1. INTRODUCTION

This paper explores the present opportunities for sustainable and multifunctional forest management for the development of rural areas, with particular reference to Europe. It argues that, for a variety of reasons, the opportunities for the forest sector to contribute to sustainable rural development today and in the imminent future are, perhaps, greater than at any time in the last fifty years. Nonetheless, sectoral path dependencies, policy inadequacies, slow innovation processes, the absence of management of the necessary transitions and competition for land from agriculture will limit the achievement of potential. These factors point to a need to create more supportive framework conditions for developments in innovation, policy and practice to help unlock the potential of this most sustainable of land uses.

The twin principles of sustainability and multifunctionality underpin European forestry, but the application of these principles will (and should) vary greatly from place to place. The principles of sustainable forest management are articulated in the work of the Ministerial Conference for the Protection of Forests of Europe (MCFPE) and provide the context for action by state, private and third-sector forest owners. These principles draw on the fundamental tenets of sustainability based on the Brundtland definition: ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (WCED, 1987). Multifunctionality, on the other hand, implies the delivery of more than one function/benefit/service from a particular land use, and, in its normal European use, implies the existence of non-market benefits, in addition to those derived from the market.
Forestry’s positive future is framed by the imminent challenges as the combined economic forces of global market capitalism and the demographic forces of population growth combine to create an unprecedented demand for natural resources. Natural and man-made capital stocks are threatened by climate change; technological potential for increasing food yields appears to have stalled somewhat; and the stock of critical non-renewable natural resources is being rapidly depleted. This is creating the context for an impending global crisis on one hand but a fillip for induced innovation on the other. In the short term, it has led to increased energy efficiency in the provision of many products and services and is leading to significant efforts to decarbonise both production and energy systems and developed country lifestyles. 

**Stern** (2007) has argued that climate change is the greatest negative economic externality ever to confront mankind. The pervasive but spatially variable impact of climate change, its insidious character, and the fact that it confronts head-on the established *modi operandi* of industrial and consumer activities, makes it on one hand require a global willingness to act, whilst at the same time challenging the deeply entrenched contemporary ethos of economic growth.

In the post-war period, European nations have seen unprecedented economic growth. Globalisation has extended the reach of market economies and is now producing a new global order with the rise of Asian economies, whose growth rates now markedly exceed those of western countries, as do those of many African and South American countries. Globalisation has also generated enormous stresses, in part arising from global restructuring of economic activity, in part because of an emergent raw materials shortage, in part because of the enormous external costs of production and consumption, and in part because of the recent financial crisis which convulsed the market economy. The UK’s chief scientist, Sir John Beddington, has used the analogy of ‘the perfect storm’ to describe the possible coming together of increased demand for food, energy and water, in the context of climate change.

These combined crises and predictions have also helped to promote critical reflection on the nature and impact of contemporary material demands (**Jackson**, 2009) and the extent to which economic metrics measure societal well-being effectively (**Fitoussi et al.**, 2009). Given the sombre context, and the critical opportunity it creates for renewable natural resources, the exploration of the scope for making more effective use of forest resources as one of the key global natural resources is an urgent task. It has been argued elsewhere (**Slee**, forthcoming) that forest contributions are wide-ranging, and can be conceptualised in terms of contributions to both livelihoods and to ‘liveability’. Livelihoods result from forests’ capacities to support material wellbeing, through direct access both to the range of products derived from forests and through wages and incomes derived directly and indirectly from the exploitation of forests and forest products. This is essentially the market-based dimension of forests’ economic usefulness. In this market-driven arena in developed countries or the subsistence arena in developing countries, forests contribute to the most basic of human needs for warmth, shelter and a range of other needs. Equally, forests also contribute to creating attractive living space and have important associated cultural and spiritual values (**Schama**, 1995). Regeneration planning has increasingly used the term ‘liveability’ to describe the need for high quality environments as living space (**Shaw et al.**, 2004). Especially in more lightly forested countries, trees add value to living and recreational space (**Slee et al.**, 2004). Borrowing from regeneration literature, the term ‘liveability’ can be used to describe the enhanced non-material quality of life created by the existence of trees, woods and forests (**Slee**, forthcoming). These are still economic benefits, but do not deliver returns to the resource owner. In delivering both enhanced livelihoods and enhanced liveability, forests confer distinct social and economic benefits and provide significant ‘green infrastructure’ support for rural development.

Given the urgency of the task to decarbonise the energy system (**Mackay**, 2009) and the search for a ‘new energy paradigm’ (**De la**
Torré Ugarte (2005), wood ought to be a highly favoured commodity. Oil prices are two to three times higher than they were in the early part of the last decade (see Figure 1). This ought to shift the energy mix to favour wood energy developments. The market for bio-composites containing woody biomass ought to be enhanced too for the same reason, because of the high hydrocarbon content of many alternatives. Climate change also creates scope for afforestation on ‘bare’ land to sequester carbon in cost-effective ways. In addition, avoided deforestation should benefit developing-country forests through the REDD mechanism. At the margin, the REDD process ought to enhance the prospects for sustainable wood production from temperate forests.

In spite of these apparent advantages, one can still find parts of Europe where under-management of the forest resource is the norm. Much of this under-managed forest arises from land abandonment from agriculture in many parts of Eastern and Southern Europe, although estimating the extent of land abandonment and the subsequent scrubbing over to forest and woodland is problematic (Keenleyside and Tucker, 2010). Particularly on poorer-quality land in remote rural areas around the Mediterranean, unmanaged scrub woodland is a widespread form of land cover, often a successional land use following farmland abandonment. In other cases, such as parts of England, the majority of the privately owned woodland still has no active management for wood production and represents a relict land use from pre-industrial times. And for all the rhetoric from bodies such as the UK Committee on Climate Change (2010), which has argued that parts of Scotland have considerable scope to replace expensive oil-based space heating with wood energy, progress in wood energy developments remains rather slow.

In this paper, I want to explore some key concepts to help understand the challenge of transformational change in the forest sector and explore some key issues that lie behind the needed expansion of the forest sector’s contribution to sustainable rural development.

![Figure 1 – Crude Oil prices 2000-2011.](http://www.mongabay.com/images/commodities/charts/crude_oil.html)
2. CONCEPTS

The key organising concepts of this paper, sustainability and multifunctionality, are convenient shorthand terms for elements of contemporary understanding about natural resource management. They are, however, distinctly different types of concept. Sustainability is a normative social construction, given particular meaning in a European forestry context through the Sustainable Forest Management Principles and their articulation into European practice by the Ministerial Conference for the Protection of Forests of Europe MCPFE. Sustainability represents a socially desirable end-state, in forestry’s case associated with a set of criteria and indicators that can assess and influence progress and trends. In contrast, multifunctionality is an uncontestable fact; it is a feature of certain types of natural resource the exploitation/management which generates joint products, frequently in the form of a market return to the resource owner for one commodity and a wider set of returns to society, such as ecological or recreational services. However, the forms of multifunctionality practiced are strongly influenced by culture and values.

Sustainability has been defined in relation to forests as: the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems1.

This definition of sustainability necessitates a holistic view of environmental (ecological), social and economic functions, but gives no guidelines as to how trade-offs between different functions might be assessed, although a most basic understanding of complex natural resource management arenas such as forestry reveals that trade-offs between functions and services are often necessary. In practice, there is a tendency to explore direction of trend in relation to a set of indicators that reflects the multiple dimensions of sustainability. This is the basis of the Criteria and Indicators approach to sustainable forest management, which establishes a framework for exploring sustainability but which by-passes awkward questions about trade-offs.

According to the OECD (1998; 2001; 2008), the key elements of multifunctionality are the existence of multiple commodity and non-commodity outputs jointly produced by land use and the fact that some of the non-commodity outputs exhibit the characteristics of externalities or public goods for which markets do not exist or function poorly. Multifunctionality had already been articulated as a central feature of the European model of agriculture at an EU council meeting in 1997 (COUNCIL OF THE EUROPEAN UNION, 1997) and has now become culturally embedded in the European way of looking at the wider benefits of different rural land uses. There is, however, scope for misunderstanding and ‘fudging’ between what is explicitly a co-product or joint product of a land use system and what is a consequence in terms of jobs or rural development, which are outcomes (whether regarded as private or public) rather than an intrinsic feature of multifunctionality. They could arise equally from purely monofunctional economic activity. There is a conceptual difference between developing a reward system for a multifunctional output that arises in the presence of market failure and promoting rural employment. Unfortunately, the EU and OECD rhetoric of multifunctionality sometimes muddles the two.

There is also need to be sensitive to new conceptual schema such as ‘ecosystem services’, even if such schema offer little that is new. At present, it seems impossible for a UK policy analyst to look at natural resource management without using the ecosystem approach and the idea of ecosystem services (MILLENNIUM ECOSYSTEM ASSESSMENT, 2005; DEFRA, 2007; UKNEA 2011). The MCPFE has also explored

1 (Source: MCFPE, http://www.foresteurope.org/eng/What_we_work_for/Sustainable_Forest_Management/)
this approach (MCFPE, 2004), and it is also being picked up at European Commission level. It identifies four types of ecosystem service (see Table 1), building on the idea of multifunctionality but, at the same time, constituting a subtle step away from exclusively biophysical or economic perspectives towards more integrated (but still ecocentric) thinking. However, in its recent use in the UK Ecosystem Assessment, the economic value of ecosystem services is still very much to the fore. In the case of forestry, its multiple ecosystem services are often manifested in high levels of provision of many regulating services, but the provision of cultural services may also be of importance.

A further reconfiguration of old concepts is found in the idea of payments for ecosystem services (PES). This is built around recognition that, in order to ensure delivery of environmental services for which there is no market, mechanisms need to be designed which reward the provider if under-provision is not to occur. Public policy measures, especially in the farm sector, have often been the principal means of PES. The concept has been explored by the OECD (2005), and, given tight public sector budgets, the scope for private and voluntary PES schemes looks especially attractive. The idea is picked up by the Commission for European Communities in its CAP reform proposals and is being actively considered by the Department of Environment food and Rural Affairs (Defra) in the UK.

Behind these new and not-so-new keywords, there are some fundamental organising concepts that should not be neglected and which may be especially important in the case of forestry. There are two critical connected concepts that need to be recognised. The first is the concept of a public good. The second is the idea of internalising externalities. Each will be explored in turn.

Public goods are defined as non-rival, non-excludable goods (and services). The consequence of these defining characteristics is under-provision by the market. No-one can make money from them because of the non-excludability criterion. Many of what are now routinely described as supporting services and regulating services in relation to forests in the new ecosystem services terminology are in fact public goods or more often quasi-public goods - that is, they have at least some of the attributes of public goods. For example, flood control or protection forest functions, carbon storage, biodiversity protection and landscape services are all examples of the multifunctional goods and services provided by forests with some (or all) public-good characteristics. In the absence of funding to recompense landowners for such services (or regulation to enforce supply), under-provision will ensue.

Table 1 – The Millennium Ecosystem Assessment classification of ecosystem services.

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<tr>
<th>CATEGORY OF ECOSYSTEM SERVICE</th>
<th>EXAMPLES</th>
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<tr>
<td>Supporting services</td>
<td>The services necessary for the production of all other ecosystem services including soil formation, photosynthesis, primary production, nutrient cycling and water cycling.</td>
</tr>
<tr>
<td>Provisioning services</td>
<td>The products obtained from ecosystems, including food, fibre, fuel, genetic resources, biochemicals, natural medicines, pharmaceuticals, ornamental resources and fresh water.</td>
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<tr>
<td>Regulating services</td>
<td>The benefits obtained from the regulation of ecosystem processes, including air quality regulation, climate regulation, water regulation, erosion regulation, water purification, disease regulation, pest regulation, pollination, natural hazard regulation.</td>
</tr>
<tr>
<td>Cultural services</td>
<td>The non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experiences – thereby taking account of landscape values.</td>
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The idea of internalising externalities (i.e. effects on “third parties” outside market transactions) arises from the realisation, clearly articulated in a forestry context by Mantau et al. (2001), that there are elements of marketability relating to some of these goods and services, and that the realisation of market opportunities depends to large degree on institutional innovation. So, rather than looking for market failure, a search should be undertaken for institutional innovation to create or enlarge such markets. Slinn (1995) had argued somewhat earlier that there is scope for indirect marketisation of some public goods. Although no-one has to pay for access to the iconic pine forests of Eastern Scotland because of Scottish access laws, the landowner can (and in one case does) charge a fee for parking a car in the vicinity of those iconic views. There may be many different forms of such secondary marketisation, and these merge almost imperceptibly with conventional enterprise diversification into normal market-based activities by the owners of forest and forest-related land. Of course, the attribution of value to forests may be problematic if the forests sit in a wider range of land covers and uses.

3. Factors in the development of new possibilities

A number of factors stand in the way of realising the opportunities provided by forestry to contribute more effectively to sustainable rural development. At a practical level, these include characteristics of the owner and the resource. At a theoretical level, the ability to generate spatially explicit benefit measurements with respect to public goods may be problematic. Further challenges comprise the scope for realising new benefits by redefining property rights and the challenge of trying to optimise the multifunctional outputs of forests, especially the trade-offs with regard to global, national and local benefits. Finally, the acknowledgement of multifunctionality opens up forestry to a range of different policy arenas, creating complexity and uncertainty.

3.1. Landowner preferences

Forest owners may have rather specific views about what they want from their forests. As landowners, they necessarily have proprietorial rights, subject to various laws and regulations. Their preferences may not coincide with what is seen by government as socially and economically optimal. In parts of the UK, woodland (typically smaller areas of predominantly broadleaved forest) is used widely for sport shooting, largely for gamebirds and to a lesser extent deer. Sport shooting is often not marketed formally but represents a form of high social status landowner/manager recreation. Such forest landowners tend not to want to exploit their forest for timber production, or even woodfuel. These decisions are not driven by any profit-maximising motive but by social customs and preferences which may not optimise benefits in terms of sustainable rural development (Urquhart et al., 2009). In other parts of Europe, there are evident tensions between the now-urban-based inheritors of farm forests and the more production-orientated resident rural population. Sometimes the gulf between productive and conservation interests can be bridged by forest owner associations who may accommodate both conservation-oriented and production-oriented forest owners, but the increased diversity of forest owners may impede commercialisation and the derivation of positive rural development outcomes.

3.2. Landownership structures

Ownership structures for forests are highly varied. Italy contains some of the oldest community forests in Europe, and these provide interesting examples of sustainable support for their rural communities. Some have been able to adapt to new demands, especially tourism, and to generate substantial revenue which recirculates in local economies. The public sector is often a major forest owner, and – whilst it can manage forests multifunctionally for the public good and respond more directly to government policy, the remote location of many state forests means that development opportunities, with some important exceptions discussed below, are limited. In the UK, relatively
recently formed charitable bodies such as the Woodland Trust invoke a more conservationist ethic in their rapidly expanding ownership of UK woodlands, and have rather less interest in local community wellbeing and development.

In some parts of Europe, the structure of forest ownership is inimical to the rational and sustainable use of forests. In parts of Eastern and South-eastern Europe (and in parts of the UK), absentee ownership is common, and tiny plots of restituted forest are the norm; the average size of forest holdings in some Balkan countries is below 1 hectare. Sustainable management is impossible, and woodlands are often neglected (though this may be preferable to wholesale felling). Ownership is not only an issue with small forests. Large, industrially run forests with highly focused wood production objectives may also make multifunctional delivery difficult because of the over-riding desire to reduce costs in the wood supply chain. Even those countries with medium-sized family-owned forests face significant challenges in deriving economies of scale and generating profitable use of privately owned forests.

3.3. Measuring the benefits

One of the great obstacles associated with public goods is the measurement of their value. The recent National Ecosystem Assessment in the UK has recognised a broad-ranging suite of public goods but has held back from valuing most of them (ValatIn and Starling, 2010). A decade ago, Willis et al. (2003) estimated the annual value of the public goods associated with UK forests as £1 billion (1.12 million Euros), but it is clear that forest’s contribution to climate change was seriously under-estimated at that time. Other work has shown how much the value of other public goods varies over space (Willis and Benson, 1989).

Benefit estimation has advanced considerably with the improvement of revealed and expressed preference methods, but few are confident about the practical ability to generate spatially explicit values for non-market ecosystem goods and services over a wide range of forest types and locations. Further, there are likely to be complex complementarities and conflicts between different ecosystem services. A forest that is optimal for carbon sequestration may be poor for biodiversity, but nonetheless enhance flood protection. These relationships will not be consistent over space because of biophysical specificities and divergent demands.

3.4. Clarifying property rights

Property rights with respect to forests may seem fixed in long-settled advanced market economies, but demand changes over time tend to valorise different elements of forest characteristics, and property rights can be significantly renegotiated as a result of culturally constructed demand changes. An obvious example of this is the clear difference that has emerged between rights of public recreational access in different parts of the UK. Since a new law of access in Scotland [embodied in the Land Reform (Scotland) Act 2003], the public in Scotland can freely access all forests, as in the Nordic Allemensretten system. In contrast, in England and Wales, there is only access along historic linear rights of way, which afford much more limited access to forests, with some large forests completely ‘out of bounds’ and inaccessible to the public because of an absence of such rights. Fear of reverting to such a situation provoked strong (and temporarily successful) opposition to the new UK government’s proposals to sell off state forests, even to NGOs.

Property rights can be contentious, and they also vary significantly across Europe. The point at which exclusion can occur and a fee can be charged is contingent on property rights. Its more realistic to think of property rights as complex evolving institutions that are reformulated in the light of emergent societal values and which may at different times and in different contexts create or negate commercial economic opportunities. Slee (1995) has noted how indirect valorisation can arise as a result of the ability to exploit views, car parking or accommodation in or near to attractive forests.

A considerable impediment to rural development arises where the forest owner is unable to derive any value from his forest property, and this is most likely to occur when the good or service in question has public good character-
istics. However, given the evolutionary nature of the EU Rural Development Programme and the scope for institutional revision of property rights, there is a range of possibilities regarding the creation of quasi-markets and the development of schemes for the Payment for Environmental Services.

3.5. Optimising multifunctionality

Multifunctionality can seem like a desirable characteristic for a forest, but it is by no means impossible to end up in a multifunctional muddle which serves neither the forest owner nor rural development well. Nijnik et al. (2011) note how multifunctionality can be horizontal or vertical. Vertical multifunctionality implies layers of functions at any one point within the forest; horizontal multifunctionality implies a zoning approach, in which different parts of the forest are used for different purposes. Both are likely to occur in practice.

Optimising multifunctionality is not costless because of the public good character of multifunctionality, and the delivery of the balance of multifunctional outputs often demands navigation of a complex and crowded policy field. The transaction costs of creating and sustaining multifunctionality may be considerable, and, given the shifts in demand for forest products and services, what is the optimal mix today may be sub-optimal tomorrow. The legacy of earlier decisions in forest management and policy often lingers long into the future, making adjustment to contemporary demand a significant challenge, but often invoking a multifunctional perspective that allows flexibility. Further, the policy environment may change. The long production cycles can produce path dependencies from which it can be costly to depart. The costs can be seen in decisions to fell-to-waste Lodgepole pine and Sitka spruce forests planted under a different economic and environmental set of values in northern Britain in the 1970s.

3.6. A crowded policy field

The forest sector can be connected to a growing range of policies at multiple scales, from sub-national to national to international. However, it is possible to argue that there has been a ‘hollowing out’, with supra-national (EU and international) and sub-national (e.g. regional and local) policies assuming greater importance than those at national (EU member state). Moreover, across sectors, conventional forest policy still provides the foundation, but increasingly forest owners can draw on a range of policies for support from energy, to climate change, to biodiversity, to health, to recreation, to rural development, to agriculture, to regional development, enterprise and innovation. On occasion, despite attempts to avoid “additionality”, it may be possible to draw on two instruments of policy support for a single forest. However, the normal situation is one in which foresters must confront a multiple array of possible support and regulation, with the obvious transaction costs of seeking a pathway through the policy maze.

4. Framework conditions for innovation

The development of opportunities must be contingent on a combination of markets, human capacities and preferences, governance and ownership structures, and a supportive institutional milieu, including well-targeted public support. Many approaches derived from management science, regional geography and regional economics explore innovation processes to such development. It is generally recognised that innovation is contingent on more than just innovation within a single firm or even inter-firm collaboration. In the cluster model and many other sectoral or regional innovation models, the public sector and research and educational institutions combine with industry in what has been termed a ‘triple helix’ to provide supportive framework conditions. Others have advocated an innovation system model which similarly recognises the need for collaboration among a range of actors and institutions (Weiss, 2011).

One problem that confronts those exploring innovation in the forest sector is the boundaries that are often drawn around wood production, excluding other aspects of forest services.
Those steering the recent COST E51 action (Weiss et al., 2011) were clear that the forestry industry included not just the wood supply chain and the actors along it, but all those directly and indirectly connected to the forest for their wellbeing. Such a view necessarily exposes a potential but by no means necessary tension between the search for efficiency and innovation in the wood supply chain and the development of a more multifunctional model of forestry where innovation is framed around Payments for Environmental Services and optimising multifunctionality. Where there is an established forest sector delivering wood raw material into traditional supply chains, this may actually comprise a barrier rather than an opportunity to doing forestry multifunctionally in ways that might enhance the prospects for both sustainable forest management and sustainable rural development (Slee, 2011).

The market drivers are central, if perturbed occasionally by policy ‘biases’ which emerge from effective rent-seeking from sectional interests. These market drivers will be crucial in realising new opportunities. The rising price of hydrocarbons is perhaps the most important of these in recent years, via its repercussions on the demand for woodfuel. The market drivers can be compounded when there is matching policy, and this is likely to be the case with climate change and energy policy coming together to support woodfuel developments. But there are important path dependencies based on the historic demands for and uses of wood raw material. Long-term contracts have been given to wood processing firms on rather favourable terms to ensure a functioning wood supply chain. In North-east Scotland, the supply chain is just developing for wood chip and wood pellet systems but must often compete for low-grade forest products. The municipal authority of Aberdeenshire has taken a lead in creating demand by converting major secondary schools to woodfuel heating systems, but the system is still nascent rather than fully functional. Indeed, quite a large part of the demand for one firm’s wood pellets is taken up by sales for easy-care horse bedding, because of a weak market for wood energy products.

The impending UK Renewable Heat Initiative which will offer a dividend for every kilowatt of renewable heat produced will certainly boost demand for wood energy, and this may lead to building more durable supply chains.

The demand for food is also rising at global scale. Inevitably, in some places there will be competition for land for food production. In countries such as the UK, and in Scotland in particular, where government policy is committed to expanding the proportion of land covered by forests from 17 to 25% by 2050, the farming community feels highly threatened by expansion of the forest sector, and has voiced its concerns to government and in the farming press. There is a need to research intelligently, and without sectoral bias, which land can best be deployed for one use of another, but in a market economy it is the economic actors on the ground who will decide, tempted by the various policy incentives on offer but perhaps discouraged by the various regulations in place. At present, the Single Farm Payment system creates a barrier to optimal resource allocation, rewarding the agricultural land owner as long as basic ‘good condition’ criteria are attained. This is less a problem in the countries of Europe where a strong farm-forest culture prevails, because here the shifting margin can occur with perhaps less stress within a single proprietorial unit. In other places, where there is no farm-forestry tradition, tensions are inevitable.

It is not just Pillar 1 support that causes a challenge. It is not inconceivable that recent developments in the Rural Development Programme of the EU (Pillar 2) have been rather too strongly oriented towards biodiversity and insufficiently towards some of the bigger issues confronting Europe today, including water quality and climate change. This appears to be recognised in early considerations of post-2013 EU policy, with the Commission asserting that ‘the future CAP should contain a greener and more equitably distributed first pillar and a second pillar focussing more on competitiveness and innovation, climate change and the environment’ (CEC, 2010). Much of the early critique of the CAP focused on the analysis of impacts of modern, intensive agriculture on
biodiversity and landscape, and this created a policy response centred on biodiversity which had no necessary beneficial rural development consequences. At the current time, with public funding shortfalls and high unemployment, this may seem a little self-indulgent. It may be better to seek transformative change that enhances the prospects for sustainable rural development, creates jobs and at the margin trades off a little biodiversity for potentially quite a lot of rural development gain. The real challenge is not to measure and reward for externalities, but to ‘internalise the externality’, in so doing creating jobs and sustaining rural communities.

Three examples of breaking away from traditions provide examples of the opportunities that can arise.

As part of COST E51, Weiss et al. (2011) provided some illuminating examples of the possibilities of transformational change in the forest sector. In response to earlier hydrocarbon price rises in the 1970s, Austrian farmers’ organisations and municipal authorities collaborated in the development of woodfuel supply chains, including community heating schemes and combined heat and power developments. This revitalised what was a mature industry facing low returns. It engaged the farmers who are major forest owners but often owned small-sized forests. This example may not be repeatable everywhere, but the preconditions are by no means unique, and sustainable and profitable wood energy supply chains have become well established.

As a second example, the UK Forestry Commission has been instrumental in developing a number of forests into world-class mountain biking centres. These developments first happened serendipitously in North Wales as a result of the enthusiasm of a forest worker for mountain biking. Within a few years of a £200,000 investment by the Forestry Commission, the development was drawing between £3 and 4 million into the local economy. This represents between 80 and 100 full-time equivalent jobs in an area characterised by high unemployment. The net exchequer cost per job created is only just over £2,000. These are figures that regional development agencies would regard with enormous envy. Mountain biking developments have subsequently been rolled out in many parts of the UK with considerable success.

The third example is an Italian one, the background of which was first described by Pettenella (pers. comm.) and articulated at theoretical level by Pettenella and Maso (2011). In some regions of Northern Italy, a range of institutional actors including municipalities, forest owners, restaurateurs and tourist providers have linked together to develop forest-based tourism, building on the highly valued porcini that are found in the area. The Borgotaro mushroom trail is an example of this type of cross-sectoral network. This so-called ‘network model’ connects to earlier thinking about the ability of an innovative milieu to nurture development, to the idea of clusters, and to the triple helix approach. The form of the network can vary, but a properly functioning network can provide an important platform for cross-sectoral innovation.

Whether we are dealing with wood-based forest products or non-wood forest products and services, the case for innovation with respect to processes, products, services and markets is strong. At EU level, the case for innovation was first articulated in the Lisbon Strategy and has subsequently been reinforced in the Europe 2020 strategy for smart, sustainable growth. The assumption that because forestry is (apparently) a low-tech industry, it has limited potential for innovation is untenable. The breadth of products and services provided by forests and the volatile market conditions with respect to some products and services (e.g. wood energy, carbon and recreational services) create a context ripe for innovation. However, there may be a risk of path dependency and lock-in which limits future innovation because of past commitments to supply wood raw material on long contracts and because of values of some forest owners.

Particularly where there is scope for transforming predominantly monofunctional forestry into something more multifunctional, there may be a need for new modes of
governance and new policy instruments to bring the relevant stakeholders together. This is perhaps most necessary in the predominantly monofunctional forests of North America and some parts of western Europe (Galicia, Portugal, Ireland, the UK uplands). However, the barriers to such transformation are by no means small.

In a descriptive model that nicely blends issues of sustainable forest management with issues of sustainable rural development, KELLY and BLISS (2009) articulate a new ‘healthy forests, healthy communities paradigm’ (See Figure 2). Bliss and his team have explored the massive upheavals and problems in North American forestry and can still construct a positive agenda based on an ethic of community engagement ecosystem management and a multifunctional vision for forests as providers of wood products and a range of ecosystem services. Even communities that have seen very difficult times in recent decades are constructing a new vision for their forests. KELLY and BLISS (2009) argue that their Wallowa County (in Oregon, U.S.A.) case ‘can point a way to restoring forest health, overcoming the jobs versus-environment debate, building community capacity, and developing a local forest restoration workforce.’

There is a growing body of work in Europe built around the idea of transition management and the need to create participatory processes involving visioning and the delivery of regime changes towards more sustainable outcomes. This work has been pioneered by Dutch researchers, notably KEMP and MARTENS (2007) and LOORBACH (2007). Their starting point is that established regimes (of energy, water management, agriculture) may be proving increasingly problematic for a variety of reasons. These sectors are the settings of open-ended, complex and difficult to resolve ‘wicked’ problems that hinge around the breakdown of socio-technical systems and, in many cases, socio-bio-technical systems.

Figure 2 – Bliss’s ‘Healthy Forests Healthy Communities’ paradigm.
Loorbach (2007) argues that niche innovations can become a kind of testing ground for alternative approaches which may provide the experimental underpinning for a subsequent shift to a new regime. Although not articulated in transition management terms, that is exactly what Bliss and his colleagues have exposed.

5. Conclusions

There is a sense of unease about the state of European forests and their relatively modest contribution to sustainable rural development over wide areas, in spite of the fact of the embedding of the principles of sustainable forest management in national and regional forestry policy and practice across Europe. This is a necessary but not sufficient platform for enhancing forestry’s contribution to sustainable rural development. In addition to that unease, there is recognition that there are particular geographical areas across Europe where innovation developments are taking place that have contributed positively to sustainable forest management and sustainable rural development. These niche developments may provide the testing ground for new models of forestry and so-called regime changes, which may then be rolled out more extensively.

However, the framework conditions may not always appropriate to realise these opportunities. The nature of forestry is that it is highly – or can be – multifunctional, and thus requires well-designed policy and regulation to ensure the delivery of numerous public goods. Some of these public goods (or avoided public bads in the case of greenhouse gas emissions) are hugely important in underpinning global not just rural prosperity and sustainability. Forestry occupies a central role in avoiding the least desirable effects of climate change as is evident in the development of REDD policies. The role of forests in addressing what Stern (2007) has described as the greatest economic externality ever to confront mankind, creates an enormous opportunity, but its realisation is contingent on a transition in terms of governance and a series of transitions in policy to help realise and unlock the enormous opportunities offered by forests.

It is not inconceivable that we have adopted an overly ecocentric model of sustainable forest management. We may have spent too much time concentrating on species conservation to the neglect of rural development on one hand, and the overriding and urgent need to tackle climate change and engage in a deep-green cleansing of our economic system on the other. We may need to cease to see forests as objects to preserve, and instead treat them as places for the delivery of many goods and services which create scope for new employment and for new and more sustainable products.

Occasionally, we see examples of where a real transformation has come about by the creation of new institutions and socio-technical regime changes, as in the Austrian woodfuel market. We see other examples of how innovation has proceeded through network developments in the case of rural tourism in Italy or through individualistic innovation in the case of UK mountain biking. These are examples of niches that may need up-scaling in regionally sensitive ways to realise the multiple opportunities.

The prospects are still hedged with uncertainties, but as we face what Sir John Beddington, the UK’s chief scientist calls the threat of a ‘perfect storm’ of energy shortage, food shortage, associated with global warming and population growth, the future prospects for forests and forest products have not looked so promising in decades. But the realisation of that opportunity, and the rural development outcomes that it can and should engender, depend on creating and nurturing the preconditions in which renewable natural resources such as forest products can assume their rightful importance as the world searches for low-carbon growth.

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RIASSUNTO

Le opportunità della gestione forestale sostenibile e multifunzionale per lo sviluppo delle aree rurali

I principi di sostenibilità e multifunzionalità rappresentano i cardini della politica forestale europea. La sostenibilità è una caratteristica chiave delle risorse forestali, mentre la multifunzionalità rappresenta un’aspirazione, cui tendono le normative di settore, che trova le proprie basi nel lavoro della Conferenza Ministeriale per la Protezione delle Foreste in Europa e nelle diverse politiche nazionali. Altri principi come quelli proposti nell’approccio dei servizi ecosistemicci vengono adottati sempre più frequentemente per raggiungere gli obiettivi della gestione multifunzionale sostenibile delle risorse forestali. Il contributo allo sviluppo rurale da parte delle foreste europee, comunque, dipenderà più dall’innovazione, che dovrà rispondere all’attuale necessità di ridurre l’impronta di carbonio delle attività economiche, che dalla formale applicazione di tutti questi principi. Il presente contributo rielabora questi concetti e sottolinea alcuni principi di sostenibilità e multifunzionalità, che dovranno essere adottati nella politica forestale e agraria per rendere possibile uno sviluppo rurale sostenibile e multifunzionale.

REFERENCES

COMMITTEE ON CLIMATE CHANGE, 2010 – Scotland’s path to a low-carbon economy. CCC, London.


MACKAY D.J.C., 2009 – Sustainable energy without the hot air. UIT, Cambridge.


MCFPE, 2004 – Sustainable forest management and the ecosystem approach. MCFPE, Warsaw.


NIJNINK M., SLEE B., PAJOT G., 2011 – Opportunities and challenges for terrestrial carbon offsetting and marketing, with some implications for forestry in the UK. South-East European Forestry (SEEFOR), in press.


SLEE W., forthcoming – Governance, multifunctional forestry and economic literacy, Scottish Forestry.


SLEE B., 2011 – Innovation in forest-related territorial goods and services. Ch. 8 of Weiss G., Petttenella D., Ollonqvist P. and Skee B. eds., Innovation in forestry: territorial and value chain relationships. CABI, Wallingford.


UK NATIONAL ECOSYSTEM ASSESSMENT, 2011 – Synthesis of the Key Findings. UNEP-WCMC, Cambridge, UK.

URQUHART J., COURTNEY P., SLEE B., 2009 – Exploring the relationship between private ownership and public...


