



The farmer as a landscape manager: Management roles and change patterns in a Danish region

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Abstract

Rural landscapes are mainly maintained and changed through farmers' decisions and practices. As a landscape manager the farmer has many different roles of which three roles related to the farm as a whole is investigated in this paper: producer, owner and citizen. Although most farmers take landscape decisions in all these three roles production based decisions are assumed to be more important for full time farmers than for hobby farmers who have their main income outside the farm and who may consider their farm more as a living place than as a production place. Based on a large survey carried out in Hvorslev, Eastern Jutland, Denmark in 2008 farmers' landscape practices are analysed in relation to their background, occupational status and view of their farms as a production place versus a living place. Altogether 377 farmers were interviewed and some comparisons are made to a similar survey in the same area in 1996. It was found that a significant proportion of farmers are hobby farmers who mainly see the farm as a living place and who

to a large degree have different landscape practices than full time farmers have. The findings indicate that more research is needed to fully understand the reasons for and implications of the differences in landscape management practices.

Key words

Agricultural landscape, farmers, land owners, landscape management, agri-environmental policy.

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The farmer and the rural landscapes

Introduction

Rural landscapes are maintained and changed through farmers' decisions and practices which in turn are framed by a combination of overall structural conditions and local opportunities and constraint. Farmers' landscape management is of interest from a number of policy perspectives including sustainability, biodiversity, heritage and rural development (Lowenthal, 2007; Tilzey, 2000; van der Ploeg et al., 2002; Tilman et al., 2002; Primdahl & Swaffield, 2010). Farmers' landscape practices can also be analysed as reflections of more general changes in agriculture linked to wider changes in society, including parallel trends towards agricultural intensification and post-productivism/multifunctionality (Wilson, 2001; Evans et al., 2002; Joon-geneel et al., 2008). Although the general conditions for farming may appear to be roughly the same for each farmer in a region (market and technology for example), the specific conditions are in fact very variable (van der Ploeg &

Saccomandi, 1995). Each farmer has his/her (for practical reasons we write 'his' in the following being aware that the 'farmer' is frequently a 'she') own context to operate within, partly determined by the farm itself situated in a specific landscape and linked to specific social networks, partly by the farmer's own values, ambitions, skills and economic situation including alternative income opportunities. The situation for the newly established full time farmer who is usually forced to pay back large loans is quite different from the hobby farmer who together with his spouse is earning two full incomes outside the farm. To understand current landscape changes these different conditions for the farmer as a landscape manager must be included as an important component in combination with the structural frame composed of agricultural structural developments as well as urbanisation processes.

Also for public policy, the concrete situation of the farmer is crucial, since it is the farmer who is seen as the target person concerning a wide range of interventions. This is the case for many agri-environmental policies and

rural development plans where the farmer is offered incentives to farm (or not to) in certain ways for environmental reasons. And as the key decision maker concerning land-use and management practices the farmer is the focus in many regulatory contexts concerning the agricultural impact on issues such as water protection, soil conservation, biodiversity and habitat protection.

In order to achieve a more precise and a more explanatory understanding of landscape management at the farm level we have, in a Danish context, found it useful to operate with three distinctive roles which the farmer can play as a manager: producer, owner and citizen.

The three roles of the farmer

The farmer's landscape practice is of course closely linked to agricultural production but also to a wider management of the farm property. As a *producer* of food, fibre and bioenergy the farmer is affecting the landscape first of all through his land-use – cultivation of land in rotation, grazing and moving grasslands, cultivation of permanent crops, livestock production, and forest management (Baudry et al., 2000; Stoat et al., 2001). Maintaining or changing these kinds of land-uses on the farm is the most significant aspect of his farming practice as a producer. However the specific management at the field level – tillage, fertilization, spraying, livestock density etc. – is also crucial for the way the agricultural landscape is functioning and structured. Often the farmer's own identity as a farmer is associated with his skills as a producer (Nassauer, 1995; Burton, 2004). Even when the farmers' practices are analysed broadly by the use of Bourdieu's concept of cultural capital (Bourdieu, 1977) as in Setten (2004) they are predominantly seen as food producers. Traditionally, this role as a producer has been the farmer's key role seen by society at large, including the policy makers (Primdahl, 1999; Madsen, 2002).

Usually the farmer is not only a producer, he is also *the owner* of a farm property, although the pattern of mixed, family farms as the dominant farm type in Western Europe (Grigg, 1974) is changing towards a more diverse pattern of family owned farms and larger corporate farms (Rehber, 2000). Fourty four percent of the total utilised farmland within the EU is leased out (Eurostat, 2007) and even when this is the case it does not necessarily mean that the owner is not or does not see himself as a 'farmer'. The role as a farm owner in a landscape context concerns managing the farm property as an investment or inheritance, an asset which will be either sold again or passed over to a successor in the family. However it is also by the owner (or long term tenant farmer) that the farm is managed as

a place to live, as a home for the farm family. There is much evidence indicating that this 'property management' or property related issues plays a vital role in the farmer's landscape practice (Munton et al., 1989; Lowe et al., 1992; Primdahl, 1999; Madsen, 2002; Busck, 2003; Kristensen et al., 2004; Primdahl et al., 2004, Jongeneel et al., 2008). In addition this role of the owner has probably been underestimated by policy makers involved in countryside policies and planning, as a large number of policy issues are more relevant for 'property related' landscape practices than for production oriented ones such as hedgerow plantings, afforestation, digging of new ponds, etc. Furthermore, when the land is leased and the producer and the owner are two different persons it is most often than not the owner, who is the person legally responsible for land-use and habitat changes. Finally, the ongoing reforms of the EU Common Agricultural Policy (CAP) from subsidies mainly linked to production to payments linked to land and with no (or very little) coupling to production result in a changing 'balance' between producers' versus owners' interests. Since the so-called MacSherry Reform in 1992 payment premises and conditions have gradually changed so that the owner is receiving relatively more payments at the expense of the producer simply because almost all subsidies before MacSherry went to producers.

The third role concerns the farmer as a member of a community to which he is more or less closely linked as a citizen. As a *citizen* the farmer participates in community life and in collective actions of various kinds. Some collective actions include resistance actions against public initiatives, others include landscape restoration projects or collective hedgerow plantings. Sometimes the actions are carried out in close co-operation with the municipality or other public institutions, in other situations they are implemented without any contact to public authority. Historically, there is in Scandinavia a long tradition for collective actions undertaken by farmers including the re-allotment reforms around 1800, the co-operative movements initiated in the late 19th Century, and drainage, reclamation and other projects aiming at expanding and improving agricultural land carried out in the last half of the 19th and through most of 20th Century (Just, 1994; Fritzbøger, 1998). Since World War Two such collective projects have become increasingly rare parallel to the centralization of the co-operatives, the termination of reclamation and the social fragmentation of rural communities. However there are indications that collective actions involving farmers' 'landscape practice' are increasing again. This is partly due to increased environmental awareness and a growing interest among farmers to contribute to

a better local environment, partly to a growing interest in the social well being of the local rural community where the farmer traditionally has been – and still is – a relatively active member. Also the territorialisation of agricultural policies, a more general trend towards what has been termed the ‘deliberate turn in democracy’ (Kymlicka, 2002: ch.7) are causing a new interest in local and collective projects.

In this paper we will concentrate on the two other roles the farmer is playing as a landscape manager, since the role of the farmer as a citizen has not been explored in the empirical studies presented here. Through new empirical studies following up on farmers surveys we are addressing the following questions: What are the farmers’ background and how are their relationships to their farms? What are the trends in recent landscape changes and what landscape management role are the farmers playing as producers compared to their role as owners of a farm? Finally we discuss some policy implications of the findings.

Case study: Agricultural structures and landscape changes in Eastern Jutland, Denmark

Methodological approach and case study area

The farmer’s double role in landscape management, as producer and as owner, is analysed using empirical data from two extensive surveys carried out in the same agricultural area at two different points in time.

In 1996, a study of farmers’ landscape practice and public policy interventions was carried out in the Hvorslev-Bjerringbro area in Eastern Jutland, Denmark (called ‘Hvorslev’ in the following). Personal interviews with 729 farmers from one coherent area (10 parishes) provide the main source of information concerning the farmers, their production and landscape practices (seen as changes of landscape elements and management), and the farmers’ experiences with public policy intervention of various kind. Ninety five percent of all farm owners (with more than two ha of property land) participated, representing 15,253 ha of farm property all together. During the interviews major changes in landscape patches and linear elements were mapped. A smaller survey focusing on farmers’ motives for planting of hedgerows was carried out in 1998. (Primdahl, 1999; Primdahl & Christensen, 2002).

In 2008 the study was repeated in the same area although the number of parishes was reduced to 8 and 377 farmers representing 90% of all farmers (excluding those which could not be contacted due to illness, farm holding on sale etc.) were interviewed. In the following we pres-

ent data from 2008 with some comparisons with the 1996 figures from the same 8 parishes.

Most of the area is typical for landscapes in Eastern Denmark with fertile loamy moraine soils as the dominant soil type. The landscape is glacial with undulating ground moraines intersected by valleys of different types as the most common land forms. In the Western part of the area there is a major river terrace with stony soils and some of the valley areas have relatively steep soils and relatively poorly drained valley floors representing more marginal farming conditions.

The farmers’ background, occupational status and view of their farm property

According to the Danish Agricultural Holdings Act the owner of the farm must live on the farm – or on one of the farms if he owns more farms. Although the act has recently been liberalized significantly, the agricultural structure is (still) to a large extent framed by this legislation. Tenant farmers are very rare whereas short term leasing contracts are common. Altogether 17% of the farmland was leased out to other farmers, mostly within the Hvorslev area. All owners may be characterized as ‘farmers’ of one kind or another.

Farmers’ rural-urban background is shown in Table 1 and may be seen as an indication of the degree of cultural ‘urbanisation’ of the landscape. About two thirds of the farmers grew up on a farm, a figure which has decreased from 74% in 1996. The portion of farm owners who grew up in towns and cities has increased from 12% to 17% during the 12 years. Seen in connection with occupational status it appears from Table 1 that a higher proportion of pensioners and full time farmers come from a farm. The highest proportion of farmers coming from a town is found for hobby farmers. Consequently, full time farmers and pensioners may have a more traditional rural relationship to their farm than hobby farmers, and the general trend is that a declining proportion of farmers have their background on a farm.

The farmers were asked how they conceived their farm in respect to production versus residential functions. As seen in Table 2 a clear majority of farmers, about two thirds, see the farm primarily as a good place to live, that is, mainly as a residential place. Only 4% see it primarily as a production unit and 29% see it as an ‘equal’ combination of the two motives. Seen in relation to occupational status these distributions clearly vary. A little more than half of the full time farmers see the farm as an equal combination of a living place and a production place, and 24% of the full time farmers see it primarily as a production place.

Table 1: The farm owners' background and occupational status, 2008 figures except for bottom row.

Background ► Occupational status! ▼	The farmer grew up			Sum (= 100%)
	on a farm	in the country	in a town ²	
Full-time farmer, %	77	13	10	39
Part-time farmer, %	67	19	14	21
Hobby farmer, %	57	19	24	190
Pensioner, %	78	13	9	96
Others, %	-	-	-	5
All, %	66	17	17	351
All farmers in 1996%	74	14	12	457

¹) Full-time farmer: age < 67 and no income from outside the farm

Part-time farmer: age < 67 with an off-farm income < farm income

Hobby farmer: age < 67 with an off-farm income > farm income

Pensioner (receiver of any kind of pension)

Others: Funds, companies, municipalities, church etc.

²) Includes cities, towns and villages > 2,000 inhabitants

Chi-Square test, p=0.0136. Chi-Square test includes the figures in the grey square

Only 21% of full time farmers look at their farm property primarily as a residential place and more than half of the full time farmers see the farm as an equal combination of a living place and a production place. For hobby farmers these figures are very different as to be expected. Seventy nine percent of the hobby farmers look at their farm as primarily a living place and almost none of the hobby farmers see production as the prime function. Seen in relation to landscape management we may expect that the hobby

farmers' management is much more related to the farm as a property than to the farm as a production unit. The question is then: how much land do hobby farmers own compared to full time farmers and what is the changing trend?

Two structural trends are affecting the agricultural holdings' structure of the area. First there is the structural development in agriculture towards larger farm units and more industrial farming. Full time farmers buy up other farms or parts of other farms and their production grows either

Table 2: How the owner perceives his farm property and farmers' occupational status (2008).

How the farm is seen ► Occupational status ² ▼	The farm owner main motivations for possessing the farm ¹ :			Sum (= 100%)
	A (good) place to live	A (good) place to produce	Both	
Full-time farmer, %	21	24	55	33
Part-time farmer, %	52	0	48	21
Hobby farmer, %	79	1	20	178
Pensioner, %	64	3	33	88
Others, %	-	-	-	3
All, %	67	4	29	323

¹) The question was: Do you primarily own this farm property because it is (1) a good place to live, (2) a good place to farm or (3) an equal combination of the two

²) See Table 1 for definitions of farmer type

Chi-Square test, p<0.0001. Chi-Square test includes the figures in the grey square, (Note: 25% of the cells have less than 5 observations)

Table 3: Changes in farmers' occupational status between 1996 and 2008.

Occupational status ¹ ▼	Share of farmers, %		Share of farmland, %	
	1996	2008	1996	2008
Full-time farmer, %	27	15	53	47
Part-time farmer, %	2	6	4	8
Hobby farmer, %	43	51	24	27
Pensioner, %	25	26	16	16
Others, %	3	2	3	3
Sum (= 100%)	476 farmers	378 farmers	11003 ha	10908 ha

¹⁾ See Table 1 for definitions of farmer type
 Chi-Square test, $p < 0.0001$. Chi-Square test includes the figures in the grey square

because farms are amalgamated or are kept as separate holdings but owned and operated by one farmer. Second, the farm structure is affected by counter-urbanisation, where an urban family buys a farm and moves out of the city. The first trend reduces the number of farms and increases the size whereas the second may stabilise or increase the number of holdings (by subdivisions) and consequently also reduce the average size. In this rather intensively farmed area both trends occur and from Table 3 it appears that the relative number of full time farmers decreases whereas the relative share of hobby farmers increases between 1996 and 2008. Focusing on property land there is a small decrease in the share of farmland belonging to full time farmers whereas

the share belonging to part time farmers increases by 4%.

Based on these results we will focus on land-use and landscape changes and see these in relation to occupation assuming that changes made by hobby farmers may be seen as indications of property related decisions rather than production related ones demonstrating the role of the farmer as owner.

Land-use and landscape changes

The distribution of different types of land-uses against farmers' occupational status is shown in Table 4. Land in rotation (arable land) is the dominant land-use covering two thirds of all properties. Woodland (including for-

Table 4: Land-use and occupational status, 2008 figures.

Land-use ¹	N	Rotation.	S-A	Grass	Wood	Green	Nature	Other	Sum, ha
Occupation ² ▼									
Full-time, %	56	65	4	4	23	1	1	2	4,398
Part-time, %	24	73	3	6	11	2	2	2	1,037
Hobby, %	194	62	3	13	11	3	4	5	2,757
Pensioner, %	94	70	3	7	11	1	3	4	1,649
Others, %	4	90	0	2	3	0	0	5	116
Sum (= 100%)	372	66	3	7	16	2	2	3	9,957
All farmers in 1996 ³	591	68	–	10	16	2	–	4	11,547

¹⁾ Rotation: arable land in cultivation. S-A: Set-aside. Grass: Permanent grassland, Wood: forest and woodlands. Green: Christmas trees and greenery. Nature: natural areas not in agricultural use. Other: buildings, yards, gardens, roads etc.

²⁾ See Table 1 for definitions of farmer type

³⁾ In 1996 land-use categories were recorded a little different than in 2008. Set-aside included land in as well out of rotation and was therefore included in either 'Rotation' or 'Grass'. The category 'Nature' was in 1996 included in 'Other'

Table 5: Hedgerows planted and removed.

Occupational status ¹	Meters of hedgerows planted (or removed)/100 ha/year – note the different time scales									
	1991-1996					1996-2008				
	N ²	1-2 rows		3-more rows		N ²	1-2 rows		3-more rows	
Full-time farmer	128	10	(1)	23	(0)	56	3	(2)	15	(1)
Part-time farmer	11	138	(0)	0	(0)	24	6	(13)	34	(0)
Hobby farmer	211	42	(6)	73	(7)	194	11	(14)	76	(1)
Pensioner	133	10	(0)	0	(0)	94	1	(3)	9	(2)
Others	11	0	(0)	16	(0)	4	0	(0)	0	(0)
All	494	23	(2)	33	(2)	372	5	(6)	32	(1)
Total length of hedgerows (meters) planted/(removed)		12,905	(1035)	18,030	(960)		5,761	(6375)	33,689	(710)

¹) See Table 1 for definitions of farmer type

²) Total number of farmers including farmers who did not plant any hedgerows

est and plantations) covers 16% and permanent grassland 7%. Seen in relation to farmers' occupations the greatest differences are seen for grassland and forestry. The share of permanent grassland is clearly much higher for hobby farms than compared to full time farmers whereas full time farmers own relatively more woodland than hobby farmers. Concerning biodiversity and other issues related to nature conservation the relatively high share of grassland makes the hobby farmers an interesting actor. Compared to 1996 the area in rotation has declined a little. The proportion of grassland in 2008 cannot be directly compared to 1996 as part of the set-aside and the unmanaged grasslands were recorded in separate categories in 2008 but not in 1996. Behind these figures has been a development in which some woodlands have been ploughed up and included in rotation whereas some of the land in rotation has been converted to grasslands or simply just been abandoned.

Farmers were asked about a number of landscape changes, including changes of grasslands (and grassland management), afforestation, digging of ponds, Christmas tree plantations, tickets, and hedgerows. Planting and removal of hedgerows represent some of the more important types of changes. As seen from Table 5 more than 5 km of one-rowed and more than 33 km of multi-rowed hedgerows have been planted between 1996 and 2008. Compared to the period 1991-1996 this represents a small reduction in planting activity. On the other hand removal of hedgerows has increased compared to the first part of the 1990s although the total meters of hedgerows are still increasing.

Seen in relation to occupational status the overall pattern from the first period continues as part time and hobby farmers plant much more than full time farmers.

In order to enable analysis of the overall landscape changes including changes in land-uses, in linear elements such as hedges and in small habitats such as ponds and thickets we have constructed two indexes, one for new, uncultivated elements (permanent grassland, woodland, greenery, thickets, hedgerows and ponds) and one for the removal of these. In Table 6 these overall changes are shown in relation to occupation. If we compare landscape changes in the two periods we see that in both periods more uncultivated elements have been established than removed. This means that former decades (1970s and 1980s) of decline in uncultivated elements in Eastern Denmark (Agger & Brandt, 1988) have been replaced by an increase in uncultivated elements (Primdahl, 1999) – a trend which continues in the 2000s although the rate in which new elements are created seems to be slower than in the early 1990s. Also the differences in the practices of the various types of farmers show the same pattern in the 2008 survey as in the 1996 survey. Hobby farmers are clearly more active in establishing new but also more active in removing existing uncultivated elements.

Table 6: New and removed uncultivated landscape elements and farmers' occupational status. The higher the index, the more changes.

Occupational status ²	Landscape change indexes for changes/100 ha/year ¹			
	1991-1996		1996-2008	
	New elements	Removed e.	New elements	Removed e.
Full-time farmer, %	0.50	0.05	0.16	0.04
Part-time farmer, %	0.88	0.13	0.51	0.07
Hobby farmer, %	1.60	0.33	1.07	0.18
Pensioner, %	0.51	0.14	0.40	0.17
Others, %	0.34	0.12	0.07	0.08
Sum (= 100%)	0.78	0.14	0.46	0.10

¹) The index is based on all significant changes of land-use and linear/point landscape elements (except for farm buildings). For a detailed description of the index see Primdahl et al., 2004: 109

²) See Table 1 for definitions of farmer type

Discussion and conclusions

The results shown (Table 1 to 6) first of all confirm what we already have seen from general agricultural statistics (Danmarks Statistik, 2011) that the farming structure is indeed changing from a relatively homogeneous structure dominated by small to middle sized family farms to a more polarized structure with few, relatively larger full time farms and many small farms occupied by part time and hobby farmers. Although most of the total property area belongs to full time farmers we see a small decline in the total area owned by full time farmers as opposed to the share belonging to part time farmers which is growing and the share of hobby farmers which is stable. We also see clear indications of counter urbanisation in the area studied. Thus, the share of farmers with an urban background is increasing as is the share of hobby farmers, that is farmers with a primary income outside the farm. The figures changes in hobby farms cannot be compared to Denmark as whole due to different definitions of a hobby farmer used in the agricultural statistics and in this study. We know from other Danish case studies using the definition used in the study presented here (see Table 1 for definition) that hobby farmers also in other regions are increasing in relative numbers as well as in share of land (Busck et al., 2006; Primdahl, forthcoming).

It is also found that the majority of farm owners see their farm primarily as a living place followed by a smaller group of farmers who see their property as an equal mix-

ture of a living place and a production place. This is a clear indication that there are good reasons for being interested in the farmers' role as owner. Moreover, there are great variations in the way the different occupational groups look at their property. Almost four out of five hobby farmers see their farm as primarily a living place, whereas this is only the case for one of five full time farmers, and for some of the full time farmers where this is the case they own more than one farm and they refer to the particular one they live on.

On this background we find it justified to use differences in hobby and full time farmers' landscape practices as an indication of differences in 'owner' and 'producer' related practice.

Concerning land-use, only few and relatively minor changes have taken place concerning the overall categories which in itself may be somewhat surprising since we expected a continuation of previous developments, that is continuous decrease of the share of land in rotation, increase in the forested area and increase in grasslands. From 1996 to 2008 the area in rotation has been reduced by 2% only. The high prices of grain and other crops in the 2007-2008 and the removal of the EU set-aside requirements may explain the reduced speed of continuing extensification. In this case the development can be seen as a clear demonstration of the significance of production conditions for landscape change, and consequently for the importance of the farmer's role as producer. However, the fact that most of the permanent grassland belongs to hobby

farmers also indicate that the 'owner dimension' is of high relevance to this land-use category.

The analysis of hedgerow plantings and removal, which represents one of the major types of landscape elements, showed that previous developments continue (Primdahl & Christensen, 2002). The hobby farmer is by far the most active agent here, both when it comes to plantings of hedgerows (especially multi-rowed hedgerows) and removal of existing rows (especially one rowed). The relatively high activity in removal of one-rowed hedgerows is most likely linked to the high activity in the planting of multi-rowed ones (replacement process). Concerning the motives for hedgerow plantings we have in earlier studies (Primdahl & Christensen, 2002) shown that the most common motives for planting hedgerows are motives associated with the farm as a living place (hunting, aesthetics, habitat and shelter around the farm house were the four most common motives) compared to motives linked to production (shelter and better water balance).

The overall landscape changes were analysed through indexes and these showed the same pattern as described above: hobby farmers and to a lesser extent part time farmers are much more active (measured as changes per land unit) than are the full time farmers. The index based analysis also clearly showed that trends from the 1990s (Brandt et al., 2001; Primdahl et al., 2004) towards more uncultivated elements being established in rural landscapes than being removed continues. Similar patterns of more uncultivated elements being established than removed have been found in England (Carey et al., 2008) although these changes are linked to different roles than the one dealt with in this paper.

In sum we can there conclude that:

- a high proportion of farmers primarily see their farm as a living place
- the clear trend towards extensification of land-use found in the mid-1990s has changed towards a process of moderate extensification
- the farmer as an owner is playing a central role in landscape changes and management of the area and there are no signs of this role being reduced over time.

At a more general level we can conclude that the agricultural region studied is affected by two parallel processes: structural developments in agricultural production towards fewer and larger farm businesses and counter-urbanisation meaning that an increasing number of farm properties have been taken over by families with urban incomes. We see

two implications of these processes. First, research in agricultural landscape functions and change cannot be analysed on the background of agricultural production only. Also other motives and processes must be included such as motives linked to the way the owner manage his property and at a more macro level: to urbanisation processes including counter urbanisation.

Second, our findings have implications for public policy and planning. As the farmer is the key 'policy target group' (Winter, 1990) for a large number of public policy measures it is of vital importance that the farmer's role as 'owner' (and citizen) is included in the design of instruments and implementation strategies – and not just the producer. Also in considering participatory approaches to planning projects, the farmer's different roles must all be taken seriously. In contexts where farmers' organizations are mainly functioning as producers' organizations (as it is the case for Denmark) it is therefore not enough to include the farmer's union in such processes.

The farmers' role as a citizen, that is, his cooperation with other members of the community in landscape management was not covered by the survey data used for this paper. As agricultural policy is changing from being mainly a sectorial market policy towards a more integrated territorial policy this role is becoming increasingly interesting for policy and planning and this is clearly an under researched field.

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