

Reutilisation of Agricultural Buildings

Tourism and Sustainability in the
Swedish Periurban Context

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Abstract

Agricultural buildings (ABs) dominate the countryside and their reutilisation in periurban areas is important in rural diversification and in maintaining a living countryside. These constructions have been examined in various studies, but the reutilisation of ABs in tourism in a spatial context has not yet been scientifically analysed. This thesis analyses agricultural buildings and their properties in order to identify key issues concerning sustainable reutilisation in tourism and the Swedish periurban context.

Using statistical data combined with information gathered from surveys, the thesis charts the dynamics of change in periurban AB stock in Sweden and the underlying reasons for these changes. Additional field studies examine the connections between human behaviour patterns/lifestyle and the use of built periurban infrastructure, including analyses of functions, use of materials and issues concerning aesthetics. Finally, actual tourism enterprises using ABs in Sweden are examined in terms of sustainability issues.

The results show that rural tourism operators and visitors differ in their views and experiences of reused buildings and the services therein, although both groups consider aggregated building-related factors to be significantly more important than aggregated tourism-related factors. Differences in spatial character provide both advantages and disadvantages. The approaches and efforts of owners to create a sustainable business show similar patterns, irrespective of geographical location. A caretaker role, holistic thinking, management style, quality of service and personal relations are perceived as the cornerstones of sustainable operations. However, approaches to sustainability differ depending on the owner's personality, lifestyle and background. Operators are also aware of the advantages and disadvantages of reutilising ABs in tourism. This thesis provides a better understanding of spatial issues and their influence on reutilisation of ABs in tourism that may help improve locally anchored sustainable development strategies for the countryside and assist authorities in addressing problems concerning owners, conservation and utilisation.

Keywords: periurban, building, construction, sustainability, rural tourism, farm tourism, reuse, building material, vernacular.

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Dedication

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List of Publications

This thesis is based on the work contained in the following papers, referred to by Roman numerals in the text:

- I Bocz, G.Ä., Nilsson, C. & Pinzke, S. 2008. Periurbanity - a new classification model. *ECLAS Conference 2008 'New Landscapes - New Lives, New Challenges in Landscape Planning, Design and Management'*, Alnarp, 11-14 September 2008 (Published as double-blind reviewed conference proceedings).
- II Bocz, G.Ä., Pinzke, S. & Nilsson, C. 2012. In the eye of the beholder. Swedish rural tourism operators' and visitors' views on reused agricultural buildings. *Scandinavian Journal of Hospitality and Tourism* 2(1), 140-163.
- III Bocz, G. Ä., Martínez, A. R. & Ness, B. 2012. Sustainability in the management of Swedish agricultural buildings reused in tourism. A case study. (Submitted).
- IV Bocz, G.Ä. 2012. Building sustainability. Agricultural buildings reused in tourism: human aspect and territorial differences. *Agricultural Engineering International: CIGR Journal* 14(3). (In press).

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The contribution of György Ängelkott Bocz to the papers included in this thesis was as follows:

- I The author collected the background material and processed the data together with the co-authors. All writing was done by the author, while the revisions were done together with the co-authors.
- II The author collected the background material and processed the data together with the co-authors. All writing was done by the author, while the revisions were done together with the co-authors.
- III The author collected the background material, analysed it and wrote the article. The co-authors assisted with the revisions.
- IV The author collected the background material, analysed it and wrote the article. Revisions were carried out by the author.

Abbreviations and Terminology

AB	Agricultural Building (or as also called, farm building). Any of the structures used in farming operations, which may include buildings to house families and workers, as well as livestock, machinery, and crops (Encyclopaedia Britannica Online, 2011). In this thesis it refers to all buildings used in agricultural and forestry production, processing and connected support functions or services.
Farmhouse	A building or part of a building designated for use as a dwelling (for humans) on the farm.
Farmer	The owner/worker of the agricultural or forestry enterprise, who often lives on the farm.
FT	Farm tourism, or farm-based tourism, is an alternative farm enterprise which conceptually is one of the seven possible pathways of farm business development (Ilbery <i>et al.</i> , 1998). It is 'rural tourism, conducted on working farms where the working environment forms part of the product from the perspective of the consumer' (Clarke, 1999).
Modern agricultural building	Agricultural building erected with the use of modern building materials, prefabricated building parts and construction technology in a style often non-typical of the area, a functional style and character that fits present day requirements.
Outbuilding	All buildings connected to farm production and related functions (<i>e.g.</i> barns, stables, farm service buildings, sheds, <i>etc.</i>) except for the farmhouse.
PU	Periurban (discussed in the thesis).
Rural	The antonym of urban.
RD	Rural development. An expression covering both government and non-government activities and initiatives aimed at improving

	social, economic, environmental and other similar issues connected to rural areas (countryside).
RH	Rural hinterland. In this study, those remote areas that are situated away from the urban centres and densely populated built up areas.
RT	Rural tourism. Tourism in a non-urban environment (primarily dominated by land-related economic activities such as agriculture or forestry), built on features of nature and the rural landscape, small in scale, traditional and sustainable in character and offering different kinds of tourism products that reflect the complex pattern of rural environment, economy and history (OECD, 1994; Oppermann, 1996; Dickinson and Robbins, 2008).
Tourism	The commercial organisation and operation of holidays and visits to places of interest (Oxford University Press, 2010). Primarily a type of leisure or recreation activity, temporary, short-term (less than one year) travel by people (non-residents) primarily for reasons other than work, along transit routes to and from a destination that is outside their normal home environment but which involves more extensive travelling than daily leisure or recreation activities and at least one night of overnight stay (Swedish Tourist Authority, 1995; Butler, 1998; Hall <i>et al.</i> , 2009).
Traditional agricultural building	Agricultural building erected in style typical of the area using traditional, locally available building materials and construction technology and a locally available knowledge base.
UF	Urban fringe or rural-urban fringe. The zone of transition between the built-up area of the city and the surrounding countryside (Carr, 1997), which can be further separated into two zones, the inner fringe and the outer fringe. The inner fringe is characterised by land in the advanced stages of transition from rural to urban uses. The outer fringe is the area between the inner fringe and the physically-spatially defined periurban zone, where rural land uses dominate the landscape but urban elements are obvious (Bryant, 1982).
Urban	In, relating to, or characteristic of a town or city (Encyclopaedia Britannica Online, 2006a).

Background

Agricultural buildings (ABs), originating in production, processing and dwelling, are an organic part of the landscape in the European countries and the Western ‘developed’ world. During the last century society and the economy have gone through radical changes, largely as a result of technological developments in areas such as production, processing, transportation, information technology and the energy sector. The previously solely agricultural landscape has been transformed into a multifunctional countryside. This process has also made its mark on agricultural buildings, especially in the rural-urban zone (the periurban area), where the transformation is already far advanced.

Past investigations have focused on the history, different aspects of preservation, economic and social issues or certain aspects of reutilisation of these ABs. However, there is still only limited understanding of the territorial issues concerning the reutilisation of an AB, *e.g.* in leisure and tourism, especially concerning the owners’ and visitors’ lifestyle, attitudes and ways of thinking. Reutilisation of agricultural buildings in leisure, particularly rural tourism (RT), is an area that is significantly expanding today, especially in periurban and amenity-rich areas. As Butler (1998) puts it, ‘the changes in rural areas relating to leisure are among the most significant to have occurred over the past three decades’.

Buildings are an essential part of most RT operations, both as key resources and as significant cost centres. In order to secure a sustainable future for the agricultural building stock, the topic has to be approached from both the owners’ and users’ (visitors’) points of view, as this issue may hold the key to better preservation of historic buildings, assist the economic survival of the countryside and help rural development.

I chose the subject of this thesis based on my previous studies in agriculture (animal husbandry and sustainable rural development through tourism) and agribusiness (diversification and adding value to agricultural operations), in

addition to my personal experiences as a periurban small business owner reusing ABs.

Although the present research project was carried out in Sweden, the findings are well applicable to the wider Nordic context, as the Scandinavian countries share a common environmental, socio-cultural and economic background. In addition, as a result of the many similarities between different Western ‘developed’ countries (*e.g.* in other parts of Europe, North America or Australia), with certain modifications, this study is even applicable in these areas.

The papers (I-IV) on which this thesis is based deal with the reutilisation of ABs in periurban environments. These cover the definition, history and future of periurban ABs in tourism-related reutilisation and questions concerning building and management-related sustainability. This thesis analyses these different papers together, summarises the main findings and presents overall conclusions.

1 INTRODUCTION

This study set out to analyse the reuse of periurban ABs, with the main focus on tourism-type reutilisation. Special attention was paid to sustainability issues concerning buildings (material and construction technology) and processes of a tourism enterprise.

The first part of the thesis begins by stating the aims of the thesis. Next the research questions and the research strategy are described. Afterwards the limitations of the project and the structure of the thesis are introduced. In the last parts of this introduction a four-fold research framework is introduced. Sustainability, spatial issues (such as the periurban phenomenon), ABs (and their reutilisation) and tourism are analysed in relation to processes of past and present. At last, as these four phenomena is forming a complex relationship influenced by people, therefore human aspects and lifestyle related issues are also analysed.

The second part of the thesis starts with describing the materials and methods used in Papers I-IV. Following this the results obtained in the papers are summarised, further analysed and put into perspective in the discussion section. The conclusions section presents the most important findings made, based on which future research areas are recommended.

1.1 The framework of the research

1.1.1 Aims of the thesis

The general aim of this thesis was to analyse agricultural buildings and their properties in order to identify key issues concerning sustainable reutilisation in tourism and the Swedish periurban context. Specific goals were to:

- Analyse definitions of periurban (Paper I).
- Examine visitors' and operators' perceptions of former agricultural buildings used in rural tourism (Paper II).

- Analyse how changes made to the agricultural built environment influence rural tourism (Paper II).
- Investigate management-related success factors leading to a sustainable rural tourism business (Paper III).
- Identify key factors concerning construction methods and building materials influencing the sustainable reutilisation of agricultural buildings during the renovation-refurbishment process in rural tourism enterprises (Paper IV).
- Account for territorial differences concerning approaches to sustainable agricultural building reutilisation in rural tourism, and study how the location affects these processes (Paper IV).

1.1.2 Research questions examined in the thesis

The research questions examined in Papers I-IV were as follows:

- Paper I: What is periurban? What are its descriptors?
- Paper II: Do visitors' and operators' perceptions of former agricultural buildings used in rural tourism differ? If yes, how?
- Paper II: Do changes made to the agricultural built environment have influences on rural tourism? If yes, what?
- Paper III: Do the location of the rural tourism enterprise, the owner's lifestyle, way of thinking and background influence the management-related processes of businesses in reutilised agricultural buildings? If yes, how?
- Paper IV: Do territorial differences and the human factor influence approaches to sustainable tourism-type reutilisation of agricultural buildings from a building-related point of view (*e.g.* concerning construction technology and choice of building material) during a renovation process? If yes, how?

1.1.3 Research strategy

Agricultural buildings and their reutilisation constitute a complex subject in the applied research field. The subject includes physical realities such as buildings and their environment, but also hard to measure non-physical phenomena such as lifestyle, attitudes and the way of thinking of owners and users.

The issues examined in this study do not belong solely to the realms of either the humanities or natural sciences. When setting up the research strategy for this study, this in turn created the difficulty of not being able to apply either only clearly quantitative or qualitative research methods. Paper I employed a

deductive approach, while Papers II, III and IV employed a mixed deductive and inductive approach.

The research design of the study, besides using literary studies as orientation to the subject, included cross-sectional (such as questionnaires and structured interviews) and case study designs.

1.1.4 Limitations

- Geographically, Swedish ABs formed the basis of this study, although the Scandinavian and wider European AB fields were also included with the use of the literature and through personal observations. ABs can differ very significantly depending on various conditions, such as climate, culture and social, economic and historical background. The study of ABs in the industrialised, ‘Western’, developed world has a rather similar point of entry concerning history, the development and the influencing factors, and the utilisation trajectories. Therefore the findings in this work, although based on European conditions, can be applied with modifications to ABs in the USA and other developed ‘Western’ countries.
- Spatially, this study examined reutilisation issues concerning the periurban zone, using comparisons to the rural and to a smaller degree the urban fringe zone. Territorial circumstances are of major significance, as they directly influence ABs through type of ownership and user groups, economic power and conflicts of interest or the social context. The periurban zone is where the rural and urban meet, an area with peculiarities otherwise not clearly visible and often accelerated processes. ABs in periurban areas are facing increased interest from urban owner and user groups, but are also situated in an ephemeral landscape (Qviström, 2005; Qviström and Saltzman, 2006) and are under the strong influence of regulatory systems.
- Only buildings originating in agriculture or such buildings that through their origin served as farm or farming-related constructions are investigated in this study. Although certain observations are made concerning historical-cultural development, typology and certain technology-related issues, these areas are only covered to the degree where they complement the main objective of the study, namely tourism-related reutilisation. From a construction categorisation standpoint, buildings are mainly covered. The types of buildings scrutinised from a functional point of view include buildings for production, processing, storage, housing and auxiliary enterprises such as workshops, smithies, *etc.* Supplementary structures such as silos, slurry and manure handling facilities are only discussed superficially and in relation to the reutilisation of buildings.

- The age and material of the periurban building stock vary greatly. Although special attention is paid to reutilisation issues concerning older buildings built from renewable materials in the study, the findings can also apply to more recent ABs built using modern materials, such as concrete or corrugated metal-sheet. All buildings with their origin in some sort of agriculture-related activity are therefore investigated, irrespective of age.
- Only the farm level implications of multifunctional agriculture are analysed and these are only scrutinised as far as agricultural buildings and their reutilisation are concerned. As the policy or governance implications would be far too wide an area to be investigated in such an interdisciplinary subject, they were excluded from the study.
- Although several of the known AB reutilisation strategies were observed, and some investigated in more detail, tourism was chosen as a main line of interest, the common link according to which the investigations were set up. Tourism-type reutilisation was chosen, as most often a tourism enterprise comprises several activities. Tourism is a tertiary service activity, but these businesses also often have a branch in primary or secondary processes, *e.g.* in the form of own products or value added activities.
- Sustainability issues are brought up in this study in relation not only to tourism but in a holistic manner, concerning material, construction technique, utilisation, management and several other fields. Although sustainability is a widely discussed subject, understandings on *e.g.* what comprises sustainable construction or tourism may differ between researchers or countries. Therefore wherever necessary, the sustainability guidelines or the framework of the analyses are provided.

1.1.5 Structure of the thesis

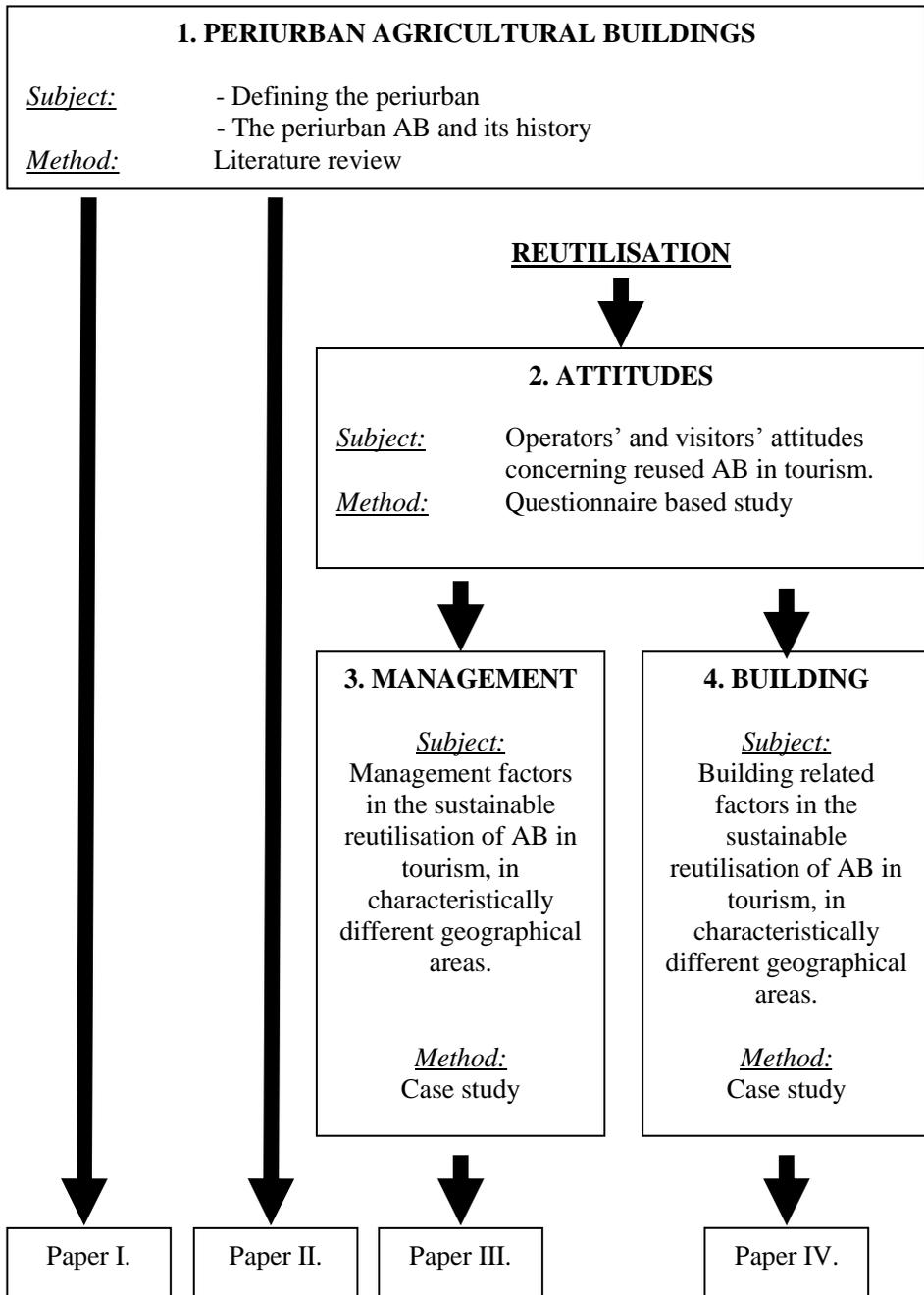


Figure 1. Structure of the thesis.

1.2 Sustainability

1.2.1 The sustainable development framework

As sustainable development is a core issue in today's scientific, economic and socio-political realm, a short discussion on the current sustainability-related discourse is provided here to place the periurban zone, its ABs and associated tourism into context. The most well-known and accepted definition of sustainable development is provided by the United Nations (1987), based on the Brundtland Commission's (1987) report. According to this,

'sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'

The Brundtland Report also describes sustainable development as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations (Brundtland Commission, 1987; United Nations, 1987). Sustainability is a complex issue that is present on the social, economic and environmental levels. Røling and Wagemakers (1998) claim that only by a holistic approach, *i.e.* where all subsystems are uniformly transformed, can a wholly sustainable system be reached. Another study identifies two alternative approaches to sustainability, an anthropocentric viewpoint, based on negotiated trade-offs, and a more bio-centric view, stating that humankind has a problem and not, as yet, the solution (Fuad-Luke, 2008). The International Institute of Sustainable Development lists the three major aspects of sustainable development based on the Brundtland Report: environment, economy and community. This is manifested in concern for equity and fairness in the form of long-term, systematic thinking and a short definition is provided:

'Environmental, economic and social well-being for today and tomorrow' (International Institute of Sustainable Development, 2010).

1.2.2 Spatially related sustainability

Spatially related sustainability issues in the context of this study are connected mainly to ABs and their reutilisation in tourism, which in turn relates to rural development issues. In Western industrialised societies such as Sweden, where 84% of the population live in densely built-up areas occupying approx. 3% of

the country's total area (Statistics Sweden, 2009b), urbanisation has changed the demographic, social and economic structure of urban and rural areas drastically. As a result of these changes, rural areas have ended up at a disadvantage in comparison with more urban-like areas. In parallel to the acknowledgement of these newly emerging problems, new concepts in rural development have surfaced calling for endogenous sustainable development, mainly through diversification from primary sectors (agriculture, mining, forestry and raw material production) towards secondary and tertiary sector-based economic structures (OECD, 2011). As counter-urbanisation in the form of periurbanisation emerged (Ford, 1999), primarily as a result of the expansion of individual car-based transportation, a new problem, urban sprawl, appeared, for which sustainable solutions are required (European Environmental Agency, 2006).

1.2.3 Tourism and sustainability

Tourism is considered to be one of the diversification tools in rural development (Ilbery *et al.*, 1998; Busby and Rendle, 2000; Sharpley and Vass, 2006) and sustainability discourses have been expanded to tourism, specifically to the RT and FT context (OECD, 1994).

Sustainable tourism, according to the World Tourism Organisation, is

‘envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems’ (World Tourism Organisation, 2010).

Agenda 21 for the Travel & Tourism Industry in turn defines sustainable tourism products as

‘products which operate in harmony with local environment, community, and cultures, so that these become the permanent beneficiaries’ (World Tourism Organisation *et al.*, 1996).

Fuad-Luke (2008) refers to Elkington (1994), the developer of the term Triple Bottom Line, in describing the expression ‘responsible tourism’, which has also been used in connection with sustainable tourism, as a type of tourism where the traveller accepts responsibility for his or her actions in relation to the ‘triple bottom line issues’, namely economic, socio-cultural and environmental concerns.

Furthermore, the conceptual definition of sustainable development of tourism given by the World Tourism Organisation is

‘Sustainable tourism development guidelines and management practices are applicable to all forms of tourism in all types of destinations, including mass tourism and the various niche tourism segments. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability’ (World Tourism Organisation, 2010).

Thus, sustainable tourism should:

- Make optimum use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.
- Respect the socio-cultural authenticity of host communities, conserve their built and living cultural heritage and traditional values, and contribute to inter-cultural understanding and tolerance.
- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.
- Sustainable tourism development requires the informed participation of all relevant stakeholders, as well as strong political leadership to ensure wide participation and consensus building. Achieving sustainable tourism is a continuous process and it requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary.

The International Ecotourism Society, TIES (1990) defines ecotourism, as

‘Responsible travel to natural areas that conserves the environment and improves the well-being of local people.’

Ecotourism is about uniting conservation, communities, and sustainable travel. A list of the Principles of Ecotourism is also provided:

- Minimise impact.
- Build environmental and cultural awareness and respect.

- Provide positive experiences for both visitors and hosts.
- Provide direct financial benefits for conservation.
- Provide financial benefits and empowerment for local people.
- Raise sensitivity to the political, environmental, and social climate of host countries.

TIES (1990) also points out that those who implement and those who participate are both keys to making tourism more sustainable. This multi-stakeholder nature was also noted by Kernel (2005). Rural tourism is sometimes referred to as the antonym of mass tourism, and several studies cite the higher sustainability level of rural tourism as a result of *e.g.* smaller visitor group sizes, closeness to local community, lower impact on the environment and opportunity for local purchasing, *etc.* (Gössling and Mattson, 2002). Urry (1995), on the other hand, analyses the ways in which mass tourism helped environmental consciousness to develop by increasing ‘visual consumption’, which in turn led to the advancement of the ‘romantic tourist gaze’. Clarke (1997) also points out that sustainable tourism has no examples, ‘there are only different types of tourism trying to achieve such a goal’. Mowforth and Munt (2003), when analysing new, more sustainable forms of tourism, provide a long list of the many descriptors that combine personal, ecological and socio-cultural objectives, therefore contrasting with the general perception of a budget, mass-tourism holiday, and suggest a kind of tourism that is about the individual and the host community or place. On the micro-level, sustainable tourism entrepreneurship is not different from other types of business, but it takes into consideration Elkington’s previously mentioned triple bottom line issues (Lordkipanidze *et al.*, 2005). Leslie (2007) provides an easy and down to earth way of defining the ‘greening’ of tourism, the ‘3Rs’, namely to Reduce, Reuse, Recycle and buy local. In a business management context, however, the owner (manager) of the operation bears in principle the sole responsibility and is the main initiator and driving force behind the transformation of a rural tourism operation into a sustainable business, while situated in a challenging many-faceted environment, as illustrated in Figure 2.



Figure 2. Challenges facing the rural tourism operation manager in making the business sustainable, based on the model created by Slack *et al.* (2001).

1.2.4 Sustainability in an AB-related context

Sustainability in an AB-related context is determined by several factors. A primary factor is that the construction industry is responsible for a large proportion of pollutants and material and energy use world-wide (Bokalders and Block, 2010). In addition, the qualitative characteristics of actual buildings create a long-term dependency on *e.g.* how energy-effectively these can be used or how often maintenance/renovation is required. Furthermore, as a result of the embodied energy in construction (Milne and Reardon, 2008), it is more sustainable to keep and renovate *e.g.* former ABs rather than pulling them down and erecting new buildings. Alternatively, in the case of *e.g.* partial demolition, building materials can be efficiently recovered, refitted and reused, thereby reducing the environmental impact (Zavadskas and Antucheviciene, 2007). Latham (2000b) provides a cost/value analysis of the cyclical nature of building reuse (Figure 3) to underline the importance of reutilisation. He also points out that

‘One thing is certain, changes in society and lifestyle [*e.g.* the requirements of sustainable development] will continue to require the creative re-use of buildings ancient and modern.’ (Latham, 2000b).

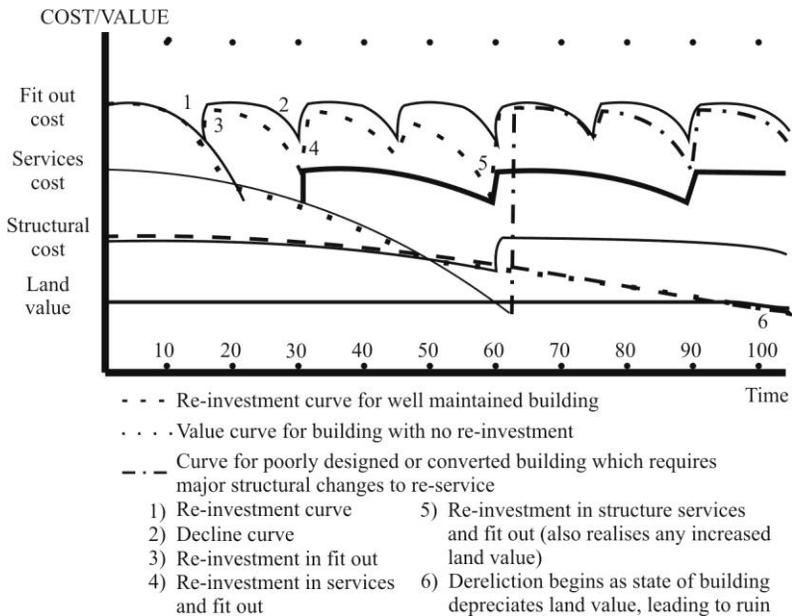


Figure 3. Cost/value analyses of the cyclical nature of building reuse (Latham, 2000b).

The only chance abandoned, redundant ABs have for survival and conservation is through utilisation (García and Ayuga, 2007), which in turn also enhances landscape quality (Fuentes, 2010). Antucheviciene and Zavadskas (2003) point out that

‘The economic benefit of revitalisation of buildings is combined with the environmental potential as well as social interest.’

In another paper (Zavadskas and Antucheviciene, 2007) they call for building regeneration to make a ‘contribution towards sustainable construction, by incorporating the protection of natural and social environmental, improvement of the quality of life and the implementation of economic goals.’ In contrast to these positive effects, Leslie (2007), while analysing the influences of RT on rural housing stock, calls attention to rising land and house prices and the negative effects on community development, counter to the principles of societal sustainability.

Overall, it can be concluded that on the principles of sustainability it would be unacceptable to lose the good and varied knowledge base (Tassinari *et al.*, 2010) and social anchor of local societies that buildings of agricultural origin constitute.

1.3 The human aspect and lifestyle

On the micro level the development direction of new lifestyles, including human aspects and social behaviour, reflects the requirements of people. The human aspect is a term generated in this work to describe the combination of all those non-physical factors that originate from people. These include some measurable *e.g.* demography (current age, education, family status, socio-economic status, *etc.*) and also the combination of non-measurable factors such as way of thinking, attitudes and preferences and lifestyle.

The relatively recent phenomenon ‘lifestyle’ (Berkman, 1974; Plummer, 1974) is one of the most significant non-physical factors that has a strong bearing on the utilisation of buildings in today’s periurban areas. Various lifestyle identification models exist, such as VALS (SRIC-BI, 2008), Experian (Experian, 2009) and Sinus (Sinus Sociovision, 2008) systems. Although originally developed by the industry (mainly for marketing purposes), they most often also contain strong indications of personal housing and areal preferences.

The importance of lifestyle as a factor in the agricultural building reutilisation context was previously shown by van der Vaart (2005), who came to the conclusion after carrying out his survey in Friesland, the Netherlands, that

‘...[people] moved to a redundant farm building for reasons that mainly had to do with the physical characteristics of the building and its surroundings... A former farm building was attractive because it allowed a lifestyle to be realised, characterised by freedom of action and the leading of an active life.’

On the level of the individual periurban building, use has been indirectly influenced by push and pull factors of users. Motivations and attitudes are widely discussed in the literature concerning periurban development and counter-urbanisation (Bryant, 1982; Mitchell, 2004), namely the reasons why people counter-urbanise and move to periurban areas and the countryside. The micro-level motivational matrix of individuals, mainly family-sized small groups includes factors such as micro-demography related aspects, education, household situation, employment income, life-course events and geographical issues (Lindgren, 2003). This motivational matrix strongly influences how people conceive, use and renovate existing buildings or create new ones.

The different understandings of urban populations and their imaginary, often idealised, concepts of the rural and the countryside (Bryant, 1982; Bramwell, 1994; Johnson and Rasker, 1995; Nilsson, 2002) include its buildings and constructions. Pull factors include lower land and house prices,

the availability of larger houses (than generally found in urban environments), the quaintness of rural buildings and a more relaxed lifestyle. Frustration with over-exploitation of cities, lack of space, high crime rates and unhealthy urban environment act as push factors. The buildings in periurban areas offer an opportunity for people to live close to nature in safe and healthy environments where there is wide scope for personal fulfilment opportunities, while keeping the advantages of an urban centre: access to services, a broad range of jobs and highly developed urban public infrastructure.

When looking at periurban agricultural buildings on the level of the individual or the family, older buildings in general have better appeal for housing because of their aesthetic characteristics. Small businesses are often very keen on using former agricultural outbuildings, as they are often well-constructed and spacious. These forms of use act as serious influences on the outer features, functional set-up and technical characteristics of individual buildings.

The above factors, together with trends in ways of thinking such as the anti-urban community movements of the 1960s, the Green Wave of the 1970s or the downshifting or 'slow' movement of today go hand in hand with fashion. They have strong effects on the use of space and the individual's view of the built environment that is most strongly manifested in easily accessible periurban areas. Micro-level factors such as changes in family finances, basic social structures, attitudes, motivations, lifestyles and trends work in parallel with macro-level changes. Together, they are shaping buildings and the physical-immaterial form of the countryside.

1.4 Defining the periurban in a building context

In this interdisciplinary study, ABs in the periurban space are analysed. Urban areas with high population density usually mean high building and land prices, strong pressures for utilisation and tough local political control over the actual building, such as its function, use and its aesthetic characteristics. Visibility is high. The buildings are exposed to, and within easy reach of, a large number of people. This is mostly a demand-led market, where strong economic forces compete for buildings.

In deep rural areas where population density is low, the situation is the exact opposite to that in urban centres. Land and building prices are usually low and owners have strong control over their buildings, although the economic background of owners is generally weaker than that of their urban counterparts. Rural areas, except for amenity-rich areas popular *e.g.* for second

homes, are mostly supply-led markets, although the more sparsely populated an area is in general, the more attractive it is likely to be to tourists (Roberts and Hall, 2001).

Periurban areas are especially interesting, as these are wedged between urban and rural areas and share some of their characteristics. There are various descriptions and definitions of the ‘peri(-)urban’, referring to a phenomenon that is explained and delineated differently according to the aims of the authors. A definition of periurban – as every definition – can only exist within its own contextual framework, in an organic and flexible connection to other phenomena that surround it. As Halfacree (2004) puts it

‘...the categories that we deploy must not be regarded as definitive or ‘objective’, but as constructs designed strategically for the task at hand’.

In this study, periurban is defined as a phenomenon that is manifesting itself on both the physical-spatial and non-physical level, following the line of the mixed approach defining other studies (Pahl, 1965; Bryant, 1982; Errington, 1994; Saraceno, 1994; Adell, 1999). It is an intermediate area between the urban and rural, both geographically and in relation to physical factors, but also concerning lifestyle and other immaterial characteristics. Periurban agricultural buildings in turn are also strongly influenced by both of these realms. Demographical, economic and social factors do not influence these periurban areas evenly over the landscape, and there are no clearly definable edges and borders between rural, periurban and urban areas. Periurban areas are situated where the other two zones meet and come into conflict. Historically, the periurban zone was much smaller in size than it is today. The development of science and technology helped its radical expansion, by inventions such as improved food production or new methods and networks for transportation and communication.

Buildings located in periurban areas are in a characteristically different situation than constructions in urban or deep rural environments. This different situation, *per se*, can be approached from the viewpoint of the original circumstances (namely its cause) or from the viewpoint of its influences and results, namely the actual effects imposed upon the built environment.

The first approach, namely the origin of these differences, can be connected to the differences originating from the different geographical, economic, demographic and social factors acting in urban, periurban and deep rural areas. The second approach examines the actual effects that are forced upon the built environment, *e.g.* different building materials and methods used, shape and form, type of utilisation, assessed value or rate of change.

ABs are tangible and therefore have a strong connection to their near environment. Concerning these, the periurban zone provides special challenges and opportunities and this location has its unique negative and positive effects on buildings that are not otherwise found in either the urban or deep rural zones. The relative accessibility of the periurban zone provides easy reach to markets for the owners of ABs and therefore better economy, but also creates overexploitation of natural and man-made resources, resulting in increased degradation, loss of character and information value. Consequently, ABs in periurban areas are more frequently reutilised than those *e.g.* in the deep rural zone. This means in turn that more buildings are kept in use by competing utilisation functions, thereby not falling into ruin and being demolished. But this also brings inappropriate uses and unwanted exploitation of the countryside in the form of *e.g.* urban sprawl (European Environmental Agency, 2006). The afore mentioned visibility created by accessibility in periurban areas increases urban influences on the buildings, as described in a British Lake District context:

‘The railway lines, which opened up the once-isolated region, transported more than the view-seeking tourists into the Lake District. They brought with them an outside perspective, a new appreciation of vernacular buildings that had previously been taken for granted, but also new materials and architectural fashions that would threaten traditional building methods and, in turn, threaten the appearance of the Lake District landscape as a whole.’ (Whittaker, 2011).

Aside from these physical effects and influences, periurban areas can be identified with non-physical, human-factor related forces (Pahl, 1965; Adell, 1999). The traditional rural-urban lifestyle characterisations meet and interact in periurban areas. Some of these characterisations are shown in Table 1.

Table 1. *Stereotypical characterisation of urban and rural (OECD, 1994; Carr, 1997; European Foundation for the Improvement of Living and Working Conditions, 2006; Scott et al., 2007)*

Dimension	Urban	Rural
<i>Economy</i>	Secondary and tertiary dominant	Primary industry sector and supporting activities dominant
<i>Occupational structure</i>	Manufacturing, construction, administration and service	Agriculture, forestry and other primary industry occupations
<i>Education levels and provision</i>	Higher than national averages	Lower than national averages
<i>Sense of community</i>	Low	High
<i>Demography</i>	Low fertility and mortality	High fertility and mortality
<i>Political views</i>	Liberal and radical elements more strongly represented	Conservative, resistance to change
<i>Ethnicity</i>	Varied	White (more homogenous)
<i>Migration levels</i>	High and generally net in-migration	Low and generally net out-migration
<i>Accessibility to services</i>	High	Low
<i>Accessibility to information</i>	High	Low
<i>Housing</i>	Access to land for housing very difficult; housing and land commercialised	Access to land for housing and building materials not a problem
<i>Governance</i>	More vulnerable to bad governance	More distant from government
<i>Occupation</i>	Greater reliance on cash for access to food, water, sanitation, employment, garbage disposal and on house	Fewer opportunities for earning cash; more for self-provisioning, greater reliance on land and its resources

1.5 Agricultural buildings

Agricultural buildings (also referred to as ‘farm buildings’) are special constructions. They are used not only for food production, processing and support functions but, in contrast to other economic activities, the owner of a farm/forestry enterprise usually resides on the premises. Historically, but often even today, ABs are many times built by the farmers themselves, as they have the tools, machinery and most of the resources needed to carry out such a large-scale building project. It is also very rare that a farm building exists by itself, in a spatial-functional vacuum. Buildings of different sub-functions are clustered together to carry out one main or several different economic and support functions of agriculture or forestry. Agricultural buildings came to

existence as a result of a need-driven gradual process. The individual buildings, although situated close to each other and forming an organic-functional unit, can therefore represent different eras, trends and styles, varying in shape, colour, material and construction technology.

Agricultural buildings are situated primarily in rural environments and landscapes, which they dominate (as very important features) and give character to (Swedish Association for Building Preservation, 1993; van der Vaart, 2005; García and Ayuga, 2007). Hernández *et al.* (2004), when developing visual impact assessment methodologies for rural buildings, single out the importance of buildings and their functions as a core ingredient of the landscape:

‘the evaluation of a landscape cannot be made in isolation from the activities that are carried out within it, the use made of its resources and its technical development’.

As a warning for recent processes, Tassinari *et al.* (2010) point out however that

‘The design of contemporary farm buildings often subordinates architectural quality and aesthetic features to economic aspects, thus leading to poor landscape consistency and compatibility.’

Tyrväinen *et al.* (2001) in turn demonstrate the importance of ABs in RT and report that tourists believe the biggest threat to the rural environment to be the destruction of old buildings.

1.5.1 Multifunctionality in agricultural landscapes and in the building context

Multifunctionality as a term for describing agricultural landscapes and the countryside has emerged in parallel to the drastic changes that took place since the middle of the 20th century in Western developed countries, as agriculture progressed from a productivist to a post-productivist state (Ilbery and Bowler, 1998). Although farms and traditional rural enterprises making a living from the land and its resources were by nature always multifunctional, the modern term covers a radical shift in which agricultural primary production has been largely replaced by tertiary service sector activities, including tourism. Most authors agree that multifunctionality is a widely discussed issue in literature and, similarly to sustainability, authors often have different conceptions of the subject. Multifunctionality is not a European invention, but a political concept

that originates from the 1992 sustainable development declaration in Rio de Janeiro and later the 1996 FAO World Summit. It addresses issues within the agricultural framework, such as the joint production of commodities and non-commodities, the rural economy and policy-related concerns, environmental amenities, welfare and economic issues on both macro and farm level, including implications connected to internationalisation and international trade (Garzon, 2005). The OECD (2003) describes multifunctionality as:

‘...the fact that an economic activity may have multiple outputs and, by virtue of this, may contribute to several societal objectives at once. Multifunctionality is thus an activity oriented concept that refers to specific properties of the production process and its multiple outputs. The key elements of multifunctionality are (a) the existence of multiple commodity and non-commodity outputs that are jointly produced by agriculture and (b) the fact that some of the non-commodity outputs exhibit the characteristics of externalities or public goods, with the result that markets for these goods do not exist or function poorly.’

The importance of stepping out of the usual policy-related, farm economy level or macroeconomy-related discussion and trying to theoretically contextualise multifunctionality in relation to productivist and post-productivist agriculture has been highlighted (Wilson, 2007). Others define the multifunctionality of agriculture ‘...that consists of non-tradable goods produced jointly in the agricultural production process’. By non-tradable goods are meant food security, environmental benefits and viability of rural areas (Yrjölä and Kola, 2000). Multifunctionality builds more heavily on incomes from non-agricultural sources (most often tertiary sector activities) than traditional, primary production agriculture. These new practices include previously unseen areas of use, such as recreation, landscape management or social functions. Multifunctional trajectories have been investigated on the macro, theoretical level (Wilson, 2007), and also on the micro sphere concerning their applicability, economic viability and suitability for local conditions (LRF, 2006, 2009a).

Based on these approaches, the working definition used in this study considers multifunctionality (with special attention to the agricultural building context) as a phenomenon that includes the production of non-conventional agricultural and landscape-related goods and services that are also physically connected to buildings of agricultural origin.

1.5.2 Agricultural context

The recent radical changes, a restructuring often referred to as the post-productivist transition in agriculture (Ilbery and Bowler, 1998), has led to the appearance of new economic activities in rural areas, with tourism and recreation among the functions (Nielsen *et al.*, 2010). Pluractivity has emerged, namely ‘the generation, by the household members, of income from on-farm and/or off-farm sources in addition to income obtained from primary agriculture’ (Ilbery and Bowler, 1998). The demand for labour in agriculture and forestry has dropped dramatically in all developed countries (Figure 4). Today, the economically active population involved in agriculture as a proportion of the total active population is only 2% in Sweden, 3% in Denmark, 2% in France and Germany, 4% in Finland and Spain and 1% in the UK. Outside Europe in other developed industrial countries, similar figures have been reported, *e.g.* 2% in the USA and 4% in Australia (FAO, 2010).

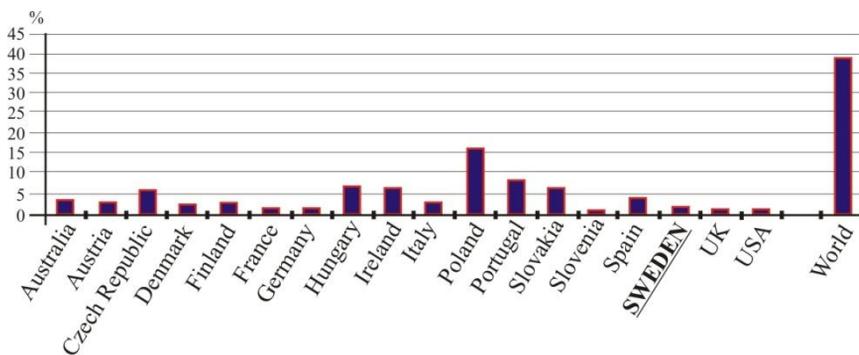


Figure 4. Economically active population in agriculture as a percentage of the total economically active labour force for different countries (FAO, 2010).

Urban centres often developed initially on agricultural plains or on the edge of these, where it was also easy to build (Kotkin, 2005). Today it is possible to cost-effectively supply food and raw materials (by highly centralised operations employing low labour input) from places further away from urban centres. Many buildings originating from agriculture and forestry in rural areas are therefore being abandoned or change profile when production ceases. Old buildings which are less suitable for modern production often become derelict. When new spacious buildings are erected, older ABs become deserted and, lacking maintenance, fall into ruin or are demolished. Figure 5 illustrates this change in the utilisation and functional profile of farms.

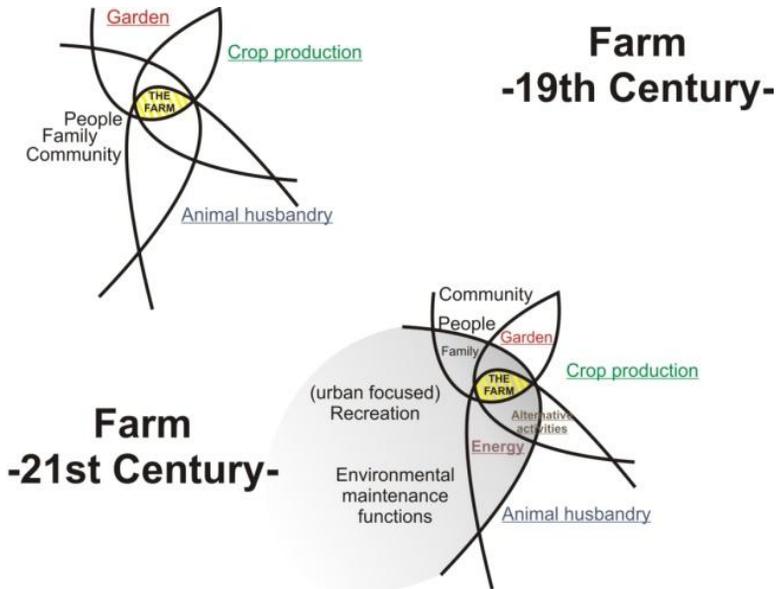


Figure 5. Change in the utilisation and functional profile of farms (Svala, 2010).

In the periurban zone, other forms of activity are already fiercely competing for land and other resources (e.g. water, buildings/infrastructure, labour). A larger number of farms here have discontinued agricultural production in comparison with those in less favoured production areas (e.g. mountains, forests), where the population was originally smaller and more widely distributed to begin with. As an aggregated result of these factors, a large number of farms in the immediate vicinity of the city, on the fringe and in periurban areas are giving up production. The land that belonged to these farms is being divided between the remaining agricultural businesses, but many of the buildings will need new uses. One of the original farmhouses is usually used as a farm centre for the new larger farm and new modern, commercial-use type outbuildings are erected. The rest of the buildings are often reclassified and sold or rented out, with or without extra land. Some land and former agricultural buildings are kept for the purposes of hobby agriculture or horse keeping (Ascard, 1996; County Administrative Board of Skåne 2007a, 2007b, 2008; Swedish Board of Housing Building and Planning, 2008). Some of the buildings may stand empty and eventually fall down, as is often the case with constructions functionally badly suited for today's users (e.g. earth cellars, old pigsties), or are transformed for other purposes in periurban housing, small industry or tourism. Figure 6 shows a typical hard to reuse object, an earth cellar.



Figure 6. Earth cellars, the traditional storage facility, today without use.

Today, the demand for these former agricultural properties in periurban areas, *e.g.* for housing, far outstretches the supply (van den Berg and Coeterier, 1996), as is also apparent in the case of *e.g.* Stockholm, Copenhagen or for that matter any large urban agglomeration.

A multifunctionality driven major shift is clearly visible in which the owner of the former primary agricultural enterprise, the farmer, becomes a countryside-based multifunctional ‘green entrepreneur’ still based on the farm, but having primary, secondary and tertiary activities as income generators. Agricultural support and advisory organisations (such as the Federation of Swedish Farmers, LRF) devote significant efforts to providing agricultural entrepreneurs with inspiration and advice in establishing successful alternative businesses on their premises (LRF, 2009b).

These multifunctional trends in agriculture are far from being a solely Swedish phenomenon. All developed ‘Western’ nations with modern agricultural practices are facing the same problems and challenges. As the workforce binding and supporting capacity of agricultural production has been steadily decreasing, the countryside has lost its main engine. This, coupled with social processes and urbanisation, has led to depopulation, but at the same time a redefining of the countryside. The change has been described thus:

‘Urbanisation created social structures and populations with experiences of urban life that needed to idealise the countryside. It also created a political economy redefining the urban-rural interdependence. Moreover, urbanisation created an urban-based intellectual and cultural climate that led to the

development of societal values that allowed for the idealisation of the rural landscape and the romanticising of countryside life' (Hall *et al.*, 2009).

Rural development initiatives and policies were created to replace the lost economic driver, in the form of diversification schemes, development of value added products, the service sector (including tourism) and in general the restructuring of the rural functions that can provide economic and social benefits and at the same time create a sustainable environment. These processes have been widely discussed in the literature (Lane, 1994b; Clarke, 1999; Tyrväinen *et al.*, 2001; Gössling and Mattson, 2002; Nilsson, 2002; Cánoves *et al.*, 2004; Pina and Delfa, 2005; Sharpley and Vass, 2006; Hall *et al.*, 2009). However, these new functions brought with them problems in the form of landscape and architectural degradation (Urry, 1995), and increased health and safety risks (Emanuelsson, 2009).

1.5.3 Building context

In a building context, AB multifunctionality is not a new concept either, although reutilisation in periurban areas nowadays is mostly connected to dwellings. A study from the Netherlands shows that 85% of the new functions developed in former agricultural buildings have to do with dwellings, while 15% are connected to non-agrarian activities, although even in the latter case, the vast majority of these activities are combined work-home residences (van der Vaart, 2005). According to Hollis (2011),

'In medieval times, buildings that combined dwelling and workplace were almost universal.'

This so-called 'work-home' phenomenon (buildings that combine dwelling and workplace) is only one example of building multifunctionality that is highly apparent in today's periurban landscape, especially with the current rapid increase in the number of 'footloose businesses' (Johnson and Rasker, 1995).

1.5.4 Trends in agriculture

In Sweden, from 1927 to 2004 the number of holdings with 2 hectares of arable land or more decreased from 307 400 to 65 800, or by almost 80%. Holdings with small areas of arable land showed the most drastic reductions, while holdings with more than 100 hectares of arable land increased in number from 2 500 to 6 100. In other words, the average size of holdings has increased. During the same period, the total area of arable land decreased from 3 563 to 2 661 thousand hectares, or by 25%. The number of cattle decreased from 2 899

to 1 628 thousand head (-44%), while the number of pigs increased from 1 387 to 1 818 thousand head (+31%).

From 1951 to 2003, the number of people employed in primary agricultural production decreased from 869 000 to 168 000, *i.e.* by more than 80%. Between 1995 and 2004 the number of persons employed in the agricultural sector decreased by 15%.

Total yield of cereals has increased, from 2 356 thousand metric tons during the latter half of the 1920s to 5 444 thousand metric tons during the first years at the 21st century, *i.e.* by more than 130%. The main reason for this is a great increase in yield per hectare, from 1 700 to 4 750 kg/ha on average or by approximately 180%. From the latter part of the 1920s production of potatoes has decreased from 1 656 to 919 thousand metric tons, mostly due to the decreased area under cultivation.

Annual production of meat from cattle and pigs amounted to 140-145 and 295 thousand metric tons respectively, during the beginning of the 21st century, approximately 15% and 75% higher than at the beginning of the 1950s. During the same period, poultry production increased sevenfold, but milk production decreased from 4 500 to somewhat less than 3 300 thousand metric tons or by more than 25%. Since 1994, the number of dairy cows and the number of pigs have both decreased by more than 20%, while the number of holdings with dairy cows has decreased by more than 50% and the number of holdings with pigs by more than 70%. This also means that the average herd size has increased greatly during the period (Swedish Board of Agriculture, 2005a).

Analysis of the trends during the last couple of years shows that the number of agricultural holdings is still decreasing continuously. Statistics Sweden (2008a) reported a 4% decrease in the number of holdings, from 75 808 in 2005 to 72 609 in 2007 in all size classes except the largest (holdings > 100 ha arable land), where the number of holdings increased (County Administrative Board of Skåne, 2008).

This is not only a Swedish phenomenon. In Finland, the number of active farms is estimated to fall as low as 60 000, with farm size increasing on average and more buildings becoming derelict (Kivinen, 1996) or finding alternative, non-agricultural uses (Andersson, 2007). Furthermore, this trend is not limited to the Nordic countries but is common all over Europe and the developed world, for example Italy (Frazzi *et al.*, 1996; Gusman *et al.*, 1996; Manera *et al.*, 1996), Spain (Martínez, 2007), Belgium (Wauters and Goedsels, 1996), The Netherlands (van den Berg and Coeterier, 1996; van den Berg and Wintjes, 2000; van der Vaart, 2005), Denmark (Birkkjaer and Pedersen, 1996) and the UK (Commission for Rural Communities, 2007).

Since 1994 until today, the costs of means of production in agriculture have increased by 28% on average, while the prices paid to the producer have decreased by 12%. The direct subsidies to agricultural holdings in the EU were partly introduced as compensation for decreased producer prices. As regards the means of production, the costs of energy and lubricants and fertilisers and soil improvers displayed the highest increases, more than 95% and about 50% during the period, while the cost of animal feedstuffs increased by only 2%. Of the agricultural products, beef and pig meat have had the strongest decreases in price, 33% and 26%. The average price of cereals decreased by 12%. Parallel to this, the rents on arable land have increased by 36% on average and the price of arable land by 105%. Regions in the south of Sweden, which had high prices already in 1994, have seen the highest price increases (Swedish Board of Agriculture, 2005b).

One in five productive farm owners is 65 years or older (County Administrative Board of Skåne, 2008; Statistics Sweden, 2008a). This paves the way for further concentration of farming businesses as these farmers retire, which is also supported by market forces pushing for improved efficiency through farm size increases. The retired farmer's freed-up land areas are most often taken over by neighbouring farms, while the agricultural buildings are either sold for other purposes or abandoned and/or demolished.

Agricultural operations typified by the County Administrative Board of Skåne and screened using three variables (age, company size, type of production) resulted in the following categories:

- Home-based agriculture – where the housing situation is the central focus of the operation.
- Part-time agriculture – where the production has a certain importance in the form of workload and income.
- One-man operation – agriculture that provides income and work for basically one person.
- Family agriculture – that can provide a family with main income and work.
- Larger agricultural operation – where at least 3 people are employed in the operation.

In Skåne especially, until the year 2013, a generation change is expected to happen in 41% of agricultural businesses. The large companies will gain while the medium-sized and smaller agricultural enterprises will decrease in importance (County Administrative Board of Skåne, 2008). A major change in the structure of agricultural operations will be a strong increase in home-based agriculture and part-time agriculture (mainly in the form of horse keeping) in periurban areas.

According to calculations by the Swedish Ministry of Agriculture as presented by Lange (1995), the size of the agricultural building stock in 1995 was approximately 2.5 million ABs, including those agriculture-related edifices that were not owned and used by active farming operations. Enterprise-related buildings and outbuildings made up the majority of this volume, with only roughly 450 000 being dwellings, a 1:4 relationship between dwellings and outbuildings (Lange, 1995; Swedish National Heritage Board *et al.*, 1998) (Table 2).

Table 2. *Number and type of agricultural buildings in Sweden in 1995 (Source: Swedish National Heritage Board et al., 1998)*

Type of building	Number of buildings
Farmhouses	455 000
Buildings for animal husbandry and feed storage	580 000
Buildings for storage of crops, <i>etc.</i>	250 000
Buildings for storing machines and tools	275 000
Other buildings	960 000
Total	2 520 000

Today there are only 72 609 active farm units in Sweden, with a 1:6 relationship between dwellings and outbuildings (Swedish Board of Agriculture, 2010). Outbuildings therefore dominate the landscape and our perception of the agricultural landscape. Statistics Sweden estimated the total number of agricultural taxation units that belong to active farms to be 370 155 in total in 2009, of which 225 354 had at least one building (Table 3). The total taxable value of these units was SEK 547 099 million. In all, 209 010 dwellings and 205 830 outbuildings were registered in connection with these agricultural units (Statistics Sweden, 2009a).

Table 3. *Estimated number and value of agricultural units in Sweden in 2009 and 2008. Values in SEK million. (Source: Statistics Sweden, 2010)*

Type code	Total taxable value, million SEK		Number of taxable units	
	2009	2008	2009	2008
Total agricultural taxation units	730 409	729 626	370 155	368 140
Of which:				
Not built on	164 850	160 147	97 098	95 726
Plots with construction, value < SEK 50 000	16 661	15 704	14 598	14 640
Built on	547 088	551 998	225 354	225 211
Greenhouse or stable	1 810	1 777	2 764	2 726
In national park	0	0	161	161
Schooling or caring purposes	0	0	166	166
Other land outside built areas, without value	0	0	217	0
- with value < SEK 1 000	0	0	29 796	29 510
Unknown use	0	0	1	0

Individual ABs and the entire stock are exposed to influences that cause changes on two levels. Micro level changes influence the individual building, while several of these added together have a macro scale effect on the total stock concerning its composition, size and other characteristics (*e.g.* most usual building material). Parallel to this, both quantitative and qualitative factors play a role. Quantitative factors provide easily measurable changes such as in:

- Number of buildings
- Floor space or other size-related measurements of the building(s)
- Ownership (number of owners at a given time)
- Buildings per plot, *e.g.* fill-in buildings.

While qualitative or more descriptive type changes influence:

- Location (*e.g.* moving buildings, as is relatively common in Scandinavia)
- Ownership (type of owner)
- Function
- Material
- Construction technology
- Character and aesthetics.

These changes, both those that happened historically and those influencing buildings today, predetermine the future of ABs and opportunities for their reuse.

1.5.5 Typology and inventories of agricultural building stock in Sweden

Agricultural building inventories and issues of reutilisation in Sweden are handled by among others the Swedish National Heritage Board (1993), Statistics Sweden (2010), the Swedish Ministry of Agriculture, educational and research institutions (Eriksson *et al.*, 1985; Molén and Bergsjö, 1989; Lund University, 2000; Nilsson, 2000; Svala *et al.*, 2000) and the County Administrative Boards (County Administrative Board of Västmanland *et al.*, 1984). The Swedish Farmers' Union and other NGOs such as the Swedish Local Heritage Movement (Barup and Edström, 1993) and the Swedish Association for Building Preservation (2010) also have local and specialist inventories and publications. Preservation and reuse of agricultural buildings is also an important issue in other countries, among others Norway (Aarstrand and Johnsen, 1994), Ireland (Bowen and Matthews, 2010), the UK (Latham, 2000a, 2000b) and the Netherlands (van der Vaart, 2005).

Agricultural buildings can be separated into a number of categories depending on various characteristics. In the Swedish context, categorisations are made according to characteristics such as:

- The way the buildings are situated within the settlement (Swedish Board of Agriculture, 1998)
 - round village '*platsby*' (Figure 7A)
 - line village '*radby*' (Figure 7B)
 - cluster village '*klungby*' (Figure 7C)

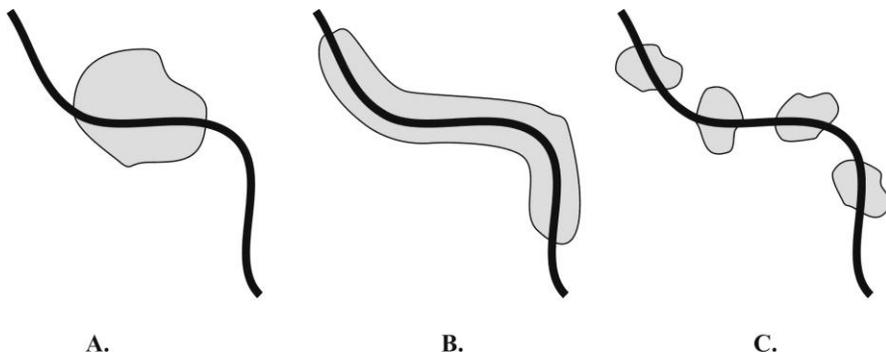


Figure 7. Typical village types found in Sweden.

- The way the farm complex is constructed
 - South Swedish farm type as shown in Figure 8 (quadratic structure with dwelling and outbuildings built together)

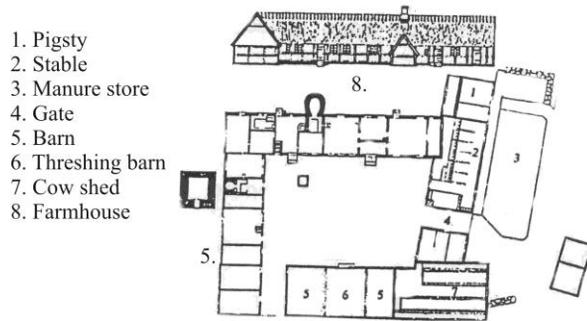


Figure 8. The south Swedish farm type. Source: Sällvik (1992).

- North Swedish farm type as shown in Figure 9 (quadratic set-up where free-standing dwellings and outbuildings are grouped together)

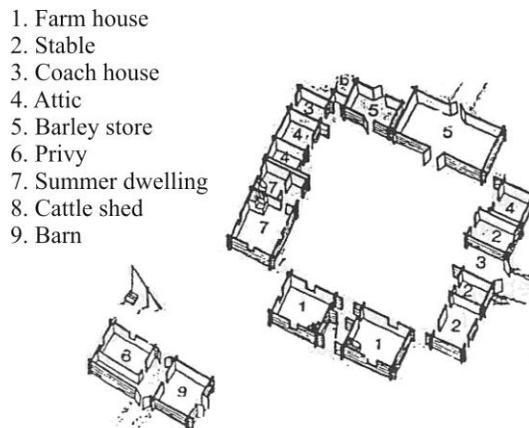


Figure 9. The north Swedish farm type. Source: Sällvik (1992).

- Gothic farm type as shown in Figure 10 (elongated buildings with dwelling and farm functions, separated by a fence)

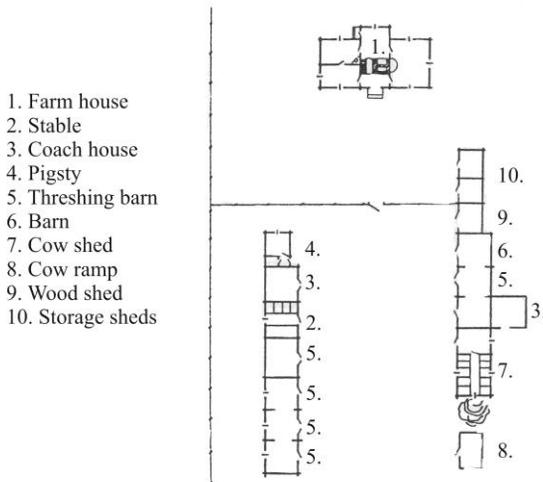


Figure 10. The Gothic farm type. Source: Sällvik (1992).

- Central Swedish farm type as shown in Figure 11 (the buildings for dwelling and farming functions are separated by another row of outbuildings)

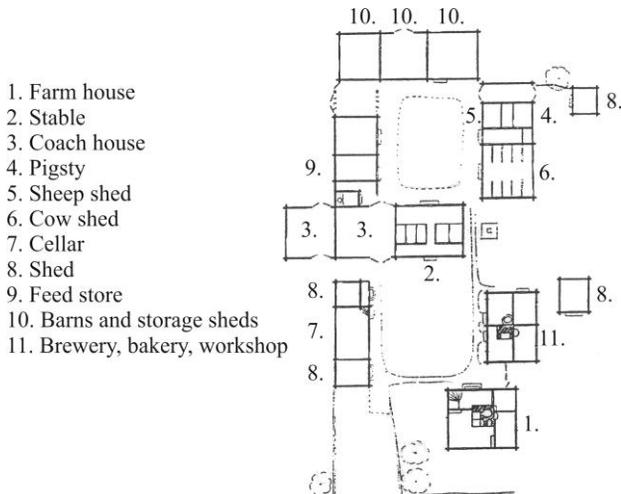


Figure 11. The Central Swedish farm type. Source: Sällvik (1992).

- West Swedish farm type (loose set of a few elongated buildings in parallel or at a 90 degree angle to each other) (Sällvik, 1992; Swedish Board of Agriculture, 2010).

Besides these typologies, the international literature has several other points of entry in categorising agricultural buildings for various purposes (García *et al.*, 2003, 2005; Arias *et al.*, 2007; García and Ayuga, 2007; Martínez, 2007; Zavadskas and Antucheviciene, 2007; Tassinari *et al.*, 2008). These are based on different approaches and combinations of these are appropriate for the purposes of the study and the geographical area. These can include one or several factors, such as:

- Building material
- Construction technology
- Influence on the landscape
- Use and function
- Size
- Age
- Character (modern/traditional, *etc.*)
- Aesthetic qualities
- Heritage values
- Monetary value, *etc.*

1.5.6 Number of buildings and their placement on farms

Farm placement and the location of individual buildings is heavily dependent on the terrain (Swedish Board of Agriculture, 1998), the farming activities themselves and other factors such as climate, rules and legislation, but also subjective factors such as the owner's personal preferences or aesthetic values. The placement factors of individual buildings have changed radically during the last century. Although certain *e.g.* climate (cold spots) and logistics factors are still of the same importance, modern construction technology and the availability of specialist machinery have made *e.g.* territorial factors less important to consider: Today it is possible to build even on low-lying or swampy areas.

According to Lange (1995), the number of buildings increases the further north in Sweden the farm is situated, from 6-7 to even more than 15 in the north, with an average of nine buildings per farming unit. On examining the age composition of the agricultural building stock, it is clear that only very few

buildings originate from before the 18th century (Figure 12), probably as a result of wood being the primary building material in the majority of Sweden.

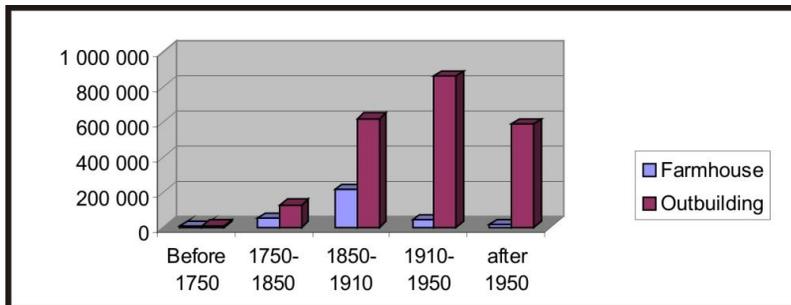


Figure 12. Age composition of agricultural building stock in Sweden (Swedish National Heritage Board *et al.*, 1998).

1.5.7 Building size and function in connection with building utilisation intensity

Buildings used in agriculture have generally grown in size and have also gathered more functions under one roof (Eriksson *et al.*, 1985). With the arrival of mechanised agriculture, new building functions were established, such as machine sheds and workshops, while certain other functions declined in importance or totally disappeared. The functional set-up of the agricultural building stock is shown in Figure 13.

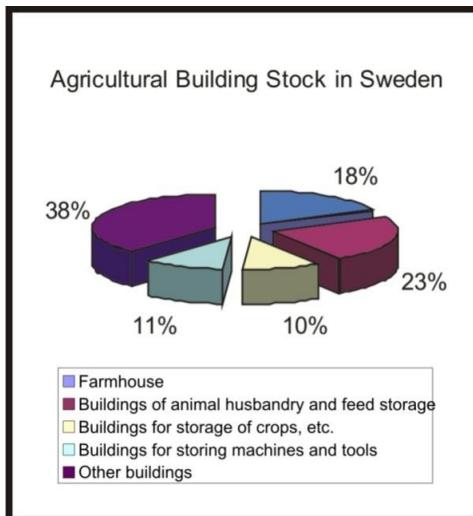


Figure 13. Functional categorisation of agricultural building stock in Sweden. (Swedish National Heritage Board *et al.*, 1998).

Traditionally, as farming operations often had very diverse activities on the same premises, there were a wide range of buildings with different functions present on the same farm (Table 4). In different parts of Sweden, the same functions could be placed under the same roof together with other functions, or in separate buildings. This, together with the use of several names for the same or similar functions, makes categorisation according to function difficult.

Table 4. *Some of the most important building functions on farms. Source: (Swedish Association for Building Preservation, 1993)*

Type	Function
Dwelling	Buildings used for dwelling and purposes of people and social functions
Summer house	
Farm-hand cottage	
Winter garden	
Outhouse (toilet)	
Sauna and bathing house	
Barn	Animal husbandry
Stable	
Chicken house	
Sheep shed	Feed and product storage
Pigsty	
Hay shed	
Silo	
Cereal storage	
Earth cellar	
Garage	Machinery and equipment
Machine shed	
Coach house	
Smithy/workshop	
Milking house	Processing/production
Grain dryer	
Mill	
Washhouse	Other, support function
Baking house, bakery	
Storage shed	

1.5.8 Buildings and their material

Historically, the geographical and terrain-related circumstances of a proposed building and material and construction technology constraints were the major factors deciding over the planning process and the size, shape and form of the buildings (Molén and Bergsjö, 1989). Concerning material, shape and technique, differences are clearly visible between how traditional and modern agricultural buildings were constructed (Ruda, 1998; Bowen and Matthews, 2010; Tassinari *et al.*, 2010). In Sweden, this break between modern and traditional occurred around the 1950s, although territorial differences existed due to factors such as accessibility of the given area, existence of transport infrastructure, information flow, *etc.* Up to that time, roughly all agricultural buildings were erected with the use of traditional building materials and construction technology. As Hammer (1988) puts it

‘The design of agricultural buildings of yesterday was limited by the construction methods known at the time. Availability of materials, the knowledge of the builder and tradition defined the building methods and the buildings were designed for natural beauty, which harmonised with the landscape.’

After the turn of the century, with the arrival of affordable, large-scale industrially produced products and building materials such as concrete and different board and sheet-metal products, farm buildings were constructed so that architectural and aesthetic quality were subordinate to function and economic aspects (Fuentes *et al.*, 2010). Figure 14 illustrates the changes that occurred in the building context. The font size of the individual factor signifies its relative importance in the past and present.

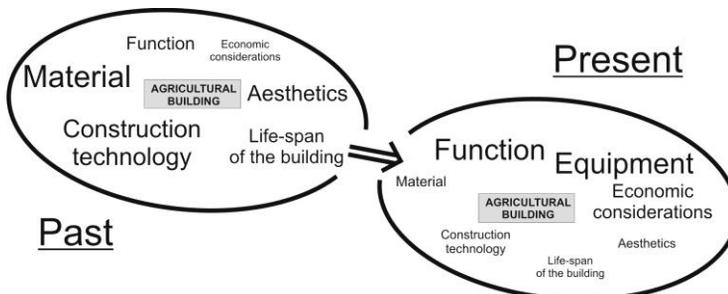


Figure 14. Changes in importance of factors concerning the erection of agricultural buildings from the farmers' point of view. Adapted from: Latham (2000b) and Tassinari *et al.* (2010).

Today's agricultural buildings are purpose-built in principle, without the constraints of material and construction methods. With the use of more complex machinery and equipment, traditional agricultural buildings have become unsuited for modern agriculture (Latham, 2000a; Antucheviciene and Zavadskas, 2003) and functional design became of primary importance (Figure 15). The expected life span of buildings has also been reduced due to a prevalent new type of economic thinking.



Figure 15. Example of a traditional agricultural building converted for the use of modern, large machinery. Functional thinking before aesthetics, the destruction of the traditional AB's proportions and its original cut-block stone material replaced with reinforced concrete and an aluminium-reinforced plastic folding-door.

Traditional agricultural buildings were built to last and have proven to be able to withstand the wear and tear of time. As a result of their characteristics, traditional agricultural buildings can be considered adequately placed (Cañas and Martin, 2004), soundly built and even by today's standards providing adequate indoor conditions (van Hoof and van Dijken, 2008), in turn serving their function well.

1.6 Agricultural building reutilisation

1.6.1 Problems and threats concerning reutilisation

As agricultural buildings in periurban areas are in easier reach of a large number of potential user groups, conflict surfaces appear both horizontally

(between users, owners) and vertically between owners and organisations, administrative, planning and policy-making authorities, NGOs.

In many cases of tourism and housing reutilisation for cultural activities and educational purposes, styles borrowed from urban contexts (Tassinari *et al.*, 2010) and a mixture of introduced, non-local artefacts together with the ‘reinvention of the buildings’ (García and Ayuga, 2007) can create an artificial rurality and a Disneyfied environment (Latham, 2000b). Canoves *et al.* (2004) points out concerning the effects of rural tourism that:

‘...all forms of tourism create some form of negative impact upon the physical and socio-cultural environment in destination areas.’

Some other areas where reutilisation can pose a threat are:

- A shift in the way of thinking of farmers in the form of too little interest in the reutilisation of old buildings (Eriksson *et al.*, 1985)
- A new function that strongly differs from the original purpose of the building (*e.g.* an old low building like a cottage being used for heavy industry or logistics purposes where heavy material flow *e.g.* through large doors, *etc.* is required) (Latham, 2000a, 2000b)
- Drastic alterations made to the outside (adding to or demolishing part of the building, new roof pitch, new materials not in keeping with the original style)
- Radical changes to the inside and layout of the buildings (tearing out walls, removing ceiling, *etc.*) (van der Vaart, 2005)
- Changes to the building so it damages the balance of the landscape (García and Ayuga, 2007)
- ‘Beautification’ and ‘suburbanisation’ of the building with artefacts of fake rurality (Latham, 2000b; van der Vaart, 2005; García and Ayuga, 2007).

To avoid these pitfalls, Latham (2000b) provides a list of ‘principles’, a best practice guideline, to follow in reutilisation:

- Identify solutions that work ‘with’ the building and not ‘against’ it.
- Think laterally about the uses to which the building is to be put.
- Treat the elements of a building that need to be conserved as ‘long-life’ elements.
- Use sympathetic material where new additions are to be made, either as an extension of past techniques, or in contrast to them (dependent upon the nature of the brief, context, setting, *etc.*)

- Use techniques of repair rather than restoration (and instruct the minimum rather than the maximum repair work necessary).
- Ensure that restoration, when it appears appropriate, is thoroughly researched and subject to the agreement of a second opinion before work proceeds.
- Maintain proven techniques, natural materials and traditional craftsmanship, in preference to ‘hi-tech’ solutions.
- Adopt modern technology as a hidden means to preserve fabric *in situ*, where traditional methods would (might) be destructive.
- Leave work apparently just in good repair rather than newly repaired (or restored).
- The quality of the final product is determined by the choice of procurement route, the time devoted to detail design and the preparation of good contract documents.
- Consider the scope for interpretation of the building by the public and the user using the most innovative and appealing means.
- Balance the demands of the user, and/or public access, with the maintenance requirements of the property.

1.6.2 Opportunities for AB reutilisation

Opportunities and motives of the actors shape ABs in the reutilisation process. Latham (2000a, 2000b) describes several reasons for the reuse of buildings, including financial pressures (*e.g.* affordable housing) and opportunities (*e.g.* developers), the requirements of an individual or an organisation or simply the availability of an abandoned building itself. He differentiates between three types of opportunities for reuse:

- People-led: where people, namely the potential users and their needs, shape the reutilisation process and therefore the building itself
- Building-led: where the building and its characteristics themselves provide the opportunity for reutilisation
- Policy-led: where institutional bodies leave or take over buildings, *e.g.* schools, community centres created by local authorities.

Location is lifted out as a major defining factor for building reuse, with distance to urban centres as a main deciding factor (LRF, 2008). Furthermore, the individual building’s location is also of major importance in reutilisation, strongly influencing reuse opportunities. As shown in Figure 16, a roadside location can provide an opportunity for the owner to use the surface (walls and roofs) of ABs for advertising. However, the aesthetics can be discussed. This is

also a good example of a low investment requirement type reuse, as other types (e.g. small industry, tourism, etc.) may require heavy investments, permits and involve complicated processes.



Figure 16. An economic reutilisation alternative: Roadside AB reused in advertising.

Furthermore, personal interests (hobbies), price of the property, availability of space and characteristic features of the buildings are among the most important incentives behind reutilisation of agricultural buildings, although the symbolic value of agricultural buildings and lifestyle-related factors including freedom of action are also important. Figure 17 shows a lifestyle-related reutilisation example where a swimming pool is housed in an old hay barn.



Figure 17. A spacious hay barn houses a large, luxurious swimming pool.

As shown before, reutilisation as a combined business/residence solution is common (van der Vaart, 2005). Figure 18 shows such reutilisation example of a private residence.



Figure 18. Reutilisation of a barn as private residence. Visible beams are a sought-after feature among today's property buyers.

Buildings and their reutilisation in the rural hinterland, on the other hand, may be specialised for activities that are difficult to carry out in densely populated areas, such as maggot farms or dog shelters. In locating a new rural business,

‘footloose’ companies have been found to rely on location-based factors in their decision, such as scenic beauty, environmental factors, ruralness and quality of life, together with the need for infrastructure (IT, roads, schools, *etc.*) (Johnson and Rasker, 1995). Agricultural buildings in periurban locations can easily be reutilised for these footloose businesses as these factors – or easy access to them – are available there, often at a lower cost than in urban environments.

Lists of reutilisation opportunities are provided by several authors. The available opportunities for reutilisation are very difficult to put a limit to because the buildings themselves are so varied in nature and character and can house a wide range of new activities. Table 5 shows a summary of some reutilisation opportunities for ABs.

Table 5. *Summary of some reutilisation opportunities for former ABs Sources: (Ascard, 1991; Butler, 1998; Latham, 2000a; LRF, 2008)*

Hobby farming	Public use (community centre, education)	Service/production/processing- related small business
Private residence or second home	(Small) industry	Wholesale outlet
Retirement home	Storage	Retailing/shop
Dwelling (private residence)	Rental - storage - conference - party space	Tourism - B&B - caravan park - camping
Office	Arts and crafts	Catering
- rental of office space	- exhibitions	- café
- consultancy	- theatre	- restaurant
- municipal space	- museum	- catering
- micro/small business headquarters	- craftsmanship - art courses	- artisan food - wine/whiskey/beer tasting

Figures 19 to 26 depict some other ways of AB reutilisation.



Figure 19. CNC (automated milling machines) in a reused cow shed.



Figure 20. Old granary-storehouse reused as a gallery in an arrangement with the local authority.



Figure 21. Stable reused as a museum.



Figure 22. Farm buildings reused as a youth hostel and antiques shop.



Figure 23. Cow shed reused as a retailing unit, a shoe shop.



Figure 24. Restaurant housed in the coach house of a farm building.



Figure 25. Small-scale firewood production unit and storage facility housed in a cow shed and its traditionally related buildings (hay barn, etc.).



Figure 26. Barn reused as an artisan craftperson's glass-blowing workshop.

1.6.3 Tourism-related reutilisation

In Sweden, the most common activity, beside contract work, on farms is activities within tourism, letting and other leisure activities. Approximately 4 000 holdings (24% of total holdings) are involved in these types of activities (Statistics Sweden, 2008b). Concerning tourism-related reuse, farm buildings provide another advantage. As farming comprises a range of activities and is housed in a large number of buildings, there is an opportunity to easily house tourism-related activities, which by nature are also very diverse. This complex relationship between agriculture, its built infrastructure and the different types of rural tourism product creation processes is shown in Figure 27. Another

angle on the same subject is that large number of under-utilised premises can be seen as a prerequisite for alternative activities – such as tourism – on farms (Gössling and Mattson, 2002). As Hall *et al.* (2009) point out, in the service production process of tourism, low levels of capital equipment but heavy investments in buildings are required.

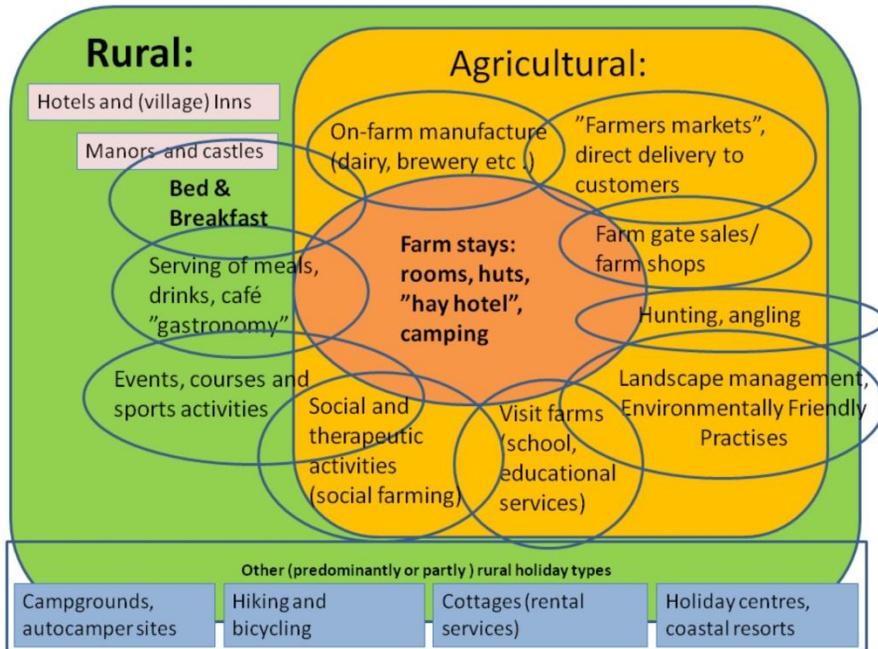


Figure 27. Agricultural tourism or agrotourism seen as a subset of rural tourism (the Danish perspective) with the focus on farm stays (Nielsen *et al.*, 2010).

Location is also an important factor concerning tourism-related reutilisation. When places of rural tourism are discussed, instead of objective measures such as population limits, settlement patterns and the dominance of certain economic functions, rural areas ‘can be seen more as a socially constructed idea that characterises it and also differentiates it from the urban in specific, but culturally changing, contexts’ (Hall *et al.*, 2009). In periurban and amenity-rich areas, tourism-related reutilisation is far more successful than in remote locations, as location is seen as a major contributing factor in achieving high occupancy rates (Oppermann, 1996; Busby and Rendle, 2000; Gössling and Mattson, 2002; Cánoves *et al.*, 2004; Sharpley and Vass, 2006). Other reasons for reutilisation of farm buildings in tourism include:

- Economic benefits, although authors disagree on the importance of this (Gössling and Mattson, 2002; LRF, 2009a)

- Opportunities for social contacts
- Being able to stay on the farm (usually an income source for the female in the household)
- Covering the costs of renovation and maintenance
- Or simply the need to make use of empty rooms and buildings.

1.6.4 The positive effect of agricultural building reutilisation

In southern European countries, especially in Spain and Italy, to date more emphasis has been placed on research into the reutilisation of agricultural buildings than in Scandinavia:

‘Traditional farm buildings are part of our popular heritage and as such they deserve to be preserved to bear witness to the way our ancestors lived (Arias *et al.*, 2007).’

The following list provides a compilation of reasons why agricultural buildings should be reutilised (Ruda, 1998; Latham, 2000b; García and Ayuga, 2007):

- They have a development and landscape value: buildings always cause a visual impact. Traditional agricultural buildings have a low impact in general.
- The conventional balance between natural and man-made elements is maintained.
- To maintain sustainability in rural areas:
 - Economically: it is cheaper to reuse in most cases
 - Socially: reuse is profitable as it provides affordable housing or a place for diversification and social activities
 - Environmentally: it is more efficient in terms of energy and material to reuse than to build new.
- These buildings are part of the location’s culture and history, an educational resource and the socio-cultural background for future development.
- Remains of buildings, *e.g.* ruins, cause several problems (illegal uses, ruined image, landscape devaluation).
- Reuse in leisure and tourism can work as a key generator for creative re-use programmes.

Reutilisation in rural tourism also acts as a key part of local development, with particular focus on the use of the local heritage (Roberts and Hall, 2001).

Cañas and Martin (2004) and Tassinari *et al.* (2010) go further in pointing out the educational function in sustainable architecture and accumulated empirical knowledge associated with high architectural quality. Cañas and Martin (2004) show that traditional ‘popular’ architecture, by basing its designs in necessity, found logical results to environmental problems such as too much or too little solar radiation, or excessive rainfall. Therefore bioclimatic strategies used in this type of construction correctly respond to the conditions imposed by the given climate of an area. This traditional wisdom has been verified as far north as Iceland (van Hoof and van Dijken, 2008).

2 MATERIALS AND METHODS

A summary of the main materials and methods is presented in this section. Full details of these are provided in Papers I-IV.

To understand such a complicated, multidisciplinary subject, a multifaceted approach is required that includes the use of several disciplines simultaneously. This situation is further complicated by some of the subjects involved, *e.g.* tourism, being interdisciplinary by themselves. Consequently, a multi-method approach is required to investigate the subject from several different angles in different ways, making the validity and reliability of the data obtained sufficiently high to be used in the final triangulation process. This multi-data source also guarantees that the results and conclusions are based on appropriate and solid evidence. The thesis is built on the principle of a narrowed-down focus approach, as shown in Figure 28.

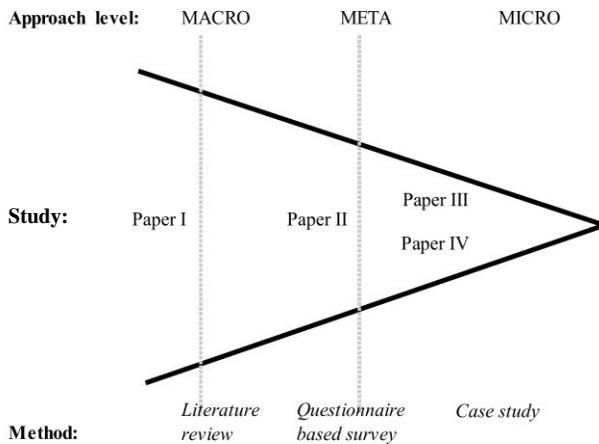


Figure 28. Methodological approach adopted in the thesis.

Papers I-IV move from a general, theoretical viewpoint to the study of a narrow, specialist subject. Some of the main sources for the investigations are shown in Table 6. These provide the macro-scale background and the basis for the narrower investigations.

Table 6. *Important macro and meta level data sources used in the thesis*

Authorities and public bodies	NGOs and private organisations, associations
Statistics Sweden (<i>Statistiska Centralbyrån, SCB</i>)	Swedish Association for Building Preservation (<i>Svenska Byggnadsvårdsföreningen</i>)
Swedish Board of Agriculture (<i>Jordbruksverket</i>)	Federation of Swedish Farmers (<i>Lantbrukarnas Riksförbund</i>)
Swedish Forest Agency (<i>Skogsstyrelsen</i>)	Swedish National Heritage Board (<i>Riksantikvarieämbetet</i>)
Websites of individual municipal authorities and county administration boards	The International Ecotourism Society (TIES)
The National Rural Development Agency (<i>Glesbygdsverket</i> , currently working under the umbrella of the Swedish Agency for Economic and Regional Growth)	Nordic Ecolabelling
Swedish Agency for Economic and Regional Growth (<i>Tillväxtverket</i>)	Swedish 'Farm Holiday' register (<i>Bo på Lantgård Riksförening</i>)
NUTEK (currently working under the umbrella of the Swedish Agency for Economic and Regional Growth)	
World Tourism Organisation (WTO)	
UN (FAO)	

2.1 Literature review

Paper I is primarily a literature review of printed and digital media, although personal observations and information collected at workshops and seminars are also included. Publications by state organisations (*e.g.* Statistics Sweden, The National Rural Development Agency of Sweden), various researchers and research networks were collected and analysed. The structures of previous definition models were dismantled and examined in order to find common denominators. Although the urban-rural continuum is a contested phenomenon on the grounds of being overly dualistic (Urry, 1995), it was used in Paper I as a two-dimensional guide to which historical, social-cultural, politico-economic and technical time-bound events and phenomena were linked. A theoretical construct of development of the periurban phenomenon was established by approaching the subject on both the macro and micro level from an

interdisciplinary point of view. A differentiated macro and micro level approach was used as an analytical separation instead of a dichotomy of scales (e.g. individual v. societal), in order to uncover existing and potential linkages (Alexander *et al.*, 1987). Findings from a number of disciplines, such as rural and urban studies, history, sociology, human geography, agriculture and technology, were used together with observations on some historical examples of the periurban phenomenon. Although the starting point was the Swedish context, where appropriate parallels exist, other European examples were also examined.

2.2 Questionnaire-based study

As a second stage, questionnaire-based statistical investigations of several actor groups connected to ABs provided a meta level platform on various areas of the main subject. An example of the type of questionnaire used is shown in Figure 29.

CONSTRUCTION & MATERIAL						
When visiting a rural tourist destination (B&B, restaurant, exhibition, etc.) my choice is influenced by <i>(Grade the alternatives below from 1 to 5 where 1 has the least and 5 the highest importance</i> <i>Mark with X!)</i>						
	<i>None</i>	<i>Little</i>	<i>Medium</i>	<i>High</i>	<i>Very high</i>	
	1	2	3	4	5	Don't know
Building character/style and aesthetic character						
Costs						
The beauty of nature and the landscape						
Building condition						
Activities on offer						
Services on offer in the vicinity (bank, gas station, shops, etc.)						

Access to public infrastructure (medical services, post, police, etc.)							
Building age							
Building material							
The construction technology details of the buildings and their architectural character							
Building shape							
Building colour							
Building atmosphere							
Functional character (number of rooms, size, etc.)							
My, my children's etc. personal safety and material security.							
Other:	Write here what and grade						

Figure 29. Example of the questionnaire used in Paper II.

The dynamics of changes in the periurban infrastructural stock and the underlying reasons for the changes were analysed by a primarily deductive approach. The current utilisation of the periurban built infrastructure is highly related to a matrix of interconnected variables including human factors (class, lifestyle, *etc.*), the characteristics of the infrastructure (size, material, construction characteristics, *etc.*), and landscape factors (distance factors, vegetation, climate, *etc.*). Because of this, several disciplines were used in this study, including urban and rural studies, tourism, architecture and environmental psychology.

All questionnaires were based on the same principles. The questionnaires for visitors and RT operators were created by the Total Design Method (Dillman, 1978), although other questionnaire design guidelines were also used (Statistics Sweden, 2001; Walonick, 2004). The questionnaires covered background (age, sex, family income, education, profession and settlement size of birthplace/present residence) and posed research questions relevant to the subject. The design of the research required the essentially ‘soft’ data (*e.g.* preferences, likes, dislikes and attitudes) to be transformed into quantitative information. Therefore research questions were created on a Likert scale (Likert, 1977), complemented with a semantic differential scale (McDougal and Munro, 1994). The research questions were formulated to uncover attitudes and preferences regarding buildings and other tourism-related factors

concerning reused ABs. Research questions (*e.g.* building/tourism factors) were mixed to reduce bias.

Two main target groups (visitors and operators) were surveyed by questionnaires during the investigations. The operator participants were collected from the Swedish 'Farm Holiday' register (Bo på Lantgård Riksförening, 2009). Their questionnaires were administered either manually or by the internet-based Questionnaire Generator Programme at the Swedish University of Agricultural Sciences. Visitors to three selected RT operations (later used as case study objects) and a pool of internet addresses supplied by the visitor lists were surveyed either via the internet-based system or by self-administered questionnaires.

2.3 Case studies

Papers III and IV were both created with the use of the same comparative case study methodology, although the actual questions in the respective studies were differently angled and the material collected differed in both type and character. Paper III focused on management-related issues of tourism reutilising ABs, while Paper IV set out to analyse the way building material and technology were perceived by the owners of ABs used in tourism in a sustainability context. Paper IV also includes a questionnaire based survey that was created using responses given by the Swedish 'Farm Holiday' register (Bo på Lantgård Riksförening, 2009). In this survey, the enterprise owners were asked about their buildings used in tourism.

As behavioural (by nature highly qualitative) issues were studied in their complex relationship to a given physical environment, a two-fold descriptive-explanatory case study methodology was chosen.

The highest level, the comprehensive micro data of case study investigations, was aimed at uncovering details of the sustainability of AB reutilisation in tourism. Three cases were used. The whole of an AB-based tourism operation was considered the unit of analysis, the *de facto* case. To ensure external validity, a literal replication pattern was chosen as a guideline in the selection process to underline any similar factors working as a driver towards sustainability in these operations and to highlight key factors.

The cases were chosen by a location and profile analysis in a three-phase filtering process from a pool of RT enterprises (n=319), including the Swedish 'Farm Holiday' register (Bo på Lantgård Riksförening, 2009), RT enterprises found on the Internet and related links. The three final RT enterprises chosen had similar business and building profiles but were located in three different

areas as shown on Figure 30. In turn, Figures 31-33 illustrate the three case study objects.

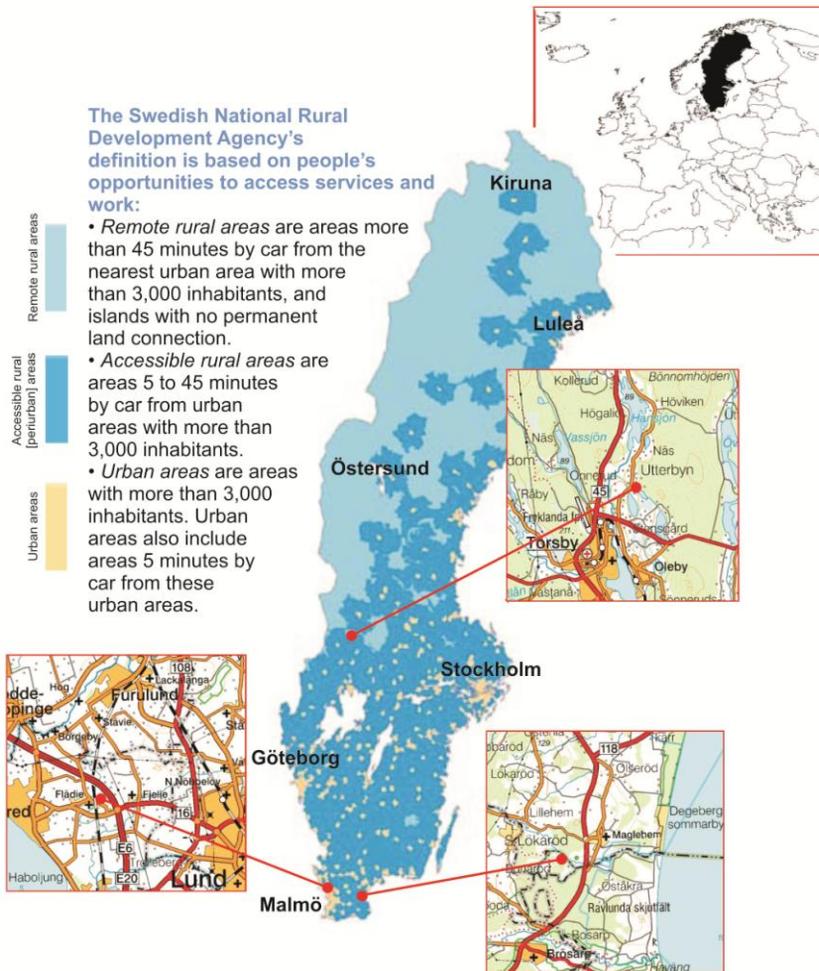


Figure 30. Location of the cases in relation to Swedish spatial characteristics. Modified from The National Rural Development Agency (2008).



Figure 31. Sahlströmsgården.



Figure 32. Drakamöllans Gårdshotell.



Figure 33. Flädie Vingård.

3 SUMMARY OF RESULTS

3.1 Defining the periurban (Paper I)

Most advances made on the rural-urban continuum are made solely from an urban standpoint, therefore being distorted and not providing an entirety of vision. There are several problems with the identification of different areas between urban and rural when using conventional definitions. As an example, Caruso (2001) points out that translations between different languages are inadequate:

‘An unfortunate and common fact is that different authors use different terminology without exact translation of the concepts, this latter problem existing mainly between the French and English speaking part of the scientific world.’

The definitions for differently named but similar types of areas overlap, such as those used for different ‘fringe’ or periurban areas, or are even interchangeable. In physical-spatial definitions, the various zones surrounding the expanding city seem to melt together, so the edges of these are difficult to identify. These differently named areas around the city include suburbia, city edges, rural-urban or periurban (interface) areas, the urban shadow or different fringe(s). A common factor therefore seems to be that these areas cannot have a clear, definable edge.

Defining models are often of low deterministic nature with high risk of territorial generalisation. Different defining characteristics, the overwhelming majority of which are physical or similar, can easily come into collision with each other in two periurban definitions or during the definition process. Descriptions of periurban areas by physical characteristics such as distance or commuting time often include huge, rural-type areas lying between, or on the

periphery of, these urban centres. As a result of its high speed transport networks, Europe has in principle no real rural areas left when using commuting time or distance-based definitions. By looking at commuting, and its characteristics, as a defining factor, we automatically equate this ‘commuter type of periurban’ with the outer movement of the city, an urbanising process and the movement of the urban fringe, where it is only a question of time before an area becomes physically categorised as urban. Instead of a complex mosaic, we are looking at an overly simplified system that does not reflect the multifaceted nature of the periurban phenomenon. This above phenomenon therefore leads to periurban, island-like settlements in the rural hinterland not being unaccounted for, *e.g.* people with urban lifestyles and needs in a deeply rural setting. The defining possibilities are not fully utilised by the most common physical-spatial approach, although recently non-physical characteristics were also incorporated into definitions. A new defining model is suggested, as shown in Figure 34.

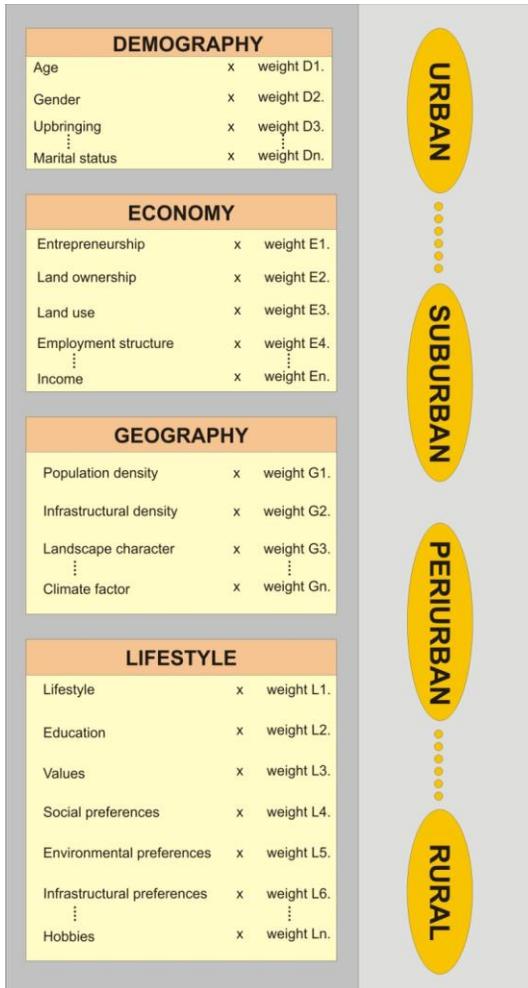


Figure 34. Schematic drawing of the Urban Rural Defining Model (URDEM).

The stepless classification results provided by the Urban Rural Defining Model (URDEM) are based on both physical and non-physical input data and are weighed against each other in the calculation process depending on the purpose of the classification. The weighing factor pool is constant, but the weight levels of individual factors are adjustable according to the purpose of the given defining process, thereby making different defining models compatible with each other. The results of URDEM not only provide a more detailed and mosaic-like classification system than conventional definitions, but also illustrate the dynamics of the character change of an area (a percentage of main character types), *e.g.* from rural towards periurban.

3.2 Operators' and visitors' attitudes concerning reused AB in tourism (Paper II)

Comparison of the typical visitor and the typical operator showed that the two survey groups differed little on the basis of their spatial belonging and other demographic factors (*e.g.* age, educational characteristics, *etc.*). Although operators somewhat lagged behind in their understanding of visitors' views about tourism and building-related issues, the average importance level concerning the factors investigated was the same for both groups. Building-related factors were considered most important by both survey groups, as detailed in Paper II. With the exception of condition, visitors generally viewed building-related factors as more important than the operators did. Three factors scored unanimously highest for both groups: style/character, nature/beauty and atmosphere (Figure 35).

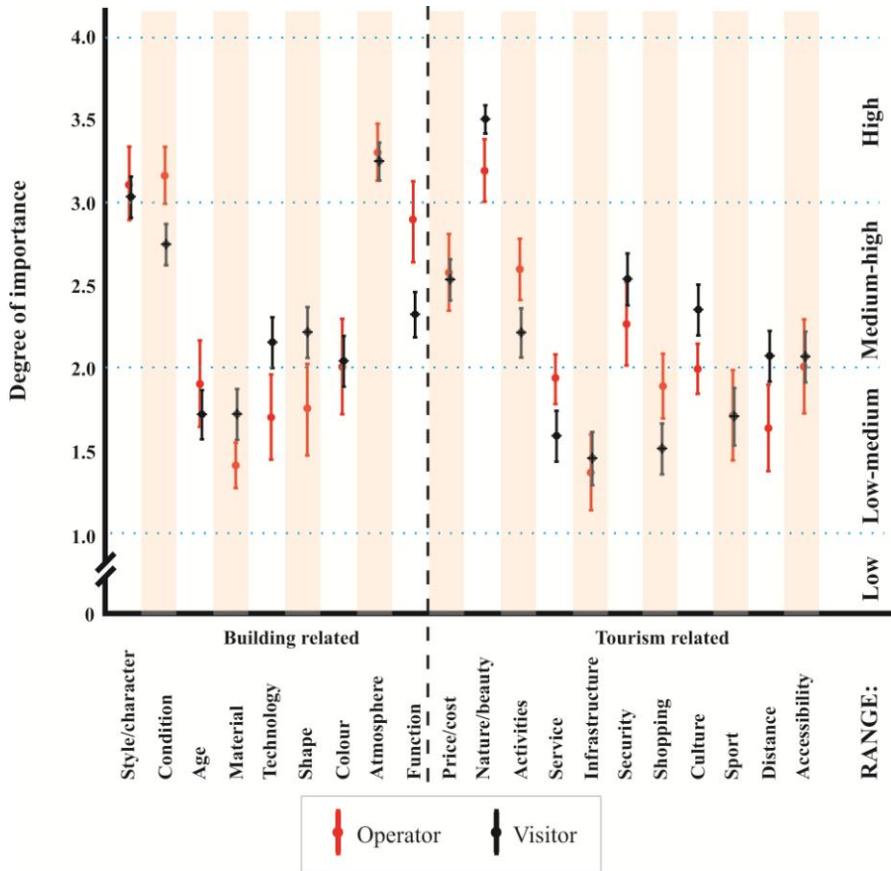


Figure 35. The importance of building-related and tourism-related factors as perceived by visitors and operators.

Condition of buildings was considered to be of the most importance to visitors as far as operators were concerned. This assumption was not supported by the visitors themselves. Function (*e.g.* size and placement of rooms, ease of access in the buildings, *etc.*) showed a similar discrepancy and therefore a misunderstanding from the operators' side. In the other four areas where visitors and operators had a different understanding of importance, visitors gave higher scores than operators did. Furthermore, three of these areas concerned building-related factors, again showing a difference in the understanding of the two groups (Table 7).

Table 7. Scores of building-related answers for the visitor and operator groups (Range: 'Low' 0-1, 'Low-Medium' 1-2, 'Medium-High' 2-3, 'High' 3-4)

Building-related factors	Group	N	Min	Mean	Max	Range	p-value
Style/character	Visitor	258	0	3.05	4	H	n.s.
	Operator	94	1	3.09	4	H	
Condition	Visitor	255	0	2.75	4	MH	.000
	Operator	90	2	3.26	4	H	
Age	Visitor	247	0	1.78	4	LM	n.s.
	Operator	91	0	1.89	4	LM	
Material	Visitor	246	0	1.72	4	LM	.047
	Operator	90	0	1.46	4	LM	
Technology	Visitor	247	0	2.22	4	MH	.000
	Operator	87	0	1.74	4	LM	
Shape	Visitor	245	0	2.28	4	MH	.000
	Operator	88	0	1.81	4	LM	
Colour	Visitor	252	0	2.06	4	MH	n.s.
	Operator	89	0	1.94	4	LM	
Atmosphere	Visitor	256	0	3.29	4	H	n.s.
	Operator	92	1	3.18	4	H	
Function	Visitor	249	0	2.31	4	MH	.000
	Operator	95	1	2.94	4	MH	

The nine building-related factors investigated (Table 7) revealed several areas where the two groups had significantly differing views and also areas with

similar attitudes. Both groups considered building style/character and atmosphere to be equally important factors, with answer strength at the highest end of the scale.

The factors building material, construction technology and building shape proved to be of different importance to visitors than assumed by operators. While visitors appreciated construction technology and architectonic design (*e.g.* building shape) over the mid-range score level, operators paid less attention to these issues, scoring only below this level. Building material was considered to be the least important factor by both groups. The age and colour of the buildings was assumed by both groups to be of equal low-medium importance.

Table 8. Scores of tourism-related answers for the visitor and operator groups (Range: 'Low' 0-1, 'Low-Medium' 1-2, 'Medium-High' 2-3, 'High' 3-4)

Tourism-related factors	Group	N	Min	Mean	Max	Range	p-value
Price/cost	Visitor	256	0	2.55	4	MH	n.s.
	Operator	95	1	2.63	4	MH	
Nature/beauty	Visitor	255	2	3.55	4	H	.001
	Operator	95	1	3.29	4	H	
Activities	Visitor	252	0	2.25	4	MH	.035
	Operator	93	0	2.51	4	MH	
Service	Visitor	251	0	1.53	4	LM	.006
	Operator	92	0	1.88	4	LM	
Infrastructure	Visitor	251	0	1.34	4	LM	n.s.
	Operator	93	0	1.29	3	LM	
Security	Visitor	242	0	2.45	4	MH	n.s.
	Operator	93	0	2.32	4	MH	
Shopping	Visitor	254	0	1.48	4	LM	.025
	Operator	91	0	1.79	4	LM	
Culture	Visitor	253	0	2.32	4	MH	.023
	Operator	89	0	2.02	4	MH	
Sport	Visitor	249	0	1.61	4	LM	n.s.
	Operator	89	0	1.69	4	LM	
Distance	Visitor	255	0	2.12	4	MH	.001
	Operator	92	0	1.70	4	LM	
Accessibility	Visitor	254	0	2.10	4	MH	n.s.
	Operator	86	0	2.12	4	MH	

Concerning tourism-related factors (as shown in Table 8), the highest score was given to nature/beauty by both groups. Both groups scored price/cost level in the medium-high section of the scale, while availability of public infrastructure (*e.g.* medical facilities, post, police, *etc.*) was considered unanimously by both groups as being of least importance of all factors investigated. Operators assumed significantly higher importance for the availability of activities than visitors actually required. Services on offer in the vicinity of the RT enterprise were not considered an important factor by the visitors, nor were opportunities for shopping. Security (which included personal security and material safety) was correctly perceived by the operators to be of relatively high importance to visitors, just as the availability of sports was well understood to be a less important factor (scoring in the low-medium range), but operators significantly underestimated the importance of culture.

The significance of travelling distance was also considerably underestimated by operators, although they well understood that the actual accessibility of the rural tourism destination is only of average importance to visitors. No significant difference was found between the two groups on this latter factor.

With reference to minimum values, nature/beauty stood out as the highest minimum value for visitors, while building condition received the same high minimum score level from operators. All other factors examined showed the same tendencies for both groups, which had respondents awarding the highest maximum values to all factors except the importance of available public infrastructure.

The comparisons of aggregated tourism-related factors with aggregated building-related factors in Paper II revealed significant differences between the understandings of the two groups, as shown in Figure 36.

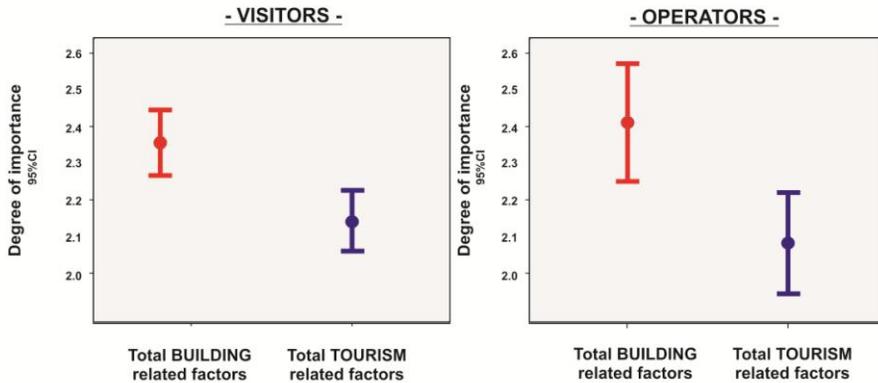


Figure 36. Importance of aggregated building-related and tourism-related factors as expressed by visitors (left) and operators (right).

Both operators and visitors considered building-related factors to be of significantly higher importance than tourism-related factors. However, comparison of operators' and visitors' scoring strength for the aggregated factors shows that operators considered building-related issues to be of higher importance to visitors than was actually the case.

In terms of demographic characteristics, the analysis was focused on the highest scoring factors including price/cost, nature/beauty, activities, security from the tourism-related factors, and style/character, condition, atmosphere and function from the building-related factor group.

Nature/beauty and style/character received significantly higher scores from females in the visitor group than from females in the operator group, although within the operator group females still showed higher appreciation of this factor than males. Nature/beauty was the only factor that received significantly different scores between age groups, although only among visitors. When analysing these results, it was found that the older the age group, the greater the importance of nature/beauty. Concerning security, a significant difference was found between the 50-65 years age group, which showed the least appreciation, and the <20 years group, which placed the highest importance on this issue.

For the visitors a significant difference was found between how highly different categories based on size of birthplace rated the atmosphere of buildings, although analysis based on residence settlement size showed no significant difference concerning the factors for either the visitors or operators. No significant difference was found between the subgroups based on type of

housing in either the visitor or operator group concerning any of the factors examined here.

Among the visitors, significant differences were found between education subgroups for several of the factors examined, namely nature/beauty, activities and atmosphere. As regards activities, the findings clearly showed that the lower the education level in the visitor group, the higher the importance given to availability of activities at the rural tourism destination. However, the highest educated subgroup of visitors showed most interest in building atmosphere and nature/beauty. In the operator group, a significant difference was found concerning style/character, with this factor showing the same tendencies as the visitor group factors atmosphere and style/character. Level of family income was found to have no significant influence in terms of either building-related or tourism-related factors.

3.3 Management factors in the sustainable reutilisation of AB in tourism in characteristically different geographical areas (Paper III)

All interviewees thought of their buildings as key attractions of the tourism enterprise. The owners could describe sustainability in their own words, although only in a non-contextual way.

None of the case study objects belonged to any of the existing sustainability or 'greening' schemes, such as the Nordic Ecolabelling for Hotels and Restaurants (Nordic Ecolabelling, 2008a, 2008b) or the European Green Key Ecolabelling system (The Green Key, 2010). Screening of the operations showed that the practical arrangements and routines mostly fulfilled the requirements of a sustainable tourism business, as prescribed for instance in the Nordic Ecolabelling manuals.

All three interviewees were very much aware of the advantages and disadvantages posed by the location of their businesses. Concerning success factors, the business concept and physical placement compared with competitors were mentioned as key issues, together with level of service and quality as attractions themselves. The lack of importance concerning *e.g.* travelling distance was raised by one interviewee when describing success factors and obstacles, as customers are willing to travel several hours to get an excellent product and services.

All three enterprises had multiple products but these were all well defined and interconnected as far as their origin was concerned. In comparison to other

RT enterprises, all three case study objects used premium pricing strategy, based on a highly quality-focused product.

While two businesses mainly relied on organised groups of conference and events guests and worked only on a strictly pre-booked basis, the third business had a wide customer base and was open to the general public.

Word-of-mouth was unanimously agreed by all three interviewees to be the most successful way to promote the tourism enterprise. The second best method was considered to be internet-based advertising via a website. Commercial (advertising in papers, magazines, *etc.*) and publicly funded promotion (*e.g.* tourist agencies and organisations) were considered to be of minor importance, although indirect advertising in the form of articles or TV appearances was considered very important by all three.

The choice of personnel was pointed out by all three interviewees as a key factor: The right people for the right job with the best possible knowledge. Cost was considered to be of secondary importance compared with the result and long-term relationships with key people were of major importance. A large effort was made to use local workforce as much as possible. One of the owners made a special effort to make local citizens take part in planning an expansion of the enterprise by starting a creative discussion with the locals.

A balance between under- and over-staffing was mentioned as a problem area, together with the procurement of suitably qualified labour (and subcontractors). The time-consuming nature of this process was also mentioned as problematic.

All three owners had close personal contact with the visitors. One owner placed special emphasis on creating a personal touch by employing a hostess/receptionist who knew most customers on a first name basis and ensured a personalised service, while another owner personally greeted all visitors to events at the entrance. All three managers showed a burning interest in transferring knowledge and educating the general public about what they are doing and why. All three managers took an active part in the local/national social debate via presence in printed and TV media.

Qualitative rather than quantitative development was pointed out as the preferred development path, through improvement of existing facilities and organic expansion instead of over-planning and chasing solely economic benefits. Long-term thinking in personal relations and in developing/running of the enterprise was observed, where a 'caretaker function' was cited as a major area. All three managers had strong characters with a democratic but autocratic leadership style, individual thinking and well formulated world views. Leadership in all three enterprises relied heavily on delegation, where creativity and pro-activeness in the workplace were rewarded. The thinking of

the managers was also found to be quality-focused in all three operations, as quality and service were mentioned as the basis of economic sustainability.

Concerning transportation, two of the three enterprises were strongly dependent on road transport, as no real public transport alternative was available. Concerning procurement of goods and products, but also services, all three enterprises were heavily dependent on road transport. All three owners showed an interest in using green transport solutions (*e.g.* biogas, electric vehicles) if available.

Environmental awareness was very prevalent in the thinking of all three owners. The natural elements (landscape, flora, fauna) of all enterprises surveyed were retained as much as possible and development was carried out following sustainability principles. The latter included the establishment of a herbaceous garden, the development of meadows, the plantation of oaks (for producing truffles) and a vineyard. Only one enterprise had a composting station. All three enterprises had their own water supply and therefore savings in this area were not considered a priority. Sewage and greywater were managed in all three enterprises in accordance with the regulations.

3.4 Building-related factors in the sustainable reutilisation of AB in tourism in characteristically different geographical areas (Paper IV)

The questionnaire based survey phase showed that almost all, 97% of the enterprises investigated provided some form of accommodation (B&B, self-catering, room/apartment rental), 40% offered activities for visitors (fishing, hunting, organised walks, *etc.*), 21% had animal-related activities for visitors (riding, taking part in work with animals, petting zoo, *etc.*) and 8% had either a café/restaurant or shop on their premises. In terms of building age, 46% of the buildings used by the businesses originated from the 19th century and 34% from the 20th century onwards. Only about 16% were from the 18th century and 4% from the 17th century or earlier. Concerning building style, 89% were of traditional character, while the rest (11%) were buildings with modern features.

Atmosphere, authenticity, charm and milieu were considered to be the main assets of reutilised ABs in tourism. Concerning disadvantages, functional character, bathroom and kitchen arrangements were mentioned as major problem areas, together with room set-up and heating/energy problems. Almost one-fifth of the respondents considered that reutilised ABs had no disadvantages at all concerning reutilisation in tourism. During the interviews,

personal participation, openness to learn and a jack-of-all-trades approach were observed in all three enterprises. The more rural the landscape character, the more obvious this latter trait became. As was found in Paper III, the nomenclature of sustainability in a building-related context was used interchangeably and sometimes inaccurately.

Personal networks in the building trade and related sectors and long-term relationships with key people (contractors, builders, craftsmen and artists) were found to be of high importance.

Locally, human factors and the social sphere were found to be strongly formed by the local economic conditions and the physical environment. Local authorities were noted to have a closer, often personal, connection to businesses in more rural areas and less ‘visibility’ related pressure was on the owner from the public on *e.g.* material or construction technology choice. Trends and fashions in a building context also seemed to have a lower impact the further away from the cities the enterprise was situated.

Concerning procurement and choice of building materials, all three case study owners emphasised the use of natural, renewable materials that fitted the character and style of traditional buildings and their environment, but also stressed the importance of functionality and a structurally sound construction. Quality and aesthetics were also of major importance in comparison to cost. The most rurally situated enterprise used a number of local materials extensively during the renovation process.

The choice of construction technology and technical solutions in all enterprises was in accordance with the traditional character of the buildings. Concerning the basic construction-related sustainability principles, namely to reuse, refit and recycle, all three interviewees tried to keep as much as possible from the original details and materials of the buildings (*e.g.* fittings, flooring, *etc.*) during the renovation process and all three enterprises used full-scale recycling during the reconstruction process. The importance of resource saving on both the material and energy side was pointed out, this manifesting itself in *e.g.* use of double and triple glazing, use of effective heat-pumps and low energy light bulbs and adequate quantities and quality of insulation used everywhere in the constructions.

The difficulty in meeting the requirements of authorities was frequently brought up during the interviews and this was also pointed out by the answers in the “Bo på lantgård” questionnaires. The most frequently mentioned problematic regulations were concerning building codes, fire-proofing and food-related health and safety rules. The transformations required by these rules and regulations often collided with the owner’s interests in preservation

and brought about radical changes both structurally, in materials and in sense of authenticity and atmosphere.

The personal and professional background of the interviewees was found to be of major importance in forming the sustainability approach of the owners. Education, work experience, world view and also experiences during their upbringing, family traditions or travel experiences had significant influences on how building-related sustainability was approached. This was physically strongly manifested in planning, choice of materials and construction technology, but especially in their whole way of thinking around the reutilised building.

4 DISCUSSION

4.1 Approach, methods and data

Having studied the fields of sustainability, tourism, ABs and the periurban context (Table 9), the findings obtained on these are combined and synthesised in the following discussion. A multifaceted analytical approach is used to analyse the complex area of study in both a physical and a non-physical factorial context.

Table 9. *Study disciplines and scientific fields connected to the subject of the thesis*

Discipline	Scientific field
Agriculture	Tourism studies
Architecture and rural architecture	Management studies
Environmental psychology	Sustainability studies
Spatial and landscape studies	Rural studies

Many previous studies describe important aspects relating to rural buildings and associated tourism activities as shown in Table 10.

Table 10. *Collective table of discourses on aspects relating to rural buildings and associated tourism activities*

Area of discourse	Study
Rural-agricultural buildings and the landscape	Sällvik, 1992; Frazzi <i>et al.</i> , 1996; Ruda, 1998; García <i>et al.</i> , 2003, 2005; Hernández <i>et al.</i> , 2003, 2004; Tassinari <i>et al.</i> , 2007, 2008; Agostini and Cairoli, 2008
Inventories and methodologies	Swedish Association for Building Preservation, 1993; Ayuga <i>et al.</i> , 2000; González <i>et al.</i> , 2006; Arias <i>et al.</i> , 2007; Martínez, 2007; Martínez <i>et al.</i> , 2009
Conservation and reutilisation analyses of these objects	Eriksson <i>et al.</i> , 1985; Ascard, 1991; Aarstrand and Johnsen, 1994; Birkkjær and Pedersen, 1996; Gusman <i>et al.</i> , 1996; Manera <i>et al.</i> , 1996; Van den Berg and Coeterier, 1996; Latham, 2000b; Cañas and Martin, 2004; van der Vaart, 2005; García and Ayuga, 2007; Zavadskas and Antucheviciene, 2007; Ravetz, 2008; Bowen and Matthews, 2010; Swedish Board of Agriculture, 2010
Materials and construction technology	County Administrative Board of Västmanlands <i>et al.</i> , 1984; Werne, 1985; Molén and Bergsjö, 1989; Barup and Edström, 1993; Guerrero <i>et al.</i> , 2005; van Hoof and van Dijken, 2008; Yeang, 2008
Transportation	Banister, 1995; Jacobsen, 2007; Dickinson and Robbins, 2008
Sustainability issues	WCED, 1987; Lane, 1994a; World Tourism Organisation <i>et al.</i> , 1996; Clarke, 1997; Bell and Morse, 1999; Bien, 2003; Baumann and Tillman, 2004; Chafe, 2005; Kernel, 2005; Lordkipanidze <i>et al.</i> , 2005; Agostini, 2007; Leslie, 2007; Fuad-Luke, 2008; Nordic Ecolabelling, 2008a; Ortiz <i>et al.</i> , 2009; International Institute of Sustainable Development, 2010; The Green Key, 2010; World Tourism Organisation, 2010
Different aspects of rural and farm tourism	Crompton, 1979; Cohen, 1988; Evans and Ilbery, 1989; Denman and Denman, 1990, 1993; Evans, 1992; Prentice, 1993; Aronsson, 1994; Bramwell, 1994; Lane, 1994b; McDougal and Munro, 1994; Garcia-Ramon <i>et al.</i> , 1995; Oppermann, 1996; Butler, 1998; Ilbery <i>et al.</i> , 1998; Clarke, 1999; Burger, 2000; Busby and Rendle, 2000; Kneafsey, 2001; Roberts and Hall, 2001; Tyrväinen <i>et al.</i> , 2001; Gössling and Mattson, 2002; Nilsson, 2002; Cánoves <i>et al.</i> , 2004; Gartner, 2004; Pina and Delfa, 2005; Sharpley and Vass, 2006; Albaladejo-Pina and Díaz-Delfa, 2009; Cawley <i>et al.</i> , 2009; Devesa <i>et al.</i> , 2010; Emanuelsson, 2009; Hall <i>et al.</i> , 2009; Blekesaune <i>et al.</i> , 2010; Hughes and Carlsen, 2010; Nielsen <i>et al.</i> , 2010; Pennington and Thomsen, 2010; Raadik <i>et al.</i> , 2010; Usitalo, 2010

These studies covered all significant aspects of tourism in a milieu created by ABs and several of the non-physical characteristics of tourism have also been previously investigated (such as the importance of atmosphere in the work of Heide and Grønhaug (2006)). However, the relationship between owners and visitors and the built environment in rural farm tourism was not examined by

any of the previous works, although several of the human factors (such as demographic characteristics, background, upbringing) themselves were analysed or used in analytical procedures.

The choice of a multi-method approach to tackle such a complex multidisciplinary subject (agricultural building reutilisation) and its interdisciplinary side branch (tourism) was found to be an adequate way of advancement.

The planned structural set-up of the research project, reflected in the construction and structure of the thesis, was to start from below using a wide literature and statistical base, then continue with a narrower questionnaire-based survey method and finish with micro scale case study investigations. This proved to be a successful strategy in coping with the extensive analyses of such a large subject.

Concerning input data for this study on the macro and meta scale, besides relying on the use of accepted data sources, such as national statistical databases (*e.g.* Statistics Sweden), other data mining resources were also used, such as the Swedish 'Farm Holiday' register (Bo på Lantgård Riksförening, 2009). 'Farm Holiday' registers of various countries were used with success by *e.g.* Nilsson (2002), Agostini (2007) and Emanuelsson (2009) in investigating different areas of farm-related tourism and its characteristics.

On the micro data resource level, case study investigations have proven to be a very useful and thorough analytical tool in understanding an interdisciplinary phenomenon, mainly resulting from the use of a combination of qualitative-quantitative research methods and multiple sources of evidence. The statement of Yin (1994) was found to be highly valid, namely that:

'The case study is preferred in examining contemporary events, but when the relevant behaviours cannot be manipulated. ... the case study's unique strength is its ability to deal with a full variety of evidence – documents, artefacts, interviews, and observations – beyond what might be available in the conventional historical study.'

Two parts of the thesis (Papers III and IV) covered such a contemporary phenomenon, sustainability. Unfortunately, the subjectivity of sustainability-related judgments was previously noted in the literature as a weakness. Jacobsen (2007) states that:

'Sustainability is not only a popular but also a vague concept.'

Assessments of sustainability are also reported to be based on personal values considering the appropriateness of change (Lindberg and McCool, 1998).

Empirical sustainability analysis tools exist for certain sectors, *e.g.* the Swedish EcoEffect system (Glaumann and Malmqvist, 2007), the American BEES, the British BREEAM and the Swiss Minergie (Glaumann, 2009) can be used for measuring building sustainability. There are also various tools for measuring the sustainability level of other sectors (*e.g.* tourism enterprises) (Bell and Morse, 1999; Bien, 2003; Nordic Ecolabelling, 2008a, 2008b), but no tools exist to help understand the actual thinking of *e.g.* the owners of RT enterprises, as far as sustainability or approaches to it are concerned. To overcome this problem, in this study non-physical, hard-to-measure, ‘soft’ data (collected via surveys, interviews and personal observations) were matched against physical ‘hard’ evidence, harvested on site by methods such as the Martínez-type validated building inventory method (Martínez, 2007).

4.2 Tourism-related reutilisation of ABs in periurban areas

In analysis of landscape/planning history, Qviström (2010) points out that:

‘Every landscape [such as the periurban as well] is developed under the shadows of former activities and ideals. ... Due to the inertia of the landscape, some decisions materialize long after they have been approved. Therefore if we aim for an understanding of the landscape as a process rather than as a mere scenery, we have to acknowledge this history as a source of knowledge about the future.’

The findings in Papers I describes such historic periurban development. Rapid periurban development has gained momentum in the industrial (Western) world ever since the early 1970s as a result of the drastic changes in historical, geographic, economic, demographic and socio-political drivers. Several authors note similar findings concerning influences and effect of developments, *e.g.* in information and communications technology, transportation, energy systems and agriculture, that shape migration patterns such as urbanisation, suburbanisation and counter-urbanisation (Bryant, 1982; Lindgren, 2003; Castells, 2004; Halfacree, 2004; Mitchell, 2004; Encyclopaedia Britannica Online, 2006b; European Environmental Agency, 2006; Brandt, 2007).

When analysing definitions of the periurban phenomenon and the development of the periurban area, the findings of Caruso (2001) are highly relevant, namely that translations between different languages are inadequate.

Paper I shows that the definitions of differently named but similar types of areas, here including the periurban zone, overlap or can even be used interchangeably. This problem with the nomenclature of various zones was also noted by Choy *et al.* (2008), who provide a long list of terms describing the same periurban phenomenon *e.g.* urban fringe, metropolitan fringe, rural-urban fringe, urban-rural interface, near-urban, pre-urban, exurban or urban hinterland. Periurban areas are therefore a peculiar phenomenon in the spatial context, as they do not have clearly definable edges and as strict sprawl prevention spatial planning alone is unable to hinder the spread of the periurbanisation process. This was underlined at a workshop in 2009, organised by Helsingborg City, dealing with urban-rural related issues such as transportation, sprawl and recreation.

Island-like periurban settlements, far from urban centres and the metropolitan core, as described in Paper I, cannot be easily explained by the conventional physical-spatial approach, as neither the commuting distance nor the built-in density approach explains the relocation of urbanities to such remote locations. When describing the typology of periurbanisation in an Australian context, Choy *et al.* (2008) also acknowledge the existence of such island-like periurban settlements, stating that:

‘...peri-urbanisation can also be distinguished in relation to small discrete urban centres within rural areas well separated from the influences of larger urban metropolitan centres.’

Although the importance of specific influencing factors was shown to have changed throughout history, future periurban ABs will follow similar response patterns to micro and macro influences as did their predecessors, *e.g.* new influences caused by global warming or further technical development such as GMOs or nano-technology.

Lange (1995) analyses the geographical spread of the AB stock and its connection to issues such as demographic, economic and socio-political factors. From our analysis of statistical resources to uncover potential territorial differences, it is clear that population density and main types of economic activity in municipalities (The National Rural Development Agency, 2008; Statistics Sweden, 2011a) can have a strong bearing on the type of use and reutilisation, while climate and other site-specific factors have a significant influence on the choice of construction technology and building material. These findings corroborate findings by Bowen and Matthews (2010). Furthermore, agricultural buildings are much more likely to be used for raw material production purposes in more deeply rural areas than in periurban

zones, where secondary and tertiary sector activities are more significant. Negative population changes show trends of higher rates of building abandonment, while average personal income levels set the level of reutilisation opportunities. These findings in turn are supported by both the stereotypical characterisations of rural and urban areas (OECD, 1994; Carr, 1997; Scott *et al.*, 2007) and the relevant Swedish regional statistics (Statistics Sweden, 2011b).

The periurban area is the arena where the physical entities (agricultural buildings) and their near environment significantly interact with various actors, including individuals and small groups such as owners and visitors (in case of *e.g.* tourism-type use) or authorities such as municipal, regional or national decision-making organisations. This periurban area is a multifunctional space, a place of production, housing and recreation at the same time, in which agricultural buildings in turn fulfil the various demands of user groups (often having conflicting interests) in traditional and non-conventional areas of use.

The findings presented in Paper II point out major differences between the thinking of operators (owners) of tourism enterprises and visitors to these buildings and businesses. Generally the findings showed that socio-demographic variables had only a minor influence on the visitors' way of thinking, as previously reported by Thrane (2009). The dichotomy noted by Nilsson (2002), namely that buildings and the physical environment are viewed differently by operators and visitors, was found to be applicable even to former agricultural buildings of RT, as evidenced by the extreme importance of some factors to given groups (*e.g.* the importance of style/character, atmosphere, function and condition to operators).

The findings of Paper II also confirm the results of Blekesaune *et al.* (2010), in that it is most often females that visit rural tourism operations. Furthermore, this gender group was also found to be more highly represented among the owners of FT operations, in line with previous findings (Nilsson, 2002). This allows females to create 'their own income' and take responsibility for part of the family business.

Findings by Tyrväinen *et al.* (2001) and Blekesaune *et al.* (2010) concerning the importance of environmental conditions in RT enterprises (such as natural beauty, variety of landscape) are partially supported by this study. Visitors showed greatest appreciation for the factor nature/beauty, much more than operators assumed they would, especially female visitors. A possible explanation for the lower score given by the operators relates to the nature of this factor, which lies outside the operators' control (except concerning new establishment or expansion of a business). Nature/beauty is either intrinsically present, *e.g.* in the form of attractive terrain (mountains) and vegetation or

surface water in the vicinity, or measures need to be taken to counterbalance the lack of it. Thus, a strengthening of other areas may counterbalance a lack of nature/beauty in less aesthetically favourable locations.

The fact that visitors were found to focus on the overall atmosphere of the buildings instead of looking at detailed features (Paper II) shows that findings by Kneafsey (2001) and Heide and Grønhaug (2006) are also applicable to the Swedish RT context. However, Latham (2000b) warns of the danger of the ‘Disney effect’ in reutilisation, a rather typical problem with tourism-type reuse, just as ‘beautification’ of ABs is mentioned by van der Vaart (2005) as a potentially dangerous process in *e.g.* reutilisation processes. While analysing rural buildings in relation to their environment, Ruda (1998) also points out the significant difference between the ‘model’ suburban house found in *e.g.* a Hungarian periurban countryside and *e.g.* the converted traditional agricultural building.

The factor ‘atmosphere’ was also found to be an important and recognised factor for operators, as shown in Paper IV. The findings of Papers II-IV either directly (*e.g.* in the questionnaire responses) or indirectly (*e.g.* through explanations by interviewees) show that this factor is recognised as being of major importance. A problem with the opportunity to utilise this factor is pointed out by Heide and Grønhaug (2006), who states that the meaning of the term ‘atmosphere’ is vague and it is often used unconsciously with multiple meanings. This naturally results in difficulties when trying to measure *e.g.* effects of changes such as improvements in the atmosphere at destinations. Of course atmosphere and functionality have to go hand-in-hand for practitioners of tourism in reutilised ABs, an area where Heide and Grønhaug (2006) asks for further research and attention, as it has to provide financial benefits and economic viability. The combining of these two areas, functionality and atmosphere, has never been so important as today, owing to rising energy prices, increasing competition on the market and political and economic pressure to improve energy efficiency. The interviews in the case study investigations confirmed that very many RT operators are facing a crossroads when trying to use ABs for tourism purposes. These include conservation issues and the difficult choice between renovation and reuse with modern materials and technology (resulting in an energy-efficient sustainable construction) or the use of traditional materials and construction technology (providing an authentic result but with lower sustainability attributes). All owners interviewed agreed that to be sustainable it is necessary to use natural and renewable materials and appropriate construction methods in accordance with the character of traditional buildings, but creating safe, energy-efficient and functional constructions. These statements show the same trends as

advocated in the professional literature (Bokalders and Block, 2010). Parallel and seemingly contrasting findings by *e.g.* Ravetz (2008) show that technology development (IT and advanced engineering) is an increasingly important area concerning the future of existing buildings, as regards utilisation. The conclusions of Paper II, namely that it is possible to use high-tech materials and technology (*e.g.* IT-based ventilation and engineering, insulation, *etc.*) in traditional agricultural buildings, as long as the character, style and atmosphere of the building are left untouched, are therefore in line with future building utilisation trends and requirements.

The case study interviews in Paper III and IV unanimously showed the relevance of Urry's (2008) statement, namely the importance of buildings and built tradition as something of a must for a visitor (such as 'see Venice and die'). For visitors, key attractions therefore include farm heritage buildings as well. The buildings used in enterprises were considered by the owners as the most essential assets of the whole RT business. Two of the RT businesses examined have used the history and cultural background of the buildings as a fundamental part of the tourism product and the business concept itself.

Papers III and IV highlight the importance of territorial differences in the form of opportunities and problem areas that tourism entrepreneurs are facing owing to the geographical location of their businesses. A location away from urban centres and periurban areas in itself can be a disadvantage in certain aspects of RT concerning sustainability issues, although amenity-rich areas even far from urban centres were previously found to have high occupancy rates (Oppermann, 1996). Otherwise, these location-related disadvantages include the long distance to be travelled to the destination (*i.e.* the existing customer base), the lack of availability of public and private sector infrastructure (forcing entrepreneurs to extensively use road transport), the available material and human resources and its qualities, the general speed of information flow, the structure of the social contact net and the need to create a wide product range for a broad target group. These are counterbalanced by the abundance of natural resources and availability of space for the enterprise in more rural areas, together with lower land and property prices, as also described by Butler (1998). Papers III and IV showed that the owners of the enterprises did not themselves see sustainability problems as being specially correlated with the location of their businesses. This confirms findings by others stating that as RT complies with slow travel principles, it can be viewed as one of the seeds of sustainable and responsible tourism (Gössling and Mattson, 2002; Fuad-Luke, 2008). On the other hand, territorial differences decide over factors such as closeness to customers and the size of a potential customer pool. In contrast to this, certain factors such as leadership style

(democratic, with authoritative characteristics), business attitude and way of thinking (long-term and goal orientated with preference for qualitative development) and acknowledgement of key factors (service, quality, *etc.*) for a sustainable tourism business showed no territorial differences concerning rural, periurban or urban fringe areas. As Gössling and Mattson (2002) point out in this context, close contacts with customers are central to small hospitality businesses and are an important means to bind clients to the operation, this being true of tourism businesses, independent of location. The owners' focus and preference on qualitative development may be considered a debatable issue. While the findings of Lordkipanidze *et al.* (2005) are supported in Papers III and IV, some other works explain this preference by the need to step on the 'quality treadmill' fuelled by competition (Evans and Ilbery, 1989; Evans, 1992). Papers III and IV do not provide clear support for this latter statement.

In relation to entrepreneurial sustainability, transportation seemed to be a major problem area, as recognised by Papers II, III and IV. Leslie (2007) points out the problematic 'distance' factor in rural tourism in connection to recycling when discussing the environmental performance of RT self-catering accommodation. Several studies of rural tourism transportation problems show an increasingly mobile, highly road transport dependent population and visitor base, causing environmental impacts both on global and local level (Oppermann, 1996; Dickinson and Robbins, 2008). Tourism entrepreneurs were found to be aware of these problems and the characteristics of the transportation situation, as shown in Papers II and III and IV, but they also gave evidence of the inability to counteract the one-sidedness of transportation in rural areas and in their tourism enterprise. The lack of available 'green', economically viable, flexible and proven alternatives was the main obstacle to developing a more sustainable transportation solution in rural tourism enterprises.

The case study subjects all showed characteristics similar to Nilsson's (2002) description of the 'rural caretaker', a function gaining in importance as agriculture ascends from a productivist to a post-productivist state (Ilbery and Bowler, 1998), with diversification (environmental conservation, recreation, *etc.*), pluractivity and value-adding as its mantras.

Garcia-Ramon *et al.* (1995) drew the conclusion that women in RT would become active agents in the conservation of traditional, agricultural and scenic landscapes through tourism. Several other studies have also listed advantages concerning female participation and work availability in connection to RT (Busby and Rendle, 2000; Nilsson, 2002). All three enterprises examined here showed signs of this and had more female than male employees, in

environments where job opportunities mainly exist in traditionally male professional sectors. Gender issues therefore were found to follow previously described patterns of RT.

Small RT enterprises and their owners were found to be highly visible in local communities and are focus points of central social life and interaction. Because of these, they can serve as good examples to other local businesses in management practices, concerning sustainability related measures and also in changing the rural population's traditionally rather conservative attitude, an ongoing process that has been already described as part of the rural restructuring process (Butler, 1998; Ilbery, 1998). These enterprise owners also know their near environment, its economy and the socio-cultural background of the local community well, and therefore can work as a spark for increasing local small business development and entrepreneurialism, as also noted by Lordkipanidze *et al.* (2005).

5 CONCLUSIONS

5.1 Research findings

Agricultural buildings are an important asset, as they are a fundamental part of the economy in rural and periurban areas and also a non-physical image creator of the countryside. Through their utilisation and reutilisation, ABs influence rural society, its values and history. Besides the conventional, mainly primary production uses of ABs, new forms of reutilisation have surfaced, such as in the secondary and tertiary sector, including tourism.

The primary focus internationally to date has been to create inventories and trajectories of conservation. Although some previous studies have analysed the opportunities for AB reutilisation, this thesis is the first in-depth analysis of AB reutilisation in tourism, its actors and its relative sustainability in a territorially-spatially bound context, while focusing on AB owners and visitors. The main findings in this thesis are:

- Existing definitions of periurban are inaccurately translated from one language to another and the definitions often overlap. Rural ‘trapped areas’ close to cities are considered only as future grounds for urbanisation, while islands of periurban settlements in the rural hinterland are unaccounted for. The possible definitions are not fully utilised by the most common physical-spatial defining approach, as non-physical characteristics must be included (Paper I).
- Rural tourism operators often misinterpret how visitors view and experience reused buildings and the services therein. A comparison of aggregated tourism-related and building-related factors showed that operators and visitors both considered building-related factors to be of significantly high importance. Operators correctly believed that visitors view ‘atmosphere’

and ‘style/character’ as most important factors. Visitors found building technological factors to be less important (Paper II).

- A more rural character resulted in both disadvantages (*e.g.* availability of transportation, infrastructure, the necessity to accommodate a broad target group) and advantages (*e.g.* abundance of natural resources and space, lower land and property prices). However owners’ way of thinking and efforts to create a sustainable business showed similar patterns, irrespective of the actual location of the operation. Holistic thinking, management style, quality of service and personal relations were cornerstones of sustainable operations. A caretaker role was a key factor in reusing ABs. Approaches to sustainability differed depending on the owner’s personality, lifestyle and background (Paper III).
- Operators are clearly aware of the advantages and disadvantages of AB when reutilising these in tourism. Although sustainability was a subjective term to many operators surveyed, choice of building material and construction technology was most often according to sustainability principles. Education, personal background, upbringing and interests, work experience and world view of the owner were of main importance in how building-related sustainability was approached. Drastic changes while reutilising ABs, where absolutely necessary (*i.e.* in engineering, *etc.*), were found to be acceptable to operators as long as attempts were made to fulfil the criteria of modernity and the authorities, but in a creative and well-planned way, thereby avoiding loss of value or building information and ensuring sustainable reutilisation. There were also territorial differences, mainly resulting from differences in local society formed by environmental and economic factors (Paper IV).

5.2 Research implications

The multi-methodological approach proved to be an effective way to study the reutilisation of ABs in tourism, a subject area where physical, measurable entities and non-physical, human factors had to be examined in a united perspective. The wide range of evidence, collected from statistical sources, questionnaire-based surveys and complex case study investigations, provided data with high validity and reliability. Combining data from these various sources and the mixture of processing methods used produced findings that would not have been possible with the use of *e.g.* a single, conventional research method.

Reutilisation of ABs and related fields in a Scandinavian periurban and rural context is an under-researched area in comparison with *e.g.* urban

building and architectural studies. A better understanding of the spatial connectedness of AB reutilisation is therefore required that can provide important areas for future research. More research is also needed on ABs and the interaction between humans and the built environment in tourism, as these areas are not well understood but are of major importance from many aspects.

Last but not least, the methodology of studying multidisciplinary and interdisciplinary subjects has to be further developed and standardised to fulfil the criteria of future academic research.

5.3 Practical implications

The theoretical knowledge gained from this thesis provides a foundation for a new research approach where non-physical and physical subjects and their interactions are examined jointly, in a reliable and repeatable way. This novel approach provides a new point of entry into understanding practical questions concerning ABs in a spatial context and into tourism studies concerning visitor preferences and operator viewpoints.

The main practical implication of the thesis is that visitors appreciate the atmosphere and style of ABs reutilised in tourism but find construction and materials of minor interest and importance. This provides operators with a practical guideline in rebuilding and renovating their ABs for tourism in a more environmentally friendly and energy-efficient way, by allowing the use of high tech materials and technology while keeping the traditional appearance and thereby the atmosphere and style of the constructions.

Based on the findings, it is also possible to create practical management guidelines for improving the sustainability of reutilised ABs and their use in tourism, *e.g.* through advanced maintenance practices or building-related functional arrangements. Because of the better understanding of visitors' building preferences provided by this thesis, it is possible to develop new, more efficient ways of use, RT marketing and conservation.

The better understanding of spatial issues and their influences on AB reutilisation in tourism may help improve locally anchored sustainable development strategies for ABs and assist authorities to better address problems concerning owners, conservation and utilisation.

6 FUTURE RESEARCH

The research community and practitioners could benefit from further studying the issues discussed in Papers II, III and IV. A new extended study based on a larger, more international sample and using a comparative approach with the focus on building and human factors could unveil information of fundamental importance for a proper understanding of the physical environment in a tourism context. In addition, as the operators surveyed here emphasised the importance of service quality and hospitality as major success factors, future research could include these in the scope of investigations.

In such a study, international visitors, operators, authorities and policy-makers could all be surveyed. As tourism is the fastest developing economic sector in the world and also in a Scandinavian context, it can have serious future implications for sustainability as regards the countryside, reutilised agricultural infrastructure and the attitudes of people owning and using these.

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