



Policy Recommendations for Sustainable Rural Communities in Europe

White Paper

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Executive Summary

Rural areas are faced with a series of energy challenges that are currently only partially addressed by the EU policy framework. Three interlinked issues have been recognised in some or all of the EU Member States: the low levels of energy efficiency in homes and commercial buildings, climate change and air quality issues due to the fuels used and finally the sometimes acute issues of energy affordability and availability in remote rural regions.

To support this White Paper FREE has created the **FREE Choices** website, which illustrates the low carbon highly efficient technologies available to rural energy consumers today. It is designed to act as a guide for policymakers and other members of the European energy community when they consider legislation. With the right policy framework in place, these technologies can be made more accessible, for the benefit of rural energy users and their environment.

The **FREE Choices** campaign is about making policymakers:

- Aware of the available, lower carbon, energy efficient and affordable rural energy technologies and sources
- Conscious of the current barriers within today's policy framework for consumers to actually make these choices
- Inspired by our set of policy recommendations to tackle these barriers, allowing EU citizens to make the right rural energy choices.

The White Paper is part of the launch of the FREE Choices campaign. FREE will now engage with stakeholders to receive their views and take this campaign to the next level.

Please visit www.freechoices.eu if you want to learn more about these available rural energy choices.

Energy efficiency levels are significantly lower in rural regions, due to the nature of many of the prevalent buildings which tend to be older and widely in need of some renovation. Whilst there is a high potential for energy savings in rural areas, current policies and energy efficiency programmes fail to exploit this directly. A combination of measures focused on rural energy consumers could address this opportunity in a more effective way:

- Follow up to the Energy Efficiency Directive with a strategy on renovation of buildings, with an objective to reach a 3% annual target for rural buildings by 2020, achievable with Government support.
- Innovative financing schemes for energy efficiency upgrades: use of ETS revenues, pay-as-you-save schemes (UK Green Deal model) specifically designed for rural energy consumers.
- Use of all available funding streams, including Rural Development Funds, for effective rural energy efficiency technologies as identified within the FREE Choices website (for example).

The need for **clean energy** is not just an urban issue. The current fuel mix in off-grid areas (heating oil, solid fuels and centralised electricity) is associated with higher levels of greenhouse gas emissions. Differences in air quality between cities and rural regions are reducing and some Member States have noticed high levels of ozone and PM emissions in rural areas. The current EU policy response is very fragmented, spanning various policy areas (climate action, energy, environment, agriculture and rural development) and, as such, unable to address these matters appropriately. FREE would propose the following:

- Support and encourage lower carbon and renewable energies, whilst ensuring that they lead to GHG savings on a life-cycle basis, lead to air quality improvements and do not result in higher energy costs for users.

- Ensure greatest level of consistency between climate policy and air quality objectives: the EU Year of Air in 2013 provides an opportunity to re-establish air quality as a priority area.
- Encourage decentralised energy production and micro-generation projects through Smart Grids deployment and energy advice for consumers.

Energy affordability and availability is particularly critical in rural areas, due to generally lower incomes, reduced energy choices and, again, poor insulation of buildings. Whilst the situation varies across Member States, FREE would consider that the following measures would help tackle the issue:

- Ensure that energy policy is 'rural proofed' and guarantees a level playing field between rural and urban energy users, with no hidden additional costs or inequality of taxation or incentives treatment due to the lack of access to the natural gas grid of many rural properties.
- Make available fuel poverty programmes focusing on insulation of buildings and personalised incentives to improve the current state of rural energy solutions.

In a nutshell - Policymakers should:

- 1** - Create direct investment in rural energy efficiency for greater environment and social benefit and remove barriers towards the roll-out of new technologies.
- 2** - Promote a balanced lower-carbon, low-polluting portfolio of energy solutions for rural communities.
- 3** - Ensure that environmental, social and health impacts are taken into consideration when setting taxation rates and incentives for fuels or energy technologies.

Background

Since its creation in 2010, the Future of Rural Energy in Europe (FREE) initiative concentrated on raising awareness about the critical situation of European rural areas when it comes to energy provision and energy use. With its network of supporting organisations and regions, FREE aims to alert policymakers – both at EU and national levels – about the series of challenges faced by rural energy users. In rural areas, due to their limited access to the natural gas grid, consumers are left with fewer energy choices, are often compelled to use high-carbon, polluting, inefficient and expensive sources of energy and have less access to modern energy technologies.

In 2011, economic consultancy Ecofys developed for FREE a study analysing the rural energy situation in five EU Member States¹ and shed a new light on these challenges. The study particularly highlighted three key points:

- A different fuel mix is used in rural areas, with generally more polluting fuels and higher emissions per capita. This is particularly

true in France and the UK. The continued use of heating oil and coal in rural regions explains in part the higher carbon footprint of rural areas.

- There are serious air quality issues in some rural areas of the EU with, for example, higher emissions of NO_x, SO_x and PM in France (due to oil and biomass use) and higher emissions of SO_x in Poland (due to coal consumption).
- Energy efficiency of buildings is poorer in rural areas, due to an older building stock and fewer incentives for building renovation.

This initial analysis of rural energy challenges demonstrated that the EU's goals of a competitive, low-carbon and secure energy supply (as outlined in the Energy 2020 Strategy² in 2010) would unlikely be attained without particular attention paid to rural areas.

Introduction



The paramount objective of FREE is to help provide the 56% of EU citizens living in rural areas³ with efficient, low-carbon and affordable energy. In this White Paper, FREE aims to conduct an audit of current environment and energy policy areas and measures in place at EU level and analyse their impact. The analysis will be structured around three key challenges for rural energy users: energy efficiency (section 1), clean energy (section 2) and affordable and available energy (section 3). For each challenge, the assessment will help identify gaps in the legislative and regulatory frameworks. Best practices identified at local, regional or national level, will illustrate measures, which would, if applied more generally when relevant, help improve the quality of energy provision for rural energy users. Energy use is commonly divided into three pillars: energy for heating/cooling, for electricity generation, and for transport. The White Paper purposely focuses more on the first two blocks and leaves out transport, as energy used in rural transport

does not substantially differ from urban patterns (although this might change in the future with the availability of, for example, charging stations for electric vehicles in cities). This White Paper largely focuses on heat consumption in buildings because the supply of heat is often underplayed in the energy and climate change debate and also because, in the EU, heating and cooling represents 49% of the final energy demand (31% for transport, 20% for electricity). This is also deemed to constitute the main challenge in rural regions where decarbonisation and energy efficiency measures can therefore have the largest impact.

Through its recommendations, FREE mostly aims at proposing new directions for energy used for heating/cooling purposes in rural areas and, to a lesser extent, for electricity generation.

Targeted recommendations will conclude each section, together with questions for discussion that will need addressing to ensure a sustainable future for rural energy consumers. FREE is willing to start a dialogue with policymakers and stakeholders, who will be welcomed to respond and contribute to this analysis. The report will conclude with a set of overall policy recommendations for EU policymakers (section 4), which will ensure that all rural citizens have access to modern energy by 2030.

To support this White Paper, a new section on the FREE website illustrates the currently available fuel options and technologies that can provide real energy savings and reduced environmental impacts today. Please go to www.freechoices.eu to access this site.

Section 1 – Energy Efficiency for Rural Areas

What's the Challenge?

Since the publication of the 2005 Green Paper on Energy Efficiency and the first Energy Efficiency Action Plan in 2006, energy efficiency has been acknowledged as a major policy priority in the EU, which would help meet most (if not all) energy challenges. As buildings account for 40 % of Europe's energy use and a third of its greenhouse gas emissions, improving energy efficiency in buildings has become an overarching priority, leading to the adoption of two Directives on the Energy Performance of Buildings (2002 and 2010) and the recent Energy Efficiency Directive.

When it comes to energy efficiency in buildings, rural areas face higher disadvantages, which have not yet been fully recognised by EU policymakers, who still consider that higher priority should be given to cities. As pointed out by the study developed by Ecofys for FREE in 2011, several barriers to energy efficiency improvements exist in rural areas. Insulation of rural homes lacks the benefits of scale that insulation of urban buildings with multiple tenants may have. In France, it is noted by the national statistics office INSEE, that ***“since 1985, there is an increasing gap between rural and semi-urban households and those living in city centers. Urban inhabitants have been the first to benefit from better building insulation and energy efficient heating systems and vehicles.”***⁴

In Poland, houses in urban areas are better insulated, mostly because renovation measures can be implemented by tenants associations, which lowers the investment costs per tenant. Local firms have also less access to energy consultancy advice and building professionals lack training on the technical solutions available.⁵

Several barriers to energy efficiency improvements exist in rural areas. The first barrier is of a financial nature. The income per inhabitant is 21% to 62% lower in rural areas, mainly

“Urban inhabitants have been the first to benefit from better building insulation and energy efficient heating systems”

because wage rates are lower.⁶ This gap is accentuated in Eastern Member States. The second barrier is the dominance of individual houses in rural areas and the scattered nature of dwellings. ***“In the urban environment, economies of scale will come into play with large-scale renovation programmes able to act on streets, districts and localities. In rural environments, projects may be more widespread and hence benefit from economies of scale to a lesser extent.”***⁷ However, one of the traditional barriers to energy efficiency, the so-called split incentive problem (whereby the owners are the one undertaking the renovation and the tenants are the one benefiting from it) is less present in rural areas, as there are more owners-occupiers in rural areas than tenants. This is mostly due to the fact that flats and houses are more affordable than in cities. In France, ***“the localisation of owners-occupiers (...) is higher than the national average (57.9%) in most of the rural counties and much lower in the very large cities.”***⁸ In Spain, ***“in rural areas, almost 70% of homes are one-family homes (61% owned, 3% rented and 6% in free occupation); whereas in urban environment this percentage falls below 20%.”***⁹

A best practice for energy efficiency in rural areas: Micro-CHP in the UK

Some energy technologies can be particularly adequate for rural and isolated areas. Micro-CHP is a very efficient form of boiler able to produce, with one fuel source, both electricity and heat for the home. If power is produced in excess, consumers can sell the electricity back to the grid and de facto become energy producers. ***“There is a substantial additional potential for installations in rural areas where a natural gas network is not available and the opportunities for network support are considerably greater.”*** Following a success story in Japan (during the past three years, more than 20,000 units have been installed in Japan), the UK Government recently decided to increase incentives to encourage the roll-out of Micro-CHP in the UK. In July 2012, the Department of Energy and Climate Change announced that Feed-in-Tariffs for domestic Micro-CHP (with a capacity of 2kW or less) would increase from a total of 14.2 pence per kWh to 17 pence per kWh. The first 30,000 Micro-CHP units will be eligible for the new rates with no degression. Feed-in-Tariffs will be reviewed when the 12,000th installation is completed.

Source: UK Department of Energy and Climate Change

What's the Current Policy Response?

In July 2012, the Committee of the Regions was the first EU body to acknowledge this challenge. The Committee, representing European regions, adopted an opinion¹⁰ outlining the specific challenges of rural communities and “underline[d] the need to (...) address in a more comprehensive and coordinated way the challenges and opportunities that rural areas face when it comes to energy use and production”. This is a first step towards recognition by EU policymakers of this important challenge.

2011 Energy Efficiency Plan

In 2010, the European Parliament also recognised the challenge in its resolution preceding the revision of the **Energy Efficiency Action Plan**¹¹, which recognised the potential for energy savings in rural areas and the impact this would have on job creation and economic development in general. These ‘soft’ recommendations have not been fully confirmed in pieces of legislation. However, the 2011 Energy Efficiency Plan¹² resulted in the creation in June 2012 of the **Smart Cities and Communities Initiative**, which supports cities and regions in taking ambitious measures to progress towards a 40% reduction of greenhouse gas emissions by 2020 through sustainable use and production of energy. A stakeholder platform was also formed, allowing urban and rural stakeholders to share views on energy efficiency in buildings, transport and on energy supply and network. On buildings, stakeholders have been able to promote specific technology solutions such as waste heat from sewage systems in Germany and Switzerland¹³ or solar heat storage systems¹⁴ in the village of Petten, Netherlands.

The extension of the Smart Cities programme to include communities, including rural communities, was a welcome acknowledgement that energy efficiency is not all about cities. However, since activities started last year, the initiative has failed to fully demonstrate the inclusion of rural energy concerns within its priorities.

Energy Efficiency Directive

The appreciation of a rural/urban divide within the building stock is absent from the recently agreed **Energy Efficiency Directive**. By providing that 3% of the total floor area of buildings of more than 500m² owned by central government is renovated each year, the text effectively excludes rural public buildings from the scope of the provision. Whereas recital 50 notes that Member States should encourage the use of financing facilities such as “*resources allocated to energy efficiency in the multiannual financial framework, in particular cohesion, structural and rural development funds*”, Article 20 on Financing fails to mention the use of these rural development funds for energy efficiency upgrades in the European countryside, which would have helped to specifically target rural public and private buildings.

Energy Performance of Buildings Directive

The revised Energy Performance of Buildings Directive rightly mentioned in the recitals that “*reduced energy consumption also has an important part to play in promoting security of energy supply, technological development and providing opportunities for employment and regional development, especially in rural areas.*”

Whilst the energy performance certificates and their recommendations for the cost-optimal or cost-effective improvement of the energy performance of a building would in principle boost renovation of rural buildings and decarbonise the heat sector, it could however be more difficult for off-grid homes to benefit from the highest rankings, due to the generally higher energy prices in off-gas grid areas – even if these energy sources have low carbon environmental credentials. This could represent discrimination for rural dwellers, as their homes would be given a lower performance rating on energy performance certificates.

Other EU-driven Energy Efficiency Initiatives

Whilst horizontal pieces of energy legislation such as the EED and the EPBD have not specifically addressed energy efficiency in rural areas, initiatives such as **Intelligent Energy Europe** (IEE) and the **Covenant of Mayors** have made funds available at local level for energy efficiency improvements.

Over the past 10 years, a number of IEE projects have benefited from EU funding to help rural communities manage their energy use, such as:

- The **RURASU project**¹⁵ in Greece and Germany, providing energy management, energy conservation consultancy and services to rural areas resulted in the creation of local energy agencies providing energy advice.
- The **RURENER project**¹⁶, rolled-out in 8 Member States, supporting its members in setting up local energy strategies and action plans. Typically, these include an energy audit, the identification of local sources of renewable energy and highlighting opportunities for energy savings.

The **Covenant of Mayors**, while initially targeting cities, now includes a large number of rural municipalities, mostly from Spain, Italy, France, Belgium and Romania. By joining the Covenant of Mayors, signatories commit to increasing energy efficiency through the implementation of a Sustainable Energy Action Plan. They can be assisted by coordinators and supported to achieve their objectives. In many countries the Mayor's office is seen as one of the more trusted public offices. Initiatives promoted through this route demonstrate real local public

leadership and provide examples of best practice to be adopted in other regions.

EU Regional Funds

In the **Energy 2020 Strategy**, the European Commission had recognised that *“regional Policy can play an important role in unlocking local potentials [for energy efficiency]. Rural areas also have a significant potential in this respect and could make use of the EARDF (European Agriculture Fund for Rural Development) that provides financial means to support such innovation projects”* (p. 16).

In addition to these funding possibilities, EU Regional Policy has gradually made energy efficiency a major priority. In 2009, EU institutions had adopted a new Regulation (397/2009/EC) to make **ERDF funds** available for energy efficiency and renewable energies, in the context of the **European Economic Recovery Plan**. Article 1(a) of the Regulation provided that *“in each Member State, expenditure on energy efficiency*

improvements and on the use of renewable energy in existing housing shall be eligible up to an amount of 4% of the total ERDF allocation.” In the proposal on the ERDF (**European Regional Development Fund**) for 2014-2020, the Commission stated that, in more developed and transition regions, at least 80% of ERDF resources at national level should be allocated to energy efficiency and renewables, innovation and SME support, of which at least 20% should be allocated to energy efficiency and renewables, identified as one of the new investment priorities. The overall budget proposed for the ERDF is €346 billion.

However, there is no ‘rural equivalent’ to **JESSICA**¹⁷ (Joint European Support for Sustainable Investment in City Areas), developed in co-operation with the European Investment Bank (EIB) and the Council of Europe Development Bank (CEB). JESSICA not only focuses on energy efficiency, but also on urban infrastructure, university buildings or the creation of new commercial floor space.

Local solutions: Beckerich in Luxembourg

Through the Covenant of Mayors, cities and small municipalities can propose innovative measures to boost energy efficiency at local level. This is the case of the small rural municipality of Beckerich in Luxembourg, where the mayor, Camille Cira, set a long-term objective of energy self-sufficiency for the town. Amongst the measures proposed, Beckerich offers free energy audits to citizens and interest-free loans for low-income households to undertake renovation. As noted by Mr Cira, *“for small communities with very limited budgets, (...) zero-interest loans from the EIB is an example of one of the appropriate instruments which could be leveraged to address this concern”*.¹

Source: Covenant Monthly Newsletter, June 2012 <http://www.eumayors.eu/-June-2012-.html>

Energy efficiency in mountainous areas: Trento, Italy

The autonomous province of Trento – an Italian region entirely situated in a mountainous region – offers a striking example of energy efficiency improvements. Between 2000 and 2008, multi-sector policies on energy savings were put in place, focusing on residential buildings and on the establishment of an ‘Energy District’, between Trento and Rovereto, in which businesses and research institutes were brought together to foster the development of a new form of construction. The objective was to develop new technologies using traditional materials that were available locally (wood), new ways of doing business, new professions and new trades. The project was undertaken in collaboration with the local university, with a view to making progress toward future building techniques with “zero impact.”

New buildings that met the standards laid out in the Energy Performance of Buildings Directive were built with energy consumption at least equivalent to ‘Class B’, that is, an energy consumption less than 60 Kwh/m², which translates into energy savings of 80% in comparison with current standard practices. Applying the class B standard to all new construction should make possible energy savings of 32% in the next 5 to 10 years in the province.

Source: Euromontana

Energy Efficiency for Rural Areas: Recommendations and Issues for Discussion

Recommendations

1 - The Energy Efficiency Directive includes several provisions which should in principle encourage energy efficiency throughout the EU territory. However, it is very likely that Member States will focus their efforts and initiatives on cities, as they seem to think that it would allow them to reach the largest number of people and therefore meet their indicative energy efficiency targets more easily.

FREE would like to ask the European Commission to issue guidance documents for Member States to ensure that the Energy Efficiency Directive also benefits rural areas, for example on these two aspects:

- The long-term strategies for mobilising investment in the renovation of buildings, to be issued before 30 April 2014 (Article 4 of the Directive) should include concrete measures for renovation of rural buildings. While identifying *“cost-effective approaches to renovations relevant to the building type and climatic zone”*, Member States should highlight their specific plans for the renovation of rural buildings, which are very often the worst energy performing buildings.
- When preparing their assessments of the potential for high-efficiency cogeneration, Member States should, as highlighted in Annex VIII of the Directive, include their estimated potential for micro-cogeneration, as it is a technology which would be greatly beneficial to energy efficiency of heating systems in rural dwellings.

2 - FREE would also encourage the European Commission to **follow-up on the Energy Efficiency Directive with a proposal specifically targeting building renovation, with specific measures for rural areas**.

In addition to investing in the renovation of urban dwellings that are, on average, already relatively energy efficient, the EU should also concentrate on rural homes that are more significantly lagging behind. For example, a recent survey conducted in Scotland found that *“68% of dwellings in urban areas have a ‘good’ NHER [National Home Energy Rating] rating compared with 29% of those in rural areas. Urban dwellings are also about eleven times less likely to be rated ‘poor’ than those in rural areas.”*¹⁸ In that respect, there is a higher potential for energy savings (expressed in tonnes of oil equivalent) in rural areas. In light of the use of more polluting fuels in rural regions (see next section), the EU would adopt a win-win strategy by encouraging energy savings in rural communities, as it

would help reduce energy consumption, fuel poverty issues and emissions of CO₂ and air pollutants.

3 - The proposal should also focus on **financing facilities and funding schemes**.

- Member States shall create financing facilities aggregating different streams, such as their own national resources, EU Structural Funds, resources allocated to energy efficiency from EU project bonds, resources from the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD).

- The European Commission could also encourage Member States to use their revenues from the EU Emissions Trading Scheme for the thermal renovation of buildings, like it is currently planned in France.¹⁹ In addition to reducing energy consumption, this idea is also seen as a way to address fuel poverty (Energy Bill Revolution in the UK²⁰).

- In this proposal, Member States should be asked to report to the European Commission on the amount of funds potentially available to rural areas for the renovation of the building stock. Another possible area worth investigating for the financing of energy efficiency is the UK ‘Green Deal Financing Scheme’ model, which allows householders to upgrade the thermal efficiency of their home at no upfront cost, with investment paid back through electricity bills (at the same time as the cost savings accrue).²¹

- The access to support for lower carbon technology and insulation should be made easy for individual rural homeowners who should not be disadvantaged by living outside a collective housing community or established urban energy savings scheme.

Questions

- Should a specific fund be set up to encourage the renovation of rural buildings, either under the Intelligent Energy Europe programme or under the Rural Development pillar of the Common Agricultural Policy?

Section 2 – Clean Energy for Rural Areas

What's the Challenge?

Climate Change

Against misconceptions, cities are not necessarily the largest contributors to climate change in the EU. *“[D]etailed analyses of urban greenhouse gas emissions for individual cities suggest that – per capita – urban residents tend to generate a substantially smaller volume of greenhouse gas emissions than residents elsewhere in the same country.”*²² This situation is particularly prevalent in developed countries: *“In China, cities use twice as much commercial energy per capita as the countryside. In developed economies, including the US and the EU, that pattern is reversed, and cities are typically the most energy-efficient places. In the US, people in rural areas use 12 per cent more energy per capita than city dwellers. Those in the suburbs use 20 per cent more.”*²³

The same pattern can be observed in the EU. Some concrete examples taken from Member States support this analysis. The study developed by Ecofys on rural energy in 2011 notes that *“in France, energy use per capita is lower in urban areas. The greater share of oil in rural areas leads to relatively high greenhouse gas emissions per capita. Other emissions to air (NOx, SOx, and particulate matter) on a per capita basis are also higher in rural areas.”*²⁴ The same applies to the UK, where greenhouse gas emissions per capita are higher in rural and intermediate areas than in urban environments (p. 69). *“For example, a regional analysis of UK greenhouse gas emissions shows that the regions with the highest per capita greenhouse gas emissions are the relatively rural northeast and Yorkshire and the Humber, whereas London has the lowest figure, followed by the highly urbanised West Midlands.”*²⁵ Still in the UK, *“the Scottish House Condition Survey shows that off-gas fuels are associated with higher levels of [GHG] emissions than those using mains gas.”*²⁶

This is due to a number of factors, such as the different (more polluting) fuel mix, the higher energy consumption due to the lower level of energy efficiency of buildings, the wider presence of industrial activities outside cities and the emissions generated by agriculture.

In 2009, 10.3% of the EU GHG emissions were generated by agriculture, down from 10.9% in 1990.²⁷ The agriculture sector differs from other sectors since methane (CH₄) and nitrous oxide (N₂O), not CO₂, are the main greenhouse gases. In order to limit these emissions, several categories of measures²⁸ have been identified, such as changes in feeding rations for cattle and improved cattle fodder, anaerobic digestion or reduced N-application (aimed at less N₂O from soil applications of fertilizer and manure). Some barriers exist to the deployment of these measures: higher costs for farmers and lack of awareness.



The higher GHG emissions to be found in EU rural areas is problematic and requires policymakers' attention, as rural areas are more exposed to the effects of climate change, particularly through its impact on agriculture, which remains a very structural sector in European rural areas. Two major phenomena would, in the European Commission's view, have a severe effect on EU farming activities: decreasing average annual and seasonal rainfall and more sudden heatwaves, droughts, storms and floods across the EU. The impact would also be major for mountainous areas: as pointed out by Euromontana, *“between the end of the 19th century and the beginning of the 21st century, the temperature [in the Alps] has increased by two degrees (...). The most visible effects have been glacial melt, a decrease in snow cover, changes in the average flow of rivers and a decrease in water resources in general.”*²⁹ This is associated with decreasing levels of production of hydroelectric energy, a leading form of renewable energy for electricity production in Europe.

“Against misconceptions, cities are not necessarily the largest contributors to climate change in the EU”

Air Quality

Despite the growing focus on climate change legislation, air quality remains a major political priority at EU level. Air quality is generally better in the countryside than in urban areas, as demonstrated by WHO data collected in both urban and non-urban environments (WHO Air Quality Guidelines for Europe, 2000). Emissions of primary pollutants, including nitrogen dioxide, carbon monoxide and volatile organic compounds, are significantly greater in urban areas.

However, serious air pollution issues also occur in rural regions. According to Thomas Kuhlbusch, Air Pollution Manager at the Institute for Energy and Environment Technology (Duisburg-Essen University, Germany), ***“the differences in air quality in rural and urban areas have reduced drastically in recent years, particularly because air quality in cities has improved. Some issues exist in rural areas, especially because of intensive livestock activities.”***³⁰ There are at least two categories of classical pollutants for which there is very little difference between rural and urban areas: ozone and particulate matters. First, maximum hourly ozone concentrations may exceed 300 µg/m³ (0.15 ppm) in rural areas and 350 µg/m³ (0.18 ppm) in urbanised regions.³⁰ The WHO indicates that short-term acute effects include respiratory symptoms, pulmonary function changes, increased airway responsiveness and airway inflammation. These health effects were statistically significant at a concentration of 160 µg/m³ (0.08 ppm) for 6.6-hour exposures. Ozone is a secondary photochemical pollutant, formed by the oxidation of other primary pollutants emitted by vehicles (such as NO or CO or VOCs) in the presence of sunlight. Pollution migrates outside of cities where the ozone is formed with the action of the sun. Some concrete case studies demonstrate that ozone pollution is actually greater over rural regions.³² By reducing vehicles' emissions in

cities, policymakers would also indirectly reduce air pollution in neighbouring regions.

The second category of pollutants for which serious issues happen in rural areas is PM₁₀. As reported by the WHO Guidelines, ***“traditionally, particulate matter air pollution has been thought of as a primarily urban phenomenon. It is now clear that in many areas of Europe, urban–rural differences in PM₁₀ are small or even absent, indicating that particulate matter exposure is widespread”*** (p. 187). PM is recognised as one of the most harmful categories of pollutants: according to the WHO, long-term exposure to low concentrations of particulate matter in air is associated with mortality and other chronic effects, such as increased rates of bronchitis and reduced lung function.

What are the causes for these PM emissions in rural areas? Three main causes have been documented: the use of diesel and petrol vehicles, pollution caused by agriculture and the use of wood-burning stoves and biomass heating systems. The issue has been particularly studied in rural France, most recently through the 'Interregional Study of Particulate Pollution in Rural Areas' conducted in 2011.³³ The study notes that biomass combustion for heating represents, at national level, 21% of PM₁₀ emissions, 34% of PM_{2.5} emissions and 66% of PAHs (Polycyclic Aromatic Hydrocarbons). Wood heating is the main source of PM pollution in the residential sector (about 90%) in rural areas, which overall constitutes half of the PM emitted. PM pollution is aggravated by the use of old heating systems. The study highlights the possible conflicts between the Government's policy encouraging renewable energies (including biomass) by 2020 and the harmful effects on air quality in rural areas.

What's the Current Policy Response? Climate Change Legislation

Since the adoption of the Energy and Climate Change Package in 2008/09, the European Union has put a major focus on the decarbonisation of the European economy. Very ambitious objectives have been set for the overall reduction of CO₂ emissions, with a binding target of 20% by 2020 and a commitment ***“to reducing greenhouse gas emissions to 80-95% below 1990 levels by 2050 in the context of necessary reductions by developed countries as a group.”***³⁴ Two main policy tools have been put in place to help achieve these goals: the EU Emissions Trading Scheme (ETS) and the Renewable Energy Directive.

Renewable Energy Directive

Whilst the EU ETS is a horizontal measure not designed to have a rural focus, it could be argued that the Renewable Energy Directive would have a particularly beneficial impact on rural areas, as recently noted by the Committee of Regions in its opinion on rural energy: ***“there is considerable potential in rural areas for both energy generation and to reduce consumption – sizeable tracts of land for wind farms or solar power plants are only available in the countryside.”*** To what extent do renewable energy investments particularly

“Recent OECD research reveals that in Germany, rural regions are attracting around 20% of the renewable energy investments”

benefit rural areas? Recent OECD research reveals that in Germany, rural regions are attracting around 20% of the renewable energy investments. Renewable energy policy is expected to deliver in three areas for rural regions: energy security, climate change mitigation and economic development. With regards to climate change mitigation, it can however be exposed to significant trade-offs. **“For instance, large biomass heat and power plants can generate new employment opportunities in rural communities, but may have a negative CO₂ balance due to land-use change and transportation of feedstock over relatively long distances.”**³⁵ Ongoing discussions on the sustainability of biofuels have also indicated that their production could be more carbon intensive than initially thought when the European Commission proposed a 10% share of biofuels in transport in the Renewable Energy Directive.

Despite the examples outlined above, significant CO₂ emissions reductions can however be achieved in rural areas thanks to renewable energies, but only if they are developed by taking into account their characteristics and specific needs. For example, it is important to **“avoid imposing types of renewable energies on areas that are not suited to them. (...) More care is needed to identify those [appropriate] places rather than adopting policies that somewhat arbitrarily spread renewable energy projects across national landscapes.”**³⁶ An overemphasis on encouraging biomass use in rural areas has been evidenced in some Member States’ national energy policies. This approach should be treated with caution as deforestation is still a consideration in many European countries. Emissions from old biomass appliances can also be extremely detrimental to local air quality.

Rural regions have often promoted renewable energy projects, as they can lead to the creation of new jobs, increase security of supply, and diversify sources of revenues in the area. Renewable energies have not developed at the same pace for electricity, heating/cooling and transport. According to the latest figures available³⁷, the share of renewables in electricity was 19.1% in 2009, but only 13.4% in heating and cooling and 4.2% in transport. In rural areas, there is scope for progress for renewables in the heating sector (for example for solar thermal), as they can be efficiently combined with back-up gaseous fuels like LPG. Biomass can also bring a series of benefits to

mountainous areas³⁸ (economic development, energy security, CO₂ emissions reduction and pollution control) if it is done in the right conditions: for example through the combustion of biomass waste from agro-forestry activities and the development of modern installations (equipped with technologies such as PM filtering devices) able to deliver electricity and heat for neighbouring consumption centers (small towns).

Back in 2010, the European Commission ruled out binding sustainability criteria for biomass, on the basis that the risks were deemed to be low and that deforestation and indirect land-use change would be addressed most effectively at international level. In parallel, the European Commission introduced a proposal on land use, land-use change and forestry (LULUCF) to harmonise rules to account for forests and agricultural soil emissions across the EU as a first step to incorporate these sectors into the EU’s reduction efforts. Member States shall submit action plans designed to limit emissions from LULUCF activities. The text, due to be agreed by the European Parliament and Member States in the coming months, does not set emissions reductions targets for the sector.

Common Agricultural Policy (CAP)

To address emissions caused by agriculture and better streamline environmental policy priorities in agriculture, the Common Agricultural Policy has relied on the principle of cross-compliance, a mechanism that ties EU support for farmers to compliance with standards of environmental care. This is however focused on the preservation of soil and water, habitats and wildlife and landscape features. As part of the Rural Development pillar of the CAP, farmers who voluntarily help protect the environment are offered compensation for the extra costs incurred through agri-environment schemes. The European Network for Rural Development³⁹ has been particularly active in providing measures to protect and enhance natural resources, as well as preserving high value farming and forestry systems and cultural landscapes in Europe’s rural areas. In addition, agricultural emissions are covered by the Effort Sharing Decision⁴⁰ for non-ETS sectors by 2020. Each Member State will contribute according to its relative wealth. For example, Denmark will need to reduce emissions by 20%, whereas Bulgaria will be allowed to see its emissions increase by 20%.



Air Quality Legislation

There is wide a spectrum of legislation at EU level which addresses air pollution. Two categories of measures exist: general horizontal measures and source-based measures. At the time of the publication of this White Paper, we await many more anticipated adjustments to air quality focused legislation scheduled in 2013.

In terms of horizontal measures, the most important piece of legislation is the **Ambient Air Quality Directive (2008/50/EC)**, which sets minimum standards with regard to the assessment and management of ambient air quality. While covering all major air pollutants, the Directive pays special attention to particulates and ground-level ozone pollution because of their danger for human health. Whilst this is of general benefit to all citizens, wherever they are located, the Directive *“particularly seeks to achieve a general reduction of concentrations of PM_{2.5} in the urban environment in order to ensure that*

large sections of the population benefit from improved air quality”. This is another example where the situation in lower-density areas is being overlooked.

As for source-based legislation, the European Union has tackled pollution from transport, but also paints, solvents, waste incineration and industrial activities. In the field of transport, emission standards were introduced for light-duty vehicles (cars and vans) and heavy-duty vehicles. These standards tend to be overshadowed now by the parallel development of CO₂ standards for both light-duty and heavy-duty vehicles.

The upcoming review of EU Air Quality legislation in 2013 should provide an opportunity to fill the gap and pay specific attention to air pollution caused by ozone and PM in rural areas.

An Integrated Energy and Environmental Policy – the Example of the Renewable Heat Incentive in the UK

The Renewable Heat Incentive, proposed in 2011 by the UK Government, aims to increase the deployment of renewable heat technologies in order to keep the UK on track to meet the 2020 target in the most cost effective way. While developing the scheme, the Department for Energy and Climate Change (DECC) anticipated possible conflicts with air quality objectives when using biomass for heating purposes: *“The Government recognises the importance of controlling emissions from the burning of biomass and that this is done as part of a coherent, strategic approach to dealing with air quality and national emissions. The burning of biomass has detrimental impacts on air quality where it replaces gas or electricity, but can have positive impacts where it replaces heating oil or coal. (...) The most significant air quality impacts are expected to come from particulate matter (PM10) and oxides of nitrogen (NOx) emissions from the combustion of biomass. Therefore, we will work with Defra and the relevant Devolved Administrations to introduce emissions limits of 30 g/GJ for particulate matter and 150 g/GJ for NOx.”* These emissions limits were due to start already in 2012.

Source: Renewable Heat Incentive, UK Department of Energy and Climate Change, March 2011, p.50



Biomassehof Achental, a Biomass Farm in Germany

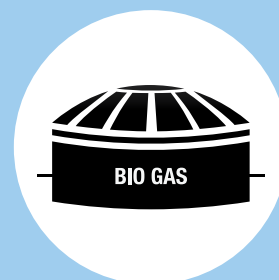
In 2007, 8 rural municipalities in the Bavarian Alps launched a biomass farm for the 30,000 inhabitants living in the area. The biomass farm is a wood pellet production plant that transforms local raw material and then supplies companies, individuals and surrounding heat networks. It sells wood chips, pellets, briquettes, logs shavings and logs, to wholesale or individual customers. It is also a biomass information centre. The farm offers services and advice to municipalities, individuals, and shops on bioenergy and other issues related to renewable energy. Within a 50 km radius of the Achental region, forest waste provides an overall potential of 942,000 m³. The farm is also conveniently located close to heat demand centers (several municipalities, industrial sites), which led to the creation in 2010 of a heat network connected to the farm.

Source: Euromontana, “The utilisation of mountain wood and the organisation of mountain wood industries”, 2012

Agricultural biogas plant – Experimental Station of the National Research Institute of Animal Production in Grodziec Śląski, Silesia Province, Poland

The project focuses on developing renewable energy sources in the agricultural sector, especially in the area of converting by-products into biomass. Construction of the agricultural biogas plant began in 2010 and various mixtures of substrates are used, both of agricultural origin (soild and liquid manure, corn and grass silage) as well as biomass from the agri-food industry and green biomass from urban areas. In addition, the on-site biogas plant is a prototype installation that uses co-generation to produce heat (for the pig farm nearby) and electricity (which is sent to the grid). The research institute leading the project also studies uses for by-products of agricultural production, such as liquid and solid manure and their immediate use in the methane fermentation process, to maximise reductions of greenhouse gas emissions.

Source: Silesia region



Clean Energy for Rural Areas: Recommendations and Issues for Discussion

Recommendations

1 - FREE supports a sustainable energy mix for rural areas and wants the EU to reduce its reliance on CO₂ intensive fuels such as heating oil, centralised electricity and coal, and promote instead cleaner fuels available in off-grid areas such as LPG and renewable energies. **Fuels need to be used to the right purpose and in the right conditions:** fuels and energy technologies are not always adequate in certain conditions and a series of parameters need to be taken into consideration (how electricity is produced, weather conditions, energy consumption profile of the household, location and level of heat demand, etc.). With this in mind, FREE would ask Member States to avoid overpromoting any single solution over others and aim for a diversification of the energy mix.

2 - FREE supports the Renewable Energy targets included under the 2009 Renewable Energy Directive and believes the development of renewables can be beneficial to the development and sustainability of the European countryside. In this respect, when considering a revision of the Directive for the post-2020 period, **FREE would encourage the Commission to take the following points into consideration:**

- Ensure that full life-cycle emissions are taken into consideration when calculating the carbon footprint of renewable fuels such as biomass, bioethanol and biodiesel.

- Cross-check their impact on other environmental objectives, such as air quality. Climate change should not necessarily overtake other environmental priorities. For example, should the Commission decide to eventually introduce sustainability criteria for biomass, these criteria should acknowledge the high NO_x and PM emissions caused by the combustion of biomass. These criteria could come with NO_x and PM emissions limits, in line with those proposed in the UK (see box), or with new financing help to apply state-of-the-art technologies to develop biomass in the most sustainable conditions.

- Provide guidance to Member States over the incentives provided to renewable energies and over the local conditions needed to make the most out of renewable energies. For example, today, 80% of Germany's biogas plants have no waste heat recovery systems in place.⁴¹ The heat should be re-used at local level for the neighbouring communities (see box on Silesia project, Poland).

- Encourage consultation with local communities to avoid conflicts of use and 'NIMBY' reactions.

3 - In preparing for the revision of Air Quality legislation in 2013, FREE would encourage EU policymakers to **ensure the greatest level of consistency between energy, climate change and air quality legislation.** Air quality



is just as important as climate change and should receive an equal treatment.

- 4 - FREE would encourage and support the European Commission to **propose a Plan to encourage micro-generation for rural areas**. Micro-generation will be made possible through the roll-out of Smart Grids and Smart Meters across the EU. This would reduce transmission losses along the power grids, the risks of supply disruptions and the impact of high-voltage lines on the landscapes. Micro-generation is not just about electricity production at micro level: micro-CHP is an available technology able to deliver both electricity *and heat* for medium-size buildings (ideally in Northern regions of Europe). Any national schemes aiming for the development of micro-generation should always include clear elements of guidance, support and advice for consumers – especially for vulnerable and disadvantaged rural consumers who may be less confident with the use of these technologies. They should also avoid excessive bureaucracy on behalf of the energy supplier and/or the micro-CHP consumer, as it is currently experienced in Poland. A recent proposal¹⁴² requires Micro-CHP owners to apply for a license if they do not consume all the electricity they produce and want to send the excess electricity back to the grid. Concrete, face-to-face advice on the heating systems will guarantee that policies determined at EU level lead to a real change on the ground. FREE believes that energy advice will play a growing role in the coming years

as technologies become more and more sophisticated and consumers are asked to take a more active part in producing energy for their own needs.

- 5 - In the field of taxation, FREE supports the principle of a **carbon tax applied to all fuels**. A simple framework is needed whereby energy content is taxed to reduce energy consumption and CO₂ is taxed to reduce CO₂ emissions. **However, the fuel taxation framework should also reflect other environmental and social externalities, such as air pollution and its impact on health.**

Questions

- With current discussions on energy infrastructure and trans-European Energy Guidelines, the debate is very much focusing on macro-level energy projects in Europe (centralised electricity and natural gas pipelines). However, security of energy supply and decarbonisation will also depend on the availability of micro-generation. How can the EU best encourage micro-generation? Should the EU have a role or should it be left to national, regional and local authorities?
- Should a special programme be created for rural communities and their mayors as part of the Covenant of Mayors to boost participation of rural towns?
- Besides CO₂ taxation, should fuel taxation also integrate broader environmental externalities, such as air pollution?



Section 3 – Affordable and Available Energy

What's the Challenge?

The concept of 'fuel poverty' was first widely used in the UK in the 1990s and is experienced when a household spends more than 10% of its income on its energy bill (heating, lighting, cooking). The definition however varies across Member States and can be amended over time, as it is currently the case in the UK. In France, 13% of households can be considered to be in fuel poverty, that is, 3.4 million households.⁴³ 35% of these households live in rural towns. In these towns, 20.5% of households are affected, versus 10.6% in cities with more than 100,000 inhabitants and 5.3% in the Paris area.⁴⁴ ***"More than one million property owners in fuel poverty live in individual houses, more in rural areas and in small municipalities"***. Amongst French rural inhabitants, 20.8% spend more than 10% of their income, versus 17% in cities of more than 200,000 inhabitants. In the UK, there are currently some 3.5 million fuel-poor households and it is estimated that between 2.6 million and 3 million households will be fuel poor in 2016.⁴⁵ Living costs are 20% higher in UK rural areas, and ***"after transport, domestic fuel costs make up the next largest element of the additional costs."***⁴⁶ This is due to the reduced choice for energy solutions in off-grid areas and the ***"prevalence of larger, older and less well-insulated housing stock in rural areas."*** Fuel poverty therefore tends to be more acute in rural areas than in cities. In the UK, ***"the depth of fuel poverty in rural households is much greater: rural LIHC (Low Income High Cost) households have an average fuel poverty gap of £622 compared to a gap of £362 for urban properties."***⁴⁷ This challenge is now experienced (to varying degrees) in various

Member States. In 2009, a study⁴⁸ developed by the Polish Energy Regulatory Office identified 14 million people living in remote areas as potentially vulnerable customers.

Fuel poverty cannot be restricted to fuel prices, as it has many dimensions and a complex set of causes (from the general lower-income situation in rural areas to the poor insulation of buildings or the use of inefficient boilers). Beyond fuel prices and energy efficiency of buildings, affordability of energy is a much broader issue which has also to do with the 'social price' of energy technologies that are encouraged through mandates and subsidised by public incentives (mostly for renewable electricity). Such effects are well documented. Recently *The Financial Times* reported on Germany's energy transition: ***"The danger of a crisis of public confidence is compounded by other aspects of energy policy. In mid-October, for example, the government will almost certainly have to raise the renewable-energy surcharge, used to pay producers a guaranteed price, from 3.5 cents to about 5.3 cents per kWh. This would raise household electricity bills by about 7 per cent."***⁴⁹ In Italy, in 2012, the costs of renewable energy incentives were to reach €9 billion (€6 billion for solar only). The Italian Government noted at the time that ***"the average Italian family would have to pay 120 euros in 2012 to support renewable power, up from 30 euros in 2009."***⁵⁰ In reaction to this, the Italian Government decided in April 2012 to cut incentives for solar power by 35% on average and for other renewables by 10 to 15%.

Tackling energy poverty through energy technologies and efficiency: The Shetlands Islands

The development of Smart Grids is essential to the realisation of the full potential of energy technologies in rural areas and to affordable energy – not just for renewable energies but also for technologies like Micro-CHP. The benefits of Smart Grids are multiple: not only will they encourage the roll-out of modern energy solutions in rural areas, but they will also help solve the issue of fuel poverty in remote areas.

An example can be found in the Shetland Islands with the Northern Isles New Energy Solutions (NINES) project, aiming to treble the amount of wind-generated power. In the Shetland Islands, 35% of households live in fuel poverty. To address the situation, the project aims to develop an innovative energy storage system, which will be managed by centrally controlled 'smart' water and storage heaters in 1000 Shetland homes. The ERDF (European Regional Development Fund) will contribute £1.3 million to finance the new heating systems.

Source: www.Shetlandrenewables.com

Fighting off energy poverty through energy efficiency in the UK

Due to the widespread concerns about the general high cost of rural energy in the UK, the British Government has recently started to specifically address the challenge of rural areas. It has particularly brought proposals¹ for a domestic scheme for Renewable Heat Incentive, a subsidy to encourage the use of renewable heat (biomass, heat pumps, solar thermal) to be made available only in off gas grid areas – targeting oil and LPG.

In addition, a significant proportion of the new Energy Company Obligation (ECO), to be launched on 1 January 2013, will be allocated for the provision of solid wall insulation in rural areas, under the Carbon Emission Reduction Target.

Source: Renewable Heat Incentive - Consultation on proposals for a domestic scheme, 20 September 2012, available here <http://www.decc.gov.uk/assets/decc/11/consultation/RHI/6453-rhi-consultation-domestic.pdf>

Passive Buildings – the ultimate solution to energy poverty?

The municipality of Stoszowice (a small town in South-West of Poland) is building the first passive school in the country. The 800 m² building will use PV solar panels as primary source of energy and be equipped with modern energy technologies such as heat pumps and heat recovery units to optimise the heat profile of the building. The building will also have an individual sewage treatment. Thanks to those solutions the building will have nearly 'zero' consumption of energy and will therefore reduce energy losses and the associated expenditure. The building will therefore be in line with the 2010 Energy Performance of Buildings Directive, which provides that from 2019 all public buildings should be 'nearly zero energy buildings' (Article 9).

Source: <http://www.dobrepraktyki.pl/index.php?p1=1&p2=3&art=414>

Energy costs are a sensitive issue not just for electricity but also for transport. As pointed out by several research pieces on living standards in rural areas, fuel prices, insurance and maintenance costs make the transport budget item a priority in rural households and a major financial burden. Research conducted in the UK⁵¹ noted that "people in rural areas are much more likely to own cars (51 cars per 1000 people compared with 370 per 1000 in urban areas). Those with cars are more likely to drive longer distances in them (...). 30% of urban residents are main drivers of cars compared with 46% of rural residents." In France in 2006, households in rural areas spent 4.4% of their budget on transport fuels (4.6% for periurbans), whereas those living in city centers would spend 3.2% (and 2.4% in Paris).⁵²

Fuel poverty also comes with another challenge for rural energy consumers: availability and reliability of energy. Rural consumers can be heavily reliant on cross-border electricity (for example, in Ireland) but cross-border flows are still quite limited: on average, only 10% of electricity consumed in the EU crosses Member States' borders in 2007.⁵³ Rural energy consumers are therefore more vulnerable. For rural areas it makes a lot of sense to develop instead micro-generation networks allowing consumers to reduce their dependency on the centralised electricity network.

“For rural areas it makes a lot of sense to develop instead micro-generation networks allowing consumers to reduce their dependency on the centralised electricity network”

What's the Current Policy Response?

There is no comprehensive approach to address fuel poverty in rural areas at EU level. In late 2010, with support from the Belgian EU Presidency, the European Commission published a Staff Working Paper⁵⁴ broadly defining energy poverty and fuel poverty, acknowledging the challenge and seeing energy efficiency as the most effective way to tackle fuel poverty: "Energy efficiency measures should be an integral part of welfare policies." However, the Paper failed to recognise the rural specificity of fuel poverty, despite the evidence gathered across several Member States. The Paper was also not followed by any concrete initiatives after the end of the Belgian EU Presidency.

The European Commission has always adopted a cautious approach to the issue, so as to comply with the principle of subsidiarity. Fundamentally fuel poverty is considered to be a social issue to be dealt with at national level. In a response to a parliamentary question in October 2010, Energy Commissioner Oettinger noted: "Regarding the specific topic on fuel poverty, according to Article 3(7) of the **electricity Directive (2009/72/EC)** 'each Member State shall define the concept of vulnerable customers which may refer to energy poverty.'"

Whilst the EU has indeed a limited margin of manoeuvre on the social aspects of fuel poverty in rural areas, it could act on three fronts to reduce the weight of energy expenses on rural households:

- First, through encouragements for **renovation of rural buildings**;
- Second, through the **completion of the EU internal energy market**, which would eventually lead to lower electricity and natural gas prices for energy consumers;
- Third, with regards to electricity prices specifically, through a tighter control over **the incentive schemes for renewable energies** across Member States, to ensure that energy users can earn extra revenues through the energy produced, but that these revenues outweigh the increase in electricity bills generated by renewable incentive schemes.

Is the European Union delivering in these fields, and is it to the benefit of greater energy affordability in rural areas?

Energy efficiency legislation

As demonstrated in section 1), the European Commission has deployed efforts to encourage energy efficiency investments through the Intelligent Energy Europe Programme and also, more importantly, through the European Regional Development Fund (ERDF) operated under the umbrella of the EU Regional Policy. However, the recent Energy Efficiency Directive has stopped

short of launching a large building renovation strategy, as was proposed by the rapporteur Claude Turmes. By definition, the obligation to renovate 3% of central government buildings each year (Article 4) will not benefit rural households or even local rural authority building stock.

Internal Energy Market legislation

With regards to the internal energy market, the European Commission has just published a Communication to ensure that completion is achieved by 2014. It is too early to anticipate the possible impact of the measures to be adopted in 2013/2014. However, the possible drop in prices would only marginally benefit off-grid energy users.

Renewable energy

Renewable energies can make a significant contribution to energy affordability in rural areas. As pointed out by the OECD, "renewable energy provides remote rural regions with the opportunity to produce their own energy (electricity and heat in particular)". However, this is only possible with carefully designed incentives. "Limit subsidies in both scope and duration, and only use them to induce renewable energy projects that are close to being viable in the market. If subsidies are too high, they can attract 'rent-seeking investors' [and] can lead to high-cost energy that is only viable as long as high levels of subsidy are sustained."⁵⁵ In the field of incentives for renewables, the European Commission has recently announced that it would "*prepare guidance on best practice and experience gained in [support scheme] matters and, if needed, on support scheme reform, to help ensure greater consistency in national approaches and avoid fragmentation of the internal market.*"⁵⁶ This was confirmed by the Communication on the Internal Energy Market issued on 14 November 2012. This is a first step in the right direction to avoid that incentive schemes lead to 'rent-seeking' behaviour and to disproportionate increases in electricity prices.

"The analysis suggests that policies to improve the thermal efficiency of the housing [are] the most effective at reducing the level of fuel poverty"



Affordable and Available Energy: Recommendations and Issues for Discussion

Recommendations

- FREE would like to reiterate its support for **ambitious energy efficiency measures in rural areas and the renovation of rural buildings**. FREE is indeed of the opinion that energy efficiency of buildings should come before other options usually considered (price-based and income-based policies). In that respect, FREE fully supports the conclusions reached by Pr. John Hills in its recent analysis developed for the UK Government: *“The analysis suggests that policies to improve the thermal efficiency of the housing stock that are targeted on those with low incomes and have energy-inefficient homes would be the most effective at reducing the level of fuel poverty.”*⁵⁷
- FREE supports **sustainable support mechanisms for renewable energies** but would also like to see **incentives for switching to lower carbon fuels such as gas (natural, bio or LPG)**. These fuels – when used in conjunction with renewable or very high efficiency technologies can take people out of fuel poverty whilst contributing towards carbon reduction targets.

- As the EU prepares a new Energy and Climate Change Package for the 2020-2030 period, it is important that the European Commission prepares, as part of its impact assessment, an **evaluation of the impact of new targets for CO₂ emissions reductions and renewable energy on European consumers’ energy bills**. To ensure that environmental objectives are met in a way that is not detrimental to social conditions for energy users, funding for fuel poverty programmes should be made available for those households identified as being worse off. These programmes should concentrate on improving heating and insulation standards in rural buildings.

Questions

- Should energy affordability be addressed at EU level or should it be left to individual Member States?
- Should tackling fuel poverty be recognised as one of the objectives of energy efficiency policy, along with climate change, security of supply and competitiveness?

Section 4 – Concluding Rural Energy Policy Ideas

1 - Should EU Energy Policy be “rural proofed”, to avoid any damaging unintended consequences for rural dwellers?

Before an EU energy policy proposal is published, the European Commission should run a simple process of examination and assessment to answer the following questions: does the proposal indirectly favour urban versus rural inhabitants? Can rural inhabitants benefit from the measure? Does the text guarantee a level-playing field for urban and rural inhabitants? If not, how can the text provide a better deal for rural inhabitants?

2 - A target for renovation of rural buildings?

Research has demonstrated that energy efficient renovation of the building stock comes with a series of benefits to society. **“A lower level of total energy consumption will reduce public spending on energy bills (...), it will imply a reduced need for subsidies to energy consumption and facilitate the achievement of EU’s 2020 (...) reductions of greenhouse gases at a lower cost.”**⁵⁸ The current rate of buildings renovation is 1.2% a year and FREE believes a 3% rate (for all buildings and not just for certain public buildings, as stated in the Energy Efficiency Directive) could trigger the necessary changes in rural building stock. In addition to this, building renovation would come with health benefits (better indoor climate) and increased economic activity. A study developed in 2012 by Copenhagen Economics for the Renovate Europe campaign demonstrates that with €40bn investments by 2020, 760,000 jobs would be created across the EU.

This could come with concrete benefits for rural areas. For example, the use of wooden materials in the renovation of buildings in rural areas has been identified as a growth area in rural France. In a study developed for the Ministry of Industry⁵⁹ it is expected that 40,000 jobs could be created in rural areas (in addition to the 231,000 existing jobs) in the wood sector should 12 million m³ be used in the construction and renovation sector.

3 - Towards a 60/40 mix for heat production in rural areas (60% renewables, 40% gas) by 2050?

FREE supports the ambitious measures deployed by the EU to increase the share of renewable energies in the energy mix. In sparsely populated regions with abundant sources of renewable energies, the deployment of renewables can come with new revenue sources, new job and business opportunities, product innovation, community empowerment and affordable energy.

FREE supports the development of renewable energies if decisions are made after consultation with local communities, to avoid ‘conflicts of uses’, such as the resistance to wind turbines by local residents or the conflict with food production for biofuels.

Natural gas is repeatedly highlighted as an adequate transition fuel towards renewable energies. In its 2011 Special Report on the ‘Golden Age of Gas’⁶⁰, the IEA notes the following: **“Natural gas has an important role to play in complementing low-carbon energy solutions by providing the flexibility needed to support a growing renewables component in power generation. Significant opportunities remain for natural gas to replace other fossil fuels in end-use sectors (...).”**

In the future, renewable energies should take an active role in system stability, while natural gas, LNG and LPG should reinforce their natural capability to deal with flexibility.

For obvious financial reasons, the natural gas grid will however never cover parts of the rural territory in the EU. In these off-grid areas, LPG and LNG could play the same back-up role for renewable energies, bringing the same environmental benefits as natural gas. LPG and LNG could therefore be fuels of choice to provide back-up to renewable energies in EU rural areas. A 60/40 energy mix would mean that the share of renewable energies in heat production (solar thermal, biomass, etc.) would quadruple in rural areas, while LPG and LNG would substitute more polluting fuels that are still dominant in the current energy mix, such as heating oil and coal.

For further information about modern rural energy technologies, visit our website www.freechoices.eu

If you would like more information or would like to add your comments to the suggestions, ideas and recommendations featured in this White Paper, please email us (rural-energy@fleishmaneuropa.com) or join our debate on Facebook and LinkedIn.

References

- ¹ Rural Energy in the EU – Country Studies for France, Germany, Poland and the UK, Ecofys, September 2011
- ² Energy 2020 Strategy (COM(2010) 639 final)
- ³ DG Agriculture and Rural Development, http://ec.europa.eu/agriculture/rurdev/index_en.htm
- ⁴ Les dépenses d'énergie des ménages depuis 20 ans, ADEME, 2006, available here: http://www.insee.fr/fr/themes/document.asp?ref_id=ip1315
- ⁵ RURASU project description, Intelligent Energy Europe
- ⁶ First European Quality of Life Survey: Urban-rural differences, European Foundation for the Improvement of Living and Working Conditions, 2006
- ⁷ Europe's buildings under the microscope - A country-by-country review of the energy performance of buildings, BPIE for European Climate Foundation, 2011, p.4
- ⁸ La structure du parc de logements en 2010, Figures and Statistics, Ministry of Sustainable Development, August 2011
- ⁹ Elección del tipo de vivienda. Una comparación entre el ámbito urbano y el ámbito rural, Valencia University, 2004
- ¹⁰ Opinion of the Committee of the Regions on 'Energy efficiency in cities and regions – a focus on the differences between rural districts and cities' (2012/C 225/06)
- ¹¹ European Parliament resolution of 15 December 2010 on Revision of the Energy Efficiency Action Plan (2010/2107(INI))
- ¹² Energy Efficiency Plan 2011, COM(2011) 109 final
- ¹³ Contribution of the European Heat Pump Association, available here: <http://www.eu-smartcities.eu/content/use-waste-heat-sewage-systems>
- ¹⁴ Contribution of the Energy Research Center of the Netherlands, available here: <http://www.eu-smartcities.eu/content/storing-solar-heat-during-summer-use-winter>
- ¹⁵ <http://www.rurasu.info/>
- ¹⁶ <http://rurener.eu/>
- ¹⁷ Information available here: http://ec.europa.eu/regional_policy/thefunds/instruments/jessica_en.cfm#2
- ¹⁸ Scottish House Condition Survey, 2010, available here: <http://www.scotland.gov.uk/Publications/2011/11/23172215/5>
- ¹⁹ Speech by President François Hollande, Government Environmental Conference, 14 September 2012, available here
- ²⁰ More details here: <http://www.energybillrevolution.org/whats-the-campaign/>
- ²¹ Getting the measure of fuel poverty - Final Report of the Fuel Poverty Review, John Hills, April 2012, p.108
- ²² Blaming cities for climate change? An analysis of urban greenhouse gas emissions inventories, David Doldman, Environment and Urbanization 2009 21: 185
- ²³ A Tricky Balance, Financial Times, 26 July 2012
- ²⁴ Rural Energy in the EU – Country Studies for France, Germany, Poland and the UK, Ecofys, September 2011 (page 15)
- ²⁵ United Kingdom Government (n.d.), Greenhouse gas emissions –summary, accessed 5 June 2008 at <http://www.sustainable-development.gov.uk/regional/summaries/01.htm>." (p. 13 (196))
- ²⁶ 21st century heating in rural homes, Consumer Focus Scotland, February 2012
- ²⁷ Climate Change Statistics, Eurostat, June 2011
- ²⁸ Next phase of the European Climate Change Programme: Analysis of Member States actions to implement the Effort Sharing Decision and options for further communitywide measures – Agriculture sector, AEA, prepared for DG CLIMA, June 2012
- ²⁹ Energy in Mountain Areas - Strategy Proposal, Euromontana, 2011
- ³⁰ Interview with Thomas Kuhlbusch for FREE Germany, 20 December 2011
- ³¹ Air Quality Guidelines for Europe, WHO, 2000, p.181
- ³² Dossier special sur l'ozone, Airparif, 2009, available here: http://www.airparif.asso.fr/_pdf/dossier_ozone.pdf
- ³³ Particul'Air, Etude inter-régionale de la pollution particulaire en zone rurale, ADEME, August 2011
- ³⁴ Energy Roadmap 2050 Communication, COM(2011) 885 final
- ³⁵ Linking Renewable Energy to Rural Development (Executive Summary), OECD, June 2012
- ³⁶ Linking Renewable Energy to Rural Development (Executive Summary), OECD, June 2012
- ³⁷ EU Energy in Figures, DG Energy, April 2012
- ³⁸ Euromontana position paper on energy in mountainous areas, 2010
- ³⁹ European Network for Rural Development: <http://enrd.ec.europa.eu/>
- ⁴⁰ DECISION No 406/2009/EC
- ⁴¹ Interview with Pr. Rainer Luick, College of Forestry of Rottenburg, Bade Wurttemberg, Germany, 15 January 2011
- ⁴² Proposal for Energy Law, September 2012, available here: <http://gramwzielone.pl/uploads/files/PEwrzesie%C5%842012.pdf>
- ⁴³ INSEE report, http://www.insee.fr/fr/insee_regions/poitou-charentes/themes/dossiers/dd/dd6.pdf
- ⁴⁴ Groupe de travail Précarité énergétique – Rapport Pelletier, Plan Batiment Grenelle, December 2009
- ⁴⁵ FREE UK Practice Briefing (July 2012), available on NEA website: <http://www.nea.org.uk/see-us-in-action/current-projects/calor-free>
- ⁴⁶ A Minimum Income Standard for Rural Households, UK Commission for Rural Communities, November 2010
- ⁴⁷ Getting the measure of fuel poverty - Final Report of the Fuel Poverty Review, John Hills, April 2012, p. 75
- ⁴⁸ Vulnerable customers and fuel poverty in Poland, Polish Energy Regulatory Office, 2009
- ⁴⁹ Germany: Lines of Contention", Financial Times, 9 October 2012
- ⁵⁰ Italy Green Energy Incentives To Be Scaled Back, Reuters, 5 April 2012
- ⁵¹ The effects of petrol price increases on rural residents, G. Stokes, 1996
- ⁵² Les dépenses d'énergie des ménages depuis 20 ans, ADEME, 2006, available here: http://www.insee.fr/fr/themes/document.asp?ref_id=ip1315
- ⁵³ Report on the experience gained in the application of the Regulation (EC) No 1228/2003 "Regulation on Cross-Border Exchanges in Electricity" (COM(2007) 250 final)
- ⁵⁴ An Energy Policy for Consumers, SEC(2010) 1407 final, 11 November 2012
- ⁵⁵ Linking Renewable Energy to Rural Development (Executive Summary), OECD, June 2012, p.2
- ⁵⁶ European Commission Communication, Renewable Energy: a major player in the European energy market, COM(2012) 271 final
- ⁵⁷ Getting the measure of fuel poverty - Final Report of the Fuel Poverty Review, John Hills, April 2012, p. 177
- ⁵⁸ Multiple benefits of investing in energy efficient renovation of buildings, Copenhagen Economics for Renovate Europe, October 2012
- ⁵⁹ Technologies Clés 2015 – Bâtiment, 2010, p. 238
- ⁶⁰ Are we entering a golden age of gas? World Energy Outlook 2011 - special report, International Energy Agency



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