ranks the highest with mid-level GDP, while some of the wealthier Italian regions have lower scores for this issue. All three of the lowest-scoring regions in Group 3 belong to the NMS, since NMS have only recently set up administrations at the NUTS (Nomenclature of Territorial Units for Statistics) 2 level and are still in the process of devolving powers to those institutions. As a result, these regions lack the authority and/or the capacity to develop policies, or have only just begun the process.

**Table 2: Status of development of climate change policy framework**

Group	Status of policy framework	RSC region	2006 GDP per capita (Euro)
1	Comprehensive and quantified regional climate change policy; regional sectoral framework that address climate change factors; ambitious regional level policy objectives and factors	Cornwall (UK)	20 641
		La Rioja (ES)	23 901
		Piedmont (IT)	27 646
2	Regions with less comprehensive climate change policy framework and sectoral policies which do not fully address climate change issues	Burgenland (AT)	20 512
		Marche (IT)	25 300
		Liguria (IT)	25 543
		Malta	12 617
3	Regional policy related to climate change is in an early phase of development or does not exist	Lower Silesia (PL)	7 631
		North Great Plain (HU)	5 636
		South West Bulgaria	5 124

The following are the main findings from the analysis of the RSC regions' policy frameworks:

- **Quantifiable policy targets:**<sup>5</sup> Four RSC regions – Cornwall (UK), La Rioja (ES), Marche (IT) and Piedmont (IT) – provided quantifiable regional-level targets for overall GHG reductions in the questionnaires; in many cases these targets are more ambitious than the national-level targets agreed with the EU.
- **Integration of climate change into sectoral policies:**<sup>6</sup> The baseline questionnaires revealed that integration of climate change into RSC regions' sectoral policies has focused mainly on the energy sector (renewable energy and energy efficiency measures). Some progress can be observed in agriculture, forestry and housing policies. Although the transport sector is a major contributor to GHG emissions, only Malta has reported integration attempts.
- **Crosscutting policy themes:** Some regions reported on integration of climate change into general regional or economic development policies and programmes through cross-cutting themes. These include: climate change as an economic driver; climate change and social inclusion; raising awareness for behavioural change.
- **Adaptation to the changing climate:** Many RSC regions reported that more attention is given to climate change mitigation in policies. Only some of the regions do demonstrate understanding of their specific vulnerability to expected climactic changes, and have initiated the preparation of adaptation strategies and plans at the regional level, for example La Rioja (ES).

<sup>5</sup>Well-developed climate change policies must have quantified targets (for emissions reductions, RES use, energy efficiency, etc.) The negotiation and setting of regional level targets which contribute toward national obligations is a different process for each Member State.

<sup>6</sup>The extent to which climate change objectives and measures are transposed or integrated into key sectoral policies such as energy, agriculture, transport, housing, waste and others varies across the regions.

## Institutional set-up at the regional level

Each RSC region has a unique set of institutions, but they fall into three basic groups according to the type of institution that is primarily responsible for climate change policy-making and implementation, as shown in Table 3.

**Table 3: Institutions responsible for climate change in RSC regions**

Group	Type of institution responsible for climate change	Regions
1	Specialised institution(s) in place at the regional / national level are primarily responsible for climate change policy-making and implementation.	Cornwall (UK), Malta
2	A department within the regional authority is primarily responsible for climate change policy-making and implementation.	Burgenland (AT), Liguria (IT), Marche (IT), Piedmont (IT), Lower Silesia (PL)
3	A local/regional branch of environment ministry, inspectorate or other national-level institution has primary responsibility for managing climate change for the region. Regional authorities have a limited role in policy-making and may or may not be responsible for implementation.	La Rioja (ES), North Great Plain (HU), South West Bulgaria

Interestingly, the two partners with specialised institutions (Group 1) for climate change were self-scored by far the lowest, which might be explained by their ambitious objectives and standards. Most of the regions which reported higher levels of capacity, financing, regulatory mandate and access to research are those in which the regional authority itself has primary responsibility for climate change (Group 2). One exception is La Rioja (ES), where a branch of the environment ministry is responsible for climate change, but the region scored well on the institutional and policy issues in the RCCI. Outside of La Rioja (ES), the regions where a national branch is responsible for climate change for the region (Group 3) reported less satisfaction with institutional capacity.

Some of the challenges reported by the regions include:

- absence of a sound national strategy to comprehensively address climate change;
- lack of a clearly delineated institutional responsibility for climate mitigation and adaptation;
- shortage of human resources;
- insufficient financial resources;
- poor access to research capacity for developing scientifically-sound policy models and scenarios.

## Social and political awareness and readiness

In general, RSC regions reported an average level of awareness on the socio-political aspects, including political prioritisation of climate change, political leadership, the overall awareness of population and industry on reducing the carbon footprint. Not surprisingly, Burgenland’s (AT) self-

scores are the highest, since it has achieved considerable success in the development of RES and has ambitions to continue this development, which must have clear political and popular support.

## Instruments for financing climate change action

Politicians and experts may argue about the efficiency of subsidising initiatives aimed at reducing emissions, energy consumption, or improving energy efficiency and renewable use; but it is clear that there are a wide range of options offered by the EU, Member States and even private institutions for funding these efforts.

**EU Cohesion Policy.** The extent to which climate change and low carbon objectives and measures are integrated into the Cohesion Policy funds and the strategic planning and programming processes is critical for making progress on these issues, since these funds are often important overall drivers of regional development. In the RSC regions climate change is most commonly addressed “vertically” through priorities and measures specifically focused on climate and/or carbon objectives, related to RES, energy efficiency, or sustainable transport. The three Italian RSC regions have dedicated significant funds (11-25%) to sustainable and efficient energy use. The so-called “horizontal” integration of climate change and low carbon issues across all of the planning and programming of the funds is more challenging for regions. Only Cornwall (UK) and Malta reported some success in this area.<sup>7</sup>

**Other public financing instruments.**<sup>8</sup> In many RSC regions, specialised national and regional subsidy programmes serve as incentives to encourage innovation and behavioural change and have resulted in highly visible success stories. The most popular subsidised sectors are energy, housing and sustainable transport.

## CONCLUSIONS

The baseline assessment will serve as the backbone of the RSC project, to enable the partnership to further define and tailor the subsequent project activities so that they best meet regions’ needs and take advantage of the experience and best practices of the RSC partners. The following is a summary of the characteristics of climate confident regions and some of the outstanding RSC performers.

**GHG emissions and sustainable energy use.** The RCCI and the further analysis in this report has shown that there are many important external factors that can hinder or favour a region’s performance with regard to GHG emissions and energy use. These include certain demographic or economic factors over which the region may have limited or no control, such as cold weather and the need for heat, population density, and the structure of the economy. Burgenland (AT) and Piedmont

---

<sup>7</sup> These include the introduction of indicators for the reduction of greenhouse gas emissions into the Operational Programmes and the development of a carbon evaluation tool to monitor CO<sub>2</sub> emissions produced by projects.

<sup>8</sup> National and regional-level financial instruments that support climate change related measures include subsidies, tax incentives and specialized funds.

(IT) stand out as regions that have made considerable progress in the use of renewable energy sources.

**Policy frameworks.** The ideal climate confident region will have a comprehensive policy framework that addresses climate change through appropriate and realistic objectives, quantified and ambitious targets and a set of regulatory and incentive measures that can enable implementation. In most cases this will include an over-reaching climate-change oriented strategy or action plan, supported by proper integration of climate change issues into sectoral policies and planning documents. The three top scorers in this area – Cornwall (UK), La Rioja (ES) and Piedmont (IT) - have overall climate change action plans or strategies and climate-friendly sectoral policies.

**Institutional capacity.** The baseline assessment found that a likely formula for good performance is one where the regional authority itself has primary responsibility for climate change. Another positive characteristic is the existence of specialised support agencies that can provide technical assistance on issues related to climate change. Good practices include inter-institutional partnerships for coordination of policies and actions [Cornwall (UK), Piedmont (IT)]; and the use of special governmental coordinating bodies for climate change [La Rioja (ES), Malta].

**Social and political awareness.** Social and political awareness about climate change, including its risks, the need for action, and potential benefits is a key cornerstone of a climate confident region. One RSC success story in this area is Burgenland (AT), which has raised considerable popular and political support through its renewable energy programmes.

**Financial instruments.** Climate confident regions will make good use of the financial tools available to them, such as EU funds and national subsidy programmes, through the integration of climate change issues at programme and project levels. Examples of this include the integration of a low carbon or carbon neutrality principle into all publicly supported investments [Cornwall (UK), Malta]. Climate confident regions must also take advantage of market-based instruments for supporting energy efficiency and renewable energy use and reductions in GHG emissions. Several of the RSC regions have varied and innovative incentive programmes which can be showcased in one of the RSC workshops or seminars.

# List of Contents

- Acknowledgements ..... 2
- Executive Summary ..... 3
  - Introduction: The RSC partnership and “climate confidence” ..... 3
  - The RSC partner regions ..... 3
  - The Regional Climate Confidence Index ..... 4
  - GHG emissions and energy results ..... 7
  - Political, institutional, socio-political and financial issues..... 9
  - Conclusions ..... 12
- 1. Introduction: The RSC Project and “Climate Confidence” ..... 17
- 2. The RSC Regions..... 20
  - 2.1. Location ..... 20
  - 2.2. Area..... 21
  - 2.3. Population..... 22
  - 2.4. Gross Domestic Product ..... 23
  - 2.5. Structure of the economy..... 24
  - 2.6. Climate change vulnerability and energy vulnerability ..... 25
- 3. The Regional Climate Confidence Index - An Overview..... 27
  - 3.1. Scoring methodology ..... 28
  - 3.2. Data collection ..... 29
  - 3.3. Methodological limitations..... 29
- 4. RSC Regions’ GHG Emissions and Energy Use: A Snapshot ..... 32
  - 4.1. RCCI Issue 1: Greenhouse Gas Emissions ..... 32
  - 4.2. RCCI Issue 2: Energy Consumption ..... 36
  - 4.3. RCCI Issue 3: Renewable Energy Use..... 39
  - 4.4. GHG emissions and energy figures for the RSC regions – a review..... 41
  - 4.5. GHG emissions vs energy consumption ..... 42
  - 4.6. Key factors affecting GHG emissions and energy characteristics..... 44
  - 4.7. Case studies: GHG emissions and energy ..... 58
  - 4.8. Conclusions – GHG emissions and energy ..... 61
- 5. The Qualitative Issues: Policies, Institutions, Socio-Political Aspects and Financial Instruments. 63
  - 5.1. RCCI Issue 4: Policy Frameworks ..... 63
  - 5.2. RCCI Issue 5: Institutional Capacity..... 73
  - 5.3. RCCI Issue 6: Social and Political Awareness and Readiness ..... 79
  - 5.4. RCCI Issue 7: Financial Instruments ..... 82
- 6. Conclusions, Next Steps and the RSC Project Response..... 89
  - 6.1. Key lessons learned ..... 89

6.2. Defining a “climate confident” region .....	90
6.3. Paving the way for further project activities and outputs.....	92
6.4. Putting it all together: matching the project activities with partner needs.....	94
Glossary .....	96
List of Boxes .....	99
List of Charts .....	100
List of Tables .....	101
Reference List .....	102
Annex: Profiles of the RSC Regions.....	103
Cornwall, United Kingdom.....	103
North Great Plain, Hungary .....	110
Burgenland, Austria .....	115
La Rioja, Spain .....	119
South West Bulgaria .....	123
Marche, Italy .....	127
Liguria, Italy.....	131
Piedmont, Italy.....	135
Malta .....	139
Lower Silesia, Poland .....	144

## List of Abbreviations

AT – Austria  
BG – Bulgaria  
CO<sub>2</sub> – Carbon dioxide  
DG – Directorates-General  
EE – Energy Efficiency  
EEA – European Environmental Agency  
ERDF – European Regional Development Fund  
ETS – Emission Trading Scheme  
ES – Spain  
EU – European Union  
Eurostat – Statistical Agency of the European Union  
FEC – Final Energy Consumption  
GDP – Gross Domestic Product  
GHG – Greenhouse Gas Emissions  
GIC – Gross Inland Consumption  
GVA – Gross Value Added  
HU – Hungary  
IT – Italy  
LCE – Low Carbon Economy  
LCR – Low Carbon Region  
MS – Member State (of the EU)  
MT – Malta  
NMS – New Member States (of the EU)  
OP – Operational Programme  
PL – Poland  
PPS – Purchasing Power Standards  
RDP – Regional Development Programme  
RES – Renewable Energy Sources  
ROP –Regional Operational Programme  
RSC – Regions for Sustainable Change  
SME – Small and Medium Enterprise  
Toe – tonne of oil equivalent  
UK – United Kingdom  
VAT – Value Added Tax

# 1. INTRODUCTION: THE RSC PROJECT AND “CLIMATE CONFIDENCE”

Climate change brings both risks and opportunities; for regions to manage the risks and take advantage of the opportunities requires sophisticated and precise policies, institutions, personnel, financial tools and many other assets. These attributes comprise the “Climate Confidence” of European regions, which is the goal of the INTERREG IVC-funded “Regions for Sustainable Change” project (RSC).

This report examines and evaluates the “Climate Confidence”<sup>9</sup> of ten European regions, represented by the 12 RSC partners.<sup>10</sup> The RSC project works to foster regions that are secure in their capability to reduce GHG emissions and effectively manage climate change impacts and future risks, and through that management to take advantage of the sizeable economic opportunities of low carbon economy. In the longer term, the RSC partners are seeking to become Low-Carbon Regions (LCR). The ultimate goal of a LCR is to integrate all aspects of its economy - services, energy supply and use, manufacturing industries and construction, agriculture, transportation, waste management and patterns of consumption – around technologies and practices with minimal GHG emissions.

To do this, the RSC project will analyse regions’ progress, experience and good practices on a variety of climate and carbon related issues; develop a set of criteria and indicators for low-carbon regions; conduct a macro-economic analysis of three partner regions to identify structural changes required to achieve low-carbon status; investigate the use of SEA and sustainability assessment for integrating climate and low carbon objectives into regional planning; and prepare a methodological handbook on integrating climate objectives into regional development programmes. In addition, RSC will strengthen the capacity of partners through capacity-building workshops and technical seminars and will carry out pilot actions to transfer the “low carbon region” development model in practice.

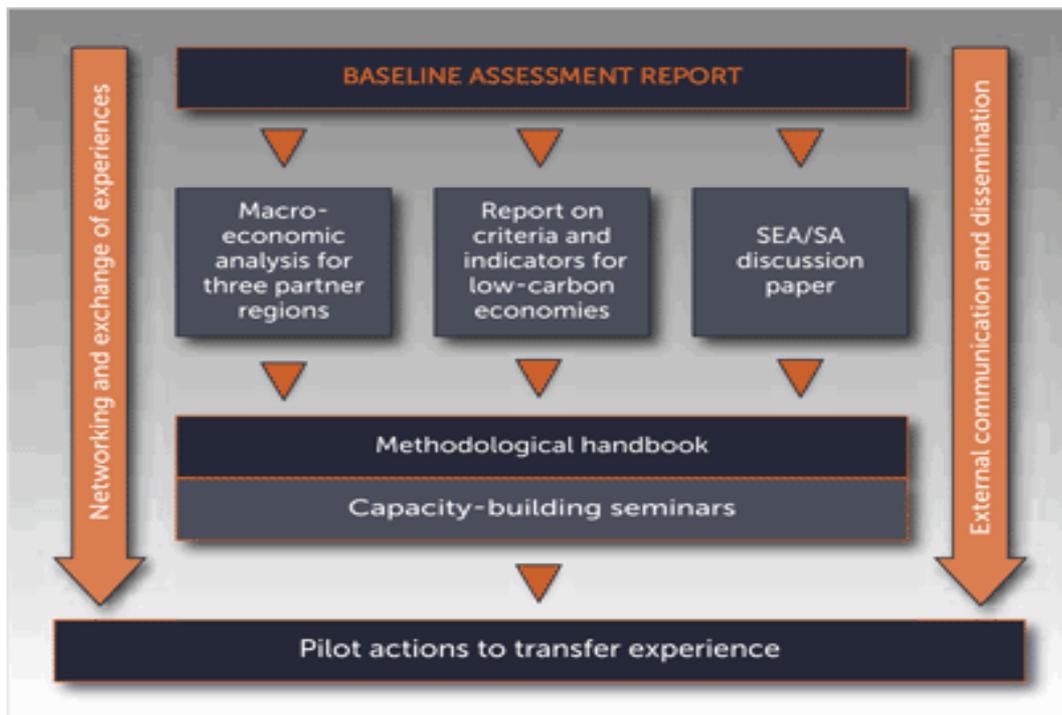
---

<sup>9</sup> The term “climate confidence” was used previously in a consumer index prepared by the bank HSBC in 2007. The HSBC “Climate Confidence Index” measures consumers’ attitudes and response to climate change across the world. It should not be confused with the RSC “Regional Climate Confidence Index.”

See [http://www.hsbc.com/1/PA\\_1\\_1\\_S5/content/assets/newsroom/hsbc\\_ccindex\\_p8.pdf](http://www.hsbc.com/1/PA_1_1_S5/content/assets/newsroom/hsbc_ccindex_p8.pdf).

<sup>10</sup> Although there are 12 project partners, only ten regions have participated in the RCI. Two partners – Cornwall Council and Cornwall Development Company – represent the region of Cornwall (UK). The lead partner, the REC for CEE, is an inter-governmental organization and does not represent a particular region. The partnership includes Malta, which is an EU member state. References to Malta as a region and as a state are used interchangeably.

Figure 1.1: Planned project activities and outputs



The baseline assessment and this report are the first step of the project and provide the foundation for the subsequent activities and outputs. The report identifies the key characteristics of climate confident regions, and, through the “Regional Climate Confidence Index” (RCCI), evaluates the RSC partner regions’ positions, strengths and weaknesses in this regard.

To carry out the assessment, a working group of four RSC partners identified seven key issues which reflect a region’s climate confidence: energy consumption, GHG emissions; renewable energy use; policy frameworks, institutional capacity, socio-political awareness and readiness, and financial instruments. RSC regions submitted data and information on these issues via a questionnaire. The RSC project team developed the index and scored regions based on their responses. The result - the RCCI and this assessment report - enables the RSC regions to learn more about themselves and each other and to critically evaluate their own status for future improvement.

The report also analyses the results for the ten RSC regions, providing insight to the factors and issues that lie behind the index scores and data, and drawing some overall conclusions about climate confidence at the regional level. Finally, the report identifies good practices from across the RSC partnership that can be elaborated and transferred through the subsequent project events and outputs.

**Table 1.1: Organization of the report**

	<b>Title</b>	<b>Contents</b>
Chapter 1	Introduction: the RSC Project and “Climate Confidence”	Defines climate confidence and explains RSC and the baseline assessment process
Chapter 2	The RSC Regions	Provides basic information about the regions: population, area, GDP, economic structure, climate and energy vulnerability
Chapter 3	The Regional Climate Confidence Index: an Overview	Presents the index methodology and regions’ performance on seven key issues for climate confidence
Chapter 4	RSC Regions’ GHG Emissions and Energy Use: a Snapshot	Provides further analysis of regions’ energy and GHG emissions data and highlights important results and practices
Chapter 5	The Qualitative Issues: Policies, Institutions, Socio-Political Aspects and Financial Instruments	Provides further analysis of regions’ policies, institutions, social and political awareness and financial instruments and highlights important results and practices
Chapter 6	Conclusions, Next Steps, the RSC Project Response	Summarises conclusions and good practices and maps out how results will inform the RSC project process
Annex	Profiles of the RSC Regions	Summary of climate-related data and information for each RSC region

## 2. THE RSC REGIONS

Geographic, demographic, economic and other factors have critical influence on a region's climate confidence. This chapter presents basic data and information on the ten regions evaluated by the RCCI: location, size, population, gross domestic product (GDP), economic structure, and climate change and energy vulnerability.

To enable comparison of the regions among themselves and with EU averages, data for this chapter was taken from the official database of the Statistical Agency of the European Union (EUROSTAT)<sup>11</sup> and refers to year 2006.<sup>12</sup>

### 2.1. LOCATION

The Regions for Sustainable Change partnership covers eight EU countries: Austria, Bulgaria, Hungary, Italy, Poland, Malta, Spain and the United Kingdom. There are two partners from Hungary and the United Kingdom and three partners in Italy.

**Figure 2.1: Regions for Sustainable Change partnership**



Six regions [Burgenland (AT), Liguria (IT), Piedmont (IT), Marche (IT), Cornwall (UK), La Rioja (ES)] are from the EU-15 group. Four regions are from the EU new member states (NMS): countries that joined the EU in 2004 [North Great Plain (HU), Malta, Lower Silesia (PL)] and in 2007 (South West Bulgaria). This has considerable impact on climate confidence at the regional level, since the regional structure and the Nomenclature of Territorial Units for Statistics (NUTS) classification<sup>13</sup> was fully introduced in

---

<sup>11</sup> For the RCCI, most data were provided by the partner regions.

<sup>12</sup> This was the last year where all relevant data were available for partner regions.

<sup>13</sup> The abbreviation "NUTS" means the nomenclature of territorial units for statistics. The NUTS classification has been used for regional statistics for many decades, and has always formed the basis for regional funding policy. It was only in 2003, though, that NUTS acquired a

the NMS only after EU membership. Since regions are less developed politically and institutionally in these countries, some of the data (mainly on GHG emissions and energy) required for the RCCI were unavailable at the regional level, so the RCCI was carried out on the basis of national data. This will be indicated throughout the report.

Several regions have peripheral locations, either in Europe (Malta, South West Bulgaria) or within their own country [Burgenland (AT), Cornwall (UK)]. Six regions are inland regions, three are in coastal areas, and one (Malta) is an island state.

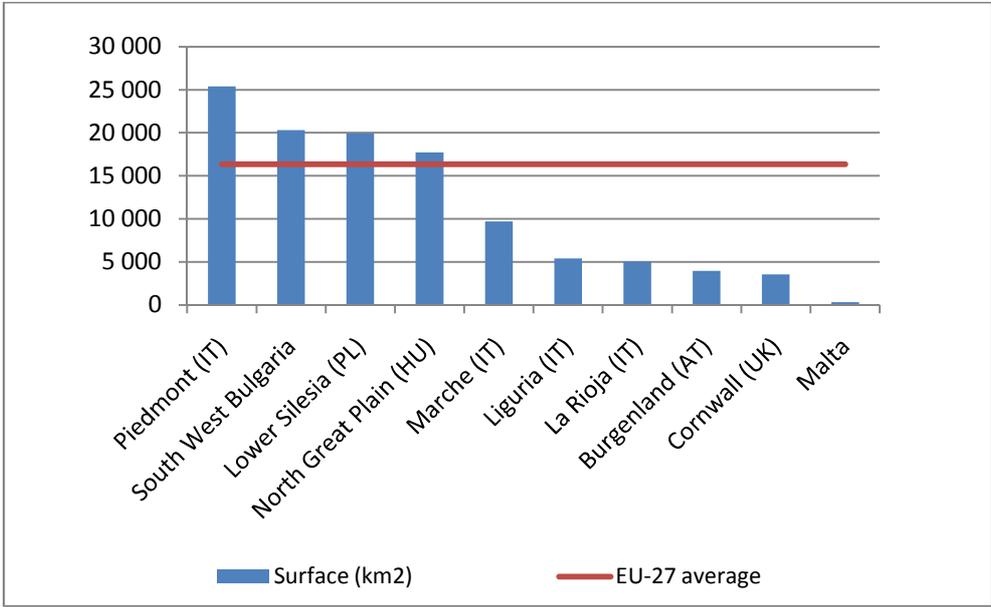
As we will see further in this chapter, geographic location and date of entry into the EU will have significant impact on other factors related to climate confidence, particularly wealth and vulnerability to climate change impacts.

## 2.2. AREA<sup>14</sup>

The ten surveyed regions are diverse in area: three of them [Piedmont (IT), South West Bulgaria and Lower Silesia (PL)] exceed the EU average (16,333 km<sup>2</sup>), whilst the seven other regions are significantly below this average. Four regions [La Rioja (ES), Burgenland (AT), Cornwall (UK) and Malta] are among the smallest 25% of European regions in area.

The largest region is Piedmont, with 25,402 km<sup>2</sup>, but it is just the 48<sup>th</sup> largest region in Europe. Malta with its 316 km<sup>2</sup> surface area is the smallest surveyed territory.

Figure 2.2: Surface area of the RSC regions in km<sup>2</sup>, 2006



legal basis, when the NUTS regulation was adopted by the Parliament and the Council ([http://ec.europa.eu/eurostat/ramon/nuts/splash\\_regions.html](http://ec.europa.eu/eurostat/ramon/nuts/splash_regions.html)). The NUTS 1 level refers to the country level, NUTS 2 to the regional level, NUT3 and 4 to smaller territorial units.

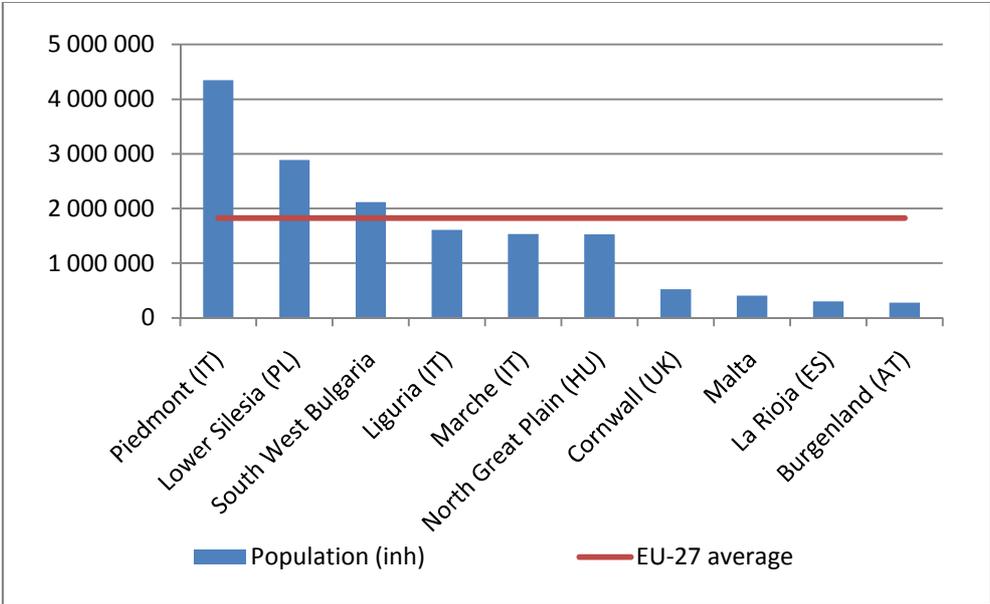
<sup>14</sup> To enable comparison, the data used are “total area” figures, which include the area of lakes and rivers, as these were available for all the regions.

### 2.3. POPULATION

Population figures are also diverse across the regions. Three regions [Piedmont (IT), Lower Silesia (PL) and South West Bulgaria] are above the EU average of 1,823,700 inhabitants; three regions are around the average; and four regions [Cornwall (UK), Malta, La Rioja (ES) and Burgenland (AT)] rank in the bottom 15 percent of European regions.

The most populous surveyed region is Piedmont, with 4.35 million inhabitants, which makes it the 18<sup>th</sup> most populous region in the EU. The smallest, Burgenland (AT), is one of the ten least populous regions in the EU.

Figure 2.3: Population of the RSC regions, 2006



Regarding population density,<sup>15</sup> the island nation of Malta is by far the most densely populated region in the partnership, and it is also the most densely populated country in the EU. With the exception of Liguria (IT), the rest of the RSC regions are well below the EU average for population density. South West Bulgaria (Sofia) and Piedmont (Torino) have major urban areas.

<sup>15</sup> According to Eurostat, for calculation of population density, the land area concept (which excludes inland water bodies such as lakes or rivers) should be used wherever available. For this report, the land area was used where available (Burgenland; Cornwall; the Italian regions; Malta ); elsewhere (NMS regions and La Rioja) total area was used to calculate population density.

**Table 2.1: Population density in the RSC regions, 2006**

RSC region	Total surface (km <sup>2</sup> )	Population (inh)	Population density (inh/km <sup>2</sup> )	Population of largest city (inh)
Malta	316	405 006	1 267	22 137
Liguria (IT)	5 330	1 609 000	301.9	610 739
Piedmont (IT)	24 860	4 347 300	174.9	887 044
Marche (IT)	9 554	1 532 500	160.4	101 277
Cornwall (UK)	3 563	526 500	145	41 948
Lower Silesia (PL)	19 947	2 885 300	144.6	636 304
South West Bulgaria	20 306	2 117 800	104.3	1 131 203
North Great Plain (HU)	17 729	1 529 200	86.3	208 630
Burgenland (AT)	3 681	279 800	70.7	12 039
La Rioja (ES)	5 045	303 500	60.2	144 474
EU-27 average	16333.5	1 823 700	380	--

## 2.4. GROSS DOMESTIC PRODUCT

Gross Domestic Product (GDP) per capita in Purchasing Power Standards (PPS)<sup>16</sup> ranges from around €9,500 to €27,000 in the RSC regions for 2006. Nominal GDP – not adjusted for purchasing power – is considerably lower in the regions from the NMS. Due to methodological considerations, both types of GDP will be used in the analysis in this report.

In PPS terms, RSC regions from the EU-15 states have GDP per capita in the range of 78 – 114 percent of the EU average. This drops to 40 – 57 percent for the NMS regions.

The richest RSC region, Piedmont (IT) - where the GDP per capita was 113% of the EU-27 average in 2006 - is just the 69<sup>th</sup> richest region among the 270 EU regions. Burgenland (AT) and Cornwall (UK) are below the EU-27 average, but exceed the 75% threshold.

The percentage of national GDP generated in the region reveals a region's economic position within its own country. Many of the RSC regions, even those with relatively high GDP per capita, are relatively small in these terms.

---

<sup>16</sup> GDP (gross domestic product) is an indicator of the output of a country or a region. It reflects the total value of all goods and services produced less the value of goods and services used for intermediate consumption in their production. Expressing GDP in PPS (purchasing power standards) eliminates differences in price levels between countries. Calculations on a per inhabitant basis allow for the comparison of economies and regions significantly different in absolute size. GDP per inhabitant in PPS is the key variable for determining the eligibility of NUTS 2 regions in the framework of the European Union's structural policy. (Eurostat)

**Table 2.2: Regional GDP per capita (PPS and Euro) 2006**

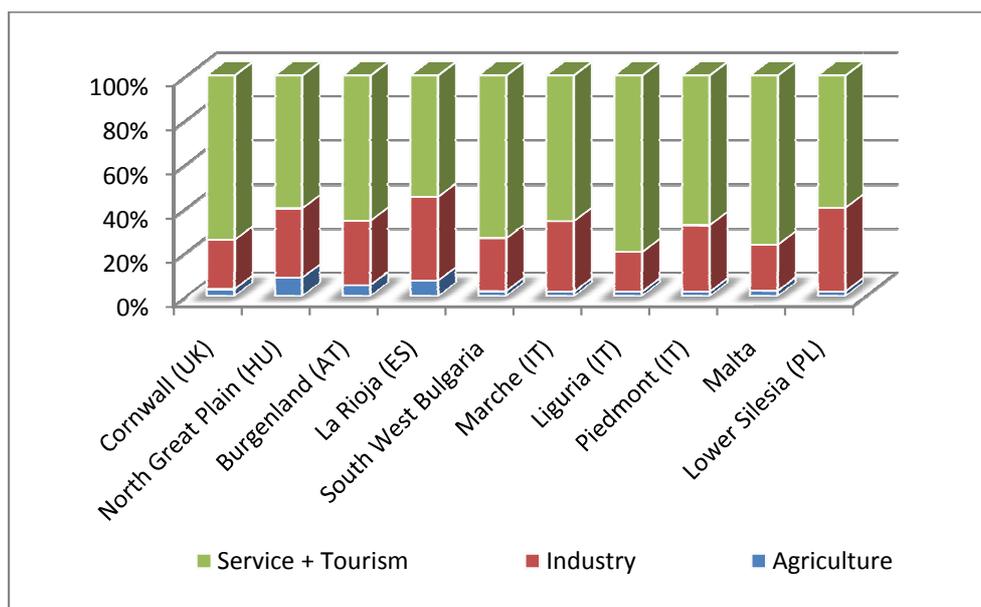
EU rank	RSC region	Regional GDP per capita (PPS)	Regional GDP per capita (Euro)	% of the EU average	% of national GDP generated in the region
69	Piedmont (IT)	26 900	27 646	113.98%	8.09%
77	La Rioja (ES)	26 400	23 901	111.86%	0.74%
104	Liguria (IT)	24 900	25 543	105.51%	2.77%
109	Marche (IT)	24 600	25 300	104.24%	2.61%
185	Burgenland (AT)	19 400	20 512	82.20%	2.23%
196	Cornwall (UK)	18 300	20 641	77.54%	0.56%
200	Malta	18 100	12 617	77.12%	100%
235	South West Bulgaria	13 500	5 124	57.20%	43.00%
236	Lower Silesia (PL)	13 200	7 631	55.93%	8.09%
255	North Great Plain (HU)	9 500	5 636	40.25%	9.58%

Further analysis on regions' GDP and development levels can be found in Chapter 4, in the analysis of issues impacting energy and emissions performance.

## 2.5. STRUCTURE OF THE ECONOMY

Like the gross majority of the European regions, the RSC regions are service-oriented economies. As a general rule in these regions, the composition of the Gross Value Added (which measures the contribution to the economy of each individual producer, industry or sector in the country or in the region) is 3-5% agriculture, 20-30% industry and 65-75% service sector.

**Figure 2.4: RSC regions' economic structure, (%) of Gross Value Added by sectors in 2006**



Industry is higher in Lower Silesia (PL) (37%) and La Rioja (ES) (38%). The service sector is higher in Liguria (IT) (80%), and Malta (76%). Agriculture is higher in Burgenland (AT), North Great Plain (HU), and La Rioja (ES). Chapter 4 will examine variations in energy consumption and GHG emissions as they relate to the economic structure of the RSC regions.

## 2.6. CLIMATE CHANGE VULNERABILITY AND ENERGY VULNERABILITY

Vulnerability to climate change and to energy security, supply, price volatility and carbon intensity are obviously critical factors for climate confidence, as they tell us the extent of any threats to a region's welfare. High vulnerability can provide the strong motivation for regions to take action to improve policies, institutions, tools and other factors that affect their capacity to react and manage effects. The EU Directorates-General (DG) Regional Policy recently developed a series of vulnerability indices for European regions, including assessments of climate change vulnerability and energy vulnerability, in the Commission Staff Working Document "REGIONS 2020: an Assessment of Future Challenges for EU Regions."<sup>17</sup>

The climate change vulnerability index assesses the physical and economic effects of the underlying processes related to climate change:

- change in population affected by river floods;
- population in coastal areas below 5 m;
- potential drought hazard;
- vulnerability of agriculture, fisheries and tourism, taking into account temperature and precipitation changes.

The report found that regions subject to the highest climate change pressure are generally located in the South and East of Europe, due mostly to changes in precipitation and an increase in temperature, and river floods in some areas. Northern and Western Europe are expected to see more limited pressures, apart from lowland coastal areas. Peripheral and island regions are also particularly vulnerable due to their geographic location. Regions with a low GDP per capita and a lower capacity for adaptation to climate change will also experience greater pressures, according to this assessment.

The energy vulnerability index covers four factors:

- energy import dependency - as a percentage of gross inland (energy) consumption;
- energy consumption of households (toe per capita);
- energy consumption of industries, transport etc. (toe/M€);
- carbon content of gross inland (energy) consumption.

As with climate change, regions located mainly in the South and the East have higher energy vulnerability, for reasons to do mainly with security of supply and energy efficiency. Centrally located

---

<sup>17</sup> For more details about the climate change or the energy vulnerability indices, please see the full report "REGIONS 2020: an Assessment of Future Challenges for EU Regions," EU DG Regional Policy, 2008 at [http://ec.europa.eu/regional\\_policy/sources/docoffic/working/regions2020/](http://ec.europa.eu/regional_policy/sources/docoffic/working/regions2020/)

regions are in the middle ground owing to higher energy efficiency. Again, the least challenged regions to energy vulnerability are in the North and West, due either to higher own energy resources (United Kingdom, Netherlands) or to energy mixes allowing lower greenhouse gas emissions and lower dependency on fossil energy providers for electricity (Finland, France, Sweden).

Vulnerability to climate change and energy in the RSC regions is diverse, as the index scores in Table 2.3 demonstrate. Scores for each index are composite indicators for the sub-factors listed above and range between 0 and 100, with zero least vulnerable and 100 most vulnerable.

**Table 2.3: Results of DG Regional Policy climate change and energy vulnerability indices for RSC regions<sup>18</sup>**

RSC region	Climate vulnerability index	Energy vulnerability index
Cornwall (UK)	19	27
North Great Plain (HU)	46	38
Burgenland (AT)	32	45
La Rioja (ES)	46	45
South West Bulgaria	46	51
Marche (IT)	42	52
Liguria (IT)	38	48
Piedmont (IT)	32	50
Malta	52	56
Lower Silesia (PL)	29	55

Malta, North Great Plain (HU), La Rioja (ES), and South West Bulgaria show the highest climate vulnerability. Energy vulnerability is highest in Malta, Lower Silesia (PL), and Piedmont (IT).

The criteria and results of the “REGIONS 2020” analyses and indices do not form part of the RSC Baseline Assessment. The factors considered in these indices do nevertheless have significant impact on climate confidence. Regions with high climate vulnerability will be more likely to focus efforts on adaptation aspects of climate policy and action, and may also report greater popular and political awareness of climate change overall. A high level of energy vulnerability would presumably encourage policies and actions that lead towards more efficient use of energy and/or efforts to improve the security of energy supply.

Regional climate confidence is clearly affected by a range of inter-connected demographic, geographic, economic and other factors that constitute the region’s overall need, motivation and capacity to take the steps necessary to react, adapt and mitigate to the physical, political and economic and other effects of the changing climate. These factors will be revisited throughout this report, in an effort to better understand what makes a region – and the RSC regions in particular – climate confident.

---

<sup>18</sup> Scores for all European regions are available at the site noted above (see footnote 9) in the “indices” sheet.

### 3. THE REGIONAL CLIMATE CONFIDENCE INDEX - AN OVERVIEW

The Regional Climate Confidence Index (RCCI) is a tool that enables EU regions to evaluate their performance and ability on a series of key issues concerning adaptation to and mitigation of climate change within their territories and economies. The RCCI was developed by the RSC partnership to assist regions to answer questions like:

- How confident are European regions in facing a changing climate?
- Do regions have what it takes to reduce their carbon emissions while maintaining sustainable economic growth?
- How do regions compare with one another and to average European benchmarks?
- What are the challenges still to be overcome?

In this chapter, the structure of the index, the scoring methodology, the organisation of the data collection process, the limitations of the methodology and finally, the results of the index will be presented.

The RCCI consists of seven key issues that are critical indicators of a region's ability to respond to climate challenges. Issues 1 - 3 are assessed through quantitative data on GHG emissions and energy consumption for the region. Issues 4 – 7 are evaluated through qualitative assessment carried out by the RSC baseline assessment team (issues 4 and 7) or self-evaluation by the regions (issues 5 and 6).

The seven key issues are the following:

**Issue 1. Greenhouse Gas (GHG) Emissions:** includes GHG emissions per capita and GHG intensity (the ratio of GHG emissions to GDP)

**Issue 2. Energy Consumption:** includes Final Energy Consumption (FEC) per capita and energy intensity (the ratio of energy consumption to GDP)

**Issue 3. Renewable Energy:** measures the share of renewables in Final Energy Consumption.

**Issue 4. Policy Frameworks:** measures the extent to which policies and planning processes for climate change are in place

**Issue 5. Institutional Capacity:** assesses the capacity and effectiveness of the regional authorities to manage climate change issues

**Issue 6. Socio-Political Aspects:** evaluates awareness and readiness of the population and key stakeholder groups for climate change related actions

**Issue 7. Financial Instruments:** assesses instruments for financing climate change-related measures

Together these seven issues give a composite snapshot of a European region's climate confidence – the status quo on GHG emissions and energy use plus an evaluation of the region's ability to manage emissions and energy.

### 3.1. SCORING METHODOLOGY

For each issue, regions receive a score from 0 (lowest performance) to 10 (highest performance). The scores are performance-oriented, which means that a score of 10 is assigned to the best, and 0 to the worst performance. The calculation methodologies were tailored issue by issue but as a driving principle they aimed at enabling regions to compare their status towards climate confidence against EU-27 averages (issue 1-3) or a maximum score based on a series of relevant questions (issues 4-7). At the end, the scores for each of the seven issues are added together to give the overall composite score on climate confidence.

Table 3.1 below summarises the contents and score calculation basis for each RCCI issue. Chapters 4 and 5 contain a detailed description of the scoring process for RSC regions on each issue.

**Table 3.1: Basis for calculation of scores in the Regional Climate Confidence Index**

Issues	Sub-issues	Score calculation basis
<b>1. Greenhouse Gas Emissions</b>	GHG emissions per capita	<i>Comparison to EU-27 average</i>
	GHG intensity (GHG emissions/GDP)	
<b>2. Energy Consumption</b>	Final Energy Consumption (FEC) per capita	<i>Comparison to EU-27 average</i>
	Energy intensity (FEC/GDP)	
<b>3. Renewable Energy</b>	Percent share of renewables in final energy consumption	<i>Comparison to EU-27 average</i>
<b>4. Policy Frameworks</b>	Adaptation: assessment of vulnerability to climate change and inclusion in policies	<i>Each sub-issue scored from 0 to 3 by RSC baseline assessment team</i>
	Regional-level climate change policy, strategy or action plan	
	Extent of integration of climate concerns into regional sectoral policy framework	
	Scope and ambition of regional-level policy objectives and	
<b>5. Institutional Capacity</b>	Experienced staff dedicated to working on climate change	<i>Each sub-issue self-scored from 0 to 3 by regions</i>
	Financial means available to institutions to manage climate	
	Regulatory mandate of institutions	
	Access to research capacity	
<b>6. Socio-Political Aspects</b>	Priority given to climate change on regional political agenda	<i>Each sub-issue self-scored from 0 to 3 by regions</i>
	Political leadership on climate change	
	Overall awareness of industry on reducing carbon footprint	
	Overall awareness of population on reducing carbon	
<b>7. Financial Instruments</b>	Variety of financial instruments available to the region for supporting/encouraging climate-related actions	<i>Each sub-issue scored from 0 to 3 by RSC baseline assessment team</i>
	Integration of climate change issues into planning, programming, implementation of EU-funded programmes	
	Consideration of climate change in projects financed by regional development/investment programmes	

The RCCI should not be viewed as a competition between regions, or as a judgment. It is intended that surveyed regions use the index to assess their own status and progress and determine where

they need to make improvements, or target their efforts, based on the other regions' position and experience.

## **3.2. DATA COLLECTION**

The information required to evaluate regions and develop the index was collected through a questionnaire completed by each region. Regions completed the questionnaires during January – April 2009. The process of collecting the data and developing the index content and scoring methodology took place simultaneously, based on data actually available to the RSC regions. During the process it became evident that many partners lack easily available, comparable and credible data and information, especially with regard to energy and greenhouse gas emissions, and the index has been modified according to data availability.

## **3.3. METHODOLOGICAL LIMITATIONS**

To make the entire exercise manageable within a reasonable timeframe and to reduce the burden placed on partner regions to collect data, the index has certain limitations.

- The RCCI is only a snapshot of the data available at a given point at the time when the region completed the information questionnaire. Therefore the RCCI has limited value as a tool to assess the effectiveness or outcomes of policies and other instruments, as some of the key indicators of performance (GHG emissions, energy use/type, etc.) are based on historical data. Regions may use the RCCI at different points in time, however, to assess progress.
- Equal weight has been given to each of the seven issues for the total composite score, although some of the issues may arguably have greater impact on climate confidence than others.
- The index overlooks a number of issues that may be very important in some regions for climate confidence. These include vulnerability to climate change; concrete adaptation efforts (the index considers adaptation studies and policies); deeper analysis of energy and GHG emissions by sector; and natural resources and biodiversity management.
- The GHG emissions figures submitted by the regions are not necessarily all measured, calculated and/or estimated according to the same methodology.<sup>19</sup> Most - but not all - data are for 2006. It was not possible to account for complexities such as carbon leakage and other factors related to the import and export of goods and services (including energy) with heavy climate impact.
- Regions tend to have energy consumption data in terms of Final Energy Consumption, which excludes the energy transformation sector. There is some debate about whether this is the

---

<sup>19</sup> The baseline questionnaire asked regions to provide data about GHG emissions by sector: energy production, transport, industrial processes, agriculture, waste, other and total.

right indicator to measure regions' climate confidence. In any case, this figure was used as it was the only comparable one available across the RSC regions.

- The three RSC regions located in the EU new member states – Lower Silesia (PL), North Great Plain (HU), and South West Bulgaria – were not able to produce reliable figures for GHG emissions, energy consumption, renewables use and other factors required for Issues 1 – 3 of the RCCI. Hence, in these cases national level data were used.
- Some countries – particularly those in the NMS – are less decentralised in governance, meaning that the NUTS 2 regions in the RCCI often lack regional-level policies and structures, so the qualitative evaluations of policies, institutions and other issues had to be adjusted for that. When applicable, national-level policies and structures were also taken into consideration in the evaluation.

Nevertheless, the RSC baseline assessment team feels that the general information and data presented are a good basis for regions to better understand their “Climate Confidence” and consider steps towards improvement. To the extent possible, given data and other information considerations, some of these issues are examined in the analysis contained in this report. These issues will also be considered in the upcoming RSC report and toolkit on indicators and criteria. Current plans for this output (expected in September 2010) are to include a modified version of the RCCI which will take into account some of the limitations and lessons learned from the baseline assessment, and enable EU regions to use it as part of their ongoing climate change monitoring work.

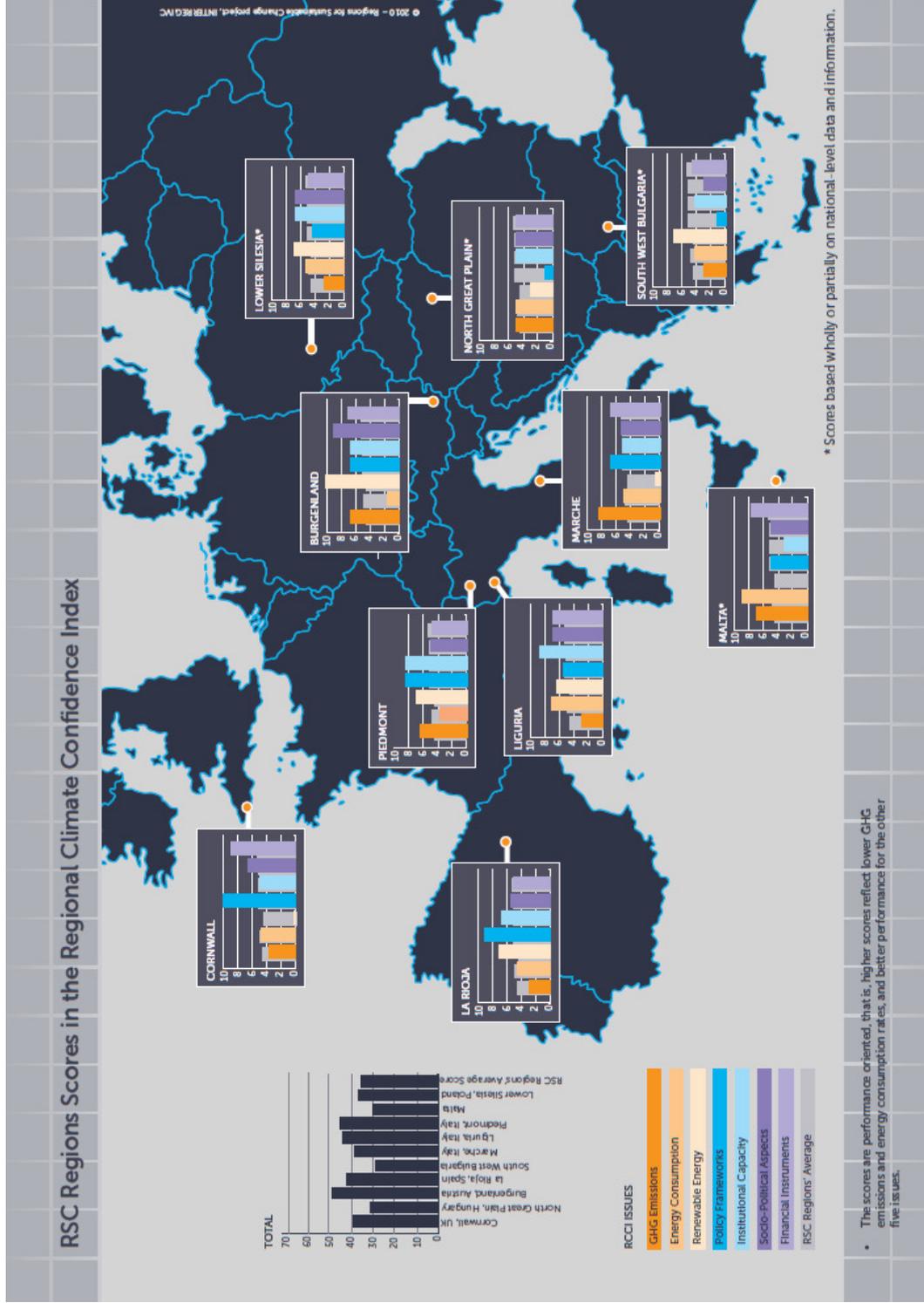
### **3.4. RCCI RESULTS FOR THE RSC REGIONS**

Figure 3.1 presents the RCCI scores for the ten RSC regions.

When reviewing the scores, please note the following:

- As a composite index, the table contains points or scores and not physical units.
- For each issue, the highest score indicating the best performance is 10, the lowest score indicating the poorest performance is 0.
- The “Total” column is the sum of scores for each individual issue; maximum total is 70 points.
- A score of 0 or 10 for issues 1-3 means that the region's performance exceeds or underperforms the EU average by more than 50%.
- Issues 4 – 7 are assessed qualitatively according to specific criteria discussed in Chapter 5.
- For Lower Silesia (PL), North Great Plain (HU) and South West Bulgaria: national-level data have been used to calculate the scores for issues 1, 2 and 3. In the case of Malta, all data and information pertain to the national level.

Figure 3.1: RCCI scores for the RSC regions



## 4. RSC REGIONS' GHG EMISSIONS AND ENERGY USE: A SNAPSHOT

GHG emissions and energy use are critical components of climate confidence. Energy production and consumption account for 80% of all GHG emissions in the EU<sup>20</sup>; regions are faced with ambitious policy objectives and targets requiring the reduction of GHG emissions, improvements in energy efficiency and a move to cleaner energy sources. The RCCI evaluates regions on GHG emissions, energy consumption, and the use of renewable energy sources (RES) in their energy consumption.

Chapter 4 is divided into two parts. Sections 4.1 – 4.3 contain a detailed explanation of the RCCI methodology for scoring regions on GHG emissions and energy issues, using the RSC regions' data and scores to illustrate each issues. Sections 4.4 – 4.8 examine and analyse the external factors surrounding GHG emissions and energy use in the RSC regions, to draw some further conclusions about the regions and climate confidence overall. It will draw heavily from the detailed information provided by RSC partner regions in the baseline questionnaires, and several interesting case studies will be presented from across the partnership.

### 4.1. RCCI ISSUE 1: GREENHOUSE GAS EMISSIONS

Data on overall greenhouse gas emissions (GHG) in tons of CO<sub>2</sub> equivalent were collected from the partner regions. Based on the information received, Issue 1 of the index assesses a region's GHG emissions per capita and GHG intensity, which is a ratio of GHG emissions to GDP.<sup>21</sup>

#### GHG emissions per capita

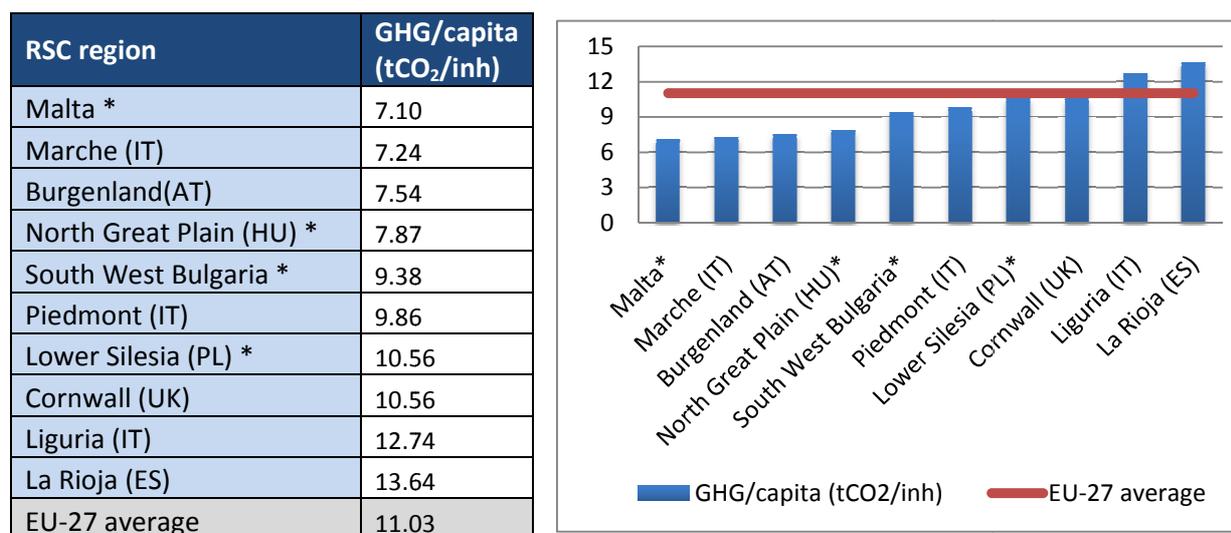
The GHG emissions per capita indicator allows comparison of differently populated regions' emissions performance. Figure 4.1 shows the GHG emissions per capita (per year) of the RSC regions, compared to the EU-27 average.

---

<sup>20</sup> REGIONS 2020: An Assessment of Future Challenges for EU Regions p17

<sup>21</sup> The GDP here is measured in Purchasing Power Standards (PPS) to allow for differences in price levels and currency rates in the different countries.

Figure 4.1: GHG emissions per capita in the RSC regions in 2006<sup>22</sup> (tCO<sub>2</sub>/inhabitant)



\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

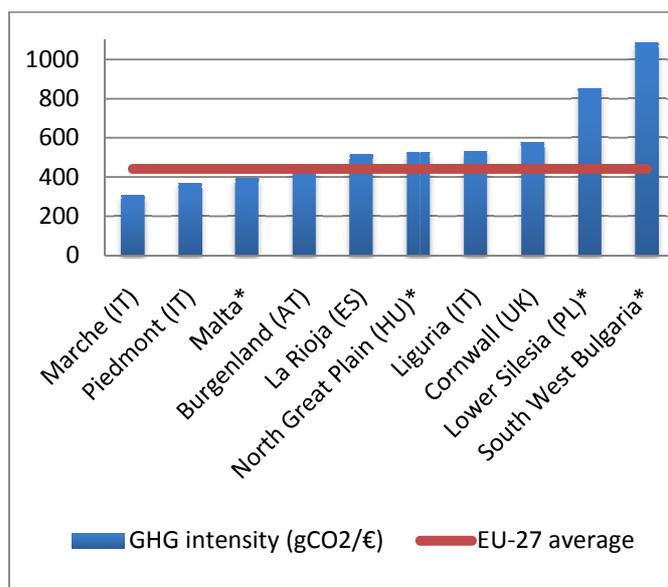
## GHG intensity

The environmental pressure of economic activity can be measured by emissions intensity, an indicator of the amount of GHG emissions per unit of economic output. This indicator takes account of energy intensity and fuel mix, therefore reflecting on a region or country's level of energy efficiency. The RSC regions' GHG intensities, compared to the EU-27 average are presented in Figure 4.2.

<sup>22</sup> For the calculation of GHG emissions per capita there was no single dataset available. For Cornwall (UK), La Rioja (ES), for NMS regions and Malta data from 2006 was used. Data for Burgenland (AT) data are 2001, for Marche (IT) and Liguria (IT) are 2005, and for Piedmont (IT) from 2007. For the NMS regions and Malta, national level data were used.

Figure 4.2: GHG intensity in RSC regions in 2006<sup>23</sup> (g CO<sub>2</sub>/€ GDP at PPS)

RSC region	GHG intensity (gCO <sub>2</sub> /€)
Marche (IT)	308.12
Piedmont (IT)	366.31
Malta *	392.41
Burgenland (AT)	440.05
La Rioja (ES)	517.30
North Great Plain (HU)*	524.42
Liguria (IT)	530.81
Cornwall (UK)	575.86
Lower Silesia (PL)*	854.11
South West Bulgaria*	1086.58
EU-27 average	442



\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta national level data.

## Scoring methodology for GHG emissions

Scores for both sub-issues are expressed relative to the EU-27 averages. For each ten percentage points above or below the EU-27 average, partner regions received one point or fraction thereof, where the EU-27 average equals five points. An example of the scoring methodology in practice can be found in Box 4.1.

### Box 4.1: Example for scoring issue 1 (GHG Emissions)

GHG emissions per capita in Cornwall (UK) region were 10.56 tCO<sub>2</sub>/capita in 2006. This is 4.26% less than the average GHG per capita emitted in the EU-27 (11.03 tCO<sub>2</sub>/capita). According to the scoring methodology described above, the region will receive +0.426 point. Thus the final score for GHG per capita will be 5 (equal to EU-27 average) +0.426 (for being 4.26% below the EU average) = 5.43 points.

GHG emissions per capita in La Rioja (ES) were 13.764 tCO<sub>2</sub>/capita in 2006. This is 23.67% higher than the EU-27 average (11.03tCO<sub>2</sub>/capita). According to the scoring methodology, the region will receive – 2.367 points, hence its final score is 5 (equal to EU-27 average) – 2.37 (for being 23.67% above the EU average) = 2.63 points.

Scores for GHG intensity were calculated in the same way.

<sup>23</sup> For the calculation of GHG emissions intensity there was no single dataset available. For Cornwall (UK), La Rioja (ES), NMS regions and Malta data from 2006 was used. For Burgenland (AT) data originates from 2001, in the case of Marche (IT) and Liguria (IT), from 2005 and in the case of Piedmont (IT) from 2007. For NMS regions and Malta, national level data were used.

## RSC regions' scores for GHG Emissions

The final score for Issue 1 – GHG Emissions is the average of the GHG emissions per capita and GHG intensity scores. The results are presented in Table 4.1; the interpretation of scores can be found in Box 4.2.

**Table 4.1: RSC regions' scores for Issue 1 (GHG Emissions)**

RSC region	Score for GHG emissions per capita		Score for GHG intensity		Total score		Final score
Marche (IT)	8.44	+	8.03	=	16.47	/2	<b>8.2</b>
Malta*	8.56		6.12		14.68		<b>7.3</b>
Burgenland (AT)	8.17		5.04		13.21		<b>6.6</b>
Piedmont (IT)	6.06		6.71		12.77		<b>6.4</b>
North Great Plain (HU)*	7.86		3.14		11.00		<b>5.5</b>
Cornwall (UK)	5.42		1.97		7.40		<b>3.7</b>
South West Bulgaria*	6.50		0.00*		6.50		<b>3.2</b>
Liguria (IT)	3.45		2.99		6.44		<b>3.2</b>
La Rioja (ES)	2.63		3.30		5		<b>3.0</b>
Lower Silesia (PL)*	5.43		0.00*		5.43		<b>2.7</b>

\*Scores for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are based on national level data.

### Box 4.2: How to understand the scores?

If a region's score is less than 5, the region's GHG emissions performance (emissions per capita and emissions intensity) is in general worse than the EU average and the lower the score is, the worse the region's performance is. If the region's score is more than 5, it means that the region's GHG performance is better than the EU-27 average and the higher the score is, the lower the GHG emissions of the region is. Hence, higher scores demonstrate a lower level of GHG emissions in the region, in relation to its population and economic size. A score of zero means that the region's level of emissions or emissions intensity was more than 50% higher than the EU-27 average in 2006.

The scores reveal the following:

1. The best performers in this category are Marche (IT) and Malta; both regions perform considerably better than the EU average.
2. Regions with higher GDP per capita tend to perform better on the GHG intensity criterion, indicating that they emit GHGs more efficiently in purely economic terms.
3. Burgenland (AT) has low emissions per capita (Figure 4.1), but its emissions intensity (Figure 4.2) is around the EU-27 average. The reverse is true for Piedmont (IT), where low emissions intensity is combined with an emissions per capita close to the EU-27 average.
4. Regions from the EU new member states – except Malta - have high GHG intensity scores, but GHG emissions per capita are below the EU average.
5. Three of the EU-15 regions – Liguria (IT), La Rioja (ES) and Cornwall (UK) - have emissions per capita and emissions intensity around or higher than the EU-27 average.

Sections 4.4 – 4.8 of this chapter will analyse these scores and results by examining the relationship between GHG emissions and energy consumption, GDP, economic structure of the regions, the main GHG emitters, sources of energy, renewable energy use, and energy vulnerability.

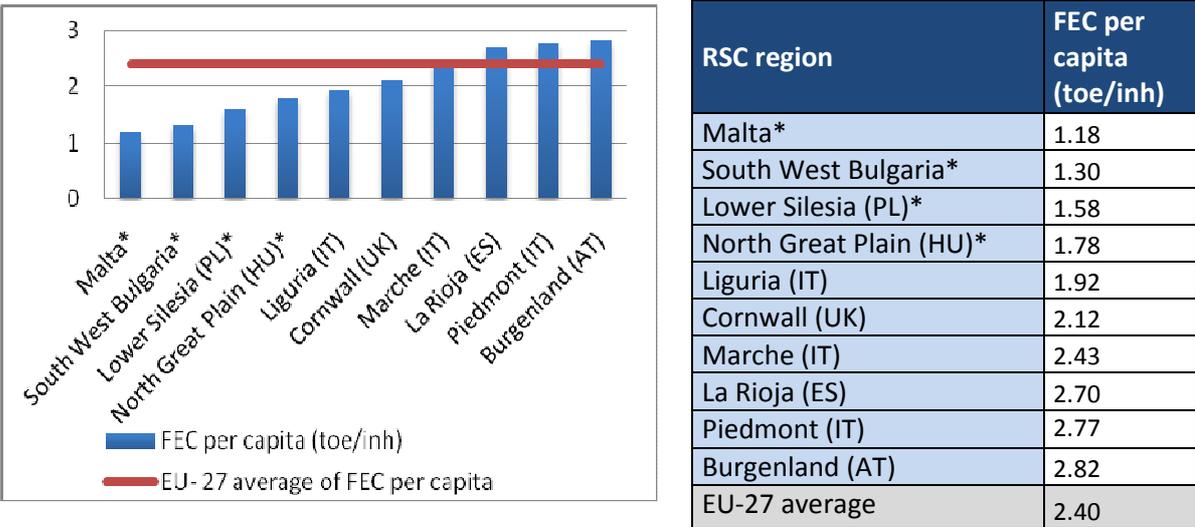
## 4.2. RCCI ISSUE 2: ENERGY CONSUMPTION

Energy consumption figures were requested from regions for both Gross Inland Consumption (GIC) and Final Energy Consumption (FEC).<sup>24</sup> Since many regions did not have GIC figures at the regional level, the index uses FEC. The index assesses regions’ energy consumption (e.g. FEC) per capita and energy intensity, which is a ratio of FEC to GDP (PPS).<sup>25</sup>

### Energy consumption per capita

In most of the RSC partner regions FEC per capita is considerably below the EU average and the lowest (which belongs to Malta) is less than half of the EU average. Detailed comparisons of FEC per capita figures against EU-27 average are presented below.

Figure 4.3: Final Energy Consumption per capita in the RSC regions, 2006



\*Figures for North Great Plain (HU), South West Bulgaria (HU), Lower Silesia (HU) and Malta are national level data.

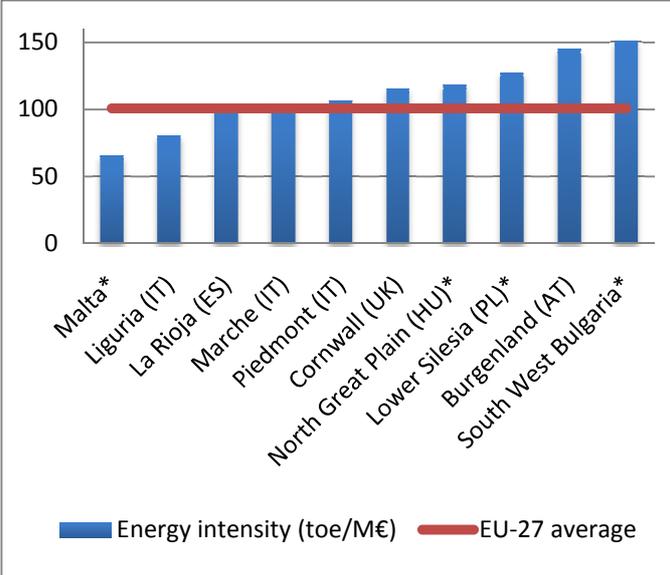
<sup>24</sup> **Gross Inland Consumption (GIC):** Gross inland consumption is the quantity of energy consumed within the borders of a country or region. It is calculated using the following formula: primary production + recovered products + imports + stock changes– exports – bunkers (i.e. quantities supplied to sea-going ships). **Final Energy Consumption (FEC):** Final energy consumption is the energy finally consumed in the transport, industrial, commercial, agricultural, public and household sectors. It excludes deliveries to the energy transformation sector and to the energy industries themselves. *EU energy and transport in figures*, DG Energy and Transport, EC, 2009, p.21

<sup>25</sup> There has been some debate about how to consider the impact of the energy transformation sector in the index, since FEC excludes energy consumed by this sector. The revised version of the RCCI methodology will attempt to rectify this issue.

# Energy intensity

Energy intensity measures the amount of energy consumed to produce one unit of GDP at current market prices (in PPS). The figures below show the RSC regions’ energy intensity figures compared to the EU-27 average.

Figure 4.4: Energy intensity in RSC regions in 2006 (toe/M€ GDP at PPS)



RSC region	Energy intensity (toe/M€)
Malta*	65.21
Liguria (IT)	80.14
La Rioja (ES)	102.52
Marche (IT)	103.30
Piedmont (IT)	106.70
Cornwall (UK)	115.60
North Great Plain (HU)*	118.51
Lower Silesia (PL)*	127.60
Burgenland (AT)	145.40
South West Bulgaria *	150.95
EU- 27 average	100.84

\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

## Scoring methodology for Energy Consumption

Scores for both FEC per capita and energy intensity are expressed relative to the EU-27 averages. For each ten percentage points above or below the EU-27 average, partner regions received one point or a fraction thereof, with the EU-27 average = five points.

### Box 4.3 : Example for scoring Issue 2 (Energy Consumption)

Energy intensity in Malta was 65.21 toe/M€ (at 2006 market prices) in 2006. This amount is 35.33% less than the average energy intensity in the EU-27 (100.84 toe/M€ at 2006 market prices). According to the scoring methodology described above, Malta receives +3.533 points. So the energy intensity score will be 5 (EU-27 average) +3.53 (for being 35.33% below the EU average) = 8.53 points.

Energy intensity in Bulgaria was 150.95 toe/M€ (at 2006 market prices) in 2006. This figure is 49.69% higher than the EU-27 average (100.84 toe/M€ at 2006 market prices) in the same year. So Bulgaria is 4.969 percentage points below the EU-27 average, hence its final score is 5 (EU-27 average) –4.97 (for being 49.69% above the EU average) = 0.03 points.

Scores for FEC per capita were calculated in the same way.

## RSC regions' scores for Energy Consumption

The final score for energy consumption is the average of FEC per capita and energy intensity, equally weighted. The results are presented in Table 4.2; the interpretation of scores is in Box 4.4.

**Table 4.2: RSC regions' scores for energy consumption**

RSC region	Score for FEC per capita		Score for energy intensity		Total score		Final score
Malta *	10.00		8.53		18.5		<b>9.3</b>
Liguria (IT)	6.98		7.05		14.0		<b>7.0</b>
North Great Plain (HU)*	7.58		3.25		10.8	<b>/2</b>	<b>5.4</b>
Lower Silesia (PL)*	8.42	<b>+</b>	2.35	<b>=</b>	10.8		<b>=</b>
Cornwall (UK)	6.15		3.54		9.7		<b>4.8</b>
South West Bulgaria*	9.57		0.03		9.6		<b>4.8</b>
Marche (IT)	4.88		4.76		9.6		<b>4.8</b>
La Rioja (ES)	3.72		4.83		8.6		<b>4.3</b>
Piedmont (IT)	3.44		4.42		7.9		<b>3.9</b>
Burgenland (AT)	3.24		0.58		3.8		<b>1.9</b>

\*Scores for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are based on national level data.

### Box 4.4: How to understand the scores?

If the region's score is less than 5, its energy consumption performance is worse (i.e. higher) than the EU average and the lower the score is, the worse the region's performance is. On the other hand, if the region's score is more than 5, it means that the region's energy consumption is better (i.e. lower) than the EU-27 average and the higher the score is, the more favourable the region's energy consumption. Hence, higher scores demonstrate lower and more efficient energy consumption. A score of zero means that the region's performance is more than 50% higher (worse) than the EU-27 average in 2006.

The scores reveal the following:

- Malta has the highest scores for this issue, since it has the lowest energy consumption figures within the RSC partnership, both per capita and per GDP unit.
- Liguria (IT) also has relatively favourable energy consumption figures.
- The EU New Member States (except Malta) and Cornwall (UK) have high energy intensity figures and a relatively favourable (low) FEC per capita, which result in a final score around 5.
- Energy consumption characteristics are relatively unfavourable in La Rioja (ES), Piedmont (IT), Marche (IT) and Burgenland (AT), with both per capita and intensity figures above the EU-27 average (i.e. scores below 5 for this issue).
- In general, regions from EU-15 tend to have higher FEC per capita than the EU-27 average and regions from NMS tend to have higher energy intensity figures than the EU-27 average.

Sections 4.4 – 4.8 of this chapter will analyse energy consumption further by examining the relationship between GHG emissions and energy consumption, GDP, economic structure of the regions, the main GHG emitters, sources of energy, renewable energy use, and energy vulnerability.

### 4.3. RCCI ISSUE 3: RENEWABLE ENERGY USE

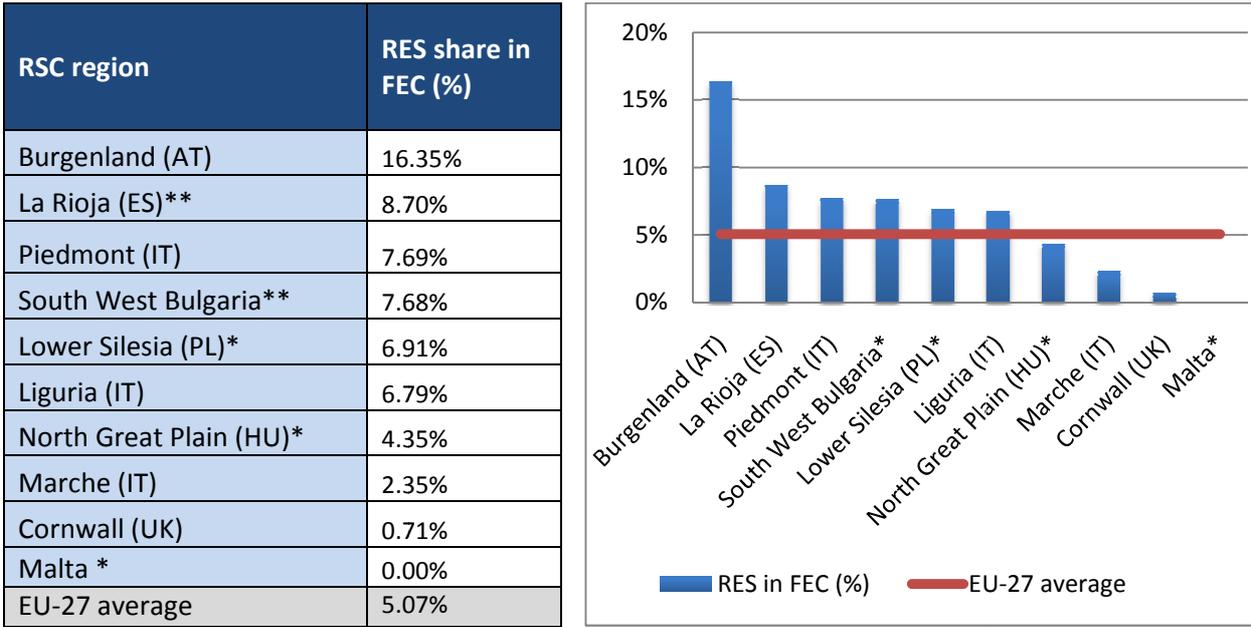
RSC regions submitted information about renewable energy source (RES) use in energy consumption and energy production capacity, as well as information about the potential for and obstacles to increasing RES use. The RCCI evaluates RES use in energy consumption (FEC) only, as energy production capacities across the regions vary considerably and would not provide a comparable basis. An overview of RES in energy production in the RSC region is provided in Box 4.5.

**Box 4.5: RES share in production capacity in RSC regions**

RES shares in production capacity vary considerably across the partnership, and are closely tied to total production capacity of the region. Cornwall produces a very small amount of primary energy within the region, so it is not surprising that it all comes from small-scale RES plants. Burgenland (AT) is a notable exception, as it generates a large amount of its own energy from RES. Piedmont (IT) also generates a relatively large amount of electric energy per capita, with a relatively high RES share.

Figure 4.5 below shows the current share of RES use in energy consumption in the partner regions against the EU-27 average of 5.07 percent.

**Figure 4.5: Renewable energy in final energy consumption in RSC regions**



\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

\*\*RES in GIC

### Scoring methodology for Renewable Energy use

The RES share in FEC score is the average of two evaluations, both relative to the EU-27 average for RES share of FEC. First partner regions/countries received one point for each ten percentage points above or below the EU-27 average. To offset the fact that some regions were considerably higher than the EU-27 average and some considerably lower, a second score was assigned proportionally, by comparing the region’s RES share expressed in percent difference from the EU-27 average divided by

highest RES share among partner regions expressed in percent difference from the EU-27 average. For further explanation see the example in Box 4.6.

**Box 4.6: Example for scoring Issue 3 (Renewable Energy)**

In La Rioja (ES), the RES share of FEC was 8.7% in 2006. The score for this issue will be the average of two evaluations:

**Evaluation 1:** The 8.7% amount is 72% higher than the EU-27 average in 2006 (5.07%). The region will receive 5 (EU-27 average) + 5 (for being more than 50% above the EU average) = 10 points.

**Evaluation 2:** the region’s RES share in FEC is measured proportionally, using the percent difference from the EU average: 172% (La Rioja RES share expressed in percent difference from the EU-27 average) divided by 322% (highest RES share among partner regions expressed in percent difference from the EU-27 average) multiplied by 10 = 5.3 points.

Thus the final score = the average of the two evaluations, i.e.  $10+5.3= 15.3/2 = 7.66$  points.

**RSC regions’ scores for Renewable Energy use**

The scores for each RSC region are presented in Table 4.3; the interpretation of scores can be found in Box 4.7.

**Table 4.3: RSC regions’ scores for renewable energy use**

RSC region	Score
Burgenland (AT)	10.00
La Rioja (ES)	7.66
Piedmont (IT)	7.43
South West Bulgaria*	7.35
Lower Silesia (PL)*	6.43
Liguria (IT)	6.27
North Great Plain (HU)*	3.13
Marche (IT)	0.54
Cornwall (UK)	0.22
Malta*	0.003

\*Scores for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are based on national level data.

**Box 4.7: How to understand the scores?**

The higher the score is, the higher the region’s RES share in FEC is. A score of 0 refers to a RES share in FEC close to 0 percent.

The data and the scores reveal the following:

- Six of the RSC regions are above the EU average, and four are below.
- Burgenland (AT) has an outstanding RES share in energy consumption.
- La Rioja (ES), Piedmont (IT), Liguria (IT), South West Bulgaria and Lower Silesia (PL) have relatively higher RES share in energy consumption.
- Cornwall (UK) and Malta currently have very low RES in energy consumption.

Sections 4.4 – 4.8 of this chapter will analyse renewable energy use further by looking at RES national targets, RES development potentials in the regions, and barriers to further development of RES. They will also examine the story behind RES success in Burgenland (AT) and the potential for further RES development in Malta.

For regions, data on GHG emissions and energy consumption and use can only provide a part of the picture. Regions' climate confidence is dependent on a number of external factors that hinder and favour the region's performance. To better understand how these factors affect climate confidence in general and the RSC regions in particular, Sections 4.4 – 4.8 of this chapter analyse a series of such factors against the RSC regions' results.

#### 4.4. GHG EMISSIONS AND ENERGY FIGURES FOR THE RSC REGIONS – A REVIEW

For review and reference, Table 4.4 presents an overview of the energy and emissions figures for the RSC regions. Figures shaded green indicate a better performance than the EU-27 average, and figures shaded red indicate a worse performance than the EU-27 average.

**Table 4.4: A review of GHG emissions and energy figures for RSC regions against EU-27 averages, 2006**

RSC region	GHG per capita (tCO <sub>2</sub> /inh)	GHG intensity (gCO <sub>2</sub> /€)	FEC per capita (toe/inh)	Energy intensity (toe/m€)	RES share in FEC (%)
Cornwall (UK)	10.56	575.86	2.12	115.60	0.71%
North Great Plain (HU)*	7.87	524.42	1.78	118.51	4.35%
Burgenland (AT)	7.54	440.05	2.82	145.40	16.35%
La Rioja (ES)	13.64	517.30	2.70	102.52	8.70%**
South West Bulgaria (BG)*	9.38	1086.58	1.30	150.95	7.68%
Marche (IT)	7.24	308.06	2.43	103.30	2.35%
Liguria (IT)	12.74	530.81	1.92	80.14	6.79%
Piedmont (IT)	9.86	366.31	2.77	106.70	7.30%
Malta *	7.10	392.41	1.18	65.21	0.00%
Lower Silesia (PL)*	10.56	854.11	1.58	127.60	6.98%
EU-27 average	11.03	442	2.4	100.84	5.07%

\* Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

\*\*RES in GIC

**GHG emissions per capita:** In 2006, every EU citizen emitted an average of 11.03t CO<sub>2</sub> equivalent. RSC regions' GHG emissions per capita range from 7.1 to 13.64 t CO<sub>2</sub>/capita, but eight out of the ten surveyed regions are below the EU-27 average. Only two regions, Liguria (IT) and La Rioja (ES), exceed the average. Emissions per capita are the lowest in Marche (IT) and in Malta.

**GHG emissions intensity:** In 2006, the EU-27's economy generated an average 442 g CO<sub>2</sub> equivalent for one unit of GDP (PPS). In the RSC regions, emissions intensity varies from 308 g CO<sub>2</sub> equivalent to 1086 CO<sub>2</sub> equivalent; many of the regions greatly exceed the EU-27 average.

**Energy consumption per capita:** Most RSC regions consume less energy per capita than the EU average (2.4 toe/capita) with the exception of Piedmont (IT), Burgenland (AT) and La Rioja (ES). Marche (IT) is around the EU average. In general, regions from NMS have lower energy consumption per capita and the lowest (which belongs to Malta) is just half of the EU-27 average.

**Energy intensity:** Despite low energy consumption rates, eight of the ten regions exceed the EU average for energy intensity of 100.84 toe per unit of GDP (PPS). The most energy intense regions are the NMS regions, plus Burgenland (AT) and Cornwall (UK). La Rioja (ES), Marche (IT) and Piedmont (IT) are near the EU-27 average; Malta and Liguria (IT) have relatively lower energy intensity levels.

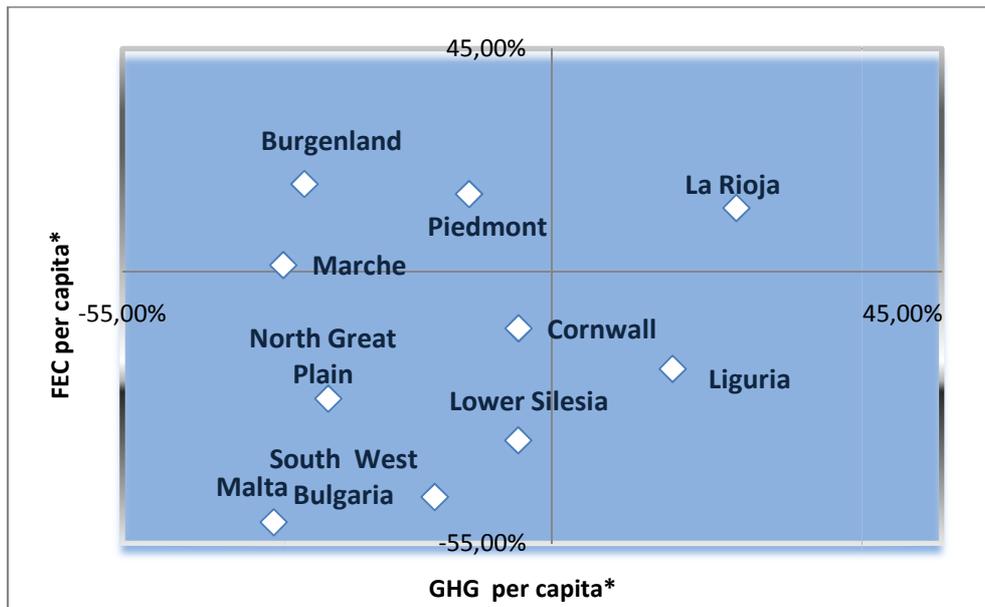
**RES share in energy consumption:** The current share of RES is relatively high in the RSC regions; the majority of them are above the EU-27 average (5%). Malta, Cornwall (UK) and Marche (IT) have very low use of RES. RES in energy consumption is relatively high in La Rioja (ES), Piedmont (IT) and Burgenland (AT).

## 4.5. GHG EMISSIONS VS ENERGY CONSUMPTION

The scatter graphs below depict the relationship of energy consumption to GHG emissions per capita (Figure 4.6) and energy intensity to GHG emissions intensity (Figure 4.7). For both figures, the values for each region are the actual percentage above or below the EU-27 average. The following points also apply to both figures:

- The axes represent the EU-27 averages for each criterion.
- Values for each region are the percent distance (plus or minus) from the EU-27 average.
- Regions located in the upper right quadrants are above the EU-27 average for both criteria analysed – i.e. GHG and FEC per capita (Figure 4.6) or GHG and energy intensity (Figure 4.7).
- Regions located in the lower right quadrants are above the EU average for GHG emissions per capita (Figure 4.6) or intensity (Figure 4.7), and below the EU average for energy consumption per capita (Figure 4.6) or intensity (Figure 4.7).
- Regions located in the upper left quadrants are below the EU average for GHG emissions per capita (Figure 4.6) or intensity (Figure 4.7), and above the EU average for energy consumption per capita (Figure 4.6) or intensity (Figure 4.7).
- Regions located in the lower left quadrant are below the EU average for both criteria analysed – i.e. GHG and FEC per capita (Figure 4.6) or GHG and energy intensity (Figure 4.7).

Figure 4.6: GHG emissions per capita vs. energy consumption per capita (% from EU average)

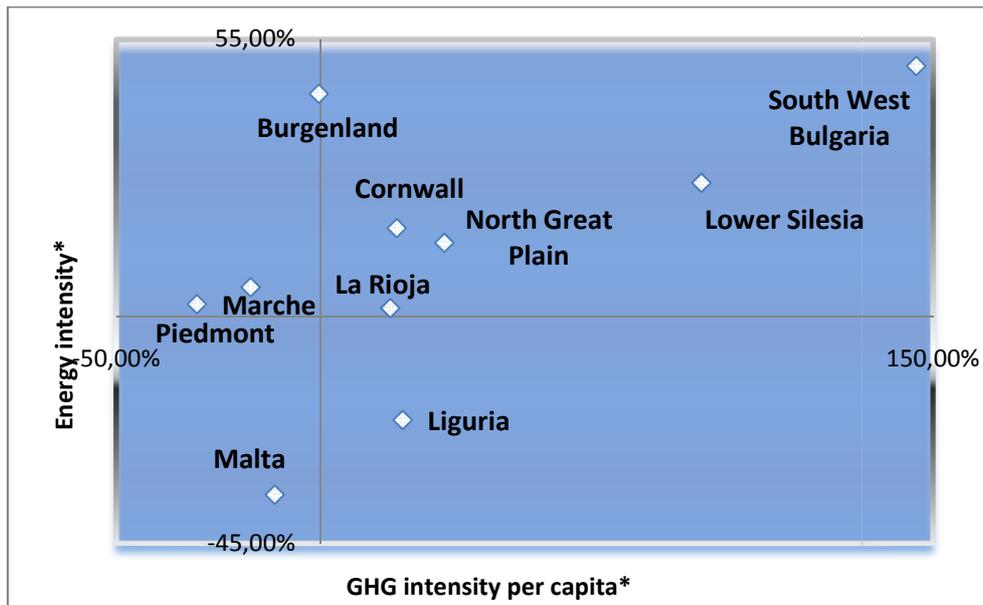


\* Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

The graph in Figure 4.6 shows that GHG emissions per capita and energy consumption per capita are not always directly related, i.e. as energy consumption increases GHG emissions also increase. Burgenland (AT) and Piedmont (IT) have higher energy consumption and lower GHG emissions. These are also the two regions with the highest share of renewable energy in their energy consumption patterns, which could explain the relatively low emissions relative to energy consumption.

Liguria has higher GHG emissions and relatively lower energy consumption. One possible explanation for this could be the omission of the energy consumed directly by the energy transformation sector in the FEC method of measuring energy consumption. Another explanation may be the export of energy, which is not counted in the energy consumption of the region but would count under its emissions.

Figure 4.7: Energy vs. GHG intensity (% from EU average)



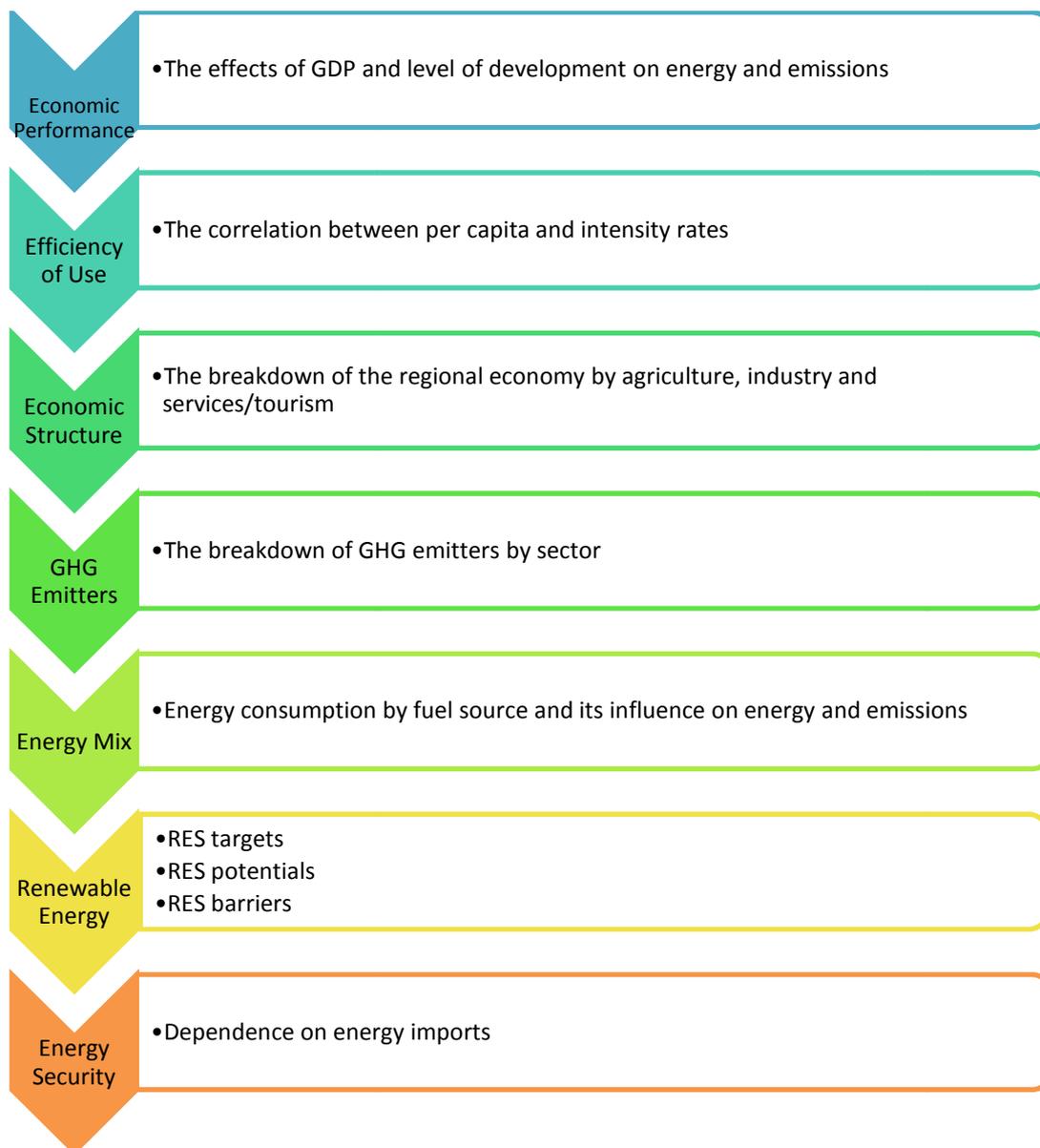
\* Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

The picture for economic intensity is somewhat different (see Figure 4.7). Several economies have both GHG emissions intensity and energy intensity greater than the EU average (those in the upper right quadrant). Only Malta lies in the lower left quadrant, indicating emissions intensity and energy intensity figures lower (better) than the EU average. As mentioned before, this is mainly due to the fact that RSC regions tend to have lower than average GDP per capita rates, which often accompany less efficient use of energy. It may also be related to the structure of economy – which will be examined later in this chapter. Again, Burgenland (AT) stands out with a relatively higher energy intensity to GHG emissions intensity.

#### 4.6. KEY FACTORS AFFECTING GHG EMISSIONS AND ENERGY CHARACTERISTICS

The RSC regions are diverse, and many factors affect their GHG emissions and energy characteristics, as well as their overall efforts to achieve climate confidence. This analysis will examine seven important factors that influence the regions' energy and emissions figures and scores, in order to better understand the regions' performance in these fields. Figure 4.8 presents the seven factors to be considered in the analysis.

Figure 4.8: Overview of external factors affecting energy and emissions



## Economic Performance: the relationship between climate confidence and GDP

### RSC regions' GDP rates and development levels

Based on nominal (Euro) GDP per capita rates, the RSC regions can be placed into three groups, as shown in Table 4.5 below.<sup>26</sup> These groups also divide the regions according to their approximate level of development. Group I are regions well above the EU GDP average, with well developed economies, from EU-15 member states. Group II regions are just below the EU average and from EU-

---

<sup>26</sup> Nominal GDP has been used in this analysis instead of Purchasing Power Standards (PPS) to better reflect the standard of living and economic development stage of each region.

15 member states. The group III regions are all from the EU new member states (NMS). These regions have lower GDP and are still developing, i.e. the economies are expected to grow at a relatively fast rate.

**Table 4.5: Nominal GDP per capita and development groups for RSC regions**

RSC region	2006 GDP per capita (Euro)	GDP group	Final RCCI score
Piedmont (IT)	27 646	Group I	45.30
Liguria (IT)	25 543		44.00
Marche (IT)	25 300		38.59
La Rioja (ES)	23 901		42.13
Cornwall (UK)	20 641	Group II	39.32
Burgenland (AT)	20 512		48.80
Malta	12617	Group III	39.39
Lower Silesia (PL)	7 631		36.56
North Great Plain (HU)	5 636		31.26
South West Bulgaria	5 124		29.01

### GDP and RCCI Scores

Figure 4.9 below is an examination of regions' final RCCI scores against GDP per capita rates. In general, regions with higher GDP scored better. The connection between GDP and RCCI score is much less pronounced for the GHG emissions and energy issues (Figure 4.10) and much more pronounced for the issues pertaining to policies, institutions, socio-economics, and financial instruments (Figure 4.11). For GHG emissions and energy issues (1 – 3), the regions are placed all across the four quadrants, indicating that those with high and low GDP have mixed performance. Conversely, for the political, institutional, social, and financial issues (4 – 7), the top six scorers are also the six wealthiest regions.

The regions that are wealthier and belong to the EU-15 grouping are clearly ahead in terms of setting climate change policies and using financial instruments, and they have greater confidence about the capacity of their institutions and awareness of populations and key stakeholders.<sup>27</sup> In most cases, this is due to the fact that the regional administrations themselves are well established and have greater autonomy and mandate to deal with climate change issues in their territories. It is interesting, however, that the regions tend to fall across a horizontal line in Figure 4.10, indicating that wealth and level of development or length of EU membership have little to no bearing on actual GHG emissions and energy consumption rates. The relationship between GHG emissions and energy consumption and the size of a region's economy will be further examined in the next section.

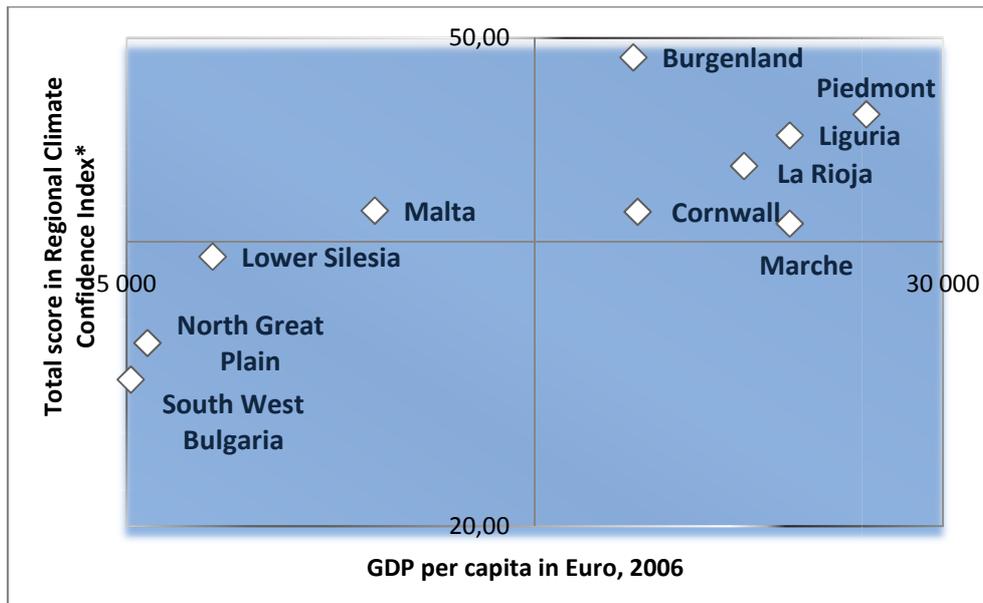
For both Figures 4.9, 4.10 and 4.11:

- The axes represent the RSC regions' average for each criterion.

<sup>27</sup> Issues 5 and 6 on institutions and socio-political awareness are based on the regions' self-assessment.

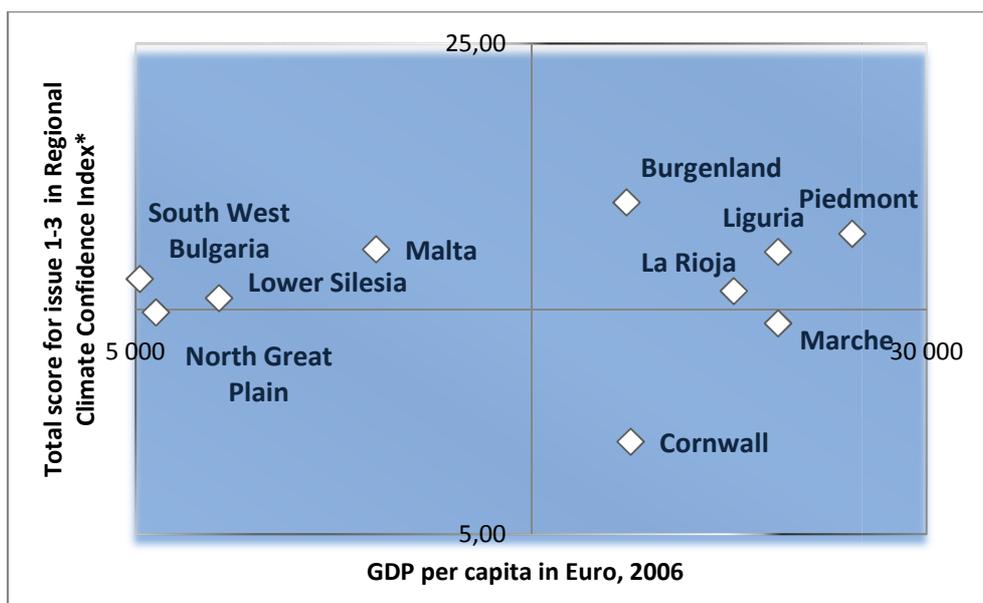
- Regions located in the upper right quadrants have above average GDP and above average RCCI scores.
- Regions located in the lower right quadrants have below average GDP and above average RCCI scores.
- Regions located in the upper left quadrants have below average GDP and above average RCCI scores.
- Regions located in the lower left quadrant have below average GDP and below average RCCI scores.

Figure 4.9: RSC regions' GDP per capita vs. RCCI total score



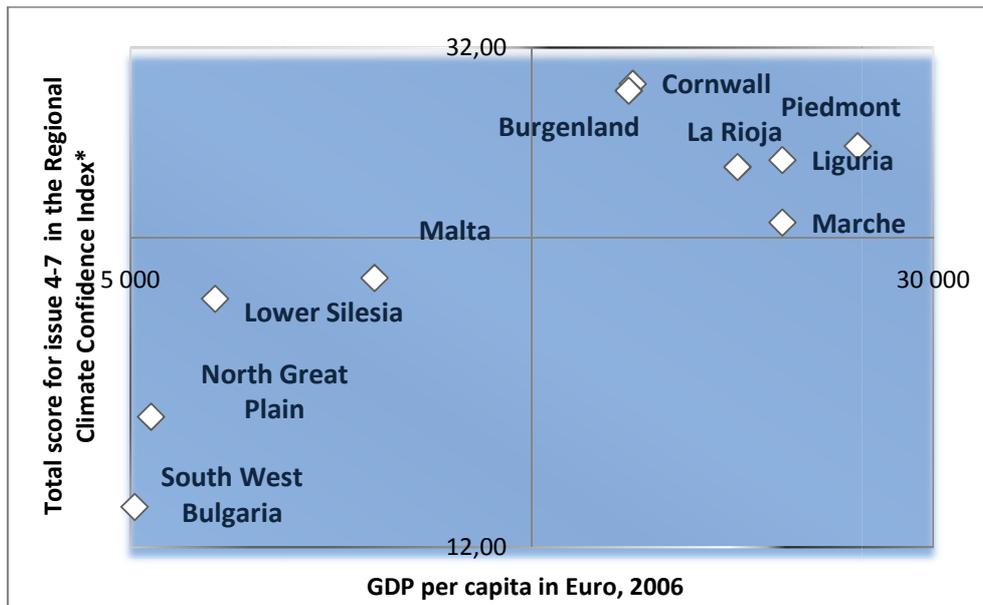
\*Scores for Issues 1-3 for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are based on national level data.

Figure 4.10: RSC regions' GDP per capita vs. RCCI scores for Issues 1 - 3



\* Scores for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are based on national level data

Figure 4.11: GDP per capita vs. RCCI scores for Issues 4 – 7



\* Scores for Malta are based on national level data

## Efficiency of use: the correlation between per capita and intensity rates for GHG and energy

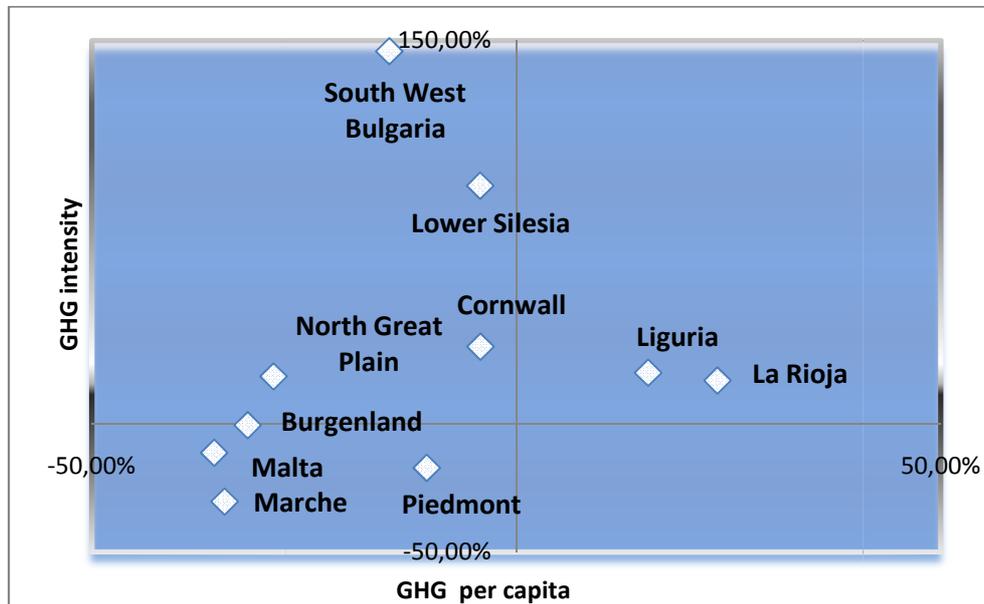
The Regional Climate Confidence Index assesses per capita emissions and energy consumption rates, and also the rate of emission or consumption per unit of GDP, the so-called “intensity” rate. GHG emissions and energy consumption intensity tell us how much economic output a region gets per unit of GHG emitted or energy consumed. In general, wealthier and more developed economies tend to be more energy efficient, i.e. have lower intensity rates. This may be due to more actual energy efficiency in the economy, to the structure of the economy, or to economies of scale owing to higher output.

Figure 4.12 and 4.13 examine the relationship between per capita and intensity rates for both GHG emissions (Figure 4.12) and energy consumption (Figure 4.13). For both figures:

- The axes represent the EU-27 averages for each criterion.
- Values for each region are the percent distance (plus or minus) from the EU average.
- Regions located in the upper right quadrants are above the EU average for both criteria analysed – i.e. GHG and FEC per capita (Figure 4.12) or GHG and energy intensity (Figure 4.13).
- Regions located in the lower right quadrants are above the EU average for GHG emissions per capita (Figure 4.12) or intensity (Figure 4.13), and below the EU average for energy consumption per capita (Figure 4.12) or intensity (Figure 4.13).
- Regions located in the upper left quadrants are below the EU average for GHG emissions per capita (Figure 4.12) or intensity (Figure 4.13) and above the EU average for energy consumption per capita (Figure 4.12) or intensity (Figure 4.13).

- Regions located in the lower left quadrant are below the EU average for both criteria analysed – i.e. GHG and FEC per capita (Figure 4.12) or GHG and energy intensity (Figure 4.13).

**Figure 4.12: Relationship between GHG emissions per capita and GHG intensity (% from EU average)**

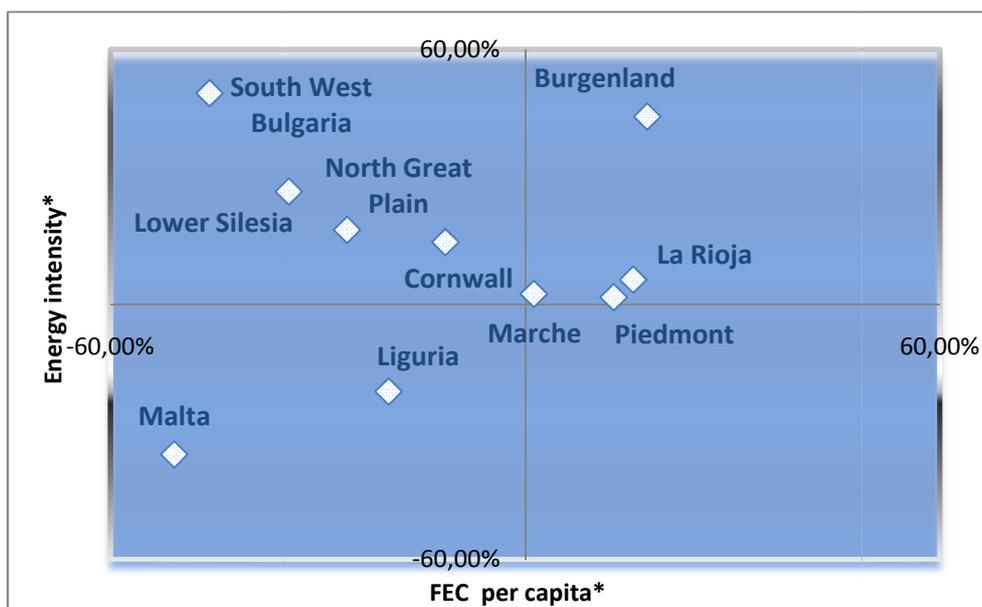


\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL), and Malta are national level data.

The relationship between GHG emissions per capita and GHG intensity reveal the following:

- Malta, Marche (IT), Burgenland (AT) and Piedmont (IT) have relatively low GHG emissions and GHG intensity.
- Liguria (IT) and La Rioja (ES) have higher emissions that are not counterbalanced by higher GDP, as their energy intensity levels remain above the EU average and higher than many RSC regions.
- The EU new member states (excluding Malta) and Cornwall have lower emissions but higher emissions intensity.

Figure 4.13: Relationship between energy consumption per capita and energy intensity (% from EU average)



\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL), and Malta are national level data.

The comparison of energy consumption per capita and energy intensity shows a disparate picture:

- Malta and Liguria (IT) have relatively low energy consumption per capita and low energy intensity.
- Marche (IT), Piedmont (IT) and La Rioja (IT) are around the EU-27 average.
- Burgenland (AT) has high energy consumption per capita and relatively high energy intensity.
- All of the EU new member states fall in upper left quadrant, with lower than average energy consumption per capita but high energy intensity. Cornwall also falls in this category.

The general expectation for GHG emissions and energy consumption rates is that wealthier regions consume more energy per person (i.e. higher FEC per capita rates) and have higher GHG emissions, but produce more in terms of economic output (i.e. lower emissions and energy intensity rates). Of course this is a very general assumption and a complex array of other factors will influence the figures: economic structure, heating and other energy requirements, energy sources, lifestyle factors, and more.

## Economic structure

The structure of an economy – the types of economic activity that predominate in the region – will naturally have an effect on energy and emissions. The RSC regions are mainly service-oriented economies, as shown in the table below. The relatively high level of industrial activity, including energy production, in La Rioja (ES) may explain its higher emissions and energy figures.

**Table 4.6: Economic structure of RSC regions against energy and emissions data**

RSC region	Agriculture	Industry	Service + Tourism	GHG per capita (t CO <sub>2</sub> /inh)	GHG intensity (g CO <sub>2</sub> /€)	FEC per capita (toe/inh)	Energy intensity (toe/M€)
Cornwall (UK)	3.20%	22.40%	74.80%	10.56	575.86	2.12	115.60
North Great Plain (HU)*	8.33%	31.49%	60.18%	7.87	524.42	1.78	118.51
Burgenland (AT)	5.01%	29.28%	65.71%	7.54	440.05	2.82	145.40
La Rioja (ES)	7.00%	38.00%	55.00%	13.64	517.30	2.70	102.52
South West Bulgaria*	2.28%	24.00%	75.99%	9.38	1086.58	1.30	150.95
Marche (IT)	2.00%	32.00%	66.00%	7.24	308.06	2.43	103.30
Liguria (IT)	2.00%	18.00%	80.00%	12.74	530.81	1.92	80.14
Piedmont (IT)	2.05%	30.12%	67.83%	9.86	366.31	2.77	106.70
Malta	2.46%	20.92%	76.62%	7.10	392.41	1.18	65.21
Lower Silesia (PL)*	2.21%	37.86%	59.92%	10.56	854.11	1.58	127.60
EU-27 average				11.03	442	2.4	100.84

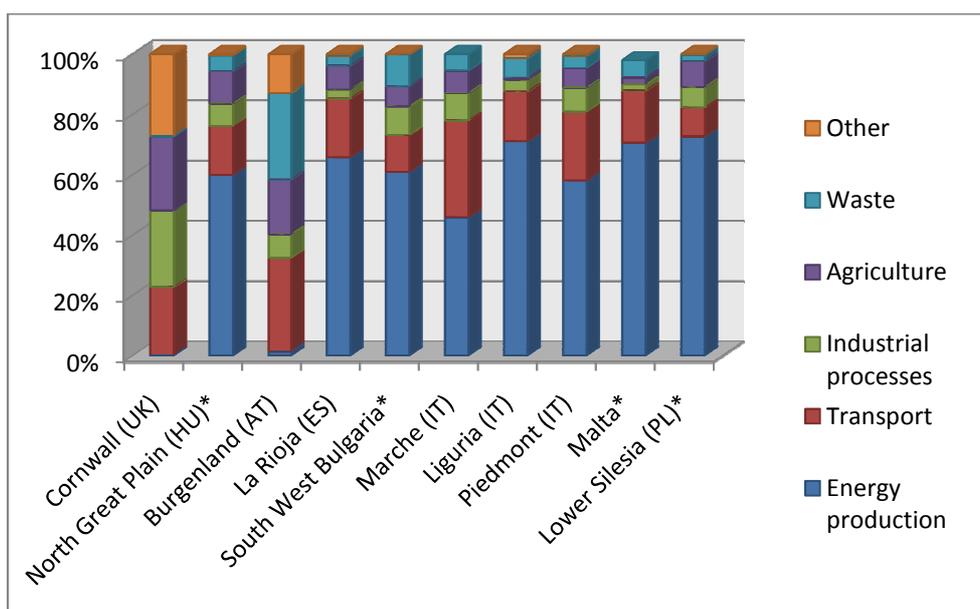
\*GHG emissions and energy figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

## GHG emitters

A review of GHG emissions by sector explains some of the factors behind GHG emissions rates in RSC regions:

- Energy production is the leading source of GHG emissions; it accounts for 40 – 70% of GHG emissions in the RSC regions.
- The two exceptions to the above are Burgenland (AT), which produces energy only from RES, and Cornwall (UK), which has very limited energy production within its territory.
- Despite the lack of energy production, Cornwall (UK) still has GHG emissions that are close to the EU average and relatively high compared to the other RSC regions. Its GHG emissions from the industrial sector are significantly higher than other regions and the EU-27 average.
- The two regions with the highest GHG emissions - La Rioja (ES) and Liguria (IT) - also have very high emissions from the energy production sector.

**Figure 4.14: GHG emissions by sector, % share of total\***



\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

Table 4.7 shows GHG emissions by sectors for the RSC regions, on a per capita basis. The sector with the largest share of GHG emissions for each region is shaded. In the majority of the regions this is the energy production sector.

**Table 4.7: GHG emissions by sector for the RSC regions, tCO<sub>2</sub> per capita**

RSC region	Energy production	Transport	Industrial processes	Agriculture	Waste	Other	Total
Marche (IT)	3.28	2.30	0.66	0.53	0.39	0.00	<b>7.15</b>
Malta*	5.29	1.29	0.15	0.17	0.44	-0.15	<b>7.19</b>
Burgenland (AT)	0.10	2.34	0.59	1.37	2.16	0.97	<b>7.53</b>
North Great Plain (HU)*	4.72	1.27	0.59	0.84	0.41	0.03	<b>7.88</b>
South West Bulgaria*	5.72	1.14	0.89	0.62	0.99	0.01	<b>9.38</b>
Piedmont (IT)	5.74	2.25	0.79	0.64	0.39	0.06	<b>9.87</b>
Lower Silesia (PL)*	7.68	1.01	0.72	0.91	0.22	0.02	<b>10.56</b>
Cornwall (UK)	0.00	2.41	2.68	2.59	n/a	2.88**	<b>10.56</b>
Liguria (IT)	9.06	2.10	0.48	0.09	0.84	0.17	<b>12.74</b>
La Rioja (ES)	8.90	2.64	0.40	1.09	0.42	0.09	<b>13.52</b>
EU-27 average	6.66	2.13	0.89	1.01	0.32	0.01	<b>11.03</b>

\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

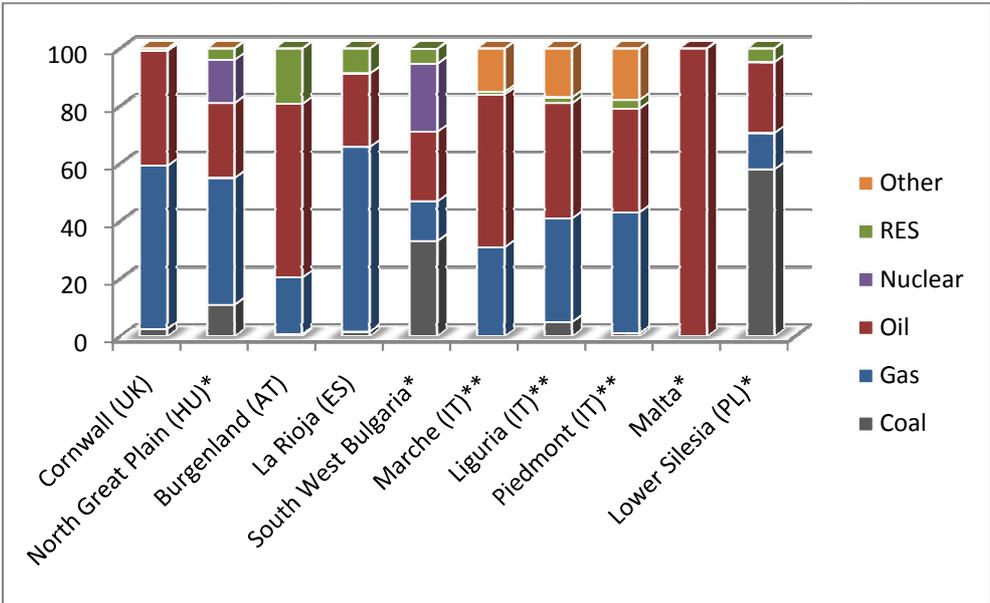
\*\*Includes waste

## Energy consumption by energy source

A review of the type, or source of energy consumed in the RSC regions shows that a preference for certain types of energy can be linked to emissions and consumption rates. The figures are not

completely comparable as they are based on different energy consumption figures (see note below table), but they nevertheless allow for some interesting generalisations.

**Figure 4.15: Energy consumption by fuel source\* (% share)**



\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

\*\*"Other" includes electricity derived from partly fossil energy sources, partly from RES.

The energy source data reveal the following:

- In the EU-15 partner regions, the most important energy sources are oil and gas.
- In RSC region from NMS (excluding Malta), coal still plays important role.
- Only Bulgaria and Hungary use nuclear energy.
- RES shares vary considerably across the regions - between 0 and 20 percent.
- In Malta oil is used exclusively.

In some cases, the data show that regions with higher shares of gas tend to have higher energy consumption rates (Cornwall, La Rioja, and Piedmont). Regions with a higher share of oil in the energy mix (Liguria, Malta) tend to have lower energy consumption rates and particularly lower energy intensity rates.

**Renewable energy**

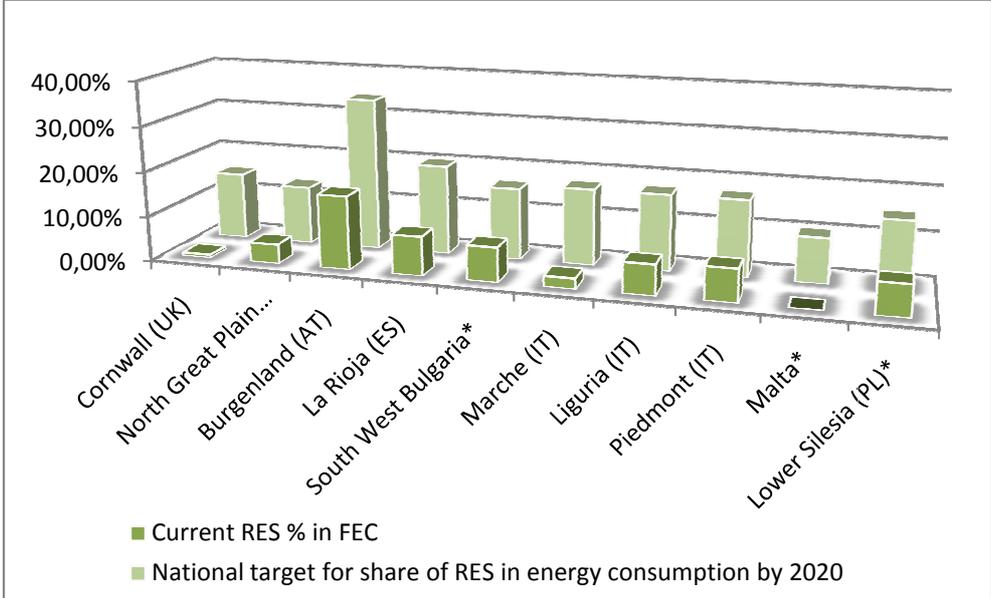
Renewable energy is one of the key factors on the path to climate confidence, as it is one option for maintaining or increasing economic growth and quality of modern life whilst limiting GHG emissions. Increasing the use of RES, particularly via small-scale energy production/distribution units, is on the priority list of most RSC regions’ key planning documents. Moreover, increasing RES in energy consumption to 20% for the EU-27 is one of the key goals of the recently adopted EU climate and

energy legislation.<sup>28</sup> There is some debate among experts over whether heavy reliance on increasing the use of renewables and control of their use through targets is the most efficient way to cut GHG emissions and mitigate climate change in Europe. Nevertheless, EU decision-makers have agreed on targets for each member state to achieve by 2020, and regions will have to work towards these targets as well. This section will examine and discuss renewable energy in the RSC regions, based on actual usage rates and national targets, and information about RES potentials and obstacles provided in the baseline questionnaires.

**RES targets and actual rates**

National targets for RES in energy consumption were set with the passage of the EU climate-energy legislation adopted in 2009. Most Member States and regions have a long way to go to achieve the targets, as Figure 4.16 below shows. Since there was only limited information available on regional targets, the analysis looks at the national targets for each RSC region.

**Figure 4.16: Comparison of current RES share of FEC and 2020 national targets for the RSC regions**



\*Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

- Austria has the most ambitious target (34%); but Burgenland (AT) has a relatively high RES share already and ambitious plans to increase this.
- Spain’s target is also relatively high (20%), but La Rioja (ES)’s current RES share is also already relatively high.
- The majority of the countries have a target around 15 %, which means in general a ten to twelve percent increase compared with current RES shares in RSC regions.
- Malta, which so far has zero RES share in energy consumption, will have to reach ten percent by 2020 to meet its target.

<sup>28</sup> See Chapter 5 for more on the EU climate-energy legislation

## Potential for further RES development

The potential for future RES development from solar, wind, biomass and other sources is critical to increasing RES shares, particularly for regions that want to reduce their reliance on energy imports.

Most RSC regions report that they have great solar, biomass and geothermal potential and less wind and hydro potential. Solar has the potential to be an important source of energy in southern regions and geothermal in NMS regions. In both cases, however, financial and market barriers should be reduced to reach higher penetration in the use of these energy sources.

**Table 4.8: Potential for increasing RES production, as reported by the RSC regions**

	High potential	% RES in energy production capacity 2006	Solar	Wind	Small hydro	Biomass	Geothermal	Others (biogas, wave)
	Medium potential							
	Low potential							
Cornwall (UK)		100	M	H	M	M	H	M
North Great Plain (HU)		4.8	H	L	L	H	M	
Burgenland (AT)		100	H	M	L	H	M	
La Rioja (ES)		37.6	H	M	L	H	H	M
South West Bulgaria		23.9	H	H	M	H	H	
Marche (IT)		28.4	H	M	L	L	M	M
Liguria (IT)		n/a	H	M	L	M	L	
Piedmont (IT)		36.2	M	L	M	H/M	H/M	
Malta		0,00	M	M	L	L	L	
Lower Silesia (PL)		7.7	M	M	M	M	H	

## Barriers for further penetration of RES

RSC partners were asked to evaluate the main barriers for further penetration of RES, and a summary of responses is presented below in Table 4.9. Financial and market barriers are the most common ones indicated by the regions.

**Table 4.9: Barriers for further penetration of RES, as reported by the RSC regions**

RSC region	Political	Legal	Market	Financial	Awareness	Social acceptance	Combination
Cornwall (UK)							X
North Great Plain (HU)	X	X		X			
Burgenland (AT)			X	X			
La Rioja (ES)			X	X		X	
South West Bulgaria							X
Marche (IT)	X			X	X	X	
Liguria (IT)		X		X		X	
Piedmont (IT)			X	X			
Malta							X
Lower Silesia (PL)		X	X	X	X		

The following are some of the specific barriers to increasing RES production, as reported by the regions at the time of compilation of the report:

**Political:**

- No approved strategy or policy on renewable energy sources - Malta
- Inadequate ambition for reaching the national RES targets, and inadequate inclusion of RES in the energy efficiency measures in the national action plans – Bulgaria
- The RES strategy doesn't contain long term visions to be filled with effective action plans or programmes - North Great Plain (HU)

**Legal:**

- No legislation at national level that requires any level of RES implementation on given sectors. The absence of planning guidelines is also a barrier for certain technologies such as wind - Malta<sup>29</sup>
- Regulations are not adequately harmonised with sectoral policies - Liguria (IT)
- Regulations are very complicated and sometimes contradict each other, getting permissions is a long and expensive process; this is unfavourable for investor confidence - North Great Plain (HU)

**Market:**

- Inadequate market development and lack of available RES technologies - Bulgaria
- Lack of efficient co-operation between different stakeholders - North Great Plain (HU)

**Financial:**

- Unfavourable feed-in tariffs; need for significant financial resources and long period for return on investment - Bulgaria, Piedmont (IT)
- Installations for generating electricity from RES are currently uneconomical and the funding system stimulate investments – Burgenland (AT)

<sup>29</sup> At the time of the compilation of this report, Malta was in the process of developing planning guidance for micro-wind installations.

- High costs of technology (such as photovoltaic and geothermal) which are viable only with tax incentives and other subsidies – Piedmont (IT)
- A net-metering system and a feed-in tariff is in place; but the payback period is still too long to encourage investment (in solar PV) - Malta

#### **Awareness:**

- Inadequate practical experience - Bulgaria
- Awareness on the feasibility and costs of certain technologies and their applicability to the local situation is increasing but is still not sufficient, particularly for micro-wind, building-integrated solar PV, and geothermal heat pumps - Malta

#### **Social acceptance:**

- Inadequate information on the benefits of introducing of RES - Bulgaria
- Given the limited land use availability, the implementation of certain RES technologies, in particular wind, is constrained by proximity to residential areas (in view of concerns on the noise and visual impact). Visual impact is also a concern in uninhabited areas, in particular areas of recreation and high landscape value - Malta

#### **Combination:**

- Need for development of the national electricity network - Bulgaria
- Barriers constitute a combination of factors, including lack of a national strategy on the use of RES, limited land space for the installation of renewable energy systems as well as the financial costs associated with the required installations – Liguria (IT)

## **Energy security**

Energy import dependency is a serious issue across the partnership. According to the regions' self-assessment, their energy dependency from external sources is very high. See Box 4.8 for some examples from Malta and Italy.

#### **Box 4.8: High energy import dependency in Malta and Piedmont (IT)**

Malta's electricity generating system is a small isolated one, with no connection to the European grid. Malta relies on imports of residual fuel oil (HFO) and gas oil for fuelling its two power plants. Malta is the only EU member state with 100% dependency on energy generated from imported fossil fuels.<sup>30</sup>

In Piedmont (IT) the share of imported fuel is 89% (mainly from foreign sources), which is higher than the national average for energy dependency. Piedmont consumes more energy than is available locally in terms of primary resources. The major component of electricity is imported and the gross consumption is heavily unbalanced towards natural gas.<sup>31</sup>

These statements and other concerns of the RSC regions are backed up by the Commission Staff Working Document "REGIONS 2020: an Assessment of Future Challenges for EU Regions," prepared by DG Regional Policy. The report states that Europe is becoming increasingly dependent on

<sup>30</sup> Adapted from Malta baseline questionnaire

<sup>31</sup> Adapted from Piedmont/Lamoro baseline questionnaire

imported fossil fuels, and that energy import dependence is expected to increase from 53 percent of total EU energy consumption in 2005 to 67 percent in 2030 if no action is taken. Moreover, the document reports that the EU is becoming increasingly exposed to the effects of price volatility and price rises on international energy markets.<sup>32</sup>

Based on Eurostat figures, the report shows import dependency as a percentage of GIC in 2006 for each EU Member State. Malta and Italy fall into the most critical category, with Malta being by far in the most vulnerable situation; the UK and Poland are the least energy dependent, due to domestic source of supply and reliance on coal in Poland.

**Table 4.10: Energy import dependency of RSC countries<sup>33</sup>**

Import dependency, % GIC	Member State (from RSC partnership)
< 0.28	UK, Poland
0.28-0.47	Bulgaria
0.47-0.53	Hungary
0.63-0.78	Spain, Austria
>=0.78	Malta, Italy

While it is not clear what direct effect security of supply has on the energy and emissions data analysed in the RCCI, it is nevertheless an important issue for climate confidence.

## 4.7. CASE STUDIES: GHG EMISSIONS AND ENERGY

### Renewable energy: success and potential

Two case studies from the RSC regions emphasize and explain significant differences in the use of renewable energy. The first case study is about a district within Burgenland (AT), where the current RES share in consumption is around 20 percent and the region has ambitions to develop this further. The second case study is from Malta, which has a current RES share around zero.

**Box 4.9: Renewable energy: success and potential**

**Güssing, Burgenland (AT) – energy autonomy and economic boost from renewable energy<sup>34</sup>**

Güssing is a district in Burgenland (AT) region, where significant steps were taken towards achieving a low carbon status. Güssing was once one of the poorest districts in Austria with a high unemployment rate and severe barriers to economic development. Over the past 20 years it has managed to boost its economy through investments in renewable energy sources and it has become an energy self-sufficient district. Other benefits include the creation of new jobs, start-up of new business and significant net income. It is intended that the successful example of Güssing be replicated in other districts in Burgenland (AT) and in other Austrian regions.

<sup>32</sup> REGIONS 2020: An Assessment of Future Challenges for EU Regions, p14

<sup>33</sup> REGIONS 2020: An Assessment of Future Challenges for EU Regions, p40

<sup>34</sup> Adapted from the report of ENEA Working Group on Climate Change and Cohesion Policy, 2009. Improving the Climate Resilience of Cohesion Policy Funding Programmes: An overview of member states’ measures and tools for climate proofing Cohesion Policy funds. Szentendre, Hungary

Using wood from local forests in its biomass heating plant, the town of Güssing produces more electricity than it consumes and is able to provide power to the entire region. Over 50 companies and 1000 jobs have been created in the renewable energy sector alone and, since 1995, Güssing has reduced its carbon dioxide emissions by 93%.

The so-called “Güssing Model” is the strategy of de-centralised, local energy production using all the available renewable resources in a region. Since every region has certain renewable energy resources in different proportions, the model can serve as an example for many communities.

#### **Malta - looking at ways to increase RES potential in a small island<sup>35</sup>**

Malta’s RES use is currently negligible. Only 0.003% of electricity consumption in 2006 was produced from RES, and solar thermal applications bring the RES share in total energy up to 0.18% for 2006. Malta has committed to increase this share to ten percent by 2020 as part of the EU Climate Action and Renewable Energy Package.

Currently, energy in Malta is almost 100% derived from imported fossil fuels (oil). The government’s policy on the use of RES is still in draft format, and it is based on a 2005 study commissioned by the government from the consultancy firm Mott MacDonald. The study identified the following potentials and barriers:

Large onshore wind was the most cost-effective technology for electricity from RES, but visual impacts and cumulative effects would make it unlikely that more than one or two large onshore wind farms could be built.

Offshore wind was considered the second most cost-effective technology, but is limited by the bathymetry of Maltese waters. (The 25 meter contour extends to just around 2 to 3 km off the coast and development of wind farms in these areas is constrained by conflicting use of the waters for recreation, tourism and other marine activities). A marginal site was identified but using it would require resolving technical issues as well as (existing) conflicting uses of the site.

Micro-wind was not considered to be a feasible option due to planning constraints likely to originate due to visual impacts on the townscape. The planning framework was considered to be more favourable to medium scale wind, but this came at an economic cost (apart from limitations on the electricity that could be produced).

The solar photovoltaic resource potential was considered to be “enormous” but the cost implications for supporting this technology were very high.

### **Three Italian regions – very different performance**

The three Italian RSC regions - Liguria, Marche and Piedmont - have diverse GHG emissions and energy figures, despite similar levels of GDP per capita. To better understand these figures, the case study in Box 4.10 looks at some of the external factors that influence GHG emissions and energy performance in the three regions.

---

<sup>35</sup> Based on Malta baseline questionnaire response.

#### Box 4.10: Case study on the three Italian RSC regions

##### GHG emissions and energy consumption in the three regions:

- In Liguria GHG emissions are well above the EU average, but energy consumption is low.
- In Marche and Piedmont energy consumption and energy intensity are quite high, but GHG emissions are relatively low, below the EU average.

##### Meanwhile, the other basic characteristics of the regions are similar:

- GDP levels per capita are very close.
- All three economies are predominantly service economies, although in Liguria there is considerably less industry.
- Piedmont relies more heavily on gas for energy consumption; the other two regions use more oil than gas.
- Energy production is responsible for a very large percentage of GHG emissions in Liguria.

##### Based on the figures in Table 4.11 below, the following can be concluded:

- In Liguria, the high share of energy production is likely responsible for high GHG emissions.
- In Liguria, the high share of services in the economy and high population density may be the reason for relatively low energy consumption per capita. Another issue is the use of the FEC measurement - which excludes energy consumed by the energy transformation sector – over GIC or another type of energy consumption measurement.
- In Piedmont, the high share of RES and gas, lower share of oil and 18 percent of “other” which likely includes some hydro or biomass fuels may be one of the reasons for low GHG emissions per capita. The high share of industrial production may be a reason for the high level of energy consumption per capita.
- In Marche the lower share of energy production in GHG emissions may be responsible for the favourable emission figures.

**Table 4.11: GHG emissions, energy and other basic data for the three Italian RSC regions<sup>36</sup>**

Key factors		Piedmont	Marche	Liguria
GHG per capita (tCO <sub>2</sub> /inh)		9.86	7.24	12.74
GHG intensity (gCO <sub>2</sub> /€)		366.31	308.06	530.81
FEC per capita (toe/inh)		2.77	2.43	1.92
Energy intensity (toe/M€)		106.70	103.30	80.14
RES in FEC (%)		7.30	2.35	6.79
Population density (inh/km <sup>2</sup> )		171.1	158.1	296.8
Regional GDP per capita (PPS)		26 900	24 600	24 900
Structure of the economy (% share)	Agriculture	2.0	2.0	2.0
	Industry	30.1	32.0	18.0
	Service + Tourism	67.8	66.0	80.0

<sup>36</sup> Data for GHG emissions and energy consumptions are for 2005, except Piedmont emissions

Key factors		Piedmont	Marche	Liguria
Fuel source of final energy consumption (% share)	Coal	1.1	1.0	0.0
	Gas	56.3	30	31.9
	Oil	15.8	48.0	45.1
	Nuclear	0.0	0.0	0.0
	RES	4.3	3.0	0.2
	Other	22.5	18.0	22.8
GHG emitters by sector (% share)	Energy production	58.2	45.9	71.1
	Transport	22.8	32.1	16.5
	Industrial processes	8.0	9.2	3.8
	Agriculture	6.5	7.3	0.7
	Waste	4.0	5.5	6.6
	Other	0.6	0.0	1.3

## 4.8. CONCLUSIONS – GHG EMISSIONS AND ENERGY

This section will re-cap what we have learned about the RSC regions GHG emissions and energy figures based on analysis of external factors. For reference, a review of the regions' GHG emissions and energy figures can be found in Table 4.12.

**Table 4.12 Review of GHG emissions and energy figures for RSC regions against EU-27 averages, 2006**

RSC region	GHG per capita (tCO <sub>2</sub> /inh)	GHG intensity (gCO <sub>2</sub> /€)	FEC per capita (toe/inh)	Energy Intensity (toe/M€)	RES in FEC (% share)
Cornwall (UK)	10.56	575.86	2.12	115.60	0.71%
North Great Plain (HU)*	7.87	524.42	1.78	118.51	4.35%
Burgenland(AT)	7.54	440.05	2.82	145.40	16.35%
La Rioja (ES)	13.64	517.30	2.70	102.52	8.70%**
South West Bulgaria *	9.38	1086.58	1.30	150.95	7.68%
Marche (IT)	7.24	308.06	2.43	103.30	2.35%
Liguria (IT)	12.74	530.81	1.92	80.14	6.79%
Piedmont (IT)	9.86	366.31	2.77	106.70	7.30%
Malta *	7.10	392.41	1.18	65.21	0.00%
Lower Silesia (PL)*	10.56	854.11	1.58	127.60	6.98%
EU-27 average	11.03	442	2.4	100.84	5.07%

\* Figures for North Great Plain (HU), South West Bulgaria, Lower Silesia (PL) and Malta are national level data.

The following are some of the conclusions we may draw about each of the RSC regions, based on the data available for the RCCI and the supplementary information submitted in the questionnaires. These conclusions lead to some general observations about climate confidence for regions, which will be summarised in Chapter 6 of this report.

**Burgenland (AT):** The most striking factor about Burgenland is its high RES share in energy consumption (16.35% in 2006). At the same time, Burgenland has the highest energy consumption

per capita of the RSC regions, combined with very high energy intensity. GHG emissions are relatively low in Burgenland; however this is likely due to the favourable energy mix.

**Cornwall (UK):** Cornwall has GHG emissions and energy consumption just below the EU average, but its intensity levels are above the EU average. As a peripheral but fast developing region with GDP just below the EU average, Cornwall needs to find a way to curb GHG emissions and maintain growth. It does not produce a significant amount of energy, and has relatively high GHG emissions for each of the other sectors (agriculture, industrial processes, transport, waste/other). Cornwall is clearly determined to do something about this, as seen by its scores in the second part of the RCCI, discussed in Chapter 5.

**Liguria (IT):** High population density and a high share of services and tourism in the economy can account for the low energy consumption in Liguria, as well the fact that the energy transformation sector is not included in FEC. High GHG emissions in Liguria are due mainly to the energy production sector, as well as the low RES use and relatively high share of oil in the energy mix.

**Marche (IT):** Marche has by far the lowest emissions intensity figure among the RSC regions – and is considerably below the EU average in this regard. This is remarkable for a region with low population density. Energy consumption in Marche are just above the EU average, however, suggesting that the carbon content of energy consumed is high.

**Piedmont (IT):** A favourable fuel mix of RES, gas and other, which likely includes hydro and biomass, may be responsible for lower GHG emissions despite high energy consumption. Piedmont in this sense is similar to Burgenland, although the two regions have very different demographic and economic characteristics.

**Malta:** As a small island nation with very high population density, Malta is a unique case. GHG emissions and energy consumption are the lowest among the RSC regions. This can be attributed somewhat to the high population density, limited transport needs, warm climate and tourism-based economy. This is also despite the fact that Malta relies completely upon oil for its energy needs and is a producer of energy.

**NMS regions:** This analysis is based upon national-level data for Bulgaria, Hungary and Poland. Unsurprisingly, these countries have lower per capita levels and higher intensity levels for both GHG emissions and energy consumption. The use of RES in these countries tends to be limited to hydro and biomass – fuels that have low GHG emissions but are not considered strictly “renewable”. All three countries rely on coal, particularly Poland. The effects of this are evidenced by the extremely high GHG intensity rates for all three countries – significantly higher than energy intensity rates, in comparison to EU-27 averages.

## **5. THE QUALITATIVE ISSUES: POLICIES, INSTITUTIONS, SOCIO-POLITICAL ASPECTS AND FINANCIAL INSTRUMENTS**

To adequately manage climate change and to progress towards a low carbon economy, regions must have comprehensive, targeted and achievable policies, strong institutions, committed political leadership, popular awareness and support, and it must make effective use of available financial resources and instruments. The RCCI evaluates regions on all of these complex factors based on information in the baseline questionnaires, including region's self-evaluations. This chapter will present detailed scoring methodologies and results for RCCI Issues 4 – 7, and examine the results further, contrasting specific issues against each other, and highlighting some of the partners' best practices.

### **5.1. RCCI ISSUE 4: POLICY FRAMEWORKS**

Policy frameworks have been evaluated subjectively by the assessment team, based on information about national and regional policies and planning processes. To carry out the assessment the team analysed the following sub-issues based entirely on the information provided in the questionnaires:

- Sub-issue 4.1: The extent to which climate change vulnerability and adaptation planning are considered in the overall policy framework
- Sub-issue 4.2: The existence of comprehensive and quantified climate change policy at the regional level
- Sub-issue 4.3: The extent to which climate change factors are addressed by the regional sectoral framework
- Sub-issue 4.4: The scope and ambition of regional-level policy objectives and targets

#### **Scoring methodology**

The assessment team scored regions from zero to three on each sub-issue, as follows:

- 0 - indicates no information available in the questionnaire
- 1 - low performance
- 2 - average performance
- 3 - outstanding performance

Final scores for this issue were calculated by adding the scores for each sub-issue and calculating the percentage of the maximum possible score. This enabled a score from zero (worst performance) to ten (best performance).

### Box 5.1: Example of scoring issue 4 (Policy Frameworks)

For all four sub-issues, Marche (IT) received 2 out of a possible 3 points for each of the four sub-issues. The total for the four sub-issues is 8, which is 66.67% of the maximum 12 points. By receiving one point for each ten percentage of the maximum points, the final score is 6.67 points for Marche.

Due to missing information and the subjectivity of the scoring process, these scores must be considered as indicative only. However the questionnaires did show that the top four regions – Cornwall (UK), La Rioja (ES), Piedmont (IT), and Burgenland (AT) - have elaborated strategic documents and set policy objectives and targets for tackling climate change at the regional level. The following three regions - Marche (IT), Liguria (IT), and Malta - have also taken steps in the direction of climate change planning at the regional level, however they don't have a comprehensive climate planning regime yet. The bottom three regions – North Great Plain (HU), South West Bulgaria and Lower Silesia (PL) – all hail from the new member states, where regional policies and planning are not yet well developed. This was taken into account in the scoring, and national-level policies were also considered.

Further details on each of the individual issues and partner regions' scores and questionnaire responses are presented below.

## Issue 4.1. Climate change vulnerability and adaptation planning

The assessment addressed the following questions for each region:

- Has an assessment of vulnerability to climate change been carried out at the national and/or regional levels?
- How thorough was the assessment and how reliable are the conclusions considered by authorities and experts?
- Have the adaptation vulnerabilities been directly taken into account in national and/or regional policies?

All regions reported that adaptation issues are taken into consideration in the policy framework. A comprehensive vulnerability assessment has been carried out in three regions – Cornwall (UK), La Rioja (ES) and Marche (IT) - while in another five regions - Burgenland (AT), Liguria (IT), Piedmont (IT), Malta and Lower Silesia (PL) - the process is at an early stage and is not translated into a detailed adaptation strategy. In North Great Plain (HU) and in South West Bulgaria, there is national-level information on vulnerability issues but there is no information on their integration into regional adaptation policy.

## Issue 4.2. Existence of comprehensive and quantified regional climate change policy

The assessment addressed the following questions for each region:

- Has the region worked out its own climate change-specific strategy and/or action plan?

- If so, is it comprehensive, i.e. does it address all relevant aspects of climate change? Are there quantitative targets corresponding to relevant indicators: GHG or CO<sub>2</sub> emissions reduction, RES share in final energy consumption and/or electricity generation, energy efficiency or reduction of energy use, biofuels and use of other RES?

Three of the regions reported having thorough regional climate change policies with quantified targets, and four others have made significant efforts in developing the policy framework. There is less progress in the new member states. Four regions - La Rioja (ES), Marche (IT), Piedmont (IT) and Cornwall (UK) – reported that they have quantitative targets concerning GHG or CO<sub>2</sub> emissions reduction and renewable energy use.

### **Issue 4.3. Climate change factors addressed by the regional sectoral policy framework**

The assessment addressed the following question for each region:

- Are the regional-level sectoral policies comprehensive and do they take into account relevant climate change related factors?

Four of the regions - La Rioja (ES), Marche (IT), Piedmont (IT) and Cornwall (UK) – indicated that they have a comprehensive regional sectoral policy framework in place, and that it adequately addresses climate change issues. Climate change issues are addressed mainly in energy, agriculture, forestry, and transport sectoral policies.

Regions from the new member states have made initial efforts in defining the sectoral framework but they lag behind. In North Great Plain (HU) sectoral policies exist only at the national level, but the EU Cohesion Policy Operational Programmes do address climate change issues at the regional level. South West Bulgaria has made attempts to develop its energy policy but the process is in the early stage. Lower Silesia (PL) has a regional strategy for energy production from biomass.

### **Issue 4.4. Ambitious regional-level policy objectives and targets**

The assessment addressed the following question for each region:

- How ambitious are the regional policy objectives and quantified targets (for GHG emissions reductions, renewable energy use, and energy efficiency), particularly in comparison with national and EU targets?

Cornwall (UK), Burgenland (AT) and Piedmont (IT) all reported that they have clear and comprehensive quantified targets which are more ambitious than the applicable national and EU targets. Other regions had some specific ambitious targets (i.e. emissions from a particular sector, non-quantified targets, etc.)

## RSC regions' scores for Policy Frameworks

The RSC regions' scores for each sub-issue and the total scores for policy frameworks are presented in Table 5.1.

**Table 5.1: RSC regions' scores for Policy Frameworks**

RSC region	Adaptation: assessment of vulnerability to CC and inc to policies	Regional CC Policy exists and is comprehensive and quantified	Regional sectoral framework addresses CC factors	Ambitious regional-level policy objectives and targets	RCCI Score*
Cornwall (UK)	3	3	3	3	<b>10.0</b>
La Rioja (ES)	3	3	3	2	<b>9.2</b>
Piedmont (IT)	1	3	3	3	<b>8.3</b>
Burgenland (AT)	1	2	2	3	<b>6.7</b>
Marche (IT)	2	2	2	2	<b>6.7</b>
Liguria (IT)	1	1	3	2	<b>5.8</b>
Malta**	1	2	2	2	<b>5.8</b>
Lower Silesia (PL)	1	2	1	1	<b>4.2</b>
North Great Plain (HU)	1	0	1	0	<b>1.7</b>
South West Bulgaria	1	0	1	0	<b>1.7</b>
<b>Totals</b>	<b>15</b>	<b>18</b>	<b>21</b>	<b>18</b>	<b>--</b>

\*Score is a percentage of the total maximum of 12

\*\* Scores for Malta are national level data.

## Policy frameworks and the RSC regions

The reality of climate change and the need to take action has permeated European policy agendas at all levels in recent years. The adoption of the climate-energy legislative package by the European Council in April 2009 has translated climate mitigation objectives into firm obligations on behalf of all Member States, and these obligations have been passed on to European regions. The directives contained in the climate-energy legislative package commit the EU to the so-called “20-20-20 by 2020” targets:

- Cutting greenhouse gases by at least 20% of 1990 levels (30% if other developed countries commit to comparable cuts);
- Increasing use of renewables to 20% of total energy production (currently  $\pm$  8.5%) plus a 10% share of energy from renewable sources in each member state's transport energy consumption;

- Cutting energy consumption by 20% of projected 2020 levels.<sup>37</sup>

In addition to the requirement to transpose the directives into national legislation, Member States (MS) are required to create a number of policies, plans and programmes detailing how they will meet the targets. Each MS will have its own process for devolving targets and actions down to sub-national, levels, depending on administrative set-up, political culture and other factors. As the RSC project concerns regions, the focus of the baseline assessment and questionnaire is on the regional-level policy frameworks for climate change. RSC regions were asked to provide information about the extent of planning for climate change and low carbon-economy related objectives within their region, ranging from policies and programmes which directly address climate change to sectoral policies and other plans which incorporate climate change objectives and measures. The results are quite diverse.

As summarised in Table 5.2, three of the RSC regions have reported that they are on the right track with planning for climate change. They have comprehensive and quantified regional climate change and sectoral policies in place. The second group contains those regions that have made some progress in developing regional-level policies, plans and strategies but some aspects are less detailed or undeveloped. In the third group, regions have either no policy in place or have just begun the process.

**Table 5.2: Status of development of climate change policy framework**

RSC region	RCCI score Issue 4 Policy Frameworks	Status of policy framework	Policy development group	2006 GDP per capita (Euro)
Cornwall (UK)	10.0	Comprehensive and quantified regional climate change policy; regional sectoral framework that address climate change factors; ambitious regional level policy objectives and factors	Group 1	20 641
La Rioja (ES)	9.2			23 901
Piedmont (IT)	8.3			27 646
Burgenland (AT)	6.7	Less comprehensive climate change policy framework and sectoral policies that do not fully address climate change issues	Group 2	20 512
Marche (IT)	6.7			25 300
Liguria (IT)	5.8			25 543
Malta *	5.8			12 617
Lower Silesia (PL)	4.2	Regional-level policy related to climate change is in an early phase of development or does not exist	Group 3	7 631
North Great Plain (HU)	1.7			5 636
South West Bulgaria	1.7			5 124

\* Scores for Malta are national level data.

Wealthier regions are more likely to be further advanced in the development of climate change policy frameworks at the regional level.<sup>38</sup> Cornwall (UK) is exceptional, as it ranks the highest with

<sup>37</sup> Taken from "Citizen's summary: EU climate and energy package", available at [http://ec.europa.eu/climateaction/docs/climate-energy\\_summary\\_en.pdf](http://ec.europa.eu/climateaction/docs/climate-energy_summary_en.pdf) and the EC press release "Council adopts climate-energy legislative package" of 6 April 2009 at [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/misc/107136.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/misc/107136.pdf)

mid-level GDP, while some of the wealthier Italian regions have lower scores for this issue. Clearly wealth or economic advancement is not the only driving force in the push towards regional action on climate change planning. Other issues such as institutional capacity, political will and awareness, and readiness of the population and key stakeholders to make changes are critical factors, as will be examined later in this chapter.

All three of the lowest-scoring regions in Group 3 belong to the new member states (NMS). As noted already in this assessment, most NMS have only recently set up administrations at the NUTS 2 level and are still in the process of devolving powers to those institutions. As a result, these regions lack the authority and/or the capacity to develop policies, or have only just begun the process. Therefore regions from the NMS or with a weaker overall tradition of decentralisation and authority at the regional level must review their results accordingly, as they may not have had the legal and political opportunity to develop climate policies.

## **Quantifiable policy targets**

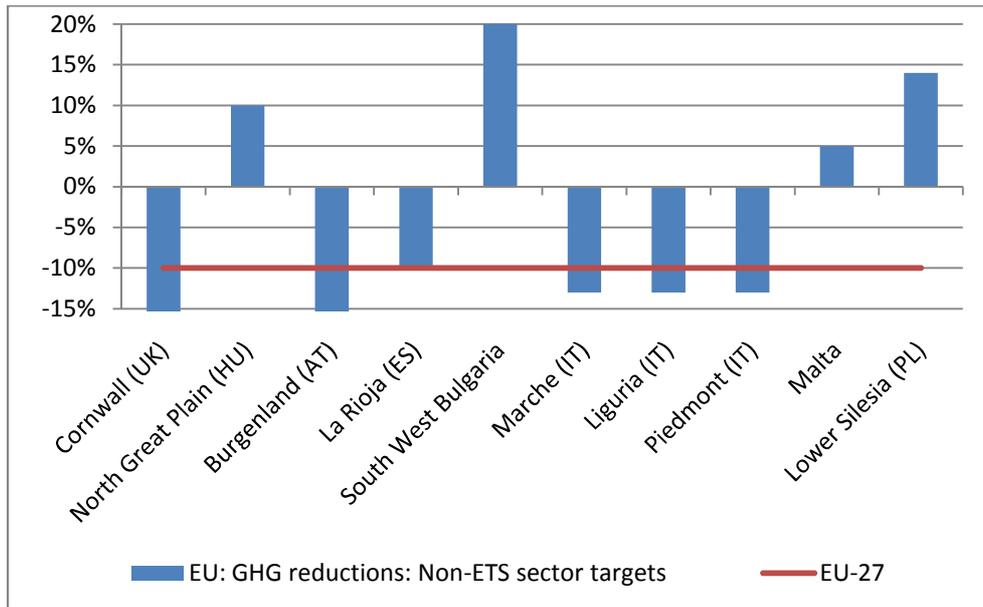
Well-developed climate change policies will have quantified targets (for emissions reductions, RES use, energy efficiency, etc.) The EU legislation prescribes national targets for GHG emissions from non-ETS sectors<sup>39</sup> and for the share of energy from renewable sources in energy consumption, to be achieved by 2020. These nationally agreed targets for each of the RSC Member States are shown in Figure 5.1.

---

<sup>38</sup> The administrative set-up of these countries could have affected this result as well, since UK, Spain and Italy, have long traditions of strong regional authorities.

<sup>39</sup> Non-ETS sectors are those not included in the EU emissions trading scheme, e.g. transport (cars, trucks), buildings (in particular heating), services, small industrial installations, agriculture and waste; they currently represent some 60% of total GHG emissions in the EU.

**Figure 5.1: RSC national targets for GHG emissions reduction in non-ETS sectors**



EU GHG targets for non-ETS sectors refer to emission cuts required or increases allowed on 2005 emissions for sectors not included in the EU ETS. One main criterion for setting the national targets is GDP levels. The targets range from +20% to -20% relative to 2005 emission levels. The ETS currently represents some 60% of GHG emissions in the EU and covers transport (cars and trucks), buildings (heating), small industrial installations, services, agriculture and waste. The countries with lower GDP per capita (i.e. the NMS) are allowed to increase emissions; Bulgaria has the highest allowance. The UK and Austria are required to make the highest emission cuts, followed by Italy and Spain.

The negotiation and setting of regional level targets that contribute toward these national obligations is a different process for each MS. Some MS will devolve legally binding contributions to the regions; others will allow the regions to set their own objectives and targets based on individual circumstances and priorities. Four RSC regions – Cornwall (UK), La Rioja (ES), Marche (IT) and Piedmont (IT) – provided quantifiable regional-level targets for overall GHG reductions in the questionnaires; in many cases these targets are more ambitious than the EU targets. These regional GHG targets are shown in Table 5.3.

**Table 5.3: Regional GHG emissions reduction targets for 4 RSC regions**

RSC region	Regional GHG emissions reduction target*
Cornwall (UK)	30-35%
La Rioja (ES)	37%
Marche (IT)	3.5 t CO <sub>2</sub> /year below 1990 baseline by 2015
Piedmont (IT)	20%
EU	20%

\* From all sectors on 1990 levels by 2020; Marche (IT) 2015

For RES, four RSC regions submitted regional policy targets, as shown in Table 5.4. In some cases these are more ambitious than the national commitments.

**Table 5.4: Regional RES targets for 4 RSC regions**

RSC region	Regional RES Target	National RES Target 2020
Burgenland (AT)	100% RES in electricity by 2013	34%
Cornwall (UK)	20%	15%
La Rioja (ES)	12% increase by 2010	20%
Piedmont (IT)	20%	17%
EU	20%	20%

Finally, many regions define energy savings and/or efficiency improvements as key policy objectives, and Cornwall (UK) and Piedmont (IT) refer directly to the EU 20% increase. Energy saving is defined as a key objective of the regional climate change policies in Malta, La Rioja (ES), Burgenland (AT) (energy savings measures in the housing sector), and Marche (IT) (energy saving measures in the construction and transport sectors). Regional targets related to energy efficiency are not defined in the three regions from the NMS but such targets are stipulated in the national policies.

### **Mitigation vs. adaptation in policy-making**

Many RSC regions reported that more attention is given to climate change mitigation in policies, particularly the concept of a low carbon economy. Adaptation measures generally receive less consideration at the regional level. In some cases this is because comprehensive vulnerability studies are still being worked out at the national level, and regions are waiting for national guidance on this issue. Some of the regions do demonstrate understanding of their specific vulnerability to expected climatic changes and have initiated the preparation of adaptation strategies and plans at the regional level.

### **Sectoral policies**

In order to adequately cope with climate change, regions must ensure that climate change objectives and measures are transposed or integrated into key sectoral policies such as energy, agriculture, transport, housing, waste, and others. The extent to which climate change has been integrated into key sectoral policies varies across the partnership, as shown in the table below. Regions from Bulgaria, Hungary and Poland have no or limited regional-level sectoral plans, but they have developed strategic development plans and programmes aimed at EU Cohesion Policy, and have integrated climate change issues into these documents.

**Table 5.5: Level of integration of climate change into key regional sectoral policies**

High: **XXX** Medium: **XX** Low: **X** No information or no policy: -

RSC region	Energy	Agriculture and forestry	Transport	Housing	Waste
Cornwall (UK)	XXX	XXX	XX	XXX	XX
La Rioja (ES)	XXX	XXX	XX	XXX	XXX
Piedmont (IT)	XXX	XXX	X	-	XXX
Burgenland (AT)	XXX	-	-	XXX	-
Malta*	XXX	X	XX		XX
Liguria (IT)	XXX	XXX	XX	X	-
Marche (IT)	-	XX		XX	-
Lower Silesia (PL)	XX	-	XX	-	-
North Great Plain (HU)*	XXX	XX	XX	XX	-
South West Bulgaria*	XX	-	X	-	-

\* Regions from Hungary and Bulgaria do not have policy frameworks at the regional level, so climate change integration has been evaluated at the national level. Information for Malta is also national-level based.

The analysis shows that integration of climate change issues into sectoral policies has focused mainly on the energy sector, with some progress in agriculture/forestry and housing. In the energy sector, most regions have policies or policy emphasis on renewable energy (wind, solar, biomass, hydroelectric, geothermal), energy efficiency measures and contributions to climate change targets. Although the transport sector is a major contributor to GHG emissions, none of the regions has reported significant integration of climate change issues into the sectoral policies for transport.<sup>40</sup>

A sample of climate change-related elements of key sectoral policy documents from across the regions is presented in Table 5.6.

---

<sup>40</sup> However, in Malta there is a (draft) “vision for public transport” that calls for a 20% reduction in harmful transport emissions in the urban area and a 30% reduction in the number of cars entering the Valletta peninsula. These goals do not target climate change *per se* but aim at improving at local air quality.

**Table 5.6: Selected elements of sectoral policy documents integrating climate changes issues**

Sector	Selected elements of the sectoral policy and/or action plan
Energy	Reduction of the intensive use of traditional energy sources through the increase of energy production from RES and promoting energy efficiency and energy savings GHG emission reduction
Agriculture and forestry	Energy production from agricultural biomass Sustainable forestry management Improvement of carbon sinks Reforestation of non-agricultural areas
Housing	Energy efficiency measures in the domestic sector Tackling fuel poverty
Waste	Decreasing of methane emissions from landfills Improvement of systems for energy recovery of biogas in the existing landfills Gradual replacement in existing co-incineration plants of use of fossil fuels with fuel derived from waste Introduction of waste hierarchy and waste reduction options through reuse, recycling and energy recovery
Transport	Promotion of and incentives for sustainable mobility Use of methane vehicles and emission control technologies

In addition to specific climate change measures within policies, some regions have used a more comprehensive approach to sectoral integration. Examples of crosscutting themes integrated into the sectoral policies include:

- **Climate change as an economic driver:** opportunities for employment and economic growth through the transition to a low carbon economy.
- **Climate change and social inclusion:** the linkage between climate change and social issues such as poverty reduction and protection of low-income groups of the population that are more vulnerable to the effects of climate change. Cornwall (UK) and Piedmont (IT) have envisaged such social benefits in their energy policies.
- **Raising awareness for behavioural change:** raising awareness about energy efficiency, climate change, and what it means for society is part of several regions' sectoral policies.

**Box 5.2: Climate change planning in Cornwall (UK)**

**Climate change in the strategic planning context of Cornwall (UK)**

A key ambition of Cornwall authorities is to transform the county into a stronghold of low carbon economic and social sustainability. In order to achieve this objective an innovative and uniquely holistic approach is applied that affects the energy needs of Cornwall and its communities. It promotes a joint approach of energy conservation and renewable energy generation in all sectors. The newly created Low Carbon Cornwall team, part of the Cornwall Development Company, are a key element of the process.

There are several key national strategies that provide the framework for how the UK (and its regions) can move towards reducing the environmental impact of energy use and become a low carbon economy. Cornwall takes

this process further by setting the basis for integrated carbon policy at the regional level.

The Cornwall Climate Change Action Plan (3CAP) aims to deliver a road map to a resilient and low-carbon Cornwall – through the application of the principals of sustainable development, “carbon literacy”, partnership working, & evidence-led strategic planning. The emerging “Action Plan” will mark a commitment by the membership of the Cornwall Strategic Partnership to work together across all sectors in order to:

- reduce Cornwall’s Greenhouse Gas (GHG) emissions footprint;
- better understand and prepare for the impacts of the warming that Cornwall is already committed to;
- make the transition to a resilient and low-carbon energy future through reducing Cornwall’s reliance on fossil fuels.

Low Carbon Cornwall has worked with partner organisations to understand and interpret both the commitments placed upon the region within the wider policy landscape and what is practically achievable for Cornwall and its key sectors. As a result of this consultative process the suite of ‘Headline Targets’ have been defined as the following:

- Greenhouse Gas (GHG): 30 – 35% reduction by 2020 (against a 1990 baseline year)
- Renewable Energy: 20% of Cornwall’s energy demand to be met through renewables by 2020
- Energy Efficiency: 20% increase in energy efficiency/demand reduction (against 2005 baseline year)

The 3CAP aims to provide the CSP and Cornwall Council with both the programme of actions and evidence base needed to ensure Cornwall can secure its status as a leader in sustainability. The 3CAP is made up of a series of Options and Issues Papers identifying key aims, proposed priority actions and the next steps for each “sector” or “issue” identified. These papers were produced with the assistance of sector specific or issue specific “Task & Finish” groups.

The Options papers include the following sectors: Food, Farming, Biodiversity and Rural Land-use; Business; Planning & Regeneration; Energy in Buildings and Construction; Transport; Tourism; and Education & Skills. The Issues papers include: Flooding & Coastal; Water Resources & Supply; Fuel Poverty; and Energy Security.

As a result of the integrated partnership approach to produce the 3CAP there have been a number of successes helping to achieve real outcomes for Cornwall as part of the region’s “climate-energy” response.

## 5.2. RCCI ISSUE 5: INSTITUTIONAL CAPACITY

This issue covers the capacity of the regions’ institutions to deal with climate change adaptation and mitigation issues. Regions evaluated their own institutions, based on the following 4 sub-issues:

- Sub-issue 5.1: Dedicated staff
- Sub-issue 5.2: Financial means
- Sub-issue 5.3: Regulatory mandate
- Sub-issue 5.4: Access to research capacity

The results must be viewed as regions’ own perceptions of their institutional capacity. The scoring methodology, further details on each of the individual issues, partner regions’ scores and further analysis of the results are presented below.

## Scoring methodology

The scores presented below are based directly on the regions' self-evaluation. In the questionnaire, regions were asked to respond "low-average-high" to four questions about their own institutions. The assessment team assigned scores of 0 (no response); 1 (low); 2 (average) or 3 (high) to each response. Final scores for this issue were calculated by adding the scores for each sub-issue and calculating the percentage of the maximum possible score. This enabled a score from zero (worst performance) to ten (best performance).

### Box 5.3: Example of Scoring Issue 5 (Institutional Capacity)

Liguria (IT) evaluated its dedicated staff (5.1) and financial means (5.2) as average (2 points each), and regulatory mandate (5.3) and access to research capacity (5.4) as high (3 points each). The total score is  $2+2+3+3 = 10$ , which is 83.33% of the maximum 12 points. By receiving one point for each ten percentage of the maximum points, the final score is 8.83 points for Liguria (IT).

## Issue 5.1. Dedicated staff

Regions assessed whether they have sufficient human resources in terms of number of dedicated staff and skills/experience with regard to climate change issues. A few issues can be outlined with regards to the assessment:

- Only Marche (IT) expressed a high level of satisfaction with the existing human resource capacity; five regions (those which scored "2") have staff dealing with climate change tasks but consider their number and experience insufficient.
- None of the three regions that scored high on policy frameworks – Cornwall (UK), La Rioja (ES), and Piedmont (IT) - considers the dedicated human resources sufficient for the achievement of desired objectives and targets.
- Four of the regions stated that the existing human resource capacity is not adequate for achieving climate change policy objectives.

## Issue 5.2. Financial means

The following points are to be highlighted based on the assessment of budgetary resources and special programmes supporting climate change related activities:

- Burgenland (AT) and Piedmont (IT) consider the available funds sufficient for implementing climate change strategies and plans. It is worth noting that these two regions have also made significant progress in developing the policy framework.
- Five of the surveyed regions consider the financial resources for climate change measures unsatisfactory, which is a hurdle for achieving regional climate-related objectives.

### **Issue 5.3. Regulatory mandate**

The following issues can be highlighted with regards to devolution of power and authority of the regions to carry out climate change policy:

- Two regions - Liguria (IT) and Marche (IT) - consider their regulatory mandate adequate for policy-making and implementing regional climate targets.
- In some cases regions evaluated this criterion strictly on the basis of whether they possess a regulatory mandate; others took a more general perspective on the relative power of the regional authority.

### **Issue 5.4. Access to research capacity on regional level**

Innovative climate policies and workable technical measures depend heavily on information and close links to research capacity.

- Four regions – North Great Plain (HU), La Rioja (ES), Liguria (IT), and Piedmont (IT) - reported that their regional institutions have enough information to manage and implement climate change policies. For North Great Plain (HU), access to research capacity may be a factor for boosting the otherwise limited activities of the regional institutions.
- Access to research capacity is considered average in Lower Silesia (PL) and South West Bulgaria.
- Cornwall (UK), Burgenland (AT), Marche (IT) and Malta consider their access to research capacity relatively low, yet they have much higher scores in other areas of the index.

### **RSC regions' scores for Institutional Capacity**

The RSC regions' scores for each sub-issue and the total scores for institutional capacity are presented in Table 5.7.

**Table 5.7: RSC regions' scores for Institutional Capacity**

RSC region	Dedicated staff	Financial means	Regulatory mandate	Access to research capacity	RCCI score*
Liguria (IT)	2	2	3	3	<b>8.3</b>
Piedmont (IT)	2	3	2	3	<b>8.3</b>
Burgenland (AT)	2	3	2	1	<b>6.7</b>
La Rioja (ES)	2	1	2	3	<b>6.7</b>
Lower Silesia (PL)	2	2	2	2	<b>6.7</b>
Marche (IT)	2	2	2	1	<b>5.8</b>
Cornwall (UK)	2	2	0	2	<b>5.0</b>
North Great Plain (HU)	1	1	1	3	<b>5.0</b>
South West Bulgaria	1	1	1	2	<b>4.2</b>
Malta**	1	1	1	1	<b>3.3</b>
<b>Total</b>	<b>18</b>	<b>20</b>	<b>17</b>	<b>23</b>	<b>--</b>

\*Score is a percentage of the total maximum of 12

\*\* Scores for Malta are national level data.

## Regional institutions for climate change

Each RSC region has a unique set of institutions with various strengths and weaknesses, but they fall into three basic groups according to the type of institution that is primarily responsible for climate change policy-making and implementation.

**Table 5.8: Institutions responsible for climate change in RSC regions**

Group	Type of institution responsible for climate change	Regions
1	Specialised institution(s) in place at the regional / national level are primarily responsible for climate change policy-making and implementation.	Cornwall (UK), Malta
2	A department within the regional authority is primarily responsible for climate change policy-making and implementation.	Burgenland (AT), Liguria (IT), Marche (IT), Piedmont (IT), Lower Silesia (PL)
3	A local/regional branch of environment ministry, inspectorate or other national-level institution has primary responsibility for managing climate change for the region. Regional authorities have a limited role in policy-making and may or may not be responsible for implementation.	La Rioja (ES), North Great Plain (HU), South West Bulgaria

Table 5.9 below reviews the regions' RCCI scores for institutional capacity and policy frameworks in comparison with the type of institutional set-up.

**Table 5.9: RSC partners' institutional group against evaluation for institutional capacity and policy frameworks\***

RSC region	Score Institutional Capacity*	Score Policy Frameworks	Institutional set-up group (see table above)
Liguria (IT)	8.3	5.8	2
Piedmont (IT)	8.3	8.3	2
Burgenland (AT)	6.7	6.7	2
Lower Silesia (PL)	6.7	4.2	2
La Rioja (ES)	6.7	9.2	3
Marche (IT)	5.8	6.7	2
Cornwall (UK)	5.0	10	1
North Great Plain (HU)	5.0	1.7	3
South West Bulgaria	4.2	1.7	3
Malta **	3.3	5.8	1

\*Scores for this issue are based on regions' self-evaluations

\*\*Scores for Malta are national level data.

Most of the regions that reported higher levels of capacity, financing, regulatory mandate, and access to research are those in which the regional authority itself has primary responsibility for climate change (Group 2). In several regions, sectoral departments (e.g. agriculture and forestry department, economic development department, etc.) established within the regional authorities are responsible for integration of various aspects of climate change adaptation and mitigation into the respective sectoral activities.

One exception is La Rioja (ES), where a branch of the environment ministry is responsible for climate change. However, La Rioja (ES) has one of the most comprehensive regional-level climate change policy frameworks within the RSC partnership, which implies that the institutional set-up is the appropriate one in this case.

Some regional authorities receive technical assistance from external regional bodies, especially in the energy sector. For example, such support is provided to Liguria (IT) by the Regional Energy Agency, while the Regional Economic Development Agency in La Rioja (ES) maintains a specialised financial body for climate change measures on the regional level.

Interestingly, the two partners with specialised institutions for climate change were scored by far the lowest in self-evaluation of institutional capacity. A possible explanation is that the institutions have very ambitious objectives and goals and therefore evaluated themselves on a more difficult scale. In Cornwall responsibilities are further divided: adaptation issues are tackled by South-West Climate Change Impacts Partnership, and mitigation by the Low Carbon Economy Unit within Cornwall Development Company.

Malta is a special case; as a small country, all climate change responsibility is taken at the national level. Malta reports that it is currently in the process of establishing a permanent inter-ministerial committee for climate change.

Finally, outside of La Rioja (ES), the regions where a national branch is responsible for climate change for the region reported less satisfaction with institutional capacity. This may be explained by the fact

that these regions come from the new member states, where institutions and progress with climate change policy-making are less mature.

Some of the challenges reported by the regions include:

- absence of a sound national strategy to comprehensively address climate change;
- lack of a clearly delineated institutional responsibility for climate mitigation and adaptation;
- shortage of human resources;
- insufficient financial resources;
- poor access to research capacity for developing scientifically-sound policy models and scenarios.

**Box 5.4: Examples of unique institutional approaches to climate change in RSC regions**

**Designated delegate of the Government Commission Against Climate Change, La Rioja (ES)**

A designated delegate of the Government Commission Against Climate Change is responsible for coordination of Government's regional policies related to the impacts caused by climate change. The delegate helps in mainstreaming the activities of the national and regional authorities with regard to climate change.

**Environmental Sustainability Advisory Group, Cornwall (UK)**

With regards to the implementation of the Convergence Operational Programmes (OPs) in South West England a cross programme advisory group regarding Environmental Sustainability was established. The aim of the group is to set requirements for investments and projects regarding reduction of their environmental intensity including carbon intensity. The group includes regional key statutory, NGO and Local Authority Environmental partners. Single Environmental Sustainability Manager assists investments and partners in delivering of the strategic environmental sustainability objectives of the OPs.

Partnerships across regional and local-level institutions including various authorities, businesses, and other stakeholders in the planning and implementation processes can be crucial for achieving ambitious GHG emissions reductions and other climate policy objectives and targets. Such partnerships can harness skills, expertise, resources and authority from different sectors and individuals. Some of the RSC regions report positive experience with these partnerships; other have not yet begun to utilise these opportunities. Two successful examples are summarised in Box 5.5.

**Box 5.5: The role of inter-institutional partnerships in climate change achievements**

**Cornwall Sustainable Energy Partnership**

Cornwall Sustainable Energy Partnership (CSEP) was created in November 2001 to combine the expertise and knowledge of organisations within the public, private, health and community sectors. Over 72 partners signed up to the 2004 Energy Strategy for Cornwall with the aim of ensuring a sustainable future for Cornwall. More recently the partnership have been integral to developing the Cornwall Climate Change Action Plan (3CAP). The activities are carried out by established groups within the partnership. Process groups aim to integrate sustainable energy across all sectors of the Cornish Economy whilst delivery groups concentrate on specific projects. This work is supported by the Low Carbon Cornwall team based within Cornwall Development Company. CSEP has been actively involved in influencing local, regional, national and European policy and has provided a template for other major initiatives.

#### **Agreement between Italian regions to prevent and reduce air pollution in the Po Valley**

The initiative includes the regions of Piedmont, Lombardy, Emilia Romagna, Veneto, Valle D'Aosta, Friuli Venezia Giulia, the Autonomous Provinces of Trento and Bolzano, the Republic and Canton of Ticino. The focus of the activities is on: harmonisation of measures targeting air pollution; a joint inventory for estimating emissions at municipal level; promotion of low-impact vehicles (methane, LPG, hybrids, electric, hydrogen, etc.); support for cleaner public transport through technological upgrade; definition of common mid-long term measures to reduce emissions; lobbying on national and EU level for the creation of specific funding mechanisms.

### **5.3. RCCI ISSUE 6: SOCIAL AND POLITICAL AWARENESS AND READINESS**

The scores are based on regions' self-evaluations as reported in the baseline questionnaires. Partners were asked to evaluate their regions by answering the following questions:

- Sub-issue 6.1. What priority is given to combating climate change on the regional political agenda?
- Sub-issue 6.2. Is there a strong political leadership on climate change and reducing the carbon impact of the economies?
- Sub-issue 6.3. What is the overall awareness of the industry with regard to reducing carbon footprint?
- Sub-issue 6.4. What is the overall awareness of the population with regard to reducing carbon footprint?

The scoring methodology, details on each of the individual issues, partner regions' scores and analysis of the results are presented below.

#### **Scoring methodology**

The scores presented below are based directly on this self-evaluation. In the questionnaire, regions were asked to respond "low-average-high" to each of the four sub-issues listed above. The assessment team assigned scores of 1 (low/weak), 2 (average) or 3 (high/strong) to each response. Final scores for this issue were calculated by adding the scores for each sub-issue and calculating the percentage of the maximum possible score. This enabled a score from zero (worst performance) to ten (best performance).

#### **Box 5.6: Example of Scoring Issue 6 (Social and Political Awareness and Readiness)**

Piedmont (IT) gave a response of "average" to sub-issues 1, 2 and 4. For sub-issue 3 the region responded "low". The total score was  $2+2+1+2 = 7$ , which is 58.33% of the maximum 12 points. By receiving one point for each ten percentage of the maximum points, the final score was 5.83 points for Piedmont.

### **Sub-issue 6.1. Priority given to climate change on the regional political agenda**

- Only Burgenland (AT) states that high political priority is given to climate change, which corresponds with the region's ambitious targets and objectives especially in the energy sector.
- The majority of regions are of the opinion that the climate change is gaining priority on the regional political agenda, but it is not sufficient in view of the urgent need for action.
- South West Bulgaria is the only region that considers climate change low on the political agenda.

### **Sub-issue 6.2. Political leadership on climate change**

- Again, only Burgenland (AT) rates its political leadership on climate change and low carbon issues high; this is consistent with its progress in policy and institutional capacity issues.
- Although there are signals of political will and leadership in dealing with climate change issues, the majority of surveyed regions consider that it does not entirely correspond to the necessities and more effort is needed.

### **Sub-issue 6.3. Overall awareness of industry on reducing carbon footprint**

- La Rioja (ES), South West Bulgaria and Piedmont (IT) are unsatisfied with the level of awareness of industry with regard to reducing the carbon footprint.
- Although regions report that campaigns have been organised to raise awareness of industry for reduction of the carbon footprint, the majority of the regions consider that they are not sufficient and further effort should be made.

### **Sub-issue 6.4. Overall awareness of population on reducing carbon footprint**

- Burgenland (AT) is the only region that reports high awareness of the population with regard to reducing the carbon footprint; this fits with the region's ambition to become energy autonomous.
- The overall awareness of the population on reducing the carbon footprint is considered low only in South West Bulgaria.

## **RSC regions' scores for Social and Political Awareness and Readiness**

The RSC regions' scores for each sub-issue and the total scores for social and political awareness and readiness are presented in Table 5.10.

**Table 5.10: RSC regions' scores for Social and Political Awareness and Readiness**

RSC region	Priority to climate change on regional political agenda	Political leadership on climate change	Overall awareness of industry on reducing carbon footprint	Overall awareness of population on reducing carbon footprint	RCCI score*
Burgenland (AT)	3	3	2	3	<b>9.2</b>
Cornwall (UK)	2	2	2	2	<b>6.7</b>
Liguria (IT)	2	2	2	2	<b>6.7</b>
Lower Silesia (PL)	2	2	2	2	<b>6.7</b>
La Rioja (ES)	2	2	1	2	<b>5.8</b>
Marche (IT)	2	1	2	2	<b>5.8</b>
Piedmont (IT)	2	2	1	2	<b>5.8</b>
Malta **	2	1	2	2	<b>5.8</b>
North Great Plain (HU)	1	1	2	2	<b>5.0</b>
South West Bulgaria	1	1	1	1	<b>3.3</b>
Totals	19	17	17	20	--

\*Score is a percentage of the total maximum of 12

\*\* Scores for Malta are national level data.

The socio-political aspects surveyed in this assessment include political prioritisation of climate change; political leadership; and the overall awareness of population and industry on reducing the carbon footprint. These issues are at the core of any region's capacity for climate confidence. Climate change adaptation and mitigation and the move towards a low carbon economy require sacrifices from many stakeholders, even if only in the short term. A basic requirement for innovative policy efforts is strong political leadership and prioritisation, much of which is dependent upon popular and stakeholder support.

Not surprisingly, Burgenland (AT) scored the highest in the self-assessment of these socio-political issues. Burgenland has achieved considerable success in the development of RES and has ambitions to continue this development, which must have clear political and popular support.

**Box 5.7: Climate change skills-building in Cornwall (UK)**

**The Clear about Carbon Project, Cornwall**

The focus of this project is to increase the climate change skills of the local workforce within both the public and private sector, by increasing access to learning and skills training for adults and take up of higher skills training by those in employment.

Whilst there is strong strategic support for the movement towards a low carbon economy within the ESF, ERDF and regional economic strategies, there is still a significant lack of understanding of what a 'low carbon economy' means in reality, how it can be achieved and in particular how organisations and individual members of the workforce can contribute towards achieving this objective.

The project partners represent key strategic organisations that are integrally involved in defining what a low carbon economy means for Cornwall and identifying the skills and resources required to achieve it. Each

organisation is a key stakeholder in the development of the *Cornwall Climate Change Action Plan (3CAP)*, which is being led by Cornwall Council. Work so far in developing the 3CAP has already identified that public sector procurement can play a key role in both mitigating and adapting to climate change by including carbon requirements in specifications and tenders. This in turn will encourage 'supply chain' businesses to adopt carbon management standards within their business planning, processing and manufacturing.

## 5.4. RCCI ISSUE 7: FINANCIAL INSTRUMENTS

Financial instruments have been assessed subjectively by the baseline assessment team according to the information provided in the questionnaires. To carry out the assessment, team members considered the following issues and questions:

- Sub-issue 7.1. The variety of financial instruments available to the region for financing climate change-related measures
- Sub-issue 7.2. The extent of integration of climate change into the planning, programming and implementation of Cohesion Policy funding for 2007-13
- Sub-issue 7.3. The extent of integration of climate change when formulating and selecting projects within regional development investment programmes (RDPs)

The scoring methodology, details on each of the individual issues, regions' scores and further analysis of this issue are presented below.

### Scoring methodology

The assessment team scored regions from zero to three on each sub-issue, as follows:

- 0 - indicates very weak performance
- 1- weak performance
- 2- average performance
- 3 - outstanding performance

Final scores for this issue were calculated by adding the scores for each sub-issue and calculating the percentage of the maximum possible score. This enabled a score from zero (worst performance) to ten (best performance).

#### Box 5.8: Example of Scoring Issue 7 (Financial Instruments)

Lower Silesia (PL) received 2 points for sub-issue 7.1 and 1 point each for sub-issues 7.2 and 7.3. The total score is  $2+1+1 = 4$ , which is 44.44% of the maximum 9 points. By receiving one point for each ten percent of the maximum points, the final score is 4.44 points for Lower Silesia.

## **Sub-issue 7.1. The variety of financial instruments available to the region for financing climate change-related measures**

Regions were asked to list and describe state and regional subsidies; EU Structural and Cohesion Funds, tax incentives and specialised financial institutions. Regarding the variety of financial instruments for financing climate change-related activities and investments the following points can be highlighted:

- Cornwall (UK) has the most extensive variety of financial instruments including subsidies, tax incentives, and specialised funds available for a variety of energy efficiency measures, energy production from RES, and carbon reduction projects.
- Five regions - North Great Plain (HU), Burgenland (AT), Marche (IT), Malta and Lower Silesia (PL) - also benefit from a large number and variety of financial instruments supporting climate change related measures.
- EU Cohesion Policy supports climate change measures in all of the surveyed regions. Predominantly, these are measures related to climate change mitigation such as energy projects, and sustainable mobility.
- Only Malta and Marche (IT) mention adaptation to climate change with regard to public financing instruments.

## **Sub-issue 7.2. The extent of integration of climate change issues into the planning, programming and implementation of Cohesion Policy funding for 2007-13**

Evaluation for this sub-issue takes into consideration the environmental assessment of plans and programmes; the involvement of environmental authorities and other environmental or climate change partners or stakeholders; and the allocation of funding for climate change-related criteria and requirements into Cohesion Policy programmes for 2007-13. Partners provided most of this information in the questionnaires in free text format, so the basis for evaluation varies significantly across the regions.

The assessment revealed the following points:

- Seven of the regions scored 2 or 3 points, meaning they reported a considerable level of integration of climate change issues.
- The concept of sustainability is frequently integrated into the planning process but in many cases climate change specifically is not. Cornwall (UK) and Malta have low carbon and carbon neutrality ambitions for their Cohesion Policy Operational Programmes.
- The focus of most regions' responses in the questionnaires was on so-called vertical integration of climate change into programmes, i.e. specific funding measures dedicated to energy efficiency, renewables, and other climate-friendly objectives, rather than integration of these themes across all funded measures.

### Sub-issue 7.3. Integration of climate change when formulating and selecting projects within regional development investment programmes

Scores were assigned based on the regions' reported use of climate change and carbon emission targets; thresholds and other requirements for project promoters; guidance given to project promoters; and criteria and indicators used to evaluate, select and monitor investment projects.

The assessment revealed the following points:

- Cornwall (UK), Burgenland (AT) and Malta report the highest degree of incorporation of climate change issues into the project cycle for regional development programmes.
- Other regions that report a lesser degree of integration mention the lack of sufficient practical guidelines and information in place to assist this process.

### RSC Regions' scores for Financial Instruments

The RSC regions' scores for each sub-issue and the total scores for financial instruments are presented in Table 5.11.

**Table 5.11: RSC partners index scores for Financial Instruments**

RSC region	Variety of instruments	Integration in Cohesion Policy planning, programming, implementation	Integration in project form and selection all RDPs	RCCI score*
Cornwall (UK)	3	2	3	<b>8,9</b>
Burgenland (AT)	3	2	2	<b>7,8</b>
Malta (MT)**	2	3	2	<b>7,8</b>
Marche (IT)	2	2	2	<b>6,7</b>
Liguria (IT)	2	2	2	<b>6,7</b>
North Great Plain (HU)	3	1	1	<b>5,6</b>
La Rioja (ES)	2	2	1	<b>5,6</b>
Piedmont (IT)	2	2	1	<b>5,6</b>
South West Bulgaria (BG)	2	1	1	<b>4,4</b>
Lower Silesia (PL)	2	1	1	<b>4,4</b>
<b>Totals</b>	<b>37</b>	<b>31</b>	<b>30</b>	<b>--</b>

\*Score is a percentage of the total maximum of 9

\*\*Scores for Malta are national level data.

Cornwall (UK) scored the highest due to its wide variety of targeted financial instruments, and considerable efforts to integrate climate change and particularly low carbon concerns into all of its funding efforts. Burgenland (AT) and Malta reported similar positive experience; the regions from Italy and Spain have mixed results. The regions from the NMS report difficulties with integration of climate change into funding programmes due to lack of experience and specific guidance and tools for this.

Politicians and experts may argue about the efficiency of subsidising initiatives aimed at reducing emissions, energy consumption or improving energy efficiency and renewable use; but it is clear that there are a wide range of options offered by the EU, Member States and even private institutions for funding these efforts.

## **EU Cohesion Policy – a wealth of opportunities**

The EU Cohesion Policy, a large-scale public funding programme targeted at regions, has earmarked nearly €350 billion for the period 2007 – 2013.<sup>41</sup> A significant amount of this funding - €48 billion - has been earmarked through national and regional strategies and programmes for climate and low carbon-related measures.<sup>42</sup> Funds are targeted at regions that lag behind in development, including many of the RSC regions. For many, Cohesion Policy funds and the strategic planning and programming processes that govern their use are important overall drivers of regional development. Therefore, the extent to which climate change and low carbon objectives and measures can be integrated into the programmes is critical for making progress on these issues.

Climate change is most commonly addressed “vertically” through priorities and measures specifically focused on climate and/or carbon objectives. These include mainly priorities related to RES, energy efficiency, or sustainable transport. All of the RSC partners have set aside funds for climate and energy-related priorities, allocated across varying programmes, priorities and measures. For example, investments in RES and energy efficiency are a major priority for Italy, which significantly increased funding allocation from €0.8 million in 2000-2006 to €4.4 billion for the current programming period. At the regional level, the three Italian RSC partners have dedicated significant funds to sustainable and efficient energy use: Liguria (11% of Regional OP funding); Marche (13%), and Piedmont (25%).

Integrating climate change as a crosscutting theme at programme and project level is usually more challenging and the positive experiences are limited. The so-called “horizontal” integration of climate change and low carbon issues across all of the planning and programming of the funds (as opposed to those measures which specifically fund climate-related measures) is more challenging for regions.

Horizontal integration can be achieved through Strategic Environmental Assessment (SEA) of strategic frameworks and programmes; the introduction of indicators for the reduction of greenhouse gas emissions into the Operational Programmes (OPs); and the use of a carbon evaluation tool to monitor CO<sub>2</sub> emissions produced by projects.

A good example of horizontal integration of climate change issues is the Convergence Programme for Cornwall & the Isles of Scilly in which environmental sustainability is the programme’s key principle, and the aim is to achieve a low carbon impact. Projects are assessed to address their low-carbon credentials within all stages of the investment life-cycle: commissioning, business plan, appraisal

---

<sup>41</sup>DG Regional Policy Inforegio: [http://ec.europa.eu/regional\\_policy/policy/fonds/index\\_en.htm](http://ec.europa.eu/regional_policy/policy/fonds/index_en.htm)

<sup>42</sup> “Cohesion Policy backs ‘green economy’ for growth and long-term jobs in Europe,” EC press release 9 March 2009, <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/369&format=HTML>

endorsement and monitoring. A methodology has been defined by the South West Regional Development Agency to assist in achieving this objective. Another example is Malta, where investments supported by EU Cohesion Policy funds must demonstrate a commitment to be low carbon, and aspire towards carbon neutrality. The political acceleration of the global climate change discourse implies that there may be opportunities for modifying the current programming documents towards further climate resilience and influencing the future ones, to increase the integration of climate change into the next programming period, 2014-2020.

**Box 5.9: Integrating climate change into project formulation and selection**

**Integrating climate change issues into regional development programmes in Malta**

The project proponent is invited to describe how the project will take into account the issues of climate change and environmental sustainability. The Project Selection Committee evaluates and ranks projects submitted under each Call against the approved Eligibility and Selection Criteria. Fifteen percent of the score is dedicated to environmental sustainability and climate change issues, so project proponents have a strong incentive to take them into account. There are two separate selection criteria that are focused on environmental sustainability and climate change. Environmental sustainability accounts for five percent of the total score; the carbon impact is ten percent.

**A three-stage process for evaluating environmental sustainability of projects in the South West of England**

As part of the Convergence Programme for Cornwall & the Isles of Scilly, a three-stage approach was developed in order to meet the objectives of the Operational Programme regarding environmental sustainability: pre-commissioning, commissioning and appraisal. At the first stage a project must outline its role in meeting crosscutting themes through an assessment of positive and negative impacts and consideration of alternatives. The second stage provides deeper insight into projects’ impacts and explores measures for mitigation and exploitation as well as adaptation of relevant monitoring indicators. The third and final assessment includes recommendations and monitoring requirements for each of the crosscutting themes indicated.

**Other public financing instruments**

National and regional-level financial instruments that support climate change related measures include subsidies, tax incentives and specialised funds. These financial instruments provide support for measures including energy efficiency in housing, production of energy from RES, sustainable transport and others.

In many RSC regions, specialised national and regional subsidy programmes play a very important role in achieving climate-related goals. Not only do they act as incentives to encourage innovation and behaviour change, but they frequently produce highly visible success stories which enable regions to further promote the benefits of low carbon economy and action on climate change. The following tables present some examples of subsidy programmes, tax incentives, and other specialised instruments used across the partnership to support climate and low carbon initiatives.

**Table 5.12: Examples of state and regional subsidies in RSC regions**

Sector	Types of support
Energy	Refunds on the purchase of products using solar and wind energy; electric vehicles; and photovoltaic energy generation equipment Aid for replacement of equipment with more energy efficient and less carbon intensive systems
Housing	Increasing energy efficiency in the housing sector Micro-generation technologies for the housing sector
Sustainable mobility	Subsidies provided to increase energy efficiency and sustainable mobility

**Box 5.10: Subsidies in Hungary (examples from North Great Plain)**

<p><b>“Panel Program” supporting energy efficient refurbishment of prefabricated multi-apartment panel buildings:</b> Subsidies are provided by the Ministry of Local Government to housing associations for energy efficient refurbishments of buildings, including thermal insulation and modernisation of buildings and the use of RES.</p> <p><b>Application of individual control and metering of apartments in district heating systems:</b> Subsidies and low-interest loans to households for installing metering devices enabling individual payment and encouraging conservation. Administered by The Ministry for National Development and Economy, the Ministry of Local Government and the Hungarian Development Bank.</p> <p><b>“Program for Successful Hungary”:</b> Subsidies and low-interest loans for modernisation of traditionally constructed buildings to improve energy efficiency; administered by the Ministry for National Development and Economy and the Hungarian Development Bank. Supported activities include improvement of thermal insulation, modernisation of existing heating and water supply systems</p> <p><b>Financial instrument (subsidy and/or loan) of the Ministry for National Development and Economy for outdated appliance exchange:</b> Support is provided for the purchase of household refrigerators, freezers and other household appliances with outstanding energy performance.</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Table 5.13: Examples of tax incentives**

Sectors	Areas of support
Energy	Reduced VAT rate for micro-generation and energy efficiency measures Excise tax deduction for the bio content of diesel
Housing	Deduction of the costs of participation for improving energy efficiency in buildings
Transport	Revision of motor vehicle registration tax and licensing system to encourage the use of vehicles with lower CO <sub>2</sub> emissions

### Box 5.11: Examples of specialised financing instruments in RSC regions

**Burgenland (AT)** has a regional instrument to provide subsidies for alternative energy solutions as part of its regional objective to achieve energy autonomy. Other regional funds provide loans for building and reconstruction of homes and loans and subsidies for SMEs

**Cornwall (UK)** The UK has several institutions that support low-carbon initiatives: the Climate Change Capital Ventus Funds with a budget of over £54 million specifically targeted at the UK onshore RE sector; Triodos renewable energy investment fund and similar bank based schemes; and the Salix loan scheme that supports organisational investments to carbon reduction projects in the health, education, government and local authority sectors.

**The Polish “EcoFund”** was established in 1992, following Poland’s debt relief agreement with the “Paris Club” of western creditor nations. Under current agreements, total contributions to EcoFund through year 2010 (when most of these agreements expire), will reach approximately USD 474 million. Investments aimed at reducing GHG emissions are among the fund’s priority issues for financing.

**The National Trust EcoFund of Bulgaria** was established in October 1995 through the Debt for Environment Agreement between Switzerland and Bulgaria. The EcoFund manages funds provided under debt-for-nature and debt-for-environment swaps, as well as funds provided under other types of agreements with international, foreign or Bulgarian sources aimed at environmental protection in the country. By now the Fund has financed 87 projects at the total amount of approximately 13 million EUR. The Fund is an independent institution and supports projects in four priority areas: clean up of past pollution, reduction of air pollution and water protection (<http://www.ecofund-bg.org>)

## 6. CONCLUSIONS, NEXT STEPS AND THE RSC PROJECT RESPONSE

At the beginning of the baseline assessment process, working group members agreed that two important purposes of the work would be:

- 1) to enable the RSC partners to get to know more about each others' needs and good experiences with climate change; and
- 2) to define in greater detail the characteristics of the "climate confident" region to which partners aspire.

This, the partners agreed, would pave the way for the future project activities and outputs, enabling the work to be tailored to fit the real needs and objectives of partners and other European regions. At the end of the process, it is clear that these things have been achieved.

The Regional Climate Confidence Index, its results, and two draft versions of this report have been presented to RSC partners for their review, discussion and feedback both in partnership meetings and by email, so that partners now have a good understanding of the situation in each RSC region. By collecting, evaluating and finally analysing key data and information about GHG emissions, energy use, policy frameworks, institutions, socio-political awareness and financial instruments related to climate change, the RSC partnership has gained considerable new insight into what makes a region "climate confident." This work has demonstrated that European regions face serious challenges in tackling climate change and re-orienting their economies towards the low carbon model, but that there are also some success stories from within the partnership which can be used to help others find their way.

This conclusions chapter looks at some of the lessons learned from the baseline assessment process, and how they can be taken into account in the subsequent RSC project activities. It will also define the characteristics of a climate confident region, based upon the performance of the RSC regions in the RCCI and the analysis of external factors. Finally, this chapter will discuss how the subsequent RSC activities will be designed and tailored to fit the needs of the RSC partnership – and other European regions – in their quest to face the challenges of a changing climate and the opportunities presented by a shift towards low carbon economy.

### 6.1. KEY LESSONS LEARNED

For the RSC partners, designing, completing and analysing the baseline questionnaires on a variety of complex factors related to climate change was a useful learning process in itself. These lessons encompass how regions collect and access climate and energy related data, and how climate change and particularly issues related to the shift to a low carbon economy can be monitored and measured at the regional level. The lessons learned will inform the future work of the project, particularly the toolkit on indicators and criteria, which will contain a revised version of the RCCI for European regions to use on a regular basis.

**Regions have difficulty to access clear, consistent data on basic GHG emissions and energy use.**

There are many reasons for this. Paramount among them is the complex nature of measuring GHG emissions and energy use within a specific territory - and sub-national territories in particular - and finding ways to account for issues such as import/export of energy commodities and emissions. Figures for regions are generally based on a breakdown of national figures, and there exist differing, sometimes non-comparable ways of calculating these.

**Regions tend to have access to energy consumption data in terms of Final Energy Consumption (FEC) rather than Gross Inland Consumption (GIC).<sup>43</sup>**

This is most likely due to the complications in tracking energy across borders, as discussed above. The FEC measure of energy consumption excludes deliveries to the energy transformation sector and to the energy industries themselves. This measure gives useful insight to the energy consumption of the main economic sectors of the region – industry, transport and households. And these sectors are typically the targets of national and regional policies aimed at improving energy sustainability and reducing GHG emissions. However, the energy consumed by the energy transformation sector does have an impact on GHG emissions, so disregarding this in the RCCI can overestimate a regions' climate confidence.

**Regions from the EU new member states will have difficulty to provide data about GHG emissions and energy at the regional level.**

In most cases, this is because political decentralisation has been recently introduced, and these countries have not found it necessary to break these measurements and statistics down to the regional level. Regions from these countries will eventually need access to this data in order to effectively monitor their climate-related status and actions.

**It is difficult for regions to self-analyse and score their performance on key issues without specific benchmarks for comparison purposes; these benchmarks must be carefully crafted to remain relevant across the EU.**

Issues 4 – 7 of the RCCI were subjectively evaluated and scored by either the regions themselves or the RSC assessments team. In future versions of the RCCI methodology, all of the qualitative issues will need to be self-evaluated by the regions. The baseline assessment showed that evaluators from the regions have widely varying performance standards, and more information is required to make comparable assessments.

## **6.2. DEFINING A “CLIMATE CONFIDENT” REGION**

The baseline assessment process has underlined that there is no single path to climate confidence for regions. Each region has its own unique set of starting conditions, and important external factors that may favour or hinder its path towards climate confidence. Nevertheless, the baseline assessment process has uncovered a number of general characteristics that indicate a region is on its way towards becoming more climate confident. In addition, the process has identified regions from the RSC partnership that have already achieved success in certain areas, and will be able to share that success with other partners in the future RSC activities. Regions must be aware of their own particular circumstances and must be able to choose those policy targets, incentives, regulations and

---

<sup>43</sup> See footnote 25 for definitions of the different ways of measuring energy consumption - FEC and GIC.

other measures that will enable them to bring down GHG emissions to the greatest extent possible while achieving other economic and social objectives.

## **GHG emissions and sustainable energy use**

Ideally, climate confident regions will have low GHG emissions, as a result of an energy efficient economy and active use of renewable energy sources. The RCCI and the further analysis in this report has shown that there are many important external factors that affect a region's performance with regard to GHG emissions and energy use. These include certain demographic or economic factors over which the region may have limited or no control, such as cold weather and the need for heat, population density, and the structure of the economy. There are, however, certain benchmark figures (top performers, or the EU-27 averages as used in this analysis) that enable regions to evaluate their performance against others. Policy targets - whether national, devolved to the regions, or set by the regions themselves – and the path towards achieving them are another way for regions to evaluate their performance.

Burgenland (AT) and Piedmont (IT) stand out as regions that have made considerable progress in the use of renewable energy sources. Burgenland (AT) has achieved this mainly through de-centralised local energy production using all the available renewable resources in the region. As a result, GHG emissions are relatively low – and this is likely due to the favourable energy mix. Meanwhile, Malta, a small island nation with very high population density, has GHG emissions and energy consumption rates that are the lowest among the RSC regions. This, however, may be unsustainable in the long term as Malta relies completely upon oil for its energy needs and is a producer of energy.

## **Policy frameworks**

The ideal climate confident region will have a comprehensive policy framework that addresses climate change through appropriate and realistic objectives, quantified and ambitious targets, and a set of regulatory and incentive measures that can enable implementation. In most cases this will include an over-reaching climate-change oriented strategy or action plan, supported by proper integration of climate change issues into sectoral policies and planning documents. Both adaptation and mitigation concerns should be included in the climate change policy framework, based to the extent possible on concrete and reliable scientific information and other studies. Another important consideration is the degree of legal and political power and jurisdiction given to a regional authority by the national system. In countries with long-standing traditions of political decentralisation and regional authority – mainly in the EU-15 – regions are more likely to have developed climate change policies.

The three top scorers in this area – Cornwall (UK), La Rioja (ES) and Piedmont (IT) - report that they have overall climate change action plans or strategies and that they have successfully managed to integrate climate change into major sectoral policies. There has been considerable success in Cornwall, which has established a specific team for the purpose of low carbon and climate change planning, which has reached out to a wide range of local stakeholders through a holistic and innovative planning approach.

## **Institutional capacity**

Climate confident regions will have a network of institutions that have a clear mandate to combat climate change and promote low carbon economy, as well as dedicated and trained staff, access to research and information, and the financial means to support their objectives and activities. The baseline assessment found that a likely formula for good performance is one where the regional authority itself has primary responsibility for climate change. Another positive characteristic is the existence of specialised support agencies that can provide technical assistance on issues related to climate change. Although all of the RSC regions consider that there is room for improvement in the capacity of their institutions, there are several interesting practices among the partners that will be highlighted during the project activities. These include inter-institutional partnerships for coordination of policies and actions [Cornwall (UK), Piedmont (IT)]; and the use of special governmental coordinating bodies for climate change [La Rioja (ES), Malta].

## **Social and political awareness**

Social and political awareness about climate change, including its risks, the need for action, and potential benefits is a key cornerstone of a climate confident region, yet also difficult to measure. One RSC success story in this area is Burgenland (AT), which has raised considerable popular and political support through its renewable energy programmes.

## **Financial instruments**

Climate confident regions will make good use of the financial tools available to them, such as EU funds and national subsidy programmes, through the integration of climate change issues at programme and project levels. Examples of this include the integration of a low carbon or carbon neutrality principle into all publicly supported investments [Cornwall (UK), Malta]. Climate confident regions must also take advantage of market-based instruments for supporting energy efficiency and renewable energy use and other mechanisms that support reductions in GHG emissions. Several of the RSC regions have varied and innovative incentive programmes which can be showcased in one of the RSC workshops or seminars.

## **6.3. PAVING THE WAY FOR FURTHER PROJECT ACTIVITIES AND OUTPUTS**

The baseline report is the first step of the RSC project and sets the stage for the rest of the project. The findings and considerations of the baseline assessment report will enable RSC partners to carry out the subsequent project activities, as follows:

### **Indicators and criteria report and toolkit**

The RSC project will compile a comprehensive set of indicators and criteria that measure and describe a climate confident region. The work will be compiled into a short background report and toolkit for self-use by RSC and other European regions. This will enable:

- Regular monitoring of climate-related performance of the region
- Benchmarking amongst the regions, EU averages and other benchmarks
- Identification of gaps in performance and possible means of addressing them

The indicators and criteria will be based upon the RCCI, with an upgraded version of the index and methodology included as the first toolkit module. It will also include instructions and advice on measuring and interpreting climate change indicators, useful overviews of other relevant indicator systems and country monitoring techniques, and advice on how to use the method over years for continuous monitoring. A capacity-building workshop will be held to present the toolkit to relevant staff from the RSC regions.

### **Macro-economic analysis of three regions' carbon economies**

An in-depth analysis of three RSC regions - Burgenland (AT), Cornwall (UK) and Marche (IT) - will be carried out by an external contractor to identify opportunities for and the costs and effects of moving to a low carbon economy in these three regions, and to provide a generic and transferable model for use in other European regions. This work will build upon the baseline assessment results for these three regions.

### **Strategic assessments and climate change in regional planning: a discussion paper and seminar**

This work will examine the use of strategic assessment processes such as Strategic Environmental Assessment (SEA) and Sustainability Assessment (SA) to integrate climate change issues into regional levels plans and programmes. The work will be based on a survey of experience in RSC regions, an overview of existing literature and guidance on the topic, and will include guidance for regional authorities and practitioners on how to include climate change into assessments.

### **Capacity-building workshops and thematic seminars**

A series of three interactive workshops and three seminars will present the RSC project outputs and partners' good experience and best practices to key staff and stakeholders from the partner regions. The lessons and practices identified in the baseline assessment will provide some of the content for these events.

### **Methodological handbook**

This will be the final project output, and will tie together the results of the previous work, including the practices identified through the baseline assessment into a user-friendly format for European regions.

## Pilot actions

Four regions will conduct pilot actions to test the recommendations in the methodological handbook. The findings of the baseline assessment will serve as a background for these activities.

### 6.4. PUTTING IT ALL TOGETHER: MATCHING THE PROJECT ACTIVITIES WITH PARTNER NEEDS

Through the questionnaires and the results and analysis of the RCCI, the baseline assessment process has identified some key gaps that many or most of the RSC regions must overcome as they progress toward climate confidence. The subsequent RSC activities, while defined generally in the project proposal and work plan stage, will be tailored more specifically to meet these needs. Table 6.1 shows the gaps and needs in the left column and the ways in which the RSC activities will serve them is presented in the left column.

**Table 6.1: Needs specified by the baseline assessment and corresponding RSC activities**

Specified needs	RSC activities
<b>Availability of data</b>	
Lack of adequate and regularly updated information and data on climate change key indicators of performance; Lack of procedures for regular monitoring and use of this information	<b>Indicators and criteria report and toolkit:</b> regions can use as guidance to develop their own monitoring programme; will encourage regions to regularly access, organise, update and interpret this information. <b>Capacity building workshop:</b> a workshop will introduce the indicators toolkit and explain how to use it. Data availability issues and ways to overcome them may be a workshop topic.
<b>Sustainable Energy</b>	
Energy consumption and GHG emissions in regions from NMS are low per capita but high vs GDP level; need to decouple emissions from expected growth Low share of RES in energy consumption; need to increase to meet targets	<b>Capacity building workshop/technical seminar:</b> Several RSC partners have good experience in encouraging the growth of sustainable energy practices and can share their experiences in a workshop or seminar dedicated to this topic. <b>Macro-economic analysis:</b> will analyse RES share in three partner regions and propose strategies for improvement.

Specified needs	RSC activities
<b>Policies and planning</b>	
<p>Climate change issues are not sufficiently transposed or integrated into all policies, planning processes and funding programmes;</p> <p>Adaptation issues are not adequately addressed in the strategic documents;</p> <p>Lack of adequate integration of climate change issues into Strategic Environmental Assessment of key plans and programmes;</p> <p>Lack of clear and comprehensive climate change strategy or action plan</p>	<p><b>Indicators and criteria report and toolkit:</b> will include qualitative indicators related to policy planning as well as case studies and examples</p> <p><b>Capacity building workshop/technical seminar:</b> can include topics such as: Cornwall’s experience in preparing a regional climate change action plan; planning process and positive practices in La Rioja, Piedmont and Malta</p> <p><b>Assessments discussion paper:</b> will cover experience with integrating climate change into strategic assessments in the RSC partner regions, present existing tools across Europe and provide concrete guidance for the RSC regions</p> <p><b>Macro-economic analysis:</b> will outline measures for improvement of the policy framework in the three partner regions and provide advice for other EU regions</p>
<b>Institutions</b>	
<p>Lack of a clearly delineated institutional responsibility for climate mitigation and adaptation at the regional level or overlapping responsibilities among institutions;</p> <p>Institutions lack adequate numbers of staff to handle the workload and specific expertise in climate change issues;</p> <p>Institutions lack the capacity to integrate climate change into SEA</p>	<p><b>Capacity building seminar:</b> analyse and highlight successful institutional approaches; compare and contrast the pros and cons of various approaches across the RSC partnership</p> <p><b>Assessments discussion paper:</b> will address the issue of institutional capacity to manage climate change and mainstream climate considerations into strategic planning and policy making</p> <p><b>Macro-economic analysis:</b> will outline potential institutional improvements in three partner regions for achieving the low carbon development scenario</p>
<b>Financing instruments</b>	
<p>“Horizontal” integration of climate change issues across all of the planning and programming of the EU funds is weak</p> <p>In many RSC regions, specialised national and regional subsidy programmes play a very important role in achieving climate-related goals but in other countries such experience is limited</p>	<p><b>Capacity building workshop/thematic seminar:</b> can highlight funding programme management approaches used in Cornwall and Malta; Burgenland experience in supporting a market for and investments in RES; and the national subsidy schemes in Hungary</p> <p><b>Assessments discussion paper:</b> will analyse specific good practices for inclusion of climate change as a cross-cutting theme in funding plans and programmes</p>

## GLOSSARY

1. **Business-as-usual** - the scenario for future world patterns or energy consumption and greenhouse gas emissions which assumes that there will be no major changes in attitudes, policies and priorities.
2. **Carbon tax** - a policy that would tax fossil fuels according to the amount of carbon they contained. This reduces the demand for fossil fuels in general and causes realignment away from coal to less polluting natural gas, or renewable sources of energy.
3. **Carbon abatement technologies** – innovative technologies applied to reduce carbon dioxide emissions in power generation and carbon intensive process industries (chemical, cement, metal).
4. **Carbon dioxide equivalent** – universal unit of measurement used to determine global warming potential of greenhouse gases, the amount of carbon dioxide by weight in the atmosphere that would cause the same amount of radioactive forcing as a given weight of another greenhouse gas.
5. **Carbon neutrality** – achievement of net zero carbon emission in atmosphere by balancing amounts of carbon dioxide released with an equivalent amount captured and offset by certain region or country.
6. **Clean Development Mechanism** – project based mechanism under the Kyoto Protocol through which developed countries may finance greenhouse gases emission reduction which otherwise would have not occurred or removal projects in developing countries, receive credits and use them to meet mandatory limits on their own emissions.
7. **Climate change adaptation** – adjustment of ecological, social and economic systems in response to the current or expected climate change and its effects in order to moderate or offset possible damages and exploit beneficial opportunities.
8. **Climate change mitigation** – human interventions to reduce greenhouse gases emissions and to enhance their sinks aimed at reduction of climate change effects and impacts.
9. **Climate change resilience** – the ability of a social, ecological and economic system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change. The climate change aspect refers to the reduction of the energy and climate vulnerability of the regions and their economies.
10. **Climate proof** – decrease of climate vulnerability of the natural and human systems and subsequent enhancement of their climate change resistance.
11. **Climate vulnerability** - the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including extremes of climate variability. Vulnerability is a function of the character, rate and magnitude of climate change and variation to which a system is exposed, its adaptive capacity and sensitivity.
12. **Carbon dioxide emissions** – emissions of carbon dioxide coming from combustion of fossil fuels such as coal, oil, natural gas.
13. **Cohesion Policy (European Union Regional Policy)** – instrument of economic integration introduced by European Union for Member States with GNI per inhabitant less than 90% of the Community average to reduce their social and economic disparities with more affluent regions.
14. **Decarbonisation** – decrease of the carbon dioxide emission intensity of unit of GDP.
15. **Energy consumption** – amount of primary and secondary energy consumed in a system, process, by an organisation or society.
16. **Energy efficiency** – reduction of amount of energy used to provide the same amount of given energy service (heating, cooling, lighting, etc.) or level of activity.
17. **Energy intensity** – ratio of energy consumption to a measure of the demand for energy service or economic or physical output, in case of national economy – total energy consumption per unit of GDP.
18. **Energy production** – production of energy in the form of heat or electricity from primary or secondary sources of energy to provide and fulfil demand in energy services.

19. **European Regional Development Fund (ERDF)** - The ERDF is intended to help reduce imbalances between regions of the Community. The Fund was set up in 1975 and grants financial assistance for development projects in the poorer regions. In terms of financial resources, the ERDF is by far the largest of the EU's Structural Funds.
20. **GHG emissions inventory** – set of data universally applied by UNFCCC parties to estimate and monitor relative contribution to greenhouse effect and climate change of anthropogenic greenhouse gases emitted by individual sources, regions and nations.
21. **Global warming** – average increase in the temperature of the atmosphere contributing to changes in global climate patterns and induced by anthropogenic emission of greenhouse gases.
22. **Green industries** – industries applying environmentally friendly resource and energy efficient, non-polluting and low-carbon technologies to mitigate their negative impact on environment.
23. **Green transport** – any means of sustainable transportation with low emissions and impact on the environment; includes vehicles using renewable sources of energy, low carbon fuel and animal or human muscle-powered vehicles.
24. **Greenhouse gases (GHG)** – atmospheric gases contributing to the naturally occurring greenhouse effect through absorption of infrared radiation and responsible for causing climate change and global warming; these gases include carbon dioxide, methane, nitrous oxide, hydrocarbons, per fluorocarbons, sulphur hexafluoride.
25. **Gross Domestic Product (GDP)** – the total market value of all the goods and services produced nationwide during a specified period of time.
26. **Gross domestic product at market (current) prices** - the sum of the gross values added of all resident producers at market prices, plus taxes less subsidies on imports.
27. **Gross Primary Production (GPP)** – total energy or nutrients assimilated by ecological unit such organism, population or entire community.
28. **Gross value added** - the value of output less the value of intermediate consumption; it is a measure of the contribution to GDP made by an individual producer, industry or sector; gross value added is the source from which the primary incomes of the SNA are generated and is therefore carried forward into the primary distribution of income account.
29. **Joint Implementation (JI)** – project based mechanism under the Kyoto Protocol through which a developed country can receive "emissions reduction units" when it helps to finance projects reducing net greenhouse-gas emissions in another developed country or in a country with an "economy in transition".
30. **Low Carbon Economy (LCE)** - a concept of economy defined as one that is 80% less carbon intensive than our present one and based on low energy consumption, low pollution and low emissions. The fundamental aim is to achieve high energy efficiency, to use clean/renewable energy and to pursue green GDP via technological innovation.
31. **Low-carbon region (LCR)** - a region with minimal GHG emissions as a result of integrating all aspects of the economy around technologies and practices with low emissions. LCRs include communities, buildings, transportation and technologies that use or generate energies and materials efficiently, and that dispose or recycle their wastes to minimise GHG emissions.
32. **National allocation plan (NAP)** – national plans introduced by European Commission for Member states for allocation of CO<sub>2</sub> emission allowances to energy-intensive industrial plants for the 2008-2012 trading period under European Union Emissions Trading Scheme. There were two, NAP 1 and NAP 2, for the 2005-2007 and 2008-2012 periods respectively.
33. **Precautionary principle** - the principle of prevention being better than cure, applied to potential environmental degradation.
34. **Renewable energy** - energy sources that are not depleted by use, for example, small hydropower, PV solar cells, wind power and coppicing.
35. **Renewed Lisbon Strategy** – strategy initially launched by EU in 2000 to make it “the most competitive and dynamic knowledge-driven economy by 2010”, which was reviewed in 2005 and received new

focus on innovation, growth and employment, and promoted strengthening of social cohesion and mobilisation of community resources in the strategy's environmental, economic and social dimensions.

36. **Sustainable Development Strategy (SDS)** - EU-wide strategy setting policy framework to deliver sustainable development, achieve continuous improvement of quality of life in the European Community and ensure environmental protection, prosperity and social cohesion.
37. **Strategic Environmental Assessment (SEA)** – formal environmental impact assessment applied at the level of programs, plans and policies in order to identify, evaluate, modify, avoid or minimise their adverse environmental effects prior to implementation.
38. **Stern Review** – released in October 2006 on the economics of climate change. The report discusses the effect of climate change and global warming on the world economy, the principal message being that the world must act now on climate change or face devastating economic consequences.
39. **Vulnerability assessment** – is the process of identification, quantification, prioritisation and correction of vulnerabilities in social, environmental or economic systems that make them susceptible to climate change and destabilisation.
40. **White Paper on Climate Change Adaptation** – document issued by European Commission setting out a framework for reducing EU's vulnerability to climate change and outlining actions needed to strengthen the EU's resilience in coping with a climate change through nationally and regionally applied adaptation measures widely integrated in EU key policy areas such as Cohesion Policy.

# LIST OF BOXES

- Box 4.1: Example for scoring issue 1 (GHG Emissions)..... 34
- Box 4.2: How to understand the scores?..... 35
- Box 4.3 : Example for scoring Issue 2 (Energy Consumption) ..... 37
- Box 4.4: How to understand the scores?..... 38
- Box 4.5: RES share in production capacity in RSC regions..... 39
- Box 4.6: Example for scoring Issue 3 (Renewable Energy) ..... 40
- Box 4.7: How to understand the scores?..... 40
- Box 4.8: High energy import dependency in Malta and Piedmont (IT) ..... 57
- Box 4.9: Renewable energy: success and potential..... 58
- Box 4.10: Case study on the three Italian RSC regions ..... 60
- Box 5.1: Example of scoring issue 4 (Policy Frameworks) ..... 64
- Box 5.2: Climate change planning in Cornwall (UK) ..... 72
- Box 5.3: Example of Scoring Issue 5 (Institutional Capacity)..... 74
- Box 5.4: Examples of unique institutional approaches to climate change in RSC regions..... 78
- Box 5.5: The role of inter-institutional partnerships in climate change achievements ..... 78
- Box 5.6: Example of Scoring Issue 6 (Social and Political Awareness and Readiness) ..... 79
- Box 5.7: Climate change skills-building in Cornwall (UK)..... 81
- Box 5.8: Example of Scoring Issue 7 (Financial Instruments) ..... 82
- Box 5.9: Integrating climate change into project formulation and selection..... 86
- Box 5.10: Subsidies in Hungary (examples from North Great Plain) ..... 87
- Box 5.11: Examples of specialised financing instruments in RSC regions ..... 88

# LIST OF CHARTS

- Figure 1: Economic performance of RSC regions in 2006..... 4
- Figure 2: RSC regions’ RCCI scores..... 6
- Figure 3: Overview of RSC regions’ performance for energy and GHG emissions issues in the RCCI..... 7
- Figure 4: RSC regions’ scores for qualitative issues in the RCCI ..... 9
- Figure 1.1: Planned project activities and outputs..... 18
- Figure 2.1: Regions for Sustainable Change partnership..... 20
- Figure 2.2: Surface area of the RSC regions in km<sup>2</sup>, 2006..... 21
- Figure 2.3: Population of the RSC regions, 2006 ..... 22
- Figure 2.4: RSC regions’ economic structure, (%) of Gross Value Added by sectors in 2006..... 24
- Figure 3.1: RCCI scores for the RSC regions..... 31
- Figure 4.1: GHG emissions per capita in the RSC regions in 2006 (tCO<sub>2</sub>/inhabitant)..... 33
- Figure 4.2: GHG intensity in RSC regions in 2006 (g CO<sub>2</sub>/€ GDP at PPS) ..... 34
- Figure 4.3: Final Energy Consumption per capita in the RSC regions, 2006..... 36
- Figure 4.4: Energy intensity in RSC regions in 2006 (toe/M€ GDP at PPS)..... 37
- Figure 4.5: Renewable energy in final energy consumption in RSC regions ..... 39
- Figure 4.6: GHG emissions per capita vs. energy consumption per capita (% from EU average) ..... 43
- Figure 4.7: Energy vs. GHG intensity (% from EU average) ..... 44
- Figure 4.8: Overview of external factors affecting energy and emissions ..... 45
- Figure 4.9: RSC regions’ GDP per capita vs. RCCI total score ..... 47
- Figure 4.10: RSC regions’ GDP per capita vs. RCCI scores for Issues 1 - 3 ..... 47
- Figure 4.11: GDP per capita vs. RCCI scores for Issues 4 – 7 ..... 48
- Figure 4.12: Relationship between GHG emissions per capita and GHG intensity (% from EU average) ..... 49
- Figure 4.13: Relationship between energy consumption per capita and energy intensity (% from EU average) ..... 50
- Figure 4.14: GHG emissions by sector, % share of total\* ..... 52
- Figure 4.15: Energy consumption by fuel source\* (% share) ..... 53
- Figure 4.16: Comparison of current RES share of FEC and 2020 national targets for the RSC regions. 54
- Figure 5.1: RSC national targets for GHG emissions reduction in non-ETS sectors..... 69

## LIST OF TABLES

Table 1: RCCI issues, sub-issues and score calculation basis .....	5
Table 2: Status of development of climate change policy framework .....	10
Table 3: Institutions responsible for climate change in RSC regions.....	11
Table 1.1: Organization of the report .....	19
Table 2.1: Population density in the RSC regions, 2006 .....	23
Table 2.2: Regional GDP per capita (PPS and Euro) 2006.....	24
Table 2.3: Results of DG Regional Policy climate change and energy vulnerability indices for RSC regions .....	26
Table 3.1: Basis for calculation of scores in the Regional Climate Confidence Index .....	28
Table 4.1: RSC regions' scores for Issue 1 (GHG Emissions) .....	35
Table 4.2: RSC regions' scores for energy consumption.....	38
Table 4.3: RSC regions' scores for renewable energy use .....	40
Table 4.4: A review of GHG emissions and energy figures for RSC regions against EU-27 averages, 2006 .....	41
Table 4.5: Nominal GDP per capita and development groups for RSC regions.....	46
Table 4.6: Economic structure of RSC regions against energy and emissions data .....	51
Table 4.7: GHG emissions by sector for the RSC regions, tCO <sub>2</sub> per capita .....	52
Table 4.8: Potential for increasing RES production, as reported by the RSC regions.....	55
Table 4.9: Barriers for further penetration of RES, as reported by the RSC regions.....	56
Table 4.10: Energy import dependency of RSC countries .....	58
Table 4.11: GHG emissions, energy and other basic data for the three Italian RSC regions.....	60
Table 5.1: RSC regions' scores for Policy Frameworks .....	66
Table 5.2: Status of development of climate change policy framework.....	67
Table 5.3: Regional GHG emissions reduction targets for 4 RSC regions .....	69
Table 5.4: Regional RES targets for 4 RSC regions.....	70
Table 5.5: Level of integration of climate change into key regional sectoral policies.....	71
Table 5.6: Selected elements of sectoral policy documents integrating climate changes issues .....	72
Table 5.7: RSC regions' scores for Institutional Capacity .....	76
Table 5.8: Institutions responsible for climate change in RSC regions.....	76
Table 5.9: RSC partners' institutional group against evaluation for institutional capacity and policy frameworks* .....	77
Table 5.10: RSC regions' scores for Social and Political Awareness and Readiness .....	81
Table 5.11: RSC partners index scores for Financial Instruments .....	84
Table 5.12: Examples of state and regional subsidies in RSC regions .....	87
Table 5.13: Examples of tax incentives.....	87
Table 6.1: Needs specified by the baseline assessment and corresponding RSC activities .....	94

## REFERENCE LIST

### Publications

- Brown, Marilyn A. and Sovacool, Benjamin K., 2007. *Developing an "Energy Sustainability Index" to Evaluate American Energy Policy*.
- CEE Bankwatch Network and Friends of the Earth Europe, 2007. *EU cash in climate clash - How the EU funding plans are shaping up to fuel climate change*.
- Cornwall Sustainable Energy Partnership, 2004. *The Energy Strategy for Cornwall - Action Today for a Sustainable Tomorrow*.
- Council of the European Union, 2009. *Press Release: Council adopts climate-energy legislative package*.
- European Bank for Reconstruction and Development, 2008. *Securing sustainable energy in transition economies*.
- EC COM (2009) 147 final, "White Paper: Adapting to climate change: Towards a European framework for action", Brussels 1 April 2009
- EC, 2009. *Citizen's summary: EU climate and energy package*.
- EC DG Regional Policy, 2009. *Regions 2020: The Climate Change Challenge for European Regions*.
- EC DG Transport and Energy, 2009. *EU energy and transport in figures*.
- EC, SEC (2008), *Regions 2020: An Assessment of Future Challenges for European Regions*. Brussels, November 2008.
- ENEA Working Group on Climate Change and Cohesion Policy, 2009. *Improving the Climate Resilience of Cohesion Policy Funding Programmes: An overview of member states' measures and tools for climate proofing Cohesion Policy funds*. Szentendre, Hungary
- European Environmental Agency, 2009. *Greenhouse gas emission trends and projections in Europe 2008: Tracking progress towards Kyoto targets*.
- GRDP Project, 2006. *Greening Projects for Growth and Jobs: Guidance on integrating the environment within regional development programmes and their projects*.
- OCED/IEA, 2005. *Energy Statistics Manual*.
- Open Europe, 2008. *The EU Climate Action and Renewable Energy Package: Are we about to be locked into the wrong policy?*
- Partnership for European Environmental Policy Research, 2009. *Climate Policy Integration, Coherence, and Governance*.

### Websites

- California Energy Commission, 2009 California Climate Change Glossary:  
[http://www.climatechange.ca.gov/glossary/letter\\_g.html](http://www.climatechange.ca.gov/glossary/letter_g.html)
- Climate Change Glossary, Word Definitions Related to Climate Change and Global Warming:  
[http://climatechange-glossary.com/Glossary\\_O.html](http://climatechange-glossary.com/Glossary_O.html)
- European Commission, Regional Policy Glossary Inforegio:  
[http://ec.europa.eu/regional\\_policy/glossary/glos2\\_en.htm#d](http://ec.europa.eu/regional_policy/glossary/glos2_en.htm#d)
- EUROSTAT - The official database of the Statistical Agency of the European Union:  
[www.epp.eurostat.ec.europa.eu/portal/page/eurostat/home](http://www.epp.eurostat.ec.europa.eu/portal/page/eurostat/home)

## ANNEX: PROFILES OF THE RSC REGIONS

### CORNWALL, UNITED KINGDOM

#### General description of the region\*

Population	Inhabitant	526 400
Surface area	Km <sup>2</sup>	3 563
Nominal GDP	€	10 865 314 850
GDP at current market prices	€	9 655 094 785
Percent of national GDP generated in the region	%	0.56
GDP per capita at current market prices	€/inhabitant	18 300
GDP per capita as percent of EU average	%	78

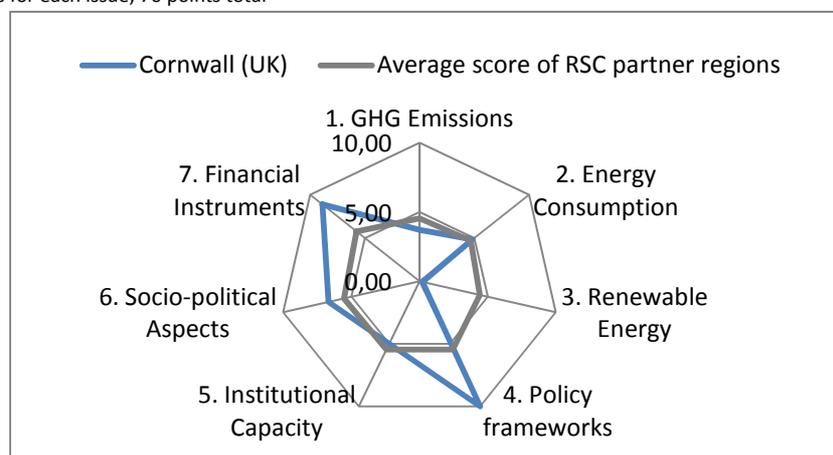
Structure of the region's economy	Industry	22.40%
	Service	68.00%
	Agriculture	3.20%
	Tourism	6.80%

\*All data are 2006 unless otherwise noted

#### Regional Climate Confidence Index Scores\*

1. GHG Emissions	3.70
2. Energy Consumption	4.85
3. Renewable Energy	0.22
4. Policy Frameworks	10.00
5. Institutional Capacity	5.00
6. Socio-political Aspects	6.67
7. Financial Instruments	8.89
<b>Total</b>	<b>39.32</b>

\*Maximum 10 points for each issue; 70 points total

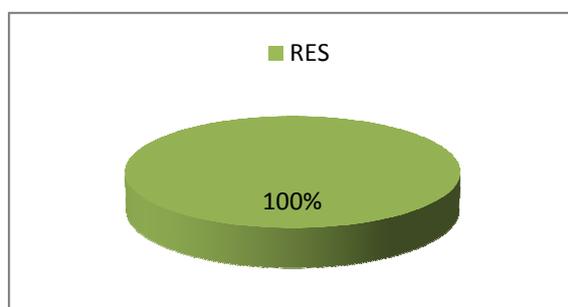


## Key GHG emissions and energy figures

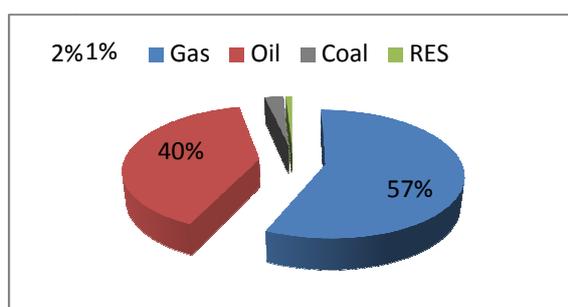
Total GHG emissions	Mtons of CO <sub>2</sub> eq	5.56
GHG emissions per capita	Mtons/inh	10.56
GHG intensity	g CO <sub>2</sub> /€	575.86

Final energy consumption (FEC)	TOE	1 116 100
FEC per capita	TOE/inh	2.12
FEC intensity	TOE/M€	115.60
Energy production capacity	MWe	53.00

### Energy production capacity of the region by fuel type (percent of total)



### Energy consumption by fuel type (percent of total)



Renewable share in energy production	100%
Renewable share in energy consumption	0.71%
Main RES types in energy production	Wind, landfill and sewage gas
Other potential RES	Geothermal, solar, biomass, wave, small hydro
Main barriers to higher penetration of RES	Combination of various social, economic and political barriers

\*All data for 2006 unless otherwise noted

## Climate policy of the region

<p><b>National level regulation</b></p> <p><b>Climate Change Act 2008</b></p> <ul style="list-style-type: none"> <li>• Sets out targets to cut emissions by at least 80% by 2050 and at least 26% by 2020</li> </ul> <p><b>Climate Change and Sustainable Energy Act 2006</b></p> <ul style="list-style-type: none"> <li>• Provision about the reduction of GHG emissions, alleviation of fuel poverty, promotion of micro generation and the use of heat produced from renewable sources, compliance with building regulations relating to GHG emissions and fuel power</li> </ul>
<p><b>National level policy &amp; policy programmes</b></p> <p><b>Climate Change – the UK programme 2006</b></p> <ul style="list-style-type: none"> <li>• Sets out government’s policies and priorities for action on climate change in the UK and internationally, including a commitment to introduce an annual report to parliament.</li> </ul> <p><b>England Biodiversity Strategy: towards adaptation to climate change</b></p> <ul style="list-style-type: none"> <li>• Aims to ensure that biodiversity considerations become embedded in all the main sectors of economic activity that have an impact on or relationship with delivery of biodiversity objectives, both public and private sectors</li> </ul> <p><b>Adapting to climate change programme</b></p> <ul style="list-style-type: none"> <li>• Brings together the work already being led by government and the wider public sector on adapting to climate change and will co-ordinate and drive forward the government’s work on adaptation in the future</li> </ul> <p><b>Adapting to Climate Change in England: A framework for action</b></p> <ul style="list-style-type: none"> <li>• Sets out the Government’s adapting to climate change programme, which will drive forward the development of the governments work on adapting to climate change in the future</li> </ul> <p><b>Building a low-carbon economy- the UK’s contribution to tackling climate change</b></p> <ul style="list-style-type: none"> <li>• Committee on Climate Change recommendations, also contains CCCs advise on the levels of the UK’s first 3 legally binding carbon budgets for 2008-2088</li> <li>• UK 34% cut in GHG emissions by 2020 (42% if global deal agreed) and 80% by 2050.</li> </ul> <p><b>Planning and Climate Change – Supplement to planning policy statement 1</b></p> <ul style="list-style-type: none"> <li>• Sets out how planning, in providing for the new homes, jobs and infrastructure needed by communities, should help shape places with lower carbon emissions and resilient to the climate change now accepted as inevitable.</li> </ul> <p><b>Climate Change Levy</b></p> <ul style="list-style-type: none"> <li>• A tax on the use of energy in industry, commerce and public sector, with offsetting cuts in employers’ National Insurance contributions and additional support for energy efficiency schemes and renewable sources of energy.</li> </ul>
<p><b>National level voluntary agreements</b></p> <p><b>Climate Change Agreements</b> (in conjunction with the Levy)</p> <ul style="list-style-type: none"> <li>• Climate change agreements allow energy intensive businesses users to receive an 80% discount from the climate change Levy. In return for meeting energy efficiency or energy saving targets.</li> </ul> <p><b>Third Sector Declaration on Climate Change</b></p> <ul style="list-style-type: none"> <li>• Recognising third sector role in tackling climate change and promoting sustainable development. Third sector organisations making a commitment to affirm the importance of climate change and take action within their own operations and membership.</li> </ul>

<p><b>Nottingham Declaration</b></p> <ul style="list-style-type: none"> <li>• The Nottingham Declaration recognizes the central role of local authorities in leading society's response to the challenge of climate change. By signing the Declaration councils pledge to systematically address the causes of climate change and to prepare their community for its impacts.</li> </ul>
<p><b>Regional climate change strategy</b></p>
<p><b>The South West Climate Change Action Plan 2008-2010</b></p> <ul style="list-style-type: none"> <li>• Plan to draw together issues from across the region to ensure that there is a shared vision on tackling climate change, access to common evidence base and jointly agreed set of priorities for taking mitigation and adaptation issues forward</li> <li>• Focused on actions to be under taken by key 'regional bodies'</li> </ul> <p><b>Revision 2010</b></p> <ul style="list-style-type: none"> <li>• To facilitate the identification and adoption of sub-regional targets: <ul style="list-style-type: none"> <li>○ 11-15% of the South West's generating capacity from renewable sources by 2010 (or 597 MW renewable electricity capacity)</li> <li>○ Renewable electricity to 2010: 509-611MWe (onshore), 56MWe (offshore)</li> </ul> </li> <li>• Supported by regional resource assessment, sub-regional targets for Cornwall adopted under 'Action Today for a Sustainable Tomorrow' (CSEP 2004)</li> </ul> <p><b>Revision 2020</b></p> <ul style="list-style-type: none"> <li>• Established targets for renewable electricity, heat, and on-site generation to 2020</li> <li>• Delivered through emerging Regional Spatial Strategy: <ul style="list-style-type: none"> <li>○ Renewable electricity to supply 20% of region's electricity demand by 2020, estimated to be 847MWe (onshore), 400 MWe (offshore) assuming energy efficiency levels as per Energy White Paper (2003).</li> <li>○ Renewable heat by 2010: 105 MWth, Renewable heat by 2020: 503 MWth</li> </ul> </li> </ul>
<p><b>Sub-regional (Cornwall) climate change strategy</b></p>
<p><b>Action today for a sustainable tomorrow: the Energy Strategy Cornwall</b></p> <ul style="list-style-type: none"> <li>• Promotes joint approach of energy conservation and renewable energy generation in all sectors.</li> <li>• The strategy's 32 Actions cover a wide range of energy issues from fuel poverty to local generation of electricity and heat.</li> <li>• Target generation capacity range for Cornwall of between 93 and 108 MW of electricity from renewable energy sources by 2010 (sourced from Revision 2010).</li> </ul> <p><b>Renewable Energy: a Strategy for Cornwall</b></p> <ul style="list-style-type: none"> <li>• The two main aims are: Renewable energy development and renewable energy company cluster development</li> <li>• By 2010 234MW of installed renewable capacity generating 675 GWh of electricity and providing 609 GWh of heat and transport fuel</li> </ul> <p><b>Cornwall County Council Climate Change Strategic Framework &amp; 'Programme of Action 2008-09'</b></p> <p><b>Cornwall Climate Change Action Plan</b></p> <ul style="list-style-type: none"> <li>• Emerging regional targets to be set for 2020 (20% RES; 20% EE; 30-35% GHG (on 1990 baseline)</li> <li>• Target date Winter 2009/ Spring 2010</li> </ul>
<p><b>Regional climate change-related sectoral policies</b></p>
<p>There are many relevant regional-level sectoral policies and plans: water/flooding/coasts; sustainable development; spatial planning; economic development; agriculture; transport; waste; housing emissions; renewable energy.</p>

### **Regional Spatial Strategy**

Will contribute to the achievement of sustainable development, incorporation a regional transport strategy and providing a broad development strategy for the region. Requires local authorities to consider climate change adaptation and mitigation in their plans.

### **Regional Renewable Energy Strategy for the South West of England 2003-2010**

- Response to challenge of delivering the government's aim of 20% of the UK's electricity to come from renewable sources by 2020. Aim to maximise the social benefits of renewable energy through mainstreaming it.

### **The South West Low carbon housing and fuel poverty strategy and action plan**

- Sets out regional targets for low carbon housing and fuel poverty.
- Housing targets CO<sub>2</sub> emissions 17% cut by 2010, 30% by 2021; at least 60% cut by 2050. Fuel poverty eradication in vulnerable households and all households by 2010 and 2016 respectively.

### **South West Regional wood fuel framework**

- Aims to develop the use of wood fuel to make a significant contribution to the demand for the renewable energy and reduce CO<sub>2</sub> emissions and increase the sustainable management of woodlands.

### **Sustainable Farming and Food Delivery Plan: Changing landscapes, changing outlooks**

- Highlights 'crunch issues' such as increasing regional opportunities in terms of food, timber, and renewable energy and managing the landscape and the environment so that it remains a key asset of the region.

### **Regional Waste Strategy for the SW: From rubbish to resource**

- Aims to ensure that by the year 2020 more waste is recycled and less waste produced in the region to be land filled.
- 45% of waste is recycled and reused and less than 20% of the waste produced in the region will be land filled.

### **Action today for a sustainable tomorrow: the Energy Strategy Cornwall**

- Promotes joint approach of energy conservation and renewable energy generation in all sectors. The strategy's 32 Actions cover a wide range of energy issues from fuel poverty to local generation of electricity and heat.
- Targets aligned with Revision 2010

### **Strategy for Agriculture, Horticulture, Food and Land Based Industries in Cornwall and the Isles of Scilly 2003-2010**

- Gives reference to reducing CO<sub>2</sub> in line with government targets, as well as to improve energy efficiency and energy derived from agricultural biomass as one of the key performance indicators.

### **Cornwall County Council sustainable development plan**

- Covers 5 key themes and sets out a range of new actions to achieve them. 1. Achieving a sustainable economy 2. Tackling climate change 3. Making sustainable use of materials, energy and water 4. Promoting personal well-being 5. Environmental protection.

### **Local Transport Plan**

- To identify local transport policies and outline the programme of local transport improvements. It sets out a comprehensive plan for all types of transport in Cornwall.

### **Waste Local Plan**

- Sets out the broad framework for the treatment, management and disposal of wastes in the county. It represents a key component of the development plans for Cornwall and is an important function of the county council's duty as Waste Planning Authority.

### **Cornwall Fuel Poverty and Energy Efficiency Action Plan**

- Aims to assess the current scale of fuel poverty and inefficient housing in Cornwall and ascertain effective methodologies for tackling fuel poverty, hard-to-treat homes and the take up of energy efficiency measures in the domestic sector in Cornwall
- Renewable Energy: A Strategy for Cornwall**
- Aims to take Cornwall forward by developing local energy resources to meet its obligations to reduce environmental impacts and develop Cornish intellectual capital to exploit the business opportunities presented

## Key institutions responsible for climate change

- South-West Climate Change Impacts Partnership (SWCCIP) for adaptation to climate change
- Low Carbon Cornwall Unit (within Cornwall Development Company) for mitigation of climate change

## Financial instruments available for financing climate change-related measures

<p><b>State and regional subsidies</b></p> <ul style="list-style-type: none"> <li>• Renewable Obligation Certificates (ROCs) <ul style="list-style-type: none"> <li>○ Trading mechanism</li> <li>○ Has set maximum capacity on percent of renewable energy generated</li> </ul> </li> <li>• Low Carbon Buildings Programme – grants for micro-generation technologies <ul style="list-style-type: none"> <li>○ Approximately €100m available from 2006 – 2010</li> <li>○ Limited due to programme restrictions (e.g. maximum amount of funding, eligible technologies and beneficiaries). Poor programme administration and problems with ring fencing of technology specific grant support</li> </ul> </li> <li>• Salix loan scheme – to provide capital to support organizational invest to save carbon reduction projects in the health, education, government and local authority sectors. <ul style="list-style-type: none"> <li>○ Useful mechanism but narrowly focused</li> </ul> </li> </ul>
<p><b>EU Structural and Cohesion funds</b></p> <ul style="list-style-type: none"> <li>• Convergence programme has overall low carbon ambition</li> <li>• No specific measures targeting climate change</li> <li>• €350M (ERDF); €150M (ESF)</li> <li>• Is likely that Convergence programme will facilitate increased carbon emissions through property-based and infrastructure projects.</li> </ul>
<p><b>Tax incentives</b></p> <ul style="list-style-type: none"> <li>• Reduced VAT rate for micro-generation and energy efficiency measures (5%)</li> <li>• Has supported increased uptake</li> </ul>
<p><b>Specialized financial institutions on regional or national level</b></p> <ul style="list-style-type: none"> <li>• Low Carbon Finance Cornwall under development (using government reward funding)</li> <li>• Climate Change Capital Ventus Funds: <a href="http://www.ventusvct.com/">http://www.ventusvct.com/</a> <ul style="list-style-type: none"> <li>○ Total capital £48 million</li> <li>○ Significant amount targets renewable energy sector</li> <li>○ Limited scope, constrained by commercial realities.</li> </ul> </li> </ul>
<p><b>Specialized financial instruments within general financial institutions</b></p> <ul style="list-style-type: none"> <li>• TRIDOS renewable energy investment fund and similar bank based schemes.</li> </ul>

<http://www.triodos.co.uk/>

- Information not publicly available
- Limited scope, constrained by commercial realities

## Information

RSC contact person	Lindsay Knuckey ( <a href="mailto:lindsay.knuckey@cornwalldevelopmentcompany.co.uk">lindsay.knuckey@cornwalldevelopmentcompany.co.uk</a> ), Cornwall Development Company
Website	<a href="http://www.cornwalldevelopmentcompany.co.uk">www.cornwalldevelopmentcompany.co.uk</a>

## NORTH GREAT PLAIN, HUNGARY

### General description of the region\*

Population	Inhabitant	1 529 200
Surface area	Km <sup>2</sup>	17 729
Nominal GDP	€	8 618 116 774
GDP at current market prices	€	14 484 705 730
Percent of national GDP generated in the region	%	9.58
GDP per capita at current market prices	€/inhabitant	9 500
GDP per capita as percent of EU average	%	40.00

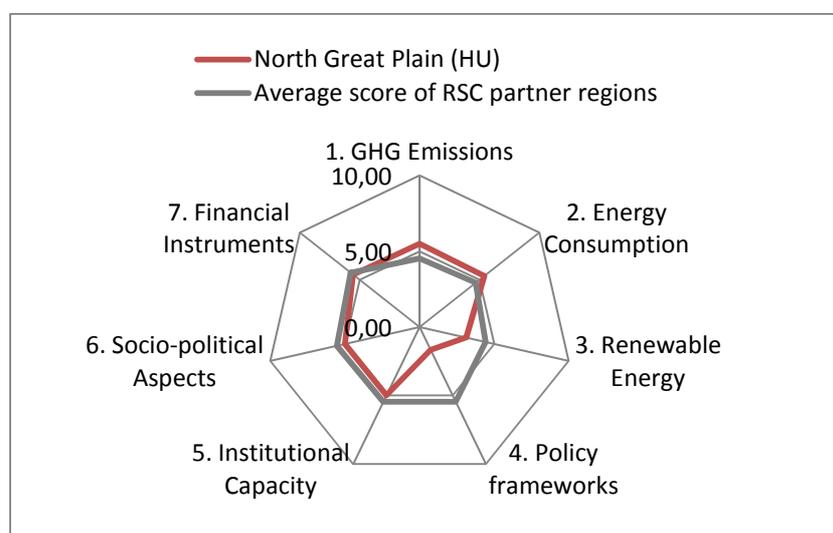
Structure of the region's economy	Agriculture	8.33%
	Industry	31.49%
	Services	60.18%

\*All data for 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

1. GHG Emissions	5.50
2. Energy Consumption	5.41
3. Renewable Energy	3.13
4. Policy Frameworks	1.67
5. Institutional Capacity	5.00
6. Socio-political Aspects	5.00
7. Financial Instruments	5.56
<b>Total</b>	<b>31.26</b>

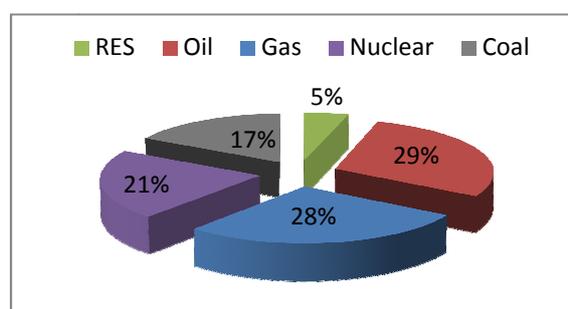
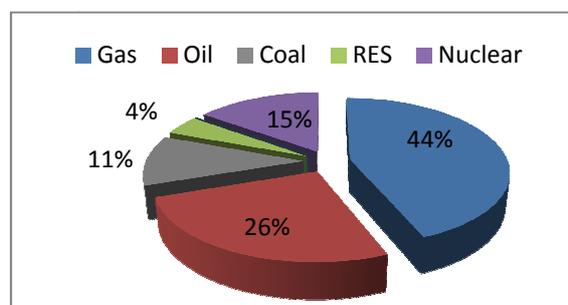
\*Maximum 10 points for each issue; 70 points total



**Key energy figures (national level)**

Total GHG emissions	Mtons of CO <sub>2</sub> eq	79.30
GHG emissions per capita	Mtons/inh.	7.87
GHG intensity	g CO <sub>2</sub> /€	524.42

Final energy consumption (FEC)	TOE	17 920 280
FEC per capita	TOE/inh	1.78
Energy intensity	TOE/M€	118.51
Energy production capacity	MWe	9 000

**Energy production capacity by fuel type (percent of total)****Energy consumption (GIC)<sup>44</sup> by fuel type (percent of total)**

Renewable share in energy production	4.78%
Renewable share in final energy consumption	4.35%
Main RES types in energy production	Biomass, wind, hydro
Other potential RES	Solar, geothermal, biomass
Main barriers to higher penetration of RES	Combination of political, legal and financial barriers

\*All data for 2006 unless otherwise noted

<sup>44</sup> Gross Inland Consumption: the quantity of energy consumed within the borders of a country or region. It is calculated using the following formula: primary production + recovered products + imports + stock changes– exports – bunkers (i.e. quantities supplied to sea-going ships).

## Climate policy of the region

<p><b>National Climate Change Strategy (2008-25)</b></p> <ul style="list-style-type: none"> <li>• Reduce emission levels by decreasing the use of fossil fuels, increasing the use of renewable energy resources</li> <li>• Energy efficiency programme</li> <li>• Adapt to the impacts of climate change in water management, agriculture and forestry and healthcare</li> <li>• Strengthen climate awareness and attitudes</li> <li>• Requires regional-level development plans to be in accordance with the national climate change strategy</li> <li>• Development of local-level information system about climate change</li> </ul> <p>Targets:</p> <ul style="list-style-type: none"> <li>• Reduction of GHG by 18% on 1990 figures by 2020. Superseded by National Action Plan for Growth and Development, which updates the targets based on recent EU legislation: 16-25% GHG reduction (on 1990) by 2025</li> <li>• Increase the ratio of RES from 4.5% to 13%</li> <li>• Decrease energy use by 1% each year from 2008 – 2016</li> </ul>
<p><b>National Climate Change Action Plan (2009 – 2010)</b></p> <ul style="list-style-type: none"> <li>• Infrastructure developments linked to the development and upgrade of agriculture and forestry</li> <li>• National funding for forest rehabilitation and forestation</li> <li>• Water resources review</li> <li>• Adaptation potentials for human health</li> <li>• Research facilitating climate change adaptation in the field of town planning</li> <li>• Measures aimed at developing transport infrastructure</li> <li>• Regulatory measures</li> <li>• Emissions trading</li> <li>• Green investment system</li> <li>• Development of local strategies and action plans for climate change mitigation and adaptation</li> </ul>
<p><b>Regional Climate Change Strategy</b></p> <p>Does not exist</p>
<p><b>Regional CC Action Plan</b></p> <p>Does not exist</p>
<p><b>Regional sectoral policies, action plans, voluntary agreements</b></p> <p>There are no sectoral policies on the regional level; but there are national-level sectoral policies related to climate change: RES strategy, energy efficiency action plan, energy action plan, and national development plan (NSRF for EU Cohesion Policy) which have climate change-related aims and targets.</p>
<p><b>Adaptation Strategy</b></p> <p>Addressed in national climate change strategy, and in many national sectoral policies; there is high political awareness due to increased frequency of extreme weather conditions. No action plan yet.</p>

## Key institutions responsible for climate change

### National level:

Ministry for Environment and Water, Climate Protection and Energy Department:

- National Climate Change Strategy and its implementation programme
- Green Investment Scheme
- Tasks related to the implementation of the EU climate/energy package
- Tasks related to the implementation of the Kyoto Protocol

A Climate Change Committee, which is an advisory body of the government, contributes to the implementation of the National Climate Change Strategy.

### Regional level:

The Regional Inspectorate for Environment, Nature and Water, which acts on behalf of the national ministry. No regional-level institution takes the lead in climate change mitigation and adaptation.

## Financial instruments available for financing climate change-related measures

### State subsidies

National Energy Saving Programme

- 2006-2008 €16M funding
- 2006 results: 88GJ/1M HUF savings; 2007: 124GJ/1M HUF<sup>45</sup> savings

Panel Program: supports energy efficiency refurbishment of prefabricated multi-apartment panel buildings.

- 2001-2007: €132M; 2008-2011: €107M funding
- Over 190,000 flats renewed as of 2008

Support to install equipment to control and measure heat consumption of flats in houses supplied by district-heating:

- 2008: €5m

Green Investment Scheme - under formulation

State programs for investments in energy efficiency

- Program for Successful Hungary - Supports energy efficient modernization of traditionally constructed buildings.
- Installation of meters in flats for individual control in district heating systems.
- Support for the purchase of household refrigerators, freezers and other household appliances with outstanding energy performance

State awareness raising programs: support for the energy efficiency consultancy network; awareness raising campaign on energy saving lighting equipment; preparation of training materials on energy efficiency; training and awareness raising for municipalities; energy efficiency guidelines for public

---

<sup>45</sup> 1M HUF (Hungarian Forints) is equal to about €3,700 in 2010.

procurement.
<p><b>EU Structural and Cohesion Funds</b></p> <p>Environment and Infrastructure Operational Programme 2004-2006</p> <ul style="list-style-type: none"> <li>• Priority 1: Environmentally-friendly development of energy management</li> <li>• Measure 7: Increase energy efficiency and RES use</li> <li>• €24m funding</li> <li>• More than 40 projects approved, implementation is under development</li> </ul> <p>Environment and Energy Operational Programme 2007-2013</p> <ul style="list-style-type: none"> <li>• Priorities 4 and 5: Increase energy efficiency and RES use</li> <li>• 2007-2008: €91m; 2009-2010: €231m</li> <li>• 98 projects approved, 74 projects under evaluation</li> </ul> <p>New Hungary Rural Development Programme</p> <ul style="list-style-type: none"> <li>• Biomass raw material production, local use of biomass collection, raw material preparation, agricultural use</li> <li>• €1.2m</li> </ul> <p>North Great Plain Regional Operational Programme</p> <ul style="list-style-type: none"> <li>• Measure 3.1.3: development of regional cycle path network</li> </ul>
<p><b>Tax incentives</b></p> <ul style="list-style-type: none"> <li>• Excise tax allowance for biofuels</li> </ul>
<p><b>Specialised financial instruments within general financial institutions</b></p> <p>Energy Efficiency Credit Fund</p> <ul style="list-style-type: none"> <li>• €10.1m preferential credit</li> <li>• 36 projects approved; 1.5PJ/year increase in RES use expected</li> </ul>

## Information

RSC contact person	Zoltan Karacsonyi ( <a href="mailto:karacsonyiz@envm.unideb.hu">karacsonyiz@envm.unideb.hu</a> ), Centre for Environmental Management and Policy, University of Debrecen
Website	<a href="http://www.envm.unideb.hu/index_en.php">http://www.envm.unideb.hu/index_en.php</a>

## BURGENLAND, AUSTRIA

### General description of the region\*

Population	Inhabitant	279 800
Surface area	Km <sup>2</sup>	3 966
Nominal GDP	€	5 739 381 265
GDP at current market prices	€	5 426 593 329
Percent of national GDP generated in the region	%	2.23
GDP per capita at current market prices	€/inhabitant	19 400
GDP per capita as percent of EU average	%	82

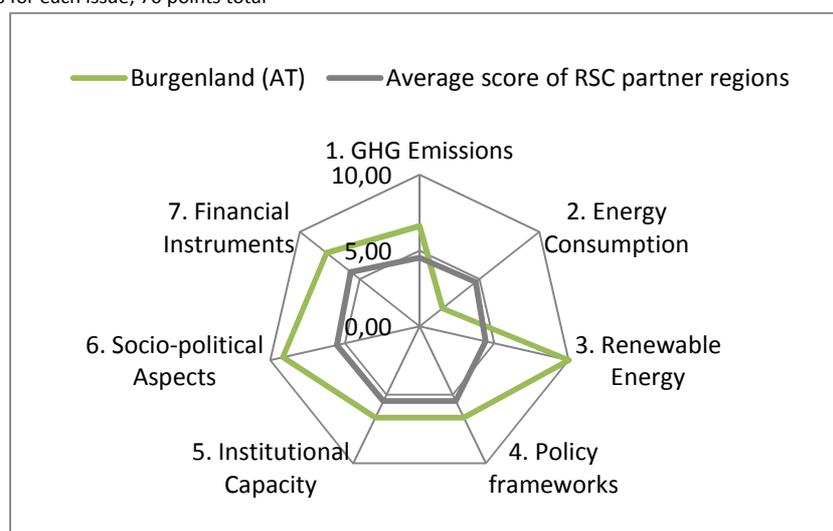
Structure of the region's economy	Industry	29.28%
	Service	61.20%
	Agriculture	5.01%
	Tourism	4.51%

\*All data for 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

1. GHG Emissions	6.61
2. Energy Consumption	1.91
3. Renewable Energy	10.01
4. Policy Frameworks	6.67
5. Institutional Capacity	6.67
6. Socio-political Aspects	9.17
7. Financial Instruments	7.78
<b>Total</b>	<b>48.80</b>

\*Maximum 10 points for each issue; 70 points total

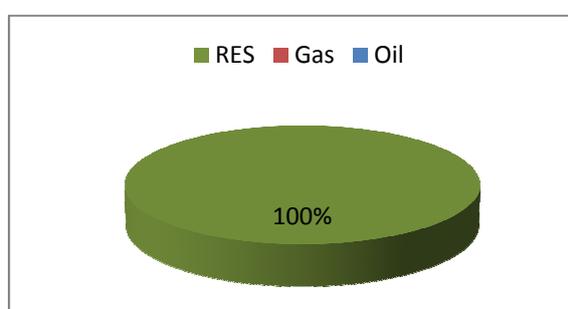
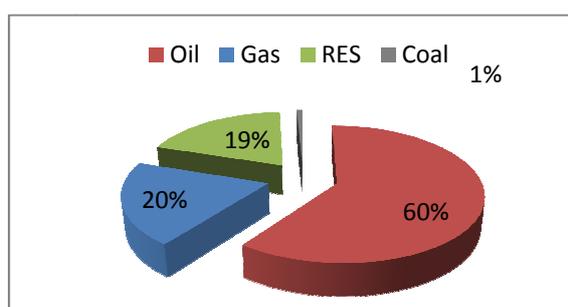


**Key energy figures\***

Total GHG emissions (2001)	Mtons of CO <sub>2</sub> eq	2.09
GHG per capita	Mtons/inh	7.54
GHG intensity	g CO <sub>2</sub> /€	440.05

Final Energy consumption	TOE	789 000
FEC per capita	TOE/inh	2.82
Energy intensity	TOE/M€	145.40
Energy production capacity	MWe	417.60

\*All data for 2006 unless otherwise noted

**Energy production capacity of the region by fuel type (percent of total)****Energy consumption (GIC) by fuel type (percent of total)**

Renewable share in energy production	100%
Renewable share in energy consumption	16.35%
Main RES types in energy production	Wind, biomass
Other potential RES	Solar, geothermal
Main barriers to higher penetration of RES	Financial

\*All data for 2006 unless otherwise noted

## Climate policy of the region

<p><b>National Climate Change Strategy</b></p> <p>Reduce GHG by 13% (on 1990 figures) and provide 78.1% of electricity produced by RES, mainly by developing technologies for RES and energy efficiency and using JI/CDM and EU trading instruments.</p>
<p><b>National Climate Change Action Plan</b></p> <ul style="list-style-type: none"> <li>• Convert at least 100,000 homes from fossil to renewable energy heating by 2010 and 400,000 households by 2020</li> <li>• Reduction of energy intensity by at least 5% by 2010 and 20% by 2020</li> <li>• Within Annex I of the Austrian Climate Strategy it is specified that all federal states are responsible for the implementation of the measures</li> </ul>
<p><b>Regional Climate Change Strategy</b></p> <ul style="list-style-type: none"> <li>• Make the region of Burgenland energy autonomous by 2013 by producing 100% of electricity from RES (with special focus on wind plants)</li> </ul>
<p><b>Regional Climate Change Action Plan</b></p> <ul style="list-style-type: none"> <li>• Renovate/increase wind farm capacity (300 MW)</li> <li>• Develop cogeneration plants using biomass</li> </ul> <p>NB: At regional level the funding of energy savings in building, the reconstruction of buildings and the implementation of renewable energy systems has already been introduced. CC related investments for companies and the public is also co-financed by the region, sometimes in cooperation with national funding systems.</p>
<p><b>Regional sectoral policies, action plans, voluntary agreements</b></p> <ul style="list-style-type: none"> <li>• Regional policy on funding of homes and subsidies for new heating – energy consumption and plant efficiency targets</li> <li>• 2009 action plan for energy efficient or RES heating</li> <li>• Voluntary partnership with “Communal area” on energy efficiency awareness</li> </ul>

## Key institutions responsible for climate change

<p><b>Regional Authority, Climate Change Department</b></p> <ul style="list-style-type: none"> <li>• Coordinates among institutions and external bodies on Kyoto target measures</li> <li>• Works on climate protection programme for the region</li> <li>• Reports to regional authority</li> </ul>
<p><b>Regional Environmental Lawyer</b></p> <ul style="list-style-type: none"> <li>• Legal representation in administrative procedures</li> <li>• Appraisal of projects, law and regulation drafts</li> <li>• Consultancy and information for private persons concerning professional and legal environmental issues</li> <li>• Ombudsman, elimination of drawbacks in environmental issues</li> <li>• Intermediation and collaboration, public relations</li> </ul>
<p><b>Energy Representative of Burgenland</b></p> <ul style="list-style-type: none"> <li>• Development of energy concepts and strategies for energy supply</li> <li>• Development and implementation of energy related projects</li> <li>• Subsidies and other support for alternative energy sources</li> <li>• Energy related issues in R&amp;D</li> </ul>

## Financial instruments available for financing climate change-related measures

<p><b>State and regional subsidies</b></p> <ul style="list-style-type: none"> <li>• Funding of new homes and subsidies for reconstruction of homes for private persons</li> <li>• Various types of funding for different measures; total is around 4 % of the federal budget</li> <li>• Very effective measure, directly related to climate change goals</li> </ul>
<p><b>EU structural and cohesion funds</b></p> <ul style="list-style-type: none"> <li>• ERDF and EAFRD - some measures are directly related to climate change</li> <li>• More favourable terms for projects which influence energy and climate issues</li> </ul>
<p><b>Specialized financial institutions on regional or national level</b></p> <ul style="list-style-type: none"> <li>• Government of Land Use Burgenland, Energy Agency Burgenland, Economy Service Burgenland provide funding</li> </ul>
<p><b>Specialized financial instruments within general financial institutions</b></p> <ul style="list-style-type: none"> <li>• Subsidies for residential building and reconstruction of homes</li> <li>• Eco-energy fund - subsidies for alternative energy systems</li> <li>• Loans and subsidies for SMEs</li> </ul>

## Information

RSC contact person	Patricia Feucht ( <a href="mailto:patricia.feucht@rmb.co.at">patricia.feucht@rmb.co.at</a> ), Burgenland Regional Management (RMB)
Website	<a href="http://www.rmb.at">www.rmb.at</a>

## LA RIOJA, SPAIN

### General description of the region\*

Population	Inhabitant	303 500
Surface area	Km <sup>2</sup>	5 027
Nominal GDP	€	7 253 926 444
GDP at current market prices	€	8 003 054 664
Percent of national GDP generated in the region	%	0.74%
GDP per capita at current market prices	€/inh	26 400
GDP per capita as percent of EU average	%	112.00

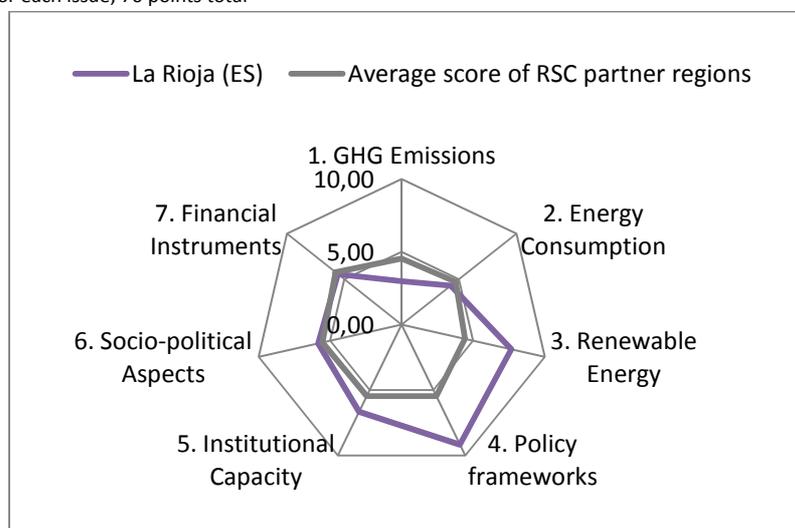
Structure of the region's economy	Industry	38%
	Service	49%
	Agriculture	7%
	Tourism	6%

\*All data are 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

1. GHG Emissions	2.96
2. Energy Consumption	4.28
3. Renewable Energy	7.66
4. Policy Frameworks	9.17
5. Institutional Capacity	6.67
6. Socio-political Aspects	5.83
7. Financial Instruments	5.56
<b>Total</b>	<b>42.13</b>

\*Maximum 10 points for each issue; 70 points total

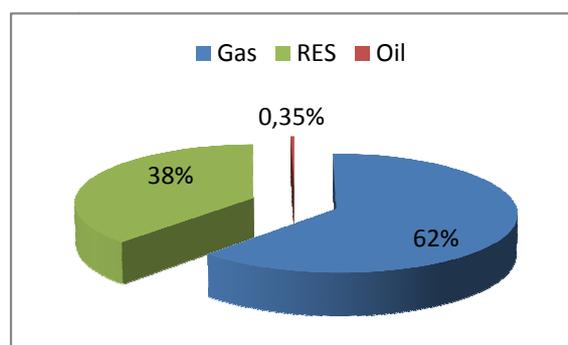


## Key energy figures\*

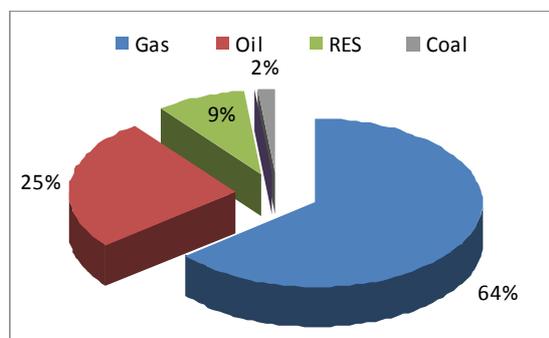
Total emission of greenhouse gases	Mtons of CO <sub>2</sub> eq	4.14
GHG per capita	Mtons/inh	13.64
GHG intensity	g CO <sub>2</sub> /€	517.30

Final energy consumption (FEC)	TOE	820 511
FEC per capita	TOE/inh	2.70
Energy intensity	TOE/M€	102.52

### Energy production capacity of the region by fuel type (percent of total)



### Energy consumption by fuel type (percent of total)



Renewable share in energy production	37.57%
Renewable share in energy consumption	8.7%
Main RES types in energy production	Wind, hydro
Other potential RES	Solar, biomass, geothermal, biogas
Main barriers to higher penetration of RES	Market, financial, social acceptance

\*All data are for 2006 unless otherwise noted

## Climate policy of the region

<p><b>National Climate Change Strategy (2007-2012-2020)</b></p> <p>Strategic objectives:</p> <ul style="list-style-type: none"> <li>• Ensure the reduction of GHG emission through the energy sector, flexible mechanisms, promotion of R&amp;D, increase of awareness, improvement of energy efficiency, and guarantee security of supply</li> </ul> <p>Quantitative targets:</p> <ul style="list-style-type: none"> <li>• Global GHG emissions should not exceed 37% of base year emissions (1990)</li> <li>• Obtain 289.36 million tonnes of carbon credits</li> <li>• Saving 188.5 Mt CO<sub>2</sub> eqv. for the period 2006-2012 (37.7 Mt CO<sub>2</sub> per year)</li> </ul> <p>The regional authorities play a fundamental role in the identification and implementation of these measures.</p>
<p><b>Regional Climate Change Strategy</b></p> <p>Strategic objectives:</p> <ul style="list-style-type: none"> <li>• Integrate and coordinate the measures and actions that contribute to the reduction of GHGs and to the adaptation strategies to climate change within the sector policies.</li> <li>• To promote research, development and innovation in technologies, techniques and systems that contribute to reducing GHG emissions and improving energy efficiency</li> </ul> <p>Quantitative targets:</p> <ul style="list-style-type: none"> <li>• Save 700 ktCO<sub>2</sub> eqv in 2012 compared to taking no action</li> <li>• Reduce GHG emission with 173 ktCO<sub>2</sub> by 2012 from sectors with diffuse pollution (non-ETS)</li> </ul>
<p><b>National Climate Change Adaptation Plan</b></p> <ul style="list-style-type: none"> <li>• Adopted in July 2006 after consultation with the main bodies dealing with climate change</li> </ul>
<p><b>Regional Adaptation Plan (under development)</b></p> <ul style="list-style-type: none"> <li>• To facilitate the development of the NCCAP, a series of regional climate change scenarios through the year 2100 were prepared for different ecological, economic and social sectors and systems</li> </ul>
<p><b>A Preliminary Assessment of the Impacts in Spain due to the Effects of Climate Change</b></p> <ul style="list-style-type: none"> <li>• To assess the possible impacts of climate change on a variety of socio-economic sectors and ecological systems</li> </ul>

## Key institutions responsible for climate change

<p><b>Environmental Quality Department of the Ministry of Tourism, Environment and Land Policy</b></p> <ul style="list-style-type: none"> <li>• Coordinate and integrate the actions of mitigation of and adaptation to climate change in other regional departments</li> <li>• Monitor the implementation of the regional climate change and clean energy strategy</li> <li>• Control and monitor the GHG Emission Trading Scheme in La Rioja</li> </ul> <p><b>Delegate of the Government Commission Against Climate Change</b></p> <ul style="list-style-type: none"> <li>• Coordinate the Government's regional policies related to the treatment and the impact caused by climate change</li> </ul> <p><b>“Regional economic development agency” - Department of industry</b></p> <ul style="list-style-type: none"> <li>• Maintain specialized financial institution for climate change measures on regional level</li> </ul>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Financial instruments available for financing climate change-related measures

<p><b>State and regional subsidies</b></p> <ul style="list-style-type: none"> <li>• Energy audits</li> <li>• Exchange of equipments and systems for more energy efficient and with less CO2 emissions.</li> <li>• Sustainable urban mobility plan</li> <li>• Promotion of renewable energies</li> </ul>
<p><b>EU Structural and Cohesion funds</b></p> <ul style="list-style-type: none"> <li>• Grants for the promotion of renewable energy, energy efficiency and for environmental protection</li> </ul>

## Information

RSC contact person	José María Infante (josemaria.infante@larioja.org), General Directorate of Environmental Quality, Ministry of Tourism, Environment and Territorial Policy
Website	<a href="http://www.larioja.org">www.larioja.org</a>

## SOUTH WEST BULGARIA

### General description of the region\*

Population	Inhabitant	2 117 800
Surface area	Km <sup>2</sup>	20 306
Nominal GDP	€	10 851 737 490
GDP at current market prices	€	28 570 367 180
Percent of national GDP generated in the region	%	43.00
GDP per capita at current market prices	€/inh	13 500
GDP per capita as percent of EU average	%	57.00

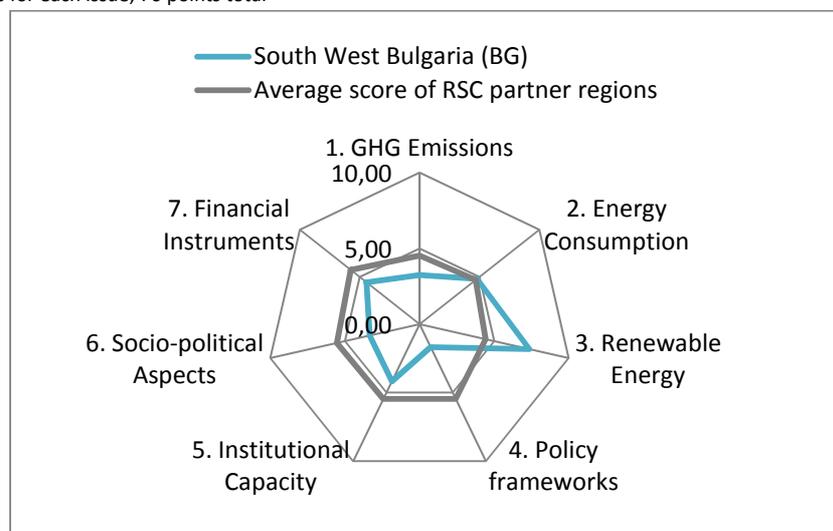
Structure of the region's economy	Industry	24.00 %
	Service	73.99%
	Agriculture	2.28 %

\*All data for 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

1. GHG Emissions	3.25
2. Energy Consumption	4.80
3. Renewable Energy	7.35
4. Policy Frameworks	1.67
5. Institutional Capacity	4.17
6. Socio-political Aspects	3.33
7. Financial Instruments	4.44
<b>Total</b>	<b>29.01</b>

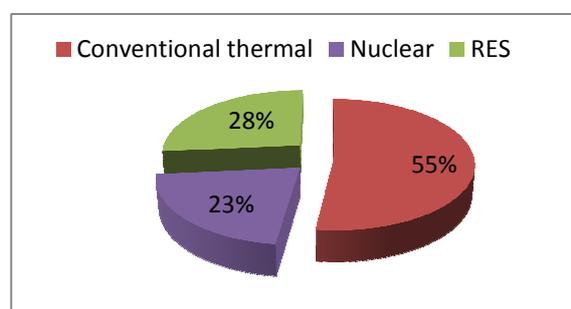
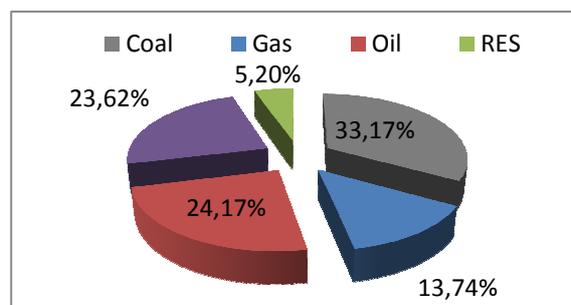
\*Maximum 10 points for each issue; 70 points total



**Key energy figures (national level)\***

Total GHG emissions	Mtons of CO <sub>2</sub>	72.20
GHG per capita	Mtons/inh	9.38
GHG intensity	g CO <sub>2</sub> /€	1086.58

Final energy consumption (FEC)	TOE	10 030 000
FEC per capita	TOE/inh	1.30
FEC intensity	TOE/M€	150.95
Energy production capacity	MWe	12 015

**Energy production capacity by fuel type (percent of total, 2005)****Energy consumption (GIC)<sup>46</sup> by fuel type (percent of total)**

Renewable share in energy production	23.93%
Renewable share in energy consumption	7.68%
Main RES types in energy production	Hydroelectricity
Other potential RES	Solar, wind, geothermal
Main barriers to higher penetration of RES	Political, legal, market, financial

\*All data for 2006 unless otherwise noted

<sup>46</sup> Gross Inland Consumption: the quantity of energy consumed within the borders of a country or region. It is calculated using the following formula: primary production + recovered products + imports + stock changes – exports – bunkers (i.e. quantities supplied to sea-going ships).

## Climate policy of the region

### **2<sup>nd</sup> National Climate Change Plan 2005-2008**

Strategic objectives:

- Decrease GHG emissions in all sectors through implementation of policies and measures
- Create enabling environment for GHG emissions reductions through capacity-building and awareness raising of the population
- Creation of monitoring and registration system for GHG emissions and periodic assessment of trends and prognosis including assessment of the influence of the policies and measures on these trends
- Introduction and implementation of Joint Implementation and Emission Trading Scheme

### **National Environmental Strategy and Action Plan**

Related strategic objective:

- Decrease and prevent the consequences of the climate change
- Support for “green” energy

### **National Energy Strategy 2020**

Strategic objectives:

- Decrease GHG emissions
- Increase the RES share in final energy consumption
- Increase energy efficiency

### **Energy efficiency and RES schemes programmes and projects**

#### **Programme for reducing the level of air pollution of Sofia City**

- Identification of the major sources of pollution and analysis of emission levels
- Preparation of set of measures to improve the air quality in the city
- 20% reduction of GHG emissions
- 30 % reduction of the emissions in the city centre by 2008 compared to 2000 baseline

#### **Municipal program for energy efficiency and renewable energy sources**

- Reduce energy use in municipal buildings by 25-30%, street lighting by 20%, transport by 15% and municipal enterprises by 25%
- Reduction of CO<sub>2</sub> emissions by 1 000 Kt for 2008/2012 period

#### **“Optimization of the supporting RES schemes for production of electricity, heating and cooling”**

- Increasing the share of RES in overall energy consumption

#### **“Achieving the Kyoto objectives by wide introduction of land-connected thermal pumps in the built-up areas”**

- Preparation of recommendations for the legislation in the field of the geothermal energy

#### **“Energy Path – Electronic educational platform for the new generation in the sphere of sustainable energy”**

- Capacity building in the fields of RES, Energy efficiency, Transport and Mobility

#### **BEHAVE project “Assessment of the programmes for changing the energy behaviour”**

- Recommendations and guidelines for improving the action of the programmes related to energy behaviour

#### **“Monitoring of the tendencies in the energy consumption and energy efficiency in the countries from EU 27”**

- Actualization and amendment of the data related to energy efficiency indicators

**Regional Climate Change Strategy**

- Does not exist

**Regional Climate Change Action Plan**

- Does not exist

**Key institutions responsible for climate change**

**The Regional Inspection of Environment and Waters under the Ministry of Environment and Waters**

- Responsible for coordination of the municipal programmes for decreasing the air pollutants and the municipal operational action plans according to the Clean Air Act as well as control of the implementation of the waste management programmes

**Financial instruments available for financing climate change-related measures**

**EU Structural and Cohesion funds**

- Grants are provided for the promotion of renewable energy, energy efficiency and environmental protection in industrial enterprises

**Information**

RSC contact person	Margarita Atanasova ( <a href="mailto:matanasova@mrrb.government.bg">matanasova@mrrb.government.bg</a> ), Ministry of Regional Development and Public Works, Bulgaria
Website	<a href="http://www.mrrb.government.bg">www.mrrb.government.bg</a>

## MARCHE, ITALY

### General description of the region\*

Population	Inhabitant	1 532 500
Surface area	Km <sup>2</sup>	9 694
Nominal GDP	€	38 772 300 600
GDP at current market prices	€	37 763 604 190
Percent of national GDP generated in the region	%	2.61
GDP per capita at current market prices	€/inh	24 600
GDP per capita as percent of EU average	%	104.00

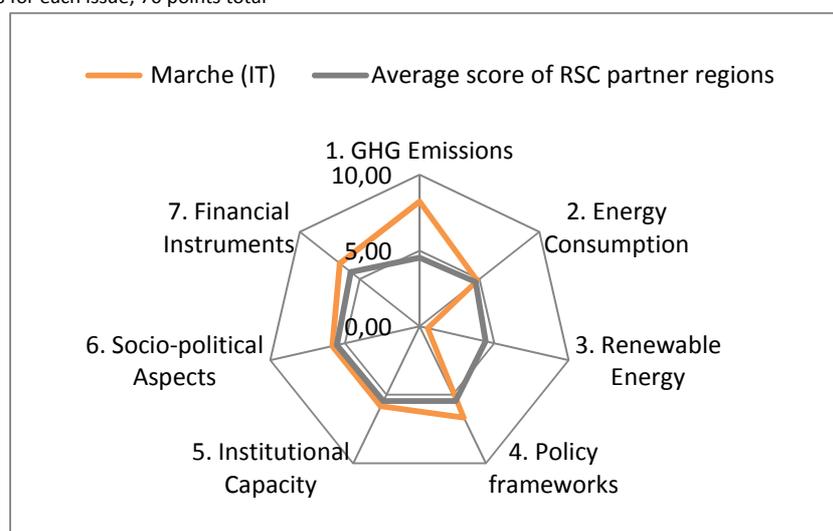
Structure of the region's economy	Industry	32%
	Service	62%
	Agriculture	2%
	Tourism	4%

\*All data for 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

1. GHG Emissions	8.23
2. Energy Consumption	4.82
3. Renewable Energy	0.54
4. Policy Frameworks	6.67
5. Institutional Capacity	5.83
6. Socio-political Aspects	5.83
7. Financial Instruments	6.67
<b>Total</b>	<b>38.59</b>

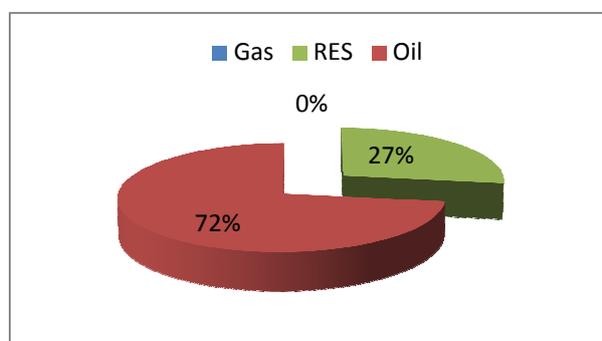
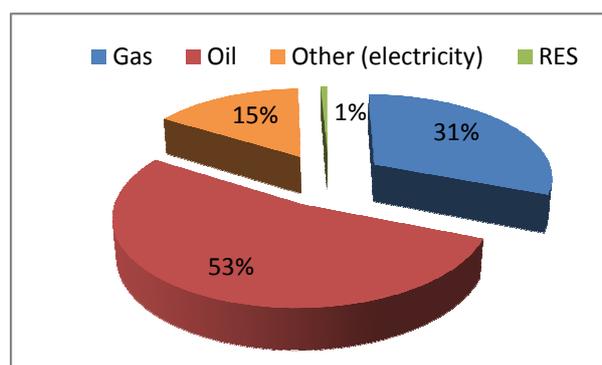
\*Maximum 10 points for each issue; 70 points total



**Key energy figures\***

Total GHG emissions (2005)	Mtons of CO <sub>2</sub> eq	11.03
GHG per capita (2005)	Mtons/inh	7.2
GHG intensity (2005)	g CO <sub>2</sub> /€	308.06

Final energy consumption (FEC) (2005)	TOE	3 698 000
FEC per capita (2005)	TOE/inh	2.42
Energy intensity (2005)	TOE/M€	103,30
Energy production capacity	MWe	862.70

**Energy production capacity of the region by fuel type (percent of total)****Energy consumption by fuel type (percent of total, 2005)**

Renewable share in energy production (2007)	28.41%
Renewable share in energy consumption (2007)	2.72%
Main RES types in energy production	Hydro, biomass
Other potential RES	Solar, wind, geothermal
Main barriers to higher penetration of RES	Political, social, financial

\*All data for 2006 unless otherwise noted

## Climate policy of the region

<p><b>National Action Plan for GHG emissions reduction 2003-2010</b></p> <p>Strategic objectives</p> <ul style="list-style-type: none"> <li>• GHG emissions reduction</li> <li>• Adoption and implementation of Kyoto Protocol</li> <li>• Establishment of carbon sink</li> </ul> <p>Quantitative targets</p> <ul style="list-style-type: none"> <li>• 6.5% reduction in GHG emissions compared to 1990 baseline by 2010</li> <li>• 93 million tonnes of CO<sub>2</sub> emissions reduction by 2012</li> </ul>
<p><b>Regional Plan for Climate Change (2007 guidelines)</b></p> <p>Strategic objectives/actions:</p> <ul style="list-style-type: none"> <li>• Promotion of energy efficiency and RES</li> <li>• Development of sustainable urban area and transports</li> <li>• Introduction of sustainable forestry and agriculture</li> <li>• Adaptation of efficient use of available resources</li> </ul> <p>Quantitative targets:</p> <ul style="list-style-type: none"> <li>• Reduction of 3.5 t CO<sub>2</sub> eq/year below 1990 baseline by 2015</li> </ul>
<p><b>Regional Environmental Energy Plan</b></p> <ul style="list-style-type: none"> <li>• Adaptation and promotion of RES, energy efficiency and energy saving measures in the energy producing sector, industry, transport and agriculture</li> </ul>
<p><b>Regional Environmental Action Strategy for Sustainability</b></p> <ul style="list-style-type: none"> <li>• Promotion of environmentally sustainable development in the region</li> <li>• Coordination of existing programming documents such as Regional Environmental Energy Plan and Regional Climate Change Plan</li> <li>• Improvement of the regional planning in the area of climate change</li> </ul>
<p><b>Single Regional Programming Document (EU Funds)</b></p> <ul style="list-style-type: none"> <li>• Mitigation, adaptation and prevention of risks associated with climate change</li> <li>• Fostering of sustainable transportation</li> <li>• Promotion of energy saving strategies, sustainable use of resources, land planning and protection of biodiversity, waste management</li> </ul>
<p><b>Rural Development Plan Marche 2007-2013</b></p> <ul style="list-style-type: none"> <li>• Emphasis on regional GHG emissions reduction</li> <li>• Increase in production of energy from biomass</li> <li>• Expand coverage of forest areas</li> </ul>
<p><b>Regional Plan for Housing</b></p> <ul style="list-style-type: none"> <li>• Promote and ensure maximum energy efficiency in construction and building sector</li> </ul>

## Key institutions responsible for climate change

<p><b>Regional Councillor for Environment</b></p> <ul style="list-style-type: none"> <li>• Responsible for environmental issues in the region and meeting of emission reduction targets under Kyoto protocol</li> </ul>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Financial instruments available for financing climate change-related measures

<p><b>State and regional subsidies</b></p> <ul style="list-style-type: none"> <li>• Regional funds complementary to EU funds are assisting to local energy plans, certification of sustainable building, etc.</li> <li>• National subsidies are yearly allocated through different regional act mainly to energy efficiency improvements in public sector and directed to areas indicated in regional plan on climate change</li> </ul>
<p><b>EU Structural and Cohesion funds</b></p> <ul style="list-style-type: none"> <li>• Structural Funds available for 2007-2013 programming period are mainly dedicated to capital investments in energy saving measures, promotion of RES and cogeneration technologies</li> </ul>

## Information

RSC contact person	Cinzia Colangelo ( <a href="mailto:cinzia.colangelo@regione.marche.it">cinzia.colangelo@regione.marche.it</a> ), Marche Region
Website	<a href="http://www.ambiente.regione.marche.it">http://www.ambiente.regione.marche.it</a> <a href="http://www.regione.marche.it">http://www.regione.marche.it</a>

## LIGURIA, ITALY

### General description of the region\*

Population	Inhabitant	1 609 000
Surface area	Km <sup>2</sup>	5 422
Nominal GDP	€	41 099 259 470
GDP at current market prices	€	40 030 025 120
Percent of national GDP generated in the region	%	2.77
GDP per capita at current market prices	€/inh	24 900
GDP per capita as percent of EU average	%	105.00

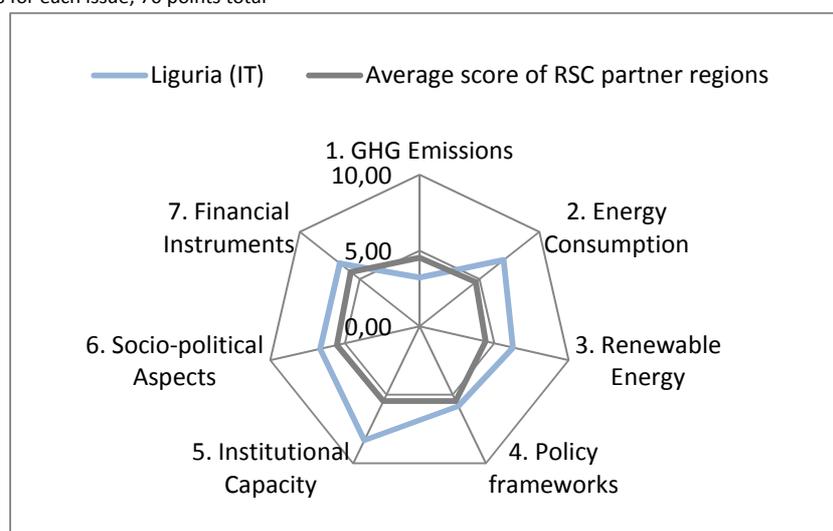
Structure of the region's economy	Industry	18%
	Service	74%
	Agriculture	2%
	Tourism	6%

\*All data for 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

1. GHG Emissions	3.22
2. Energy Consumption	7.01
3. Renewable Energy	6.27
4. Policy Frameworks	5.83
5. Institutional Capacity	8.33
6. Socio-political Aspects	6.67
7. Financial Instruments	6.67
<b>Total</b>	<b>44.00</b>

\*Maximum 10 points for each issue; 70 points total



## Key energy figures\*

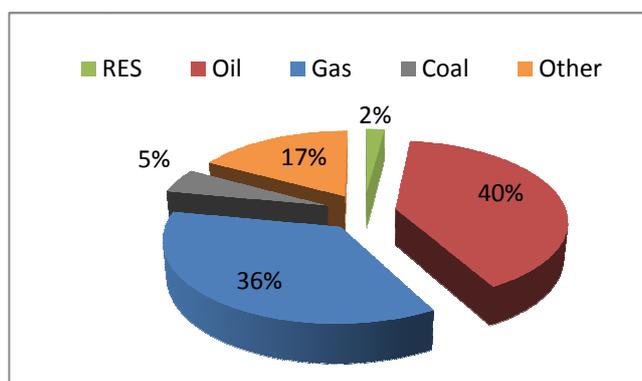
Total GHG emissions (2005)	Mtons of CO <sub>2</sub> eq	20.40
GHG per capita	Mtons/inh	12.74
GHG intensity	g CO <sub>2</sub> /€	530.81

Final energy consumption (FEC) (2005)	TOE	3 080 000
FEC per capita	TOE/inh	1.91
Energy intensity	TOE/M€	80.14
Energy production capacity <sup>47</sup>	MWe	2307.90

### Energy production capacity of the region by fuel type (percent share)

Data not available

### Energy consumption by fuel type (percent share, 2005)



Renewable share in energy production	2.31%
Renewable share in energy consumption	3.67%
Main RES types in energy production	Cogeneration, hydro
Other potential RES	Solar, wind, biogas
Main barriers to higher penetration of RES	Legal, financial, social

\*All data for 2006 unless otherwise noted

<sup>47</sup> More than 50% of energy produced is exported outside the region.

## Climate policy of the region

<p><b>National Plan for GHG emissions reduction 2003-2010</b></p> <p>Strategic objectives</p> <ul style="list-style-type: none"> <li>• GHG emissions reduction</li> <li>• Adoption and implementation of Kyoto Protocol</li> <li>• Establishment of carbon sink</li> </ul> <p>Quantitative targets</p> <ul style="list-style-type: none"> <li>• 6.5% reduction in emissions compared to 1990 baseline by 2010</li> <li>• 93 million t CO<sub>2</sub> emissions reduction by 2012</li> </ul>
<p><b>Environment and Energy Plan of Liguria region</b></p> <p>Strategic objectives:</p> <ul style="list-style-type: none"> <li>• Increase energy efficiency in the region</li> <li>• Control of emissions and gradual reduction to 1990 levels</li> <li>• Promotion of RES</li> </ul> <p>Quantitative targets:</p> <ul style="list-style-type: none"> <li>• 7% of energy production by RES</li> <li>• Biomass energy production equal to 150 MWt (by 2013); energy produced by solar thermal technology equal to 40 MWt (by 2010); wind energy equal to 120 MWe (by 2010)</li> <li>• Energy recovery from waste equal to 250,000 MWe by 2010</li> <li>• Energy savings increase by 10% by 2010</li> </ul>
<p><b>Rural Development Programme 2007-2010</b></p> <ul style="list-style-type: none"> <li>• Promotion of RES (construction of small solar, wind and biomass plants);</li> <li>• Energy saving through modernization of existing agricultural enterprises (decrease of current oil consumption by 2,850 TOE by 2015)</li> <li>• Reforestation of non agricultural areas (2000 hectares);</li> </ul>
<p><b>Regional Forestry Program 2007/2011</b></p> <ul style="list-style-type: none"> <li>• Sustainable forestry management aimed at improvement of carbon sink function</li> </ul>
<p><b>Regional Plan for Air Quality</b></p> <ul style="list-style-type: none"> <li>• Decrease of emissions and subsequent meeting of Kyoto Protocol requirements</li> <li>• Application of RES for transport</li> </ul>

## Key institutions responsible for climate change

<p><b>Environmental Department of Regione Liguria (regional authority)</b></p> <ul style="list-style-type: none"> <li>• Promotion of environmental policies on sustainable development, air quality and energy efficiency</li> </ul>
<p><b>Agricultural and Forestry Department of Regione Liguria</b></p> <ul style="list-style-type: none"> <li>• Implementation and coordination of agricultural and forestry policies</li> </ul>
<p><b>Economic Development Department of Regione Liguria</b></p> <ul style="list-style-type: none"> <li>• Approval and control of green public procurement procedures</li> </ul>
<p><b>Regional Energy Agency of Regione Liguria</b></p> <ul style="list-style-type: none"> <li>• Provides technical support to the regional authority in the fields of energy and sustainable development</li> </ul>

- Management of the funds established to finance climate change project and pilot actions

## Financial instruments available for financing climate change-related measures

### State and regional subsidies

- Underemployed Areas Fund is established to promote sustainable transportation and develop Genoa Underground network
- Decrease of the vehicular traffic volume and subsequent CO<sub>2</sub> emissions reduction

### EU Structural and Cohesion Funds

- OP 1 Measures: Promotion of alternative energy use by public bodies, support investments in energy efficiency, improvement of sustainable transportation
- Increase biomass resources
- Increase RES use in heating systems

### Tax Incentives

- State Law N203/2008 provides for a 36% reduction in the costs of energy efficiency investments in buildings

## Information

RSC contact person	Matteo Graziani ( <a href="mailto:matteo.graziani@regione.liguria.it">matteo.graziani@regione.liguria.it</a> ), Liguria Region
Website	<a href="http://www.regione.liguria.it/inglese/index.html">www.regione.liguria.it/inglese/index.html</a>

## PIEDMONT, ITALY

### General description of the region\*

Population	Inhabitant	4 347 300
Surface area	Km <sup>2</sup>	25 402
Nominal GDP	€	120 184 600 000
GDP at current market prices	€	117 057 889 100
Percent of national GDP generated in the region	%	8.09
GDP per capita at current market prices	€/inh	26 900
GDP per capita as percent of EU average	%	114.00

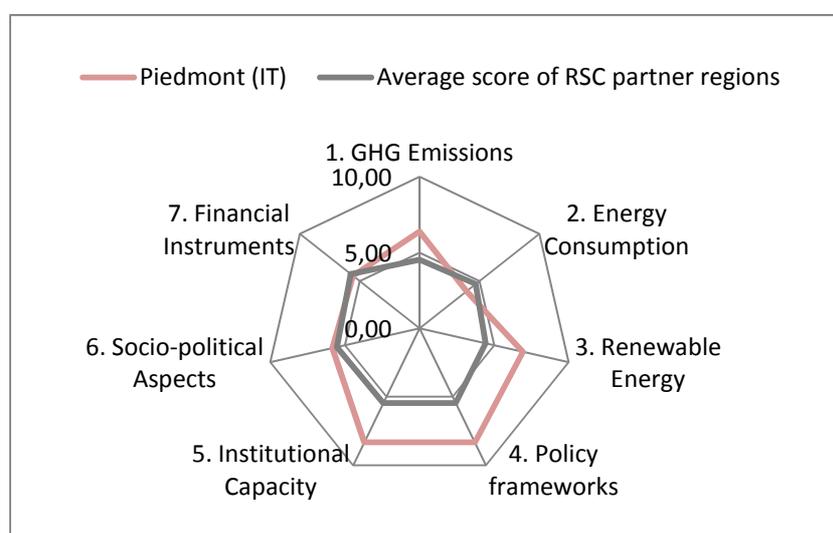
Structure of the region's economy	Industry	30.12%
	Service	67.83%
	Agriculture	2.05%

\*All data for 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

1. GHG Emissions	6.38
2. Energy Consumption	3.93
3. Renewable Energy	6.93
4. Policy Frameworks	8.33
5. Institutional Capacity	8.33
6. Socio-political Aspects	5.83
7. Financial Instruments	5.56
<b>Total</b>	<b>45.30</b>

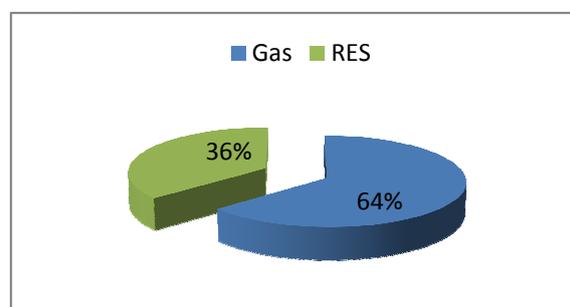
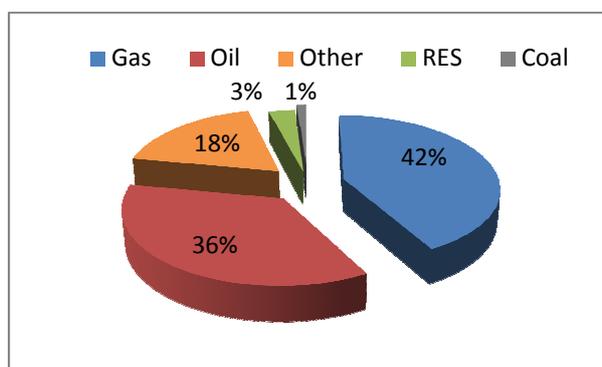
\*Maximum 10 points for each issue; 70 points total



**Key energy figures\***

Total GHG emissions (2007)	Mtons of CO <sub>2</sub> eq	42.88
GHG per capita	Mtons/inh	9.86
GHG intensity	g CO <sub>2</sub> /€	366.31

Final energy consumption (FEC) (2005)	TOE	12 016 000
FEC per capita	TOE/inh	2.76
Energy intensity	TOE/M€	102.7
Energy production capacity (2007)	GWh	21 600

**Energy production capacity of the region by fuel type (percent of total, 2007)****Energy consumption by fuel type (percent of total, 2005)**

Renewable share in energy production (2007)	36.17%
Renewable share in energy consumption (2005)	7.30%
Main RES types in energy production	Hydro
Other potential RES	Biomass, geothermal
Main barriers to higher penetration of RES	Market, financial

\*All data for 2006 unless otherwise noted

## Climate policy of the region

<p><b>National Action Plan for GHG emissions reduction 2003-2010</b></p> <p>Strategic objectives</p> <ul style="list-style-type: none"> <li>• GHG emissions reduction</li> <li>• Adoption and implementation of Kyoto Protocol</li> <li>• Establishment of carbon sink</li> </ul> <p>Quantitative targets</p> <ul style="list-style-type: none"> <li>• 6.5% reduction in emissions compared to 1990 baseline by 2010</li> <li>• 93 million t CO<sub>2</sub> emissions reduction by 2012</li> </ul>
<p><b>Energy and Environmental Regional Plan</b></p> <p>Strategic objective:</p> <ul style="list-style-type: none"> <li>• Achievement of the objectives set by Kyoto Protocol</li> </ul> <p>Quantitative targets:</p> <ul style="list-style-type: none"> <li>• Reduction of CO<sub>2</sub> emissions in Piedmont by 4,888,544 t by 2010</li> <li>• Change of electro-productive mix in the region (-1,014,650 t CO<sub>2</sub>)</li> <li>• Extension of AEM district heating in the city of Torino (-2,851,450 t CO<sub>2</sub>)</li> <li>• Incorporation of energy efficiency measures under CDM (-798,000 t CO<sub>2</sub>)</li> <li>• Reduction of electricity losses on the national transmission grid (-95,659 t CO<sub>2</sub>)</li> <li>• Decrease of electricity consumption (-258,279 t CO<sub>2</sub>)</li> <li>• Dissemination of the district heating system powered by wood-cellulose biomass (-27,353 t CO<sub>2</sub>)</li> </ul>
<p><b>Regional Plan for conservation and restoration of air quality</b></p> <p>Strategic objectives:</p> <ul style="list-style-type: none"> <li>• Preparation of action plans to reduce emissions into the air</li> <li>• Promotion of actions related to sustainable mobility</li> <li>• Elaboration of criteria to adopt measures for certain jobs and manufacturing plants</li> </ul> <p>Quantitative targets:</p> <ul style="list-style-type: none"> <li>• Dissemination of highly efficient innovative technologies with low emissions both in new facilities and as part of the normal replacement of the stock in heating plants (system-building plant, heat generators, distribution and regulation systems)</li> <li>• Promotion of fuel use with low environmental impact and RES</li> <li>• Reduction of emissions from public, private and freight transport</li> <li>• Promotion of behaviour change by citizens and consumers behaviours to reduce energy consumption and emissions from heating and air conditioning</li> </ul>
<p><b>ERDF Regional Operational Programme 2007-2013 (EU Funds)</b></p> <ul style="list-style-type: none"> <li>• Reduction of intensive use of traditional energy sources through increase of energy production from RES and promotion of energy efficiency and energy savings in production and consumption of energy (1,900,000 t CO<sub>2</sub> equivalent)</li> </ul>
<p><b>Rural Development Plan 2007-2013</b></p> <ul style="list-style-type: none"> <li>• Contribution to the mitigation of climate change by increased production of renewable energy and incorporating improved agricultural and forestry practices</li> </ul>
<p><b>Regional Transport Plan 2004, Three year program of public transport 2007-2009</b></p> <ul style="list-style-type: none"> <li>• Promotion of sustainable mobility and mitigation and prevention of environmental impacts from transport through renewal of rolling stock (rail and motor), introduction</li> </ul>

of methane vehicles, emission control technologies and subsidised use of public transport
<b>Regional Plan for the Management of Municipal Waste 2009-2013</b> <ul style="list-style-type: none"> <li>• Reduction of GHG emissions</li> <li>• Minimization of the construction of new landfills</li> <li>• Modernization of the systems for collection and energy recovery of biogas in the existing landfills</li> <li>• Gradual replacement of the use of fossil fuels with the fuel derived from waste in existing co-incineration plants</li> </ul>
<b>Energy Action Plan of the Piedmont Region</b> <ul style="list-style-type: none"> <li>• 20% reduction of GHG emissions compared to 1990 baseline (5,505 kt of CO<sub>2</sub>)</li> <li>• 20% increase in energy efficiency</li> <li>• 17% share of energy from renewable sources</li> </ul>

## Key institutions responsible for climate change

<b>Environment, Agricultural, Transport Directorates and Directorate of Production</b> <ul style="list-style-type: none"> <li>• Responsible for the promotion of actions for mitigation and adaptation to climate change in the region</li> </ul>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Financial instruments available for financing climate change-related measures

<b>State and regional subsidies</b> <ul style="list-style-type: none"> <li>• Subsidies for demonstration projects based on innovative technologies in energy (photovoltaic in the small scale, district heating)</li> <li>• Grants for incentives for retrofitting current building stock through the installation of energy efficient heating, air conditioning, improvement of insulation and promotion of energy saving practices</li> <li>• Co-financing for provinces for the development of mobility management policies, installation of emissions control equipment on public transportation vehicles, subsidising of the use of public transport and promotion of safe destruction and substitution of older vehicles</li> </ul>
<b>EU Structural and Cohesion funds</b> <ul style="list-style-type: none"> <li>• Grants for the promotion of sustainability, energy efficiency, energy savings and RES use</li> </ul>

## Information

RSC contact person	Ms. Valentina Scioneri (asti@lamoro.it), LaMoRo Development Agency
Website	<a href="http://www.lamoro.it">www.lamoro.it</a>

## MALTA

## General description of the region\*

Population	Inhabitant	405 006
Surface area	Km <sup>2</sup>	316
Nominal GDP	€	5 101 240 000
GDP at current market prices	€	7 330 000 000
Percent of national GDP generated in the region	%	100
GDP per capita at current market prices	€/inhabitant	18 100
GDP per capita as percent of EU average	%	77

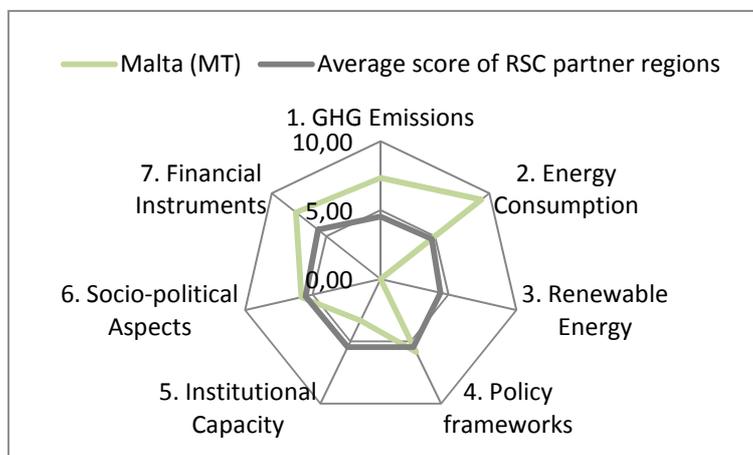
Structure of the region's economy	Industry	21%
	Service	71%
	Agriculture	5.5%
	Tourism	2.5%

\*All data for 2006 unless otherwise noted

## Climate Confidence Index Scores (out of ten)

1. GHG Emissions	7.34
2. Energy Consumption	9.27
3. Renewable Energy	0.00
4. Policy Frameworks	5.83
5. Institutional Capacity	3.33
6. Socio-political Aspects	5.83
7. Financial Instruments	7.78
<b>Total</b>	<b>39.39</b>

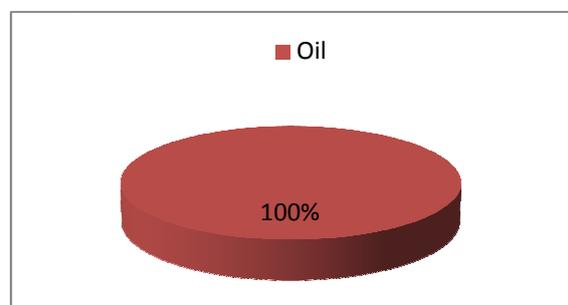
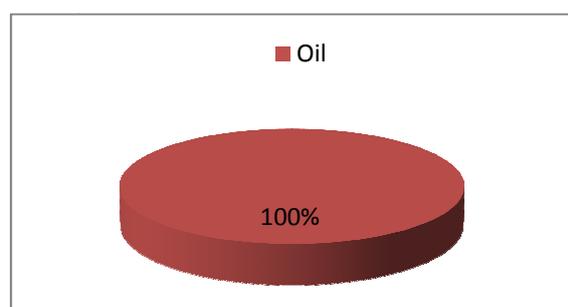
\*Maximum 10 points for each issue; 70 points total



**Key energy figures\***

Total GHG emissions (LULUCF)	Mtons of CO <sub>2</sub> eq	2.88
GHG per capita	Mtons/inh	7.10
GHG intensity	g CO <sub>2</sub> /€	392.41

Final energy consumption (FEC)	TOE	478 000
FEC per capita	TOE/inh	1.18
Energy intensity	TOE/M€	65.21
Energy production capacity	MWe	571

**Energy production capacity of the region by fuel type (percent of total)****Energy consumption by fuel type (percent of total)**

Renewable share in energy production	0%
Renewable share in energy consumption	0%
Main RES types in energy production	-
Other potential RES	Solar, wind
Main barriers to higher penetration of RES	Political, legal, financial, social

\*All data for 2006 unless otherwise noted

## Climate policy of the region

### **National Strategy for Policy and Abatement Measures Relating to the Reduction of Greenhouse Gas Emissions (consultation process has been finalized, pending until Parliament's approval)**

#### Strategic objectives

- Development of strategic response scenarios for mitigation in terms of reduction in GHG emissions
- Promotion of renewable energy sources
- Heads of entities, departments and authorities are required to meet series of quantitative mitigation targets set by 2013 compared to the 2008 baseline

#### Quantitative targets

- 15% reductions in carbon emissions
- 12% reduction in carbon emissions from government road vehicles
- 10% Increase in energy efficiency
- 10% energy sourced from RES
- 5% reduction in waste
- 10% increase in recycling
- 10% reduction in water consumption

### **Draft Renewable Energy Policy for Malta**

#### Strategic objectives

- Promotion of RES
- Ensure that the quality of life is not compromised by use of renewable energy
- Guarantee sustainable and increasing adoption of RES and ensure availability and accessibility of support services and development facilities

#### Quantitative targets

- Makes reference to EU target of 5% of the total electric energy to be generated from RES in 2010 (now Malta is required to achieve 10% share of RES in total national energy consumption by 2020)
- Establishes a target for the biofuels to constitute 0.3% of all fuel used in road transport

### **National Energy Efficiency Action Plan 2008**

#### Strategic objectives

- Achieve savings in energy end use
- Ensure that the public sector becomes a role model in energy efficiency
- Promote increased awareness and behavioural change by consumers on an individual level
- Adopt financing tools and economic incentives targeting all sectors to stimulate take up of more efficient technologies
- Support international efforts to ensure that more energy efficient products become available to the consumer
- Using legislation and fiscal instruments judiciously, e.g. by setting standards for energy performance in buildings or for providers of energy services
- Carrying out research in energy efficient technologies and practices suitable for adoption in Malta
- Creation of organizational structures for the support of the achievement of these objectives

#### Quantitative targets

- Energy saving target for 2016: 9% or 378 GWh per year

<ul style="list-style-type: none"> <li>• Energy saving target for 2010: 3% or 126 GWh per year</li> </ul>
<p><b>Draft Sustainable Development Strategy for the Maltese Islands</b></p> <ul style="list-style-type: none"> <li>• Reduction of GHG emissions, promotion of RES and sustainable transportation, land use, agriculture and industry, improvement of production and consumption patterns based on energy efficiency</li> </ul>
<p><b>Solid Waste Management for the Maltese Islands</b></p> <ul style="list-style-type: none"> <li>• Introduction of waste hierarchy and waste reduction options through reuse, recycling and energy recovery leading to GHG emission reduction and increase of energy efficiency of waste utilization</li> </ul>
<p><b>Vision for Public Transport</b></p> <p>Relevant recommendations:</p> <ul style="list-style-type: none"> <li>• Public transport must include all possible means of transport;</li> <li>• A new fleet of route buses of reduced size and level of emission that meet the objectives set post-Kyoto;</li> <li>• Institute disincentives based on traffic planning so as to avoid private vehicle use, where possible.</li> </ul> <p>Indicative quantitative targets:</p> <ul style="list-style-type: none"> <li>• Stabilising bus service patronage to 1995 levels;</li> <li>• A 20% reduction in on-street parking, particularly in town centres;</li> <li>• Establish schemes for Green Transport Plans;</li> <li>• Healthier travel through a 20% reduction in harmful transport emissions in the urban area and a 30% reduction in the number of cars entering the Valletta peninsula.</li> </ul>
<p><b>Operational Programme 1 – Investing in Competitiveness and Quality of Life (EU Funds)</b></p> <ul style="list-style-type: none"> <li>• Adaptation of low carbon with the ultimate aim of achieving carbon neutrality</li> <li>• Promotion the use of RES and energy efficiency at the household and enterprise levels</li> </ul>
<p><b>National Reform Programme for 2005-2008 (NRP)</b></p> <ul style="list-style-type: none"> <li>• Provides strategic direction for implementing the Lisbon Agenda and lists measures to combat climate change as one of the two national strategic priorities for environment</li> </ul>
<p><b>National Strategic Reference Framework (NSFR) 2007-2013</b></p> <ul style="list-style-type: none"> <li>• Provides a basis for allocation of EU Cohesion Policy funding for Malta, where climate change is identified as one of the key challenges for the country</li> </ul>
<p><b>The 2006-2010 Pre-budget document and subsequent Pre-budget documents</b></p> <ul style="list-style-type: none"> <li>• Acknowledges energy efficiency as national priority, promotes reduction in fuel consumption and introduction of RES exploitation methods</li> </ul>
<p><b>Draft Environmental Technologies Action Plan (ETAP)</b></p> <ul style="list-style-type: none"> <li>• Awareness raising and culture change resulting in a shift towards sustainable development and green economy</li> <li>• Presentation of itself as the showcase in the use of RES</li> <li>• Improvement of energy technologies through energy saving and efficiency measures</li> </ul>
<p><b>National Allocation Plan (2008-2012)</b></p> <ul style="list-style-type: none"> <li>• Cap of Malta's CO<sub>2</sub> emissions from the electricity generation sector through the participation of Malta's two power stations in the EU's Emissions Trading Scheme</li> </ul>

## Key institutions responsible for climate change

<p><b>Ministry for Resources and Rural Affairs</b></p> <ul style="list-style-type: none"> <li>Has the lead role in delivery and implementation of mitigation and adaptation policies through assessment of baseline situation and provisions of recommendations</li> </ul> <p><b>Climate and Marine Policy Unit at The Malta Environment and Planning Authority (MEPA)</b></p> <ul style="list-style-type: none"> <li>Bears responsibility for the provision of technical support and advice to the Government on climate change mitigation and adaptation issues</li> </ul> <p><b>Ministry of Finance, Economy and Investment</b></p> <ul style="list-style-type: none"> <li>Controls the planning and budgeting procedures for fiscal and financial measures in relation to the climate change</li> </ul> <p><b>The Malta Resources Authority</b></p> <ul style="list-style-type: none"> <li>Administers energy related schemes and acts as regulator on energy and water issues</li> </ul>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Financial instruments available for financing climate change-related measures

<p><b>State and regional subsidies</b></p> <ul style="list-style-type: none"> <li>Refund on the purchase of products using solar and wind energy, electric vehicles, and photovoltaic energy generation equipment</li> </ul>
<p><b>EU Structural and Cohesion funds</b></p> <ul style="list-style-type: none"> <li>Operational Programme 1 allocates around 33% of funds to climate change and environment related issues stated as priority under all priority axes</li> <li>All OP 1 investments are required to be low carbon, and if possible – carbon neutral</li> <li>Axis IV stands for the improvements of efficiency of energy generating infrastructure, emissions reduction, increase in penetration of RES (photovoltaic, wind and thermal solar), construction of a liquid waste treatment plant</li> <li>Axis V directs funding into solid waste management, rehabilitation of former and existing waste dump sites with subsequent increase of amount of energy recovered from waste</li> <li>Government provides subsidies from EU Structural Funds on purchase and installation of equipment generating energy from renewable sources and energy efficient equipment if they are placed at national grid and also subsidises energy audits of industrial and commercial enterprises and co-finances the recommended energy efficiency measures</li> </ul>
<p><b>Tax incentives</b></p> <ul style="list-style-type: none"> <li>Revision of motor vehicle registration tax and licensing system to make it emissions based and to encourage the use of vehicles with lower CO2 emissions</li> <li>Fuel excise tax - government imposes excise duties on most fuel products, with the highest tax imposed on motor fuels</li> <li>20% bio- content of diesel is exempted from excise tax starting from 2005</li> </ul>

## Information

RSC contact person	Sergei Golovkin ( <a href="mailto:sergei.golovkin@mepa.org.mt">sergei.golovkin@mepa.org.mt</a> ), Malta Environment and Planning Authority
Website	<a href="http://www.mepa.org.mt">www.mepa.org.mt</a>

## LOWER SILESIA, POLAND

### General description of the region\*

Population	Inhabitant	2 885 300
Surface area	Km <sup>2</sup>	19 947
Nominal GDP	€	22 016 552 590
GDP at current market prices	€	38 150 989 210
Percent of national GDP generated in the region	%	8.00
GDP per capita at current market prices	€/inh	13 200
GDP per capita as percent of EU average	%	56.00

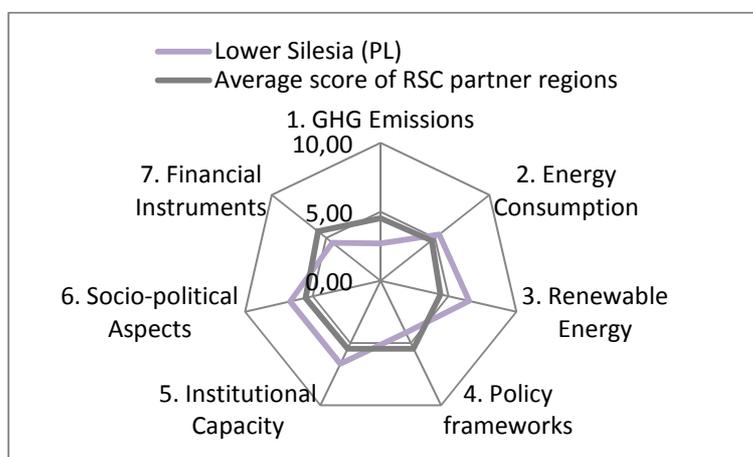
Structure of the region's economy	Industry	37.86%
	Service	53.92%
	Agriculture	2.21%
	Tourism	6.00%

\*All data for 2006 unless otherwise noted

### Regional Climate Confidence Index Scores\*

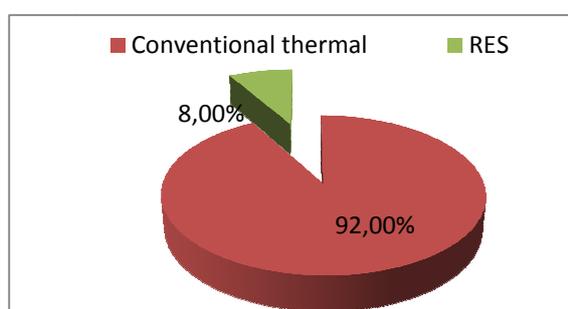
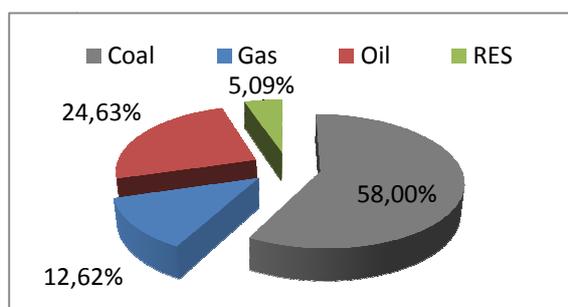
1. GHG Emissions	2.71
2. Energy Consumption	5.38
3. Renewable Energy	6.52
4. Policy Frameworks	4.17
5. Institutional Capacity	6.67
6. Socio-political Aspects	6.67
7. Financial Instruments	4.44
<b>Total</b>	<b>36.56</b>

\*Maximum 10 points for each issue; 70 points total



**Key energy figures (national level)\***

Total GHG emissions	Mtons of CO <sub>2</sub> eq	402.7
GHG per capita	Mtons/inh	10.56
GHG intensity	g CO <sub>2</sub> /€	854.11
Final energy consumption (FEC)	TOE	60 800 000
FEC per capita	TOE/inh	1.59
Energy intensity	TOE/M€	128.95
Energy production capacity	MWe	32 360

**Energy production capacity of the region by fuel type (percent of total)****Energy consumption (GIC)<sup>48</sup> by fuel share (percent of total)**

Renewable share in energy production	7.73%
Renewable share in energy consumption	6.91%
Main RES types in energy production	Hydro
Other potential RES	Geothermal, biomass, wind, solar
Main barriers to higher penetration of RES	Legal, market, financial, social

\*All data for 2006 unless otherwise noted

<sup>48</sup> Gross Inland Consumption: the quantity of energy consumed within the borders of a country or region. It is calculated using the following formula: primary production + recovered products + imports + stock changes – exports – bunkers (i.e. quantities supplied to sea-going ships).

## Climate policy of the region

<p><b>The Climate Policy of Poland – The Strategy of Greenhouse Gas Emissions reduction by 2020</b></p> <p>Strategic objective:</p> <ul style="list-style-type: none"> <li>• Ensure the reduction of GHG emissions by 2020</li> </ul> <p>Quantitative targets</p> <ul style="list-style-type: none"> <li>• 40% reduction of GHG emissions from 1988 baseline by 2020</li> <li>• 14% increase of the share of RES by 2020</li> </ul>
<p><b>National Action Plan on energy efficiency</b></p> <ul style="list-style-type: none"> <li>• 9% reduction of energy use by 2016</li> </ul>
<p><b>Regional Climate Change Strategy</b></p> <ul style="list-style-type: none"> <li>• Part of the Development Strategy for Lower Silesia by 2020</li> </ul>
<p><b>Energy Strategy for the Lower Silesia Province</b></p> <ul style="list-style-type: none"> <li>• Creates conditions for increased use of recyclable resources to produce energy</li> <li>• Stresses the main role of the cities in working towards climate resilience</li> </ul>
<p><b>2013 National Strategy for Transport Development</b></p> <ul style="list-style-type: none"> <li>• Promotion of increasing the share of public transport in passenger transport</li> </ul>
<p><b>Regional Action Plan for using biomass in the Wroclaw heat and power station</b></p> <ul style="list-style-type: none"> <li>• Development of measures aimed at change of energy carrier into a more environmentally friendly one such as biomass</li> </ul>

## Key institutions responsible for climate change

<p><b>The Government of Lower Silesia Province</b></p> <ul style="list-style-type: none"> <li>• Responsible for the development and implementation of the Regional Climate Change Strategy</li> <li>• The “Energy Strategy for the Lower Silesia” is the guideline for the activities</li> </ul>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Financial instruments available for financing climate change-related measures

<p><b>State and regional subsidies:</b></p> <ul style="list-style-type: none"> <li>• National and Regional Funds for Environmental Protection exist to provide financial support to climate change mitigation and adaptation related projects</li> <li>• Examples of ways in which these funds are used to support GHG reductions include projects which increase RES use, promote sustainable transport, and for ecological education</li> </ul>
<p><b>EU Structural and Cohesion funds</b></p> <ul style="list-style-type: none"> <li>• Grants for the promotion of renewable energy, energy efficiency and environmental protection</li> </ul>
<p><b>Municipal-level Environmental Protection Fund:</b></p> <ul style="list-style-type: none"> <li>• Finance energy efficiency or renewable projects</li> <li>• There are about 25 projects in 2009, 125,000 PLN (about 31,250 €) in 2009</li> </ul>
<p><b>EcoFund, Environment Protection Bank</b></p> <ul style="list-style-type: none"> <li>• Promote protection of the climate through use of RES - biomass, solar, geothermal, biofuels</li> </ul>

## Information

RSC contact person	Dorota Wilusz ( <a href="mailto:dorotawilusz@um.wroc.pl">dorotawilusz@um.wroc.pl</a> ), Municipality of Wroclaw
Website	<a href="http://www.wroclaw.pl">www.wroclaw.pl</a>