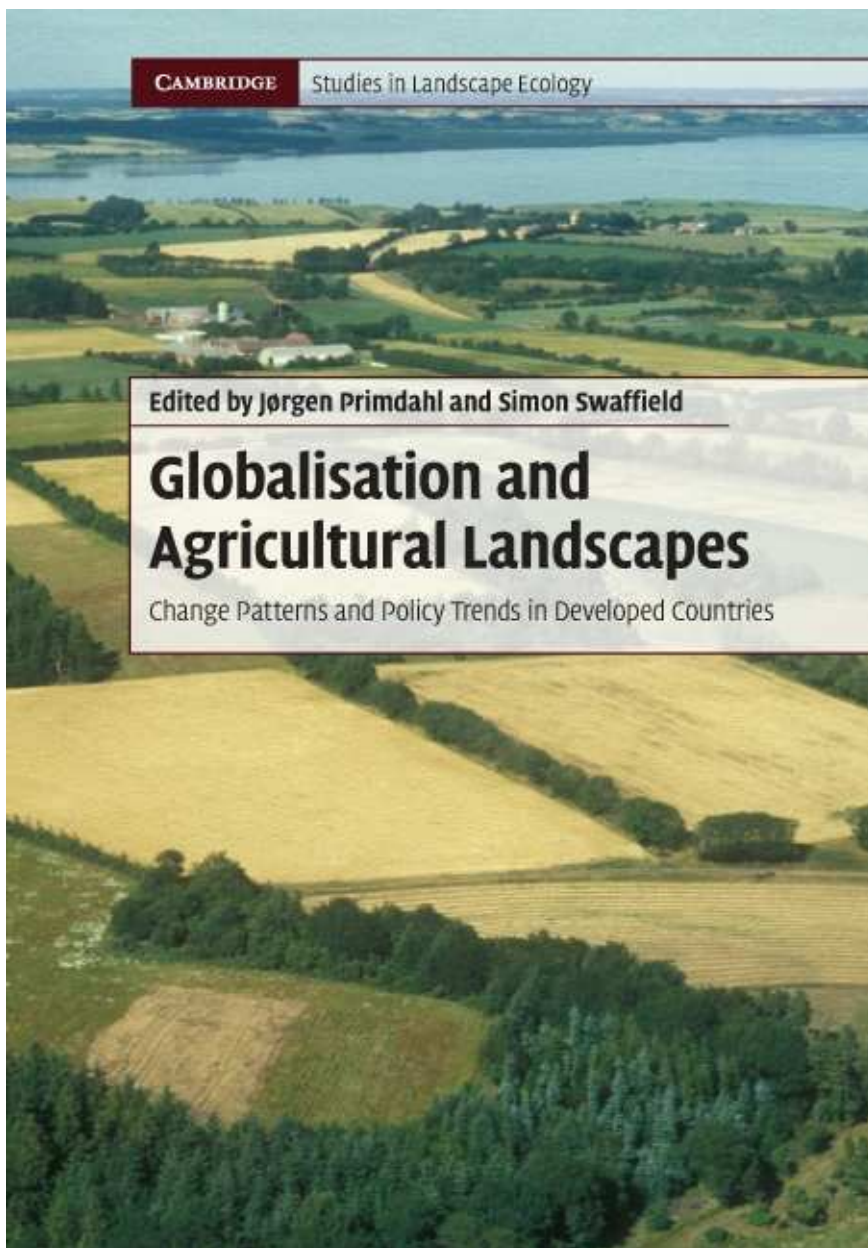


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Globalisation and the local agricultural landscape: current change patterns and public policy interventions

Introduction

The way in which a place is shaped depends partly on autonomous decisions and actions taken by local people, partly on local adaptations and responses to decisions and events from outside, and partly on outside decisions. The specific balance or constellation of such events, decisions and actions is a key to understanding the differences between places, and likewise a key to understanding differences and similarities in the way local agricultural landscapes are changing (Jones, 1988). Unfortunately this key is not a simple one, for a number of highly interrelated reasons. First of all because external driving forces are complex and increasingly affecting the local landscape. These changes in external influence happen either through overall shifts in the dynamics of globalisation (as outlined in Chapter 1), or through some of the consequences of these changes, including changes in production, increased migratory movements and urbanisation (Harvey, 1996, 2000), all of which have significant impacts on most agricultural landscapes in the developed world. These changes take place within networks organised at different scales in what Castells has termed the ‘space of flows’, which links changes in the local landscape with decisions and actions taken outside, often at great distances from the landscape in question (Castells, 2000).

A second reason for the complexity of landscape change has to do with the changing social composition of agricultural landscapes and the changing roles and importance of agriculture. Rural landscapes in the developed world are increasingly inhabited by residents with urban incomes (or with former urban incomes in the case of retired persons) including many owners of farm properties. Recreational and non-agricultural businesses are also

playing a growing role (Primdahl, 1999; Knickel *et al.*, 2004). The functions affecting land use and landscape patterns are therefore various combinations of agricultural, residential, recreational and other activities associated with the local land use and with the landscape as a place – or ‘space of place’ in the terminology of Castells (2000). The debate about current changes in agriculture and a possible ‘post-productivist’ trend in agriculture as well as the discourse on multifunctionality are linked to these social changes at the local level (Kristensen, 2001; Wilson, 2001; Evans *et al.*, 2002; Wilson, 2007). Whereas there is clear evidence showing that ‘productivist’ trends in agriculture occur parallel with ‘post-productivist’ ones, it is equally clear that the changing social structure in many regions does have a significant impact on the agricultural production and on the ‘demand’ for a variety of functions at the landscape level.

A third reason why landscape change is difficult to analyse has to do with the natural context and its variations. Since agriculture is fundamentally based on the natural resources available, primarily nutrients and water, and the natural processes related to climate and ecology, the conditions for agriculture vary across landscapes in both space and time. Consequently, even under the influence of almost identical driving forces, agricultural landscapes will remain different because the natural conditions vary. Furthermore the way these conditions are dealt with in the farming system varies, as do the policy responses to the impacts of the farming systems (Forman, 1995; Zonneveld, 1995).

In sum, each agricultural landscape is therefore at the same time a unique entity and part of wider regional and global processes and patterns. How do we then explain the concrete pattern of a specific landscape and the heterogeneity of landscapes across a region? Jones (1988) proposes three types of explanation which in combination can be used to explain the evolution of cultural landscapes. First, there are *intentional explanations* which link specific parts of the landscape – certain farm buildings, a specific woodlot, a ditch drainage pattern etc. – to specific persons or groups of people who did this and that at definite points in time. Such explanations are especially useful when dealing with change in local conditions over a relatively short time span. Second, there are *structural explanations*, such as changes in markets, technologies and public policy interventions. The opening up of the North European grain market in the late nineteenth century and the resulting collapse of Danish grain exports, and the subsequent conversion of land to livestock farming, is an example of a market change with great impacts on landscape. The introduction of liquid manure systems in the 1970s is a more recent example of a new technology that has had profound consequences for agricultural land use. Thus manure technology has reinforced the industrialisation and concentration of husbandry farming systems, with severe impacts on the environment and the introduction of environmental policy response as a consequence – all factors with clear

land-use implications (see for example Groeneveld *et al.*, 2001). Such structural shifts may explain large-scale landscape changes, in time as well as in space. The third type of explanation is a *functional explanation*, by which the local landscape is explained as the material human adaptation to the local conditions, such as the practical adjustment of widely used farming systems to the local landscape situation. The old infield–outfield systems in regions with combined good and marginal conditions, the introduction of modern centre-pivot irrigation systems in regions with low precipitation and ample groundwater resources, and agro-forestry systems in Mediterranean regions, are examples of such functional adaptations of specific farming systems producing specific landscapes. Jones (1988) emphasises that the three modes of explanation complement each other in the understanding of a specific landscape, and should not be seen as alternative or mutually exclusive types of explanation.

Using this approach to analysis, this chapter presents and discusses some concrete examples of current development patterns in six agricultural landscapes. The aim is twofold. First, to explore relationships between the driving forces associated with globalisation and the current change patterns in agricultural landscapes in developed countries that are located in different biophysical, socio-economic and public policy contexts. Second, to identify policy needs and solutions to these new changes. The case studies should be read as exemplars of similarities and differences in current change patterns, rather than as extensive, systematic analyses based on precise hypotheses – there is in my view simply insufficient theoretical understanding or empirical evidence currently available for any comprehensive testing of formal models of change.

The agricultural landscape and public policy

Public policy interventions of various kinds affect agricultural landscapes in numerous ways and have done so throughout history (Olwig, 2002; Jones, 2005). Policies may be seen as an instrumental ‘response’ to other developments, as the OECD does it in its driving force–state–response model of environmental change (OECD, 1997). More fundamentally, policy can be seen as a means to maintain or reproduce the current order of the capitalist system, as in ‘regulation theory’ (Dunford, 1990; Goodwin *et al.*, 1995). Policy may also represent a normative intention based upon changes in aspiration and understanding, such as the vision for English Garden Cities formulated by Howard in 1898 (Howard, 1898/1965).

Chapter 1 introduced two international policy agendas of particular relevance to agricultural landscapes, namely ‘the market liberalisation agenda’ and ‘sustainability agenda’. Agricultural policies clearly belong to the market policy agenda, with decoupling or even removal of agricultural subsidies as

the dominant trend over recent years. Highly centralised decision-making with no concern for the local landscape is a key characteristic of this agenda. The sustainability agenda deals mainly with the environmental consequences of market- and technology-driven developments. Here, decisions are taken at all political-administrative levels, from the UN to the municipality. Inevitably, the two agendas meet in the local agricultural landscape, and in the cases presented below examples are given of the tensions and conflicts this meeting raises.

Since all policies affect human decisions and behaviour, rather than the physical landscape as such, a great deal of the policies affecting agricultural landscapes work by influencing farmers' decisions and practices. However, the farmer is affected in different ways, and through the different roles s/he plays in the landscape (Primdahl, 1999; Kristensen and Primdahl, 2000; Primdahl *et al.*, 2004). As a *producer* the farmer may be supported through subsidies and various support schemes, and restricted through land-use planning and environmental regulatory measures. This is a traditional role in which the farmer is seen as the producer, and as the target agent for a significant range of policy interventions whether they are regulatory, incentives or consist of advisory support and information. As a property *owner* the farmer is also regulated through planning and environmental measures. In fact, more often than not, it is the *owner* who is the person legally responsible for overall land-use change (reclamation and afforestation for example), and it may also be the owner who collects the agricultural subsidies. For Europe as whole, the owner and the producer are the same person on about half the farmland. This means that on the other half, a given policy must be targeting *either* the owner *or* the producer (depending to some degree on the tenant system in question). However, even when these roles are taken by the same person, it may be that they use quite different rationales (with different time scales involved) to formulate their 'producer' and 'owner' decisions.

The third role concerns the farmer as a *citizen*, as a member in a community, as part of a landscape to use the original German-Nordic meaning of 'landscape' (Olwig, 1996). Historically this role has been important, especially in the Nordic countries with a long tradition of cooperatives and with public-private policy partnerships (Just, 1994). In the twentieth century this role has been reduced, but there are clear signs that it is regaining currency. In Europe this is seen in the new 'territorial' approaches in the Common Agricultural Policy (CAP) and it is appearing in the new collaborative approaches in physical planning as part of a 'communicative' turn in planning (Healy, 1993, 1997). For example, new agri-environmental schemes for promoting 'environmental plans and grassing associations' introduced in 2008 as part of the Danish Rural Development Programme may be interpreted as a scheme targeting farmers as community members rather than as individual owners and/or producers.

When public policies are changing, as they are currently in most developed countries, the role of the farmer as a policy target is also changing. This is most clearly seen in the CAP reforms starting with the so-called MacSherry reform in 1992 and continuing up to now with the decoupling of the main part of the subsidies and introduction of direct payments in 2005. During this process the owner (rather than the producer) has become more and more the main receiver of payments, and this is also the case for the so-called agri-environmental schemes introduced in the 1980s (Primdahl *et al.*, 2004).

In relation to the two spatial dimensions already mentioned, Castells' (2000) 'space of flows' and 'space of place', the farmer's role as a producer is mainly but far from exclusively linked to the 'space of flows' dimension since most producers are increasingly part of highly vertical food-networks, although locally based food-networks are growing in some regions. The role as a property owner is on the other hand mostly linked to the 'space of place' dimension, since long-term landscape decisions are critical for the value of the property and the farm as living place. Also as a citizen participating in community life, the 'space of place' dimension is central and quite often in conflict with the role as a producer. In regions with corporate owners, landscape decisions and practices may be dominated by 'production decisions'.

Case studies – methodological approach and empirical material

Six case studies in three countries were selected for the purpose of studying current change patterns of agricultural landscapes within their specific natural, social and public policy context. The three countries are New Zealand (Canterbury Region, the South Island), Portugal (Alentejo Region, southern Portugal) and Denmark (Jutland, western Denmark). Taken together, the three countries represent different agricultural structures and traditions, different rural landscapes, and different policy contexts within the OECD. Denmark and Portugal both represent a European context with long histories of agricultural landscapes affected throughout history by public policy interventions of various kinds, with a large proportion of the biodiversity associated with agricultural landscapes, and with great time and space variations in market conditions and urban–rural relationships (Jensen and Reenberg, 1986; Meeus *et al.*, 1990; Stanners and Bourdeau, 1995; Vos and Klijn, 2000; Wascher, 2000; Kristensen, 2001; Kristensen *et al.*, 2004). New Zealand represents a 'new world country' that is part of the so-called Cairns Group of food-exporting nations, with a relatively short history of agricultural landscapes, an indigenous biodiversity that is poorly integrated with agricultural landscapes, and with the lowest degree of public support to agriculture in the OECD (Le Heron *et al.*, 1992; White, 1999; Meurk and Swaffield, 2000; OECD, 2003). Environmental policy also makes New Zealand

different from the two European countries due to extensive deregulation and reform in the early 1990s (Memon and Perkins, 2000).

New Zealand and Denmark, on the other hand, both represent countries with highly developed agricultural sectors which are efficiently linked to global food-networks and which are contributing significantly to the national budget. Compared with these two countries, the agricultural sector in Portugal is much smaller – in absolute as well as in relative terms, and Portuguese agricultural landscapes in general are more marginal than most European landscapes. They are on the other hand deeper in agricultural history and typically more diverse and ecologically rich than the Danish and New Zealand ones (Pinto-Correia, 1993; Caldas, 1998; Pinto-Correia and Mascarenhas, 1999; Eden and Vieira, 2000).

In each of the three countries, two contrasting case study areas were selected using a combination of ‘typical case’ and ‘maximum variation’ sampling strategies (Patton, 1980); one with relatively good conditions for agriculture, the other with more marginal conditions. Each of the areas has been chosen to avoid extreme cases (including unusual agricultural production structures or national parks and other very important nature conservation areas). All farmers within the individual area were contacted and asked for a face-to-face interview, in which the farmer was asked questions concerning the farm property, the farmer, farming and landscape practices, the relationship to markets, recent changes on the farm and in the local area, and influences on the farm from policy interventions and private organisations including food cooperatives. The interviews took place from 2003 to 2005 and this period is the ‘reference point’ for the recent changes described in the next section.

An overview of the six case study areas is given in Table 8.1. The six areas are rather different when it comes to agricultural land use. Furthermore, the variations between the three regions represented appear to be greater than between the individual areas, with the possible exception of Amendoeira in Portugal, which has a very large wooded area due to one specific farm property on the periphery. The average farm size is significantly smaller in the two Danish case studies, which reflects the regional differences between the three countries. However, when it comes to conditions for agricultural production – as will be described in the next section – the variations show a different pattern. In the following section, the six areas are briefly characterised and the current changes and role of public policy interventions are then described.

Te Pirita, New Zealand. Located on South Island in Canterbury Plains (see Chapter 6), Te Pirita is an example of an intensively farmed ‘dairy landscape’ based on irrigated grasslands with a very high productivity and an equally high livestock density. Part of the area is located on river terraces with narrow, steep terrace banks; other parts are situated on an outwash plain meaning that the soils are well drained, stony or sandy soils well suited for grassing. Shelterbelts about 5–6 metres high and forest belts (*Pinus radiata* and

TABLE 8.1. Main characteristics of the six agricultural landscapes under study.

Case study landscapes	New Zealand		Portugal		Denmark	
	Te Pirita	Banks Peninsula	Sao Manços	Amendoeira	Hvorslev	Nees
No. of farmers interviewed	8	10	9	13	14	15
Average farm property size, ha	670	590	520	180	35	63
Total area, ha	5380	5873	4649	2327	489	950
Rainfall, mm/year	400	670	660	600	630	690
Potential evapo-transpiration, mm/year	750–1000	750–1000	1250–1500	1250–1500	500–750	500–750
Agricultural conditions	Good (with irrigation)	Marginal	Good	Marginal	Good	Marginal
Agricultural land use, % of total farm property						
Arable	20	7	48 ^a	16 ^a	80	74
Permanent grassland	76	58	45 ^a	19 ^a	3	6
Permanent crops	0	0	6	1	0	0
Wooded areas	2 ^b	17	0	64 ^c	9	13
Other areas	2	18	1	0	8	7
Husbandry						
Main stock type	Dairy	Sheep	Mixed	Cattle	Pigs	Pigs
All livestock, units/ha agricultural land ^d	2.26	0.40	0.18	0.45	1.00	0.44

^a A significant proportion of the arable land and permanent grassland also includes cork oak (*Quercus suber*) and holm oak (*Quercus rotundifolia*) trees in varied densities, so-called 'Montado'.

^b A municipal 'Plantation Board' owns and operates a network of forest belts (*Pinus radiata*) in the area (see also Chapter 6). These are not included in the statistics.

^c Seventy-five per cent of the wooded area in Amendoeira belongs to one large property. The property is included because most of the wooded area is former farmland, Montado, recently afforested.

^d The EU system for calculating the 'livestock unit' is utilised with some modifications since New Zealand dairy cattle (Slevig Holstener) are typically smaller than the European stock. The conversion figures are (number of units/DE): dairy cows = 0.85; heifers = 4.9; beef cattle = 2.6; bulls = 2.5; sheep = 7; horses = 2.3; sows = 4.3; fat pigs = 35; piglets = 175; poultry = 2600.

Cupressus macrocarpa) intersect the area. There are no indications of pre-European Maori settlements in the area, and current farming patterns date from the beginning of the twentieth century. The big Rakaia River, which is protected through a water conservation order, is located just south of the area. Besides the river there are no protected areas within the Te Pirita area.

Most of the farms are dairy farms and a few others support these with winter fodder and maintain themselves a mixed livestock production. One farm operates a traditional 'dry-land sheep' production with only one sheep per hectare, and well-developed risk-management practices to cope with extreme weather conditions such as drought or snow storms in the winter. The dairy cattle are outside all year round, with the main investments (besides livestock and land) being in the milk shed and irrigation. Since the milk is used for milk powder the calving time is the same for all cows; in the middle of the winter. All milk is sold to New Zealand's international dairy cooperative, Fonterra. All farmers within the area are full-time farmers with one being a sharemilker (owning the cattle but not the land) and almost all other residential houses in the area are occupied by workers employed on the dairy farms.

Banks Peninsula, New Zealand. This area forms the south-east part of the Banks Peninsula, located east of Christchurch on the South Island. The study area forms part of a complex of old, eroded volcanoes. The upper part of the area is largely open tussock-type grasslands and some shrubs and ferns. The lower and main parts of the area have a pastoral landscape with some patches of natural (or regenerated) bush with a rich diversity of indigenous species and a few monoculture plantations (*Pinus radiata*). About half of the boundary is a highly varied coastline with many small inlets and bays and high scenic values. The Banks Peninsula is rich in Maori settlements, and when European settlement began around 1840 the landscape was already a modified cultural landscape, highly affected by burning, with few woodlands left, and dominated by tussock grasslands and fern. Within the study area, a few nature reserves have been established, including a locally initiated nature reserve now covering over 1000 ha of regenerating forest.

All the farms are primarily sheep farms, which since the economic deregulations in the mid 1980s have been farming under marginal economic conditions. The stock density is rather low and bush regeneration still occurs on the steeper parts of the farms. There are also beef cattle. Many farmers are involved in tourism, including bed and breakfast accommodation, and since the late 1980s a group of farmers have operated a successful four-day walking tour which includes 'backpacker' style accommodation in former farm-worker buildings. The area has been characterised by generally low levels of investment over recent decades – mainly in building and equipment related to tourism – although there is now growing international investment in property. A well-known tourist town, Akaroa, with bus connections to Christchurch, provides local services. Due to subdivision of agricultural land (in plots typically around 20 ha) there is an increase of residential houses in the area occupied by pensioners or people with jobs outside the area.

Sao Manços, Portugal. This area is located on a fertile plain about 20 km east of Evora in the Portuguese region Alentejo. The area is an intensively agricultural landscape with a slightly rolling terrain, with smallholdings and a relatively dense pattern of buildings to the east close to the small town of Sao Manços and large fields with large estate buildings located on small hilltops to the west. Many of the small farms are owned by part-time farmers or function as second homes for urban people. Parts of the Sao Manços area are designated as groundwater protection zones and the farmers in part of the area are entitled to sign contracts under EU agri-environmental schemes.

The small and highly intensive farms to the east grow grapevines (for wine), oranges and vegetables, whereas the large estates in the western part have cattle breeding and arable farming on large fields with scattered trees. Newly planted fields with irrigated vineyards and olives also occur in the area. There is a relatively large cooperative operating in the area. This cooperative was established under the Portuguese revolution in the mid 1970s when many large estates were occupied by peasants and is one of the few still in operation in this region. The area has been subject to large investments in irrigated vineyards and olives, and more intensification is expected to occur.

Amendoeira, Portugal. This area represents a marginal agricultural landscape with poor soils, low rainfall and little or no possibility of irrigation. The landscape, located close to the Guadiana River near the Spanish border, is – for the main part – a typical Alentejo Montado landscape with cork oaks (*Quercus suber*) and holm oaks (*Quercus rotundifolia*) scattered in varied densities throughout the area. The landscape is rich in biodiversity and scenic values and is part of the regional ‘Mertula Nature Park’ named after the historic town Mertula about 20 km south of the area.

Extensive production characterises agriculture in this landscape. Permanent grasslands with scattered oak trees (*Q. suber*, *Q. rotundifolia*) and wooded areas are the most common land use. Vast investments financed through EU afforestation schemes have been made on a few properties including a very large one, mostly oak and pine (*Pinus pinna*) plantations designed for hunting. On the arable land, hard wheat and oats are the most common crops, but husbandry production constitutes the main part of the agricultural production, with beef cattle and sheep as the most common stock types. Hunting plays an important role in the area with partridge, duck and wild boar as the most important game. The main socio-economic trend in the area is depopulation as young people move away and there are no or very few newcomers to replace the old retired farmers. Most of the smaller farms are owned by older farmers whereas the owners of some of the larger farms (including the largest) are living outside the area. Tourism is slowly evolving.

Hvorslev, Denmark. This case area represents an intensively farmed, relatively open landscape typical of eastern Denmark. Although pockets of poor sandy soils and steep river valley slopes occur, most of the area is covered by fertile loamy soils on the moraine plateaus. The individual farm buildings, usually surrounded by deciduous trees, are scattered throughout the area. The landscape history has been relatively stable, although the number and share of non-cultivated landscape elements has declined over the last century. New deciduous hedgerows (one-, three- and six-rowed) have been planted during the last decades and are slowly enclosing the landscape. The biodiversity and scenic values of the area are associated with the river valley north of the area and with small gullies penetrating the plateau. A few small villages are located on the plateau and they usually contain a few active farms as well.

The agricultural structure is composed of highly specialised farms, mostly pig farms and a few cash-crop farms and dairy farms. These farmers operate most of the land, but most farm holdings are owned by hobby farmers, with most of their income from urban jobs. The dominant socio-economic changes in recent years have been the specialisation of traditional mixed farming (dairy, pig and crop production on all farms), with rapid growth of a few large pig farms and the disappearance of services and jobs in the villages, leaving them as residential areas characterised by relatively low-quality buildings and with a declining housing market.

Nees, Denmark. This flat landscape is located in Western Jutland on an outwash plain close to the North Sea and bordering a large inlet. Most of the area is former heathland, with sandy soil. The last major heathland reclamation in Denmark took place in this area during the 1950s. A dense pattern of hedgerows (shelterbelts) characterises the area with a number of newly afforested woodlands. The area is by Danish standards relatively isolated, with no major traffic roads and about 30 km to the nearest town. There is one small village with a small furniture factory and one grocery store left. There are no designated conservation areas, with the exception of a small zone along the inlet in which agri-environmental schemes to maintain extensive grassing of the salt marshes are in operation.

Agriculture is characterised by dairy and pig farms and a few newly established beef cattle units. Except for a small area with potato, all crops are used for fodder. More than half of the agricultural land is irrigated, reflecting the low water capacity of the sandy soils. Land use has become more extensive in recent years. A relatively large proportion of the area has been taken out of production for CAP set-aside and for new forests. A few decades ago the area was poor in wildlife. This is changing, and the area now contains a stable population of roe deer, and red deer are seen frequently. The new forests are also a main reason why young families have moved to the area recently.

Present change patterns and the role of public policy interventions

Although current change was not part of the sampling criteria of the case areas, all the six agricultural landscapes are in transition, affected by global driving forces such as market liberalisation and reduced transportation costs, and related changes including growth in tourism and urbanisation (including counter-urbanisation). There are clear patterns in the variation between the case studies and between the three pairs of case studies from each country. Thus there are distinct differences in the way the three areas with good agricultural conditions change compared with the way the three more marginal areas develop. An overview of current change patterns is given in Table 8.2.

When it comes to changes in landscapes – functions as well as patterns – there are significant changes in the six case studies, all linked to structural changes in agriculture with an increase in farm size and scale of production as common change patterns. In some areas (Banks Peninsula, Sao Manços, Hvorslev and Nees) residential functions are gaining importance, caused by new developments or by farm holdings taken over by people with urban incomes. In others (Banks Peninsula and Amendoeira) tourism is evolving and affects the landscape through new buildings (bed and breakfast facilities, restaurants etc.), roads, walking trails, parking lots, picnic sites etc. In the areas where residential functions are gaining importance the farmer's role as owner is equally growing in significance in relation to landscape change.

Environmental issues and conflict emerge in all areas in relation to water resources (consumption, pollution, eutrophication), soil erosion, biodiversity (species and habitats), cultural elements and aesthetics, although the significance and specific composition of the problems vary. Most severe problems are found in the three intensively farmed areas, Te Pirita, Sao Manços and Hvorslev. Extensification and abandonment is in conflict with the protection of highly valued biodiversity and scenery in Amendoeira.

The public policy interventions applied also vary, most clearly between the countries. The two New Zealand case study areas are characterised by the market liberalisations and the removal of agricultural subsidies and support schemes in the mid 1980s, as the most influential changes affecting agricultural landscapes throughout the country (see also Chapter 6). Furthermore the reforms of environmental policies including reform of the planning system in the early 1990s have been influential in enabling changes concerning buildings, plantings and irrigation, and in effect have basically made it easier for private landowners to develop their properties and farm holdings. In combination, the New Zealand policy reforms have promoted a process in which nature conservation interests and agricultural production increasingly have become segregated (Primdahl and Swaffield, 2003). This is clearly seen in the

TABLE 8.2. *Current change patterns in the six agricultural landscapes under study.*

Good conditions for agriculture	Poor conditions for agriculture
————— New Zealand —————	
Te Pirita	Banks Peninsula
Introduction of irrigation and intensification of agricultural production	Counter-urbanisation and growth of tourism
Population increase	Population increase
Increased impacts on aquatic environment	Extensification of agriculture
Decrease in habitats and landscape heterogeneity	Regeneration of natural woodland
Deregulation of public policy	Deregulation of public policy
————— Portugal —————	
Sao Manços	Amendoeira
Intensification and mechanisation of agricultural production	Marginalisation/extensification of agricultural production
Counter-urbanisation	Afforestation
Increase in population	Depopulation
Increased environmental impacts	Emerging tourism
Introduction of agri-environmental policies, restrictive building regulations	Huge support payments for afforestation on farmland and Montado management (clearance of shrubs, pruning and extensive grassing)
	Designation of a regional nature park
————— Denmark —————	
Hvorslev	Nees
Intensification and specialisation of agricultural production	Extensification in agricultural production (land use and husbandry)
Some counter-urbanisation	Afforestation
Increase in environmental impacts	Recent depopulation trend appears to have ceased
Increase in small, uncultivated landscape elements	Growth in wildlife
Environmental regulations of farming practices have increased in details and overall degree of restrictions	Support schemes have been applied for public and private afforestation
	Environmental regulations have increased in details and overall degree of restrictions
	New scheme for extensive grassing has been introduced

Te Pirita area which has developed into a very intensive production landscape with little or no consideration of other functions, whereas some nature conservation sites have been developed within the Banks Peninsula area (Primdahl and Swaffield, 2003).

Both the Portuguese case study areas have been highly affected by the CAP – in terms of income support to the owners, in terms of investment support to

modern production systems (mainly in Sao Manços), and in terms of support for agri-environmental schemes and for afforestation (mainly in Amendoeira). The protection and maintenance of the Montado landscape in particular, present in both case study areas, have been facilitated through agri-environmental schemes (see Chapter 7). New buildings including new residential buildings are regulated through detailed and relatively restrictive rules in Portugal, although the Sao Manços landscape is affected by new residential buildings, usually constructed in connection to existing farm buildings. Water resources and the environment in general are also subject to detailed regulations, which on the other hand do not prevent expansion of irrigation in the Sao Manços area due to new opportunities created by the construction of Europe's largest dam, the Alqueva Dam, about 60 km from the area. In the Amendoeira area a large afforestation project planned for pulp production from eucalyptus was rejected due to nature conservation interests linked with the designation of a regional nature park.

The two Danish case areas have also been highly affected by EU policies, especially the CAP. In both areas, the hectare and livestock premiums have contributed to stimulating an intensive land use by maintaining a high share of cultivated land and a high livestock density. This is particularly the case in Nees, where arable farming is at the edge of economic feasibility due to sandy soils. However, the large pig production has only to a limited degree been subject to support from the EU. Schemes to support afforestation have influenced both areas – in Nees through huge planting projects in the 1990s – whereas agri-environmental schemes have not until very recently played any significant role. Environmental legislation, partly related to the EU Nitrate Directive, has played a central role in regulating technology and farming practices in relation to livestock production. Finally, the national agricultural policy has played a role in regulating farm structure, although this influence is decreasing due to deregulation of the Agricultural Holdings Act.

There are some striking similarities across the case studies and national context. First, there are obvious similarities in the ways the three areas with good conditions (Te Pirita, Sao Manços, Hvorslev) are currently developing. Agricultural production is becoming more intensive, specialised, mechanised and concentrated as part of a process of becoming competitive in different segments of the world food market – primarily the milk-powder market in Te Pirita, wine and olive market in Sao Manços and the pork market in Hvorslev. This process is partly driven by family farmers, partly by corporations (a few are operating in Te Pirita and Sao Manços). In all three areas some immigration of farm workers from Eastern Europe has been part of the process – even in New Zealand. Agriculture is most intensive in Te Pirita, where the introduction of intensive dairy production has taken place over less than ten years, resulting in profound landscape changes – first of all in terms of removal of the tall hedgerows characteristic of the former Canterbury sheep landscape,

but also with removal of forest belts and water races and the construction of large, circular centre-pivot irrigation systems. In parts of the Sao Manços area huge investments have also been made in newly planted drip-irrigated vineyards and olive fields, mainly by a large foundation operating the largest estate in the area, replacing former Montado with highly intensive production. In the Hvorslev area transitions from a farm structure based on mixed farms (dairy, pig and arable on each farm) to specialised pig farms have taken place during the last 20 years, parallel to the arrival of many hobby farmers who have taken over some of the smaller farms. The pigs produced are either sold as piglets to be fattened (in recent years often exported for breeding, mainly to Eastern Europe and Russia) or as hogs to the 'Danish Slaughterhouses', an umbrella organisation owned by the pig farmers and selling almost all pork from Denmark. The landscape pattern already present since the 1980s, characterised by open fields with a very small share of uncultivated elements, has been relatively unchanged, with the exception of the large new production buildings and an increase in hedgerows, woodlots and other small uncultivated habitats. In sum, large investments in more or less industrialised production efficiently linked to worldwide food markets characterise developments in these three areas, with different impacts on the landscape and with increasing conflicts with other residents and public authorities concerning environmental impacts of the intensification, first of all impacts on the water resources. Productivist perspectives, more or less in conflict with the conservation of water resources and biodiversity, dominate changes in these three landscapes.

The three areas characterised by relatively difficult conditions (Banks Peninsula, Amendoeira, Nees) also show clear similarities in their current patterns of landscape change. Most important is the extensification of agricultural production, in land use and in livestock production. The reasons for these changes reflect to a large extent the same driving forces that have led to intensification in the other areas – liberalisation of the agricultural policy (including removal or reduction/restructuring of subsidies and support schemes) and reduced prices on agricultural products. However, these marginal landscapes have only a few possibilities to intensify production, because of natural constraints related to soil, water, terrain and climate. Partly linked to these constraints, the three marginal areas all contain assets related to biodiversity, wildlife, cultural elements and scenery. Again, this is most clearly seen in the New Zealand case. Growing tourism and residential development are the main characteristics of the current changes in Banks Peninsula. There are also examples of plain speculation in property value by new overseas owners. In Amendoeira a large proportion of the farmland is owned by people living outside the area. Huge areas have been planted with oaks and pine with hunting as the main function (besides investments in

property) and on the remaining land extensive farming is operating with the support of agri-environmental schemes. Large afforestation projects are also characteristic for the landscape changes occurring in Nees.

Although the levels of land prices in the three marginal areas vary and are significantly lower than the prices in the three other areas, it is interesting that they have risen to the same extent as the others, that is, more than doubled in price during the 1990s and early 2000s. The trend that land prices in marginal agricultural landscapes rise during periods of falling prices and subsidies indicates new socio-economic conditions associated with post-productivist functions in these areas.

Conclusions

All the six agricultural landscapes are currently undergoing transformations which in different ways are closely linked to global processes. These transformations include:

1. *Deregulation* of agricultural policy and expanding global food markets are clearly affecting all six areas, most profoundly the three areas with good conditions (see Tables 8.1 and 8.2). These three landscapes change fast – with land use intensification including livestock production. Environmental impact from agriculture on water and soils increase, as do the visual impacts from new buildings, irrigation systems and roads. Biodiversity in all these areas has declined during the last decades and no clear improvements are to be expected in the near future. The economic return per hectare increases in these areas, as do the economic and environmental risk levels, including dependence on climate variations and changes in specific global markets. The three marginal areas (Tables 8.1 and 8.2) have also been affected by deregulation in the way that agriculture has been extensified – land has been taken out of rotation, grassland management extensified or given up, and land has been afforested. In all these three areas biodiversity is improving due to habitat regeneration and conversion of arable land into grasslands and forests.
2. *Urbanisation* and *tourism* have been affecting all areas, in that urban capital is increasingly being invested in land and buildings. Furthermore, functions related to recreation, tourism and the landscape as a living place are gaining importance in relation to agricultural production functions – with the possible exception of Te Pirita. Banks Peninsula and Amendoeira have been affected most profoundly by such processes. In these areas some subdivision has occurred and some of the farm properties have been taken over by urban people living far away from the landscape,

while others have been taken over by newcomers with urban jobs or pensions saved up in cities. A high level of tourism has developed in Banks Peninsula and tourism is slowly evolving in Amendoeira.

3. The ways that landscape function and pattern are linked to 'space of flows' and to 'space of place' (Castells, 2000), and the balance between these dimensions of the landscape, are also changing. The general pattern is that the agricultural landscape is increasingly being linked to networks organised and functioning in global systems of networks – from international food chains to tourism organisations. This is in accordance with Held *et al.*'s (1999) characterisation of globalisation (Chapter 1) as is the growing impact that 'space of flows' dynamics have on the biophysical processes in the landscape. *Structural explanations*, to use Jones' terminology introduced in the beginning of this chapter (Jones, 1988) are in other words significant for understanding the changing processes in all areas.

At the same time there is growing awareness of the local place – as a living place or a visiting place. Since people now are much more mobile and distances are being reduced in terms of transportation time, the local landscape as a more-or-less well-functioning and attractive 'place' will increasingly be 'competing' with other local places in maintaining/attracting residents, simply because it is the 'residents' – more than the 'food producers' – who constitute the local economy and maintain 'the space of place'. In this context the farmers' roles as owners and as citizens come into play and these roles are clearly ignored in designing and implementing the public policies in question.

As Castells (2000, p. 458) highlights, it is by no means predetermined how the balance between the 'space of flows' and 'space of place' (that is between globalisation and localisation) will develop in any given landscape. It is interesting that the 'place' dimension manifests more in the three marginal areas than in the three others and this is probably related to the reduced importance of production functions.

4. Against this background it is notable that there are only a few examples of policies related to the landscape as a 'place' in the six case studies – in fact there are no examples of integrated policies or plans dealing with the multifunctional landscape as such. Almost all policies concern *either* the avoidance of negative impacts from agricultural production *or* the avoidance of abandonment of farming. In addition a number of (quite different) planning policies deal with residential development and other forms of urbanisation. The policies rarely deal with the landscape as a whole, as a place in which a number of functions co-exist in balance, which to a high degree determines the condition and attractiveness of the area. The three roles of the farmers are only dealt fully with if different policies are integrated.

In sum, the six landscapes presented represent six different contexts in respect to biophysical conditions, socio-economic patterns and public policies in play. Nonetheless, they are all increasingly affected by the same driving forces: market liberalisations, expanding food networks, urbanisation and regulations linked to the sustainability agenda. The three intensively farmed landscapes may be converging in patterns and functions towards highly mechanised, intensive production landscapes with highly disturbed habitats and hydrological systems. The three marginal landscapes are also affected by similar change patterns including extensification of farming and urbanisation. This means that the landscapes within the same countries are diverging.

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