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A TREATISE ON KNOWLEDGE SOCIETY DISCOURSE AND POLICY

Helena Tapper

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@Helena Tapper

Supervisors

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Professor, Aalto University

Professor Esa Väliverronen, University of Helsinki

Pre-examiners

Professor Rasigan Maharajh, Chief Director,
Institute for Economic Research on Innovation,
Tshwane University of Technology, Tshwane

Luci Abrahams, Ph.D., Director, LINK Centre,
University of Witwatersrand, Johannesburg

Opponent

Mika Kautonen, Ph.D., Vice-Director, Research Centre for Knowledge, Science, Technology
and Innovation Studies, Tampere University. Adjunct Professor, University of Turku

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ABSTRACT

The focus of this thesis is the study of the Knowledge Society discourse and policies of international development organisations (the UN, AU, IADB, ITU, UNESCO) and two national governments (South Africa and Finland). The research question is “Why and how the policies of national and international organizations have promoted and developed Knowledge Society policies generally and for development in the Sub-Saharan Africa, in particular?” The data for the thesis traces its origins to the author being immersed for 15 years in Knowledge Society policy implementation and study, in and across five regions (Central America, the Caribbean, South America, Europe, and Africa). This thesis is not a monograph but involves an introductory essay, four articles and one book chapter. In and across the essay, articles and the book chapter, this thesis explores the historical progression of Knowledge Society discourse and policies across temporal and geographical dimensions.

The author’s framework in this study blends earlier research on the historical progression of scholarly thought on Knowledge Society discourse and policies with public discourse on the content and new directions of what defines Knowledge Society policy. The author has engaged in participant observation and many rounds of analysis, iteration, reflection, and interpretation as it pertains to the subject matter. Since 2015, she has carried out further data collection, analysis and interpretation for purposes of theorization. The data collected, analysed and interpreted in this study thus pertain to the history and evolution of Information and Knowledge Society and its manifestation in national policies of governments and the development policies of international development organisations globally, and more specifically in the context of Africa.

Following the methodology of Gioia, Corley and Hamilton (2013), the author categorized her foregoing data on Knowledge Society discourse and policies into 21 first-order codes or policy themes. The identified codes or themes are each contextually embedded in the time of their publication. Some of the policy themes or first-order codes in the essay, articles and book chapter have remained the same from 2000 to 2015. Other policy themes, like gender and local economy, have only appeared on the agenda more recently. The author categorized her 21 codes into 5 themes. Finally, she aggregated the five themes into three developmental ‘waves’, ‘phases’ or ‘dimensions’ of Knowledge Society: An efficiency-and economically oriented wave starting as discourse in the 1970s, an information and communication technology wave

starting in the 1980s and globalization and development wave starting in the 1990s.

The first two publications, published in 2000, represent the “Information Society” policies prevalent in the 1990s in Finland. These policies focus on growth of the national economy, competitiveness and the development of information (mobile) technology, as well as the role of the state, the individual and globalization. The third article from 2006 discusses ICT for development as a way to bridge the digital divide by focusing on gender, sustainability in small businesses, and information and communication technology. The fourth article from 2010 discusses development of innovation systems in Finland and South Africa, identifying policy themes such as regional development and innovation systems, collaboration between the public and private sectors and academia. In the 2020 book chapter, international Information and Knowledge Society policies and indices are studied from the 2003 “WSIS” policies (inclusion, access to information, and information technology) to the 2015 “SDGs” of Knowledge Society for development (scientific education, collaboration between public and private sector, and local economy). Among Sub-Saharan countries, Mauritius, South Africa, Kenya, Namibia and Botswana persistently lead in Knowledge Society indices. Globally, Norway, Sweden, Denmark, Finland, Germany, the Netherlands, the UK, the US, Japan, the Republic of South Korea, and Singapore are in the lead.

The contribution of this thesis is to reveal that Knowledge Society has not been a discourse that has remained stagnant for the decades of its existence but has evolved through three waves or main phases:

- 1) An efficiency- and economically oriented wave
- 2) A technological wave
- 3) A globalization and development wave

Within each of these waves and across them, Knowledge Society has either contributed to development of national economies and societies in the Global North (such as those of Europe or the United States) or in the Global South (such as those in Sub-Saharan Africa). The technology wave or the global and development wave have not replaced the efficiency-and economically oriented wave. Rather, they have converged on one another over time. Calls for further research include the study of the impact of the Covid 19 pandemic on development in selected countries in the Global North and the Global South.

ACKNOWLEDGEMENTS

This thesis is a result of my studies of Information and Knowledge Society over more than two decades. This study originated from my interest in Information Economy, a field that almost 40 years ago was in its early infancy. I had studied both macroeconomics and communication studies, and this field was in the intersection of these two academic fields. At the time there were very few scholars in this field. I was very lucky to receive an ASLA-Fulbright scholarship from the League of Finnish-American Societies to study Information Economy at the University of Southern California in Los Angeles. This was the beginning and core of my studies in this field. I then continued my studies at the University of California Los Angeles with a scholarship from the Academy of Finland. At the time I had a great opportunity to study with Professors Robert Hayes and Jorge Schement from the UCLA and had foundational discussions about Information Economy with Professor Donald Lamberton and Doctor Michael Rubin. This provided me with an academic foundation for years to come and I am forever grateful to these scholars for their enlightening academic discussions. I also had an opportunity to develop my ideas and a theory of Information Economy at the MIT, Sloan School of Management as a visiting scholar.

There are challenges in the field that are in the cross-section of academic fields. I was lucky to continue my academic work at the Department of Communication, University of Helsinki. My licentiate thesis, "Information Society - Another Modernity" was published in 1998. Soon after that my academic studies turned into real world assignments in Knowledge Society for development policies and programmes for fifteen years. First, I began working in the Inter-American Development-Bank, then in the Finnish Information Society Development Centre, and subsequently for nine years in Africa. Working in and for ICT4D and Information Society for Development programmes in Eastern and Southern Africa was rewarding and I learned to know many great minds, like Professor Mammo Muchie from IERI, Tshwane University of Technology. Managing a regional programme of 13 countries in Leadership for Knowledge Society Development based in Nairobi, Kenya, was an inspiring learning experience to understand country specific perspectives and policies in Africa.

I would like to thank the Sanoma Foundation and the Yrjö Jansson Foundation for their support in the early stages of my studies, as well as the Academy of Finland and the League of Finnish American Societies. There are many academic colleagues I would like to thank, but most importantly my supervisor Professor Antti Ainamo. Antti has provided challenging discussions and advice that I have debated with him. Antti is a great scholar. Thank you, Professor Esa Väliverronen for your advice in the final steps of this study. I had valuable methodological discussions with Professor Jukka Törrönen, from Stockholm University. I would like to thank Associate Professor Johanna Sumiala for your inspirational support and discussions. Further, I enjoyed theoretical discussions with Professors Eeva Luhtakallio and David Inglis. You are true academics. Then thank you Professor Emerita Ullamaija Kivikuru for sharing academic life with me for decades.

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I would like to dedicate this scholarly work to my parents who are not here anymore. They would be happy for me.

Helsinki, Majavatie 16.10. 2021

Helena Tapper

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LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following publications:

- I Tapper, Helena (2000) Information Society Strategy - Seeking New Solutions for Post-Modern Societies, The Case of Finland, ***Nordicom Information*** 1/2000, 79-87.
- II Tapper, Helena (2000) The Potential Risks of the Local in the Global Information Society. ***Journal of Social Philosophy***, 31(4), (Winter), 524-534.
- III Tapper, Helena (2006) Visiting the Digital Divide: Women Entrepreneurs in Central America. ***E-Learning***, Volume 3, Number 3, 271-278.
- IV Tapper, Helena (2010) Science and technology policies in networked environment: case of Finland and South Africa. ***African Journal of Science, Technology, Innovation and Development***. Volume 2, Issue 3, September 2010, 229-240.
- V Tapper, Helena and Ainamo, Antti (2020) Building Indices to Measure Knowledge Society for Sustainable Development in Sub-Saharan Africa. In ***Muchie, M. & Baskaran, A. (eds.), 2020. Science, Technology and Innovation Indicators, Lessons from the Development Experience in Africa***, 291-314. Trenton: Africa World Press.

Author's contribution to the publications:

I am the author of the four publications (I -IV) and the main author (80 %) of the publication V. Publications III, IV and V are closely connected to my work in Knowledge Society development programmes for 15 years in Europe, Central and South America and Africa.

The publications are referred to in the text by their roman numerals.

ABBREVIATIONS

AISI	= African Information Society Initiative
AI	= Artificial intelligence
ARAPKE	= African Regional Action Plan on the Knowledge Economy
AU	= African Union
e.g.	= <i>exempli gratia</i>
EU	= European Union
etc.	= <i>et cetera</i>
GII	= Global Information Infrastructure
GNP	= Gross National Product
IADB	= Inter-American Development Bank
ICT	= Information and Communication Technology
i.e.	= <i>id est</i>
INGO	= International nongovernmental organization
ITU	= International Telecommunications Union
KIB	= Knowledge Intensive Business
MDG	= Millennium Development Goal
NEPAD	= New Partnership for Africa`s Development
NICI	= National Information and Communication Infrastructure
OECD	= Organization of Economic Cooperation and Development
R & D	= Research and Development
SDG	= Sustainable Development Goal
S & T	= Science and Technology
STEM	= Science, Technology, Engineering and Mathematics
THA	= Triple Helix Approach
UN	= United Nations
UNDP	= United Nations Development Program
UNECA	= United Nations Economic Commission for Africa
UNESCO	= United Nations Educational, Scientific and Cultural Organisation
UNICEF	= United Nations International Children's Emergency Fund
WSIS	= World Summit on the Information Society

1 INTRODUCTION

1.1 BACKGROUND AND AIM OF THE THESIS

This study is built on research about the discourse of history of Knowledge Society (and Information Society), and Knowledge Society for development policies. The study is about the history of Knowledge Society and how it made itself into an important part of development policy and development cooperation. Knowledge Society and Knowledge Society policies have served to bridge the digital divide between the Global North consisting of the U.S., Europe, Japan and Singapore, as well as other countries in Asia, and the Global South consisting of most countries in Africa and some countries in Asia and Central and South America.

What in hindsight can be called the “first wave” of Knowledge Society, and the discourse about it, can be traced back decades across countries in Europe and in the U.S. The first wave originated in the 1960s but continued through the 1970s as a technical model for measurement, control, management and economic efficiency (Porat, 1977 a, Mattelart, 2003, Freeman & Louca, 2001, Webster, 1995). The “second wave” discourse of Information Society and Knowledge Society based on information technology began in the 1980s and made its way into policy discourse in the 1990s within Europe (Mattelart, 2003, Bangemann, 1994). In the United States, building on earlier ideas of “post-industrial society” (Bell, 1973), Information Society took root in the political thinking of the Third Wave (Toffler, 1981, Mattelart, 2003). The U.S. Information Society plan was called the National Information Infrastructure (1993) to build national information highways (Mattelart, 2003, 118). It was a national programme to promote information and communication technology. The EU responded to it by preparing a paper to build the European Information Society (European Commission, 1997).

The “third wave” of information society for global development policies began as discussion of telecommunications deregulation and the role of ICT in development. The U.S. presented the model of global information society called Global Information Infrastructure at the International Telecommunications Union meeting in 1994 (Gore, 1994, Mattelart 2003, 118). The meeting opened a discussion about global information society and development. The EU developed its own programme to build Europe’s role into a leader in the global Information Society (Bangemann, 1994).

These waves and processes to integrate the Information Society and the Knowledge Society, particularly information and communication technology, to development and globalisation led the UN to initiate a multinational ICT Task Force in 2000. The aim of this Task Force was to provide policy advice to governments and international organisations to bridge the digital divide and

support UN strategies in ICT for development. Its task was to build partnerships between the UN, national governments and multiple stakeholders, including the ICT industry, to work towards bridging the digital divide. The ICT Task Force provided advice to the World Summits on Information Society (WSIS). This process has led to the implementation, over more than 20 years, of policies to integrate Knowledge Society and ICT into the development context. These policies have also been viewed as controversial and some have questioned the merits of this development. (Adu Amoah, 2014, Mattelart, 2003, Castells & Himanen, 2014).

In contrast to the general ideas above about how Knowledge Society has made itself into such an important part of development policy, cooperation and digital divide discourses, there is little research on specifying the issues that have led to this outcome. This study attempts to specify the processes that have contributed to the spread of Knowledge Society from a technical approach for measurement, control and management called economic efficiency and growth (the first wave), to a national discourse about the changing of the economy and society towards focusing on new information and communication technologies (the second wave) and to a part of the globalisation and development discourse (the third wave). This thesis discusses the history and evolution of Information and Knowledge Society from two points of view: theoretical and development policy. This leads into a discussion on how the two worlds have met, have not met or can potentially meet in the future.

Across all the above perspectives, the premise of this thesis is that the term “Information Society” refers to a society where ICT is the dominant technology in the society and the economy (Bell, 1973, Drucker, 1978, Castells, 1996, Castells & Himanen, 2014), with quantification of information as an underlying motivator behind such technology (Mattelart, 2003). In other words, information is considered a key resource in such a society and economy. The production, processing and distribution of information are considered the key domains of economic activity either as an independent economic sector or embedded in other sectors in this society. “Information Society” discourse refers to continual technological development, where information is embedded in technology, often in the ICT capacity, and progress is based on that development. Further, the idea that “knowledge is power” (Nye & Owens, 1996, 20 in Mattelart, 2003, 130) refers to economic growth and globalisation based on ICT.

Knowledge society is a term closely related to Information Society. The slight difference is that knowledge in the Knowledge Society context is assumed to have value in terms of utility and is interpreted through context, rather than being information independent of context. Otherwise, Knowledge Society and Information Society discourse possess many of the same elements as Information Society and Information Society discourse, but the value of knowledge in Knowledge Society is determined in the context in which it is used. However, the concepts of Information Society and Knowledge Society are often used in parallel.

In the policy texts of international organisations, Knowledge Society for development is introduced as “access to information for all” or as an inclusive Knowledge Society (UNESCO, 2003, WSIS, 2003 a, WSIS, 2005). The UNESCO background paper (2003) presents four principles for the

development of Knowledge Societies:

- Freedom of expression,
- Equal access to education,
- Universal access to information, especially in the public domain
- Giving expression to cultural diversity (UNESCO, 2003, 3).

These four principles have been added to economic and technological development objectives and present a comprehensive approach to Knowledge Society for development (see WSIS, 2003 a, 2005). UNESCO emphasises the building of Knowledge Societies through the development of Information Society.

While the history of Information and Knowledge Society dates back over six decades (Machlup, 1962, Bell, 1973, Schiller, 1984, Webster, 1995, Mattelart, 2003), the focus of this study is on policies in the last two decades. It is worth noting that Information Society was a dominant concept in the early discourse, which has evolved towards Knowledge Society. That said, Information Society is still often used in policy documents in parallel with Knowledge Society (see e.g., ITU, 2021).

In this understanding, Information and Knowledge Society have mostly been discussed in economic, technological and globalisation contexts and less in development discourse. Further, there has been theoretical analysis of Information or Knowledge Society in the works of Schiller (1984), Webster (1995), Castells (1996), Mattelart (2003), Ainamo & Lindy (2013), Castells & Himanen (2014), and others.

This thesis addressed the following research questions:

1. Why and how has the definition of Information and Knowledge Society changed over time in literature, and in policies (2000-2015)?
2. What themes define Information and Knowledge Society in the policy documents of international and regional (African) organisations to enhance development?
3. What kind of development do these policies enhance? How do national governments (Finland, South Africa) enhance Knowledge Society in their policies?

Following from the theoretical literature and policy discourse, these further research questions arise:

- How do the theoretical literature of Knowledge Society and policy discourse meet?(time, similarities/differences in content)
- What do the development policy texts reflect in or borrow from the theoretical discourse?

In the following sections of this essay, I will review the research literature appropriate to the research questions. I will present the methodology and the data. Then, I will summarise the five papers published prior to this introductory essay to present the common themes and syntheses that arise from these papers. Finally, I will draw conclusions and point to the implications for further research.

1.2 LITERATURE REVIEW

To answer the research questions, I will specify milestone theoretical treaties, events and the evolution of Information Society to Knowledge Society through three waves (phases): the efficiency and economically oriented wave, the technology wave and the globalisation and development wave. I use the metaphor of the “wave” originally conceived by Toffler to illustrate the tripartite phases of evolution of Knowledge Society (Toffler, 1981, Mattelart, 2003). Within the discourse about Information and Knowledge Society, Mattelart (2003, 134) has called the concept of the history of Information Society moving in waves a cliché. To me, he has not fully realised the potential utility of the waves as a concept. To illustrate this point, I review how the evolution of Information Society originated in economic development, as presented historically in post-industrial service or information economies (see Toffler, 1981). The three waves of Information Society and Knowledge Society have their specific origins, but they also exist in parallel with one another. The metaphor “wave” describes the evolution from a beginning or a starting point of a phase, then growing, slowing down and becoming the beginning of a new wave. The waves also have counter waves. I will analyse the waves of Information and Knowledge Society chronologically. I used the concept of “waves” in my licentiate thesis (Tapper, 1998, 29-30) to describe the evolution of Information Society in a slightly different way.

Economic development has historically been presented as three waves: 1. agricultural, 2. industrial and 3. post-industrial service or information economy (see Toffler, 1981). The Knowledge Society and Information Society has its foundations in the service economy. The service economy was first analysed and defined by Fuchs (1968) as an economy after the industrial phase of economic development (see also Witt & Gross, 2020).

The concept of waves has been discussed in economic development as long waves or cycles, the length being between 40-60 years. The theory of long waves was introduced to economic theory by the Russian economist Kondratieff and then further developed by Schumpeter. For them, the starting point of a new wave is spurred by technological innovation. Schumpeter further developed the theory of waves of technological innovation by saying that each technological wave of innovation is shorter than the earlier one due to the rapid development of technology (see Freeman & Louca, 2001). Some neo-Schumpeterian scholars considered information technology to mark a start of a new era called the Information Age (see Webster, 1995, 8). The theory of long waves has been debated by economists and the discussion continues in the era of the fourth industrial revolution (see Postelnicu and Calea, 2019).

Returning to the three waves of Information and Knowledge Society; they are linked together as presented below, and this connection is the theoretical foundation of this study. The three waves overlap and the core of Knowledge Society for development is the area where all three waves overlap and come

together. The theoretical aim of this study is to analyse this core of Knowledge Society and how it is formed by the three waves. This is analysed in the approach taken in policy documents, which provide context to the theory of Knowledge Society for development.

The first wave is about the economic origins of Information Society in the 1970s (originating from the early 1960s) and onwards (Machlup, 1962, Porat, 1977 a). The second wave began in the 1980s as a discussion and analysis of how information technology would change society and the economy (Forester,1985, Masuda, 1980, Schiller, 1984 and others). The economic discourse continued in parallel with that of the information technology discourse. Information technology was considered a vehicle of change in the development of economies and societies. Globalisation and information technology were integrated in this phase of discourse. National information society policies, including in Finland, (i.e. Finland's Way to the Information Society, 1995 and Quality of Life, Knowledge and Competitiveness, 1998) began predominantly in the 1990s. The third wave, development discourse, started in earnest in the 2000s, though it originated in the 1990s. The international Knowledge Society for Development discourse started as a series of policies and programmes called ICT for Development or Information Society for Development (WSIS, 2003 a, b, WSIS,2005). It continued the globalisation discourse as well as the bridging the digital divide discourse and policy. Figure 1. Knowledge Society in three interdependent waves (overlapping each other).

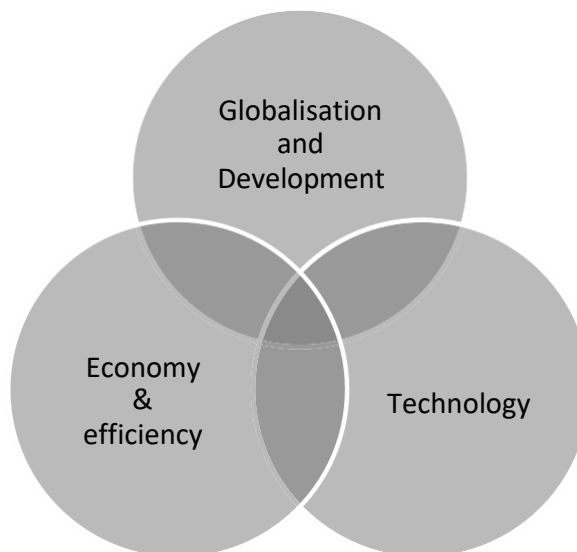


Figure 1. Knowledge Society in three interdependent waves (overlapping each other).

The figure above is a synthesis of the waves of Information and Knowledge Society. In the intersection of the waves, one can observe the economy interacting with technology and globalisation. In the evolution of Information

Society to Knowledge Society, this is the phase when information technology discourse merged with prospects for economic growth nationally and globally.

Furthermore, as (information and communication) technology was understood to enhance economic growth, it was considered to lead to global development and was positioned as a policy tool to strengthen countries in global competitiveness. This (development phase or wave) is the phase when ICT for development or Knowledge Society for development entered the development discourse. Globalisation interacting with the development phase supported the emergence of information and communication technology-led development. Each wave represents policies and the theoretical discourse as they pertain to Knowledge Society.

In the economic wave of Information and Knowledge Society, economic efficiency demanded skilled labour and high technology for economic growth. Information and knowledge products and services created new markets. The measurement of information and knowledge economy became important in analysing economic development. In the technology wave, information and communication technology (ICT) was seen as a catalyst for the development and change of society. Digitalisation and later artificial intelligence changed organisations, communication and work. Access to information for all was seen to become possible through ICTs. The globalisation and development wave addressed both economic growth and bridging the digital divide. Knowledge Society was addressed as a global Information and Knowledge Society with issues of competitiveness and global opportunities for information, finance, human resources and information/knowledge products and services. I will discuss the waves further in the literature review.

In the policy discourse, Information Society and Knowledge Society have been on the agenda of international and regional development organisations as well as national governments for more than 20 years, from national Information Society strategies (Finland, 1995 and 1998, Singapore, 1985, and others), and international organisations' development policies (the UN Summits on Information Society WSIS, 2003, WSIS, 2005, UNESCO, 2005) to the UN Sustainable Development Agenda of 2015 (UN, 2015). The focus of this agenda seems to have changed from an initial focus on technological and economic growth to the enhancement of sustainable development (UN, 2015).

Knowledge Society was on the national and regional policy agenda in the Global North earlier, mainly in the 1990s, and then became part of the international development agenda in the early 2000s. The policy texts allow for analysis both of changes in the policy agendas and of the timings of policies. They seem to have different timings from the waves of Knowledge Society; in other words, they seem to have many of the key themes from discourse of the Information and Knowledge Society waves but appear in the development policy texts later.

1.3 METHODOLOGICAL APPROACH

The methodology is both theoretical analysis and discourse (Fairclough, 1996) of the evolution of Information Society into Knowledge Society and a thematic analysis of policy documents. Lindgren (2020) discusses the interaction between the theory and the data that is relevant to this study. The theory frames the analysis of data, and according to Lindgren, “organizing data should not be the focus of analysis but ideas emerging from it” (Lindgren, 2020, 147). The analysis should provide ideas as to the most pertinent theory for analysing the phenomenon studied, in this case to understanding Knowledge Society. “Once the theoretical understanding is there, the data can be used to illustrate the fitting theory” (Lindgren, 2020, 147).

The policy documents present and define the goals and what the means are to reach those goals. I will analyse the policy documents, how they build the dominant discourse for development and what the themes are in these documents. The assumption is that the main discourse is about economic growth and technological development to enhance the competitiveness of countries. I will analyse the policy documents to identify what the themes of Knowledge Society are and how they are connected to development.

The data consists of policy documents of international organisations, namely the UN and the AU. Further, policy documents of national governments of Finland and South Africa are studied. A case study of the use of information technology by women entrepreneurs in Central America (Costa Rica) and South America (Bolivia) is presented to analyse the role of information technology in enhancing the economic sustainability of women entrepreneurs. This study reflects on the IADB’s policy to bridge the digital divide. Furthermore, the development policies and indices to measure Knowledge Society development are discussed, particularly in the context of Sub-Saharan Africa.

1.4 THE STRUCTURE OF THE THESIS

The thesis consists of the summary article, four articles and a book chapter published earlier that present the evolution of Knowledge Society and the policies to build a Knowledge Society.

This summary article discusses and analyses the following published articles and a book chapter to answer the research questions:

I. Tapper, Helena (2000). Information Society Strategy – Seeking New Solutions for Post- Modern Societies. Case Finland. It discusses the Information Society strategies of Finland and the evolution of Information Society. This article analyses the Information Society policies of the Finnish

government in the 1990s. There were two main strategies to enhance Finnish society. The first was to develop information technology infrastructure and services for all and to enhance economic growth by investing in ICT services and products. The second was to enhance quality of life and access to knowledge for all. The common theme was to make Finland a global leader in ICT.

II. Tapper, Helena (2000). *Potential Risks of the Local in the Global Information Society* discusses the tension between the local and global contexts in the new information technology environment. Globalisation is an opportunity but also a challenge for the local environment. The article discusses the potential tension between the global and local, and the roles of the state and the citizen in Information Society.

III. Tapper, Helena (2006). *Visiting the Digital Divide: Women Entrepreneurs in Central America*. This study discusses the role of ICT in enhancing women entrepreneurs' capacity. It is based on a case study. This paper analyses the digital divide from the point of view of micro and small women entrepreneurs in Costa Rica, Central America and Bolivia, South America, examining how they eventually benefit from access to information and communication technology. The article is based on the study of local women entrepreneurs, their capacity building and enhancement of their use of technology to run and market their businesses.

IV Tapper, Helena (2010). *Science and Technology Policies in Networked Environment*. Cases from Finland and South Africa discuss Science and Technology Policies in the two different policy environments. Science and technology and innovation play a central role in the enhancement of Knowledge Society. This paper analyses the science, technology and innovation policies of two countries, Finland and South Africa.

V. Tapper, Helena and Ainamo, Antti, (2020). *Building Indices to Measure Knowledge Society for Sustainable Development in Sub-Saharan Africa*, in Muchie, M. & Baskaran, A. (eds.) (2021). *Science, Technology and Innovation Indicators, Lessons from the Development Experience in Africa*. The study analyses how the Knowledge Society policies of international and regional development organisations have changed from the early 2000s to the 2015 Sustainable Development Goals. It further discusses various indices used to measure Knowledge Society development, comparing countries in the Global North with Sub-Saharan countries in the Global South. This study presents both a theoretical discussion (evolution) of Knowledge Society and an analysis of the indicators that measure Knowledge Society for development.

1.5 DISCUSSION OF FINDINGS & RECOMMENDATIONS FOR FUTHER RESEARCH

In this part of the thesis, I will discuss findings, how the development policy discourse of Knowledge Society has changed, and whether it has in fact changed. The main themes will be discussed in this chapter. Some themes seem to remain unchanged, meaning information and communication

technology leading development and economic growth. The bridging of the digital divide-policy is still ongoing, but it has expanded from bridging only the divide between the Global North and the Global South to address national and social divides. The Knowledge Society for development policy texts of 2014 and 2015 emphasise building human capital, meaning further skills development and education for all. Science, technology and innovation continue to be on the development agenda.

The qualitative changes in society are outside the scope of this exploration and thus are not discussed in detail. The digital divide in countries and societies needs to be addressed. Further research is needed to analyse the impact of the global Covid-19 pandemic on development, and how science and technology development together with ICT can enhance development in this context. These are some areas for further research. I will discuss results and recommendations for further research in greater detail in the final chapter.

2 REVIEW OF THE LITERATURE: EVOLUTION OF INFORMATION SOCIETY INTO KNOWLEDGE SOCIETY

In this chapter I will discuss the evolution of Information Society into Knowledge Society in three waves, in chronological order beginning in the 1960s and 1970s. The waves have their own specific origins, but they also exist in parallel and integrated with each other. The first wave is about the economic origins of Information Society (Machlup, 1962, Porat, 1977 a,b) and the continual change of society. The second wave began in the 1980s as discussion and analysis of how information and communication technology would change society and the economy (Forester, 1985, Masuda 1980, Schiller, 1984 and others). The economic discourse continued in parallel to the role of information and communication technology discourse. Information and communication technology was considered an agent of change in the development of economies and societies. Globalisation and information technology were integrated in this phase of the discourse. National Information Society policies, including that of Finland, (i.e. Finland's Way to the Information Society, 1995 and Quality of Life, Knowledge and Competitiveness, 1998) began in Europe, Asia and North America in the 1990s.

The third wave started in the 1990s. The Knowledge Society for Development discourse started as policies and programmes called ICT for Development or Information Society for Development in the 2000s. (WSIS, 2003, WSIS, 2005). It made information and communication technology integral to economic growth and development. The third wave addresses the globalisation of Knowledge Society and development, in the sense of bridging the digital divide with the goal of enhancing the sustainable development of economies and societies. Finland produced the third national Knowledge Society strategy for 2007-2015 in 2006. The strategy presents Finland as an innovative, humane and globally competitive Knowledge Society (Innovative, Humane and Competitive Finland, 2006).

As mentioned in the Introduction, the waves represent phases of Information and Knowledge Society development with a beginning, growth and potentially continuing or integrating into other waves. Thus, the efficiency and economic wave continues ideally as sustainable economic development; the information and communication technology wave continues as globalisation of economies and societies, and the development wave continues, integrated to some extent with globalisation and sustainability. Choong and Leung, (2021, Abstract) present a similar analysis of the stages of economic and social development. They suggest a model of key aspects of Knowledge

Economy based on social values, technology, knowledge and innovation to produce knowledge products. They emphasise the social economy, society and its values as key aspects of Knowledge Economy (Ibid, 20).

In the following I discuss the waves with the main aspects and approaches to Knowledge Society.

2.1 THE FIRST WAVE OF INFORMATION SOCIETY AND KNOWLEDGE SOCIETY: INTERNATIONAL ECONOMIC EFFICIENCY

The industrial mode of production was the dominant mode of production, and industrial society was the prevailing form of society in most Western countries in the 1950s. The demand for industrial products in Europe was high and construction industries were growing. The goal was to enhance economic growth, efficiency and productivity in most economies. This required developed technology and skilled labour. As efficiency was needed for economic growth, this required more input from science and technology. Education and research and development for innovations were effectively the drivers of growth.

As the USA had invested in war technology, this industry needed new innovations in information technology in the 1940s and 1950s. The other reason for R&D in information technology was the growing demand for industrial products and the need to enhance productivity through developed technology, allowing for automation of production. Scientific and technological information and innovations, together with skilled labour, became the basis for productivity and economic growth.

Information economy has its origins in the early 1960s. The beginning of analysis of Information Economy was based on the classification of information labour in industries in the economy (Machlup, 1962). The *Production and Distribution of Knowledge in the U.S.A. (1962)* by Machlup is considered the basis for economic analysis of knowledge work as classification of labour and information industries. Machlup analysed five information industry groups: education, media and communication, information machines, information services and other information activities (Webster, 1995, 11) and measured their share of gross national product (GNP).

Machlup was the first scholar to study production and distribution of knowledge as an essential part of economic growth. According to Machlup, “an ever-increasing part of GNP has been taken by the production of knowledge. The causal connections are complex and undoubtedly go both directions: increase in the production of certain kinds of knowledge, in nature of investment, leading to increased productivity in the use of resources and to higher national incomes” (Machlup, 1962, 11). Further, for Machlup there was a continuous growth of knowledge-producing workers and a decline of productive labour.

These economic studies were continued by Mark Porat. Porat (1977 a, b) produced the definition of information economy, with primary and secondary information sectors and their interlinkages in the economy. Porat (1977, b) and Michael Rubin measured the primary information sector in the economy and provided a definition of what industries form the primary information sector. The definition of information sector of the economy has been debated for decades thereafter, but an agreement on the metrics of measurement has been reached for statistical purposes by international and national statistical organisations.

Information has been studied as economic theory as commodity (Arrow, 1996), and information and uncertainty in decision-making in the markets (Hirshleifer, 1973, Hirshleifer & Riley, 1992). Lamberton, in his book *Economics of information and knowledge* (1971), provides analyses of information in economic theories by a number of economists. Furthermore, productivity studies and market information studies have included information as a variable in economic analysis. Information was considered a factor in production processes that enhanced productivity as skilled labour and developed (high) technology. There were economic studies to measure Information Society (e.g. Williams, 1988) and economic analysis of Information Society (Dordick, 1987). Later, measurement of information and knowledge indicators and Information Economy became important areas of study in competitiveness: i.e., the OECD published a guide to measure the Information Society (2011), and The World Economic Forum (2018 and 2019) produced studies of competitiveness. Choong and Leung (2021) present measurement of Knowledge Economy based on four criteria: social values, technology, knowledge and innovation, and they discuss international organisations' methodologies of measurement of Knowledge Economy.

Several indices are used by international organisations like the World Bank, UNDP and the World Economic Forum to measure Knowledge Society. These indices have measured ICT (infrastructure, use, price of services, access to ICT and skills), education, science, technology and innovation, as key domains of Knowledge Society (Tapper & Ainamo, 2020). These areas are also embedded in the Sustainable Development Goals. There are other domains that are not included in them, like indigenous knowledge, which should be included to strengthen the role of local knowledge.

We (Tapper & Ainamo, 2020) analyse the indices of Knowledge Society, what they measure and how they place countries globally. There is a significant divide globally between countries in the Global North and South. As mentioned earlier, the top Knowledge Society countries in the world rank high in education, investment in R&D and in ICT infrastructure and services, and competitiveness. But we should look further at the level of participation in social and economic activities and democracy. The measurement of Knowledge Economy is problematic and there are several studies of these measurements. Leon (2017) discusses commonly used tools like the Lisbon Scorecard and Knowledge Assessment Methodology and introduces the measurement of intellectual capital at the firm level. Leon studies Romania as Knowledge Economy in her article.

Information has been a resource in economic analysis in terms of labour and technology. But information is not only a resource; it is also embedded in technology, human capacity, organisational structures and flows of finance

and communications.

Mansell (2009, 2) presents two different approaches to Knowledge Economy that to some extent reflect even today's Knowledge Economy or Society policies. First, UNESCO's (2005, 5) definition, according to Mansell, emphasises capabilities and the variety and plurality of societies: "Knowledge Societies are about capabilities to identify, produce, transform, disseminate and use information to build and apply knowledge for human development". The OECD's (1996) definition of a Knowledge-based Economy is dependent on the production, distribution and use of knowledge as embodied in human beings and in technology. Both definitions represent widely used policies. (See also Mansell, R. 2015 about the Futures of Knowledge Societies).

Powell and Snellman (2004) analysed Knowledge Economy and noted that it was problematic to find supporting data for economic growth at the macroeconomic level as a result of investments in information technology. Instead, they argue that Knowledge Economy could be studied and verified at the firm level. Investments in ICT and knowledge work were not the only accelerators of economic growth and productivity; organisational changes were needed to accompany them. Powell and Snellman used patents as a measure of Knowledge Economy in their study. According to their study, the leading industries in Knowledge Economy in the U.S. in 2001 were molecular biology and semiconductors (Ibid, 2004).

Knowledge Economy or Knowledge-based Economy was seen in the 1990s and from 2000 onwards to lead economic . It was understood that investments in education, innovation and ICT would lead to economic growth. This was reflected, for example, in education policies promoting skilled labour for knowledge-intensive industries, like software and information technology industries.

The role of labour in Knowledge Economy has been debated. The main line of thought was that Knowledge Economy needed high-skilled labour and skills in STEM (science, technology, engineering and mathematics). This in turn was considered to enhance productivity and economic growth. Societies and economies are assumed to move to new divisions of labour driven by scientific knowledge that accelerates the pace of technological innovation. One critical aspect of globalisation is knowledge-work, meaning that high skilled labour can be harnessed by companies globally (Brown & Lauder & Ashton, 2007, 134). This challenges national and regional policies.

Antonelli and Fausio (2016) analyse Knowledge Economy as a creative reaction in Schumpeterian terms of firms to globalisation of products and factor markets in advanced economies. They find that advanced countries have specialised in the generation and use of knowledge, as they have a large stock of knowledge and sophisticated mechanisms for knowledge governance. This in turn enhances total factor productivity. They recommend economic policy to support the generation of knowledge through stronger interaction between public research systems and knowledge-intensive business service industries, and to increase the availability of external knowledge and the localised user-producer interactions between Knowledge Intensive Businesses (KIBs) and manufacturing, which is important in the generation and exploitation of knowledge (Ibid, 13). This would support the growth of Knowledge Economy. Another critical approach to the Knowledge Economy is, how it was established as policy for competitiveness and reinforced by academia and how

it influenced education policies and systems (Sum & Jessop, 2013, Abstract). Newfield (2019) provides a critical analysis of how the role of universities and cultural environment has changed in the Knowledge Economy. He discusses the role of universities as public institutions challenged by the demands of Knowledge Society.

2.2 THE SECOND WAVE OF INFORMATION AND KNOWLEDGE SOCIETY: INTERNATIONAL SOCIETAL CHANGE BROUGHT BY ADVANCES IN INFORMATION AND COMMUNICATION TECHNOLOGY AND ECONOMY

Studies of information technology have both been critical of the role of information technology in society (Schiller, 1984) and analysed it, like the Nora and Minc study (1981) in France, and Masuda (1980) in Japan. The focus was on information technology. Nora and Minc studied the use and impact of information technology in communities in France, and Masuda analysed the role of information technology and its societal impacts in Japan. These studies analysed the use and impact of information technology on the development of the economy and society and partly served to inform government policies (Nora & Minc, 1981).

At the end of cold war in the 1990s, there was a surplus of high-technology information products for global markets. The USA announced a high-technology programme called National Information Infrastructure in 1993. This programme was launched to later build a global market for ICT services and products, called the Global Information Infrastructure (Mattelart, 2003, 118, Tapper, 1998, 8).

Parallel to economic studies of information in society, the role of information and communication technology (ICT) was studied as an agent of change in the economy and society at large. There have been two schools of thought in analysing the change from industrial society to “post-industrial society”: Information Society as a different kind of society or economy (Bell, 1973), and as a continuum with industrial society (Schiller, 1984, Mattelart, 2003, and others).

Sociologist Daniel Bell analysed Information Society as a post-industrial society characterised by non-linear, technology-driven development from industrial society to post-industrial society (Bell, 1973, Porat, 1977 a, Drucker, 1978). Bell later called it Information Society. Schiller (1984) and others (Williams, 1983) on the other hand considered Information Society as a continuation and another form of industrial society. Schement (1989, 48), among others, analyses the two views of Information Society as post-industrial society and Information Society as a continuation of industrial society and suggests a third option: information-oriented industrial capitalism.

Bell’s analysis (1973) of the change from industrial society to Information Society as post-industrial society is characterised by:

1. Centrality of theoretical knowledge as a source of innovation and policymaking
2. An economic sector that has changed from producing only goods to producing information and services
3. An occupational distribution dominated by a professional and technical class
4. Future orientation
5. A decision-making process that depends on the creation of a new “intellectual technology”(Tapper, 1998, 37-38).

This characterisation of Information Society emphasises the role of a professional and technical “class”, dependence on technology in decision-making and the importance of theoretical knowledge and future orientation.

According to the other school of thought, Information Society evolved from industrial society with informational characteristics. Therefore, according to Schiller (1984) and Williams (1983), Information Society has industrial characteristics and draws from the scientific and technological roots of the industrial revolution.

The conclusion of Information Society theorists is that the process of work has changed from the industrial production of material goods to the production of both material and information goods. The suggestion is that there is more information embedded in products and in the process of production in an Information Economy. As technologies allow the growth of complex economic structures, there is a need for more information for decision-making and control. Both economic and political decision-making require more information and better technologies to analyse and process information.

These changes characterise Information Society, but is it entirely different from industrial society or is there an information orientation in society? Information Society can be characterised as a society with industrial roots but also as a different kind of society. This wave integrated information technology into globalisation and was adapted by international and regional development organisations as well as national governments in their policies. This could be called technology-driven development and it concerns the process of globalisation.

Information Society studies were continued as studies of globalisation, for example Castells' Network Society (Castells, 1996). Further, Appadurai (1990) and Castells (1996) analysed globalisation as flows of information, goods and services, finance and human resources.

2.3 THE THIRD WAVE OF INFORMATION AND KNOWLEDGE SOCIETY: LOCAL-RECIPIENT - DEVELOPMENT- COUNTRY CHANGE BROUGHT ABOUT BY GLOBAL ECONOMY

Historically, linear economic development has been understood to take place beginning from agricultural societies, leading to industrial and then to service and Information Economies. During the 1980s the Third Wave of economic development (Toffler, 1981) was discussed. The rhetoric of a Tofflerian Third Wave was about moving from the industrial economy into the Information Economy by experiencing “system crisis” in the U.S. (Aune, 1997, 231). Aune, in his review of Toffler’s book, *Creating a New Civilisation: The Politics of the Third Wave* (Toffler, A. & Toffler, H.,1995), wrote that, according to Tofflers, the main crisis in the U.S would be between those who supported building a global Information Economy and those who resisted it (Aune 1997,231). In the following section I will discuss the different approaches to the globalisation of Knowledge Society and the policies for Knowledge Society development.

The assumption of linear development has changed as developing economies change from agricultural economies directly to economies with large service and information sectors.

Developmental dualism was discussed by Berger and Priore (1980) as a principle of change in developing countries. According to them this means: 1. the parallel existence of large monopolistic companies connected to the global economy and small local companies, 2. An informal sector parallel to the formal sector with a different level of development, and 3. a skilled and a non- skilled labour force (Berger and Priore, 1980, 55 in Tapper, 1998, 45). This means a parallel existence of traditional sectors like agriculture and industry and a growing sector of information and other services (see Tapper, 1998, 48).The rhetoric about global Information Society and information infrastructure was dominant in the 1990s in the Global North. Information and communication technology dominated this discourse in the region. National and regional Information Society policies emphasised “becoming a global leader in ICT” (e.g., Finland’s *Way to the Information Society, 1995, Quality of Life, Knowledge and Competitiveness, 1998*) and “Europe becoming a global leader as information society” (Bangemann, 1994). Globalisation and global Information Society emphasised the economic growth and competitiveness of countries and regions.

One of the concepts in the globalisation of Information Society was the global “informational network society” introduced by Castells (1996). Castells proposed a theory that society (space as an expression of society) is constructed of flows as new forms of global interaction, flows of information, technology, organisational interaction, capital, images, sounds and symbols. He further described the space of flows supported by material layers of electronic impulses (telecommunications, ICT), a structure of nodes and hubs, and spatial organisation of the dominant, managerial elites (Ibid, 412-415). Castells proposes a new global informational society as a social theory. Earlier,

Appadurai (1990) had analysed globalisation as cultural flows of ethnoscaples, mediascaples, technoscaples, financescaples and ideoscaples (Appadurai, 1990, 6-7). For him the important point of globalisation is the interrelationships of ethno-, techno- and financescaples. (Ibid, 8).

A relevant concept for this study is the theory of “world polity” and “world society”. It provides a perspective on globalisation and Information Society for development, as it analyses the role of international nongovernmental organisations in the formation of world culture (Boli & Gallo-Cruz & Mathias, 2011, Summary). The world polity theory was originally founded by sociologist John W. Meyer at Stanford University in the 1970s. One of the relevant questions posed by the world polity theory is about the role of international nongovernmental organisations in the formation of policies: why the similar policies of these international organisations are adopted by countries with very different levels of development, and what role nation states play in this development. Meyer (2010) discusses the role of actors (individuals, organisations) and the actor status of nation states. For Meyer the models come from those in power (globally), but nation states expand their agency and cooperation in these circumstances (Meyer, 2010, 11), meaning that they are not entirely powerless. Buhari-Gulmez (2010, 255) states that “international nongovernmental organisations (INGOs) act as ‘scriptwriters’ for nation states that seek external legitimation to consolidate their very autonomy in the world political arena”. Buzan’s (2004) concept of “world society”, as analysed by Navari (2018), challenges the notion of powerless nation states by saying “that international organisations reproduce and instantiate what is essentially a state-centered international order. Thus, they cannot transcend ‘stateness’, however that is defined” (Ibid, 17). The “world society” discussion is valid in the context of this study, to analyse what policies international organisations present for development and how similar they are.

Castells and Himanen (2014) discuss development and globalisation in the global information age. The book discusses how development is linked to human and economic development in the globalised world. They connect economic development to human development, calling the new society a wellbeing society. This includes ecological and cultural sustainability. The final goal, according to the authors, is dignity, and they propose a new concept called “dignity as development” (Ibid, abstract). This approach brings together economic and social development in a sustainable way. I would call it a constructive utopia of the future.

Globalisation and building the global Information Society were the main themes of international organisations in the late 1990s and thereafter. In this study I analyse policies from the perspective of international nongovernmental organisations like the UN. The assumption is that country perspectives are to some extent integrated into international policies through consultation. Therefore, the policy process ideally works both ways, from international organisations to countries and countries participating in the policy formulation of international organisations.

Then, how did the global Information Society discourse for development begin? Building the “global information infrastructure” (Gore, 1994) and “bridging the digital divide” was brought into international discourse by the U.S. (1994) and by the Global North in the 1990s. They were brought to the development policy discourse by the UN as ICT for Development and

Information Society for Development policies in the early 2000. The UN established an ICT Task Force with stakeholders ranging from national governments, information technology industries and NGOs to civil society groups to address the digital divide-issues and provide policy support to countries and to the UN. The main goal was to build an Information Society for all and enhance the information technology infrastructure and services in developing countries to “bridge the digital divide” between the Global North and the Global South. The agenda was created in the Global North (see Adu Amoah, 2014).

Knowledge Society became a part of the development agenda of the UN and other international organisations in the early 2000s (UNESCO, 2003, ITU/WSIS, 2003 and ITU/WSIS, 2005). It integrated the global development agenda and Knowledge Society to enhance economic and social development nationally and globally. In this agenda, the Global South was considered less developed, and the goal was to bring the Global South to the same technological level as the Global North (Adu Amoah, 2014, 7). This wave was continued by the UN in 2015 in the form of the Sustainable Development Goals, known as Agenda 2030 (UN, 2015). The 17 Sustainable Development Goals were agreed by the UN member countries globally as development goals until 2030. Knowledge Society is embedded in these Sustainable Development Goals, as discussed in Chapter 4.

Knowledge Society policies and plans were started in Africa as the African Information Society Initiative (AISI), coordinated by the UN Economic Commission for Africa (UNECA) and launched in 1996. AISI was preceded by a resolution of the Conference of African Ministers fostering the building of an African Information Society “that will help Africa to accelerate its development plans, stimulate growth...and help African countries to leapfrog stages of development and raise their standard of living” (UNECA, 2008, 6). It further emphasised linking Africa regionally and globally to the information age (Ibid). According to Ojo (2016, 705) the AISI initiative was partly successful. It faced challenges like the lack of information technology infrastructure, lack of political priority in decision-making and limited financial resources. According to Ojo, Africa was considered a subset of the global information economy (Ojo, 2016, 705).

AISI was followed by the African Regional Action Plan on the Knowledge Economy (ARAPKE) in 2005, coordinated by the African Union, implemented by UNECA and funded by the European Commission. ARAPKE was a response of African countries to the WSIS process. According to Ojo (2016), it is a result of NEPAD, WSIS, MDG and AISI action plans (Ibid, 708). The main critique of these information and communications technology for development (ICT4D) policies and action plans is that they do not consider the capacities of countries, and there was a lack of financial resources to implement the plans. However, AISI initiated National Information and Communication Infrastructure (NICI) policies and plans in many countries in Africa, for example in Rwanda.

A recent study of BRIC countries analyses South Africa as Knowledge Economy and states that Knowledge Economy depends on globalisation and ICT. According to this study, South Africa is making significant progress as a Knowledge Economy in the continent of Africa, coming in at number 2 after Mauritius. (Vadra, 2017, 1235). Further, Asongu (2017) analyses South Korea

and its development into a Knowledge Economy and how African countries could learn from the process of Knowledge Economy in South Korea.

In this study the Knowledge Society focus is development and development policies. Knowledge Society is located at the intersection of economy, information and communication technology, globalisation and development. Knowledge Society in this study is about a change of society towards a Knowledge-based Society, with an emphasis on investments in ICT infrastructure and ICT services, investments in and enhancement of education (skills and quality education) and investments in Research and Development (innovations). These investments, according to international policies, build the foundation of the economy and society for local development and allow participation in the global economy, meaning that they generate economic growth that in turn can enhance social development.

The social and democratic aspect of Knowledge Society is access to information and knowledge for all, a goal that in turn could facilitate democratic decision-making and transparency in society. However, this requires a shared understanding of goals for social and economic development of the country, joint leadership by the public and private sectors and opportunities for citizens to participate in decision-making in their societies.

There is critical discussion about how Knowledge Economy and globalisation change national education systems. According to Dale (2005, 123) 'supranational' forms of education are challenging national education systems, and he discusses the relationship between education and globalisation. Robertson (2005) has analysed the education discourses of international organisations in global Knowledge Economy: these organisations critique schools and teachers as unable to meet the needs of Knowledge Economy and promote Knowledge Economy as a determined future with promotion of individual learning (Robertson, 2005, 166-167). Further, there are later critical studies about the challenges to education systems in providing the labour force for Knowledge Economy (O'Donovan, 2020).

O'Donovan (2020) challenges the growth assumptions of Knowledge Economy in his study of policies in the UK during the Blair era. According to O'Donovan, the optimistic growth regime of Knowledge Economy is challenged by automation, artificial intelligence (AI) and new business models (O'Donovan 2020, 261). More importantly, the new Knowledge Economy challenges (due to automation and AI) the position of knowledge workers, increasingly dividing them into high-skilled and low-skilled labour, with the middle class of knowledge workers disappearing (Ibid, 261). Harris and Ormond (2019) analyse how education links knowledge to the economy and how Knowledge Economy relates to globalisation and how that is reflected in policies. The education policies have tended to be adjusted to Knowledge Economy and continuous change in skilled work, and how the new global economy challenges universities to provide labour with skills to meet the demands of globalisation (see i.e. Robertson, 2005). Therefore, lifelong learning has become an essential part of education. Bejinaru (2017) discusses the role of universities and how they are adapting to the changes in Knowledge Economy.

Information Society is a useful concept to describe quantitative changes in society, the growth of information and communication industries, and the key

role of information and communication technology (digitalisation and artificial intelligence). Information technology produces and enables structural changes in organisations, work and communication (time and space).

In this study Knowledge Society possesses elements of Information Society, like technology and information services. However, it becomes Knowledge Society when people have access to information and have the capacity to use it for their development and participation in society's decision-making and activities.

There are two competing trends globally: globalisation and the role of the local decision making. These trends can be seen as tensions or complementing trends. De Sousa Santos (2006, 23) points out that there is no global without the local, though in the discourse of globalisation the local is seen inferior to the global. To me, the digital networks connect the two, the global and the local. Therefore, the local and the global Knowledge Society exist as socially interwoven entities. At the same time, national economies are increasingly interdependent globally. Global economic changes and crises impact national economies. In this situation, Knowledge Society, with its key domains, becomes an important instrument to build national and local economies and societies.

The main body of the thesis focuses on the development of Knowledge Society. Therefore, it is important to ask what development and societies are being enhanced: is it economic growth or a qualitatively different kind of development? The question is, how do we support development that produces qualitative and sustainable changes in society?

One answer is to identify what characterises top Knowledge Societies globally. According to statistics, they rank high in economic competitiveness, in education and investments in R&D, and they possess a high level of information infrastructure. If we look at these key elements, they are all about information and knowledge (high level of knowledge embedded in technology). I will analyse how countries in the North and the South, particularly Sub-Saharan Africa, rank in these domains of Knowledge Society and how these domains are addressed in national and international policy documents.

Globalisation is both an opportunity and a challenge, as information flows are global, but knowledge is always interpreted in a local context. One important question: is what kind of knowledge is relevant for development in different cultures, as information and knowledge flows reach the most remote places in the world? According to Peters (2003), knowledge production and Knowledge Economy play an important role in globalisation. He analyses the development of economies, pointing out that governments and states play an important role in the production of knowledge, and discusses knowledge as a public good in the globalisation process. Ordóñez and Sánchez (2016) analyse globalisation and knowledge capitalism through socio-spatial analysis. One of their main messages is that states as national spaces are moving towards fragmentation as regions and local spaces connect to the globalisation of economy; however, the role of the state as warden of the economic and social environment is important. The authors propose for the future either the Scandinavian model of solidary liberalism or Asian selective corporatism along with neoliberalism. (Ibid, 16). There is a need to invest in education and R&D in areas relevant to the respective country, while

respecting their culture and knowledge.

Tausch (2018) discusses the dependency theory of countries and regions in the globalisation process. The 'classic' thinking about the dependencies of countries in development has focused on core or leading countries and semi-peripheral or peripheral countries. The discussion has been about the Global South depending on the Global North. Tausch (2018, 85) points out that multinational companies have penetrated in the Global North as well, and they have changed economies across the world, like Europe having the same penetration rate as Latin America. (The article was originally published in 2010). The study points out the changing roles of regions in the global economy.

In summary, ICT and information flows have a great capacity to enhance development. Paradigmatic shifts in Knowledge Societies must be included in the study of development: quantitative changes have been studied, but qualitative changes in societies ought to be studied as well. Some of the key issues are about understanding knowledge as (symbolic) capital, the capacity to access information and knowledge, and use of it at the individual and societal levels.

3 DATA AND METHODOLOGICAL APPROACH

The data within this research is twofold: theoretical literature on various approaches to Knowledge Society and policy documents of national governments and both regional and international organisations. The literature provides data for understanding how Knowledge Society became a key concept in the development of economies and societies both in the Global North and the Global South.

The literature presents the main approaches to the Knowledge Society discourse over time, as analysed through the wave model. Each wave provides a starting point that has evolved to the present day, like the first wave of the efficiency and economic approach. This wave (wave 1) started as a measurement of labour in information and information industries in the economy, which then evolved into a discourse of productivity and markets for economic growth and global competitiveness, and finally to a discourse of sustainable economic development. Each wave has produced themes on the discourse of Knowledge Society. For example, wave 3 integrates themes from earlier waves, like economic growth, competitiveness and information technology (wave 2) with new themes like capacity building and skills development. I analyse the themes as discourses of Knowledge Society policies presented in each publication (I-V): what the themes are, how the themes are presented and how have they changed. Each publication's discussion takes place in the context of the waves; however, there are some thematic commonalities between them as they overlap. These themes are discussed in chapter 4.

I have selected policy documents of Knowledge Society for development to identify and analyse the discourse of themes over different time periods to discover the change both in national (Finland, South Africa) and international and regional policies (UN, AU).

The selected policy documents of international organisations are from the UN, WSIS, from the early 2000 to the present day, to iterate the international development policy and agenda for the world. I then selected the AU policy documents to build African Knowledge Society from 2010 onwards, and finally the UN Sustainable Development Goals from 2015. Themes of country policies for Information Society in Finland are studied, as well as Science and Technology policies in Finland and South Africa. Furthermore, indices for Knowledge Society measurement are presented to analyse Knowledge Society development in Africa and the results compared to leading Knowledge Society countries in the world. A case study of the use of information technology by women entrepreneurs in Central and South America is presented to address the digital divide policy, in this case of the Inter-American Development Bank

(IADB).

The methodological approach of the study is a discourse analysis and thematic analysis of Knowledge Society literature and policy texts. I analyse the discourse of themes in policy texts emerging from my publications, located in the three waves of Knowledge Society.

3.1 DISCOURSE AND THEMATIC ANALYSIS: CONSTRUCTING THE CHANGE OF SOCIETY

In this study, discourse analysis is used as a means of analysing the construction of reality (see van Dijk, 1985), in this case constructing Knowledge Society for development in the policy documents of international development organisations and in Finland and South Africa. Discourse has several meanings: in linguistics it means, “extended samples of either spoken or written language, or different types of language used in different social situations” (Fairclough, 1992, 3). For this research, however, a more useful definition is provided by Jokinen & Juhila & Suoninen (1993), as they refer to interpretation repertoires and discourse as a system of meanings and their relations, constructed in social practices and at the same time building social reality (Ibid, 27).

Discourse analysis is used in this research to analyse the policy texts of international, regional and national organisations. These texts represent building Knowledge Society for development, but they also construct reality: what are the elements of Knowledge Society for development and how do they construct development? These texts are cross-contextual; therefore, it is important to iterate the meaning of these texts. The policy texts are contextual, as they refer to a certain period (2000-2015), and context of space (global-regional-national-local).

I will use discourse analysis both as a theoretical frame (Knowledge Society) and as a method (see Jokinen & Juhila & Suoninen, 1993,17) to analyse policy texts of Knowledge Society for development. I analyse texts as policy discourses by certain organisations and as texts having political, social and economic effects. The frame of analysis presupposes that (see Jokinen & Juhila & Suoninen, 1993, 17-18, Lehtonen, 1996, 70) discourses are social practices which construct social reality. Some discourses are related to other competing discourse or sub-discourses. Other discourses are context-oriented, referring to a social and cultural context. This research emphasises how policy texts represent and construct Knowledge Society and development.

Discourses are always contextual: they have a meaning in a certain time and society. Discourses are also hierarchical, as there are dominant discourses and competing or sub-discourses. The dominant discourses appear simplistic, but it is necessary to look more deeply into them to reveal their essence. For example, Knowledge Society policies and programmes can be seen to enhance development using digital services and better ICT infrastructure. Behind that argumentation, a discourse of “technology for progress” can be identified.

The sub- and counter- (competing) policy discourses may give more information about the texts. For example, a discourse of an inclusive

Knowledge Society could be understood as democratic or enlightenment discourse, instead of being only a discourse of technological and economic growth.

In this study I will try to understand the reasoning behind building Knowledge Society. Thus, it is necessary to understand: what is Knowledge Society about? Who are the main agents in building a Knowledge Society? To whom is it addressed?

I have produced categories (waves) of the history of Knowledge Society in the following way: the first wave consists of economic analysis of information technology-based efficiency and economic growth, originating from the 1960s but mainly starting from the 1970s onwards. The second wave pertains to the role of information technology and analysis of the transformation from industrial to post-industrial information society, and globalisation from the 1980s onwards. In summation, the third wave is about Knowledge Society for development and globalisation, beginning from the early 2000s and lasting till today.

The underlying assumptions in this thinking are drawn from my earlier studies, reading and working in development programmes. Knowledge Society is about a change of society, it is about economic growth, it is about polarities (global and national) and technological progress (technology allows growth) and to an extent social development.

I read texts on policies for Knowledge Society for development. The policy texts are ideal material because they reflect the thinking and perceptions on the policy-making level in constructing a Knowledge Society. I consider the development context in particular. Text analysis is an instrument for me to deconstruct the society they are attempting to represent. At the same time, they construct social reality. These texts are cross-contextual; thus, I need to have a working knowledge of other texts that they refer to. The texts are also situational (time-bound), as they represent a certain period (2000-2015) and a context of society (liberalism-deregulation-enlightenment-technological utopia). Discourse analysis offers me a methodological instrument to study the main discourses and competing sub-discourses (see Jokinen & Juhila & Soininen, 1993).

This study is also about a change of Knowledge Society from local (national) to global, and also into Knowledge Society for development. I approach this through discourse and thematic analysis (Fairclough, 1992, Berger & Luckmann, 1994). One way of doing text analysis is to identify dichotomies and themes in the texts, like global-local, developed-developing countries, information-knowledge, technology driven development-cultural development, economic growth-based development-human development, liberalisation-regulation, individual-societal, opportunity- risk and state-citizen.

Knowledge Society has been studied for decades. The studies began from economic analysis of the information sector of the economy. In the past, information technology was considered a major variable for change in all domains of society and at the individual level. This phase dominated Knowledge Society discourse for decades and it continues to do so. Issues like the role of knowledge institutions, education and research appeared in the policy documents later. The change in society and the roles of state and citizen have been discussed to some extent. Knowledge Society for development has

been on the agenda of international organisations' discourse for the last two decades. Initially the focus was on globalisation and development, but it has since turned into a sustainable development discourse.

The theoretical analysis of Knowledge Society has emphasised the following: it is analysis of change of society into a different kind of society (information society, post-industrial society, global information society), i.e. are we witnessing the birth of a new kind of society? The role of information and communication technology has been discussed as a main engine of change, and information as a key resource in society and in globalisation. Then, Knowledge Society has been analysed in the development context, emphasising the role of Knowledge Society in sustainable development globally. The underlying assumptions in the texts are the following: information technology changes societies and lives of individuals for the better (progress, competitiveness); there is change from information to knowledge, as knowledge adds value for the user (participation, building individual capacity) and the inclusiveness and universal development of Knowledge Society (global development).

3.2 TEXTS AS POLICY

As a researcher, I construct or interpret the meaning of the policy documents through my personal frame of interpretation (see Väliverronen, 1996, 40-43). This statement does not mean that my approach is not methodological. I have a structure for analysing the policy texts systematically and my frame of interpretation uses a dichotomy to view the subject: Knowledge Society as a discourse of progress – and Knowledge Society as a global development discourse.

Reading the texts should also reveal the main agents of these policy texts. Usually, the texts are addressed to a specific audience: whether a country or a sector or individual, they address the reader as “we” and exclude others. However, if one reads the policy texts closely, there is an official, neutral “we” voice, using the dominant voice and addressing another neutral “we”, that usually supports the argumentation (Knowledge Society for development) with numbers (facts and statistics) or by referring to other official voices as cross-contextual references.

This dominant tone is usually passive, which makes it more authoritative. The main discourse about Knowledge Society for development is a universal belief in technological progress, and how to facilitate societies in developing and directing their resources towards investments in the knowledge base of society.

In conclusion, this text is also a policy text, since I, as a reader and researcher of these policy texts, use my own interpretation repertoire, which comes from my personal history as a researcher and working in Knowledge Society for development programmes and policies. This analysis of texts also reveals something of my own position with regard to the development and understanding of society, and myself. Thus, I will read the texts, by definition, as my discourse with texts on Knowledge Society for development (see also Palonen, 1988).

4 ANALYSIS OF POLICIES OF KNOWLEDGE SOCIETY FOR DEVELOPMENT

In this part of the thesis, I discuss the published articles and the book chapters (I-V). I will explore what I see as common themes across the articles and the book chapter as well as how they differ from each other. All the texts present and analyse the phenomenon of Knowledge Society and related policies in one way or another. More specific and less obvious common themes that appear in publications I-V are:

1. Changes of society and economy towards a knowledge-based society and economy (Bell, 1973, Drucker, 1978, Porat, 1977a)
2. The role of information and communication technology in the change of economy and society (Bell, 1973, Freeman & Louca, 2001)
3. Globalisation (Castells, 1996) and competitiveness
4. The role of the state (Giddens, 1990, Beck, 1994, Beck & Giddens & Lash, 1994)
5. Innovation (Freeman, 1989)
6. The role of the citizen (Giddens, 1990, Beck, 1992)
7. Inclusiveness (WSIS, 2003, UNESCO, 2003, WSIS, 2005)
8. Education and capacity-building (skills) (UNESCO, 2003), and others.

However, the themes are so manifold that they almost serve to further obscure rather than clarify. The themes are not evenly distributed between the articles included in this thesis and discussed in the introductory part of the thesis.

The new and non-common themes that emerge from the discourse of policy texts in the publications are:

- Risks and uncertainty (Beck, 1992, Bauman, 1996),
- Expert society (Castells, 1996),
- Continuity (Beck, 1994),
- Gender,
- Local economy,
- Entrepreneurship,
- Policy collaboration,
- Collaboration between public and private sector,
- Commercialisation of innovations,
- Network economy,
- Enabling environment for Knowledge Society,

- e-commerce and
- Investments in Science and Technology.

The themes above can be seen to reflect optimism about progress through information technology, economic growth and a change of the economy towards a global Information Society where belief in science and technology can benefit all countries through participating in it. There seem to be common international and national goals for this progress, and policies are planned to enhance these goals.

It is my view, strengthened by those of many others (e.g. Schiller, 1984, Mattelart, 2003), that the publications included in this thesis reflect criticism of information technology-driven development and globalisation. Scholars like Schiller, Mattelart and Schement have voiced that criticism to portray Knowledge Society developments in a negative light, but my take is intended to be a constructive criticism. Some have argued that Knowledge Society developments would only serve global and national elites, with little attention paid to how common individuals might manage in this changing economy. However, the questions that I have been concerned with are how the local and the global contexts interact and whether the global dominates the local. This also relates to concerns over managing risks and uncertainties at the individual and societal levels.

First, I analyse Finnish Information Society strategies of the early 1990s to identify where the idea of Information Society came from and what goals the strategies presented for Finland's development. Publication I. Tapper, Helena (2000). *Information Society Strategy – Seeking New Solutions for Post-Modern Societies*.

Secondly, I discuss the issues of globalisation and the local in Publication II. Tapper, Helena (2000). *The Potential Risks of the Local in the Global Information Society and analysing this in the context of Finnish Information Society strategies*.

Thirdly, in Publication III. Tapper, Helena (2006). *Visiting the Digital Divide: Women Entrepreneurs in Central America*, I analyse the role of women entrepreneurs as a case of bridging the digital divide, referring to building their capacity and the potential benefits of their using information technology. This study was done in the context of the IADB ICT4D policies.

Fourth, I analyse and compare science and technology policies and innovation systems in Finland and South Africa, a country in the Global North and a country in the Global South. Publication IV. Tapper, Helena (2010). *Science and Technology Policies in Networked Environment: Case of Finland and South Africa*.

Fifth, I analyse policy texts of international and regional development organisations of Knowledge Society for sustainable development, and how Knowledge Society indices measure this development. Publication V. Tapper, Helena and Ainamo, Antti (2020). *Building Indices to Measure Knowledge Society for Sustainable Development in Sub-Saharan Africa*.

I will next identify policy themes specific to each publication. In Table 1. policy themes emerging from the publications (I-V) are linked to the 5 main themes of the publications.

Table 1. Knowledge Society policy themes linked to article and book chapter (I-V) main themes.

Knowledge Society policy themes	Knowledge Society main themes of the publications (I-V)				
	Information Society Strategies	Globalisation and the Local	Bridging Digital Divide	S & T Policies and Innovation Systems	Knowledge Society Indices
change of economy	x				
ICT	x				
globalization and competitiveness	x				
role of the state	x				
education and skills	x				
network economy	x				
inclusiveness		x			
expert society		x			
risks and uncertainty		x			
role of citizen		x			
continuity/sustainability					x
gender			x		
local economy			x		
entrepreneurship			x		
policy collaboration				x	
public and private sector collaboration				x	
commercialisation of innovations				x	
innovations (R & D)				x	
enabling environment for Knowledge Society					x
e-economy					x
investments in S & T					x

Each of the policy elements has been linked to the five main themes of the publications. Though they appear to be linked to one main theme, there is continuity of policy elements between main themes in some cases. For example, policy themes relevant to the main theme of Information Society strategies continue to be relevant but less focal in the main theme of Globalisation and the Local. In Table (2) the main themes are linked to the Knowledge Society waves.

Table 2. Article and book chapter (I-V) main themes of publications linked to the three waves of Knowledge Society.

Themes of publications	Knowledge Society Waves		
Themes of publications (I-V)	Wave 1. International economic efficiency	Wave 2. International societal change brought about by advances in information technology and economy	Wave 3. Globalisation and development country change brought about by global economy
I: Information Society Strategies	x	x	
II: Globalisation and the Local		x	
III: Bridging Digital Divide		x	
IV: Science and Technology Policies and Innovation Systems			x
V: Knowledge Society Indices			x

The main themes are mostly linked to the changes brought about by information and communication technology, which reflects the strong role of information and communication technology in the change of society and economy in the policy discourse.

In Figure 2. policy elements (21) are linked to the main themes of the publications. Then these main themes are linked to the Knowledge Society waves.

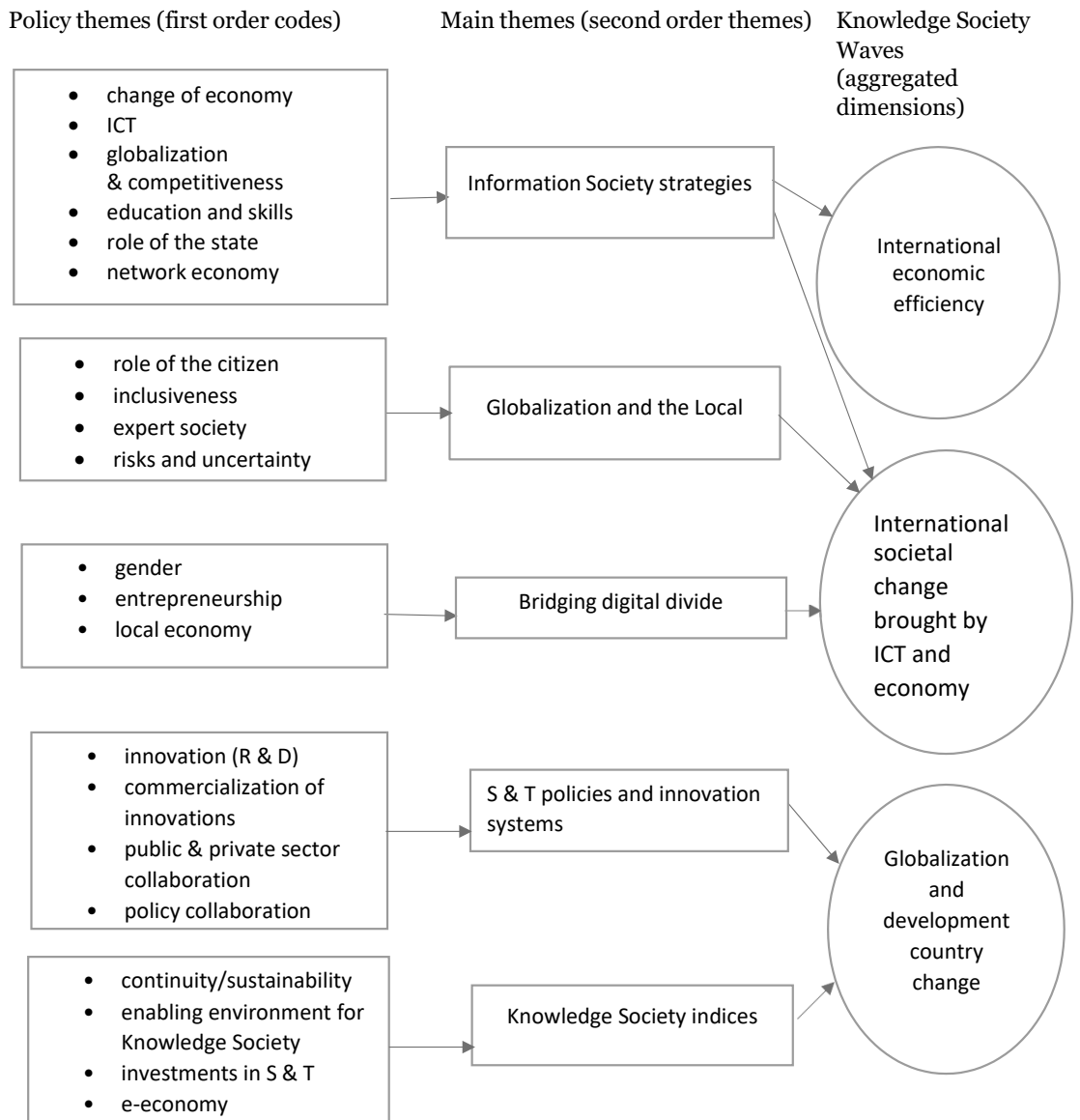


Figure 2. Knowledge Society 21 policy themes linked to the 5 main themes of publications and publication themes linked to 3 Knowledge Society discourses of waves.

I have categorised the 21 policy themes emerging from the publications and linked them to five main themes of the publications. They are then linked to the three Knowledge Society waves. This is done following the methodology of Gioia, Corley and Hamilton (2013), (see also Cloutier & Ravasi, 2020 and Ainamo & Dell’Era, Verganti, 2021, 454). The methodology uses first order codes, in this study policy themes, then these themes are categorised and linked to second order themes: in this study, the five main policy themes. They are then linked to aggregated dimensions, which in this study are the three Knowledge Society waves.

I will next discuss each publication, and what kind of Information or Knowledge Society policy they represent.

4.1 NATIONAL INFORMATION SOCIETY STRATEGIES OF FINLAND: INFORMATION SOCIETY STRATEGY- SEEKING NEW SOLUTIONS FOR POST-MODERN SOCIETIES (I)

This article discusses Information Society strategies of Finland. It analyses changes in society and the economy through modernisation and Beckian concepts of uncertainty and risks (Beck, 1992, 1994). Another starting point is that the Information Society was originally an economic strategy, not a societal strategy for the future development of post-industrial economies, according to Schiller (1984), and Mattelart (2003).

The first Information Society strategy was prepared in the early 1990s in Finland, which was then facing an economic challenge. A global financial crisis, economic recession and the collapse of the Soviet Union had had a severe impact on exports of industrial products (pulp, paper and metal industries) and there was mass unemployment. This article analyses the country’s strategies to orient the Finnish economy and society from a predominantly industrial economy towards an Information Society.

First, Finland’s strategy was a government decision to build an Information Society. The government played a key role in developing and implementing this strategy. Information technology, particularly telecommunications, played a key role in this strategy. The strategy presents three important challenges that are key to the country’s future. The first challenge is the global economy. The second challenge is the internal challenge of recovering from an economic depression that has produced mass unemployment and an expansive growth of public debt. The third is the challenge of the changes produced by technological development (Finland’s Way to the Information Society, 1995, 5).

The economic goals of the Information Society strategy reflect globalisation and employment as follows: 1. successful adaptation to the world economy; 2. high employment; 3. vibrant entrepreneurship; and 4. a competitive public sector. The societal goals reflect active citizenship and individual

opportunities. (Tapper, 2000 a, 84).

The strategy emphasises readiness to change. It states that “in a global open economy, firms and national economies need to constantly look for ways to improve productivity and competitiveness” (Finland’s Way to Information Society 1995, 6). This secures “the well-being of citizens and the resources required to develop the society, there are no alternatives. This requires readiness for change, know-how and development of technology” according to the strategy (Ibid, 6). The key role is given to information technology: “Information technology is an essential competitive factor for products and production. It is also gaining a foothold on a personal level in work, studies and leisure time activities” (Ibid, 6).

Furthermore, the role of information technology in economic development is described as follows: “The general direction in the renewal process is networking and the networked economy. A networked economy with a developed information network... provides a real opportunity for Finland, as it reduces problems caused by distance and makes it possible to take advantage of our high level of education” (Ibid, 7).

This introduction seems to reflect a positive approach to the role of the country in adjusting to global economic competition. It suggests that we have the technological infrastructure and level of development, a high level of education and the key role of information technology required to meet the challenges of a global economy (see Beck, 1997). The Information Society strategy appears to be a ‘salvation strategy’ for a small country in the face of global competition.

This strategy is also optimistic, as it suggests that if we become an Information Society and have the information industry as a main sector of our economy, we will be able to meet the challenges of globalisation. The intent is that Finland will be a leading economy in ICT development, in Europe and in the world.

The first national strategy was published during a period of strong globalisation of economies and development of ICT. A technological and economic approach to this development seems to be key. The strategy does not mention the risks or uncertainties in society. It suggests continued economic growth excluding the risks, understood in a Beckian sense. The new risks produced by the integration of the national and global economy are not discussed in the first strategy.

The second national strategy approaches the Information Society from the point of view of the citizens. Information Society issues continued to be a part of the government programme. This strategy calls for an Information Society as Quality of Life, Knowledge and Competitiveness. It defines knowledge as the basis for Finland’s global economic competitiveness and continues building Finland as a leading Information Society. It adds, however, knowledge as the basis for education and culture (Quality of Life, Knowledge and Competitiveness, 1998, 5). The second national strategy seems to place more emphasis on society and culture than the first. It also puts citizens in a more central position in the ICT-driven development and economic growth (Tapper, 2000a, 85).

However, structural and societal issues have become more central in the development of the Finnish economy. The marginalisation that is taking place among the large number of unskilled labour, and the risks issues, like crime and drugs, have become more visible in society. Society in general is doing well, but the risks of social instability are also growing. As Beck (1994) and Bauman (1996) point out, the return to uncertainty and lack of commitment produce risks that are a source of instability in society.

At the same time, the economy is growing, and there is high demand for experts in technology and other fields. As Castells says, the global technology elite of experts and the power elite of the global economy determine life for the rest of society and the world (Castells, 1996, 416-417).

The history of the idea of the Information Society reveals three changes: an economy and technology based on information, qualitative changes in economy and society, and information-dependent economy and globalisation. These changes are, however, connected to the continuation of modernity (Tapper, 2000a, 86).

This publication (I) discusses the concepts of risk and uncertainty, and how they become ambivalent when trying to solve the problems of modern information societies. They become risks in the old order, but they can be alternatives or possibilities in the new order of modern societies. However, the decisions and visions are still constructed within the frame of an industrial order. The concepts of risk society and reflexive modernisation (Beck, 1994) operate as a framework for discussing the issues of the Information Society. However, the risks of the industrial society may turn out to be opportunities in the Information Society.

The changes in modernisation towards an Information Society seem to emphasise rationality and scientific-technological information. Information technology serves as an agent of change in the economy and society but also causes constant problems. Therefore, the risk society continues as the Information Society, where we grant authority to experts and expert knowledge and believe in technological progress (see Bell, 1973).

However, globalisation of the economy and its integration challenge belief in technological progress. The risks increase, and uncertainty as well. The rationale used during planning and decision-making for the future and today increasingly operate in an environment of risk, although the same technology controls these risks. The questions of order in society, the control functions of society and the responsibilities of both individuals and the state become issues of order and stability. (Tapper, 2000 a, 86)

The role of the citizen or individual becomes a question of belonging to something – of identity. For individuals, modern information technology produces flexibility in many domains of everyday life, for example, education, entertainment and work. It also produces increased individualism. The Information Society is in many ways another risk society, but also another modernity characterised by belief in progress through technology. The other knowledge, that of culture, seems to lie outside these strategies. These strategies reflect the continuity of modernisation and represent the Information Society as a “progress utopia” (Ibid, 86).

This article provides answers to research question 3: how do national governments (Finland) enhance Knowledge Society in their policies? It discusses Information Society as a progress economy that adjusts and gains

from globalisation. The key themes in this process are ICT, globalisation, the role of the state in promoting Information Society but also including the state to safeguard society and individuals against risks and uncertainties. The main ethos is to build a modern global information society with economic leadership that is based on ICT. It is also future-oriented and an expert society. The policy demands change in the economy to be a global Information Society leader. This study brings up the concepts of risk and uncertainty in building a Knowledge Society, in the second strategy. For citizens, this is a risk society, though providing (and demanding) flexibility as well. The article emphasises education and a need for skills. Further, this article discusses the common themes of Knowledge Society (Table 2) and adds uncertainty and risks to the policy discourse.

The latest and third national Knowledge Society strategy from 2006 emphasises Finland's role as a globally competitive, innovative and humane Knowledge Society. (Innovative, Humane and Competitive Finland, 2006).

4.2 POTENTIAL RISKS OF THE LOCAL IN THE GLOBAL INFORMATION SOCIETY (II)

This article discusses globalisation and the role of the local in the global information society. Globalisation plays an important role in the discourse of Information Society. Development driven by information technology was seen to be the future for post-industrial societies globally. Many European countries, including Finland, produced Information Society strategies and policies in the 1990s to orient and direct their economies towards Information Society to enhance their economies. There were several reasons to do this: the economic and financial crisis of the early 1990s challenged national economies globally, financial markets had been deregulated, causing a financial crisis, and information technologies were becoming key technologies for development.

In this study I have analysed the Information Society strategies of Finland in the context of globalisation. The local in this context means local communities and economies but also national economies. This article looks at the role of the state and the role of the individual in Information Society in the globalisation process.

The nation-state played an important role in modern society as an environment for citizens. The nation-state approached the citizens as active members of society: citizens were expected to vote in elections, pay taxes, and make a commitment to be responsible citizens of society (see Giddens, 1990, Beck, 1994). In return, the state (as welfare state) would provide social and health services, education, and security for its citizens. As Bauman (1996) points out, there was the promise of security and continuity in society. The nervousness of postmodernity, as Bauman calls it, has brought chaos, which

seems to characterise the present Knowledge Society. Continual individuation in society, a lessening need to make a commitment to something, and the diminishing role of the state characterise the post-modern Information Society. (Tapper, 2000 b, 525)

The same information technology that had been promoted as an engine for development also produces unexpected economic crises in both economic centres and their peripheries. The time horizon in such an economy is short, and that makes it risky for organisations and labour to operate in the increasingly uncertain environment. Time spans for individuals and organisations are becoming shorter. To overcome this problem of chaos or nervousness of society, as Bauman calls it, the post-modern Information Society calls for flexibility, lifelong education, flexible organisational structures, and increasing dependency on experts, whether financial, legal, technological, medical, or psychological. (Tapper, 2000 b, 526)

The role of the state is partially contradictory in this context. On the one hand the state assumes citizens' willingness to support the state, through taxpaying, voting, and following the legal system of society. On the other hand, citizens are encouraged to take individual responsibility for their lives. This means less need to make a commitment to society and more options for individual choice in society. The lack of need to belong to society, that is, individuation, brings chaos out of order, and therefore the state may be called for again. The question is: what is the momentum in society when the state is needed to maintain order in society? Will there be an empowered state? These are the key questions discussed in the study.

Has the neo-liberal economy and increased individuation reached such momentum that the state is needed only to maintain the security of society and basic social services? The question is: what are the functions of the state in the post-modern global economy?

How is the role of the state articulated in the Finnish Information Society strategy? First, society is approached as a collective entity: we are building Finland as a technologically developed high-technology society, the model of an Information Society. This is a shared national project. Further, the national strategy is to build a bridge across the structural change in the economy from an industrial society to an Information Society. (Tapper, 2000 b, 529)

Globalisation is a challenge to continuous economic growth. This requires growing interest in the role of the citizen and the kind of citizenship that the Information Society seems to propose and promote. The characteristics of such a citizenship are flexibility, adaptability to continuous and quick changes, lifelong learning, quickly changing social relationships, and short-term employment contracts. Finally, the ability to move from one place to another is required for employment. How do citizens and globalisation interact? A starting point for analysis could be McLuhan's concept of the Global Village, where information and ICT are the agents of integration with globalisation (Tapper, 2000 b, 530).

The paper proposes that the key issue of citizenship will be identity. But globalisation is generally seen as an optimistic option, a utopia for the future. Everything becomes instantly accessible. The global nomad seems to be a popular model for individuals. Finally, as Beck says, individuals are free from society, the welfare state, free to make choices (see Beck, 1992, 1994). Freedom

of choice is possible for everyone in this utopia. The state remains as an environment for free choices and action. This is still a utopia for most people in the world. My argument is that in late-modern societies, the community, the belonging to, is important for constructing individual identity, the self, in society. (Tapper, 2000 b, 531-532)

Castell's theory (1996, 415) of space of flows seems relevant in the analysis of the global and the local. The cosmopolitan elites are global, and most of us, the people, are local: local culture, tradition, and people are central in the local. Is McLuhan's Global Village a space for globalisation or the local or the interaction of both?

This article answers research question 3: what kind of development do the policies enhance? How do national governments (Finland) enhance Knowledge Society in their policies? It discusses individual identity and how globalisation and change in the economy and society challenges individuals in society. Individuals are called on to be flexible and there is increasing individualization in society. There is tension between the global and the local and how the global meets the local. The two spaces may interact, or the divide between them may grow. The new themes that emerge from this article are flexibility, continuity, change, the role of the local, and the role of the citizen and individual.

The article presents the policies of the 1990s for a small economy dependent on foreign trade of pulp, the paper industry, and the metal industry. The global and European economic environments were in crisis. Finland's bilateral trade with the Soviet Union at that time collapsed as a result of the fall of the Soviet Union. Financial markets that had earlier been open became disrupted and this resulted in a high level of debt for the country and people due to high interest rates in response to financial uncertainty. Finland joined the EU in 1995 and that further changed the economy. Nokia as a company played an important role in the growth of the local ICT industry. The goal of the first Information Society strategy of Finland was to enhance the growth of the information technology industry and make Finland a global leader in mobile technology. This became the main economic goal for Finland. The growth of Nokia into a global ICT company played an important role in this phase. The globalisation of Information Society created a demand for a skilled workforce – an enhancement of human capital to meet the needs of the changing labour market. At the time there were discussions about the individuation of members of society and how to meet continuous changes in various domains of life.

The first Information Society strategy emphasises readiness for change. In a global open economy, firms and national economies need to constantly look for ways to “improve productivity and competitiveness” (Finland's Way to The Information Society, 1995, 6). This needs to be done to secure “the well-being of citizens and the resources required to develop the society, there are no alternatives” (Ibid). This requires readiness for change, know-how and development of technology, according to the strategy.

The second Information Society strategy framed citizens as members of the Information Society and saw it to enhance quality of life. Concurrently, it targeted global competitiveness (of ICT industry) as its ultimate goal. The national vision was that “Finnish Society develops and applies potential of

Knowledge Society to enhance quality of life, global competitiveness and interaction” (Quality of Life, Knowledge and Competitiveness, 1998, 8). At the time Nokia and the ICT cluster became the leaders of economic growth. Skilled labour was one of the assets of the Finnish economy - engineers and technicians could easily be trained in the skills required for the ICT industry and services. Finland had the potential to become a global leader in ICT and at the same time it had an opportunity to improve the quality of life of its citizens. This challenged individuals to take risks and meet continual changes in return for economic benefits.

4.3 VISITING THE DIGITAL DIVIDE: WOMEN ENTREPRENEURS IN CENTRAL AMERICA (III)

In article (III) the digital divide is visited in Central America and South America. This article is placed in the period when international organisations promoted knowledge-based society, and when developing and newly industrialised countries were developing their strategies towards Knowledge-based economies and Information Societies in the early 2000s.

In the international policies of the UN and countries (in the Global North) it is understood that newly industrialised economies can leapfrog technological development, benefit from earlier experiences and use the best practices of developed countries. In this context the following questions become relevant: 1. how to continually reduce the digital divide between and within countries (public/private sector partnerships and civil society inclusion) through national ICT for development strategies and policies; 2. how to include most of the population within this development; and 3. what are the benefits and disadvantages of the use of ICTs (impacts and effects) for the country (local and national economy)?

The first World Summit on the Information Society (WSIS) was organised by the International Telecommunications Union (ITU) in December 2003, in Geneva. This was the first and largest international conference on Information Society. The major result of this forum was a declaration signed by developed and developing countries to bridge the digital divide.

Bridging the digital divide in these policies means providing access to information and information technology, access to participation in decision-making, transparency of decision-making, access to education and employment in the new economy.

Gender is one of the key elements in this process: how to balance the development of society and economy by providing access to information, education and economic and political decision-making to people of both genders (women and men). It was understood that women need new skills in the Knowledge Economy that allow them to be actors in the economy and benefit from this development. They were seen to need access to and capacity to use ICT, so that they can be included in the development. (Tapper, 2006, 272)

Micro and small enterprises play a significant role in the economy of many developing countries. These enterprises are flexible, can adopt new technology

very quickly, can be networked and function locally. Women are a significant resource as a labour force and as entrepreneurs in developing countries. (Ibid, 272)

According to this publication, in Latin America 70-90 % of enterprises are micro, small and medium size, and they usually have from one to 10 employees. About 70 % of these enterprises are managed and owned by women. Most of these women have primary-level education and usually have a long history of managing their businesses. They are often the only or main source of income for their families, and, in many cases, they constitute female-headed households. (Tapper, 2006, 272)

During 2001-02 the Inter-American Development Bank initiated pilot projects in ICT training for women entrepreneurs in Costa Rica and Bolivia. The objective of the project was to gain knowledge and experience of how to use information and communication technology in a sustainable way that could improve the economic and social role of women in developing economies, in this case Central and South America. (Tapper, 2006, 272)

Information and communication technologies provide a new spectrum of opportunities for men and women to participate in the new economy. Technological advancement has a significant impact on society, and social inclusion also often means technological inclusion. Therefore, according to the study, it is important to make ICT-related decisions at the policy level, as well as at the grassroots level, to empower women and other socially excluded groups in their everyday lives, to provide them with access to information and knowledge, to train them to use these technologies, and to enable them to participate in the new economy. Gender and ICT-issues crosscut the economic, social, cultural and political development of a country.

In publication (III) it is noted that, at the policy level, a gender perspective should be incorporated into ICT policies to assure that women are not left out of the new economy. To achieve this goal the following objectives were addressed, as mentioned in the article: providing equal access to the use of ICT for participating in the new economy, strengthening good governance and social development and human capacity development (Ibid, 273).

The main objective of developing ICT training for women entrepreneurs was to gain experience of how to include women entrepreneurs in developing digital skills in two different kinds of Latin American countries: Costa Rica (in Central America), with a developed education system and ICT infrastructure, and Bolivia (in South America), with a less developed ICT infrastructure and lower level of general education.

Micro entrepreneurs in Central America, whether female or not, have in general received very limited training and technical assistance. The percentage of those who have received training varied between 8 and 18%, and the figure is lower for women than for men. Two obvious consequences of the lack of access to ICT are that they lag in professional capacities and competitiveness in their businesses. (Tapper, 2006, 274)

The pilot project had three focus areas: 1. business development: how to improve the business; 2. technology: how to learn to use ICT in business; and 3. gender; focus on women as entrepreneurs. (Ibid, 2006, 276)

110 participants completed the training in Costa Rica. They brought up the following challenges to be solved for a sustainable and continuous use of ICT

in their businesses:

- *Technology*. The technological infrastructure needed to be developed. This means both public and private sector investments to build more developed telecommunications infrastructure. Access to technology is the key to further development; this might mean providing new forms of low-interest loans so that the entrepreneur can invest in computers and connection to the Internet. These loans could be provided by banks, non-governmental organisations or via integrated efforts. Another solution is to provide low-cost public access points for users (in municipalities) or Internet cafés.
- *Sustainability*. Training should not be a single event. Backup is required for technical and other user problems. A feasible solution could be training of students at schools and follow-up for the women trained, organised by the training organisation.
- *Business development*. Learning new digital skills could provide opportunities for new businesses to develop, such as Internet cafés. Access to further training could be provided.
- *Empowerment*. One of the most interesting outcomes of the training was the experience of empowerment by the women. They had long experience as micro or small business owners but had received very little training. The learning experience made them develop their businesses and rethink the future of their businesses. (Tapper, 2006, 276-277)

The digital divide exists in countries and between countries. ICT training needs sufficient infrastructure and technology and to be based on the needs of the entrepreneurs. The cultural and societal context is important, as in Bolivia, women entrepreneurs and indigenous women entrepreneurs could not participate in the same training. This capacity building in Costa Rica and Bolivia was a case of bridging the digital divide on a small scale. The study addressed the key issues of gender-based inclusion in economy.

This article answers research question 3. What kinds of development policies of international organisations enhance, in this case IADB? It discusses gender inclusion and access to resources, whether financial, educational, skills capacity building or technological, to manage in the local economy. It also addresses the cultural environment, which has an impact on making progress in entrepreneurship. This article introduces the theme of gender, women as micro and small entrepreneurs in local economy and the impact of access to ICT. The role of information technology and access to financing is seen to be essential to empower women in local economies.

At the time of this article the IADB built Information Society strategies with Latin American countries. These strategies were country-specific and addressed issues like equal access to information and knowledge, skills, gender, continuity, and local economy. Bridging the digital divide in the countries was addressed, as well as economic opportunities for businesses. The pilot project in Costa Rica and Bolivia provided important information for gender inclusion in economy and society locally. These empirical studies provided an inclusion perspective of gender to the formulation of Information Society policies and strategies by the IADB.

4.4 SCIENCE AND TECHNOLOGY POLICIES IN THE NETWORKED ENVIRONMENT: CASE OF FINLAND AND SOUTH AFRICA (IV)

Information Society strategies and policies have focused on Science and Technology policies, and innovation policies and systems as the foundation for economic growth and development. In this article, these policies and innovation systems are analysed in the national contexts of Finland, a country in the Global North, and South Africa, a country in the Global South.

In this article the science and technology policies and building innovation systems are discussed as means of building a Knowledge-based Economy. Knowledge Economy or Knowledge-based Economy refers to building the knowledge base of an economy to generate economic growth, create employment, enhance exports, and increase productivity and regional development. This requires investments in science and technology, research and development, and education. Building a national or regional innovation system is an instrument to enhance building that knowledge base.

Science Parks are one element of national or regional innovation systems. The concept of Science Parks varies from a physical infrastructure entity to collaborative networks of researcher organisations, enterprises and local-regional governments. Science Parks are spaces for building the knowledge capacity of the region and turn it into economic growth and space for innovation.

The study presents how Finland has built its innovation system. In Finland science and technology development was connected to industrial and regional policy. The main aspect of industrial policy was R&D in high technology areas, such as ICT, environmental management, forest management, biofuels, biotechnology, health and e-learning. In regional development (region here referring to a province of a country), collaboration between the public and the private sector is seen as essential. Science Parks and Centres of Excellence are vehicles in this development. Strategic Centres of Technology are mentioned as networks of research with universities, research institutes and the private sector. They function in key technology areas like ICT, forestry, environment, and health (Tapper, 2010, 230).

In its Ten-Year Plan, the South African Department of Science and Technology identified the strategic areas of science and technology for the future to be ICT, nanotechnology, biotechnology, and space technology. The role of Science Parks is seen as critical for regional and local development. There are only a few Science Parks, but there are science clusters (biotechnology, ICT), incubation centres, and research clusters. (Ibid, 231)

Information and communication technology, education, and innovation capacity are considered key elements of a Knowledge-based Society. Building the knowledge base is considered a key element of competitiveness in any country.

What did Finland do? First, Finland invested for decades in a public education system that is currently free of charge from kindergarten to doctoral degree. Secondly, the public sector gave a push through technological

development entity (Finnish Funding Agency for Technology and Innovation) financing to build the Finnish innovation system. Today two-thirds of R&D is financed by the private sector. Thirdly, there is a systemic approach to build collaboration between stakeholders in the innovation system. Fourthly, Finland has built a shared national vision for building a Knowledge-based Society or Information Society, and fifth, the information and communication (telecommunication) markets were deregulated early. (Ibid, 231).

According to Lemola (2001) Finland's technology policy can be presented in three phases: first, research policy in the 1960s, then technology policy in the 1980s and innovation policy in the 1990s (Lemola, 2001 in Tapper, 2010, 232).

Innovation policy was to 1. promote the functionality of the innovation system and its ability to renew itself; 2. enhance the knowledge base of the economy; 3. improve the quality and targeting of research; 4. promote the adaptation and commercialisation of research; and 5. secure economic resources for activities such as the continuous development of human resources (Science and Technology Policy Council of Finland, 2006 in Tapper, 2010, 233).

There are the following entities for research and development: Science Parks are places for research collaboration between universities, the private sector and other entities. The Centre of Expertise Programme provides the same kind of collaboration at the regional level to strengthen regional expertise.

A foresight study, Finnsight 2015, was produced in collaboration with the Academy of Finland and The Finnish Funding Agency for Technology and Innovation to identify key challenges and priority areas for the future in science, technology and innovation, as well as the driving forces for Finnish society and economy.

The study identified the following driving forces: globalisation, ICT, sustainable development, aging population, competencies, global collaboration and managing changes, and multicultural society. The challenges identified were renewal of the public research system, companies needing to invest more in R&D, and identifying priority areas in R&D (Finnsight 2015 in Tapper, 2010, 235-236) for development of the Finnish innovation system and policy in Knowledge Economy. (See also Halme & Lindy & Piirainen & Salminen & White, 2014).

In South Africa, science and technology are considered essential for the country to be competitive in the global economy and provide services and infrastructure for the nation. The National Science and Technology Strategy emphasises: 1. ensuring that the National System of Innovation (NSI) addresses national growth and development goals in the first and second economy; 2. maintaining and developing a highly competent and representative cohort of scientists; 3. ensuring that South Africa has a world class scientific infrastructure; 4. administering an optimal set of funding instruments; and 5. responding creatively to global challenges. (Tapper, 2010, 236)

There are two guiding principles in the Ten-Year plan, developed by the Department of Science and Technology (DST, 2007), for building a knowledge-based society in South Africa: 1. the principle of societal accountability for science, people and society: the government is the guardian of ethics, safety,

health, and environmental issues; and 2. a functioning National System of Innovation.

The Ten-Year Plan presents a set of actions and investments for the transformation towards a Knowledge-based Economy, namely: strengthening human capital development, knowledge generation and exploitation, and enablers to address 'the innovation chasm', between research results and socio-economic outcomes (DST, 2007 in Tapper, 2010, 238). The South African innovation system is partly being built with Finnish collaboration.

Finland has made long-term investments in education and R&D. There is collaboration between the public and private sectors and division of labour between the two. Science and technology policy is integrated with economic and industrial policy and education policy. The Science Parks and Centres of Excellence have provided new forms of networks and collaboration with regional public organisations. The Triple Helix Approach (THA) and sustainability of industries have been analysed by Quartey & Oguntoye (2021). In their study, they recommend THA collaboration for the sustainability of industries in Africa.

This article answers the questions: what kind of development do the policies enhance? How do national governments (Finland, South Africa) enhance Knowledge Society in their policies? The government of South Africa has recognised the need for a Science, Technology and Innovation System. However, the role of different players is not clearly defined. There is a "chasm", meaning how to commercialise research results. The provincial innovation system has been seen to have great potential to meet the needs of provincial development. Here, there is a similarity with Finland, to the extent that regional innovation systems support regional development. The need for the development of a National Innovation System has been recognised and the Department of Science and Technology (DST) is developing it. This has been recognised in the Ten-Year-Plan by DST. South Africa has great potential to produce quality research results, but financing and human capital are the limiting factors on progress. The new themes emerging from this article are the need for a holistic approach to policymaking where industry, regional partners, and DST collaborate. The aim of this collaboration should be to further enable the commercialisation of innovations. This new theme would help to shrink the chasm between research results and commercially viable outputs.

4.5 KNOWLEDGE SOCIETY FOR DEVELOPMENT POLICIES BY INTERNATIONAL AND REGIONAL ORGANISATIONS(V)

In this article we (Tapper and Ainamo) have analysed Knowledge Society for development policies both on the international development agenda, pre and post the 2015 Sustainable Development Agenda, and in the context of Africa. The development themes of education, ICT and science, technology, and innovation as the knowledge base of any society are analysed in the

selected documents of international and regional organisations. New themes will be discussed as well. Further, we have analysed indices to measure the development of Knowledge Society.

Knowledge Society or Information Society for development has been on the global policy agenda for the past 20 or more years. The discourse has addressed the Knowledge Society as economy and post-industrial society (as a different kind of society from industrial society). The discourse emphasised technology-driven development in the beginning, but later oriented towards a Knowledge Society where knowledge can be accessed by all, meaning an inclusive Knowledge Society. The current development agenda increasingly addresses human capacity development: education and skills and investments in the knowledge base of society.

The first global Information and Knowledge Society agendas were formulated by the UN (initiated by the ITU) in World Summits for Information Society (WSIS) conferences in Geneva (2003) and Tunis (2005). Then the EU had its own Knowledge Society agenda for development together with the African Union (AU). It is important to note that WSIS was and is a global agenda that addresses Knowledge Society for development.

The latest global development agenda, Sustainable Development Goals, Post 2015, was agreed in September 2015 by heads of states in the UN (UN, 2015). The Knowledge Society areas like education, skills development, capacity building, technological (ICT) development, science, technology, and innovation are addressed in that agenda. This global development agenda has 17 development goals.

In this study, we analyse policies (development agendas) in selected key documents of international (development) organisations: the UN, UN organisations (ITU, UNESCO), and the AU. The documents have been selected as key development documents of the global policy on Knowledge Society. International development organisations represent countries and regions, but they are also “independent” organisations as policy makers. The policy formulations increasingly take place in complex, inter-organisational and network relationships, and policies are influenced by global decisions as well as by domestic actions (Walt, G. & al, 2008, 309, Puppis M., 2010, 140). International development organisations (UN) and regional organisations (AU in this case) are setters of the global and regional agendas.

One could argue that the development agenda is formulated by the developed countries and ask how the voice of less developed countries is heard. The regional organisations represent the countries of their region, and it is understood that these organisations have performed consultative processes with their member countries. In this study the policy formulation is not the focus, but rather how the policies themselves are expressed in the policy documents.

4.5.1 PRE 2015 KNOWLEDGE SOCIETY AGENDA

The Geneva World Summit for Information Society (WSIS) in 2003 produced the first global declaration for Knowledge Society (though it used the term Information Society). WSIS was an initiative of the International Telecommunications Union (ITU) to the UN. The UN General Assembly recommended that preparations for the Summit take place through an open-ended intergovernmental Preparatory Committee that would define the agenda of the Summit. The General Assembly also encouraged contributions from all relevant UN bodies and other intergovernmental organisations, including international and regional institutions, non-governmental organisations, civil society, and the private sector to participate actively in the intergovernmental preparatory process of the Summit and the Summit itself. (WSIS, 2002)

The WSIS Declaration on Information Society (WSIS, 2003 a) states: “people-centered, inclusive and development-oriented Information Society, in bridging digital divide and that in emerging society, information and knowledge can be produced, exchanged, shared and communicated through all the networks of the world. All individuals can soon, if we take the necessary actions, together build a new Information Society based on shared knowledge and founded on global solidarity and a better mutual understanding between peoples and nations. We trust that these measures will open the way to the future development of a true knowledge society.” This statement emphasises bridging the digital divide (with technology), inclusive Information Society and development-oriented Information Society. Another element is sharing, producing, and exchanging knowledge globally. There is also a statement on the new Information Society (based on sharing knowledge and on global solidarity). In summary, this declaration constructs a new Information Society that is inclusive, global and based on sharing information and knowledge globally.

The Geneva Plan of Action (WSIS, 2003 b) sets out ten targets for connectivity and ICT usage to bridge the digital divide. The WSIS 2003 targets are the following (WSIS, 2003, b):

1. “to connect villages with ICTs and establish community access points
2. to connect universities, colleges, secondary schools and primary schools with ICTs
3. to connect scientific and research centres with ICTs
4. to connect public libraries, cultural centres, museums, post offices and archives with ICTs
5. to connect health centres and hospitals with ICTs
6. to connect all local and central government departments and establish websites and email addresses
7. to adapt all primary and secondary school curricula to meet the challenges of the Information Society, considering national circumstances
8. to ensure that all the world's population have access to television and

radio services

9. to encourage the development of content and to put in place technical conditions to facilitate the presence and use of all world languages on the Internet
10. to ensure that more than half the world's inhabitants have access to ICTs within their reach”

The Action Plan (as a tool for policy implementation) emphasises connectivity of communities (access to knowledge and information for all), access to government services (access to participate and receive information), access to education and information (access to knowledge and education through schools, libraries etc.) and access to ICTs (infrastructure and devices). One could summarise this as an agenda and an action plan to ensure access to information services, inclusiveness and building ICT infrastructure and services. This is also an action plan for bridging the digital divide.

The second phase of WSIS took place in Tunis in 2005. The Tunis agenda emphasises the implementation of activities to be continued according to the Geneva Plan of Action and focuses on financial mechanisms to bridge the digital divide, Internet governance, and follow-up of the Geneva and Tunis declarations.

The following elements are needed for Information Society development, according to the Tunis agenda (WSIS, 2005):

1. “Creating policy and regulatory incentives aimed at universal access and the attraction of private-sector investment.
2. Building human resource and institutional capacity (knowledge) at every level for achieving Information Society objectives, especially in the public sector.
3. Mainstreaming and aligning national e-strategies, across local, national, and regional action plans, as appropriate and in accordance with local and national development priorities, with in-built time-bound measures”.

The Tunis agenda emphasises policy and regulatory measures, and incentives to provide universal access to information services. This continues the inclusiveness and equality agenda to enhance the Knowledge Society. Mainstreaming and aligning e-strategies to local, national, and regional action plans, and integrating them with local and national development plans, implies that ICT is considered the main element of national and regional development strategies.

The Tunis Declaration also calls for Internet governance, the private sector is called on for investments, and the public sector for capacity-building. To me the Tunis Declaration calls for policy and regulatory measures for building the Knowledge Society. It also calls for sustainability and support for local government and businesses. Further, financing and capacity building are called for.

Based on my experience in Africa, governments in Eastern and Southern Africa and development organisations have invested in ICT infrastructure (together with private sector). Some countries, like South Africa, have Knowledge Society strategies and have implemented them. In most countries, Knowledge Society policies (thematic areas) have been integrated into either national or regional plans and policies.

4.5.2 POST 2015 AGENDA: SUSTAINABLE DEVELOPMENT GOALS (SDGs)

As discussed earlier in this paper, Knowledge Society has been on the global development agenda for more than 20 years. The main forums to address Knowledge Society and ICT before 2015 have been the WSIS process and the Millennium Development Goals (MDGs).

Post 2015, Knowledge Society development has been globally addressed in the Sustainable Development Goals (SDGs) in Agenda 2030 (UN, 2015). We have selected the following Sustainable Development Goals (SDGs) that address the key areas of Knowledge Society: Education, ICT and Science, Technology and Innovation (STI). These areas were selected based on studies of the needs of 13 countries in East and Southern Africa when preparing the African Leadership in the ICT capacity building programme for Knowledge Society Development. (GESCI, 2010, a, b). In the following section I will analyse the themes, including the above themes and how they are addressed in SDGs.

Goal 4 addresses education, “the need to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UN, 2015). This SDG addresses education as inclusive and equitable. Learning is addressed as lifelong learning. This continues the statement of inclusiveness in Knowledge Society, in this case education as a basic element of Knowledge Society.

Goal 4.1 addresses equal access to quality education: the goal is “by 2030 to ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes” (UN, 2015). It also addresses gender equality at all levels of education: “by 2030, the goal is to ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university” (UN, 2015).

Science, Technology and Innovation (STI) is addressed in SDG 9 “to build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation” (UN, 2015). Goal 9.5 seeks “to enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending” (UN, 2015).

This sub-goal addresses the enhancement of scientific research and upgrading industrial sectors through innovation and increasing number of R&D workers and investments in R&D by both the public and private sectors. Currently, South Africa in Sub-Saharan Africa is the closest to investing about 1 % of GDP in R&D, which is the African Union target.

Goal 9.b addresses support for domestic technology development, research and innovation in developing countries, “by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities” (UN, 2015). This sub-goal proposes to enhance the development of domestic technology, R & D, and enhance the policy

environment to enhance the role of STI in development.

Goal 9.c seeks to “significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2030. This is a fundamental goal for development in all sectors” (UN, 2015). This sub-goal addresses the need for functioning ICT infrastructure and access to Internet for development.

The Science and Technology capacity building, Goal 17.8, seeks “to fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communication technology” (UN, 2015).

Capacity building in STI is a crucial element of development in any country. Here policy coherence becomes critical, as capacity building in STI is linked to capacity building in ICT and other fields. On the other hand, capacity building in ICT contributes to education.

4.5.3 POST 2015: KNOWLEDGE SOCIETY AGENDA BY AFRICAN UNION

The Common African Position on the Post 2015 Development Agenda (2014) highlights the African states’ position on future development priorities in Africa. “It presents a unique opportunity for Africa to articulate its common priorities, opportunities and challenges. It emphasizes structural economic transformation for inclusive and people centered development” (Common African Position on the Post 2015 Development Agenda, 2014, 5).

African development agenda, Agenda 2063 (2015), The Africa We Want by the African Union Commission (AUC) addresses the future development and challenges of Africa till 2063. It addresses Africa’s development in general, but the following areas are particularly relevant to Knowledge Society development: the challenges of globalisation, modern (information)technology revolution, and changes in technology and knowledge in the Post 2015 era.

Agenda 2063 (2015) emphasises that “humanity today has the capacities, technology and know-how to ensure a decent standard of living and human security for all inhabitants of our earth. Yet, inequality, hunger and malnutrition remain part of the human experience and underdevelopment, fragility, marginalisation and inequality between regions and countries and within countries persist”(Ibid, 12).

To address these challenges, Agenda 2063 mentions actions to be taken, “to speed up education and skills and actively promote science, technology, research and innovation, to build knowledge, human capital, capabilities and skills to drive innovations and for the African century” (Ibid, 14).

Agenda 2063 directly addresses building and expanding African Knowledge Society through transformation and investment in universities, science, technology, research and innovation, and through harmonisation of education standards and mutual recognition of academic and professional

qualifications.

Regarding ICT, Agenda 2063 mentions a need for the continent to be at the same level with the rest of the world as an Information Society. Agenda further states that “Africa needs an integrated e-economy where every government, business and citizen have access to reliable and affordable ICT services by increasing broadband penetration by 10% and broadband connectivity by 20 % by 2018 and by providing access to ICT to children in schools. Further, the Agenda proposes venture capital to be made available to young ICT entrepreneurs and innovators and mentions that migration to digital TV broadcasting will take place by 2016” (Ibid, 16-17).

This publication (V) addresses these research questions: 1. how has the definition of Knowledge Society changed over time in theoretical literature and in policies? and 2. what themes define Knowledge Society in the policy documents of international and regional (Africa) development organisations to enhance development? The Pre 2015 policies enhance technological and economic development and inclusiveness. The Post 2015 policies emphasise sustainability, gender equality, equal access to education and governance. Agenda 2063 emphasises that Africa needs to create an enabling environment for Africa’s development, including the mobilisation of resources from all funding mechanisms for the implementation of Africa’s priorities as defined in Agenda 2063. The new themes are investments in science and technology, integrated e-economy and enabling environment for the development of Knowledge Society.

4.5.4 HOW TO MEASURE KNOWLEDGE SOCIETY DEVELOPMENT GLOBALLY AND IN SUB-SAHARAN AFRICA

In this study (V) we also discuss the various Knowledge Society indices, what they measure in terms of Knowledge Society development and how they rank Knowledge Society development in different countries globally, but particularly in Sub-Saharan Africa.

We selected the indices for Knowledge Society development based on economic, technological(ICT), science, technology and innovation, human development and sustainable development. The indices analysed in the study are:

1. The Networked Readiness Index (NRI) of The World Economic Forum, which measures ICT environments and the use of ICT, and we introduce the new NRI by Portulans Institute;
2. Economic competitiveness metrics of a country, as measured by the World Economic Forum;
3. The metric of investments in R&D as a share of GDP by UNESCO;
4. The ICT Development Index (IDI) by the ITU, which measures Information Society development;
5. The Human Development Index (HDI), which measures education and

skills, by the UNDP, and renewed HDI; and

6. The UN Sustainable Development Index by the UN.

I have added analyses of the renewed indices of the Networked Readiness Index (NRI) and Human Development Index (HDI), which were introduced and redesigned after the publishing of the study (V).

The NRI (2016) measured the use and availability of ICT using four sub-indices: (i) environment: political and regulatory environment, business and innovation environment; (ii) readiness: ICT infrastructure, affordability and skills; (iii) usage by three stakeholder groups: individual, business and government; and (iv) impacts: the societal and economic impacts of ICT (The World Economic Forum, 2016; 3). Based on NRI, the top countries globally were Singapore (1) followed by Finland (2), Sweden (3), Norway (4) and the US (5) in 2015. Out of the Sub-Saharan countries, Mauritius ranked top (49), followed by South Africa (65), Seychelles (74), Rwanda (80) and Cape Verde (83) (The World Economic Forum, 2016, 16). The NRI shows not only the differences between the top countries and the Sub-Saharan countries, but also growing differences between Sub-Saharan countries.

There is also a critique of the index, as stated in the article. Oriogun (2017, 125) has criticised the NRI model for not providing adequate data for country policies and environment and suggests a new Adjusted Weighting Function for measurement that links technological development in a country-specific environment.

The NRI was renewed in 2019 by Portulans Institute. The study recognises that there is still a danger of a global technological divide. It also makes a statement that governments should have policies that allow individuals and businesses to benefit from technological development. (Dutta & Lanvin, 2019, 12, 13).

The new Networked Readiness Index (NRI) of 2019 consists of four pillars: 1. technology (access, content, future technologies); 2. people (individuals, businesses, governments); 3. Governance (trust, governance, inclusion); and 4. impact (economy, quality of life, SDG contribution) (Ibid, 13).

The NRI 2020 Analysis (Dutta & Lanvin, 2020) also discusses the impact of Covid-19 on the development of countries, which in many cases means lower investments in ICT infrastructure and digitalisation and a slower digital transformation. According to 2019 NRI index the top countries globally are Sweden, Denmark, and Singapore. Out of African countries, Mauritius ranks 61, South Africa 76 and Kenya 82. The NRI study covered 134 countries (Dutta & Lanvin, 2020, 23).

The Competitiveness Index measures the economic development of a Knowledge Society. According to The World Economic Forum report (2018), as economies begin to enter the 4th Industrial Revolution, which requires innovation and human capital as well as resilience and agility. This information is addressed by the Global Competitiveness Index (GCI 4.0). (The World Economic Forum, 2018, vii). GCI 4.0 claims to capture these dimensions of the economy by including new concepts like entrepreneurial culture, multi-stakeholder collaboration, critical thinking, and social trust. The

GCI 4.0 consists of 12 pillars: 1. enabling environment (pillars: institutions, infrastructure, ICT adoption and macroeconomic stability); 2. human capital (pillars: health, skills); 3. markets (pillars: product market, labor market, financial market system and market size); and 4. the innovation ecosystem (pillars: business dynamism and innovation capability (The World Economic Forum, 2018, vii). The 2019 report discusses uncertainties in the world economy and reviews emerging “win-win policy options to achieve the objectives of growth, inclusion and sustainability” (The World Economic Forum, 2019, vii).

In 2019 the report covered 141 countries. The top countries in competitiveness in the world were Singapore, the United States, Hong Kong, the Netherlands, and Switzerland. The top Sub-Saharan countries were Mauritius (52), South Africa (60), Seychelles (76), Botswana (91) and Namibia (94) (The World Economic Forum, 2019, xiii). The competitiveness index measures themes of Knowledge Society, namely human capital, innovation and ICT use, and infrastructure.

Growth of Gross Domestic Product (GDP) and particularly investments in R&D are indicators of economic growth and the role of innovation in it. The world average economic growth of GDP was 2.9 % and in advanced economies 1.7 % in 2019. The growth was 1.3 % in the Euro area and 3.1 % in Sub-Saharan Africa. (World Economic Outlook, Update, 2020).

Israel invested 4.9 % of its GDP in R&D in 2019, making it the top country in terms of R&D investment, followed by South Korea with 4.6 %, Taipei with 3.49 %, Sweden with 3.40 % and Japan with 3.2 % of GDP (OECD, 2020). The African Union has set a target of 1 % of GDP to be invested in R&D. This goal was not reached in most Sub-Saharan countries; however, the top country was South Africa, investing 0.88 % of Gross Domestic Product in R&D in 2018 followed by Kenya with 0.8 % and Ethiopia 0.6 % of GDP (UNESCO, 2020).

The Human Development Index (HDI), developed by the UNDP, measures the following dimensions of human capital: life expectancy at birth (SDG3), expected years of schooling (SDG 4.3), mean years of schooling (SDG 4.6), Gross National Income (GNI) per capita (SDG 8.5) and Gross National Income (GNI) per capita rank minus HDI rank. The purpose is to analyse life expectancy, years of education and the GNI per capita. It also includes four other relevant indices: the inequality adjusted HDI discounts the HDI according to the extent of inequality. The Gender Development Index compares female and male HDI values. The Gender Inequality Index highlights women’s empowerment, and the Multidimensional Poverty Index measures non-income dimensions of poverty. (UNDP, 2018, 1). The UNDP 2020 Human Development Report introduces a new HDI called *Planetary pressures-adjusted Human Development Index (PHDI)*, referring to interwoven human and planetary climate and environmental changes, risks and imbalances (UNDP, 2020, 236).

The latest Human Development Report (2020) has produced a composite index measuring the average along three dimensions: a long and healthy life, knowledge, and decent standard of living. The report further emphasises environmental and climate changes as well as the global COVID-19 pandemic. Quoting the report about planetary changes and human development, “planetary imbalances (the dangerous planetary change for people and all forms of life) and social imbalances exacerbate one another” (UNDP, 2020, 3).

The social imbalances and planetary changes produce increasing instability and more risks according to the report.

The HDI ranking of top countries globally in 2019 is the following: Norway (1), Ireland (2) and Switzerland (2), Hong Kong (4) and Iceland (4). The leading Sub-Saharan countries are Mauritius (66), Botswana (100), South Africa (114), Cape Verde (126) and Namibia (130.). The global average score is 0.737, the score for developing countries is 0.689, and for Sub-Saharan countries it is 0.547. To compare the changes from 1990 to 2019, the largest positive change has taken place in developing countries (0.173), and in Sub-Saharan Africa the change has been (0.145), compared to the world average change (0.139). (UNDP, 2020, 242-243). This ranking uses the traditional HDI.

The economic, technological, and human conditions and capacity divide between the countries in the Global North and in Sub-Saharan Africa is evident. However, in the Sub-Saharan countries positive change has been relatively greater than the world average. The same countries in Sub-Saharan Africa seem to lead in all of the above indices. This tells us that the economic, technological, and human capacity development are tied together. The question is how to enhance development in the rest of the Sub-Saharan countries.

Information Society development is measured by the ITU using the ICT Development Index (IDI) which consists of 11 indicators grouped under access to ICT, use of ICT, and ICT skills. (ITU, 2017). The IDI covers infrastructure, use of ICT, and ICT skills, and looks at the impact of these indicators on country development both in developed and developing countries and compares countries and how countries can benefit from the use of ICT for their development. The revised IDI (2019) has 14 indicators grouped as access to ICT, use of ICT, and ICT skills. (ITU, 2019, a). However, in the 2019 consultations, the ITU recommended the use of the old IDI due to availability of data and potential overlapping of data. (ITU, 2019, b)

According to the IDI, which covered 176 countries, the leading countries globally in 2017 were Iceland, the Republic of Korea, Switzerland, Denmark, and the UK. In Sub-Saharan Africa, the leading countries were Mauritius, Seychelles, South Africa, Cape Verde, and Botswana (ITU, 2017).

Sustainable Development Goals progress has been studied by Sachs, & Schmidt-Traub & Kroll & Lafortune & Fuller & Woelm (2020, 2021). According to the Sustainable Development Report 2021 by these authors, the top countries making progress in the Sustainable Development Goals globally are 1. Finland, 2. Sweden, 3. Denmark, 4. Germany, 5. France, and 6. Belgium. In Sub-Saharan Africa the leading countries are 92. Cape Verde, 95. Mauritius, 107. South Africa, 111. Gabon and 114. Ghana. (Ibid, 2021,10-11). The global challenges of COVID 19 have slowed the progress of SDGs. Compared to the 2020 progress report, the order of countries on the top and in Sub-Saharan Africa is almost the same.

This part of the study addresses research question 3: what kind of development do these policies enhance? In conclusion, the indices measure ICT use and readiness, infrastructure, education and skills, access to ICT services, and governance. The indices partly overlap (NRI, HDI and IDI). The new NRI and the renewed HDI measure the development of economies and

ICT more broadly than just measuring technological advancement. If the renewed NRI and HDI are used together, they could be complemented by competitiveness indicators, if we measure economic development. The PHDI is important, as climate change and environmental issues are becoming key issues in economic development and the growth and stability of societies, not to forget the global pandemic.

5 FINDINGS AND DISCUSSION

In this section I will discuss the key findings of the articles to address the research questions. The publications discuss policies and strategies for Knowledge Society development over 20 years in Finland, in the Global North (I and II), in the Global South (Central America and South America (III), Finland and South Africa (IV) and globally and in Sub-Saharan Africa (V). The studies take different approaches: the country policies are analysed in Finland and in South Africa and international policies globally, in Central and South America and in Sub-Saharan Africa.

I have analysed country policies for Knowledge Society development in Finland (I) in the 1990s, when a change in the economy was needed due to external (global economic recession) and internal factors (traditional pulp, paper and metal industries were slowing down, unemployment was high, and the financial crisis impacted the economy heavily). This was the early phase of policy development towards a Knowledge Society. These policies in Finland called for a change within the economy, globalisation, a belief in innovation, emphasis on the role of the state (investments in R & D in ICT) and building the capacity of citizens through education. The logic was that “if we manage to make this change, Finland will be the leading economy in ICT in the world”, and citizens would benefit from this through better quality of life. The message was strong and unambiguous. It was also a future-oriented policy by the government. This article addresses research question 3: how do national governments (Finland) enhance Knowledge Society in their policies? What kind of development do the policies enhance?

In Article (II), I analyse Finnish Information Society strategies and point out tensions or dichotomies between the global and the local contexts, and the role of the individual and the role of the state. Information and communication technology plays a key role in these potential tensions. On the one hand, Finland and developed economies more generally needed ICT to connect globally and to produce leading (mobile) technologies and integrate their national economies with the global economy. Given that these changes are taking place at ever greater speeds, I address how the individual can manage the change (life-long learning, flexibility and need to belong) in this environment. The role of the state becomes important in this scenario as a safeguard against risks and uncertainties and as a provider of a safe environment for individuals. In this article, I discuss the risks and uncertainties for individuals, and provide answers to research question 3. What kinds of development do the policies enhance?

I address the challenge of the digital divide and gender in entrepreneurship in Costa Rica and Bolivia in publication III. Here the case study reflects the global policy on the role of ICT in economic development. It also reflects the time (2006 and before) when Information Society policies became part of the

development agenda of international development organisations, in this case the Inter-American Development Bank. At the time, ICT was seen to play a key role in development. This study focuses less on policies but instead considers a case study to address the digital divide and gender in a local context with an economic impact. It points out a need for policy to enhance local development, inclusion of gender, and sustainability. It originates from the needs of female entrepreneurs managing micro and small businesses to enter the local and national market and enhance their ability to control and build their businesses. The study also provides feedback on policy formulation in the country and on the Inter-American Development Bank. This article addresses local development and inclusion. It attempts to answer research question 3: what kinds of development do the policies enhance?

I analyse and compare science and technology and innovation policies and practices in Finland and in South Africa in publication (IV). The science and technology policies in Finland have been connected to research, industrial, science, and regional policies. The study discusses building and elements of the national and regional innovation system. It emphasises the role of the state, key national innovation organisations, collaboration between the public and the private sectors, universities, and regional entities. The regional innovation system supports regional development. I further discuss how the innovation system supports economic development in the global environment and meets global challenges. South Africa has a national Ten-Year Plan that includes building national and provincial innovation systems. Like in Finland, entities like Science Parks are being planned to enhance the innovation capacity of South Africa. The challenge of meeting the global challenges is identified in both countries. South Africa addresses its responsibility to develop human capital to meet the challenges of the global Knowledge Society and bridge the innovation 'chasm' of commercialising innovation. There are similarities between the two countries, like regional development and the need to meet global needs. Both countries aim to meet global economic challenges. This article addresses research question 3: how do national governments (Finland, South Africa) enhance Knowledge Society in their policies?

We have analysed (publication V) international Knowledge Society policies starting from WSIS 2003 to SDGs 2015. In summary, the policies reflect the need for economies to change from industrial to Knowledge-based Economies and to globalisation. The main engine of change is information and communication technology. The focus has evolved from discussing merely ICT for development and economic growth through productivity growth to include issues like governance, local economy, enabling environment, equal access to information and knowledge, education and skills, and more recently the ongoing COVID-19 pandemic. Environmental and climate changes have also entered the agenda. The policy part of the article pertains to the following research questions: 1. How and why has the definition of Information and Knowledge Societies changed over time (in literature and) in policies? 2. What themes define Knowledge Societies in the policy documents of international and regional (Africa) development organisations to enhance development? and 3. What kind of developments do these policies enhance?

We have observed that, when looking at the measured levels of development of Knowledge Society using different composite indices, the top

countries in the world seem to hold their places in the global rankings over time, and the same is true for the Sub-Saharan African countries. The top Sub-Saharan African countries are mostly the same and there is a digital divide within the region. Two indices (HDI and NRI) have been updated over time to measure development more comprehensively. This part of the article addresses research question 3: What kind of developments do the policies enhance?

There are common themes in the Knowledge Society for development policy documents: the key role of information technology in development, more closely aligning the Global South with the international level of development, the role of information technology and innovation for economic growth and competitiveness, equal access to information services for all, education and skills to manage in the global environment, and globalisation. Education and access to education is presented as a condition for development, as well as investments in ICT infrastructure and providing information services and access to them. Greater opportunities for countries in the global competition are seen as an outcome of this development. The main message to countries is that, in order to participate in this development, countries should aim to provide equal access to information services and education for all. Further, the policy documents have latterly emphasised the importance of investment in science, technology and innovation through investment in R&D leading to innovations.

It is worth noting that innovation and R&D are not coming up as one of the main themes for development globally and in Africa. The main themes of access to ICT and education to lead development of society are emphasised at all levels of society. Digitalisation and the role of ICT in economic and social development presents the success stories of countries in the Global North with high levels of education, high investment in R&D, and a high level of digitalisation. This model of society is presented as part of globalisation, global economic integration, and competitiveness. The presentation of potential negative effects or lack of action is seen as a failure to keep up with global development.

A new theme is building partnerships between developed and developing countries and between the public and private sectors. Furthermore, gender has largely entered the agenda of development policies of international development organisations in SDGs. An enabling environment by governments and public sector is seen as a necessary condition for Knowledge Society development.

Knowledge Society continues to be relevant to African development and it continues to be on the national and regional development agendas. Education, skills development, technological infrastructure, and investments in science and technology and innovation continue to be relevant to all countries. This has been articulated in the post-2015 African agenda (Africa 2063) and in the Global Sustainable Development agenda.

The Sustainable Development Goals address the key areas of Knowledge Society that have been on the global Knowledge Society agenda for 20 years. The focus has changed from technology to capacity building and building partnerships between the Global North and the Global South and between the public and the private sectors.

The Knowledge Society for development policy discourse is an optimistic

model of economic growth where (ICT) technology leads development. This argumentation is based on technology as progress-discourse. It is also an inclusive discourse for all members of society, as it recognises equal access to knowledge as an outcome to be pursued.

ICT is seen as a leading technology for development. This is from WSIS to SDGs. Inclusiveness has also been on the agenda from WSIS to SDGs. Skills development and capacity building have become more visible elements from 2015 onwards. Equal access to quality education has been emphasised in the agenda since 2015. The AU emphasises investments in R&D, innovation, and an increase in the number of research workers. The policy environment for Knowledge Society development has been on the agenda since WSIS. Investments in innovation and R&D and a need for innovation have become part of the agenda of both the UN SDGs and the AU. This development is geared towards increased domestic and local innovation.

I have not found competing discourses in the policy texts, but there are new themes like gender equality, development of e-commerce and partnership building between developed and developing countries, partnership building between the public and private sectors, and local development.

In sum, the themes that have remained mostly the same over the past 15 years in the Information and Knowledge Society policy documents: the role of ICT in development, education, access to information and knowledge, inclusive development, the role of the individual and the role of the state, and globalisation. What is new in the policy documents towards 2015 and after is the focus on gender and building partnerships. In the early 2000s the themes of change, instability and uncertainties were discussed in the context of globalisation. Indicatively, these latter themes have come up again in the measurements of Knowledge Society development. Science, technology, and innovation have played a lesser role on the development agenda over time.

If one compares the themes of the policy documents to the theoretical discourse of Knowledge Society, the predominant policy themes have been discussed in the literature. One could also conclude that the Knowledge Society literature has exhibited the discourse of policies even after the policies have been implemented. The themes that originate within the theoretical discourse appear on average about 10 years later in the policy documents. Some themes from the literature discourse are not included in the global policydiscourse, e.g., change of society.

Lastly, COVID-19 has changed the future visions and the trajectory of development as previously envisioned. The new Planetary adjusted Human Development Index by UNDP is therefore interesting, as it addresses social instability and the risks that are tied to environmental and climate instabilities and shocks. This index addresses the uncertainties and risks associated with the pursuit of building a Knowledge Society. It remains to be seen how these shocks will affect future development.

Future research could focus on studying Knowledge Society in selected countries in the Global North and in the Global South and focus on the change of society in critical areas like education, skills, access to ICT and knowledge, gender inclusiveness, and innovation. The qualitative changes in society have not been addressed and this could be studied as selected country studies in the Global South and Global North. The digital divide in countries and societies needs to be addressed.

Further research is needed for the analysis of the impact of the COVID-19 global pandemic on development and how science and technology development together with ICT can enhance development in this context. Investments in innovation and the commercialisation of innovations could be further studied. The qualitative aspects of Knowledge Society for development could be further studied and this development could be measured using the renewed indices like the Planetary adjusted Human Development Index and the renewed NRI index and analysing them in the larger context of economy and society.

5.1 CONTRIBUTION OF THIS RESEARCH TO THE DISCOURSE OF KNOWLEDGE SOCIETY

The thesis has provided a discourse of the evolution of Knowledge Society from its early economic origins in Information Society (1960s) until 2020. The role of Knowledge (Information) Society in the economic development of countries has been important to both countries in the North and later in the South. The thesis provides new information on Knowledge Society development based on quantitative data, with a specific focus on metrics like indices.

In conclusion, Knowledge Society as seen in the 2020s seems to have become saturated and diffused to the point that it is missing from the global discourse. Whether this has to do with it becoming contextually merged with the ideas of digitalisation, AI, or the fourth industrial revolution, we can only speculate. Perhaps it has been eclipsed by urgent issues like climate change or global health. Irrespective of the name we assign it in the 2020s, the idea of Knowledge Society policymaking as a vehicle for positive societal change in the form of improved economic efficiency, sustainability and development stands unchallenged in the wake of the fourth wave of Knowledge Society. It is the role of future scholars to expand the scope and breadth of Knowledge Society policymaking studies in order for it to continue to serve its purpose.

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