



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Gerhard K. Heilig

International Institute for Applied Systems Analysis,
Schlossplatz 1, A-2361 Laxenburg, Austria
e-mail: heilig@iiasa.ac.at

Information society and the countryside: can *internet-based* systems bring income alternatives to rural areas?

Abstract: *The paper reviews seven types of Internet-based technologies and services that may be especially suitable for rural areas. Its main focus is to analyze, which of these applications could promote rural development and prevent further economic and socio-demographic decline in peripheral rural areas. In particular, we will analyze whether these technologies have the potential to create income alternatives for the rural population. The paper also criticizes the current rural development policy of the European Union, which is heavily biased towards the agro-environmental measures, largely ignoring the potential of Internet-based businesses and services for rural job creation.*

Key words: *rural development, information technology, internet, tele-work.*

Introduction

Today, rural areas in Europe are often in deep structural crisis. In many regions with less favorable climate, poor soils, or large distance to markets, the economic situation has been deteriorating for decades. *Peripheral* rural areas are suffering in particular. Agricultural income stagnated or even declined – despite heavy subsidies for the agricultural sector. At the same time, the agricultural labor market is shrinking in most parts of Europe. Income alternatives to agriculture and forestry, however, have remained rather limited. Consequently, young people often moved away from these rural areas for higher education and in search for better income opportunities. In many rural areas, the population has been stagnating or even declining. As our demographic analyses have shown (Heilig 2002), we must even expect a population *collapse* in some of the (more peripheral) rural parts of Europe during the next decades. Almost everywhere, the rural population has been aging rapidly – because of out-migration of young people, but also due to *extremely* low levels of fertility. Today, the average number of children in rural areas is typically *lower* than the average number of children in urban areas – such as is the case in Germany.

Economic stagnation and intrinsic population decline have frequently led to a reduction or downgrading of public and commercial infrastructure, such as postal services, public transport, road networks, or supermarkets. In a vicious circle, these trends further accelerated the out-migration of young people and further deterioration of social and cultural life. Contrary to public declamations of politicians, rural life in Europe is often boring, economically unattractive, and detached from the cultural, social, and economic vitality of urban areas and larger cities. It is therefore of paramount importance for a successful rural development to identify new ideas of how the rural economy could be revitalized. Mostly, these new economic initiatives will be outside the traditional sectors of agriculture and forestry.

It was often suggested that the Internet might play an important role in rural development. A number of projects had been implemented in the recent decade, but the high-flying expectations seldom materialized. The services and products, which were typically developed by techno-enthusiasts from the information technology (IT) and computer industry, had often little practical relevance for rural everyday life. In the late 1990s the European Union funded a number of *rural* IT projects through its “Esprit” program. Descriptions of these projects can be downloaded from the Community Research and Development Information Service (CORDIS) web site (<http://dbs.cordis.lu>). With all due respect, it has to be said that many of these projects were rather academic and conceptual in their approach. In most cases, we were not able to find any follow-up activities, such as actual implementation and commercial operation of the suggested telematic services. Apparently, many of these projects evaporated into thin air, as soon as the initial funding from the European Union had stopped.

In the present paper, we will analyze some widely discussed Internet services and products that might be especially relevant for rural areas, though not from a technological point of view, but from the perspective of rural development. In other words, we will discuss the *social, cultural, and economic potential* of these Internet technologies for rural areas.

Social, cultural, and economic potential of Internet services in rural areas

There are widespread expectations that modern information technology, particularly the Internet, could play an important role in rural development. However, as recent failures indicate, it is necessary to identify and select only those technologies and services that actually improve living conditions in the rural areas and are socially and culturally acceptable.

In principle, seven types of IT services in connection with the Internet seem to be relevant for the countryside:

1. **Systems in the (rural) tourist industry** for information, promotion, and easy booking (especially relevant for farm and winter tourism).

2. Various systems for **tele-working** (including services and applications for widely distributed or *mobile* tele-workers, tele-commuters, rural tele-centers, or tele-“cottages”).
3. **E-marketing** for farmers and small and medium enterprises (SMEs). This includes e-shops for direct marketing of (organically produced) food, but also e-shops specialized in cloths, handicrafts, and art objects, which are authentic for the area.
4. **Business-to-business solutions and logistics systems.** This includes e-trade platforms for farmers and small and medium enterprises (SMEs) and systems for tracking the safety of the food chain.
5. **Distance learning** applications, including applications for vocational training, higher education and university education.
6. **E-administration and online public services**, such as online permissions, certificates, applications to the local and regional political administration.
7. **Virtual communities** for the rural society, such as chat rooms and other services that specifically focus on the *social, cultural, and economic* interests of people living in the countryside. These virtual communities are typically organized through specialized *rural Internet portals*, which are often operated by farmers associations, rural grass-roots initiatives, and environmental or political activists.

We will now evaluate these Internet applications from the perspective of rural development by trying to answer the following analytical questions.

- a) Which of these applications could really provide **income alternatives** to the rural populations outside agriculture and forestry?
- b) Which application would make rural life more attractive to young people?
- c) Which Internet services can meet **existing demands**?
- d) Are there Internet technologies and applications that could **reverse the widespread trend of rural-urban migration**?

E-Tourism

The Internet is certainly *essential* for one of the most important alternatives to agriculture and forestry – namely the tourist sector in rural areas. Reservation, booking and customer information is rapidly switching from the conventional travel bureaus to Internet-based services. This is not only the case for the large-scale tourist industry. Today, even small farmers use the Internet very efficiently to attract visitors to their “holiday on the farm” programs. In Austria, for instance, you can book small mountain cabins from alpine farmers in Carylthia directly through the Internet (see for instance: <http://www.urlaubaufederalm.com/Leebhuetten.htm>).

The Internet has three *fundamental* advantages for people, who are unsure where to spend their vacation: a) They can easily *search* offers from a specific region and immediately compare facilities, prices, and other aspects. Most tourist busi-

nesses now have photos of their facilities and environment on the Internet. b) Potential customers can look for a vacation *at home*, whenever they have time (this is a clear advantage in those European countries such as Germany or Austria that still have absurdly strict regulations concerning the opening hours of travel agents). c) Potential customers can *directly contact* the tourist business without having to go through a travel agent (which might save costs).

The Internet is an excellent advertising and booking tool for farmers trying to get into tourism. With a fraction of the cost of other marketing tools (such as catalogues, trade shows, etc.), they can advertise their facilities to a very wide audience. In Austria, we have seen the emergence of a significant number of small regional Internet providers and web design businesses, which provide services to the rural tourism sector, including farm-based businesses. While these small IT businesses in rural areas cannot create a large number of jobs, they can provide possibilities for highly qualified young people, who previously moved away to a city.

E-Work

There can be no doubt that the Internet will change the way we work – not only in the tourist industry. In a knowledge-based economy, *everyone* will eventually use the Internet and other information technologies. The Internet provides a broad range of possibilities for companies to re-organize the workflow. Various forms of telework will become more common, as companies and employees find out about the advantages. Of course, not every business and every employee would benefit from tele-work. There are certainly business processes that require a team working in face-to-face interaction in a shared office space. Many people also prefer *direct* human interaction during working hours. But we also know that people would be happy to work 2 or 3 days *at home* in order to avoid the usual traffic disaster in our cities or to be close to their small children. There is also the group of mobile tele-workers, such as insurance and real estate agents or service mechanics, who drive around the whole day to their customers, connected by cellular phone (and in the future perhaps mobile Internet) to their base office.

In recent decades, an interesting shift in rural employment can be observed in some parts of Europe: a significant increase of service-sector employment. Actually, two thirds of the *new* jobs in these rural areas have been in the service sector. Surprisingly, these include many highly qualified positions in financial services, the IT industry, in architecture, research and engineering. Apparently, the development is triggered by a new trend of *long-range* sub-urbanization, where *highly qualified* urban professionals move into prosperous *rural* tourist and recreation areas. The trend can be observed in large parts of Bavaria's rural areas south of Munich (particularly around the Starnberger and Ammer lakes), where the executives and managers of Munich's high-tech industry often have their luxurious homes in rather exclusive "villages" (which only 20 years ago

were dominated by farmers). Similar areas can be found around most European capitals.

However, there are also former agricultural areas relatively far away from large cities, which have become extended “rural leisure and recreation parks” for high-tech professionals, wealthy pensioners and those, who do not have to work for a living. The region of Tuscany, and large areas around Lago di Garda are examples. In these areas, one can find numerous exclusive restaurants, golf courses, shopping centers and other facilities for the wealthy inhabitants (which need large numbers of service personnel). These facilities are not only for tourists from the outside, but also for the growing number of *permanent* wealthy inhabitants who have retired from the stress of city life.

These *prosperous* rural areas have become the European equivalents to the recreational and retirement zones in Florida, USA, which had also been farmland before the wealthy people from the cities in the North decided to spend their retirement there. In these new “rural” areas, the Internet obviously plays an important role. It links the wealthy inhabitants to their businesses – which are usually still in the bigger cities. Those, who are still active can often afford to work from home or drive to the city just once or twice a week to supervise the operation of their business. This new type of rural development through rich migrants may be limited to only a few, most attractive, rural areas; but it has significant implications for the rural world in general. These migrants bring fresh ideas, talent, and new perspectives to the rural world, which is often deadlocked in its development concepts on agriculture and forestry.

E-Marketing

There is also the idea that the Internet might be used by farmers (or networks of farmers) for direct marketing of their products (e-marketing). This would be a welcome step upward in the value chain for the farmer. The idea is to sell *processed* farm products such as cheese or sausages and thus achieve higher income than from selling milk to a dairy or pigs to the slaughterhouse. In theory, this appears to be a promising concept for improving farmer’s income. There are a few hundred *million* people on the Internet and if only a *tiny fraction* of them would order the products of a particular farmer, he or she could make a fortune. Unfortunately, this is a *naïve* idea. In practice, such Internet business often ends in a disaster.

The first problem is that production of primary products and processing of food are two tasks, which have been separated in modern societies for good reasons. The hygienic standard of a farm usually conflicts with the cleanness requirements in food processing (it is hard to guarantee sterile conditions when flies are buzzing all over the place). The investment necessary to guarantee hygienic food processing can be substantial. With small amounts of processed food, it is also usually impossible to undertake expensive laboratory tests of the finished

product for ensuring stable food quality and security. Finally, it is extremely *labor-intensive* to process food at the farm level. With small production amounts, one cannot invest much in labor-saving machinery. Farmers, who have started such farm businesses, are frequently complaining about the self-exploitation of the whole family for a small additional income.

The idea that there is a huge potential market of Internet users is also misleading. First, few food products can be mailed over long distances (an exception may be dried spices or mushrooms, honey, and certain types of sausages). There is also the problem of export regulations, which are quite strict for food items. For a farmer (or even a small network of farmers), this typically restricts the market to EU countries, because they do not have the capacity to take care of all export regulations and requirements. The most serious obstacle of e-commerce in the food sector, however, is the reservation of potential customers to buy food from a computer monitor. Most people like to buy food only if they can smell it, touch it, and taste it. Just watch, what people typically do on the vegetable and fruit stand of a supermarket. Even very powerful retail chains in Germany (Karstadt) have not managed to make e-commerce of food items a successful business. It may be possible to sell books, T-shirts, or movies over the Internet – but not (fresh) food. Only very few food products (such as very specific types of tea, spice) may be suitable for e-marketing.

E-Business solutions

In the early years of the Internet, many high-tech advocates promoted the idea of using this technology to establish *electronic trading places* for a broad range of products. Several businesses tried to convince farmers that it would be an advantage to trade grain, livestock and other agricultural products on their electronic exchange. For instance, the company AgraLink Exchange, a Canadian Internet business, introduced an e-trading platform for grain in 1997. In the meantime, they had to close down the operation due to a lack of interest among the farm community. On their web page, one can find the following statement: *“In spite of our successes on other industries, agriculture has not shown an interest in electronic trade. This is evidenced by the many failures of agriculturally oriented, web-based trading systems in the past year. Due to the low volume of transactions on our electronic grain exchange AgraLink has decided to cease operations of our marketplace.”* (www.agralink.ca)

This is certainly typical for many *agriculture*-related Internet applications. Only few (very large) farmers can organize their farm like an industrial enterprise. For the great majority of small to medium scale farms, which are typical for Europe, it is not worth the effort to implement and test new solutions that might *or might not* provide economic benefits.

The supply chain of farms concerning seeds, fertilizers, fuel and other inputs, is the long established business of specialized, often cooperatively functioning

organizations, which leave little room for Internet start-ups trying to take away their business. In Europe, most farms are too small to invest into business-to-business Internet solutions.

There are also plans to use Internet technology for controlling the integrity of the food chain – in particular to track livestock from its birth on a farm until its end as a piece of meat on a consumer's table. When BSE and other food scandals frightened consumers all over Europe, people certainly wanted to know *exactly*, where the particular pig or cow was raised, fed, and slaughtered, from which they bought a piece of meat in the supermarket. However, potential investors should think twice, before implementing costly tracking systems that might please only a small minority of consumers. Today, many customers are obviously more concerned with *price* than with quality and tend to buy very cheap meat and sausages in no-name packages from discounters.

However, other businesses in rural areas might use the Internet for business-to-business interactions. Especially in the tourist and recreation sector, we find larger companies that can use Internet technology for purchasing supplies and simplifying payment.

E-Learning

In recent years, many schools and universities enthusiastically adopted the idea of e-learning. Even very famous universities in the United States have started ambitious web sites with numerous courses for distance learning. In Germany, a Distance University (“Fernuniversität Hagen”) has transformed its complete curriculum into online courses and created a “virtual study center” (for details see: <https://vu.fernuni-hagen.de/>). And the European Union has spent millions of Euros to promote the concept of distance learning and support development of e-learning applications in its 5th and 6th Research Framework Programs. Could this technology help (remote) rural areas in Europe to better develop? Could e-learning provide better living conditions for young people in the countryside?

Study courses on the Internet have two great advantages: the student can work at home and choose the time for learning. The Internet (in theory) also provides a broader range of possibilities for improving the teaching materials (multi-media, video, simulation tools, etc.). Most students in distance learning programs are adults, who want to upgrade their school or university degree. The same group previously went to evening schools. While distance learning is certainly an excellent opportunity for this group of students, the advantage for students from rural areas is less obvious. Young people in rural areas typically welcome the opportunity to leave their village for a higher school or university (at least those, who have the ambition for higher education). It is an opportunity for them to meet new people and “see the world”.

E-learning was also discussed as a possibility of compensating for the consequences of population decline in rural areas. Due to the drastic birth decline in recent years, many schools in rural areas had to be closed down. Now the students are collected by buses for larger more distant school centers. Could distance learning help those children? Probably it cannot! Education – especially of children – is a *social* process. It requires face-to-face communication and interaction with other children and teachers. The idea of replacing teachers and school friends with a web page contradicts everything we know about the socio-cognitive interaction process of learning. It would be a pedagogical nightmare comparable only to the abstruse arguments in the early times of television, which promoted TV as a “tool for learning” (while in reality it is probably the best device for transforming children into passive receptors of sensory overload).

Children need to be motivated, supported and (sometimes) corrected for a successful learning experience. This can be only provided by sensitive human interaction. There is also overwhelming evidence from cognitive research that *physical activity* greatly promotes learning processes among children – an experience, which is really not encouraged in front of a computer monitor (Sibley and Etnier 2003; Keays and Allison 1995). E-learning, no matter how sophisticated the application may be, can never replace essential *human* elements in the learning process.

E-Administration

This is a field, where rural areas could certainly benefit from the Internet revolution. Rural citizens frequently complain that they are discriminated by the public administration, which is usually located in the bigger cities or provincial capitals. They often have to spend hours and travel long distances for getting permissions, certificates, legal documents and other administrative service products. Especially rural areas that have experienced population decline have frequently seen a reduction of public offices and services in recent years. In those cases, the Internet can be an excellent tool for actually improving (local) government services even in thinly populated rural areas. Some *regional* governments in Europe have started to develop *extensive* web sites, which provide a plethora of information sources and numerous interactive tools for getting permissions, subsidies, legal documents, addresses and many other items. A good example is the official web site of the Lower Austrian government, which is responsible for a primarily rural area with about 1.5 million inhabitants (see: <http://www.noel.gv.at/Homepage/>). One can find detailed documents, legal forms, and administrative regulations – essentially everything that a citizen might need from the regional government.

These web sites are excellent for the rural population, because they typically combine all relevant administrative information in one place, which can be easily accessed from home. They also typically include information and access to

several administrative branches – so people do not have to travel to offices in different places.

The Internet can also significantly reduce the costs of the public administration, once the initial investments into the technology and the associated reorganization of administrative procedures have been made.

E-Communities

In recent years, rural sociologists and activists of non-governmental organizations (NGOs) have promoted the idea of using the Internet to increase social cohesion in the countryside by establishing *virtual* communities. In fact, the Internet may be an excellent tool for the civil society to organize itself. Interest groups can easily coordinate their actions or exchange information through the Internet. Virtual communities are typically organized through specialized *rural* or agricultural **Internet portals**, which are often operated by farmers association, rural grass-roots initiatives, and environmental or political activists. These portals often try to provide a broad range of targeted information and services, such as *regional* weather forecasts, producer price information for farmers, information on EU regulations and subsidies, information on local cultural events, etc. For instance, English and French farmer organizations have used the Internet to coordinate demonstrations against government decisions or against Brussels' policies.

In 2001 and 2002, the IIASA European Rural Development (ERD) project conducted case studies, in which we asked rural entrepreneurs (both from the agricultural and non-agricultural sector) if they have ever benefited in their business from using the Internet. The results were disappointing. One Austrian farmer, for instance, told us that he spent *several evenings* trying to find information on the “optimal treatment of manure” on the Internet. He was quite enthusiastic about the possibility to easily *search* for specific information, but was more than disappointed, when he found nothing useful. The documents were either too specific (such as scientific papers on manure treatment from universities) or too general for practical application on his farm. He told us that he finally got the information by contacting a fellow farmer in a neighboring village, who had the same problem.

This example illustrates a general observation: the *content* on web sites of rural associations is often quite poor or otherwise inappropriate. One can typically find only addresses and rather general (administrative or legal) information. What is really missing is a web site that would provide *hands-on, practical suggestions* for improving farm operations or for starting a new rural business. In the United States of America web sites of farmer's organizations or rural interest groups are much better than in Europe. There one can find numerous detailed hints and suggestions for farmers and rural businesses on how to improve opera-

tions. These Internet-based “extension services” are provided by the US Department of Agriculture, but also by numerous local or regional organizations.

The Internet can only become useful for various groups of the rural society and economy if rural web sites become *much* better. They must provide useful *content* – and not just graphics and superfluous information.

Some Data

So far, we have discussed Internet-based systems and services in Europe’s rural areas based on anecdotal evidence. Now it is time to check some statistical data. Unfortunately, we were not very successful in our search for hard facts. While we could find sufficient statistical material on the *overall* penetration of information and communication technology, there is almost nothing available for *rural* areas. For instance, the voluminous Status Report on European Telework (*European Telework Online* 1999) does not include a single table or chart, which would provide the number of tele-workers by place of rural or urban residence. All we could find were *national averages*. This is rather strange, because we have to assume that a significant proportion of teleworkers live in rural areas or at least in the rural fringe of urban areas. However, we found some statistical material that provides insight into the structure of Internet-based products and services, which we can use to evaluate the potential of the various applications.

Table 1 provides data on e-business in selected OECD countries for the year 2000. The United States of America was leading, by far, in Business-to-Customer (the so-called B2C) transactions. The overall volume in B2C transactions (that is customers buying from e-shops) was 25.8 billion US\$; for comparison: electronic purchases of German customers amounted to 1.2 billion US\$ (*OECD* 2001, p. 51). In 2000, 16% of the working-age population in the USA were Internet shoppers; in Germany it was only 5% and in Italy only 1%. Some 27% of Internet users in the US have at least once bought from an Internet shop; in Germany and Italy it was only 17% and 7%, respectively. In the US almost 20 million people bought in Internet shops, in Germany it was just 1.4 million and in Italy only 360 thousand. This clearly indicates that in 2000 Europe was far behind in Internet commerce. We could not find hard data on e-commerce in Eastern Europe, but very likely, it was even less developed – actually non-existent (*The Center for Democracy & Technology* 2001).

In Table 2, we have used data from Forrester Research, which is a US-based IT market research firm that produced e-commerce forecasts (cited from *OECD* 2001, p.67). It shows the maximum expected market penetration of e-commerce for selected product groups, based on household surveys in the United States of America. According to these projections, 50% of computer software will be bought over the Internet, some 44% of computer hardware, and some 25% of music (CDs or MPEG files). It is interesting that the lowest expected market penetration of e-commerce will be in the food and beverage sector: Forrester

Table 1. Business-to-consumer e-commerce indicator in selected countries for 2000

	Number of Internet Shoppers			Value of Transactions (US\$ million)	Penetration of Retail Sales (in %)
	thousands	as percentage of Internet users	as percentage of working-age population		
United States	19 666	27	16	25 845	1.0
Japan		20	6	7 644	0.3
Germany	1 370	17	5	1 199	0.3
France	310	7	2	345	0.1
Italy	360	7	1	194	0.1
United Kingdom	970	18	5	1 040	0.4
Canada	811	12	4	774	0.3
Australia	1 335	10	4	380	0.4
Austria	120	13	2.2	96	0.2
Belgium	90	11	3	82	0.2
Denmark	90	16	9	193	0.2
Finland	160	10	4.7	51	0.2
Greece	30	11	0.4	–	–
Ireland	40	13	1.6	–	–
Korea	2 140	15	7.7	1 008	1.0
Netherlands	320	12	5	182	0.3
Norway	100	19	11	61	0.3
Portugal /1	50	10	1	–	–
Spain /1	220	7	1	70	0.1
Sweden	260	10	4.6	232	0.7
Switzerland	130	12	2.7	127	0.3

/1 Portugal and Spain have been combined in the total transaction value and penetration rate of online sales.

Source: Extracted and adjusted from: OECD, 2001, p. 51

Original Sources:

OECD based on various sources including OECD, 2000, Economic Outlook 67, June Paris

E-Commerce Promotion Council of Japan (ECOM), 2001, Market Research on Electronic Commerce 2000

Australian Bureau of Statistics, 2000, Use of the Internet by Householders, 8147.0

Australian National Office for the Information Economy, 2001, Current State of Play, November 2000

NUA (2000): NUA Internet Surveys. Various Issues.

Taylor Nelson Sofres, 2000: Global e-Commerce Report, Taylor Nelson Sofres Interactive, July 2000

National Korean Computerization Agency (NCA) and Ministry of Information and Communication (MIC), (2000):

2000 Korea Internet White Paper, October, 2000.

Research thinks that only 7% of food and beverages will be eventually bought over the Internet (and this percentage will only be reached in 2009). This is a clear message that farmers should not be too optimistic about their possibilities of using the Internet for direct marketing.

Table 2. Expected uptake of e-commerce in selected product groups in the USA

	Maximum Expected Penetration	Year of Expected Maximum Uptake
Software	50	2003
Computer Hardware	44	2004
Music	25	2004
Apparel	17	2009
Event tickets	17	2005
Books	16	2004
Health & Beauty	16	2006
Flowers	14	2004
Toys	14	2006
Consumer Electronics	13	2006
Appliances	12	2003
Photo & Film	10	2005
Food & Beverages	7	2009

Source: Extracted and adjusted from: OECD, 2001, p. 67.

Original Source: Forrester Research, 1999.

While B2C e-commerce is still in its infancy, telework has certainly taken off. Table 3 provides statistics from the Status Report on European Telework (*European Telework Online* 1999, p. 29). According to these statistics more than 8% of the labor force in Scandinavia were teleworkers – the majority (65%) home-based, some 20% self-employed, and roughly 30% mobile (please note that there is an overlap, because teleworkers can be classified in two or three categories). In Germany and Austria only 4.4% of the labor force can be classified as teleworkers – with a relatively large percentage of them self-employed. In Spain, Portugal and Greece, teleworkers are less than 2% of the labor force.

Table 3. Types of Teleworkers by selected European regions, 1999

	Teleworkers as Percentage of Workforce /1	Percentage split between type of telework			
		Home-based	Self-employed in SoHos /2	Mobile	Multiple types (Overlap)
Scandinavia	8.2	65	20	30	15
Benelux	7.5	49	27	51	26
United Kingdom / Ireland	4.6	50	19	44	12
Germany / Austria	4.4	35	34	33	3
France / Italy	2.6	54	12	42	8
Spain / Portugal / Greece	1.9	63	12	25	0
European Union (15)	4.0	49	23	38	10

/1 Excluding supplementary home-based telework of employed persons of less than 1 day per week.

2/ SoHo: Small Office/Home Office.

Source: Extracted and adjusted from: European Telework Online (1999), p. 29.

Discussion and Recommendation

Political and academic discussions of rural development in Europe very rarely take into account the dimension of modern information technology. For instance, in a detailed Synthesis Report on the Nature of Rural Development in Europe, the term “Internet” or “information technology” does not appear *once* (Baldock et al. 2001). Another example: the European Commission has a Directorate General on the “Information Society”. However in its vast website we could, find very little on the topic of information technology *in rural areas*. One of the few specific documents is a brief draft on “Information Society as Key Enabler for Rural Development and Integration” (European Commission 1999). Unfortunately, the document includes very little substantial discussion of the problems and opportunities of information technology in rural areas – it is primarily a collection of general policy statements and references to related EU programs.

Even more disappointing are the “rural development” documents from the EU Directorate General of Agriculture (see: http://europa.eu.int/comm/agriculture/rur/index_en.htm and http://europa.eu.int/comm/agriculture/rur/publi/index_en.htm) One would expect to find at least some specific material concerning the relevance of modern information technology for rural development. But a search of available documents yielded almost nothing. For instance, the Rural Development section of the EU web site prominently displays a Fact Sheet on “CAP Reform: Rural Development”, which gives an overview of the Commission’s Rural Development policies. The term “Internet” does not appear in that document, neither the term “information technology”. The same situation we found in a document on “Mountain areas and rural development” – not one word about the Internet or modern information technology (maybe the authors of this document should, for a change, search the Internet to find *hundreds* of farmers, advertising their mountain cabins for tourists). The main “Working Document” of the European Commission’s Directorate General for Agriculture on “Rural Development” (July 1997) includes a short paragraph about Information Technology. In a 74-page document, however, we would have expected a little more than just a few lines on that important topic. Finally, we checked the 2001 Report on “The Agricultural Situation in the European Union” (published in 2002). There is a short section on Information and Communication Technology (ICT), but it primarily deals with systems implemented by the EU Commission to monitor and check and manage subsidies and other CAP measures in the agricultural sector or improve statistical reporting.

We found it rather surprising that all these EU documents are talking about *RURAL* Development, while, in fact, they almost exclusively deal with *agro-environmental* measures, processing and marketing of *agricultural* products and the social and economic conditions of *farmers*. This clearly illustrates the strong emphasis on agriculture of those responsible for the EU’s rural development programs. Rural development is still seen as predominantly agriculture- and environment-related. However, this approach ignores the reality in many

rural areas of Europe, were high-tech businesses, specialized health services, recreation facilities, tourism, and many other *non*-agricultural businesses are already dominating.

Information technology, and in particular the Internet, has become one of the fundamental driving forces of global economic modernization – today still primarily in the urban-industrial world, but also in a few rural areas – particularly those that live from tourism. While rural areas (particularly in Central and Eastern Europe) still lag behind in Internet use (*The Center for Democracy & Technology* 2001; Stenberg, et al. 1997), this will certainly change during the next few years, as more and more businesses begin to understand the advantages of this technology. In the US, many farmers already use the Internet for e-mail, for accessing (producer-) price information or weather forecasts, for advertising their farm-tourism facilities or for getting information about improved production methods, commodity markets, subsidies and farm regulations. In 1999, some 29% of all US farms had Internet access, and 43% of those with sales of over \$ 100,000 (Stenberg 2000).

This paper suggests that much more attention should be given to *Internet-related initiatives in rural development*. Despite some high-flying ideas in the 1990s that did not result in economically viable solutions, Internet business is far from dead. We are now seeing the first large-scale Business-To-Customer (B2C) operations becoming profitable (such as AMAZON, e-bay, etc.), while Business-To-Business (B2B) Internet solutions are already dominating in many industries. New information technologies will be introduced shortly; such as a new wave of high-bandwidth telecom services (UMTS), which will greatly expand possibilities for *mobile* Internet-based, multi-media services. The people in rural areas cannot afford to ignore all this and nurture dreams of a traditional agricultural world dominated by farming. As the diversification in the rural economy continues, Internet-related services will become increasingly important.

If we want to keep (young) people interested in the rural world, we have to actively develop those economic sectors and technologies that will create the (rural) jobs of tomorrow – and not the highly subsidized jobs of the past.

References

- Baldock D., Dwyer J., Lowe P., Petersen J.E. and Ward N., 2001, *The nature of rural development: towards a sustainable integrated rural policy in Europe*, A Ten-Nation Scoping Study for WWF and the GB Countryside Agencies (Countryside Agency, Countryside Council for Wales, English Nature and Scottish Natural Heritage).
- European Commission, Directorate General for Agriculture, 1999, CAP reform: rural development, Fact Sheet: 08/1999.

- European Telework Online*, 1999, Status Report on European Telework: New Methods of Work 1999, AC990518 (online available at <http://www.eto.org.uk>).
- Heilig G. K., 2002, *Multifunctionality of Landscapes and Ecosystem Services with Respect to Rural Development*, [in:] Helming K., Wiggering H. (eds.), *Sustainable Development of Multifunctional Landscapes*, Berlin, New York, Springer Verlag).
- Keays J.J., Allison K.R., 1995, *The Effects of Regular Moderate to Vigorous Physical Activity on Student Outcomes: A Review*, Canadian Journal of Public Health, 86, 1.
- OECD, 2001, *Consumers in the Online Market Place*, Berlin, Germany Eds: D. Friedkin, J. Dryden, OECD Workshop, March 13–14, 2001, Document DSTI/CP(2001)5.
- Sibley B. A., Etnier J. L., 2003, *Exercise and Cognitive Functioning in Humans*, Pedagogy Symposium – From Health to Facilitation of Cognitive Functioning, Changing the Rationale for Supporting Physical Education in the Schools, Arizona State University, Tempe, AZ.
- Stenberg P. L., 2000, *The New Economy, Rural Economic Development and the Farm Sector*, Paper presented at the International Conference „Agrarian Perspectives“, Czech Agricultural University, Prague (September 19–20, 2000).
- Stenberg P. L., Rahman S., Perrin B. M., Johnson E., 1997, *Rural Areas in the New Telecommunications Area*, Rural Development Perspectives, 12, 3, 32–39.
- The Center for Democracy & Technology*, 2001, Bridging the Digital Divide, Internet Access in Central and Eastern Europe, Washington, D.C.