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THREE HUNDRED STORIES OF THE ENVIRONMENT

FFRC Environmental Bibliography 1997–2007

FFRC eBook 1/2008



Dedicated to the memory of JiWu Sun
(1948-2006)

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ABSTRACT

This bibliography includes the social scientific environmental publications authored or co-authored by Finland Futures Research Centre (FFRC) researchers between 1997 and 2007. Overall, the FFRC can boast 319 publications and the number of annual publications has varied between 19 and 48. A large variety of research topics and research fields have been addressed. Environmental policy and environmental economy have been the two most important fields of research followed by socio-cultural and philosophical studies on environmental issues. There are also a few papers on environmental history, regional studies and education as well as general environmental reviews.

The bibliography starts with a commentary part describing the approach, presenting time series statistics in graphs, reviewing the main fields of work, and discussing the findings. There are many interesting findings and a lot of room for interpretations as well as expectations of future prospects. The latter part of the bibliography consists of a list of the references to each publication, as complete as possible. We hope that the bibliography provides with a good basis for the internal use of increasing self-understanding and forming the research strategy as well as useful information for our clients, partners and anyone interested in social scientific environmental research.

Acknowledgements

This bibliography is an expansion of a literature review on climate policy included in the SIGHT project. Academy of Finland is gratefully acknowledged for funding. Collecting and correcting the references was a joint effort of most FFRC environmental researchers. Thank you – without your contribution we could not have done it! Special thanks to Jarmo Vehmas for comments on the manuscript.

INTRODUCTION

We are so good! ..or are we? This was the mixed feeling, when we started to collect the environmental bibliography of Finland Futures Research Centre (FFRC) in May 2007. The FFRC has now had its fifteenth anniversary and is thus moving from a junior teenager towards a more mature organization. In the early days, the father of the FFRC, Prof. Pentti Malaska, was very keen on environmental questions and gathered a solid research team around him. This team has then grown and evolved to different branches of research. The centre now has an acknowledged international reputation in social scientific environmental research. Projects come and go, researchers come and go but the publication mill is running nevertheless.

We would not be futurists if we were not also worried about recent and future development. Are we using too much time in writing applications instead of publications? Since the FFRC is almost totally dependent on external project funding, people come and go. When prominent researchers leave the centre they take their tacit knowledge with them. When established environmental researchers move on to business futurology, technology foresight studies or education within the centre, should we fear losing our environmental tradition?

This bibliography offers many answers to these questions. There is much room for interpretation and discussion. However, one finding is clear – indeed we are good. The researchers can boast as many as 319 social scientific environmental publications between 1997 and 2007. Popular writings are excluded and if they would be counted, the figure might double. High quantities of output are important nowadays for any institution. Scientifically and strategically it is perhaps more relevant to ask what kind of environmental publications have been made and what changes over the years can be observed?

The structure of the bibliography

The bibliography contains four parts, where the first one includes the description of the gathering process. Second, we analyse the trends in FFRC publication activities and third, discuss the findings. The fourth part consists of the publications that are categorized according to the typology of two previously made social scientific environmental bibliographies in Finland (Viinikainen 1997¹; Puhakka 2007²). The categories in the typology are not mutually exclusive since many publications would fit several classes but when applied systematically the analysis reveals some interesting features of the FFRC environmental research profile.

There are ten main categories. Three first classes include works that deal with the fundamentals – general environmental reviews, environmental history and philosophy. Next, there are three classes of basic societal systems – social and cultural structures, policy and the economy. Environmental law is a research area that is addressed in the typology, but no publications in this category were found at FFRC. In addition, there are two specific topics – regional studies as well as environmental education. As if these classes were not enough there

¹ Viinikainen Tytti. 1997. Yhteiskuntatieteellinen ympäristötutkimus Suomessa. Katsaus tutkimusaloihin ja kirjallisuuteen. Suomen ympäristö 99, Suomen ympäristökeskus, Helsinki.

² Puhakka, Valto. 2007. Yhteiskuntatieteellistä ympäristötutkimusta Suomessa vuosilta 1997–2006. Yhteiskuntatieteellisen ympäristötutkimuksen seura. <http://yhys.net/ymptutkimustasuomessa.pdf>

is another category containing “other social scientific research of the environment”. Here there are a few papers that have studied statistical questions and evaluated research programs.

Two important strands of research were especially difficult to categorize, research of the sustainable information society and the indicators of sustainability. Publications of the information society were gathered to the class 4 “Research of socio-cultural structures”. Indicator studies as well as studies on integrated impact assessment and social impact assessment were all placed under the heading of Environmental Impact Assessment.

The classification seems to work rather well on the first level. On the second level things get more complex. In some cases the typology could be called misleading or poorly structured. For example, in the fifth category “Environmental Policy” there is a subtitle 5.4 containing research into sectoral policies. On the second level there is also the class of Animal politics (5.7) and Food issues (5.8). Clearly these two categories are in fact sub-systems of sectoral environmental policies similar to the energy, transport and forest sectors. However, we did not alter the typology since we wished to maintain the option of comparison with the national bibliographies.

In the typology, there are some distinctive positive aspects, as well. It is a wide view on environmental research and it proved to be difficult to construct a better one. Most importantly the typology is not too much fixed on scientific disciplines. For example, a major category is labeled as research on environmental *economy*, not environmental *economics*. For an interdisciplinary research institute this is crucial.

What is in and what is out?

This bibliography counts the publications of social scientific environmental research of FFRC researchers between 1997 and 2007. The more one thinks about this simple sentence the deeper one gets to complex questions, some of which are practical some even ontological.

- What is a publication?
- What is published in 2007?
- Who is a FFRC researcher?
- Are earlier employees’ publications reported?
- Are current employees’ previous publications reported?
- What is environmental?
- What is scientific?
- What is social scientific?
- What is research?

Table 1 addresses the nine questions and how they are dealt with in this bibliography. We have been rather conservative but not overly strict. The general idea is to exclude popular publications and concentrate on research reports. There are, however, some research based text-books, published university course material and reviews that can be considered social scientific. Publications without references are left out as well as texts published in personal or other non-institutional internet pages. Publications were gathered during May-July 2007 by directly asking current FFRC researchers to provide lists of their publications. The gathered and edited list was resent to the researchers in order to correct possible errors and update the list with new publications. Past FFRC researchers’ publications were gathered from FFRC internet page (www.tse.fi/tutu). Here we relied on the titles and/or abstracts regarding publications that we had not read thoroughly.

Table 1. *What is in and what is out regarding FFRC environmental bibliography?*

Question	In	Out
What is a publication?	Publications published by some other party than the researcher.	Public material in non-institutional web pages.
What is published in 2007?	Publication decisions made by September 2007	Publication decisions made after September 2007
Who is a FFRC researcher?	Researchers employed at FFRC.	Consortium partners.
Are earlier employees' publications reported?	Yes.	Publications after leaving FFRC were not asked for.
Are current employees' previous publications reported?	Yes.	Each one's own personal judgement.
What is environmental?	Publications dealing with the origin, the characteristics and/or solutions for problems and risks in the ecological environment. Each one's own personal judgement.	Publications dealing with only the techno-economic or socio-cultural environment without an explicit connection to the ecological environment. Each one's personal judgement.
What is scientific?	At minimum there should be references.	Papers without references.
What is social scientific?	Wide scope: interdisciplinary publications having natural scientific or engineering approaches are included as well as environmental law, economic and statistical publications.	Purely natural scientific or engineering publications. Statistical publications without human perspective.
What is research?	Both theoretical and empirical publications included. Published as text.	Papers without reference to external sources (theory, other empirical material). Slide shows excluded.

Current employees' past publications are also included. The idea is not to incorporate other institutions' merits but describe as accurately as possible FFRC researchers' activities.

As for the substance, environmental publications are considered publications dealing with the origin, the characteristics and/or solutions for problems and risks in the ecological environment. Publications dealing with only the techno-economic or socio-cultural environment without a connection to the ecological environment are excluded. A wide view of the social sciences was adopted, that is interdisciplinary publications having natural scientific or engineering approaches are included as well as environmental law, economic and statistical publications. Purely natural scientific or engineering publications are excluded. This is an abstract definition and leaves much room for interpretation.³ However, it was each researchers' own decision, whether s/he saw a publication as environmental or not.

³ Calls for including the socio-cultural and techno-economic environment under the concept of 'environment' have been made. However, if all scientific approaches were considered environmental sciences, the word environmental would be cleared out of any meaning.

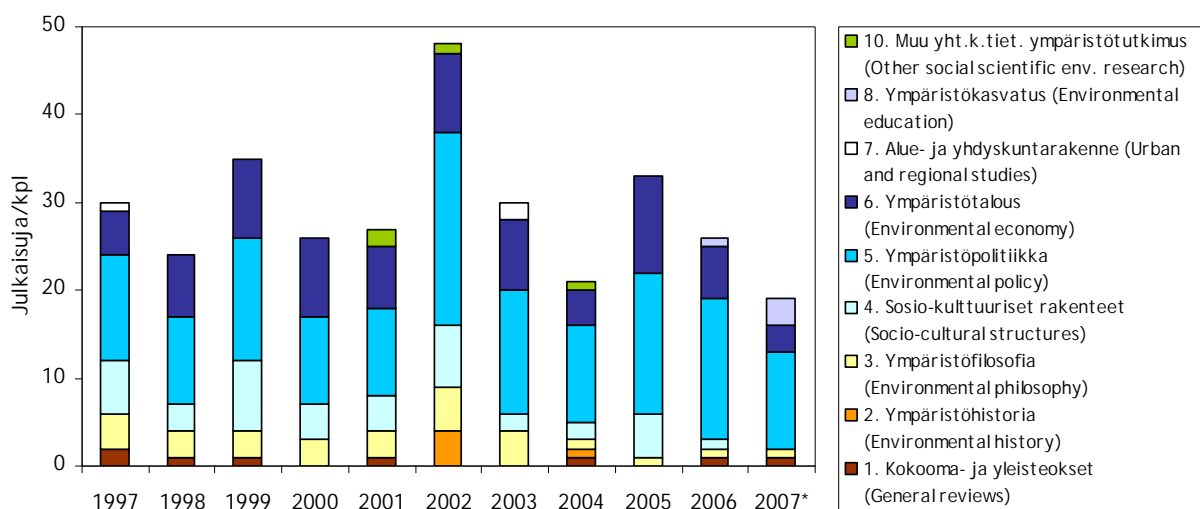
FINDINGS

Overview

As said in the introduction, over three hundred publications were gathered. What kind of publications are there more specifically? Can temporal trends be established? Figure 1 presents the most general and comprehensive outlook to the material. The clearest message is that publication volume has been high during the whole decade, and there was a high peak in 2002. In addition, very good years have been 1997, 1999, 2003 and 2005. Studies on environmental policy (146 publications) and economy (78) have been the major focus throughout the years, followed by socio-cultural studies (42) and environmental philosophy (29). The first three fields accounted for 83% of the total publications and all four as much as 92%. Environmental philosophy has gradually lost ground whereas minor fields such as environmental education publications have increased only recently. Studies on the regional and historical aspects have been published occasionally. There are a few other studies as well.

The last three years' development seems a little worrying. Although the information is based on September 2007, there is little reason to believe that a significant number of papers would have been published without us knowing it beforehand. Indeed, there are some publications that actually will be published in 2008. One possible reason might be the concentration on scientific articles and monographs rather than the so-called 'grey literature', conference papers, interim reports, working papers *etc.* (Figure 2). If we compare the first two years with the last two years, this serves as a partial explanation but not the whole truth.

Looking at the trend, it seems that each poor year has been followed by a good year. Now we know that there are some rather long projects funded by the EU and the Academy of Finland which are entering a more mature phase when publications emerge in pulses. Regarding the large amount of manuscripts under review or being finalized, we might predict a recovery in the next two years.



* Data for 2007 gathered in May-July and checked in September 2007.

Figure 1. FFRC researchers' environmental publications by field of research 1997-2007 -
Tulevaisuuden tutkimuskeskuksen tutkijoiden ympäristöjulkaisut aihepiireittäin

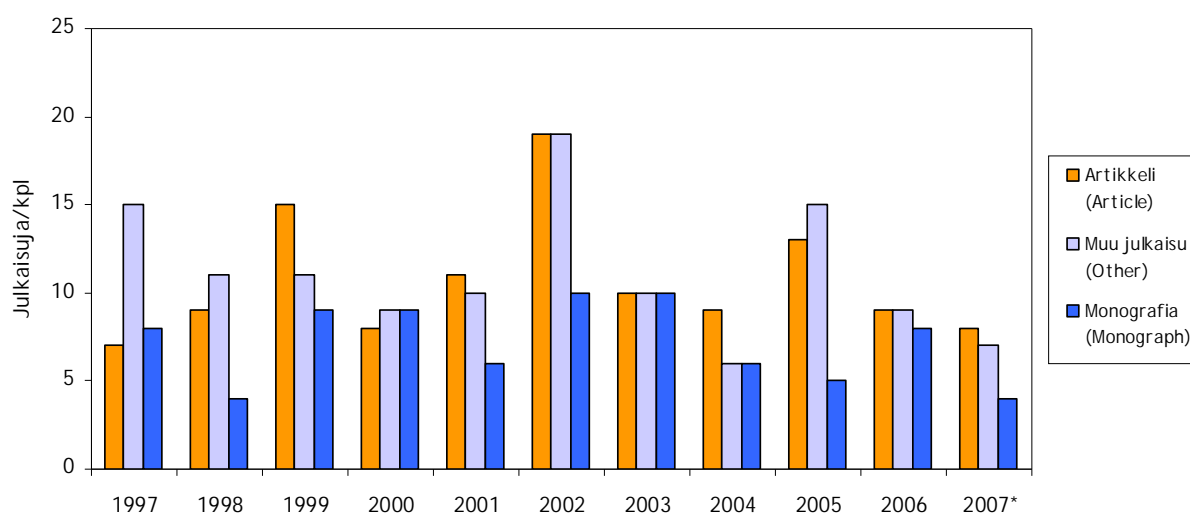


Figure 2. *FFRC reseachers' environmental publications by type of publication 1997–2007 - Tulevaisuuden tutkimuskeskuksen tutkijoiden ympäristöjulkaisut julkaisutyypeittäin*

The data in Table 2 reveals that although FFRC researchers have published international papers for long, there is a slight change towards decreased domestic publishing. That is, there have been fewer and fewer environmental publications in Finnish. Since FFRC as a whole has plenty of publications in Finnish the development indicates a structural change of the research policy of the Centre. The change is in line with the vision that we should strive for a more comprehensive palette of sustainability studies including also business foresight, socio-cultural studies, regional development and education. Indeed, some prominent researchers within the Centre, such as Prof. Markku Wilenius, Director Juha Kaskinen, Dr. Jari Kaivo-oja and Olli Hietanen have widened their research focus also to other areas than the environment.

Maybe the best explanation for the downward turn is in personnel changes. Prof. Malaska has retired and Dr. JiWu Sun has unfortunately passed away. Dr. Matti Kamppinen's, Dr. Pekka Jokinen's, Dr. Jarmo Hukka's, Dr. Merja Otronen's, Dr. Juhani Tirkkonen's, Paula Hakola's and Johanna Kohl's research period at FFRC has ended. The next generation will take over, but it takes time. Prof. Jyrki Luukkanen and Dr. Jarmo Vehmas together with Jari Kaivo-oja have continued their publishing as well as Dr. Petri Tapio, Olli Hietanen, Riikka Saarimaa and Katriina Siivonen. Recently hired Dr. Sylvia Karlsson, as well as Hanna Kaisti, Miia Kinnunen, Salla Laasonen, Marileena Koskela, Mia Pihlajamäki, Venla Kinnunen, Eeva Kuntsi-Reunanen, Sofi Salonen, Antto Vihma and Markus Vinnari are researchers who have already started creating the next pulse. Several doctoral students should achieve the publishing phase during the next couple of years. Prof. Sirkka Heinonen has just joined the team. Indeed, we expect the ladies to play an increasingly important role on the publication front in the future.

Table 2. *FFRC reseachers' environmental publications by language 1997–2007 - Tulevaisuuden tutkimuskeskuksen tutkijoiden ympäristöjulkaisut julkaisukielen mukaan*

Language	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
English	17	16	21	12	19	24	20	15	27	18	14	203
Finnish	13	8	14	14	8	21	9	5	6	8	5	111
Turkish							1	1				2
Japanese						1						1
French						1						1
Swedish						1						1
Total	30	24	35	26	27	48	30	21	33	26	19	319

Publications of environmental policy

Two fields of environmental research have been particularly characteristic to the FFRC, namely research into environmental policy and economy. Let us now have a closer look at the publications in these fields that have accounted for over 70% of the total publications. As for environmental policy, the major sub-field of Finland Futures Research Centre has been futures research – not surprisingly! Most of these publications present self-made scenarios or export scenario thinking to more specific fields such as energy, transport, agriculture and industry. Another well-established tradition is international environmental politics and development (Figure 3). This line of research has cherished Prof. Malaska's heritage of thinking global and has been largely performed in the studies on South-Eastern Asia led by Prof. Luukkanen and recently also by Dr. Karlsson.

In addition to future scenarios, many studies on current and past sectoral environmental policies have been made over the years, mainly focused on energy issues performed by Professors Malaska and Luukkanen as well as Dr. Vehmas and Kaivo-oja. Some research has also been made on the water (Dr. Jarmo Hukka), forest (Dr. Matti Kamppinen and Riikka Saarimaa) and transport sectors (Dr. Tapio). Food questions have risen recently on the policy agenda and the FFRC has worked in the frontline in projects led by Prof. Wilenius. Climate policy has been the major interest in most studies. On the other hand, research into planning systems and processes has been reduced in recent years. Hopefully this does not mean that futures thinking would be diminishing in governmental and municipality planning systems.

The large category of Environmental Impact Assessment includes here also indicator studies performed by Director Juha Kaskinen, Prof. Sirkka Heinonen and Olli Hietanen with others. There are also studies on Social Impact Assessment made by Johanna Kohl as well as a few Integrated Impact Assessment studies made by teams that Dr. Kaivo-oja has participated.

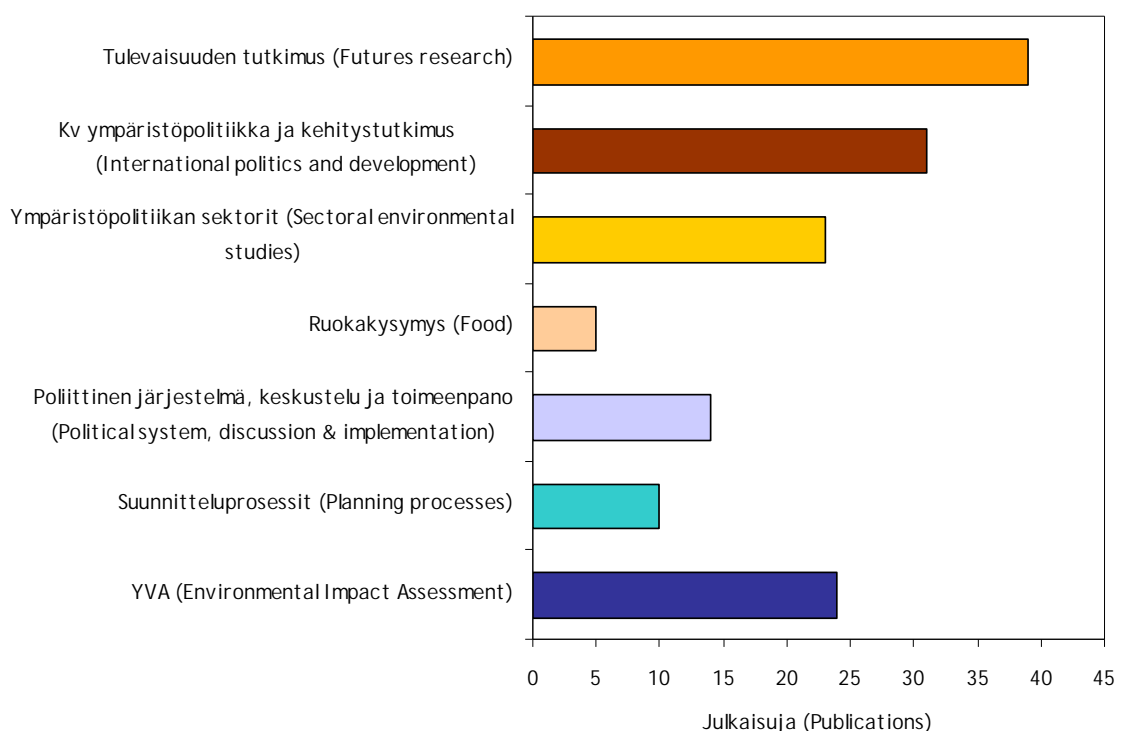


Figure 3. FFRC researchers' publications on environmental policy 1997–2007 - Tulevaisuuden tutkimuskeskuksen tutkijoiden julkaisut ympäristöpolitiikan saralta

Publications of environmental economy

The FFRC is a part of Turku School of Economics which makes studies on the environmental aspects of economy an essential part of the Centre's research profile (Figure 4). What is notable, many of these publications can hardly be labeled as mainstream environmental economics. Instead they take into account aspects from many disciplines.

Most of the publications in this category are focused on sectoral macro studies on energy where the de-linking of environmental harm from material production as well as the de-linking of the volume of material production from GDP growth have been addressed. There are many papers comparing different countries using time series data. Mostly the environmental harm has been measured in terms of carbon dioxide emissions, in some cases also total greenhouse-gas emissions, acidifying emissions or total material requirement. There are also more general publications which address theoretically the role of the environment and environmental policy in the economy.⁴

One cannot talk about the FFRC research without mentioning the method of decomposition analysis used by the ' J_4 researchers': JiWu Sun, Jyrki Luukkanen, Jarmo Vehmas and Jari Kaivo-oja lead by Prof. Malaska. The decomposition analysis was imported to the FFRC by Dr. JiWu Sun and further developed to the approach of the Advanced Sustainability Analysis (ASA) by especially Prof. Malaska, Prof. Luukkanen and Dr. Vehmas. With Dr. Kaivo-oja and many researchers at the Tampere office, they have applied it to a plethora of cases, sectors, countries and regions all over the world.

Recently there has been an expansion towards the micro-level, since analyses of the business organizations point of view have been performed increasingly. Here Prof. Markku Wilenius has made much effort and combined environmental aspects to corporate responsibility thematics. There is also a weak signal that consumer research will rise up in the future. At least this would be a logical step forward.

Socio-cultural studies

The next largest category of publications is stemming from the humanist, or socio-cultural domain. No doubt, the publications on the sustainable information society have played a major role here. Prof. Malaska led a large project titled *Citizenship and Ecomodernisation in the Information Society. Futures Approach* (FUTU) during 1996-1999. Well argued, well connected and well performed, the FUTU project gave a real boost to the FFRC in the critical early days. The information society papers have mainly been categorized as Social scientific theories ("Ympäristökysymysten yhteiskuntateoreettinen tarkastelu") or General reviews on various fields ("Yleisesityksiä eri tieteenaloilta"). The division between these two categories is fuzzy, but more theoretical papers have been placed onto the first category. Key authors have been Prof. Wilenius, Prof. Heinonen, Dr. Kamppinen, Dr. Jokinen, ' J_3 researchers' (Kaivo-oja, Luukkanen & Vehmas) and Olli Hietanen.

⁴ The sub-category 'Economic theory and ecological economy' is rather fuzzy. The original concept "*Talousteoreettinen ympäristökysymysten tarkastelu sekä talouden ekologisointi*" means *Economic theoretical scrutiny of environmental questions and the ecologization of the economy*. Division between theoretical papers and empirical papers would serve better.

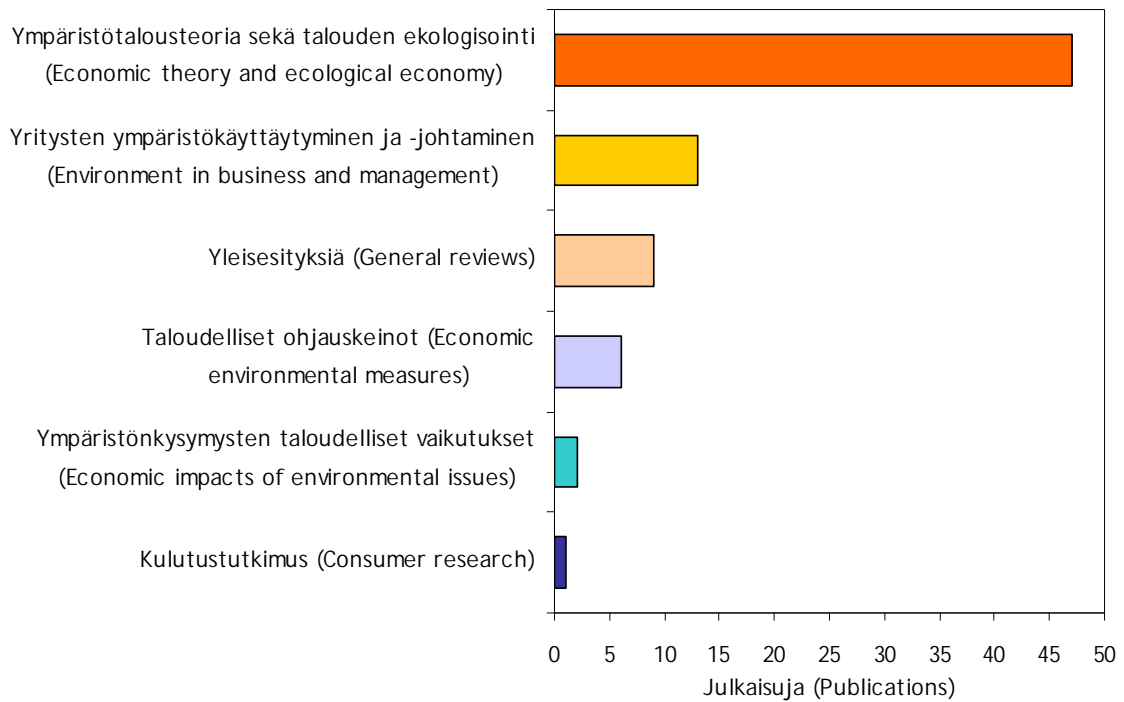


Figure 4. FFRC researchers' publications on environmental economy 1997–2007 - Tulevaisuuden tutkimuskeskuksen tutkijoiden julkaisut ympäristotalouden saralta

Some papers contribute an introduction to environmental sociology, ethnography, or social transition towards sustainability. There are some papers addressing environmental attitudes, consciousness, experiences, conflicts and local issues. Riikka Saarimaa and Johanna Kohl have contributed here well. Surprisingly, we found only one paper on mass media. Not surprisingly, it is about the climate discourse – the major theme in the FFRC research profile.

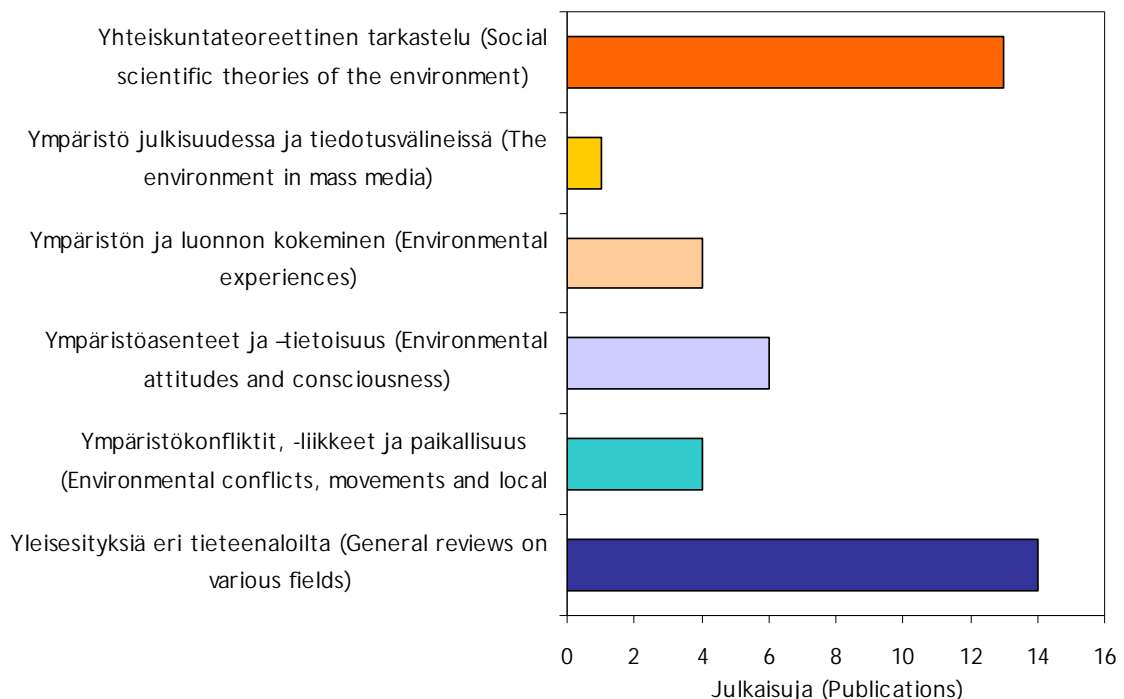


Figure 5. FFRC researchers' socio-cultural environmental publications 1997–2007 - Tulevaisuuden tutkimuskeskuksen tutkijoiden julkaisut sosio-kulttuurisista ympäristökysymyksistä

Environmental philosophy and general reviews

Almost 30 publications have been focused on environmental philosophy although there have not been many projects where philosophical aspects would have been on the main focus. These publications have been a positive side-effect of researchers going ever wider and deeper in their analysis of the environment.

The major contributor in the philosophical papers has been Prof. Malaska who has written about the reasoning of the human-nature interrelations since the 1970's. Dr. Kamppinen's studies on time, risks and scholar history have also been important. In addition, epistemological and methodological papers have been written by Prof. Sirkka Heinonen, doctors Kaivo-oja, Karlsson and Tapio, as well as Olli Hietanen. Kaivo-oja and Tapio have also made some general reviews on environmental and sustainability issues that are difficult to place into specific classes.

Other social scientific environmental publications

Last but not least a quick look to publications representing research fields that have been worked on only by few FFRC researchers. As futures researchers are more interested in the future than the past, it is not surprising that the performance in environmental history (class 2) has been rather modest. Prof. Sirkka Heinonen's Doctorate thesis and Hannu Heikkinen's publications have been notable exceptions as well as the long-term statistical reviews authored by Dr. Juha Kaskinen and Dr. JiWu Sun. What is surprising is that despite an involvement in many urban and regional studies only few regional publications have been environmentally focused.

Due to a recent large project on the future of sustainability education there have been some publications of environmental education authored by Kohl, Salonen and Dr. Tapio together with Tuomo Kuosa and Sarianne Tikkanen (class 8). The last category (10) of other studies includes publications of research funding evaluation made by Dr. Merja Otronen. There are also statistical publications made by Dr. JiWu Sun. This bibliography is dedicated to his memory.

DISCUSSION

All in all, the bibliography reflects personell and research policy changes within the FFRC. Some essential people have come and gone and new professionals have arrived. The FFRC has expanded its activities mostly in other branches than the environmental one. If previously most FFRC researchers' publications could be considered environmental, now less than half can.⁵ The publication rate has varied quite much depending on many factors. However, the tradition has been successfully continued as there have been approximately between twenty and fifty publications each year, the average being around thirty publications per annum.

A summary of the FFRC's environmental research profile between 1997 and 2007 and some future prospects might look like the analysis collected in Table 3. No rigorous futures studies methods have been made in order to produce the future options. They are solely the authors' views based on the analysis and the knowledge of current activities.

Table 3. Summary of the social scientific environmental publications of FFRC researchers

Type of activity	Observations	Future options
Strong and prevailing tradition	Environmental policy, especially futures studies performed by mathematical modelling, the Delphi method and scenarios; climate related analyses of sectoral policies in energy and transport.	Analysis of new sectors, such as agriculture (food and non-food), forest sector and industry.
	Environmental economy, especially de-linking and decomposition analyses.	Expansion from macro-analyses to firm level and households.
Expanding tradition	Cultural studies, especially environmental perceptions, attitudes, values and images of the future.	Creativity and innovation studies.
	Business and the environment.	Business studies connected to corporate responsibility and visionary leadership.
Hibernated tradition	Environmental philosophy.	From hobby to projects.
	General environmental reviews. Regional studies.	Stronger inclusion of environmental aspects into regional foresight studies.
Weak signals of potential high-growth areas	Some publications during the recent two years.	Consumer studies. Environmental and sustainability education.

There are some threats that need to be avoided in the future, the most obvious being the acquisition of too short projects where there is no time for publishing, another is the lack of permanent posts. The major strengths include the innovative atmosphere, interesting and important projects and motivated researchers. When these basic prerequisites are nourished there will be a prosperous future.

⁵ For example, the FFRC Publications series and FFRC eBooks series include eight environmental publications and fifteen other publications between 2005 and 2007.

LIST OF THE PUBLICATIONS

A= Journal article; B= Monograph; C= Other publication.

1. General reviews (Kokooma- ja yleisteokset)

- B Berninger, Kati, Tapio, Petri & Willamo, Risto. 1999. Ympäristönsuojelun perusteet. (3. painos.) Gaudeamus. 389 s.
- B Eronen, Ulla & Tapio, Petri. 1997. Ympäristönsuojelu yhteiskunnassa. 3. painos. Ympäristönsuojelun opetusmonisteet N:o 23, Helsingin yliopisto, Limnologian ja ympäristönsuojelun laitos, Helsinki, 135 s.
- B Kaivo-oja, Jari. 1998. Esseitä tulevaisuustietoisesta kestäväen kehityksen alue- ja yhteiskuntapolitiikasta. Tampereen yliopisto. Taloudellis-hallinnollinen tiedekunta. Aluetieteen ja ympäristöpolitiikan laitos. Lisensiaattityö. 270 s.
- B Kaivo-oja, Jari. 2004. Analyses of Historical and Future Problems of Sustainable Development. Research Articles in Spatial Sustainability Analysis, Planning and Evaluation. Acta Universitatis Tamperensis 1038, University of Tampere, Tampere. PhD Dissertation. Acta Electronica Universitatis Tamperensis 385. 434 p.
- B Tapio, Petri & Willamo, Risto. 2001. Environmental problems – What, why and how? FFRC Publications 4/2001, Finland Futures Research Centre, Turku, 21 p. <http://www.tse.fi/tutu>
- B Tapio, Petri & Willamo, Risto. 2006. Interdisciplinary environmental frameworks as tools for education for sustainability. In: Tani, S. (ed.) Sustainable Development through Education. Proceedings of the International Conference on Environmental Education, Helsinki 14 June 2005. Research Report 268, Department of Applied Sciences of Education, University of Helsinki, p. 49-75.
- A Tapio, Petri. 1997. Miksi on ympäristöongelmia? Ympäristö ja terveys 28(3-4): 94-101.
- A Tapio, Petri & Willamo, Risto. 2007. Developing interdisciplinary environmental frameworks. *Ambio - A Journal of the Human Environment*. In press.

2. Environmental history (Ympäristöhistorian tutkimus)

2.1 General history (Yleisesityksiä)

- C Kaskinen, Juha. 2002. Tieliikenne lukuina ja suoritteina – Suomen tieliikenteen kehitys 1950-luvulta uudelle vuosituhannele. Teoksessa: Järvelä, Marja & Lybäck, Katinka & Jokinen, Marika (toim.) Kaupunkiliikenteen ekososiaaliset ulottuvuudet. Yhteiskuntatieteiden ja filosofian laitos, Jyväskylän yliopisto, s. 73-92.

2.2 Natural history (Luonnon muutosten historia)

N.A.

2.3 History of human-nature interface (Yhteiskunnan ja luonnon vuorovaikutuksen historia)

- C Heikkinen, Hannu & Jokinen Mikko. 2002. Effects of Reindeer Herding and Conservation to the Strict Nature reserve Malla. In: Northern Timberline Forests - Socio-economic Issues and Concerns. (Ed by Sakari Kankaanpää, Ludger Muller-Wille, Paulo Susiluoto and Marja-Liisa Sutinen). Metsäntutkimuslaitoksen tiedonantoja 862. Metla/ Gummerus, Kolari, 114-115.
- B Heikkinen, Hannu. 2002. Sopeutumisen mallit - Poronhoidon adaptaatio jälkitekolliseen toimintaympäristöön Suomen läntisellä poronhoitoalueella 1980–2000. SKS. Hakapaino, Oulu, 369 s.
- A Sun, J.W. 2004. The analysis of energy-related CO2 emissions from 1950 to 2000. International Journal of Global Energy Issues 21(4): 397-405.

2.4 Scholar history (Aatehistoriallinen tutkimus)

- C Heikkinen, Hannu. 2002. Katsaus poronhoidon syntyteorioihin. Saamelaiskulttuurin ensyklopedia. (Toim. Irja Seurujärvi-Kari et. al.) WSOY.
- B Heinonen, Sirkka. 2000. Prometheus Revisited. Human Interaction with Nature through Technology in Seneca. Commentationes Humanarum Litterarum 115. Societas Scientiarum Fennica, Helsinki, 232 p.

3. Environmental philosophy (Ympäristöfilosofian tutkimus)

3.1 General Reviews (Yleisesityksiä)

- B Heinonen, Sirkka, Hietanen, Olli, Kiiskilä, Kati & Ruohonen, Laura. 2003. Kestääkö tietoyhteiskunta? Käsiteanalyysiä ja alustavia arvioita. Suomen ympäristö, Ympäristöpolitiikka 603. Ympäristöministeriö, Helsinki. <http://www.ymparisto.fi/palvelut/julkaisu/elektro/sy603/sy603.htm>
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