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GLOBALISATION AND RURAL LANDSCAPE CHANGE - KEY CONCEPTS, DEVELOPMENT TRENDS AND SOME IMPLICATIONS FOR POLICY

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RESUMO:

Os factores-chave e a agenda política, associados tanto com a globalização como com a transformação da paisagem rural, são identificados e revistos. É apresentada uma tipologia de paisagem, baseada no equilíbrio entre intensidade de produção e a influência da urbanização. Os dois principais factores de mudança da política global, as agendas de mercado e da sustentabilidade, são descritos, e a sua influência nas paisagens rurais discutida. Seis exemplos de paisagens agrícolas de diferentes países e situações são analisadas e os padrões de transformação que caracterizam estas paisagens são revistos. Há convergência entre paisagens com condições similares de produção, entre as diferentes regiões e países. Argumenta-se que as duas agendas políticas influenciam de forma desigual os diferentes tipos de paisagem. São revistas brevemente as recentes iniciativas políticas e é proposta uma abordagem baseada na identificação de uma combinação óptima de políticas para os quatro diferentes tipos de paisagem.

Palavras-chave: Globalização, transformação da paisagem agrícola, agenda do mercado, sustentabilidade, combinação de políticas

Códigos JEL: R52; R14; Q24.

ABSTRACT:

Key features of globalisation and rural landscape change are briefly reviewed, and a typology of landscape types presented, based upon the balance between intensity of production and influence of urbanisation. Two major global policy drivers of change are then described, the market and sustainability agendas, and their influence upon rural landscapes discussed. Six examples of agricultural landscapes from different countries and situations are analysed and change patterns characterisation these landscapes summarized. There is some convergence between landscapes with similar conditions for production, across different regions and countries. It is argued that the two policy agendas impact unevenly across different types of landscape. Recent policy initiatives are briefly reviewed and an approach based upon identifying effective mixes of policies for the four different landscape types is proposed.

Key Words: Globalisation, agricultural landscape change, market agenda, sustainability, policy mix.

JEL codes: R52; R14; Q24.

1. INTRODUCTION

All landscapes are dynamic and change over time due to a combination of human and natural processes. In particular, the contemporary speeding up of social relations across space – a core part of what is usually defined as ‘globalisation’ (Giddens 1990, Held et al. 1999) – is affecting rural landscapes in numerous ways. The intensification and extension of global processes mean that local landscapes are increasingly shaped by events and decisions that occur in distant locations, and that action taken in local landscapes in turn increasingly affects other distant landscapes. Changing technologies, markets, rural-urban relationships, global and regional climates, and public policy interventions are the main drivers of rural landscape change, and they are interwoven with the effects of decisions and actions of local agents, particularly the farmer.

In this paper we briefly outline some key aspects of what has been termed ‘globalisation’ and identify some key factors and policy agenda associated both with globalisation and rural landscape change. Based on current research we then present six examples of agricultural landscapes from different countries and situations, and discuss some of the change patterns characterise these landscapes. Finally we comment on policy implications of the trends described. Most of the issues discussed are further developed in various chapters of a forthcoming book on ‘Globalisation and Agricultural Landscapes’ edited by the authors (Primdahl and Swaffield forthcoming 2010b).

2. GLOBALISATION AND AGRICULTURAL LANDSCAPES

The geographer David Harvey (2000) identify four, highly interlinked processes that characterise globalisation in the second half of the twentieth century. These comprise: technological changes, financial de-regulation, changes associated with the ‘information revolution’ and significant reductions of transportation costs. All these dimensions of globalisation are contributing to change in rural agricultural landscapes. In particular, new technologies and their widespread deployment have enabled an intensification of agricultural production at a global scale, with an increase in grain production for example of 1.9 percent per annum from 1966 to 1990 (Evans 1998). This has had immense impact upon the ecology of agricultural landscapes, through biodiversity loss, soil erosion, and eutrophication and contamination of the water resources (Butler et al. 2007, Tilman et al. 2007).

Parallel to the intensification in areas suited to industrial agriculture, a process of extensification and marginalisation of agricultural production has also occurred in many regions (Wilson 2007), particularly those with difficult conditions for agriculture, such as mountainous topography, dry and cold climate, and poorly drained soils. This differentiation in the intensity of production worldwide has been reinforced by changing markets, changing policy regimes and alternative job opportunities in other sectors, and is significantly influenced at a regional level by the expansion of urban areas and systems.

Paradoxically, the landscape ecological effects of extensification frequently include biodiversity loss, due to the abandonment of semi-natural grasslands and extensive farming of other areas that are species rich as a result of former agricultural practices. In some situations extensification can lead to biodiversity and soil conservation gains, for example where decline in agricultural production is accompanied by re-afforestation or spontaneous growth of woody vegetation, as grazing and mechanical pressures are reduced, allowing natural succession. However abandonment of agriculture can also increase fire risk in hot climates (Pinto-Correia and Mascarenhas 1999, Brouwer et al. 2008).

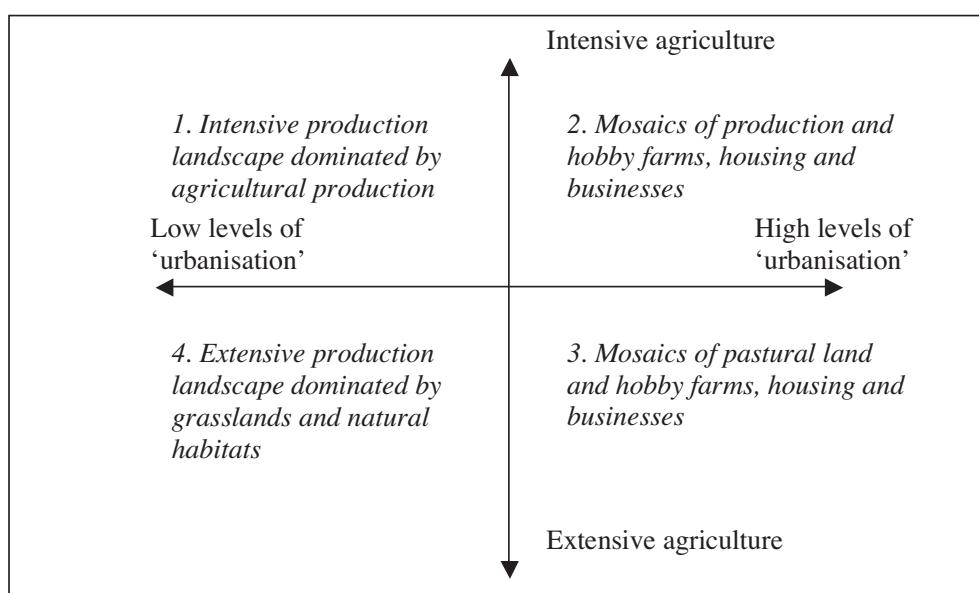
Urbanisation in many different forms is also contributing to rural landscape change, and its effects have increased dramatically in recent decades. A significant global threshold of urbanisation was passed in 2007, and now more people are living in urban environments than in rural ones (Zlotnik 2004). Landscape impacts from urbanisation include the consumption of rural land for urban development and its fragmentation through urban

sprawl; the development of lifestyle 'consumption landscapes', dominated by commuters and hobby farmers in urbanised regions, and by tourists and early retired pensioners in attractive landscapes; and more generally, the influence of urban values and preferences upon rural producers and land managers by food consumers (Champion 2001, Antrop 2004, Busck et al. 2006). The growth of networks concerned with the provenance of food has been a significant part of these changes in agriculture, particularly in advanced economies, and has increasingly affected farmers' decisions on what, how and where to produce (Goodman and Watts 1997, Morgan et al. 2007).

These two types of change, agricultural intensification and extensification, and the extension of urban systems into rural areas, create a complex mosaic of possibilities and landscape trajectories. Figure One sets out a framework to understand the broad types of rural landscapes that can result. Four categories are identified: (1) Intensively farmed rural landscapes, usually characterised by good conditions for agriculture and a highly disturbed natural environment; (2) intensively farmed landscape

FIGURE 1

Two main drivers of agricultural landscapes – agriculture and urbanization, including counter urbanisation and the general influence of 'urban' investments and 'urban' values. (Moderated from Primdahl and Swaffield, forthcoming 2010a).



with a high degree of 'urbanisation' characterised with pressures for urban land uses; (3) extensively farmed landscape with a high degree of 'urbanisation' characterised with a mixed land-uses included extensive grassing, forests, and horticulture; and (4) extensively farmed rural landscapes characterised by relatively poor conditions for agriculture and usually rich in biodiversity.

3. EVOLVING POLICY REGIMES FOR RURAL LANDSCAPES

Public policy is also shaping change in rural landscapes in diverse and profound ways. Two particular policy agendas have been influential at a global scale. First, there is the market policy agenda, institutionalized at the international level through the World Trade Organisation (WTO), in which agricultural policy is the most important influence on rural landscapes. The market agenda has been characterised by market deregulation and liberalisation, including reforms of national agricultural policies and opening of regional and global markets. Although an open global market for agricultural products is far from reality (OECD 2003), there is no doubt that the reforms of agricultural market policies which have taken place in most developed countries during the last decades have been highly influenced by the WTO process (Potter and Burney 2005).

The level of deregulation and content of agricultural policies vary widely across countries, with New Zealand adopting one of the most radical reform programmes, removing national production subsidies almost entirely, while others such as Switzerland still maintain a high level of economic support to farmers, while (almost) complying with WTO requirements. Much focus is placed upon the trends in US federal agricultural policy and in the EU Common Agricultural Policy (CAP), both of which have been undergoing

significant reforms in line with the WTO agenda. These have included incremental decoupling of financial support from production, and the introduction of a number of alternative agri-environmental programmes that provide support and incentives to farmers to undertake conservation and landscape related actions. These types of reform have had immense consequences for agricultural landscapes everywhere in which they have been implemented (see for example Primdahl and Swaffield 2004, Nassauer forthcoming 2010, Benni and Lehman forthcoming 2010, Pinto-Correia forthcoming 2010). However, the level of decision making in the market policy agenda is very centralised, and the material consequences for the agricultural landscapes affected by changing market access and support are seldom given much consideration, and sometimes not considered at all in the determination of high level policy.

The lack of environmental consideration when shaping economic policies was one of the key criticisms voiced in the Brundtland report, 'Our Common Future', which was one of the main starting points of the 'sustainability agenda' (World Commission on Environment and Development 1987). This agenda is concerned with policies to ensure economically, socially, and environmentally sustainable development. Policies are designed and implemented at all levels, from global to local. In practice most emphasis is upon local and regional environmental policies for issues such as biodiversity, water resource management, and soil conservation. Physical planning, rural development (which also includes economic and social schemes) and heritage are also usually part of this agenda. National scale policy typically specifies broad goals and indicators of sustainability, and in Europe, supra national policy is becoming more influential in regard to issues such as biodiversity and water quality (through EU directives), and cultural identity (for example through the European Landscape Convention).

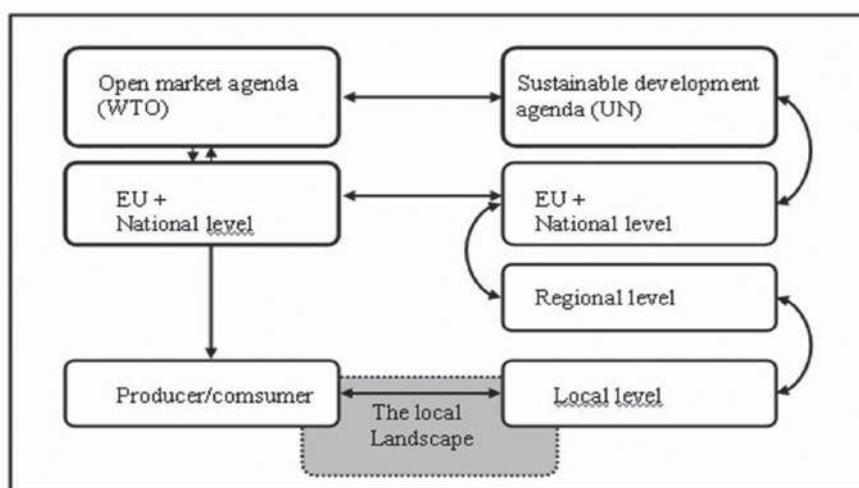
Climate change policies are a rapidly growing dimension of the sustainability agenda with profound implications for rural landscapes, in a number of ways. Initiatives aimed at reduction in use of fossil fuels through greater use of bio-fuels, for example, have already had a significant impact upon the economics of land use in the US Mid West, with consequential effects upon international commodity markets, and rural land use and landscapes worldwide. The emergence of carbon markets using various types of carbon storage and offsets such as forests and low tillage systems is opening up new land use possibilities, whilst consumer concerns about the carbon cost of transporting food are forcing producers to evaluate the carbon footprint of their activities.

These two global policy dynamics- the market and sustainability agendas - meet physically in the local landscape (Figure Two). Increasingly, this meeting is asymmetrical, as decisions taken in the market policy agenda typically express more powerful and more 'distant' interests (in respect to the local landscape

context) than those taken on sustainability issues by the local municipality and regional government. This asymmetry is a particular problem in situations where a sustainable future requires agricultural production to develop side by side with functions associated with the landscape as a living place and a visiting place. On the one hand, the local landscape represents a spatial entity, a 'place' which can be defined more or less precisely, with a range of values and distinct identity. Managing these local systems is a primary object of policies within the sustainability agenda. On the other hand, the landscape is also part of a wider space through which information, goods and people flow as part of global commodity networks. A key role for public policy is to achieve a measure of balance and integration between this latter 'space of flows' and the former 'space of place' (Castells 2000, Swaffield and Primdahl 2006). This creates a number of challenges, which will be discussed in the final section. Before doing that, and in order to illustrate these issues more concretely, we examine six specific rural landscapes that demonstrate the dynamics involved.

FIGURE 2

Two international policy agendas affecting the local agricultural landscape, the WTO's open market agenda and the UN's sustainable development agenda (From Primdahl and Swaffield, forthcoming 2010a)



4. CHANGE PATTERNS AND TRENDS IN SIX AGRICULTURAL LANDSCAPES

Table One summarises the main characteristics and change conditions in six local landscapes representing different socio-economic, political and ecological contexts. Two contrasting landscapes in each of three different countries has been studied through map analysis, field observations, personal interviews with the farmers, and key informant interviews involving policy makers at different political-administrative levels (Primdahl forthcoming 2010). The three countries are New Zealand (Canterbury, South Island), Portugal (Alentejo, Southern Portugal) and Denmark (Jutland). New

Zealand and Denmark represent two countries with a large agricultural sector mainly organized in food-networks operating on a global scale with different forms and degrees of public policy interventions. Portugal and Denmark represent two regional contexts within the same supranational European context in respect to landscape history (including similar histories in respect to urban-rural relationships) and with the same 'Common Agricultural Policy' – but with very different natural conditions for agricultural production. The two landscapes sampled within each country represent 'typical' agricultural landscapes within the region in question, one with relatively good conditions for agriculture, the other with more marginal conditions.

TABLE 1

Six agricultural landscapes – main characteristics and changing patterns. The landscapes marked with an ** represent areas with good conditions for agriculture, the others more are marginal

	Main functions and patterns	Current change patterns and policy issues
New Zealand		
* Te Piriti	Dairy farming dominates agriculture on this flat outwash plain. Livestock density is extremely high. Large grass patches irrigated by centre pivot irrigators are the dominant element. Tall (> 5 meters) shelter belts still exist and give character to part of the landscape.	Farms and fields are growing in size, and corporate farming based on milk powder production is increasing. The landscape becomes more open as shelter belts and forest belts- remnants of the former dry land sheep landscape -are being removed. Significant increase in population has accompanied intensification. Regional regulation of irrigation from ground water and management of environmental impacts on waterways are the most significant landscape policy interventions.
Bank Peninsula	Extensive sheep and beef production dominates agriculture on this hilly, grassland landscape. Natural bush occur on the steeper slopes and a few pine plantations exist. New houses are built on 20 ha plots for hobby farmers and agro-tourism is widespread.	Agricultural production has been intensified since the removal of subsidies in the mid 1980s, and native bush is slowly expanding. Residential houses and tourism are increasing. A number of nature reserves have been designated over the last 20 years. District land use policies regulating new development and plantations are the most significant landscape policy interventions.
Portugal		
* Sao Manços	Agricultural production is diverse with beef cattle, cash crops, wine, and olive as main products. Large open fields belonging to large estates dominate this undulating landscape. Smaller holdings and new residential houses are also found in the area.	Agriculture is being intensified with large investments in centre pivot crop irrigation and (drip) irrigated wine and olive fields. Some counter urbanisation is evident in the area. Municipal planning regulations and EU agro-environmental policies (grassing) and direct CAP subsidies are the most significant landscape policy interventions
Amendoeira	Highly diverse and extensively farmed landscape dominated by arable and grassland fields with mixed densities of cork and holm oak trees ('montado'). Part of the area is covered by newly planted cork and pine forests or by shrubs due to abandonment of farming. A few agro-tourism businesses are found in the area.	Although the agricultural production is being intensified, many formerly abandoned fields have been re-cultivated and afforested. The afforestation involves huge investment in terraces and construction of small lakes (for water in case of fire). Tourism is slowly developing and the area is part of a new designated regional nature park. Agro-environmental schemes (montado management), afforestation schemes, direct CAP payments and husbandry subsidies are the most significant interventions. The area is being de-populated as young people move out.
Denmark		
* Hvorlsev	Intensive crop farming and pig production dominates this moraine landscape with the arable field being the dominant landscape element. Relative high density of livestock. The farms are owned by a mixture of full time farmers and hobby farmers.	Industrialisation and concentration of pig production parallels an increase in the number and area of hobby farms are domination trends. A huge biogas plant based on manure has been in operation for almost 20 years. Increases in uncultivated elements due to new hedgerows, forests, ponds etc. Direct CAP payments, municipal planning regulations, hedgerow planting schemes, and environmental policies mainly to protect water resources are the most relevant current interventions.
Nees	This mosaic landscape is characterized by a mixture of arable fields, grassland, forest and a network of mainly deciduous three rowed hedgerows planted mainly for shelter.	Extensification of agricultural production and afforestation have been dominant trends for the last 20 years. Mainly due to the new forest there has been an increase in deer populations and other forms of wildlife. For the first time in many decades de-population seems to have ceased. Direct CAP payments, afforestation schemes, and agri-environmental schemes (grassing) represents the most relevant interventions .

All six landscapes are currently in transition and undergoing significant changes in respect to functions as well as patterns. There is a clear overall trend that areas with good environmental and infrastructure conditions for the production of global commodities are intensifying production, through concentration, specialization, mechanization, and (in two of the three areas) irrigation. In contrast, extensification of production, through reduction of stock numbers and inputs, or retirement of land from production, has been a dominant trend for the areas with relative poor comparative agricultural advantages. The intensification of production has increased environmental impacts of agricultural production in the landscapes involved, and a number of environmental protection measures have been introduced, with different degrees of success. In the more marginal landscapes for agriculture, there has been a diversification of functions, and some biodiversity gains. Tourism and outdoor recreation is increasing in all three areas, and permanent and part time residences are also gaining in importance relative to agriculture, especially in one of the areas (Banks Peninsula).

Although there still are profound differences between landscapes in the three countries, due to different climates and especially to different economic, cultural, and political histories, there are indications that these differences seems to be declining in significance when we compare the landscapes in terms of their agricultural conditions. Thus it seems that the landscapes with good conditions for production are converging in some ways, and so also are the ones with poor conditions. In the first case the main drivers are technology and global market opportunities, whereas in the marginal areas, counter urbanisation and tourism are main drivers of convergence (together with increased difficulties in competing on the open and deregulated agricultural markets). However 'poor conditions' for agriculture do not necessarily mean poor conditions for the

local economy, and land prices in the three marginal landscapes have increased at the same rate as in the three intensive areas – although they still remain relatively lower.

What we may be seeing is that intra- and inter-regional differences between agricultural landscapes with different agricultural conditions and potentials may increase in the future, whereas the differences across countries and even continents may be reduced for landscapes with relatively similar conditions and potentials. The summary comparison of six different landscapes has shown *indications* of distinct change patterns, rather than extensive empirical evidence of change, although the indications are clear and also supported by similar studies in other settings (Primdahl and Swaffield forthcoming 2010b). However more research is needed, especially concerning some concrete dimensions of change, including ecological, social and political factors. Nonetheless, the outcomes are a plausible and in many ways predictable consequence of the dynamics of globalisation discussed above, and have a number of implications for public policy, as discussed in the next section.

5. POLICY IMPLICATIONS

The economic, political and moral drivers of public policy are complex, but there are clear differences in the way that the market and sustainability agendas relate to agricultural landscapes. The market agenda in respect to agricultural produce reflects to a significant degree a coalition of interest between food exporting countries and agribusiness corporations that operate in the global market. Decision making is increasingly detached from the site of production, and determined by financial interest. The agenda draws justification from the economic arguments associated with a neo-liberal political economy, to the effect that open markets will be the most effective and efficient

way to feed the growing global population, and to enable economic development in rural communities in developing countries. The measures of success are non spatial, and focused upon monetary values.

In contrast, the sustainability agenda is focused upon conserving resources, ecosystems and cultural values for future generations, at a range of scales, from global to local. The measures of success are more complex and include significant 'place' dimensions. Decision making is typically legislated at national level but devolved in practice to local public institutions.

There has been a general presumption, in developed countries at least, that these two sets of goals and justifications are complementary. However the case studies suggest that in practice the two agendas are being expressed unevenly across different rural landscapes.

In landscapes where agricultural conditions favour production within a global system, the consequences of the market agenda dominate landscape change. Sustainability goals are subsumed by the production and market drivers, and as a consequence landscapes of very different origins and contexts are becoming more 'universal' and converging in character, with cultural and ecological differences being suppressed. The sustainability goals that are likely to be most congruent with the decision making structures are those that can be measured in abstract, a-spatial terms - for example carbon footprints per kilo of product - or that are meaningful within a production unit- for example water quality in a discharge pipe- and that can be integrated into production contracts. Place based dimensions such as landscape pattern and function tend to rely upon regulatory requirements, which are contested by farmers, or upon systems of public financial support such as US Federal conservation grants or the CAP second pillar payments.

In agricultural landscapes that are less favoured by global markets, and where production is declining, there is greater potential for the sustainability agenda to be more evident in decision making, but the extent to which this occurs in practice depends upon the alternative landscape functions that can be developed to support the local economy, and the public financial support that is available to facilitate the implementation of sustainability policies. Murdoch (2000) distinguished between the prospects for what he called 'legacy' rural space, which carries forward a strong base of social and cultural capital and is able to take advantage of potentials for change, and what he describes as 'marginal' rural space that lacks the capacity to adapt, and needs external support. Banks Peninsula in NZ is an example of a 'legacy' space, whilst Amendoeira in Portugal and Nees in Denmark are examples of marginal spaces, although they both have potentials for developing their social and cultural capitals.

Our summary analysis therefore leads us to question the compatibility of the market and sustainability agendas as currently expressed in the agricultural landscapes of developed countries. Policies under the different agendas may be uneven, dysfunctional or even conflicting, and sometimes miss the real issues at stake locally. We suggest that the current mix of highly centralised market policies with little or no concern for sustainability at the landscape level, and multilevel environmental policies with the nation state as the primary agent, are insufficient either singly or in combination to provide a coherent public policy framework for rural landscape sustainability.

What are the prospects for improved public policy? Several alternative paradigms have been suggested. On the market side, three types of initiative can be noted. Countries such as New Zealand that have most fully embraced the market agenda have placed major emphasis upon voluntarist mechanisms over

recent years, and have been encouraged in this by the OECD (2005). However, there is little evidence to suggest that voluntarism is effective at the scale needed to make a difference in the places most under pressure (Swaffield 2005 and Swaffield 2010b forthcoming). After over two decades of neo liberal rural policies, for example, the area of agricultural land in New Zealand under voluntary covenants with the largest voluntarist rural agency (the QEII National Trust) is still less than 1% of the land area in production, and mostly concentrated in marginal areas (Swaffield 2008). Voluntarism seems to work best when decision makers are not under economic pressure, and this is not the typical situation in a global agricultural economy.

A second more recent initiative is the development of the concept of ecosystem services (Costanza et al 1997). Here, the proposition is that economic valuing of the contributions made to the community by non market functions such as biodiversity will highlight the inherent value of ecosystems, and ensure they are conserved and managed in a sustainable way. Whilst the notion has attracted much support and has been adopted by a range of agencies such as the IUCN, there remain few examples of its systematic implementation. There are both practical and conceptual problems with this approach. Practically, measurement of the value of 'services' is difficult, and it is even more problematic to locate these values in space (Blaschke, T. 2006, Willemen et al. 2008). Economically, it is far from clear how the costs and benefits of services should be allocated- are they 'owned' by the land owner, to whom payment must therefore be made by the community following the 'provider gets' principle? (Hodge 2000). Or are they owned by the community, whom farmers must pay for any losses or degradation according to the polluter pays principle? Or does the community retain ownership and pay the farmer to manage such services on their behalf? Philosophically, these types of question extend the logic of the market agenda even further, commodifying the 'lifeworld' of local landscapes. The

history of landscapes already embraced by the market agenda offers little evidence to suggest that this will enhance their long term sustainability as coherent spaces of place.

A third market based initiative is the development of certification schemes, in which producers undertake to manage their businesses [and the local landscape in which they undertake business] in 'sustainable' ways, typically fulfilling specified management and monitoring regimes. The premise is that these schemes add value to the final product, or at least enable them to retain market access by showing consumers that they are 'sustainable'. However there is a major challenge in linking schemes within the space of flows with particular landscapes, and with local landscape policy frameworks. In each of these three types of market based approach, there is a major transaction cost in integrating the market based initiative with local landscape management, which also remains vulnerable to changing market conditions.

On the sustainability side, two initiatives can be noted. The first is the development of the idea of multifunctional landscapes (Brandt and Vejre 2003), in which landscapes are managed as complex and coupled human-environmental systems within defined spatial boundaries. Whilst conceptually rich, there are major uncertainties in how such models can be operationalised. They require high levels of data and management capability, and still leave unresolved the questions explored in relation to the market based initiatives, about the relationships between public and private assets and responsibilities.

A second set of initiatives are focused upon improving systems of rural governance, and there is considerable interest in various forms of co management of resources and collaborative decision making (Morrison 2006). However our observation is that these types of approach tend to be most common in the capacity-rich 'legacy' landscapes that are not

under pressure from intensification of production, and where the 'sustainability space' (Potschin and Haines-Yong 2006) is relatively generous.

There is clearly no 'silver bullet' that can resolve the challenges in all rural landscapes. Instead we refer back to the four types of landscape identified in Figure One, and suggest that different policy mixes will be needed in each type of situation. The key policy research question that arises is to identify the most effective mix and emphasis of policies in each landscape type.

In the intensive production landscapes strongly connected to global markets and distant from main urban centres (Fig.1,top left), the primary challenge is to find better ways to link mechanisms that are congruent with the market disciplines of the commodity chain with the public interest in local landscapes. Two directions are worth exploring. First, to ensure that local public institutions are supported by strong national standards and regional strategies, so that the sustainability goals are clear and unambiguous. Second, to find ways that enable and encourage the managers of the production landscapes to achieve public sustainability goals through their own management systems [certification, ecosystem service models etc]. It could be feasible for example to establish a strong performance based regulatory framework with a discretionary component, in which land owners may satisfy regulatory obligations by registering a certified farm plan that has been specifically designed to meet the local landscape needs.

In marginal rural landscapes away from urban areas (Fig.1, bottom left), there is less need for concern about the effects of global commodity chain production. The challenge is how to build community capacity to manage landscapes sustainably with low capital value and low cash turnover. Here there may be need for public policy that enables landowners to develop collaborative approaches to integrated landscape management and community development, perhaps

through a mix of voluntarism, regulation and public support. The biggest challenge in these landscapes arise when there is no public support available to facilitate change, and when there is a need to weigh up local landscape values against profitable land uses such as tourism resorts or renewable energy with locally intense effects.

In intensively managed production mosaics near urban areas (Fig. 1, top right) the main challenges are the management of land use change and the establishment and maintenance of landscape infrastructure (Swaffield and Primdahl 2006). Here solutions are likely to require a strong leadership role from public planning institutions, as the economic pressures for self interest by land owners are particularly strong. It may involve public institutions taking ownership of critical ecosystem networks, and use of specific area agreements and partnerships to structure and direct change. A Dutch example of this approach is provided by Hidding et al. (forthcoming 2010).

For 'consumption' landscapes within the urban hinterland (Fig.1, bottom right) the landscape management challenges lie in managing the interface between wealthy private lifestyle homeowners/hobby farmers and demands from adjoining urban areas for public access, recreation, and other ecosystem services such as stormwater management. Here public ownership of key landscape assets may be needed combined with active operational management.

The essential point of this review of types is not the detail of possible solutions, but the need for research into how to find the best match of policy approach for different types of rural landscape. The convergence of landscape character world wide under globalisation means that there is a need for each location to consider a wide range of possible policy solutions, and to select mixes that meet the specific needs of the locality. Pinto-Correia's typology of landscape potentials (Pinto-Correia, forthcoming 2010) represents a practical way to begin that task.

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