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Scoping the Impacts on Travel Behaviour in Scotland of E-Working and Other ICTs

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Scoping the Impacts on Travel Behaviour in Scotland of E-Working and other ICTs

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The views expressed in this report are those of the researchers and do not necessarily represent those of the Department or Scottish Ministers.

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EXECUTIVE SUMMARY

This research has reviewed existing literature to assess the implications of e-working and other ICTs on travel behaviour and traffic reduction in Scotland. The work has comprised a detailed literature review, together with some limited analysis of Scottish Household Survey, Eurostats and UK Office of National Statistics Online data.

Information and knowledge are replacing capital and energy as the primary wealth-creating assets, just as the latter two replaced land and labour 200 years ago. Within this new economy, the long held association between car use and wealth is being challenged. It appears that the amount of travel needed to support each pound of economic activity is now able to fall as a result of ICT.

13.5% of working adults spend at least some of their working hours at home. Scottish e-working is concentrated in managerial, professional and technical sectors, and is most prevalent in large urban and accessible rural locations. The proportion of people who could telework in the future is unlikely to exceed 40% without major economic restructuring.

High take up of e-working is associated with low population densities, the need for security by working from dispersed locations, fiscal incentives, and the prevalence of managerial, professional and administrative jobs. E-working is part of a number of flexible working practices and reflects management approaches that focus on delivering results rather than staff putting in hours. Both staff and employers find teleworking increases efficiency and flexibility as well as job satisfaction.

Whilst e-working solutions may be effective in meeting the functional requirements of activities, they may well fall short of meeting other social or psychological requirements.

If journeys to work are being replaced by e-working, and business travel is being reduced by the use of teleconferencing, these effects lower travel demand. There is however a complex matrix of second-order effects, which in many cases reduces or negates the traffic reduction effects as shown below.

Nevertheless e-working can help to uncouple long term relationships between economic growth and travel demand, and based on current patterns of economic activity, and capabilities of current technology, a managed approach could achieve reductions of up to 11% in travel demand in the Scottish context. Other flexibilities associated with e-working such as greater choice of journey time, mean that much greater reductions in congestion are also possible, making better use of existing capacity.

However this upper bound estimate must be viewed within the context of dynamic lifestyle and travel choices within which e-working is only one factor. If alternatives to e-working become less attractive, (e.g. if traffic congestion grows) then e-working will increase and travel demand fall, which may in turn encourage people to e-work less and travel more and so on. E-working also impacts more upon reducing public transport use than car use, by allowing people to switch mode and use their car at an uncongested time of day.

The balance between substituted and induced travel effects will depend on the complementary policies for travel demand management, social inclusion and economic development, and the administrative context within which these are delivered as shown below.

To secure these benefits, a cross-sectoral approach to policy and programme delivery will be needed. Separate transport policy and communications policy will struggle to cope with the new e-lifestyles. Emerging best practice includes broad action to enhance: skills, knowledge, physical access, capabilities, information, affordability, capacity, acceptability, quality, safety and security. The lessons from successful programmes provide a pointer to future policy across wider transport, social inclusion and economic development policy. By focusing on the current and future networking/connectivity/accessibility needs of people and businesses, jointly funded public investment in, and regulation of, transport and ICT can be targeted where it is most needed for Scotland's economy to grow, and the opportunities for all people to be enhanced.

This review has been a first step to assess the impacts of ICT and e-working on travel behaviour, and further work is needed to understand the factors affecting lifestyle choices and how they are changing.

1.0 INTRODUCTION

1.1 In recent years advances in information and communications technologies (ICT), especially the mass adoption of global computer networks, have resulted in rapid social and economic change, which has created a number of new opportunities for transport and economic development policy in Scotland. This research was commissioned by the Scottish Executive to review the parameters of the debate and to inform options for policy and future research.

1.2 From employment and commerce to recreation, health, and day-to-day contact with public bodies and government; increasingly activities can be undertaken using ICT, giving rise to many new virtual resources and digital services.

1.3 Whilst the potential consequences of these changes are profound and wide ranging in their impact, including on travel patterns and demand, understanding of possible outcomes is limited by the continuing rapid rate of change. People and businesses are constantly adapting and responding to the new opportunities emerging with each new generation of technology.

1.4 The internet is often referred to as the "Global Super Highway" underlining the close inter-relationship between digital communications and physical transport infrastructures. Understanding this relationship is critical if the right decisions are to be made for an integrated 21st Century transportation policy in which road, rail and air networks are augmented by virtual highways, digital communities and electronic workplaces.

1.5 This research has reviewed existing literature to assess the implications of e-working and other ICTs on travel behaviour and traffic reduction in Scotland. Specific issues have included:

- Current trends for e-working in Scotland

- Attitudes towards e-working in Scotland

- Scope and limits to e-working

- Effects of e-working on travel patterns, behaviour and traffic levels

- Predictions of future impacts

1.6 The work has comprised a detailed literature review together with some limited analysis of Scottish Household Survey, Eurostats (Statistical Office of the European Communities) and UK Office of National Statistics Online (ONS) data. It has been undertaken by a research team from DHC supported by Jillian Anable.

1.7 Although the focus of this work is on e-working (using ICT), many research findings relate to telework (using telecommunications generally) and in some cases homeworking. There is a substantial overlap between homeworking and teleworking, and e-work is a majority subset of telework. To avoid confusion, throughout this report the most accurate term is used for the findings being described.

2.0 THE ICT REVOLUTION AND SOCIETY

2.1 There is a growing theoretical and empirical research foundation on the social impacts of developing ICT. This chapter provides a brief review of the changing social context provided by new technologies as relevant to e-working and travel behaviour. Factors considered include:

- The philosophy and aspirations for the revolution.

- The social, economic and technological context.

- Social consequences of increased ICT.

- Attitudes to ICT adoption and networked living.

The philosophy and aspirations for the ICT revolution

2.2 In the 1960s "the global village" was identified as an aspirational concept:

"After 3,000 years of explosion by means of mechanical technologies, the Western World is imploding. After more than a century of electronic technology, we have extended our central nervous system across the world in a global embrace, abolishing both space and time as far as our planet is concerned" (McLuhan 1964).

2.3 40 years on, the high-speed internet has become a reality and is diminishing the importance of spatial location. Historians and social scientists have long studied the impact of communications on the evolution of society from the role played by roads in the expansion of the Roman empire (Stradling 2001), to the impact of the development of aviation and satellite communications on globalization.

2.4 It has been suggested that, if the age of rail made a profound impact on 19th century development patterns, and the age of the motor car was inextricably interwoven with social evolution in the 20th Century then "The Information Age' will be the innovation which history will deem to have been the driver of society in the early 21st century (Guest 1999). *"From a future perspective the internet will be on a par with the invention of the city as a force in human culture".* (Gibson 1995)

Social and Economic Trends

2.5 It is important to analyse the technological revolution in the context of other wider societal issues and changes. The growth of ICT has been driven by, and has itself been the cause of many changes and these are discussed below in relation to the:

- Wider economy

- Social and demographic trends

Wider Economic Trends

2.6 The economic context within which the ICT revolution is taking place is characterised by:

- Information and knowledge replacing capital and energy as the primary wealth-creating assets, just as the latter two replaced land and labour 200 years ago (Krugman 1999).

- Shifts in the UK, and most European economies away from manufacturing and agriculture towards service industries (ILO 1999). In June 2004 80% of all Scottish jobs were in the service sector (Scottish Executive, Economy Factsheet 2004).

- Increasing wealth - Between 1981 and 1998 average weekly earnings in Britain rose by 310% from £124.9 to £384.5 (Scase 1999). In the same period the Retail Prices Index rose by 220%. Since 1998 this trend has continued and people in the UK now enjoy the second highest purchase power in Europe at 115% of EU average as opposed to only 92% of the EU average in 1995 (Eurostats 2003).

- House price inflation changing the geography and sociology of where people live and work. (Townplan.org 2003).

2.7   The increased wealth has allowed substantial increases in spending on transport and travel. UK spending on motoring increased from 11% of total household spending in 1978 to 16% in 2002. It is now the single largest area of expenditure for the average household. Spending on leisure activities has increased by a similar margin over this period. (ONS 2005) The fastest growth in car ownership is amongst women (RAC 2003).

2.8   However the long held association between car ownership and use and wealth has recently been challenged (Carr-Hill 2002; Townplan.org 2003) with Britain showing slower car growth than poorer parts of Europe despite a booming economy (Commission for Integrated Transport, 2001). If communications are essential for economic activity, it may be that the transport intensity for economic growth is now able to fall as a result of ICT (SACTRA 1999).

Social, cultural and demographic factors

2.9   The characteristics of the population are changing, and significant differences are apparent in the ways in which people of different ages and sex interact with ICT (Eurostats 2003). Of particular note is that:

- Despite a static population, the number of Scottish households are expected to increase by over 126,000 between 1997 and 2007 (GROS 2002).

- Changes in the age demographic are forecast - There are some 17 million people in the UK aged 20-40, and 14 million between 45 and 65. By 2020, the younger group is expected to shrink to 16 million, while the older group will grow to 17 million, as the baby boomer generation matures (Williams and Jones 2004).

- Improvements in health mean that Scotland's ageing population will maintain high levels of mobility later in life, thereby further increasing overall travel movements (Scottish Executive 1998).

- Women in the workplace - There will soon be at least as many women past 50 at work as men. Amongst women in their 50s, the proportion with a paid job has increased steadily from 55% in 1986 to 62% in 1999, although almost half work only part time. (Lyons *et al.* 2000).

- Employment - People are working longer with about a quarter of working men and one in ten working women spending more than 50 hours per week at work. The labour market is likely to see a continued growth in the number of self-employed

people over the next decade. The current national level is 13% of the labour market with strong growth in the number of self-employed manual workers and managerial and professional workers. This is accompanied by a shift away from 'jobs for life' for those in larger companies.

2.10   These demographic changes take place within a society where:

- There are increasing environmental concerns, but currently limited cross over to behaviour change. Given that behaviour change is incremental and that the starting point is problem recognition, the momentum for environmentally driven behaviour change may be building (Kelly 1955).

- Debates about long working hours, working cultures and business performance have meant that the need for more flexible working is high on the policy and business agenda (DTI 2003, UK Act of Parliament 2002). In the past six years there has been legislation to extend maternity and paternity leave and offer parents of children under 6 the right to request flexible working (Williams and Jones 2004). Teleworking is part of a family of flexible working practices which also include flexitime, annualised hours, compressed week, choice of shift patterns, term-time working, banked hours and job sharing.

- Changes in educational priorities and practices with a move towards student centred learning from an earlier age using networked resources and ICT (Scottish Executive 2003).

- There are shifting cultural and religious norms and changing attitudes and beliefs (Scottish Executive 2003).

- Workers who change employers regularly are more likely to maintain their own ICT infrastructure rather than rely on their company for all their technology provision (Taylor *et al* undated).

2.11   Overall, social and economic trends are heavily influenced by technological change. Further detail of trends and impacts of ICT adoption are provided in Appendix A.

Social consequences of increased ICT

2.12   A potentially very important but poorly researched area is what impact ICT will have on social and interpersonal interaction. Some people hypothesise that ICT offers *"the greatest chance for liberty that mankind has ever known. Now people can say whatever they want to each other wherever they may be" (EFF undated).* There is however a danger that people will be seduced by virtual living to such a degree that they forget how to live in the real world (Levy & Murnane 2005). The daily dialogue with a computer screen lacks the depth of existence to be found in office bustle and banter.

2.13   As in previous eras when similar concerns were expressed about the introduction of radio, television and telephones; 'reports of the death of civilization have been greatly exaggerated'. Indeed there are powerful arguments that that the era of one-way broadcast media was much more socially corrosive than anything currently threatened by the networked age (Taylor et al undated). Broadcasting is the favoured tool of dictators, who thrive in an environment where the audience do not answer back.   In

contrast the new networks are inherently democratic, encouraging a return to the natural human condition of 'peer to peer' exchange, dialogue and debate (Negroponte 1995).

2.14 From the business perspective, success depends heavily on continuously adaptive social and organisational interactions or networks (Rycroft and Kash 1999). Consequently social and interpersonal skills are among those most valued by employers. They are also the skill deemed to be most lacking in the Scottish workforce (Futureskills Scotland 2004). There is therefore an increased requirement to develop new e-social skills to ensure that Scottish skills are competitive internationally.

Social change and travel

2.15 Indications from ongoing research (UWE 2003) are that the widespread consumer adoption of mobile ICT is already changing travel and commuting patterns. Interim findings suggest that an increase may be being observed in the average time which individuals are willing to budget on the daily commute. The researchers hypothesise that as a result of mobile ICT "*The boundaries between travel time and activity time are increasingly blurred. Specifically, many people are using travel time itself to undertake activities (or anti-activities). The 'cost' to the individual of travel time is reduced as travel time is converted into activity time. In turn, at the aggregate level, less of the travel time budget is used, enabling more travel or encouraging greater use of modes that may enable en-route activities to be undertaken."*

2.16 If people can work (or play) during their commuting time, they are less likely to perceive it as wasted time and are therefore liable to adopt extended patterns of commuting. In addition the productive working day can be extended. Whilst the European research is not complete, census data in the USA identify "extreme commuters" travelling over 90 minutes per day as among the fastest-growing segment of society (Smith 2004).

2.17 The term 'anti-activities' refers to American research (Mokhtarian and Salomon 2001) which shows that many people value commuting time as a period of rest in which to 'shift gears' between office and home life. In this context the proliferation of portable video and games devices may be as salient to changing travel patterns as efficiency enhancing mobile computers and Personal Digital Assistants (PDAs).

2.18 If teleworking needs to be viewed as part of a family of flexible working practices including flexible hours, then longer commutes could become much more widespread. Scots currently have some of the shortest journey times to work in Europe. In 2001-2 most people in Scotland (92 per cent) were able to get to work within one hour, and over 50 per cent within 20 minutes (Scottish Executive 2003). The average commuting time is just over 20 minutes (Scottish Enterprise 2004). This average is less than half that for the UK as a whole and two thirds of the EU average (King & Leibling 2003).

3.0   THE DEVELOPMENT OF TELEWORKING

3.1   The use of computers and telecommunications has helped to change the traditional geography of work. By taking advantage of new information and communications technologies, opportunities for telework have grown (Lake 2004). Employers who adopt teleworking encourage employees to adopt a range of remote working practices (Cairns *et al* 2004) so that work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis.

3.2   This chapter reviews:

- Methods for defining and quantifying telework.

- Perceptions of teleworking.

- Attitudes to teleworking.

- Policy instruments and telework

Definitions

3.3   In order to be able to correctly interpret the findings of previous research on the impacts of teleworking and e-working is it important to clarify the meaning of the many different terms used in the research.

3.4   The media and some older academic studies often incorrectly interpret teleworking to mean working most of the time from home (Lyons 2002) but the term also applies to a wide range of other methods of flexible working including part-time remote operation as well as the use of hubs and telecentres closer to home than the primary location. In effect the Internet is diminishing the importance of spatial location for working.

3.5   In Europe Telework is the term most commonly used but in America "Telecommuting" is dominant, and though it is mostly used as a synonym for teleworking, it is sometimes used to describe a specific subset of teleworking which substitutes telecommunication technologies for work related travel (Niles 1999).

3.6   More specific to the use of new communication technologies are terms such as: e-working, e-commuting and cyber-working. "Virtual Accessibility" and "Virtual Mobility" are similar concepts which refer to the use of ICT as an alternative to physical travel. That is, they refer to using ICT as the means of "getting to" activities that would previously have required transport (www.virtual-mobility.com). Although e-options and impacts of ICT are the focus for this project, it is useful to review the literature for teleworking more generally within this chapter to ensure as broad an evidence base as possible.

3.7   The UK DTI guidelines on Teleworking (2003) point out that: "there is no definition of teleworking under UK law". For example, it can mean:

- Working most of the time from home

- Working only part time or occasionally from home

- The use of hubs and telecentres closer to home than the primary location

- Non location-specific use of ICT whilst on business trips

3.8 Many of the definitions offer no judgment as to what level of remote working would qualify a person to be defined as a teleworker. In the UK, changes to questions in the Labour Force Survey (LFS) have brought greater stability to the definitions and consistency to who is counted - it now distinguishes between traditional home-workers and people using ICT in home-working; it counts all people who have teleworked for one day per week or more.

3.9 However, these statistics still have limitations when considering the frequency of teleworking occasions, as their purpose is to count heads rather than teleworking occasions. In other words identifying numbers of teleworkers has only limited value unless we know whether it means – only part of days or 1,2,3 or 4 days per week (Pratt 2000). Timing is also important as someone who teleworks for half-days alters the timing of commute trips, but does not eliminate any of their actual travel. (DTLR 2002).

3.10 Telework activities with an impact on travel behaviour are:

- Telework, telecommuting and all the forms of remote work using ICT.

- e-business & e-commerce (business to business and business to consumer online transactions and service/product delivery).

- e-services (e-government services, e-learning, telemedicine, etc).

- Collaborative working with partners, contractors and suppliers over electronic networks – for example teleconferencing.

- Remote monitoring and remote diagnostics (http://www.flexibility.co.uk/issues/transport/index.htm)

3.11 A more detailed explanation of the meaning of the various definitions in the literature is provided in Appendix B.

Advantages and disadvantages of teleworking

3.12 UK government policy suggests that "By allowing more flexible ways of working, telework can increase employment opportunities, particularly for those with families or who have long journeys to work. In turn this can ease pressure on infrastructure, facilitate regional development and help employees improve the balance between work and home life. For business these new ways of working can offer new business opportunities, improve productivity and maintain competitiveness". (DTI 2003)

3.13 Whilst e-working solutions may be effective in meeting the functional requirements of activities, they may well fall short of meeting other social or psychological requirements (e.g. a chance to get out of the house and see and meet people). Meeting social requirements could involve more travel than would have been the case for the e-activity.

3.14 There is a large body of literature pertaining to teleworking. The majority however is not supported by clear evidence and a significant subsection is politically or commercially motivated.

3.15   This report has concentrated on the review of studies supported by a clear evidence base. However to review hypotheses about telework, the broad range of supported and unsupported assertions are reviewed in Table 3.2.

Table 3.2 – Perceptions of Telework

	Advantages	Disadvantages
Worker Efficiency and Satisfaction	• Improves worker efficiency: "more time at home = balance of home/work priorities = less stress = better performance." (James 2004) • Distraction free workspace aids concentration. • Increases the number of productive working hours (commuting 1 hour each day equates to 6 full work-weeks a year) • Can lead to improvements in diet, exercise and other health related variables. • Gives employees greater choice of where to live.	• Reduced social interaction can lead to social & professional isolation. This is a specific concern of the Trade Unions (Mesner 2002). • Tainting of the home environment with work related anxiety. • There may be issues associated with mental health e.g. increased levels of depression in full time teleworkers. • Increase burden of household duties for the teleworker i.e. taking on a chauffeuring role relinquished by others in the house. This is a problem more reported by women [Hori & Ohashi 2004] • Potential to over-work, over-eat and under-exercise. Desk-potato or "fridge factor" syndrome. • Blurring of distinctions between work and leisure which is deleterious to both (Cairns *et al* 2004) • Work/life balance may be affected with reported increases in work addiction.
Management, Business cost and Employment Issues	• Leads to improvements in management infrastructure • Reduces absenteeism • Reduces disease transmission. • Reduces office space requirements and running costs including parking, lighting and utilities. IBM in Italy claim that by 'mobilising' their 'sedentary' work force they can save €5400 per person. • Is robust in times of emergency, bad weather or disaster. • Reduces the need of businesses to relocate as they grow. • Increased staffing flexibility enabling employers to attract quality staff previously unavailable to them. • Improved staff recruitment and retention. 10% of BT Workabout employees said that they would be unable to undertake their current job if they could not telework. People affected include staff with responsibilities for child care, or who need to care for ill or disabled family members, or who are themselves disabled or recovering from an illness. (Cairns *et al* 2004) • BT report an increase in return rate after maternity leave among teleworkers (Cairns *et al* 2004) • Eases organizational difficulties created by emergent 24/7 customer expectations	• Supervision and performance monitoring can be tricky • Middle managers may resent perceived loss of 'empire' and create stumbling blocks • Challenges with respect to health and safety arrangements and monitoring including provision of adequate training with respect to ergonomics and RSI. • Maintenance and reliability of equipment. • Systems issues, (e.g. remote access to company databases and applications) • Diminished access to resources found only at workplace. • Homeworkers can be viewed as work shy in cultures still dominated by 'presenteeism'. • Fewer career and promotional opportunities; reduced office influence. • Security of information and employee safety issues. People working in finance, health or sensitive political or military arenas will not be able to guarantee the security of data in their homes in the same way an employer can guarantee the security of its offices • Loss of walk-in business for downtown stores and restaurants

Environment/ Transport	• Reduces stress on the transport infrastructure including a reduction in road congestion • Reduces traffic accidents • Let's multi-vehicle families get by with only one vehicle.	• Socially isolated workers may drive more to achieve human contact, and become less effective in their work, thereby creating more stress and a 'vicious circle of disbenefit'. (SUSTEL 2003) • Promotes urban spread into new pseudo-rural 'micropolitan' areas. This is often described as 'exurbia'. • Generation of more journeys … • Use of electricity/ energy at home
Equity	• Gives jobs access to those in geographically remote areas. • Increases employability for disabled & mobility restricted workers. • Can help decrease social exclusion by diffusing services in the community. 'virtual mobility provides accessibility opportunities both substituting for physical mobility and enabling access where previously there was an accessibility deficit' [Keynon *et al* 2002] • Recognizes changing family needs, particularly single parent/dual career households. Permits more convenient child care arrangements. • The flexibility afforded to teleworkers is more conducive to both partners in a relationship being able to develop careers and accommodate childcare and domestic matters.[Lyons *et al* 2000]	• Equality issues with colleagues in posts which are not tele-amenable. • Issues for people with unsatisfactory home lives (including domestic violence or oppressive caring duties) for whom the work-place has hitherto been a haven. • Perceived discrimination against people without sufficient working space at home or uncomfortable home environments. • Traditional forms of home-working have often led to exploitation in the form of very low pay and the avoidance of normal workers' rights.
Social/ Regeneration	• Contributes to regeneration of rural and village communities with both financial and social repatriation of resources to hitherto dormitory communities. • Teleworkers tend to become more involved in volunteering and other community activities. • Leads to a reduction in daytime home break-ins.	• Can act as a Trojan horse for introduction of overseas outsourcing. In other words once an organization has reorganized to allow staff to work remotely it is only a short step to replacing those staff with lower paid alternatives in India

Attitudes to Teleworking

3.16   Analysis of case studies from research across the world, reveals that the wide range of pros and cons in Table 3.2 are derived from mechanisms related to quality of life and business competitiveness. These mechanisms are derived from the experience of both staff and employers who find that teleworking increases efficiency and flexibility as well as job satisfaction.

3.17   The chief disincentive is social and professional isolation but this is only really an issue for full-time (or majority time) teleworkers who make up a small subset of the remote workforce. Most of the other negatives are case specific and arise only in some studies, often as a result of poor implementation.

Table 3.3 - A summary of attitudes to teleworking found in 6 case studies

Nature of Study	% of respondents (or yes/no)			Perceptions of participants	
	Increased efficiency or job satisfaction	Enhanced work life balance	Resulted in professional isolation	Major advantage perceived	Major disadvantage perceived
James 2004	Yes	Yes	38-58	Improved concentration	End up working longer
Sustel 2003 (Reporting on BMW Germany)	94			Reduced fatigue	
Cairns 2002	81	90.3	37	Less time travelling	End up working longer
Hopkinson et al 2002 (Reporting on BT workabout)	78	85		Reduction in travel	End up working longer
Royal Bank of Canada (2002)	77	72		Improved job satisfaction	
Niles (1999) (Reporting on Atlanta Olympics teleworking)	60	79		Saved money and time Commuter Traffic Reduced Air quality improvements	
RTA (1994) (Reporting on Roads & Traffic Authority New South Wales pilot)	Yes			Efficiency/Cost	Career prospects suffer

3.18 Despite broadly similar findings with respect to attitudes to telework worldwide, there are some localised differences, which reveal some curious insights about different cultures:

- Avoiding high property costs and transport disruption are very important in the Netherlands and the UK, but much less so elsewhere. British teleworkers are particularly likely to work longer hours than others. While most countries require a strong business case for teleworking, in Denmark it is usually considered a basic labour right, which does not need to be justified in financial terms. (James 2004)

- Keen early adopters like Canada (http://www.ivc.ca) are often driven by an economic need to make the most of a geographically dispersed population, condensing a critical mass of workers from a very wide catchment area into a commercially viable 'virtual workforce'. In Australia telework became an issue at the election with a pledge to form a 'telework taskforce' (Mitchell 2005). This model has significance for some of Scotland's remoter areas (www.work-global.com).

- In the United States, security and cohort safety is an additional motivator (Kistner 2004), with the US Office of Personnel Management (OPM) putting a strong emphasis on using telework for emergency preparedness. OPM wants agencies to

have experienced teleworkers and managers who can keep agencies running remotely, should disaster strike.

- There may also be a cultural bias in the phenomenon of telework. An institute for employment studies (IES) report (Huws *et al*. 1999) speculates that teleworking as a concept mainly finds favour in Anglo-Saxon cultures where a 'macho' work ethic and a culture of individuality means people find it possible (and even desirable) to work in isolation. Certainly telework studies from Asia or even Southern Europe are quite thin on the ground.

3.19   There are also differences in the way in which the sexes approach telework. Home-based teleworking is favoured by mothers of young children but shunned by fathers, who often view their place of work as a sanctuary during the early years of child rearing. Consequently, telecommuting may reinforce traditional stereotypes with men being much more likely to use the new information technologies to support a roving work-style. Thus whilst women make up 53% of the home based telework-force, they comprise only 21% of all mobile teleworkers (IES 2003).

3.20   One interesting anecdotal finding reported by *Financial Times* journalist Andrew Bibby in his book "Home is Where the Office Is" (1991), is that while initial perceptions of teleworking are generally positive among those who adopt it, (see Table 3) there tends to be a drift back to conventional working practices after a honeymoon period of 2-3 years. It seems that the 'old fashioned' work place serves a function beyond that of purely functional work-hub, giving employees a sense of identity and belonging as well as being an important source of social contact. So whilst e-working solutions may be effective in meeting the functional requirements of the workplace, they may well fall short of meeting other social or psychological requirements.

3.21   A supporting finding to this is that in the Netherlands 45% of the workforce say they don't want to telecommute even if the option is available (Peters *et al* 2004). A Europe wide online poll by monster.com (2005) with 8500 respondents found a similar result with 40% expressing apathy or hostility to teleworking. This is a finding replicated in the US and Canada where despite considerable efforts to promote teleworking, early aspirations for widespread adoption have not been realised.

3.22   The UK in comparison seems to be apparently sympathetic to the concept with 77% of employees saying they welcome the opportunity to telework (Netilla Networks, 2004). In 2001 30% of respondents would have considered changing jobs, and 25% would have taken a cut in salary, in order to get the chance to telework (MORI 2001). However opinions appear to be changing and with a December 2003 poll by National Opinion Polls (NOP) indicating that, for those Internet users who are in employment but don't currently work from home (estimated to be 12 million employees), 77% do not want to telework, 17% want to but would not be allowed to and only 7% want to and would be allowed to.

3.23   Part of the resistance or apathy may stem from the fact that tangible benefits of telework practices are difficult to isolate from other effects. Though most companies who have tried telework programmes report positive feedback and 'suspect' that it has contributed to increased productivity or reduced costs it is hard to quantify it in a meaningful manner. BT is one of the few to have tried, and while they claim that

teleworking 'contributed' to a £180 million decrease in overheads (Cairns *et al* 2004), caution is needed since BT clearly has a vested interest in promoting the use of telecom networks.

3.24   Management guru Gil Gordon (www.gilgordon.com) points out: *"probably the most important outcome of teleworking has been a change in management style to recognize that results matter more than putting in the hours. Much of the rest has been hype. When an organisation introduces telework programs, it gets them looking and thinking about other more fundamental issues around how work gets done and what people are paid to do. So when managers supervise teleworkers they often end up being better managers because they become accustomed to evaluating people based on results rather than attendance. One of the keys about telework is it forces managers to start managing with their brains instead of their eyeballs".*

Policies and policy instruments for teleworking

3.25   Schemes to promote teleworking have been introduced in a number of countries, including the United States, the Netherlands, Norway and Sweden (Bennett 2005). In most cases the motivation seems to have been environmental or congestion related rather than to boost the economy or increase digital inclusion. In Sweden the PC tax reform of 1998, which allows companies to purchase computers tax free and sell them to employees, led to PC ownership growing from 41% (in 1998) to 76% (in 2002) the worlds highest penetration of home PCs at that time (Booz Allen Hamilton 2002).

3.26   In the UK, 1999 legislation called Home Computing Initiatives (HCI) aimed to emulate Sweden's success by allowing employers to lease IT equipment to their staff, up to a value of £2500 free of tax and National Insurance Contributions. Initial uptake has been fairly weak and at the beginning of 2004 only 36% of employers were aware of the scheme (Personnel Today 2004) and only 2% had used it (Kunert 2004). However attitudes appear to be changing since publication of DTI guidleines in January 2004. HR departments now appear to regard participation as good practice, and by the end of 2004 there had been a 500% increase in uptake (Bennett 2005) with 1.8 million employees leasing equipment from their employer.

3.27   Another UK move aimed at promoting flexible working is a measure introduced in The Finance Act 2003 which states: "No tax liability arises where an employee receives a payment towards reasonable additional expenses connected with the day to day running of the employee's home that are incurred by the employee when working at home under arrangements where the employee regularly works at home".

3.28   Other programmes worldwide to promote teleworking have included tax breaks on home energy bills and reductions on property rates (CCRA 2002) for those working at home.   In Houston, Los Angeles, Philadelphia, Washington, and Denver a proprietary software package called 'Teletrips' (www.secure-teletrips.com) has been piloted to offer companies tax credits based on a computer-modeled estimation of their reduction in staff vehicle miles traveled (VMT) and emissions (Clarke 2001). A similar scheme for giving companies tax credits (emissions trading) based on computer models of reductions in emissions due to teleworking has been piloted by the National Environmental Policy Institute in Canada. There is however no evidence about whether

the staff of participating companies ended up travelling less. (Videoconferencing Cookbook 2004).

3.29   Atlanta has an interesting case history with respect to teleworking in that the 1996 Olympics kick started teleworking because they needed to formulate strategies to keep the town working during the upheaval of the games (Niles 1999).   The local chamber of commerce organised a campaign and seminars to promote telework called telecommute the games. It was highly successful with over 50% of relevant workers adopting telecommuting for the time of the games. It was suggested that Atlanta air quality was improved and many workers benefited (see Table 3.3) so telework policies remain high on the political agenda with an election campaign pledge to "Reduce traffic by making telecommuting standard practice in Georgia" (Thorpe 2000).

3.30   Perhaps the most concerted barrage of political interventions with respect to teleworking have come as a consequence of the terrorist attacks of 9/11 which revealed the danger of having too many mission-critical staff in one place at one time.   This reinforces the rationale for early state investment in the internet as a communications system developed by the US military to be robust in the event of a nuclear holocaust. Web based teleworking maintains communications in all but the most absolute states of devastation, so current proposals being discussed by senators involve fining agencies which fail to reach targets for the proportion of teleworking employees. (Kristner 2004).   In one proposal each state agency would be required, by July 1, 2009, to have not less than 50 percent of its eligible workforce participating in telecommuting at least one day per week (Senate Bill HB 2127). The debates on this issue have highlighted that in the immediate aftermath of the terrorist attacks of Sept 11, the high-rise building that houses American Express' World Financial Center was out of reach due to the rescue work at Ground Zero. Amex already had in place an extensive telework programme and as a result business continued with staff working from home.

3.31   Similarly in Canada and Hong Kong, teleworking got a major boost during the bird-flu scare. With a pandemic of flu now overdue, the promotion of societal trends which increase the robustness of our infrastructures in time of crisis are not unimportant. With this introduction of global pandemics and terrorism to the telework equation it is interesting to note that as a field of study telework has to be uniquely broad in its impacts ranging from: workers rights, child care and social inclusion to global warming, security, town planning and corporate economics.   For decision makers this takes cross cutting challenges to new levels.

3.32   A 1997 document by the Employers' Organisation for Local Government 'Teleworking and Local Government - Assessing the Costs and Benefits', cogently sums up many of the issues and notes that the range of options and possible impacts is so wide, that it is impossible to provide a single policy blueprint (Mortimer 1997).

4.0   E-WORK CHARACTERISTICS AND STATISTICS

Who is doing it?

4.1   The emergence of ICTs, offers the potential to enable people to better manage busy and complex schedules so ICT use is greatest amongst economically active groups. Those working in small businesses and in large organisations are most likely to have flexible working available to them, whilst those working in medium sized organisations are least likely to be able to work flexibly (Williams and Jones 2005).

4.2   The DTI provide some insight into this issue by classifying the number of teleworkers in two occupational systems (DTI 2002). Table 4.1 shows that the highest incidence of teleworking, occurs in managerial, professional, administrative (including secretarial) and skilled occupations. Those employed in these sectors make up 64% of the total UK workforce (62% in Scotland) and between 5% and 16% of the workforce in each of these sectors currently telework. The remaining one third of the workforce has a much smaller incidence of teleworking at around 2%. This is further illustrated in table 4.2, which uses the standard industry classification to show that all sectors have some degree of teleworking - even including industries which rely heavily on personal contact, such as 10% in education, 13% in real estate and 5% in health and social work.

Table 4.1 Breakdown of employment by occupation (figures for Spring 2001 (UK) and 2003/04 (Scotland))

	% of employees in each employment category (UK 2001)	% of employees in each employment category Scotland 2003/04*	% of total teleworkers in each employment category UK 2001	% of those in each employment category who are tele workers UK 2001
Managers and senior officials	13.7	12.5	23	13
Professional occupations	11.9	11.8	25	16
Associate professional and technical	13.3	13.4	20	12
Administration and secretarial	13.4	12.5	9	5
Skilled trades	12.0	12.0	15	9
Personal services	7.2	8	3	3
Sales and customer services	7.8	8.8	2	2
Process, plant and machine operatives	8.6	7.9	2	2
Elementary occupations	12.2	13.9	1	1
Total	100	100	100	-

Sources: Adapted from Cairns et al 2004 and DTI 2002 and coded according to the 2000 Standard Occupational Classification.

Table 4.2: Breakdown of employment by industry sector (figures for Spring 2001 (UK) and 2003/04 Scotland))

	SIC category	% of employees in each employment category UK 2002	% of teleworkers in each employment category Scotland 2003/04	% of teleworkers in each employment category UK 2002	% of those in each employment category who are tele workers UK 2002
Agriculture, forestry and fishing	a,b	1.2	2	2	13
Energy and water	c,e	0.7	2.3	0	5
Manufacturing	d	15.0	12.3	12	6
Construction	f	4.7	7.6	14	24
Wholesale, retail and motor trade	g	17.6	20.2	9	4
Hotels and restaurants	h	6.6		1	2
Transport, storage and communications	i	6.3	6.6	5	6
Banking, finance and insurance	j	4.2	13.4	4	8
Public administration and defence	l	5.5	29.2	4	6
Education	m	8.4		10	10
Health and social work	n	10.2		6	5
Real estate, renting and business activities	k	14.6	6.2	24	13
other community, social and personal	o-q	5.0		8	14
		100	100	100	--

Sources: Adapted from Cairns et al 2004, DTI 2002.

4.3   From the above table it can be seen that almost a quarter of all teleworkers work in real estate, renting and business activities. Other main industries are construction and manufacturing.

4.4   In addition, compared to the labour force as a whole, there are a large proportion of self employed teleworkers. In 2001, self employed persons made up 11% of the total workforce but 43% of teleworkers were self employed, 55% were employees and the rest were unpaid family members.

4.5   With respect to gender, the distribution of men and women working as teleworkers differs substantially from the pattern of all employees. In 2001, just over half of all employees were men, but two thirds of teleworkers in the UK are male. For all teleworkers, a larger proportion men than women needed both a telephone and a computer to do their job (82% compared to 77% respectively). (DTI 2002)

4.6   Men and Women teleworkers also predominate in different occupational groups. Fig 4.3 shows the proportion of all teleworkers in different occupational groups by sex. This shows that almost all teleworkers in the group of skilled trade occupations were

men (95%) and in the managers and senior officials group, 3 in 4 teleworkers were men. By contrast, only 15% of teleworkers in the personal service group and 19% in the administrative and secretarial were men. This suggests that men predominate in groups that contribute the largest share to the total number of teleworkers, while women predominate in groups where teleworking is not as common.

Figure 4.3: Proportions of all teleworkers who are men by occupational group (Figures for 2001, not seasonally adjusted)
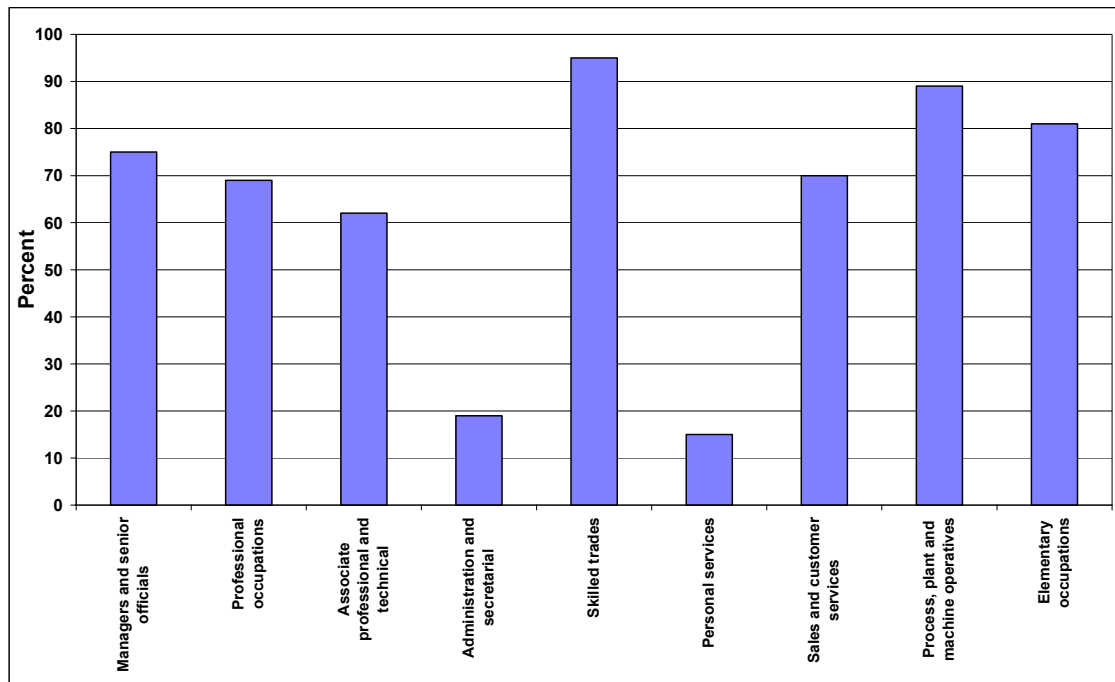
Data read from graphs in DTI 2002

4.7   The DTI analysis claims that the explanation for this gender difference lies not in the difference between the occupational distribution of employees, nor the varying distribution of male and female across industrial groups, but in the difference between them in the share of self employment. Almost three quarters of self employed people are men, corresponding closely with the number of self employed teleworkers that are men (72%).

4.8   Other characteristics of teleworkers include:

• Teleworkers tend to be on higher than average incomes (Cairns et al 2004; Dodgsen et al 2001)

• Telework doesn't just interest people with dependent children. Older staff can also value telework: as a change from a lifetime of commuting, have a retired partner, to care for aged parents, or want a transition into retirement (James 2004).

• Poorer people may lack sufficient space, be at risk of possible theft of equipment or have other income-related reasons which prevent them from working from home (James 2004).

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4.9   Different studies report a range of estimates of how often, on average, teleworkers work from home, in current circumstances. Estimates range about 1½ days per week to about 3 days per week as shown in Table 4.3.

Table 4.3 A range of telework frequencies reported in different studies.

Study	Average no. days worked from home
Dodgson *et al* (2000) quote research by Fouracre and Hill (1998)	Teleworkers typically work from home for 25% of their time (i.e. just under one and a half days).
DTLR 2002	On average teleworkers work about 1½ days a week away from the main office
Geraghty, 2004	For those working at home, the average frequency is 3.1 days per week
Cairns *et al* (reporting in the BT workabout pilot)	An average teleworker at BT, works from home about three days a week
Lake *et al.* (1997)	Local authority workers spend an upper limit of 3 days per week (or 60% of the time at home)

How Many?

4.10   The proportion of the working population that is teleworking is growing fast. In 1993 it was estimated that about 0.5% of the workforce in Britain (130,000 people) sometimes teleworked (DTI 2002). By 2001, data from the Labour Force Survey showed that 2.2 million people in the UK (7.4% of the labour force) worked from home at least one day a week using a telephone and computer. Since 1997 the number of teleworkers in the UK has increased by on average 13% a year, giving an overall increase between 1997 and 2001 of 65% (Cairns *et al* 2004).

4.11   DTI also defined a subcategory of teleworker, as being people who could not perform their job *without* the use of both a computer and telephone. In 2001, there were reported to be 1.8 million of these (approximately 6% of the labour force). The 'essentialness' of telecommunications equipment is not of particular interest in transport terms, however, this subcategory is of interest, because there are later figures available from the Labour Force Survey. Specifically the 2003 Labour Force Survey, which showed that even this subcategory on its own had grown to 2.1 million in 2003, with a growth rate of 12% in the last year that data was available (Cairns *et al* 2004).

4.12   It is possible to estimate from a combination of a survey of December 2003 (reported by Geraghty 2004 and Fogarty 2004) and the April 2004 Labour Force Survey Quarterly Supplement, produced by the Office of National Statistics, that 4.1 million people (or 14.4% of the labour force) telework some or all of the time. This compares with an equivalent 2004 figure of 20% in the U.S.

E-work characteristics in Scotland

4.13   The Scottish Household Survey (SHS) can be used to profile e-workers in Scotland by demographic, employment and travel characteristics. This can reveal such information as what sectors e-workers are employed in, whether they are employed in rural locations and how often they use their cars.

4.14   The SHS does not however have a specific variable on e-working. Instead homeworking can be used as a proxy variable. The survey asks whether employees spend some of their working hours at home. There is a significant overlap between the homeworking and e-working populations, but they are not identical as there are a

number of flexible working practices that come under the category of homeworking. Viewing the homeworking population by Standard Occupational Codes is a useful method of gauging their similarity. The three sectors with large proportions of homeworkers are shown in Table 4.4.

Table 4.4: Employment Status for Potential E-workers

	Managers and senior officials (%)	Professional occupations (%)	Associate professional and technical occupations (%)
Homeworkers	26.8	34.5	17.2
All workers	12.7	12.7	14.2

(Source: SHS 2003)

4.15   The homeworking population is dominated by managers and professionals, and also shows a large proportion of associate professionals. These three sectors are likely to make significant use ICT, indicating that there is a strong link between homeworking and e-working. The homeworking population from the SHS shows small proportions of non-ICT sectors such as industrial and manual work.

4.16   SHS data on home Internet access (Table 4.5) shows that homeworkers have a significantly higher rate of home internet access. Unfortunately the SHS data does not ask whether the internet is used for work purposes, but the very high rate of internet access indicates that there is a positive relationship with homeworking, and that e-working is having an influence.

Table 4.5: Internet Access

	Households that can access the internet from home (%)
Homeworkers	82.7
All workers	59.6

(Source: SHS 2003)

4.17   If it is accepted that homeworking is a useful proxy for e-working the SHS data can then be used to indicate e-working trends – if not absolute levels. The Scottish Household Survey 2003 identifies that 13.5% of working adults spend at least some of their working hours at home. There are marginally more male homeworkers (53%) than female (47%), and there is also a large proportion of self-employed homeworkers (20%).

4.18   The homeworking population can be characterised according to an urban/rural classification of home location (Figure 4.2). It might be expected that homeworkers would be more prevalent in rural locations, but the relationship is more complex than this. There is a large concentration of homeworkers in accessible rural locations but not in remote towns or remote rural areas. There are also high proportions of homeworkers present in large urban areas and small accessible towns. This will reflect the employment opportunities in each type of area and that homeworkers are not entirely location independent since they still require access to larger centres.

4.19   Homeworkers can be characterised according to how frequently people use their cars (Figure 4.3). The data points to slightly more frequent car use from homeworkers compared to the general working population.

Figure 4.2: Location of Homeworkers by Urban/Rural Classification (Source: SHS 2003)
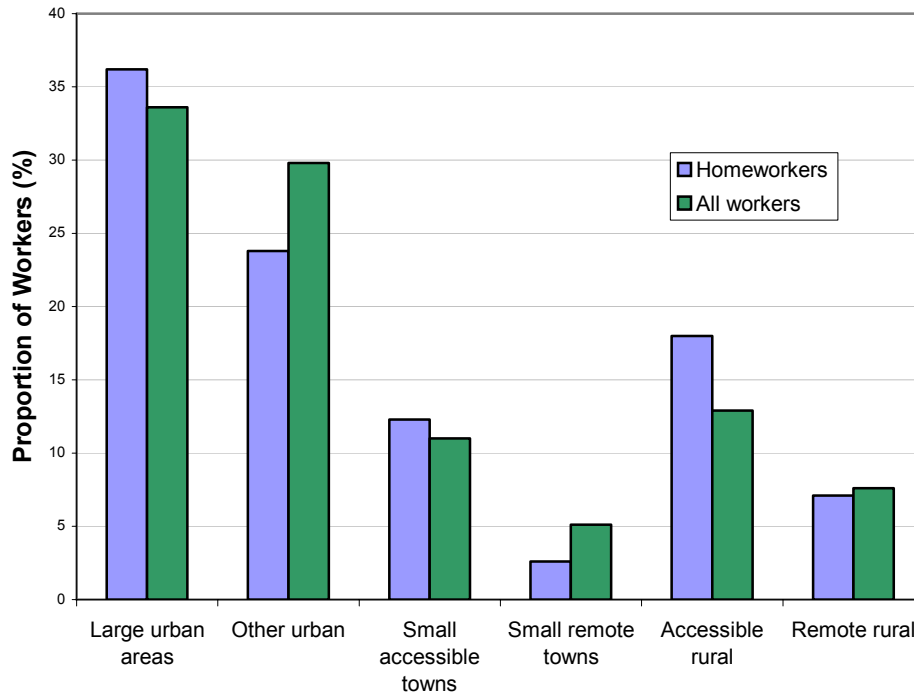
4.20   There is also evidence that teleworkers may have longer commute journeys than the national average. Mitchell *and Trodd* (1994) found teleworkers had average commute journeys of 21 miles compared to the national average at the time of 8.3 miles (cited in Cairns *et al* 2004). DTLR (2002) concluded from their review of the published literature that 'generally teleworkers record longer (substituted) commute journeys than the average national commute journey.' This is likely to be a reflection of the high proportion of managers and professionals within the homeworking sector who have high car ownership and travel further to work and more frequently than other workers.

Figure 4.3: Homeworkers by Driving Frequency (Source: SHS 2003)
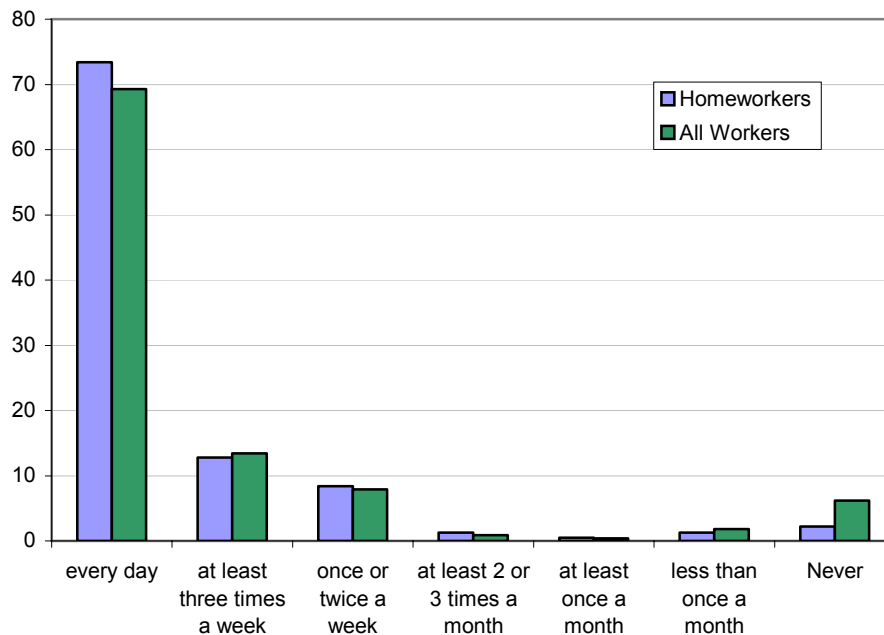
4.21   Overall, the SHS data demonstrates that Scottish e-working is concentrated in managerial, professional and technical sectors, and is most prevalent in large urban and accessible rural locations. E-working is part of a number of flexible working practices, and these overlap within the homeworking category in the SHS data restricting the ability to separate out e-working impacts. Homeworkers were found to use their cars more frequently than the general working population.

4.22   Further analysis of travel patterns for e-workers could be revealing, looking in particular at journey distance, time and purpose as well as frequency, using travel diary data. Even if e-workers make similar numbers of car journeys there are potential transport efficiency gains if these journeys are made outside peak times.

Forecasts of E-working

4.23   Analysis of the proportion of particular occupations in the total UK workforce suggested that 22.6% were amenable to telework adoption (DTI 2002). In the same report, a study from the United States in 2001 was cited which suggested that 21% of the labour force were already teleworking. Current growth rates of 12-13% p.a. projected to 2012 would result in approximately 30% of the UK workforce teleworking for at least some of the time. The potential for teleworking depends on the definition of telework and some studies suggest a ceiling as high as 40% of employment (Fouracre and Hill, 1998).

4.24   However even if the more conservative estimate were to be accurate at present, the workplace is evolving fast, and whilst there are some jobs where teleworking

potential is limited, the proportion of the population who are able to telework for some proportion of the working week, is set to grow. It is therefore of note that:

- 64% of the workforce are in occupations where 5% or more already telework. (Cairns *et al* 2004)

- 50% of the workforce are, to some degree, 'information workers' and 80% might telecommute, leading to a saturation level of 40% of the workforce. (Dodgson *et al* 2001) In this scenario, Dodgson *et al* estimate that 15% of the UK workforce might be teleworking by 2010 on any one day.

- Telework amenable occupations make up a growing percentage of the employment market. Thus in addition to adoption of teleworking within existing jobs which are currently appropriate there is also an evolution of the workplace towards the creation of new jobs which are more suitable for integration with teleworking practices. Part of this is the continuation of a long trend in Western societies to develop knowledge economies and move away from physical industries such as manufacturing and agriculture.

- Fundamental redesigns in the concept of the workplace, away from bricks and mortar, to global networks of individuals, are currently taking place, with major companies like American Express experimenting with the mass dispersal of staff (Financial Times, 2003). Many IT, telecoms and knowledge based companies are contemplating moving entire operations into the virtual workspace. BT for instance has indicated that ultimately 65% of the workforce could be teleworking.

- Industries which have not traditionally been thought e-amenable have been developing new work-styles which apply telecommunications to those tasks previously thought unsuitable (such as medical diagnoses, further education teaching, estate agency, personal advice, and production control).

- Improving technologies (especially broadband networks) have expanded the number of tasks which it is possible to do remotely.

- Occupations which will never be fully suitable for teleworking (such as the police force, nurses, primary school teachers etc.) are nonetheless identifying significant proportions of many jobs (often the clerical side), which can be carried out away from the main workplace.

4.25   This last point is expanded upon in study for DTLR (Lake *et al*. 1997) which gives an insight into the potential for teleworking in occupations where it is currently low. They looked at the "teleworkability" of tasks carried out by 2300 employees of Cambridgeshire County Council, and concluded that, of the tasks carried out by different types of employee:

- 5-20% of tasks carried out by support staff were location-independent

- 30-60% of tasks by service delivery staff, including field workers, were location-independent

- 30-50% of tasks by managers were location-independent.

4.26   These figures show that occupations which are not presently seen to have much teleworking potential (such as support roles and service delivery) involve a significant proportion of tasks which could be carried out away from the workplace (Pratt 2000).

4.27   In the long run whether teleworking turns out to be a major step-change in employment practice, will depend on how popular and useful it turns out to be. In a study to find out why people chose to adopt teleworking, Mokhtarian and Salomon (1994) found that various pressures and constraints were required for individuals to change their prevailing work routine. In the majority of cases, a 'threshold level of dissatisfaction with one or more aspects of life' was necessary to cause an individual to consider an alternative to conventional work patterns. On the part of the employer these dissatisfactions will tend to be related to efficiency, cost and commercial viability whilst on the part of the employee they will usually be related to quality of life.

4.28   Thus if factors such as traffic congestion make commuting unpleasant, more people will be attracted to telecommute. This shadows the evolution of ICT. Technology has always been adopted to assist with tasks which are difficult, boring, expensive or dangerous as well as to improve the quality of existing work.

5.0 TRAVEL BEHAVIOUR AND E-WORKING

5.1   Against the background of the development of ICT and e-working described in Chapters 2 to 4, there has also been research on the impact of evolving communications technology on travel behaviour and social change. This provides an extensive theoretical but limited empirical basis for this review, so this chapter reviews the relevant theory on:

- The ICT factors that affect travel demand

- Tools for travel demand management

- Mechanisms of complementarity and substitution

5.2   It then reviews the empirical findings on:

- The magnitude of the effects

- The robustness of the evidence

- The relevance of the research to Scotland

Factors affecting travel demand

5.3   In order to understand the role of ICT on travel demand, a broad approach is needed. Rather than simply predicting the demand for travel, transport planners need to recognise that travellers modify their behaviour to take account of the opportunities available to them. The availability of opportunities determines behaviour. If an opportunity is available which does not involve travel then people may travel less. If more opportunities become available and people can do more things then they may travel more. These laws of supply and demand underpin economic theory, but since travel is derived from wider economic and social needs, travel demand markets need to consider three dimensions to travel behaviour (Mohktarian and Salomon 2001):

- The utility of arriving at a destination – This is the accessibility benefit, and depends on both the quality of the opportunity that can be reached and the travel or telecommunications options available.

- The utility of activities that can be conducted whilst travelling – In most cases these activities can be undertaken without travelling (e.g. listening to music, working, talking to friends, reading, thinking) but they help to increase the utility of a particular choice over other travel choices or non-travel alternatives.

- The utility of travel itself – Numerous sports and hobbies revolve around travel for its own sake (e.g. hiking). Almost by definition undirected travel is largely a leisure activity, so this element dominates for leisure travel.

5.4   Travel demand is derived from the economic and social needs of individuals and businesses. In order to assess how much travel there will be, it is first necessary to understand in sufficient detail the economic and social activities of the relevant population (SACTRA 1994, DfT 2001).

5.5   If journeys to work are being replaced by telecommuting; trips to the high street are being replaced by online shopping; and business travel is being reduced by the use of teleconferencing, this substitution will replace travel demand. The reality is that

there is a complex matrix of second-order effects, which will in many cases reduce or negate the traffic reduction effects to be expected from the simple substitution of real journeys for virtual activities (Cairns *et al* 2004). To understand the net impact of all these factors requires a detailed lifecycle assessment, and the aggregation of measured values for four different major kinds of impact (James 2004, Mokhtarian 1990):

Substitution

- Replacement - telecommunications replaces travel.

Complementarity

- Enhancement - directly stimulates travel by providing opportunities for people and businesses to achieve more and participate in more activities.

- Efficiency - improves travel by making the transportation system more efficient.

- Indirect impacts – impacts on land use and economic development which in turn affect travel, lifestyle changes with reductions in work travel being replaced by increases in leisure travel.

5.6   Within these broad categories some of the specific questions that need to be answered include (Lake 2004):

- To what extent will latent demand be realised by other road users taking advantage of "liberated" road space?

- To what extent will new trips be made by the home/telecentre worker during the course of the day that would otherwise not have been, or by other family members using the car?

- How proportionately will transport substitution affect different traffic modes (e.g. will regular public transport users become occasional car users)?

- Will ICTs in due course affect location decisions so that people will tend to live further from their places of work, and therefore make fewer, but longer trips, and possibly contribute to urban sprawl?

- What influence will more distributed life/work patterns have on the distribution and transportation of goods.

5.7   A more detailed discussion of the mechanisms associated with each of these effects is provided in Appendix C under the headings of: commuting, other work related travel, recreational travel, impacts on other household members, and mode and time shift. The extensive literature summarised in the Appendix shows that for each trip purpose and people group there are mechanisms to increase travel demand, and mechanisms to reduce demand. It suggests that the mechanisms are important for accurate travel demand estimation, but that it is difficult to generalise about which mechanisms are most important in which situations.

Policies and tools for travel demand management

Transport and planning policy

5.8   Although travel demand is derived from wider economic and social needs there are many ways that demand can be influenced by public policy. The adoption of e-

working and its impacts, needs to be viewed within the context of the prevailing, and changing, policy and legislative framework.

5.9   E-working increases flexibility for people and businesses, increasing the scale of the responses shown in Table 5.1 for the main policy interventions used to influence travel demand (summarised from Scottish Executive 2003, Cairns et al 2004). E-working can therefore have both positive and negative impacts on travel demand dependent on the parallel complementary hard and smart measures being implemented.

Table 5.1 – Policy measures and demand management impacts

Policy Initiative	Tool	Impacts where ICT and e-work affect the scale of the change
Hard factors		
Transport infrastructure changes	Traffic management, road and rail construction, improvements to facilities, bus shelters, pedestrian crossings, etc.	Will tend to increase demand if infrastructure capacity is provided and reduce demand if capacity is reduced.
Service changes and network management	Improved vehicles and trains Speed limits, traffic cells, priority signalling, bus priority Intelligent transport systems	Will tend to increase demand if travel times are reduced and reduce demand if travel times are increased.
Land use planning	New development location	Most development increases demand but development in inaccessible locations increases demand most.
Charges, taxes, and grants	Road/user parking charges and taxes Public transport subsidies, fares	Generally reduce demand in line with charges
Facility and site improvements	Workplace/residential parking, lockers and changing facilities	Additional provision increases demand and reduced provision suppresses demand.
Smart measures		
Regulatory measures	Encouragement for innovation, competition, diversity and efficiency	Regulation generally suppresses demand and innovation, competition, diversity and efficiency increase demand. Highly regulated public transport therefore currently suppresses demand relative to lightly regulated road transport.
Institutional support	School and workplace travel plans, employee training and development, personalised travel plans Flexible work schedules, lifestyle support Risk sharing for cost of backup for transport/personal emergencies/problems Technological support for e-activities	These impacts relate to particular people to help manage business and lifestyles which can involve increases or reductions.
Information	Transport information, e-communications.	These encourage more efficient choices so will sometimes reduce travel demand but sometimes raise awareness or open up other options which increase demand.
Business development and marketing	Event management, site management, publicity, travel awareness, health awareness	These encourage better management of travel demand so will often support public transport use and car travel reduction. Marketing can also help events and businesses to be more successful which can lead to more travel.

Environmental policy

5.10   An influential factor in putting telework on the political agenda has been to promote it as a means for reducing greenhouse gases and nox emissions. The jump from assumptions about potential trip substitution to environmental impact without looking at the impacts on travel demand more explicitly, is common within policy due to presentational needs of organisations to "greenwash" their activities (Rye 2000).

5.11   More rigorous treatment of the relationships between environmental factors and transport policy show that a broad approach is needed which looks at both positive and negative responses (Goodwin 1997, SACTRA 1999). Narrow assumptions such "buses good/cars bad", or building roads to boost economic development, or in this case e-working improves the environment therefore have little to add to the evidence base.

5.12   The importance of environmental policy is that it is underpinned by a national and international policy and legislative framework that incentivises action on travel demand management measures such as e-working.

Employer policy

5.13   The importance of changes in the policies of human resource departments has already been identified as an important influence on the take up of e-working. Employment policy is also an important influence on mode choice with recent research in Glasgow (Scottish Executive 2003) showing that workplace and employment related conditions were the single most important factors restricting public transport mode choices for their journey to work accounting for 43% of those surveyed.

5.14   If people can only e-work if their employer lets them, and can only use public transport if they employment conditions allow this, then it follows that that management and administrative factors are amongst the most important influences on whether ICT and e-work will affect travel demand and traffic levels.

5.15   In many cases, more flexible employment conditions appear attractive to employers when they are promoting business relocation decisions. For example BBC Scotland decided to relocate all but a core news staff from Edinburgh to Glasgow. Many of the Edinburgh based staff did not wish to relocate their families to Glasgow and consequently retained their homes in Edinburgh and adopted e-working (bbc.co.uk). Other research shows that over time it can be expected that people will move house or job so short and long term impacts may be different.

5.16   Greater employment flexibility therefore can be associated with encouraging longer journeys to work and needs to be viewed alongside the relatively low commuting times currently observed in Scotland. There is therefore potential for ICT and e-working to stimulate significant increases in travel.

5.17   This is a poorly researched topic and requires longitudinal studies of employers in a range of sectors and locations. It is also highly topical with moves planned for the National Transport Agency in Scotland and Scottish Natural Heritage.

Land use policy and impacts

5.18   If people optimise their behaviour to take account of the opportunities open to them, and travel demand management seeks to limit increases in travel demand, then

land use policy is perhaps the most important long term regulatory mechanism of government to control what activities take place (ECOTEC 1993).

5.19   Although surveys of teleworkers show a fall in trip numbers, large rises in longer distance trips are observed (TNO 2004, Cairns et al 2004). Therefore if e-working is encouraging more dispersed patterns of activity, then it follows that in the long term there could be substantial travel demand induced. National planning policy seeks to limit (NPPG17/SPG17) this with development planning and control seeking to reduce travel demand by improving opportunities for access to employment and other services. If e-working creates pressure for the development of extended suburbs (sometimes called exurbia), and this is not controlled by the development planning process then the travel demand implications could be substantial.

5.20   Given the current economic geography of Scotland it seems unlikely that planning policy will oppose housing development in for example rural Ayrshire, due to the needs for regeneration, or remote parts of the Highlands where population has been declining. The land use planning function will therefore be more likely to take advantage of the economic development benefits of e-working than the potential travel demand reduction benefits.

5.21   What seems clear is that whether it is driven primarily by e-working and ICT, or simply increased wealth and changes in social patterns, increasingly dispersed living has profound implications for travel demand, the spatial organisation of society, and the environment (DHC 2005).

Magnitude of the effects

5.22   There is a large and conflicting evidence base on the magnitude of the interacting competing effects. This is not surprising and echoes more general findings on smart measures that the impact can be very large or very small depending on the extent to which e-working changes are supported locally by policies and parallel initiatives.

5.23   To achieve robust estimates of travel demand changes from e-working, it is necessary to look at all trip purposes, not just those related to work. In paragraph 5.6 it was noted that it is also necessary to look at the effect of telework adoption on people around the teleworker, including family members, local shops, recreational sites, postal services, and colleagues who remain in the work place.

5.24   Since the available research does not look comprehensively at these issues and is limited in other important ways, as discussed below from paragraph 5.28 to 5.30, there are major limitations on the scope for robust conclusions to be made about the magnitude of the effects. However, the research does help to scale the impacts by identifying from case studies how particular companies and groups of people have been affected by e-working and ICT.

5.25   Table 5.2 shows that the *net* mileage reductions vary from between 1243 to 8878 miles per annum, and Table 5.3 shows direct substitution effects of between 720 and 9000 miles per annum. If it is assumed that these reductions can be set against the average mileage travelled by Scottish residents from the Scottish Household Survey of about 6970miles (averaging 2000 to 2003 figures) then it is clear that very large proportional reductions may be being indicated.

5.26 If it is assumed that on any day 15% of the population in Scotland could telework (the upper bound from Chapter 4) and each of these could reduce their travel by 5000 miles (a rough average of the above reductions) then an upper bound estimate of travel demand reduction from teleworking would be 11%.

5.27 Table 5.3 provides a summary of the 30 case studies in 5 countries carried out as part of the Sustel project (Sustel 2004). This provides figures for average commuting savings, additional journeys undertaken and net rebound effects.

Table 5.2 Summary of Case study findings for Teleworking

Authors	Target Group	Substitution Effect	Complementary Effect	Net Effect
NOP (Gerarghty 2004)	1600 internet users who teleworked	Average 16.3 miles per round trip saved (ave 3.1 days p/ wk) **= -2324m pa**	56% made non work journeys (ave. 4 miles ea.) whilst at home	12.3 miles saved per day **= -1754m pa**
Shallabock *et al.,* 2003	400 teleworkers in a Munich Insurance company	Ave. car mileage savings = 1,440,000 km pa **= -2237m pa**	Reduction of car occupancy. Trips which could be combined with trips to and from work (19km weekly per teleworker) Trips made by family workers because of car availability (72km per week per teleworker) = total 640,000 km pa **=+994m pa**	800,000 km/year = 2000 km pa per teleworker **= -1243m pa**
Hopkinson and James 2003	20 BAA staff	Ave. reduction 61 miles p/wk **= -2806m pa***	Ave. increase of 16 new trip miles p/wk **= +736m pa**	- 45 miles p/wk **= -2070m pa**
Hopkinson and James 2003	199 BT staff registered with Workabout	Ave. car commuting reduced by 253m p/wk **= -11,638m pa**	More non work trips	193 m p/wk saved **= -8878m pa**
Hopkinson *et al.,* 2001	103 AA call centre staff (67 responded)	Vehicle miles saved per employee **= -3680m pa**	30-40% miles offset + some non work travel increased **= +1100-1470 pa**	 **= -2210-2580 pa**
Mitchell and Trodd 1994	70 teleworkers - Cross section of UK existing teleworkers	Results differ according to how many days a week working at home.	21% reported additional non work trips	Average reduction 113 miles p/wk **= -5876 m pa**
Notes: 1. In this table both complementary and substitution effects are reported and standardised to vehicle miles saved per employee per annum. 2. Assumed that 46 weeks worked pa or 220 working days					

Table 5.3 Case study findings for Teleworking

Authors	Target Group	Substitution Effect
Mesner 2002	23 volunteers 1 day p/wk, (Yorkshire and Humber)	- 1356m pa
Mesner 2002	East of England Development Agency	-3344m pa
SustainIT 2002	19 workers at Sefton Metropolitan Borough Council	-720m pa
HOP Associates 2000-2003	65 staff Hereford County Council Trading Standards	-9000 m pa
Hop Associates 2001	145 RM Consulting staff	-1724m pa
Hop Associates 2001	ADAS Consulting	-2000m pa
Koenig et al 1996 and Niles 1990	40 participants California State Telecommuting Pilot[2]	-1752m pa
Notes:		
1. Only substitution effects are reported (standardised to vehicle miles saved per employee per annum (travel effects only))		
2.[1] in work mileage = 5-8% reduction		
3.[2] on telecommuting days – ave. 1.3 days per week = -29.3m (Nilles 1990)		

Table 5.4 – Summary of 30 Case Studies in five Countries

	Denmark	Germany	Italy	Netherlands	UK - BT	UK - BAA
Mean estimate reductions in weekly commuting **(Km)**	105	283	242	98	253	61
Mean estimated additional travel **(Km)**	77	53	33	42	60	15
'Rebound effect' as a percentage of commuting savings **(%)**	73	19	14	43	24	25

5.28   Before accepting at face value the very positive messages about traffic reduction in Tables 5.2 to 5.4 it is necessary to question carefully the assumptions and methods:

- Representativeness and size of the sample - Staff selected for trials often had a personal vested interest in 'successful' outcomes or were chosen as 'best case' employees. Figures are also often based on respondent estimates. Also the current case study evidence provides little information on the differences between types of geographical locations

- Companies undertaking research had vested interests in positive outcomes (e.g. BT)

- Duration of research – The theory suggests that longer term studies would be needed to observe most complementary effects so the relative importance of substitution may be being overestimated. For example longer term employee relocation changes may erode initial travel savings.

- Scope – It may be that there are tasks which e-workers no longer undertake, such as attending meetings, that other staff backfill increasing travel demand elsewhere in

the organisation. There is also a lack of measurement key data relating to car occupancy, public transport journeys and walking and cycling activity.

- Definition - No two studies appear to define teleworking and calculate the results in exactly the same way.

5.29   It is also interesting to note from this review that the type of organisation undertaking the studies appears to have an influence over the outcome with:

- Most policy makers and large employers being confident about net traffic reduction impacts – e.g "overwhelming evidence that telework does lead to reductions in travel with expected traffic reduction impacts of teleworking between 2 and 15% taking place progressively over a decade" (DTLR 2002)..

- Academic studies being generally much more cautious – "while the direct effects of teleworking may be to reduce travel, the wider effects of telework and other ICT use is to generate a sufficient number of new trips to eliminate the benefit or even to increase traffic levels" (Akiva, Niles)

5.30   A major obscuring factor, making longitudinal research difficult, is that both ICT uptake and car usage are increasing in parallel as a result of an expanding economy and improvements in technology (STELLA 2004), so it is very hard to unpick from this how much the two interact with each other.

5.31   Although there may be doubt about the precise impacts on traffic levels, there is however a broad consensus that the promotion of ICT and e-working is a good thing. The improvements in accessibility and choice, and the flexibility offered through new networking opportunities, mean that successful e-working solutions are consistent with sustainable transport and development agendas.

Relevance to Scotland

5.32   Although several of the studies in Table 5.2 include samples within Scotland, the results have not been presented in a way which allows disaggregation to particular places. There is however some evidence that ICT and e-working may have a greater impact on Scotland due to:

- Some of the remotest parts of Europe - The strongest adoption of e-living is being seen in other widely distributed nations like Canada, Australia, New Zealand and Finland (Mitchell 2005, Heinonen 1998).

- A high proportion of people living in small towns of between 3,000 and 10,000 people which have relatively poor accessibility and where e-networks can therefore make the greatest impact.

- Two thirds of all jobs located in the four largest city conurbations (Scottish Executive 2002) meaning that spatial policies to distribute economic activity relies on improved networks.

5.33   Further research is needed to project the current knowledge about travel impacts of ICT and e-working to fit the context of Scotland's changing geography and demography. Scotland is to be one of the first countries in the world with 100% broadband coverage, and e-working may well present greater opportunities than for other countries. There are therefore likely to be greater positive and negative impacts

on travel demand. Further work will however be needed to assess the balance between substituted and induced travel effects in different contexts to identify whether this will lead to net increases or decreases in travel.

Traffic levels

5.34   If messages about the impacts on overall travel demand impacts are complex then much greater clarity can be achieved by unpicking the components that could lead to traffic reduction.

5.35   The research is very clear. The increased flexibility and availability of information provided by ICT and e-working allows people to improve efficiency and this includes avoiding congested sections of roads at peak times of day (James 2004, Cairns 2004). An unaltered (or even slightly increased) burden of traffic distributed more evenly across the day can make very substantial reductions in congestion. There is currently no generally agreed definition of congestion but most approaches relate to the avoidance of delays and the reliability of journey times (NAO 2004).   The difference between peak and off peak journey times and the reliability of trips at all times of day can be improved if travellers:

• Can choose when to travel

• Know when problems arise and avoid using the affected modes or locations at these times

5.36   Flexibility and choice are stronger attributes for car travel than they are for public transport (Stradling 2001). It is therefore not surprising that there is a consistent finding that e-working impacts more upon reducing public transport use than car use (Lyons 2002). It also appears to allow people to switch mode and use their car at an uncongested time of day.

5.37   E-working is therefore no different from any other demand management intervention with both "push" and "pull" interventions being needed to achieve desired aims. Without "push" measures such as road capacity reduction or road pricing, increased flexibility for users allows them to fill up spare capacity on the road network throughout the day (Gillespie *et al* and Salomon, Lake 2004).

Summary of travel behaviour impacts

5.38   Overall the conclusion of this analysis is that the flexibility offered by new e-opportunities allows public agencies to secure social and environmental benefits for communities through travel demand reduction measures, but also allows individuals and businesses to travel more. To secure the potential travel demand reduction effects, there would need to be a significant increase in complementary measures to manage travel demand.

5.39   Figure 5.1 shows the main mechanisms for change.

Figure 5.1 – ICT and e-work influences on travel demand
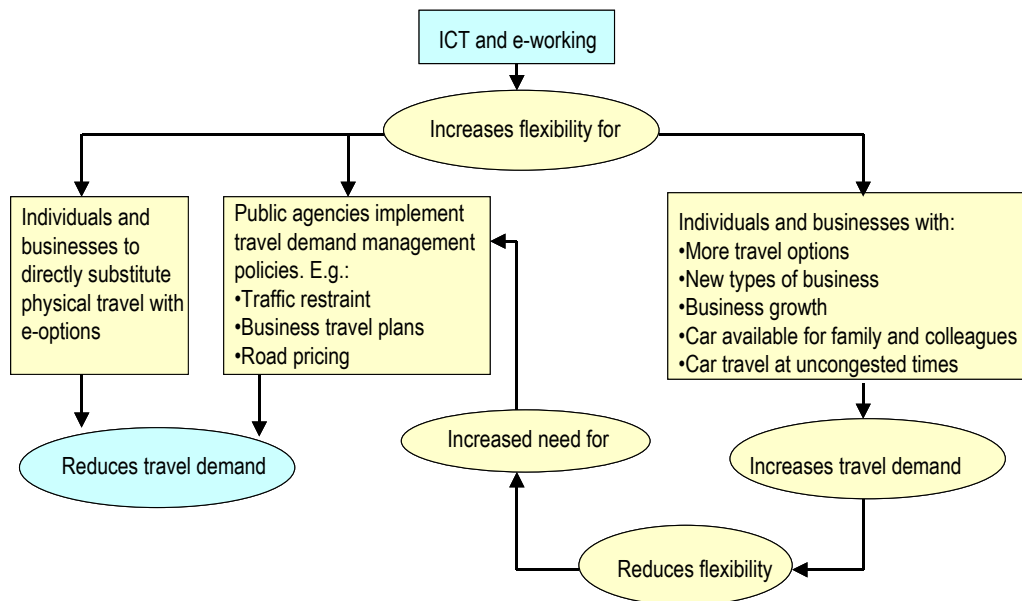
5.40 The potential traffic reduction benefits are significant. E-working can help to uncouple long term relationships between economic activity and travel demand. Based on the international evidence and case studies, a managed approach could achieve travel demand reductions of up to 11% in the Scottish context. Much greater reductions in congestion are also possible by making better use of exiting capacity.

5.41 To achieve this level of traffic reduction and congestion relief would require a step change increase in activity on travel demand management policies involving:

• Transport infrastructure and service changes

• Land use planning and facility and site improvements at homes and workplaces

• Charges, taxes, and grants

• Regulatory measures

• Institutional support such as workplace travel plans and flexible working patterns

• Information, business development and marketing initiatives

5.42 However even if the travel demand increases exceed the efficiency benefits, there remains a broad consensus that the promotion of ICT and e-working is a good thing, with improvements in accessibility and choice being generally consistent with sustainable transport and development agendas.

6.0 LOOKING TO THE FUTURE

6.1 In his autobiography 'The Road Ahead' written in 1995, Bill Gates the founder of Microsoft concentrated on stand alone PCs and CD ROMs as the future of ICT. If only a decade ago one of the central figures in ICT, failed to grasp the benefits from networking, then the challenges for predicting future travel demand as a result of e-change are clear.

6.2 Perhaps the challenge for transport is the reverse of the one that has faced ICT. The recent focus has been on physical networks and the next steps are to look more carefully at the stand alone decisions of individual travellers and businesses. Transport planners have been used to having the ability to make decisions on behalf of people: to build a road, to provide a bus service, or to refuse planning permission for a new development on transport grounds. Instead future travel demand prediction will be based on working more closely with people and businesses to jointly shape sustainable transport markets (Halden 1996).

6.3 Within the constantly changing technological and policy environment this research reveals: the sort of information that is useful, the extensive work programmes already underway, and the challenges of applying this knowledge to transport.

Future research

6.4 It is very significant that most of the research that has supported this review has only touched on transport as part of a wider agenda to look at the overall impacts of ICT. It is a substantial research exercise to capture the relevance for transport in Scotland of this widespread and ongoing knowledge base. This small review has been a first step but further work is needed. There are both research and data collection needs as follows:

- Understand the factors affecting lifestyle choices and how they are changing. To achieve this, new kinds of data are needed to understand substitution and complementary travel effects. These need to consider interactions of travel decisions between household members and more general e-lifestyle issues.

- More longitudinal studies with larger samples from a range of businesses over longer periods of time to identify how multiple effects combine into overall impacts.

- The studies need to move beyond dealing with the aggregate level, towards individuals and their activities. Continued expansion of the Scottish Household Survey data could help collect geo-referenced data of individual's activities and travel that will allow the construction of detailed space-time geographies of everyday life. However within the survey it would be helpful if homeworkers could be asked what use they make of ICT.

- By understanding the social and geographical context of the impacts - gender, class, transport systems, land use, etc – research will be better placed to identify the transferability of findings between locations.

- Effects on journey purposes other than commuting are needed, since it is leisure travel that has fuelled much traffic growth in recent years and ICT affects different trip purposes in different ways.

- In addition to investigating large companies, mobile and self employed workers need to be studied as they increasingly make up a higher share of workers.

Policy

6.5 Despite the gaps in the knowledge, the evidence within this review gives some clear pointers for policy to ensure that ICT and transport policy work together to support sustainable development goals. The increased flexibility offered by ICT and e-working are key advantages that define its potential. Whether for security, sustainability or efficiency, e-working provides a choice which is increasingly attractive if physical travel becomes more difficult. Therefore to ensure a conducive policy culture it is necessary to recognise the cross-cutting benefits of promoting ICT development and e-working.

6.6 The challenges of joint working are recognised and continue to grow given increasingly complex policy aims for equity and choice, and the growing complexity of people's lives. Research can generate better understanding of the integrated lifestyle choices, but policy which separates decision making e.g. between transport and communications will struggle to cope with the new e-lifestyles.

6.7 The transport choices of travellers are a trade off between cost, time, availability, and quality factors; people seek to maximise accessibility within limited time and cost budgets. A key role for government is to ensure that where the market fails to support economic development, social inclusion and environmental aims then appropriate policy interventions are delivered. In some cases the best way of ensuring good accessibility for all, will be through an ICT intervention such as improving skills to use ICT or improving availability of ICT networks.

6.8 Digital inclusion policy recognises the need to work through communities, building capacity, increasing skills and supporting new technologies. Economic development/broadband policy works particularly closely with the market to widen geographical coverage. Communities and markets for transport and ICT delivery can be geographically based, topic based, or people group based.

6.9 To achieve a joint approach, emerging best practice focuses on the needs of people and communities, rather than types of service provision. E-options or physical travel options can therefore be supported according to the contribution that they make to the social or economic needs of any individual or people group. Emerging best practice includes broad action to enhance: skills, knowledge, physical access, capabilities, information, affordability, capacity, acceptability, quality, safety and security. Future policy therefore needs to ensure that all barriers are tackled systematically, since removal of one barrier to access opportunities through ICT or travel does not necessarily imply any improvement for individuals, businesses or companies who still face other barriers.

6.10 Cross sectoral policy approaches are developing (Making the Connections - SEU 2003) and the emerging "accessibility planning" approaches rely on an audit of

accessibility need, joint planning, and multi-sector resource assembly. Some of the good examples of such action within the Scottish Executive, have been:

- The Digital Inclusion Strategy which has identified the barriers to using ICT such as lack of confidence and knowledge and developed a targeted action programme to overcome these problems.

- Promoting travel plans within transport policy where employers and other organisations have considered the accessibility needs of their workforces and customers often delivering ICT rather than transport solutions to tackle identified needs.

- Rural partnerships which have broad forward complementary programmes of transport and ICT development to support the development of rural communities.

6.11   The lessons from these and other similar programmes provide a pointer to future policy across wider transport, social inclusion and economic development policy. By focusing on the networking/connectivity/accessibility needs of people and businesses, public investment and regulation in transport and ICT can be targeted where it is most needed for Scotland's economy to grow and the opportunities for all people to be enhanced.

7.0 CONCLUSIONS

7.1 Information and knowledge are replacing capital and energy as the primary wealth-creating assets, just as the latter two replaced land and labour 200 years ago. Within this new economy, the long held association between car use and wealth is being challenged. It appears that the amount of travel needed to support each pound of economic activity is now able to fall as a result of ICT.

7.2 ICT and e-working increase flexibility and this presents opportunities for:

- Public agencies to capture economic, social and environmental benefits consistent with sustainable development plans, including traffic reduction.

- People and employers to improve efficiency, widen opportunities and improve job satisfaction and quality of life.

7.3 The flexibilities offered could help to enable travel demand reductions of up to 11% in the Scottish context. Much greater reductions in congestion are also possible by making better use of exiting capacity. However to secure the potential travel demand reduction effects, there would need to be a significant increase in complementary measures to manage travel demand.

7.4 High take up of e-working is associated with: low population densities, the need for security by working from dispersed locations, fiscal incentives, and the prevalence of managerial, professional and administrative jobs.

7.5 13.5% of working adults in Scotland spend at least some of their time working from home. The proportion of people who could telework in the future is unlikely to exceed 40% without major economic restructuring. Given the geography and demography of Scotland, e-working is relatively more important for the economy than for other parts of the UK, and this is likely to lead to greater positive and negative impacts on travel demand.

7.6 To secure these benefits, a cross-sectoral approach to policy and programme delivery will be needed. Separate transport policy and communications policy will struggle to cope with the new e-lifestyles. Emerging best practice includes broad action to enhance: skills, knowledge, physical access, capabilities, information, affordability, capacity, acceptability, quality, safety and security. The lessons from successful programmes provide a pointer to future policy across wider transport, social inclusion and economic development policy. By focusing on the current and future networking/connectivity/accessibility needs of people and businesses, jointly funded public investment in, and regulation of, transport and ICT can be targeted where it is most needed for Scotland's economy to grow, and the opportunities for all people to be enhanced.

7.7 To inform policy agendas, and support sustainable transport and e-networks, new types of information and analysis are needed. These should consider trends in lifestyle choices, and business travel needs, and form a core part of investment appraisal for transport and other public funding. The mechanisms of interaction between transport and e-networks identified in this report provide a starting point for such appraisal, but further research is needed to provide a stronger empirical base.

8.0   REFERENCES

Akiva, B. *et al*. 1996. Travel Demand Model System for the Information Era.

Amarach Consulting. 1998. for Dublin Transportation Board: Telecommuting, The Shortest Route to Work.

Australian Federal Chamber of Automotive Industries 2002. reported in NRMA Magazine "Open Road".

Ayres R. U. and Williams, E. 2004. The digital economy: Where do we stand? Technological Forecasting and Social Change. Volume 71, Issue 4, Pages 315-339.

Bagley, M.N. *et al*. 1995. Telecommuting Centres and Related Concepts: A Review of Practice.

Balepur P.N., Varma K.V., Mokhtarian P.L. 1998. The transportation impacts of center-based telecommuting: interim findings from the neighbourhood telecenters project *Transportation* 25(3) 287-306

Barker, C. 2004. Mobility reaches the mainstream. Computing March 2004 - www.computing.co.uk

Bennett, M 2005. Tax break brings PCs home. IT Week 06 Jan 2005.

Bibby, A 1991. 'Home is Where the Office is: A Practical Handbook for Teleworking from Home' Hodder .

Booz Allen Hamilton International 2002. e-Economy Benchmarking The World's Most Effective Policies For The e-Economy. London 19 November 2002.

Brooks, D. 2004. "On Paradise Drive: How We Live Now (And Always Have) in the Future Tense" Simon & Schuster.

Cairns S., Sloman L.; Newson C.; Anable' J.; Kirkbride' A., and Goodwin' P. 2004. Smarter Choices – Changing the way we travel Chapter 10: Teleworking report for the UK Department for Transport July 2004

Canada Customs and Revenue Agency (undated) CCRA 2002 IT-352R2, Employee's Expenses, Including Work Space in Home.

Carr-Hill & Chalmers-Dixon 2002. A review of methods for monitoring and measuring social inequality. Centre For Health Economics, University of York

Centre for Transport and Society 2003. Travel Time Usage in the Information Age with Centre for Mobilities Research

Choo, S; Mokhtarian, P. L; Salomon, I. 2005. Does telecommuting reduce vehicle-miles traveled? An aggregate time series analysis for the U.S. Transportation Volume 32, Number 1 Date: January 2005 Pages: 37 - 64.

Clark, N. 2004. The Tipping Point - Evidence Why Business is Suddenly Focusing on Women! Womensmedia.com

Clarke, D. 2001. Companies May Get Paid to Push Telecommuting - reported on: http://pcworld.about.com/news/Apr252001id48466.htm

Commission for Integrated Transport 2004. Research Reports, European Best Practice in the Delivery of Integrated Transport, Report on Stage 1: Benchmarking.

Dejonckheere J., Ramioul M., Van Hootegem G. 2003. Is Small Finally Becoming Beautiful? Small and medium-sized enterprises in the new economy. IES Report 391. a study from the EMERGENCE project

DHC 2005. Transport and Rural Economies. Final report for the Countryside Agency.

Dodgson, J., Pacey, J., and Begg, M. 2001. RAC Foundation "Motors and Modems Revisited: the role of technology in reducing travel demands and congestion" http://www.nera.com

DTI 2002. Teleworking in the UK, Labour Market Trends June 2002

DTI 2003. Telework Guidelines. HMSO. DTI/Pub 6856/10k/08/03/NP. http://www.dti.gov.uk/

DTI 2004. Employer provided home computing initiatives - Information and Guidelines - www.dti.gov.uk/hci

DTLR 2002. The impact of information and communications technologies on travel and freight distribution patterns: review and assessment of literature, Report by HOP Associates and Transport Research Group, University of Southampton

EFF (undated). Statement by John Perry Barlow. The Electronic Frontier Foundation.

Eurostat 2005-03-24 UWE 2003

Financial Times 2003. Case study: American Express. - Financial Times, December 19, 2003.

Fogarty B, 2004, A role for teleworking: the BT experience, BT Seltrans presentation

Fouracre & Hill (1998) Report for the Highways Agency research programme on understanding travel behaviour, produced by TRL, as quoted in Dodgson et al (2000).

FutureSkills Scotland 2004

Geraghty C, 2004, How the Internet can help ease traffic congestion, Presentation at 'Alternative Approaches to Congestion' conference convened by BT26/1/02

Gillespie *et al*. 1995. Review of Telework in Britain: Implications for Public Policy.

Gillespie *et al*. 1995. Review of Telework in Britain: Implications for Public Policy.

Glasgow Inward Investment News Autumn 2004. Glasgow City Council AND Scottish Enterprise.

Glogger, A.F., Z_ngler, T.W & Karg, G. 2003 Proceedings of the TRIP Research Conference, Hillerod, Denmark Feb 2003 The Impact of Telecommuting on Households' Travel Behaviour, Expenditures and Emissions

Golob, T. 2000. Travelbehavior.com: Activity Approaches to Modeling the Effects of Information Technology on Personal Travel Behavior.

Guest, A. M. 1999 Some Evolving Thoughts on Leo F. Schnore as a Social Scientist. Center for Demography and Ecology University of Wisconsin-Madison CDE Working Paper No. 99-07.

Halden 1996. Managing Uncertainty in Transport Policy Development. Proceedings of the Institution of Civil Engineers.

Hamer, R. *et al* 1991. Teleworking in the Netherlands: an Evaluation of Changes in Travel Behaviour.

Handy, S, & Mokhtarian, P.L. 1995 Forecasting Telecommuting - An exploration of methodologies and research needs.

Handy, S. L. and Mokhtarian, P. L. 1996. Forecasting Telecommuting - An exploration of methodologies and research needs.

Heinonen, S. 1998. Telework Potential in Finland - VTT Communities and Infrastructure - Espoo 1998.

Hensher, D.A. & Jeyes, A.J. 2000 Trip-chaining as a Barrier to the Propensity to use Public Transport, Transportation 20 4.

Hepworth, M & Pickavance, L 2004. The Geography of the Scottish Knowledge Economy A report prepared for Scottish Enterprise. Local Futures.

HOP Associates 2001. Travel plans: new business opportunities for suppliers of information and communication technology. Report produced by the Energy Efficiency Best Practice Programme. General report 80.

Hopkinson, P. et al. 2001. The Impacts of Teleworking - A Study of AA Employees.

Hopkinson, P., James, P., Mayurama, T., Selwyn, J. 2001. The impacts of teleworking – a study of AA employees. As summarised on the HOP Associates database at www.virtual-mobility.com.

Hopkinson, P; James, P; and Maruyama, T. 2002. Teleworking at BT - The Economic, Environmental and Social Impacts of its workabout scheme. Report on Survey Results SUSTEL IST-2001-33228.

Hopkinson, P., James , P. 2003. UK report on national SUSTEL fieldwork.

Hori, M. & Ohashi, M 2004. Teleworking and mental health - Collaborative work to maintain and manage the mental health for women teleworkers. Proceedings of the Hawaii International Conference on System Sciences.

Hulme, M & Peters, S. 2005. Me My Phone and I, Teleconomy Unit, Lancaster University.

Huws U, Jagger N, O'Regan S. 1999 Teleworking and Globalisation, IES Report 358. ISBN 1 85184 287 X.

Huws, U 1996 Teleworking - An Overview of the Research

Huws H, Jagger N & Bates P 2001. Where the butterfly alights, the global location of e-work. Institute of Employment Studies, Report 378, as quoted in DTI 2002.

IES 2003. Will flexible working policies confirm that a woman's place is in the home? Press Release 16 July 2003 Institute of Employment Studies.

ILO 1999. International Labour Organisation, Sectoral Activities Programme, Final Report: SDPT/1999/D7 Symposium on the Social and Labour Consequences of Technological Developments, Deregulation and Privatization of Transport Geneva, 20-24 September 1999.

IMD World Competitiveness Yearbook 2004. Published 2005 IMD International.

Institute for Employment Studies 2002. eReadiness: Regional Data. EMERGENCE Project.

Intelligent Community Awards 2004. Intelligent Community of the Year Glasgow, Scotland, United Kingdom a project of the World Teleport Association.

James, P 2003. Is Teleworking Sustainable An analysis of its economic, environmental and social impacts www.sustel.org

Jensen, L.M., Jensen-Butler, C., Madsen, B., Millard, J. and Schmidt, L. 2003. A web-based study of the propensity to telework, based on socio-economic, work organisation and spatial factors. Proceedings of the TRIP research conference, Hillerod, Denmark, February 2003

Kelly 1955. The psychology of personal constructs

King, E. and Leibling, D. 2003. Commuting and travel choices. Presentation to the RAC Foundation / Railway Forum Conference 22 July 2003.

Kistner, T. 2004. OPM report links telework to emergency readiness. Network World. Jun 7, 2004.Vol.21, Iss. 23; pg. 44.

Kistner, T. 2004. Q&A: Congress fights telework malaise . Network World: Jul 19, 2004.Vol.21, Iss. 29; pg. 25.

Kitamura, R. *et al*. 1990. Telecommuting as a Transport Planning Measure: Initial Results from the State of California Pilot Project.

Koenig, B.E., Henderson, D.K., Mokhtarian, P.L. 1996. The travel and emissions impacts of telecommuting for the State of California telecommuting pilot project. *Transpn. Res.-C* 4, 13-32

Koenig, B.E., Henderson, D.K., Mokhtarian, P.L. 1996. The travel and emissions impacts of telecommuting for the State of California telecommuting pilot project. *Transpn. Res.-C* 4, 13-32

Krugman, P. 1999. New Economic Geography.

Kunert, P 2004. Small businesses miss HCI message. ComputerWeekly.com Monday 27 September 2004.

Lake, A.S. & Van Vuren, T. 1997. Assessing the Impact of Advanced Telecommunications on Work-related Travel.

Lake,A, 2004. Travel reduction and teleworking: what we know and what we dont http://www.flexibility.co.uk/issues/transport/travsubsummary.htm,

Levy and Murnane 2005. "The New Division of Labor: How Computers Are Changing the Job Market" published by Princeton University Press

Lyons, G. *et al* 1997. The Potential Impacts of Teleworking on Travel: Results from a Longitudinal UK Case Study.

Lyons, G.D. 1998. An Assessment of Teleworking as a Practice for Travel Demand Management. Transport 129 4 , 195-200, ICE

Lyons, G., Chatterjee,K., Marsden,G and Beecroft,M, 2000. Society and Lifestyles The first of eight reports from the Transport Visions Network, Landor Publishing

Lyons,G, 2002. Internet: Investigating technology's evolving role, nature and effects on transport, Transport Policy 9, pp335-346

McLuhan, M. 1964. Understanding Media. New York: Mentor

Mesner,S, 2002. Teleworking promises fewer car trips, but what is it actually delivering, LTT Issue 336

Mesner,S, 2002. Teleworking promises fewer car trips, but what is it actually delivering, LTT Issue 336

Miller, J. et.al. 1999. FORESIGHT ICT REPORT - part of South Africa's National Research and Technology Foresight project.

Mitchell, H & Trodd, E. 1994. An Introductory Study of Telework Based Transport-Telecommunications Substitution, 1994;

Mitchell, S. 2005. Coonan launches telework taskforce - Australian IT MARCH 11, 2005.

Mitomo *et al*. 1999. Information Technology for Sustainable Societies - Public Policy Perspectives in Japan: The Case of Telework.

Mokhtarian, P. and Salomon, I., 1994. Modelling the choice of telecommuting: setting the context, Environment and. Planning A, 26: 749-766.

Mokhtarian, P.L. 1997. A Synthetic Approach to Estimating the Effects of Telecommuting on Travel.

Mokhtarian, P.I., Varma, K.V 1998. The trade-off between trips and distance travelled in analyzing the emissions impacts of center-based telecommuting *Transpn. Res.-D* 3(6) 419-428

Mokhtarian, P.L. 2000. Telecommunications and Travel.

Mokhtarian, P.L. and Salomon, I. 2001. How derived is the demand for travel? Some conceptual and measurement considerations. Transportation Research A, 35, 695-719

Monster.com 2005. Telework Poll - reported on www.onrec.com/content2/news.asp?ID=4299

MORI 2001. "British Office Workers Want To Work From Home" conducted for MITEL networks 26 April 2001.

Mortimer, J 1997. Teleworking and Local Government. Assessing the Costs and Benefits. Employers' Organisation for local government. www.lg-employers.gov.uk

Moss, L.M. and Carey, J. 1991. The New York Telecommuting Project,

Nader, F.H. 2005. "Electronic Substitution for Mail: Models and Results; Myth and Reality". Pitney Bowes.

NAO 2005. Tackling Congestion by Making better use of England's Motorways and Trunk Roads. National Audit Office.

National Statistics Office 2003. Family Spending: A report into 2001-02 Expenditure and Food Survey 22/09/03 www.statistics.gov.uk

Negroponte, N. 1995. Being Digital. Hodder & Stoughton ISBN 0 340 64525 3

Netilla Networks 2004. Flexible Working Survey - Survey of 165 commuters in London's Liverpool Street Station.

New Scientist 24th January 2004 "The Concrete Jungle".

Nilles 1990. The State of California telecommuting pilot project final report JUNE 1990 *JALA Associates, Inc.,* Los Angelos

Niles, J. 1995. Beyond Telecommuting: A New Paradigm for the Effect of Telecommunications on Travel.

Niles, J. 1999. The Olympics, Jakarta Traffic, and Telework. Pacific Link http://www.pacific.net.id/pakar/jmnilles/olympics.html

OECD 1997. Committee For Information, Computers and Communications Policy GII-GIS

ONS 2005. Household Expenditure.

Ortuzar,J. de D; Willumsen,L.G 1994. Modelling Transport (3nd edition) Wiley, Chichester

Parkhurst, G. 1999. Environmental Cost-Benefits of Bus-based Park & Ride Systems.

Pendyala, R.M., Goulias, K.G., Kitamura, R. 1991. Impact of telecommuting on spatial and temporal patterns of household travel *Transportation* 18, 383-409

Personnel Today 2004. "Take IT home" Personnel Today Magazine 12 October 2004.

Peters, P, Tijdens, K.G. and Wetzels, C. 2004. Employees' opportunities, preferences, and practices in telecommuting adoption. Information & Management Volume 41, Issue 4 , March 2004, Pages 469-482.

Pieda Consulting 2004. Digital Communities, Final Report for The Scottish Executive.

Pratt, J.H. 2000. Asking the Right Questions about Telecommuting: Avoiding Pitfalls in Surveying Home-based Work.

RAC   Statistics   2003   from: http://www.carpages.co.uk/land_rover/land_rover_womens_panel_reaches_second_ann iversary_14_07_03.asp

RBC Financial Group 2002. The Internet is Shaping the Way in Which Canadian Families Live and Work Together - Royal Bank of Canada/Ipsos-Reid study.

Road & Travel Magazine 2003. Women and the Automotive World

Rouwendal J. & Rietveld P. 1994. Changes in Commuting Distances of Dutch Households. Urban Studies, November 1994, vol. 31, no. 9, pp. 1545-1557

Roycroft, R.W. and Kash, D.E., 1999, The Complexity Challenge: Technological Innovation for the 21st Century . Pinter, London,

RTA 1994. Teleworking a flexible working opportunity - RTA Teleworking Pilot Project 1993/94 - Roads & Traffic Authority NSW.

SACTRA 1994. Trunk Roads and the Generation of Traffic.

SACTRA 1999. Transport and the Economy.

Scase, R. 1999. Britain Towards 2010. The changing business environment. HMSO, London. http://www.esrc.ac.uk/2010/docs/britain.html

Schafer, A. 1998. The Global Demand for Motorized Mobility. Transportation Research A, 32 6 , 455-477.

Schallabock, K.O., Utzmann, I., Alakeson, V. & Jorgensen, B. 2003. Telework and sustainable development Digital Europe Project. A case study with the Global eSustainability Initiative (GeSI). Final Report.

Schallaböck, K.O., Utzmann, I., Alakeson, V. & Jorgensen, B., 2003. Telework and sustainable development A case study with the Global eSustainability Initiative (GeSI). Final Report

Scottish Enterprise 2003. Digital Inclusion Audit. Digital Inclusion Champions.

Scottish Enterprise 2004. Digital Inclusion Audit. Public Internet Access in Social Inclusion Partnership areas.

Scottish Enterprise 2004. Travel and Commuting www.talentscotland.com

Scottish   Enterprise   2005.   M-business   Scotland   www.scottish-Enterprise.com/publications/m-commerce.pdf

Scottish Enterprise et al 2004. Scottish e-Business Survey 2004 Annual Survey of Scottish Businesses investigating attitudes to and adoption of e-business National Report   available   at   http://www.scottish-enterprise.com/publications/scottish_e-business_survey_2004_main_report.pdf

Scottish Executive 2001a. Digital Inclusion: connecting Scotland's people.

Scottish Executive 2001b. Connecting Scotland. Broadband Strategy for Scotland.

Scottish Executive 2002. Review of Scotland's Cities.

Scottish Executive 2003. Social Focus on Urban Rural Scotland. A Scottish Executive National Statistics Publication.

Scottish Executive. 2004a Economy Factsheet.

Scottish Executive 2004b. Scotland's Transport Future.

Scottish Office 1997. Keeping Scotland Moving.

Scottish Executive 1998. Travel Choices for Scotland.

SEU 2003 – Making the Connections- Transport and Social Exclusion.

Shafizadeh, K.R. *et al*. 1997. The Costs and Benefits of Telecommuting: An evaluation of the macro-scale literature.

Skills in Scotland 2004. Futureskills Scotland. Scottish Enterprise, HIE, Scottish Further Education Funding Council.

Smart, Successful Scotland 2004. Strategic direction to the Enterprise Networks and an enterprise strategy for Scotland ISBN: 0-7559-4365-1

Smith, S. 2004. Extreme Commuting. UNDERNEWS Fri Dec 3 2004

Sustel 2003. Telework Report - Is Teleworking Sustainable? - An Analysis of its Economic, Environmental and Social Impacts - reported by Canadian Telework Association http://www.ivc.ca/

STELLA 2004 - ICT, Innovation and the Transport System, 22-23 April, 2004, Budapest, Hungary. Proceedings of Synthesis Meeting.

Stradling 2002. Persuading People out of their Cars. Professorial Lecture. Napier University.

SustainIT, 2002. eWell-Being Awards – 2002 winners. Commended: Sefton Metropolitan Borough Council' available at www.sustainit.org

Taylor et al undated: Taylor, R., Button,K and Stough,R, undated, Telecommunications and Transportation Effects, The Institute of Public Policy, George Mason Uni, VA

The Know Network 2005. http://www.knowledgebusiness.com

The Scottish Executive 2003. Social Justice - A Scotland where everyone matters - Indicators of Progress.

Thorpe, J. 2000. From: How the candidates view state's faltering economy -Atlanta Journal Constitution reported on 'Telework News'. http://www.telecommute.org/news/currentnewsletter.htm

Townplan.org 2003. York Exiles the Poor - www.yorkexilesthepoor.org.uk

UK Act of Parliament 2002. The Flexible Working Procedural Requirements Regulations

US Department of Energy 1994. Energy, Emissions and Social Consequences of Telecommuting

US Department of Transportation. 1993. Transportation Implications of Telecommuting.

Videoconferencing Cookbook 2004. Video Development Initiative - http://www.videnet.gatech.edu/cookbook.en/

Wikipedia Online Encyclopedia - http://en.wikipedia.org/wiki/Main_Page

Williams, L & Jones, A 2004. Changing Demographics, The Work Foundation, Peter Runge House, 3 Carlton House Terrace, London SW1Y 5DG

Wright, A. 1997. Saving Energy and Reducing Pollution through Teleworking.

Zumkeller 2002. Transport and telecommunications - first comprehensive surveys.

www.statistics.gov.uk Expenditure and Food Survey 2002/03

APPENDIX A – TRENDS IN ICT ADOPTION AND E-READINESS

Trends in ICT Adoption

In recent years there has been a widespread increase in the availability and use of computers and communication technology, such as mobile phones and the internet. Data from the Scottish Household Survey has been used to track the changing situation in Scotland.

The period 1999 to 2003 saw a large increase in the number of households owning personal computers, from 30% to 47%, and an even more dramatic increase in household Internet access, from 15% to 42%. This massive shift has greatly increased opportunities for e-working, and as Internet access continues to grow these opportunities will increase further in the future.

Figure A.1 - PC Ownership and Internet Access by Household
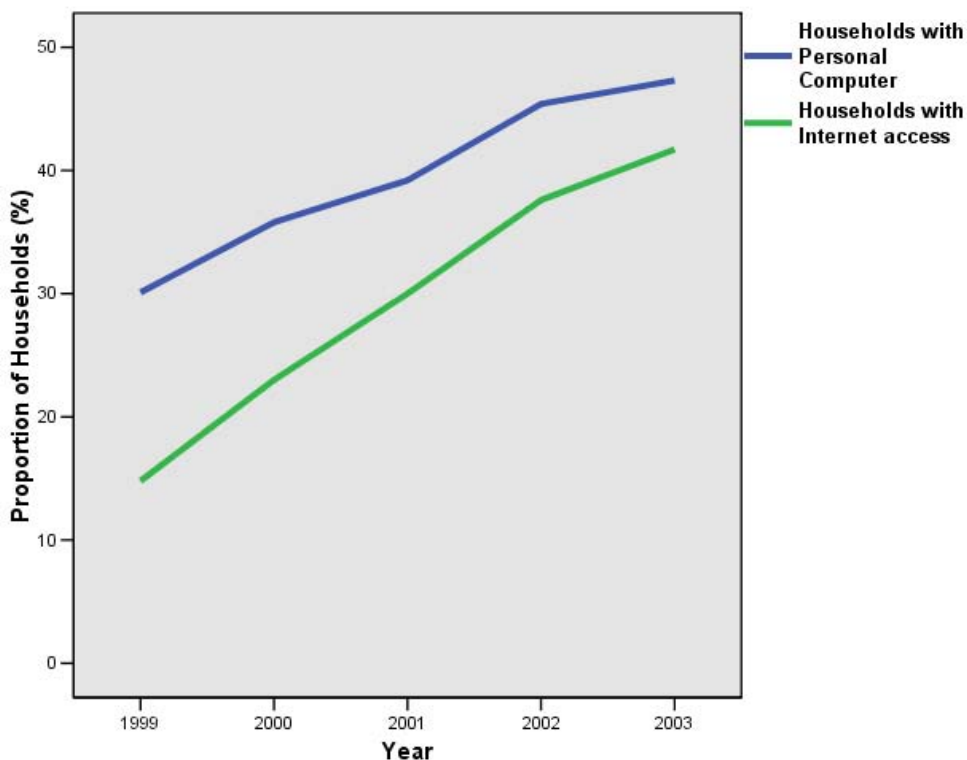
It is also interesting to note (Office of National Statistics 2004) that in the period 2002 – 2004 the percentage of Scottish adults who had used the internet within the last 3 months rose from 40 – 57% a growth double that for the rest of the UK - bringing Scotland up to the UK average. In 2002 Scotland had the second lowest access of any UK region (only the North East of England scoring poorer) so this is clearly a major change which may be partly related to policy changes including the Scottish Executive Digital Inclusion and Broadband Strategies.

Emergent Technologies

Another major technological revolution impacting on Scotland's communications is the explosion in usage of mobile phones and other portable ICTs. How this influences the development of a networked society is difficult to gauge but evidence shows that mobile phones are important for teleworkers (Mokhtarian 2000).

Table A.1: Percentage of households with ICT by UK Countries and Government Office Regions, 2001-03

	South East	South West	England	Wales	Scotland	Northern Ireland	UK
Mobile phone	75%	64%	68%	63%	67%	50%	67%
Home computer	58%	50%	53%	46%	47%	41%	52%
Internet connection	50%	39%	43%	34%	39%	33%	42%

(Source: Expenditure and Food Survey 2002/03)

As mobile ownership grows landline numbers are beginning to fall. For the UK as a whole, the ownership of telephone main-lines peaked in 2001 at approx 52 lines per 100 people and has dropped fractionally since as a result of mobile usage. This is in line with the EU average and is predicted to continue for a few years to come, particularly as fax machines are decommissioned. Mobile ownership in 2003 was 84 per 100 of the UK population (Eurostat 2005). This is higher than the EU 25 average of 80 per hundred of population, but lower that that for Luxembourg with 120 mobiles per hundred of population.

When households are considered, the Family Expenditure Survey shows that in 2003 67% of *households* in the UK owned at least one mobile phone. This was the same in Scotland. Between 1991-7 and 2001-02, ownership of mobile phones grew from 16% to 65%. Growth was 18% between 2000-01 and 2001-02 compared to only 3% between 1999-2000 and 2000-01. 34% of households in the lowest income group owned a mobile phone compared to 82% in the highest. Households in the South East had the highest proportion of mobile phones at 75%. (National Statistics Office 2003 Family Spending: Report of 2001-02 Expenditure and Food Survey)

The explosion of mobile technology has led analysts to claim that communication is to the 21st century what the PC was to the 20th (Scottish Enterprise 2005 M-business Scotland). The Internet has already transformed the way companies do business; experts now predict wirefree technologies will do the same in the coming decade. M-business is the exchange of data by cellular phone networks, using any non-fixed device, such as the mobile phone, Palm Pilot or hand held computer. These developments have enabled businesses to take their operations out of a fixed environment and into a mobile one.

Europe is at the forefront of developing M-business, with Western Europe expected to have an estimated 34% of the global m-business market in 2006, followed by Asia Pacific with 25% and the USA with 24%. A local area benchmarking survey (Scottish Enterprise 2004) shows that 27% of businesses that have PCs are likely or very likely or definitely going to conduct business by accessing the Internet via a mobile phone or hand held computer within the next 18 months.

One survey conducted by O_2 along with *Computing Magazine* in March 2004 (Barker 2004) indicates that while adoption of laptops as desktop replacements for appropriate staff has now been established as best practice, the business use of 3G smart phones, PDAs and convergence mobile computing devices is not well established with 63% of IT managers in British companies having no strategy for mobile technologies.

The reasons for this lack of clarity are highlighted in the survey as:

- Lack of system standardization.

- Concerns about security

- Unsure about reasons for introduction

- Staff responsible for communications, and the staff responsible for IT, unsure who is responsibile for mobile computing devices.

If blurred responsibilities for who is responsible for which technology can affect the roll out of 3G, PDAs and convergence mobile devices, then it could be an even greater constraint in relation to accountability and security for e-working.

Despite slow formal uptake of mobile technology in the workplace, consumer adoption of mobile devices continues apace, and it is predicted (Barker 2004) that within 2 years convergence devices, which combine portable pc functions with mobile phones, will start to outsell single function devices.

Despite Scotland's geography, wireless technology can potentially reduce geographical barriers increasing availability of e-networks. While mobile communications are often regarded as being the preserve of those companies at the top end of the market, initial m-business results have shown this not to be the case (Scottish Enterprise 2005). M business applications typically involve a large number of low value individual transactions and both of these factors have major implications for the social inclusion policy ambitions of the Scottish Executive.

Where We Are Now: Scotland's E-Readiness and E-Maturity

E-readiness, which is a country's preparedness to participate in e-commerce and the new economy, is a measure of the computer literacy of the population along with business adoption, e-government uptake, broadband adoption and the physical ICT infrastructure. Key indicators include percentage of GDP transacted online and proportion of the workforce involved in teleworking. For the purposes of these statistics a teleworker is defined as a member of the workforce who has replaced at least one day per week at their normal workplace with a day's work at a remote location, be it a tele-centre, tele-cottage, satellite office or home.

Inevitably with such vague and numerous criteria it is very difficult to make a meaningful quantification of a nations e-readiness. However most studies seem to show Scotland's e-prospects to be significantly better than its traditional economy, which currently lies at 36th place in the IMD World Competitiveness Yearbook (2005), 14 places lower than the UK as a whole and below India and Thailand.

In the e-readiness rankings (Institute for Employment Studies 2002) based on adoption of e-work by medium and large enterprises (>50 staff) Scotland scored 52% as opposed

to the UK as a whole on 44%, Germany on 33%, and France on 31%. This is very encouraging.

Scotland's big advantages lie in "high skills profile" and rich graduate labour pool. Edinburgh and Aberdeen are "success stories," with "highly- competitive" knowledge economies" (The Know Network 2005). The 1999 educational profile for Scotland (Institute for Employment Studies 2002) shows 27% of the population receiving a tertiary education as opposed to 17% in France 18% in Germany and 24% in the UK as a whole. The European average is 16%.

A particularly positive indicator is that between 2002 and 2004 Scottish adult internet usage grew from a low 40% of the population to the UK average of 58%, a bigger increase than any other part of UK. (London went from 59 to 64% in the same period) (UK National Statistics Online). Scotttish households with internet access at home stands at 52% (UK National Statistics 2004) which is considerably higher than the EU average of 45% though not as high as digital leaders Germany 60%, Denmark 69% and Iceland 81% (Eurostats 2004). In comparison it is interesting to note that France has only 34% home uptake.

Interestingly, one source (Scottish Enterprise et al 2004) suggests that access to the internet by Scottish companies decreased in 2004 from 75% to 72%. The 3% decline is explained by the fact that, following years of growth, connection to the internet within Scotland has now levelled off, particularly in certain areas such as Ayrshire, Lanarkshire and Tayside. This downward movement is thought to be part of a wider 'clicking off' phenomenon due to the perception by some companies of low benefits and lack of need.
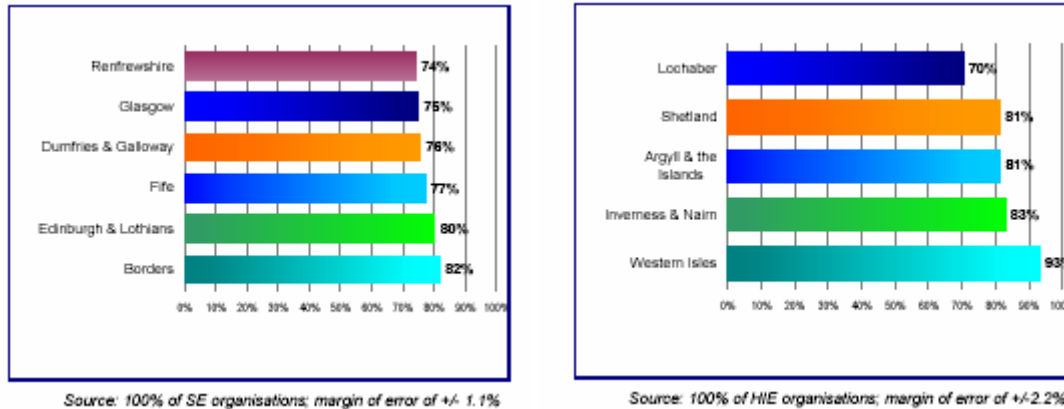
Access to the internet is more prevalent in some areas than others, in particular in the South and East (Borders, Edinburgh and Lothians, Fife and Dumfries and Galloway) and in the Highlands and Islands (the Western Isles, Inverness and Nairn). One reason could be the higher levels of use of the internet for businesses within remote or rural areas and the remote nature of businesses in the Highlands and Islands which necessitates use of an internet connection (Scottish Enterprise et al 2004). It may also be significant that Argyll and Islands and Inverness and Nairn have higher percentages of creative industry, financial services and construction and manufacturing organisations. The remote nature and the relative lack of agriculture perhaps explains the higher levels of internet adoption within the Western Isles and Shetland.

For broadband users, the Scottish infrastructure is highly competitive internationally and over 97% of households should be able to access broadband by July 2005. The Scottish Executive has supported its development by working with providers to provide a contractual framework for affordable broadband for communities who would otherwise lack access. Every community in Scotland should have access by the end of 2005.

The critical importance of Broadband is that it allows a wide range of tasks to be performed remotely that hitherto were restricted to specialist office, library or technical environments. This includes accessing large databases as well as many applications which involve the handling of complex graphics and video (James 2004). In addition

broadband enabled households have been shown to be more likely to adopt teleworking (Geraghty 2004 and Fogarty 2004).

Figure A.2: Broadband access in Scotland

Source: 100% of SE organisations; margin of error of +/- 1.1%

Source: 100% of HIE organisations; margin of error of +/-2.2%

As of July 2004, UK broadband uptake by customers was only 7.4% which is lower than EU 15 average of 7.6%. The highest was Denmark at 15.6% with Netherlands 14.7% and Belgium at 14% (Eurostats 2004). However the uptake amongst Scottish households has increased sharply and around 20% of households now have a broadband connection. Broadband connections by households are now nearly as common as dial-up-connections and based on current trends numbers should soon exceed the dial-up option.

Uptake is even greater amongst businesses. Broadband adoption has more than doubled amongst Scotland's connecting organisations (from 17% of connecting organisations in 2003 to 39% in 2004), suggesting that initiatives such as 'Broadband for Scotland' may be working (Scottish Enterprise et al 2004). However, whilst Broadband adoption in Scotland is increasing steadily, levels of adoption still trail areas such as London (where 56% of connecting organisations have Broadband). This appears to be due to perceived barriers of availability as the results suggest that around half of dial up and ISDN connectors in Scotland that believe they cannot get broadband are mistaken in this belief. However, the vast majority of dial up and ISDN users (67%) are definitely, very likely or likely to adopt broadband within the next 12 – 18 months.

E-commerce practice has also seen encouraging growth in Scottish organisations. 24% of connected companies allow customers to order products and services online and 22% allow customers to pay electronically. These increases may reflect the integrated nature of online ordering and payment solutions. Food & Drinks and Hi-Tech organisations are most likely to allow their customers to order and pay online, perhaps due to the nature of their products or the global nature of their marketplace.

Figure A.3: E-trading practices in Scotland
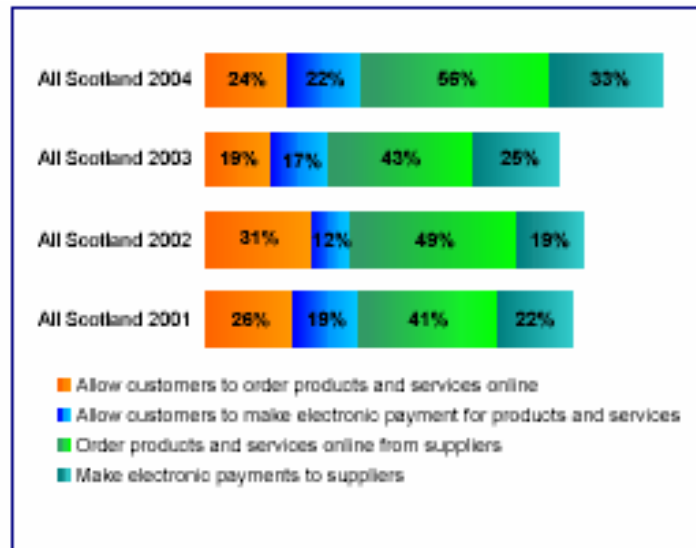
Source: 72% of organisations; margin of error of +/- 1.2%

(Source: Scottish Enterprise et al 2004)

Scotland may be more vulnerable to global change with an unusually high number of companies are classed as small or medium. Historically the global economy has favoured large such as Microsoft or Wallmart. In contrast in Scotland (SPICe 2005):

- Only 8.75 per cent of Scotland's businesses can be classed as medium sized, that is with a turnover of over £1 million.

- Scotland currently has only 12 large firms with a value of between £250 million and £1 billion, compared with 221 firms of this size in the UK as whole.

- Recent research by the Royal Bank of Scotland highlighted the fact that the top ten businesses in Scotland accounted for nearly 70 per cent of value-added of the country's entire top 100.

The good news for Scotland is that these indicators – seen as crippling in the old economy - are much less significant in the new economy. In the digital age small and medium sized Enterprises (SMEs) can have significant advantages over larger competitors (Dejonckheere *et al* 2003) since:

- Increased outsourcing of information activities is resulting in new business opportunities for SMEs specialising in these fields;

- The low degree of capital intensity of many eBusinesses resulting in relatively low start-up and exploitation costs — in this way, a traditional weakness of SMEs is becoming less important in the new economy;

- Flexibility, adaptability, speed of decision-making and innovativeness — traditional strengths of SMEs — appear to be all the more important for the supply of knowledge-intensive business services; and

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- Electronic networking and clustering allows SMEs to combine the advantages of small scale with various of the benefits of large scale.

In this context, an economy such as Scotland's built on a wide diversity of SMEs rather than corporate giants (e.g Germany) can be at a distinct advantage in the new economy.

Perhaps the major negative indicator for Scotland in a networked economy is the low proportion of the workforce involved in occupations which are suitable for new-economy integration. The number of people in jobs utilising ICT is half the European or UK average (Institute for Employment Studies 2002). "Problems" lie with the apparent dependence and growth bias towards low knowledge-intensity (where graduates account for less than 25% of the workforce). One in two private sector jobs in Scotland are concentrated in the relatively low knowledge-intensity K3 sector compared to a one in four figure for the North West of England, or one in seven figure for the South East of England (Hepworth & Pickavance 2004)]. The bulk of K3 and lower skill K4 sector posts (which include machining, postal, retail, construction, hotels, restaurants and other low value, low wage services) tend not to be amenable to enrichment in the e-economy.

Another major issue is the persistence of wide social and economic divides in Scotland. The issue of digital inclusion has become pressing in an era where lack of access to digital technologies will have major implications for all aspects of life from employment and earning prospects to recreational choices and even government services. Clearly it is undemocratic to migrate services fully online until they can be available to all and that will not be possible until computer literacy is more widespread. When launching the Scottish Executive Digital Inclusion strategy (Scottish Executive 2001) the Minister noted the importance of three main factors:

- the development of a skilled and knowledgeable workforce

- the maintenance of successful and vibrant local communities.

- individual opportunity through technology to learn, work, play, entertain, inform and discover.

The need to recognise geographic challenges is also recognised by the Scottish Executive Broadband Strategy, "Connecting Scotland" (Scottish Executive 2001). This recognises that public investment is needed in broadband infrastructure to ensure that all areas can benefit from the new networks, helping to support the viability of living and working in many rural areas.

In 2001 just 25% of Scots had internet access but by 2005 the figure grew to 58%. This rate of growth has been faster than other parts of the UK and Europe. Few employers are now reporting shortages with respect to computer literate staff (Futureskills Scotland 2004). The remaining problem is a more generalised issue of social exclusion, with a portion of the population being harder to include (Pieda 2004).

In the UK as a whole 85% of households in the top 10% income bracket had internet access this dropped to only 12% of households in the lowest 10% income bracket (UK National Statistics Online 2003).

In contrast Digital TV uptake (which, is common with some games consoles, and can enable internet access) is more evenly distributed throughout income groupings (Lyons 2002), providing opportunities for greater digital inclusion. Being a networked community involves a combination of:

- Significant deployment of broadband communications to businesses, government facilities and residences, with government providing a catalyst through regulation, incentives and even network construction when necessary.

- Effective education, training and workforce development that builds a labour force able to perform "knowledge work."

- Government and private-sector programs that promote digital democracy by bridging the Digital Divide to ensure that all sectors of society benefit from the broadband revolution, and by expanding citizen participation in government decision-making.

Table A.2 - Summary of the main drivers and obstacles to Scotland's networked future

Drivers	Obstacles
- High skills profiles - Rich graduate labour pool - High recent growth in internet usage - High internet usage at home (52%) - High broadband coverage - High numbers of SMEs 'Scotland' as a brand image - Beautiful scenery/ surroundings and quality of life	- Slow broadband uptake - Lower than average GDP per capita - Lower proportion of people in 'e-workable' jobs - Greater orientation on consumer and tourism related services - Social and economic inequalities

APPENDIX B – DEFINITIONS OF E-WORKING

Table B.1: Definitions of Teleworking

1. Overarching Definitions		
Teleworking	Labour Force Survey	Someone who works at least one full day per week at home (or at another location closer to home than the office)
	DTI (Guidelines on teleworking 2003)	*A form of organising and/or performing work, using information technology, in the context of an employment contract/ relationship, where work, which could also be performed at the employer's premises, is carried out away from those premises on a regular basis* *The essential feature is the use of information and communications technologies to enable remote working from the office, either for:* *workers who work at home full time or part time* *workers who divide their time between home and the office and* *primarily mobile workers using their home as an administrative base".*
2. Temporal' Definition		
Full time teleworkers		Always works away from the traditional workplace
Part time teleworkers		Spends at least one day per week teleworking
Supplementary teleworkers	European ECATT survey (cited in DTLR 2002)	People who regularly practice teleworking in addition to regular attendance at a traditional workplace. This may be done to avoid rush hour by adopting unconventional commuting times
Ad hoc teleworking	DTLR 2002	People who occasionally telework as needed or those who can telework but do not have official permission to do so
3. Geographical definition		
Home based	DTLR 2002 James 2004	Alternate between working at home and on the employers premises either in a fixed pattern or more flexibly
Centre based	DTLR 2002	Not using home as a base
Mobile/ nomadic/ location flexible	DTLR 2002 James 2004	Spend a significant time away from home or their main place of work, for example on business trips and at client sites, during which time they use ICT
Satellite based	DTLR 2002	Use telecentres and satellite offices nearer to home than the main office.

APPENDIX C – MECHANISMS AND IMPACTS OF TELEWORK

Table C1 - Effects of telework on car usage

Effects of ICT which stimulate car use	Effects of ICT which reduce car use
Commuting	

Travel time accrued by substitution may be reinvested in other travel (Krizek 2002). Some transport analysts subscribe to the view that there is a travel time budget, i.e. "people spend somewhat more than one hour per day travelling, on average, despite widely differing transportation infrastructures, geographies, cultures and per capita income levels" Thereby where people have acquired access to modes of travel that are faster (e.g. the Internet) so, in turn, rather than saving time on travel, they begin to make more trips or travel over longer distances. (Lyons 2002)
 	
Mobile ICT increases willingness to travel. As discussed in Section 2.5 people use their mobile phones frequently while travelling and this seems to lessen their reluctance to spend long times on the move. In one study almost a quarter of the respondents said that their reluctance to travel had decreased because of the convenience of the mobile phone and that their trip rate has grown. (TNO 2004)
    Online capabilities encourage people to live further away from where they have traditionally needed to live, work, shop and play. This could mean a heightened likelihood to relocate away from urban centres (Hopkins *et al*, 1994).
	Eliminates journeys as a result of less commuter trips to the office.
	
	Leads to travel at less congested times.
	
	Leads to more efficient use of travel opportunities due to increased flexibility
	
	    Leads to more efficient use of travel opportunities due to improved information on availability (e.g. web cams at congestion black spots and online timetables).

Other Work Related Travel	

ICTs expand the range of business interactions which are possible, many of which require 'face-to-face' follow up.
    In some cases the adoption of telework may lead to an increase in business travel, for instance among ICT engineers maintaining dispersed networks and managers visiting remotely based staff.
	Teleconferencing and other forms of electronic working, reduce in-work travel.
	    Reducing unnecessary 'presenteeism' is an incentive for others to break with meetings culture and results in fever face to face meetings.

Recreational/Personal Travel	
If a worker travels less as part of their working life they may become less travel-averse when it comes to recreation. An in-built human desire for mobility and contact with others may mean that the suppression of business and commute trips is likely to lead to an increase in leisure trips leading to far less predictable temporal and spatial patterns of travel and traffic. (Lyons *et al* 2000) In a recent survey (TNO 2004) a quarter of respondents reported that availability of ICT has had increased their number of daytrips to cultural and recreational destinations because they had more information at their disposal.	Teleworking may assist in the rediscovery of local communities. This could result in higher concentrations of people in currently depopulated areas, with concurrent reintroduction of local services. (Lyons *et al* 2000) Online shopping and entertainment services will reduce the need for travel as a result of direct substitution.
Effects on Family of Teleworker	
Other household members, may undertake journeys (for example taking children to school) which previously would have been made as 'a linked trip' as part of the daily commute. (DTLR 2002)(Cairns *et al* 2004) Another family member may take advantage of the fact the car is available, for example to drive to work when he or she would previously have taken the bus.(Cairns *et al* 2002). This issue of other trips being made because a car is available at home is an important one The increased ability to communicate by means other than face-to-face contact has allowed for more dispersed households and living patterns. (Lyons *et al* 2004) This leads to enlargement of the spatial scale of daily life which has an important impact on transportation policy because an increase in operative scale generally leads to longer trip distances, thus boosting demand for transportation. (TNO 2004) ICTs promote new types of personal interactions and long distance friendships as well as increasing numbers of friends and aquaintances.	Glogger *et al*. (2003) found that both teleworkers and other household members made fewer trips after teleworking began. In other words knock on effects can also reduce other household journeys, thus adding to the substitution effect (Hamer 1991). Cairns *et al* 2004 suspect that few if any extra trips are taken by teleworkers or their families as a result of telework, though trips by other family members are slower to equilibrate after the transition. Efficiencies due to increased flexibility of child minding etc. can lead to a decrease in 'shuttle' trips (e.g. to pick kids up from nursery). Relocation of families to less congested loci can provide relief in congested areas.

Mode and Time Shift	
A study in the Netherlands, found that teleworking nearly always replaced trips by bicycle and public transport. It did not reduce car travel and resulted in a shift in mode split towards the car (Hamer, Kroes and Ooststroom 1991). In Dublin a 0.5% reduction is predicted for 2006 in bus use, and 2.1% reduction in rail/light rail use.(Amarach 1998) A Californian study notes some reduction in 'rideshare' among teleworkers, believed to be due to teleworkers falling out of regular car sharing arrangements or travelling independently at a different time of day. (reported in DTLR 2002) Worsening of afternoon peak time traffic as a result of people avoiding overtime at the office and instead returning home to continue work there. (Graaf and Rietveld 2003). Latent demand. Even where specific reductions are identifiable, it is not clear whether there might not be new traffic generated, either "filling the space" in trips removed from congested areas, or generated elsewhere.(Lake 2004). In other words traffic congestion is a strong motivator to avoid travelling. If congestion is reduced as a result of telework (or other factors) and this motivation not to travel is reduced as a consequence, does this result in greater travel?	Eliminating the commute, creates time and opportunity for use of other modes – such as walking or cycling. Thus for instance someone who would not cycle to work every day may be willing to do so on a reduced number of commuting days. In addition to influencing the number and distance of trips, teleworking can also influence their timing. This can be of disproportionate importance if it shifts some journeys from peak periods into off-peak periods spreading the burden of traffic more evenly across the day.(James 2004) Mitomo (1999) notes a decrease in public transport usage but regards this as a benefit since it will make for a more pleasant experience for the other users by reducing overcrowding on trains and buses. This model may be relevant to London where the 'armpit jungle' has become a business disincentive, but is unlikely to be relevant in Scotland.

Other impacts

- Many studies indicate a reduction in energy consumption as a result of telework. Usually this is a direct extrapolation from reduced car use, calculated either from directly observed monitoring in case studies or from application of hypothetical reduction in car use applied at a local, regional or national level using transport statistics and/or models. Many individual studies combine an element of the latter approach on the basis of "if this pattern were followed at a national level…"

- In Japan teleworking has been incorporated as a measure to be promoted in order to help the country meet its emissions reductions targets under the Kyoto protocols.

- In the US, studies by the Department of Transportation [1993] and the Department of Energy [1994] both attempted to quantify the total amounts of pollutant emissions that might be avoided by the US as a whole given predicted levels of

telecommuting uptake. The latter study also attempts to factor in allowances for urban sprawl, though it is not clear what this calculation is based on.

- In 1999, 49% of AT&T's workforce teleworked at least 1 day a week, while 10% did it full time. In a very PR type report AT&T concluded that these teleworkers saved: 87 million miles; 4.1 million gallons of fuel; 41,000 tons of carbon dioxide; 180,000 tons of hydrocarbon; 1.4 million tons of carbon monoxide and 93,000 tons of NOX. This is quite illustrative of a common problem when addressing environmental issues. Many bodies both governmental and commercial are keen to earn 'brownie points' and puff up their environmental acheivements, while conveniently neglecting to report the additional burdens introduced by their initiatives.

- A study at the Department of Employment in Sheffield (1997) adopted a distinct approach, measuring total energy consumption in the office, in teleworkers' homes and in their vehicle use. This found that homeworking produces around 80% reductions in energy use in an "ideal scenario" – one where not only the commute trip is eliminated but where the office space is also decommissioned. The study is useful in three respects. First, it measures every aspect of energy consumption at home, on the road and in the office. Secondly, it serves as a reminder that the assumed economies of scale that offices theoretically achieve tend not to occur. This is mainly due to systems and equipment being always on – lighting, heating, ventilation, IT, photocopiers, drinks machines, etc – whereas in the home these are only on when needed. The extra lighting and heating etc often mentioned for home-based teleworking was found to be less than expected. Thirdly, around two thirds of an office worker's energy consumption is attributable to travel.

- Fuel savings are only achievable if there is property reduction. For an individual organisation, this may to some extent be possible, by introducing hot-desking, team space and concentrating operations on fewer sites. But in reality, unless the surplus building is knocked down, or converted to a less energy-intensive use, another organisation will move in with its own energy use demands.

- The Sheffield study appears to be one of a kind. Though the "80%" reduction figure may raise some eyebrows, and would require extensive demolition of offices under some kind of teleworking command economy to achieve, the study has clearly taken a rigorous and all-inclusive approach to the measurement of energy consumption. Further studies of this nature, in a range of contexts would be welcome.

- In general, however, commentators conclude that transport substitution through telework and other aspects of ICT use will have only a very limited effect in reducing energy use and pollutant emissions. Better home insulation and more fuel-efficient vehicles are amongst the comparisons made as better options for improving environmental performance.

RESEARCH - PUBLICATIONS LIST FROM 2003

The Status of Traditional Scottish Animal Breeds and Plant Varieties and the Implications for Biodiversity: I A Wright and A J I Dalziel (MacAuley Institute) and R P Ellis (Scottish Crop Research Institute). (2003) (£5.00)
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Seat Belt Wearing in Scotland: A Second Study on Compliance: Archie Burns, Mark Kummerer and Neil C Macdonald (Halcrow Group Limited). (2003) (£5.00)
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Evaluation of the Drug Driving TV Advert: Rachel Ormston (NFO Social Research). (2003) (£5.00)
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New Directions for Land Management Schemes in Scotland's National Parks: Land Use Consultants, Glasgow. (2003) (£5.00)
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Social Inclusion Bulletin No.9: Social Inclusion Research Branch (Ruth Bryan). (2003) (Free)

Determined Differences: Rent Structures in Scottish Social Housing: Alison More, Jeanette Findlay, Kenneth Gibb, Diana Kasparova and Carl Mills (Department of Urban Studies, University of Glasgow). (2003) (£5.00)
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Tracking Homelessness: A Feasibility Study: Kevin Pickering, Suzanne Fitzpatrick, Kerstin Hinds, Peter Lynn and Sarah Tipping. (2003) (Web only)
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Direct Supply of Medicines in Scotland: Extended Monitoring of a Pilot Scheme: Christine Sheehy and Lyn Jones (Scottish Health Feedback). (2003) (Free)
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Consultation Paper on the Mental Health Law Research Programme. (2003) (£5.00)

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The Glasgow Drug Court in Action: The First Six Months: Susan Eley, Margaret Malloch, Gill McIvor, Rowdy Yates and Alison Brown. (2003) (Free)
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Establishing Drug Courts in Scotland: Early Experiences of the Pilot Drug Courts in Glasgow and Fife: Gill McIvor, Susan Eley, Margaret Malloch and Rowdy Yates. (2003) (Free)
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Gypsies/Travellers in Scotland: The Twice-Yearly Count – No.3 (January 2003) (Free)

The Speeding Driver: Who, How and Why?: S G Stradling and M Campbell (Transport Research Institute, Napier University), I A Allan, R S J Gorell, J P Hill and M G Winter (TRL Ltd) and S Hope (NFO System Three Social Research). (2003) (£5.00)
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Evaluation of Bikesafe Scotland: Rachel Ormston, Anna Dudleston, Stephen Pearson (NFO Social Research) and Steve Stradling (Napier University). (2003) (£5.00)
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Academy Bulletin No.1/2004: Scottish Academy for Health Policy and Management Position Paper - March 2004. (2004) (Free)

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Assessing Need for Legal Advice in Argyll & Bute: James Law, Sinead Assenti, Gareth Barton, Kirsty McKissock (Market Research UK Ltd); Professor Deborah Baker, Steve Barrow (University of Salford); Dan Cookson (SeeIT Ltd); and Catherine Palmer (Scottish Executive). (2004) (Free)
Summary only available: Legal Studies Research Findings No.45/2004

Assessing Need for Legal Advice in Edinburgh: James Law, Sinead Assenti, Gareth Barton, Kirsty McKissock (Market Research UK Ltd); Professor Deborah Baker, Steve Barrow (University of Salford); Dan Cookson (SeeIT Ltd); and Catherine Palmer (Scottish Executive). (2004) (Free)
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Assessing Need for Legal Advice in Fife: James Law, Sinead Assenti, Gareth Barton, Kirsty McKissock (Market Research UK Ltd); Professor Deborah Baker, Steve Barrow (University of Salford); Dan Cookson (SeeIT Ltd); and Catherine Palmer (Scottish Executive). (2004) (Free)
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Assessing Need for Legal Advice in Glasgow West: James Law, Sinead Assenti, Gareth Barton, Kirsty McKissock (Market Research UK Ltd); Professor Deborah Baker, Steve Barrow (University of Salford); Dan Cookson (SeeIT Ltd); and Catherine Palmer (Scottish Executive). (2004) (Free)
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Community Legal Service: Assessing Needs for Legal Advice in Scotland: Technical & Geographic Report: James Law, Sinead Assenti, Gareth Barton, Kirsty McKissock (Market Research UK Ltd); Professor Deborah Baker, Steve Barrow (University of Salford); and Dan Cookson (SeeIT Ltd). (2004) (Web only)

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Colin Buchanan and Partners. (2004) (Web only)

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Review of Green Belt Policy in Scotland: Glen Bramley, Cliff Hague, Karryn Kirk, Alan Prior, Jeremy Raemakers and Harry Smith (School of the Built Environment, Heriot-Watt University) and Andrew Robinson and Rosie Bushnell (Robinson Association). (2004) (£5.00)
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Green Jobs Strategy Review: Optimat Ltd. (2004) (Free) (Web only)

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Social Inclusion Research Bulletion No.12/2004: (2004) (Free)

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Minimum Standards for Open Space: Ironside Farrar Ltd. (2005) (£5:00)
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Gypsies/Travellers in Scotland The Twice-Yearly Count – No.7: January 2005: Research Consultancy Services. (Free) (2005)

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Summary available (Web only)

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Domestic Abuse Wave 8 – 2005 Post-Campaign Evaluation: TNS System Three. (2005) (Web only)
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One Scotland Campaign (March 2005) Post-Campaign Evaluation: TNS System Three (2005) (Web only)
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Summary available: (Web only)

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