**CV (Short)** 2014-02-20

# Personal data and contact information:

Peter Lohmander 560329-1435 Professor Management and economic optimization, Forest Economics, SLU, 901 83 Umeå, Sweden

Phone: +46-(0)90-770811 Mobile: +46-(0)738-288 294 e-mail: Peter@Lohmander.com



## **Positions and education:**

Declared competent (by all the three referees) for professorship in forest industrial economics, SLU, Dept. of Forest Products, 2009 (Kompetensförklarad till professur i skogsindustriell ekonomi, SLU, Inst. f. Skogens Produkter, 2009.)

Professor of forest management and economic optimization, SLU, Dept. of Forest Economics, 2000. (Professor i skoglig företagsekonomi med inriktning mot ekonomisk optimering, SLU, Inst. f. Skogsekonomi, 2000)

Associate professor of forest economics, SLU, 1995. (Docent i skogsekonomi, SLU, 1995)

Declared competent for professorship (by all the three referees) in forest planning, SLU, Dept. of Forest Resource management, 1995 (Kompetensförklarad till professur i skoglig planering, SLU, Inst. f. Skoglig Resurshushållning, 1995)

Declared as competent, and as the most competent of three competent applicants, for professorship (by all the three referees) in forest economics, SLU, Dept. of Forest Economics, 1990 (Kompetensförklarad, samt förklarad mest kompetent bland alla tre kompetensförklarade sökande, till professur i skogsekonomi, SLU, Inst. f. Skogsekonomi,1990)

Acting professor, forest economics, SLU, Dept. of Forest Economics, 1990 (tf professor, Skogsekonomi, SLU, Inst. f. Skogsekonomi, 1990)

Senior lecturer of management and business administration, SLU, Dept. of Forest Economics, 1988 (Universitetslektor i skoglig företagsekonomi, SLU, Inst. f. Skogsekonomi, 1988)

Doctor of forestry in forest economics, SLU, Dept. of Forest Economics, 1987 (Skoglig doktor i skogsekonomi, SLU, Inst. f. Skogsekonomi, 1987)

Lecturer of forest economics, SLU, Dept. of Forest Economics, 1986 (Universitetsadjunkt, Skogsekonomi, SLU, Inst. f. Skogsekonomi, 1986)

Lecturer of forest planning, KVL, Copenhagen, Denmark, 1986 (Universitetsadjunkt i skoglig planering, KVL, Köpenhamn, 1986)

Master of Science in Forestry, Forester, with master thesis in mathematical statistics, 1981 (Civiljägmästare med examensarbete i skoglig matematisk statistik, 1981)

Army ranger officer education of the Cavalry special forces, K4, 1979 (Fänrik i Kavalleriet, jägarlinjen, K4, 1979)

High school exam in Science, Rinmanskolan, Eskilstuna, 1975 (Studentexamen, naturvetenskaplig linje, Rinmanskolan, Eskilstuna, 1975)

### **Selected Recently Organized and Chaired International Conferences and Key Notes:**

Many more conferences and events with presentations and details are found here: http://www.lohmander.com/Kurser/Kurser.htm

## **2012:**

#### Lohmander, P. (Chair) TRACK 1: Global Bioenergy, Economy and Policy,

BIT's 2nd World Congress on Bioenergy,

Xi'an, China, April 25-28, 2012

http://www.Lohmander.com/Schedule China 2012.pdf

http://www.Lohmander.com/PLWCBE12intro.ppt

Lohmander, P., Economic optimization of sustainable energy systems based on forest resources with consideration of the global warming problem: International perspectives,

BIT's 2nd World Congress on Bioenergy,

Xi'an, China, April 25-28, 2012

http://www.Lohmander.com/WorldCongress12\_PL.pdf

http://www.Lohmander.com/WorldCongress12 PL.doc

http://www.Lohmander.com/PLWCBE12.ppt

#### 2011:

#### Lohmander, P. (Chair) TRACK: Finance, Strategic Planning, Industrialization and Commercialization,

BIT's 1st World Congress on Bioenergy, Dalian World Expo Center,

Dalian, China, April 25-30, 2011

http://www.bitlifesciences.com/wcbe2011/fullprogram\_track5.asp

http://www.lohmander.com/PRChina11/Track WorldCongress11 PL.pdf

http://www.lohmander.com/ChinaPic11/Track5.ppt

Lohmander, P., Economic forest management with consideration of the forest and energy industries,

BIT's 1st World Congress on Bioenergy, Dalian World Expo Center,

Dalian, China, April 25-30, 2011

http://www.lohmander.com/PRChina11/WorldCongress11 PL.pdf

http://www.lohmander.com/ChinaPic11/LohmanderTalk.ppt

Lohmander, P., KEYNOTE: Economic optimization of sustainable energy systems based on forest resources with consideration of the global warming problem: International perspectives,

SSAFR-2011, 14th Symposium for Systems Analysis

in Forestry, Abstracts, Maitencillo, Chile, March 8-11, 2011,

http://www.sistemasdeingenieria.cl/seminarios/index.php?id\_seminario=22&idioma=en&pagina=participantes http://www.lohmander.com/Chile\_2011/Chile\_2011\_Keynote\_Lohmander.ppt

# 2010:

Lohmander, P., PLENARY REPORT: Methodology for optimization of coordinated forestry, bioenergy and infrastructure investments with focus on Russian Federation, Plenary Report and Abstract, Forests of Eurasia, Publishing House of Moscow State Forest University, September 19 - 25, 2010

http://www.lohmander.com/Moscow10/Moscow10\_PL.pdf

http://www.lohmander.com/Moscow10/Moscow10\_PL.doc

http://www.lohmander.com/Moscow PL 2010.pdf

http://www.lohmander.com/Moscow\_2010/Lohmander\_Moscow\_2010.ppt

http://www.lohmander.com/Moscow\_2010/Programma-LE\_10\_01.doc

In 2010, among many other conferences, I chaired one day of 3rd Annual European Biomass and Bioenergy Forum, Stockholm I also gave the following presentation: Lohmander, P., Optimum combination of biomass production with investments in infrastructure, CD, MarcusEvans, 3rd Annual European Biomass and Bioenergy Forum, Stockholm, 13th - 15th September 2010, <a href="http://www.lohmander.com/EBBF\_2010\_Lohmander.ppt">http://www.lohmander.com/EBB\_2010\_Lohmander.ppt</a> <a href="http://www.lohmander.com/EBB\_2010.pdf">http://www.lohmander.com/EBB\_2010.pdf</a>

#### **2009:**

Lohmander, P., chairman of the complete international conference "European Biomass and Bioenergy Forum, Marcus Evans, London, UK, 8-9 June, 2009". <a href="http://www.lohmander.com/London09.pdf">http://www.lohmander.com/London09.pdf</a> and <a href="http://www.lohmander.com/London09/London Lohmander">http://www.lohmander.com/London09/London Lohmander</a> 09.ppt

Lohmander, P., chairman of the final day of the international conference "Economics of forestry and the forest sector, Saint Petersburg, Russia, 26-27 March 2009". http://www.lohmander.com/RuMa09/RuMa09.htm

#### 2008:

Lohmander, P., chairman of the complete conference "Energy Forum, Stockholm, 6-7 Feb 2008". <a href="http://www.energyforum.com/events/conferences/2008/c802/program.php">http://www.energyforum.com/events/conferences/2008/c802/program.php</a> and <a href="http://www.lohmander.com/EF2008/EF2008Lohmander.htm">http://www.lohmander.com/EF2008/EF2008Lohmander.htm</a>

#### **2007:**

Lohmander, P., cluster chair of the international cluster "Operations Research in the Forest Sector, INFORMS International, Puerto Rico, USA, 2007." The Institute for Operations Research and the Management Sciences (INFORMS) is the largest professional society in the world for professionals in the field of operations research (O.R.). It was established in 1995 with the merger of the Operations Research Society of America (ORSA) and The Institute of Management Sciences (TIMS). <a href="http://www.lohmander.com/ORForSec07.doc">http://www.lohmander.com/ORForSec07.doc</a> and <a href="http://www.lohmander.com/SDO.ppt">http://www.lohmander.com/SDO.ppt</a>

## **Future and Past Conferences, Presentations and Courses:**

http://www.lohmander.com/Kurser/Kurser.htm

## **Publications:**

http://www.lohmander.com/Information/Ref.htm

#### The Bord of the Professors Union

I am the SLU member of the board of the professors union in Umea.

## The Board of the Swedish University Professors, SULF

I am the only member of the board of SULF from SLU.

# **PhD Supervision**

I have been supervisor and advisor of five PhD students that have already defended their doctor degrees and become doctors. Two of these former PhD students are now professors. Three of my PhD students that have obtained their PhDs have come from P.R. China, one from Iran and one from Sweden.

#### Language:

Swedish (Excellent), English (Excellent), German (Fair)

Explanations:

I was born in Sweden and has lived there most of my life. I have studied in Swedish schools, high schools and universities. I have written many reports, articles and other texts in Swedish and also been teaching in Swedish at different levels. I obtained the highest possible grade, 5, in the Swedish language, in high school.

I have been writing most of my scientific articles in English and have organized and chaired many international conferences, excursions and other events in English. I have been working in English when I have evaluated candidates for positions as university professors in different countries (USA and Finland), I have been referee in many scientific journals, PhD opponent, and PhD committee member. During the years, I have also been giving many courses at PhD, graduate and undergraduate levels in the English language, in many different countries. Most of the work is performed using the English language. I obtained the highest possible grade, 5, in the English language, in high school.

I obtained the highest possible grade, 5, in the German language, in high school. Occationally, I have been using the German language, in countries such as Austria and Germany, during international excursions, conferences and scientific discussions at universities. (With a week of conversation, the German language competence could rapidly be updated.)

## **Research, Theory and Methods:**

My research has been focusing on these things:

Development of methods for optimization, in particular in dynamic and stochastic decision problems. Most of the theoretical work has concerned optimization methods where adaptive controls can be adjusted over time, sequentially, as a result of the latest observations of the state of the underlying system. Relevant methods in this class are stochastic dynamic programming in discrete time, with discrete and/or continuous state space, and stochastic optimal control in continuous time, usually with continuous state space.

Analytical derivations of optimal control functions and investigations of how the optimal controls are affected by changes in the decision problems. The sensitivity of the optimal control to different properties of the decision problem, such as properties of dynamic growth functions, stochastic parameters and constraints.

Estimations of stochastic processes of relevance to forestry, such as price and cost processes and windthrows. Processes of this type are necessary background information when the optimal stochastic control problems in forestry should be solved.

Linear and quadratic programming in combinations with stochastic dynamic programming within Markov decision problem definitions.

Dynamic game theory in continuous and discrete time, with mixed and pure strategies, with solutions determined with marginal policy adjustments and/or with linear programming.

Applications of the general methods to problems in companies and other organizations in the forest sector and connected sectors such as the energy sector, logistics and infrastructure.

# **Course Development, Lectures, Administration and Management:**

I have been developing and giving a large number of courses, at all levels, covering most parts of management and business administration and relevant economics with applications to the forest sector. Such courses have covered forest economics, forest management planning, general management, optimization and operations research at all levels (kostnads- intäktsanalys med optimering), industrial economics, different economic forest logistics courses, finance, natural resource economics, trade theory, international markets, forest taxation, and many different courses of micro economics.

The student groups have been found in several countries, from undergraduates to PhD students. I have been teaching students of forestry, engineering, business administration and economics. I have been developing and giving a large number of courses, at all levels, focusing on optimization of decisions in typical problems in the companies in the forest sector.

Some periods, I have also had administrative responsibility for all business, management and economics courses (in the capacity of "studierektor") and department head (as prefekt or "department chair").

I have been the main supervisor of five PhD students that have already defended their PhD theses and become doctors. Two of these former PhD students are now full professors. The number of master theses that I have been the supervisor of is large. I have been the supervisor of approximately 20 such master students. Two of them obtained prices for the "best master theses".

## **Internet information**

Information, publications, courses and conferences, web software and other options, are available from: http://www.lohmander.com/

Conference information, online articles, internet software, conference presentations, TV-broadcasts, radio broadcast, pictures from different events, course schedules and reading instructions are found there.

# **APPENDIX**

Information with special emphasis on Mathematical Statistics, Operations Research and Optimization By Peter Lohmander 2013-02-27

## Research, Theory and Methods:

In my research, lectures and supervision, I have been focusing on development of general methods for decision optimization in dynamic and stochastic decision problems. This includes mathematical models for optimal control in discrete and continuous time, for discrete and continuous state spaces, and for different classes of problems. Statistical estimations of relevant functions, parameters and processes have often been necessary parts of the work. Furthermore, in many cases, computer codes have been constructed in order to solve the corresponding problems numerically. Relevance to the forest sector has been a guiding principle. Applications of the general methods to problems in the companies and other organizations in the forest sector have often been made.

### **Present position**

Professor of forest management and economic optimization, SLU, Faculty of Forest Sciences, since the year 2000. Optimization is a key activity within all of my work.

## PhD thesis, defended at SLU, 1987

PhD Thesis: The economics of forest management under risk

Contents: Stochastic dynamic and spatial optimization of activities in forestry. Estimations of spatial windthrow probability functions with logistic functions and empirical forest data from Denmark. Estimations of autoregressive stochastic processes representing the real wood prices in Finland, Sweden and Norway. Estimation of forest growth functions via exact polynomial approximations. Development of a general stochastic optimal stopping model, comparative statics analysis and applications to optimal forest harvesting in forestry. Development of a general spatial multi stand optimal forest harvesting model under the influence of stochastic winds, in which the different stands protect each other in case they have not yet been harvested. The degree of wind protection is a function of the continuously changing stand properties, that are described via estimated functions derived via approximations of forest production function data. Development of a general stochastic dynamic programming model for continuous harvesting, where prices and growth are two stochastic processes and the control is the harvest level. Development of optimization software that was used to analyse the problems in the thesis.

One member of my PhD committee:

Professor of Mathematical Statistics Mats Rudemo, Chalmers University of Technology, Gothenburg. <a href="http://www.math.chalmers.se/~rudemo/">http://www.math.chalmers.se/~rudemo/</a>

### **International Institute for Applied Systems Analysis**

International education for PhD students, Systems and Decisions Sciences, IIASA, International Institute for Applied Systems Analysis, Vienna, 1985.

At SDS, IIASA, I wrote two IIASA reports that were fundamental version of two of the articles that were included in the PhD thesis. These were published at IIASA and were also published as scientific articles in the international journal Systems- Analysis-Modelling-Simulation. At IIASA, I also gave two seminars in the Systems and Decisions Sciences seminar series.

IIASA has been a world leading institute during many years and a very limited number of PhD students from many countries were accepted to IIASA each year. Chair, Professor Kurzhanski, SDS at IIASA, nominated one

PhD student, me, for the Pecci Scholars Award. The Award was however given to a PhD student at another department of IIASA that year. In any case, this nomination was a great honour. My supervisor at IIASA:

Professor of Mathematics, Academician, Russian Academy of Sciences, Deputy Director of IIASA, Chair of Systems and Decisions Sciences, PhD, Alexandr B., Kurzhanski.

A Tribute in Honor of Alexandr Borisovich Kurzhanski at his Seventieth Birthday, Differential Equations, 2009, Vol 24, No. 11:

http://link.springer.com/article/10.1134%2FS0012266109110012?LI=true#page-1

## **Master thesis in Mathematical Statistics**

Master of Science in Forestry, Forester, with master thesis in mathematical statistics, 1981 (Civiljägmästare med examensarbete i skoglig matematisk statistik, 1981)

My supervisor: **Professor of Mathematical Statistics, PhD, Bertil Matern, SLU** http://books.google.se/books/about/Spatial\_variation.html?id=s-xczaXRptoC&redir\_esc=y

# Supervision of PhD students and Master Students

I have been the main supervisor of five PhD students that have already defended their PhD theses and become doctors. Two of these former PhD students are now full professors. All five PhD projects and students that I have been supervising have been directed towards optimization in the forest sector. My PhD Students have been mathematicians and PhD students with different backgrounds from China, Sweden and Iran.

The number of master theses that I have been the supervisor of is large. I have been the supervisor of approximately twenty such master students. Two of them obtained prices for the "best master theses".

## Organizer, Chair and Key note speaker at large international conferences

The complete lists of references and conferences are found here: <a href="http://www.lohmander.com/Information/Ref.htm">http://www.lohmander.com/Information/Ref.htm</a>, <a href="http://www.lohmander.com/Kurser/Kurser.htm">http://www.lohmander.com/Kurser/Kurser.htm</a>

I have organized and chaired many international conferences in the areas of operations research, forest sciences and bioenergy. Below, you find a fraction of these:

2007: I was cluster chair of the international cluster "Operations Research in the Forest Sector, INFORMS International, Puerto Rico, USA, 2007." **The Institute for Operations Research and the Management Sciences (INFORMS)** is the largest professional society in the world for professionals in the field of operations research (O.R.). It was established in 1995 with the merger of the Operations Research Society of America (ORSA) and The Institute of Management Sciences (TIMS).

http://www.lohmander.com/ORForSec07.doc and http://www.lohmander.com/SDO.ppt

2008: I was chairman of the complete conference "**Energy Forum**, Stockholm, 6-7 Feb 2008". <a href="http://www.energyforum.com/events/conferences/2008/c802/program.php">http://www.energyforum.com/events/conferences/2008/c802/program.php</a> and

http://www.lohmander.com/EF2008/EF2008Lohmander.htm

2009: I was chairman of the final day of the international conference "**Economics of forestry and the forest sector, Saint Petersburg**, Russia, 26-27 March 2009". http://www.lohmander.com/RuMa09/RuMa09.htm

2009: I was chairman of the complete international conference "European Biomass and Bioenergy Forum, MarcusEvans, London, UK, 8-9 June, 2009". <a href="http://www.lohmander.com/London09.pdf">http://www.lohmander.com/London09.pdf</a> and <a href="http://www.lohmander.com/London09/London">http://www.lohmander.com/London09/London</a> Lohmander 09.ppt

In 2010, among many other conferences, I chaired one day of 3rd Annual European Biomass and Bioenergy Forum, Stockholm I also gave the following presentation:

Lohmander, P., Optimum combination of biomass production with investments in infrastructure, CD, MarcusEvans, 3rd Annual European Biomass and Bioenergy Forum, Stockholm, 13th - 15th September 2010, <a href="http://www.lohmander.com/EBBF">http://www.lohmander.com/EBBF</a> 2010 Lohmander.ppt <a href="http://www.lohmander.com/EBBB">http://www.lohmander.com/EBB</a> 2010.pdf

A few days later, I was the only non-Russian Plenary Speaker in Moscow at the following conference:

Lohmander, P., Methodology for optimization of coordinated forestry, bioenergy and infrastructure investments with focus on Russian Federation, Plenary Report and Abstract, Forests of Eurasia, Publishing House of Moscow State Forest University, September 19 - 25, 2010

http://www.lohmander.com/Moscow10/Moscow10 PL.pdf

http://www.lohmander.com/Moscow10/Moscow10\_PL.doc

http://www.lohmander.com/Moscow\_PL\_2010.pdf

http://www.lohmander.com/Moscow 2010/Lohmander Moscow 2010.ppt

http://www.lohmander.com/Moscow 2010/Programma-LE 10 01.doc

I gave many more conference talks in 2011, such as:

Lohmander, P., **KEYNOTE:** Economic optimization of sustainable energy systems based on forest resources with consideration of the global warming problem: International perspectives, at SSAFR-2011, **14th Symposium for Systems Analysis in Forestry**, Abstracts, Maitencillo, Chile, March 8-11, 2011, 
<a href="http://www.sistemasdeingenieria.cl/seminarios/index.php?id\_seminario=22&idioma=en&pagina=participantes">http://www.sistemasdeingenieria.cl/seminarios/index.php?id\_seminario=22&idioma=en&pagina=participantes</a>

<a href="http://www.lohmander.com/Chile\_2011/Chile\_2011">http://www.lohmander.com/Chile\_2011</a> Keynote Lohmander.ppt

Lohmander, P., Spatial dynamic optimization of district heating and/or cooling systems based on forest resources, SSAFR-2011, **14th Symposium for Systems Analysis in Forestry**, Abstracts, Maitencillo, Chile, March 8-11, 2011,

http://www.lohmander.com/Chile 2011/Chile 2011 Spatial Lohmander.ppt

Lohmander, P., Optimization of the forest and bioenergy supply chain in Sweden, SSAFR-2011, **14th** Symposium for Systems Analysis in Forestry, Maitencillo, Chile, March 8-11, 2011, <a href="http://www.lohmander.com/Chile">http://www.lohmander.com/Chile</a> 2011/Chile 2011 Chain Lohmander.ppt

Lohmander, P., Zazykina, L., Dynamic economical optimization of sustainable forest harvesting in Russia with consideration of energy, other forest products and recreation, SSAFR-2011, **14th Symposium for Systems Analysis in Forestry**, Abstracts, Maitencillo, Chile, March 8-11, 2011, <a href="http://www.lohmander.com/Chile">http://www.lohmander.com/Chile</a> 2011/Chile 2011 Dynamic Lohmander.ppt

Lohmander, P., Optimal ekonomisk skogs och energipolicy, **Energiutblick 2011, Energimyndigheten**, Bioenergi för småskalig kraftvärme, Mars 2011, <a href="http://www.lohmander.com/Energiutblick 2011 Lohmander.ppt">http://www.lohmander.com/Energiutblick 2011 Lohmander.ppt</a>

Lohmander, P. (Chair) TRACK: Finance, Strategic Planning, Industrialization and Commercialization, BIT's 1st World Congress on Bioenergy, Dalian World Expo Center,

Dalian, China, April 25-30, 2011

http://www.bitlifesciences.com/wcbe2011/fullprogram\_track5.asp

http://www.lohmander.com/PRChina11/Track\_WorldCongress11\_PL.pdf

http://www.lohmander.com/ChinaPic11/Track5.ppt

Lohmander, P., Economic forest management with consideration of the forest and energy industries, **BIT's 1st World Congress on Bioenergy**, Dalian World Expo Center, Dalian, China, April 25-30, 2011 <a href="http://www.lohmander.com/PRChina11/WorldCongress11\_PL.pdf">http://www.lohmander.com/PRChina11/WorldCongress11\_PL.pdf</a>
<a href="http://www.lohmander.com/ChinaPic11/LohmanderTalk.ppt">http://www.lohmander.com/ChinaPic11/LohmanderTalk.ppt</a>

Lohmander, P., Optimization in forestry - Motivation, principles, methods and results,

Forest Ecology and Management Seminar Series of SLU, Umea, December 13, 2011

http://www.lohmander.com/PLTalk111213.ppt

http://www.lohmander.com/PLTalk111213 slides.pdf

In 2012, many more presentations followed:

Lohmander, P., Optimal Forest Management in Sweden with Consideration of the Forest and Energy Industries and Pulpwood Cartels, NCSU, North Carolina State University, Operations Research Dept., March 20, 2012

http://www.lohmander.com/PLNCSU120320.ppt

http://www.lohmander.com/PLNCSU120320.pdf

http://www.lohmander.com/PLNCSU2012.pdf

http://www.lohmander.com/PLNCSU2012.doc

Lohmander, P., The Economics of Forest Biomass and a Rational European Carbon Policy,

NCSU, North Carolina State University, Pulp and Paper Laboratory, March 22, 2012

http://www.lohmander.com/PLNCSU120322.ppt

http://www.lohmander.com/PLNCSU120322.pdf

http://www.lohmander.com/PLNCSU2012.pdf

http://www.lohmander.com/PLNCSU2012.doc

Lohmander, P. (Chair) TRACK 1: Global Bioenergy, Economy and Policy,

BIT's 2nd World Congress on Bioenergy,

Xi'an, China, April 25-28, 2012

http://www.Lohmander.com/Schedule China 2012.pdf

http://www.Lohmander.com/PLWCBE12intro.ppt

Lohmander, P., Economic optimization of sustainable energy systems based on forest resources with consideration of the global warming problem: International perspectives,

BIT's 2nd World Congress on Bioenergy, Xi'an, China, April 25-28, 2012

http://www.Lohmander.com/WorldCongress12 PL.pdf

http://www.Lohmander.com/WorldCongress12\_PL.doc

http://www.Lohmander.com/PLWCBE12.ppt

Lohmander, P., Lectures at **Shandong Agricultural University**, April 29 - May 1, 2012, Jinan, China, http://www.Lohmander.com/PLJinan12.ppt

Lohmander, P., Kontinuerligt skogsbruk - **Optimala lösningar** och jämförelser med slutavverkningsskogsbruk Fastighetsvärdering - Skog, Temadag, **Lantmäteriet**, Stockholm, May 10, 2012

http://www.lohmander.com/PLLM120510.ppt

http://www.lohmander.com/PLLM120510.pdf

http://www.lohmander.com/PLLM120510small.pdf

http://www.lohmander.com/PLTema120510.pdf

Lohmander, P., Rationella naturresursbeslut mht två intressenter, Exempel på hur rennäring och skogsbruk kan fastställa rationella åtgärder med hjälp av optimering där rennäringen får bästa möjliga utfall för varje kostnadsnivå för skogsbruket, **SSR**, **Svenska Samernas Riksförbund**,121210,

http://www.Lohmander.com/PL\_Rationella\_naturresursbeslut\_SSR\_121210.ppt

http://www.Lohmander.com/PL Rationella naturresursbeslut SSR 121210.pdf

http://www.Lohmander.com/PL\_Pareto\_Examples\_121101.txt

http://www.Lohmander.com/PL Pareto 121101.xls

#### More conferences, courses and meetings are found here:

 $\underline{http://www.lohmander.com/Kurser/Kurser.htm}$ 

### **Development of optimization software for applications**

Links to software that I have developed, which is available via the Internet:

http://www.lohmander.com/Program/Program.htm

## Some PhD courses in mathematical statistics that I have developed and given:

#### **Optimization in Dynamic and Stochastic Decision Problems**

http://www.lohmander.com/ODSDP 2011/ODSDP 2011.pdf,

(I have given this course several years and will give the same course in the autumn of 2013, September 2 – October 4. PhD students from many countries have followed this course.)

#### Applied problem solving via computer programming

http://www.lohmander.com/AppPro.pdf

(I have given this course for PhD students from different departments.)

#### Discrete optimization

A PhD course given at Mid Sweden University in Sundsvall. The course was last time given for PhD students in mathematics from all Swedish universities. I gave one part of this course. The course was coordinated by **Professor Mårten Gulliksson, Matematik**, Mid Sweden University,

http://www2.math.uu.se/fmb/courseinfo\_do/discreteo\_spec.html

#### Example of suggestions presented in connection to PhD defence:

Lohmander, P., The PhD chair of defence, gives research suggestions for the future in the area of rational environmental compensation in multi species problems with raptors and polar foxes under the influence of wind power expansion, SLU, Umea, Sweden, 120518, <a href="http://www.Lohmander.com/PLint120518.ppt">http://www.Lohmander.com/PLint120518.ppt</a> <a href="http://www.Lohmander.com/PLint120518.ppt">http://www.Lohmander.com/PLint120518.ppt</a>

#### Some articles and reports in mathematical statistics

A more complete reference list is found from this link: http://www.lohmander.com/Information/Ref.htm

Lohmander, P., Product price risk and the investment intensity in a two stage decision process, The 14'th conference on stochastic processes and their applications, The Bernoulli Society for Mathematical Statistics and Probability, Abstracts, Chalmers, Gothenburg, Sweden, 1984

Lohmander, P., Continuous extraction under risk, IIASA, International Institute for Applied Systems Analysis, Systems and Decisions Sciences, WP-86-16, March 1986

http://www.iiasa.ac.at/Admin/PUB/Documents/WP-86-016.pdf

http://www.lohmander.com/WP-86-016.pdf

Lohmander, P., Pulse extraction under risk and a numerical forestry application, IIASA, International Institute for Applied Systems Analysis,

Systems and Decisions Sciences, WP-87-49, June 1987

http://www.iiasa.ac.at/Admin/PUB/Documents/WP-87-049.pdf

http://www.lohmander.com/WP-87-049.pdf

Lohmander, P., Helles F., Skovstruktur og stormfald, En analyse af novemberstormen 1981, Dansk Skovforenings Tidskrift, No. 3, 1987

Lohmander, P., The economics of forest management under risk, Swedish University of Agricultural Sciences, Dept. of Forest Economics, Report 79, 1987 (Doctoral dissertation) (Doktorsavhandling), 311p

Lohmander, P., Helles, F., Windthrow probability as a function of stand characteristics and shelter, SCANDINAVIAN JOURNAL OF FOREST RESEARCH, Vol. 2, No. 2, 227-238, 1987

Lohmander, P., Ekonomiskt optimal avverkning med hansyn till stormfallningar, SKOGSBRUKETS EKONOMI, Skogsfakta Konferens, No. 11, 32-37, 1988

Lohmander, P., Continuous extraction under risk, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 5, No. 2, 131-151, 1988

Lohmander, P., Pulse extraction under risk and a numerical forestry application, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 5, No. 4, 339-354, 1988

Lohmander, P., Optimal resource control in continuous time without Hamiltonian functions, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 6, No. 6, 421-437, 1989

Lohmander, P., Stochastic dynamic programming with a linear programming subroutine: Application to adaptive planning and coordination in the forest industry enterprise, in Lohmander P. (editor), SCANDINAVIAN FOREST ECONOMICS, No. 31, 51p, 1989

Lohmander, P., A quantitative adaptive optimization model for resource harvesting in a stochastic environment, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 7, No. 1, 29-49, 1990

Lohmander, P., The rotation age, the constrained Faustmann problem and the initial conditions, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 7, No. 5, 377-395, 1990

Lohmander, P., Stochastic dynamic programming with multi-dimensional polynomial objective function approximations: - A tool for adaptive economic forest management, Swedish University of Agricultural Sciences, Dept. of Forest Economics, WP-120, 49p, 1990

Lohmander, P., Optimal forest harvesting over time in the presence of air pollution and growth reduction, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 8, No. 7, 539-563, 1991

Lohmander, P., The multi species forest stand, stochastic prices and adaptive selective thinning, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 9, 229-250, 1992

Lohmander, P., Continuous harvesting with a nonlinear stock dependent growth function and stochastic prices: Optimization of the adaptive stock control function via a stochastic quasi-gradient method, in: Hagner, M. (editor), Silvicultural Alternatives, Proceedings from an internordic workshop, June 22-25, 1992, Swedish University of Agricultural Sciences, Dept. of Silviculture, No. 35, 198-214, 1992

Lohmander, P., The optimal dynamic production and stock levels under the influence of stochastic demand and production cost functions: Theory and application to the pulp industry enterprise, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol.10, Issue 2, 1992

Lohmander, P., Adaptive economic forest management - recent findings, Swedish University of Agricultural Sciences, Dept. of Forest Economics, WP-152, 1992

Lohmander, P., Economic two stage multi period species management in a stochastic environment: The value of selective thinning options and stochastic growth parameters, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 11, 287-302, 1993

Lohmander, P., Decision optimization with stochastic simulation subroutines: Relation to analytical optimization of capacity investment and production, presented at the "4'thInternational Conference of Systems Analysis and Simulation 1992", SYSTEMSANALYSIS - MODELLING - SIMULATION, Vol. 10, 279-314, 1993

Lohmander, P., Adaptive decision making in forestry, in: Paredes G. (editor), Forest management and planning in a competitive and environmentally concious world, proceedings from: International Symposium on Systems Analysis and Management Decisions in Forestry, March 9-12, 1993, Valdivia, Chile, 411-421, 1994

Lohmander, P., The economically optimal number of plants, the damage probability and the stochastic roundwood market, in Paredes, G. (editor), Forest management in acompetitive and environmentally concious world, proceedings from: International Symposium on Systems Analysis and Management Decisions in Forestry, March 9-12, Valdivia, 1993, Chile, 290-314, 1994

Lohmander, P., Adaptive transportation and production in a multi factory forest company with regionally distributed stochastic roundwood prices, in: Helles, F., Linddal, M. (editors), SCANDINAVIAN FOREST ECONOMICS, Proceedings from the biennial meeting of the Scandinavian Society of Forest Economics, Denmark, November 1993, No. 35, 1994

Lohmander, P., Qualitative conclusions in dynamic resource economics and the consequences of alternative models, in: Helles, F., Linddal, M. (editors), SCANDINAVIAN FOREST ECONOMICS, Proceedings from the biennial meeting of the Scandinavian Society of Forest Economics, Denmark, November, 1993, No.35, 153-164, 1994

Lohmander, P., Expansion dynamics and noncooperative decisions in stochastic markets: - Theory and pulp industry application, in: Helles, F., Linddal, M. (editors), SCANDINAVIAN FOREST ECONOMICS, Proceedings from the Scandinavian Society of Forest Economics, Denmark, November, 1993, No. 35, 1994

Lohmander, P., Reservation price models in forest management: Errors in the estimation of probability density function parameters and optimal adjustment of the biasfree point estimates, Management Systems for a Global Forest Economy with Global Resource Concerns, Society of American Foresters, Asilomar, California, September 1994, Brodie, D. & Sessions, J., (Editors), College of Forestry, Oregon State University, Corvallis, Oregon, USA, 439-456, 1995

Lohmander, P., Optimization of decentralized adaptive truck decision rules: - A spatial dynamic stochastic forest company problem, paper presented at the "Natural Resource Management Cluster" of the TIMS/ORSA meeting, Los Angeles, April 23-26, 1995(See also 1997)

Lohmander, P., The optimal production capacity when product prices vary: - Explicit functions and a forest industry application (Abstract), IFORS 96, International Federation of Operations Research Societies, 14th Triennial Conference, Vancouver B.C., July, 1996

Lohmander, P., Optimization of decentralized adaptive truck decision rules: - A spatial dynamic stochastic forest company problem, paper presented at the "Natural Resource Management Cluster" of the TIMS/ORSA meeting, Los Angeles, April 23-26, 1995, and at the general meeting of Scandinavian Society of Forest Economics, Finland, 1996, in Saastamoinen, O. & Tikka S., (Editors), SCANDINAVIAN FOREST ECONOMICS, 36:, 73-87, 1997

Lohmander, P., The constrained probability orbit of mixed strategy games with marginal adjustment: General theory and timber market application, SYSTEMS ANALYSIS - MODELLING - SIMULATION, Vol. 29, 27-55, 1997

Lohmander, P., Economically optimal harvesting over time, forest act constraints, economies of scale in harvesting operations and stochastic markets, in: Lohmander, P., (Editor), 1999, Proceedings of the Biennial Meeting of the Scandinavian Society of Forest Economics, Umeå, Sweden, May - June 1998, SCANDINAVIAN FOREST ECONOMICS, No. 37, 9p, 1999

Lohmander, P., Optimal sequential forestry decisions under risk, ANNALS OF OPERATIONS RESEARCH, Vol. 95, pp. 217-228, 2000

Lohmander, P., Optimal "continuous" harvesting in forestry, economies of scale and stochastic prices, in EURO 2001, The European Operational Research conference, Rotterdam, The Netherlands, July 9-11, 2001, ABSTRACTS, Association of European Operational Research Societies, 2001, http://www-sekon.SLU.se/~PLO/euroXViii/Prelprogram.html

Lohmander, P., Optimal forestry decisions under risk when there are global constraints, in EURO 2001, The European Operational Research conference, Rotterdam, The Netherlands, July 9-11, 2001, ABSTRACTS, Association of European Operational Research Societies, 2001, http://www-sekon.SLU.se/~PLO/euroXViii/Prelprogram.html

Lohmander, P., Optimala beslut inför osäker framtid, FAKTA SKOG, SUAS, Nr 10, 2001

Lohmander, P., On risk and uncertainty in forest management planning systems, in: Heikkinen, J., Korhonen, K. T., Siitonen, M., Strandström, M and Tomppo, E. (eds). 2002. Nordic trends in forest inventory, management planning and modelling. Proceedings of SNS Meeting in Solvalla, Finland, April 17-19, 2001. Finnish Forest Research Institute, Research Papers 860, p 155-162, ISBN 951-40-1840-0, ISSN 0385-4283

Lohmander, P., Olsson, L., Adaptive optimisation in the roundwood supply chain, in Olsson L., Optimisation of forest road investments and the roundwood supply chain, Doctoral Thesis, Acta Universitatis Agriculturae Sueciae. Silvestria nr 310, 2004

Lohmander, P., Adaptive stochastic harvest scheduling with constraints at the forest property level, (Abstract book), New Opportunities for Operations Research, EURO/INFORMS (= The Association of European Operational Research Societies / Institute for Operations Research and the Management Sciences), Forestry Management Cluster, Istanbul, July 06-10, 2003

Lohmander, P., Optimal deterministic and stochastic continuous cover forestry, (Abstract book), New Opportunities for Operations Research, EURO/INFORMS (= The Association of European Operational Research Societies / Institute for Operations Research and the Management Sciences), Forestry Management Cluster, Istanbul, July 06-10, 2003

Lohmander, P., Optimal decentralized tactical decisions of isolated blue units behind red lines, (Abstract book), New Opportunities for Operations Research, EURO/INFORMS (= The Association of European Operational Research Societies / Institute for Operations Research and the Management Sciences), Military Operations Research Cluster, Istanbul, July 06-10, 2003, Connected information: <a href="http://www.lohmander.com/mil/MilDir.html">http://www.lohmander.com/mil/MilDir.html</a>

Lu, F., Lohmander, P., Optimal mixed stand management under risk, in Lu, F., Optimization of forest management decision making under conditions of risk, Doctoral Thesis, Acta Universitatis Agriculturae Sueciae, Swedish University of Agricultural Sciences, No. 333, 2004

Lohmander, P., Optimal Continuous Cover Forest Management with Stochastic Prices and Set up Costs, INFORMS annual meeting 2004, Denver, Colorado, USA, Abstracts, <a href="http://www.informs.org/conf/Denver2004/">http://www.informs.org/conf/Denver2004/</a>

Olsson, L., Lohmander, P., Optimal forest transportation with respect to road investments, FOREST POLICY AND ECONOMICS, No 7, 369-379, 2005

Lohmander, P., Adaptive Optimization of Forest Management in a Stochastic World, Abstracts, IFORS 2005, Institute for Operations Research and the Management Sciences, 2005, <a href="http://www.informs.org/Conf/IFORS2005/">http://www.informs.org/Conf/IFORS2005/</a>

Mohammadi, L.S., Lohmander, P., Stumpage prices in the Iranian Caspian forests, in Mohammadi L. S., Economically optimal values and decisions in Iranian forest management, Doctoral Thesis No. 2006:91, Faculty of forest Sciences, SLU, Acta Universitatis Agriculturae Sueciae, 2006

Lohmander, P., Mohammadi, L.S., Optimal continuous cover forest management in an uneven-aged forest in the North of Iran, (submitted) and in Mohammadi L. S., Economically optimal values and decisions in Iranian forest management, Doctoral Thesis No. 2006:91, Faculty of forest Sciences, SLU, Acta Universitatis Agriculturae Sueciae, 2006

Mohammadi, L.S., Lohmander, P., A game theory approach to the Iranian forest industry raw material market, Scandinavian Forest Economics No. 41, 2006 and (marginally updated) in Mohammadi, L. S., Economically optimal values and decisions in Iranian forest management, Doctoral Thesis No. 2006:91, Faculty of forest Sciences, SLU, Acta Universitatis Agriculturae Sueciae, 2006

Lohmander, P., Stochastic Dynamic Optimization of Forest Industry Company Management, INFORMS International Meeting 2007, Puerto Rico, Power Point Presentation, <a href="http://www.Lohmander.com/SDO.ppt">http://www.Lohmander.com/SDO.ppt</a>

Lohmander, P., A Stochastic Differential (Difference) Game Model With an LP Subroutine for Mixed and Pure Strategy Optimization, INFORMS International Meeting 2007, Puerto Rico, Power Point Presentation, <a href="http://www.Lohmander.com/SDG.ppt">http://www.Lohmander.com/SDG.ppt</a>

Lohmander, P., Adaptive Optimization of Forest Management in a Stochastic World, in Weintraub A. et al (Editors), Handbook of Operations Research in Natural Resources, Springer, Springer Science, International Series in Operations Research and Management Science, New York, USA, pp 525-544, 2007 <a href="http://www.amazon.ca/gp/reader/0387718141/ref=sib\_dp\_pt/701-0734992-1741115#reader-link">http://www.amazon.ca/gp/reader/0387718141/ref=sib\_dp\_pt/701-0734992-1741115#reader-link</a>

Mohammadi, L.S., Lohmander, P., Stumpage Prices in the Iranian Caspian Forests, Asian Journal of Plant Sciences, 6 (7): 1027-1036, 2007, ISSN 1682-3974, 2007 Asian Network for Scientific Information, <a href="http://ansijournals.com/ajps/2007/1027-1036.pdf">http://ansijournals.com/ajps/2007/1027-1036.pdf</a> <a href="http://www.Lohmander.com/MoLo2007.pdf">http://www.Lohmander.com/MoLo2007.pdf</a>

Lohmander, P., Mohammadi, S., Optimal Continuous Cover Forest Management in an Uneven-Aged Forest in the North of Iran, Journal of Applied Sciences 8(11), 2008 http://ansijournals.com/jas/2008/1995-2007.pdf http://www.Lohmander.com/LoMoOCC.pdf

Mohammadi, L.S., Lohmander, P., A game theory approach to the Iranian forest industry raw material market, Caspian Journal of Environmental Sciences, Vol 6, No1, pp. 59-71, 2008 <a href="http://research.guilan.ac.ir/cjes/.papers/969.pdf">http://research.guilan.ac.ir/cjes/.papers/969.pdf</a> <a href="http://www.Lohmander.com/MoLoAGTA.pdf">http://www.Lohmander.com/MoLoAGTA.pdf</a>

Lohmander, P., Guidelines for Economically Rational and Coordinated Dynamic Development of the Forest and Bio Energy Sectors with CO2 constraints, Proceedings from the 16th European Biomass Conference and Exhibition, Valencia, Spain, 02-06 June, 2008 (In the version in the link, below, an earlier misprint has been corrected.) <a href="http://www.Lohmander.com/Valencia2008.pdf">http://www.Lohmander.com/Valencia2008.pdf</a>

Lohmander, P., Strategic options for the forest sector in Russia with focus on economic optimization, energy and sustainability (Full paper in English with short translation to Russian), ICFFI News, Vol. 1, Number 10, March 2009

Lu, F., Lohmander, P., Optimal Decisions for Mixed Forests under Risk, Scientia Silvae Sinicae, Vol. 45, No. 11, Nov. 2009, <a href="http://www.Lohmander.com/Lu Lohmander 2009.pdf">http://www.Lohmander.com/Lu Lohmander 2009.pdf</a>

Lohmander, P., Zazykina, L., Rational and sustainable utilization of forest resources with consideration of recreation and tourism, bioenergy, the global warming problem, paper pulp and timber production: A mathematical approach, Proceedings of the II international workshop on Ecological tourism, Trends and perspectives on development in the global world, Saint Petersburg Forest Technical Academy, April 15-16, 2010

Zazykina, L., Lohmander, P., The utility of recreation as a function of site characteristics: Methodological suggestions and a preliminary analysis, Proceedings of the II international workshop on Ecological tourism, Trends and perspectives on development in the global world, Saint Petersburg Forest Technical Academy, April 15-16, 2010

Mohammadi Limaei, S. Lohmander, P. and Obersteiner, M. 2010. Decision making in forest management with consideration of stochastic prices, Iranian Journal of Operations Research, Vol.2, No.1, pp.32-40 http://www.Lohmander.com/LiLoOb2010.pdf

Lohmander, P., Gedigna kunskaper i matematik är absolut nödvändiga, Universitetsläraren, Debatt, Nr 8, 2010 <a href="http://www.Lohmander.com/Sulf\_8\_10.pdf">http://www.Lohmander.com/Sulf\_8\_10.pdf</a>

Lohmander, P., Optimal economic decision rules in the biomass supply chain with CO2 considerations Abstract, ALIO-INFORMS Joint International Meeting, Buenos Aires, June 6-9, 2010 <a href="http://www.lohmander.com/INFORMS2010a.ppt">http://www.lohmander.com/INFORMS2010a.ppt</a>

Lohmander, P., Optimization of the forest and bioenergy supply chain in Sweden, Abstract, ALIO-INFORMS Joint International Meeting, Buenos Aires, June 6-9, 2010, <a href="http://www.lohmander.com/INFORMS2010b.ppt">http://www.lohmander.com/INFORMS2010b.ppt</a>

Lohmander, P., An international supply chain optimization approach to sustainable bioenergy and forest sectors Abstract, ALIO-INFORMS Joint International Meeting, Buenos Aires, June 6-9, 2010 <a href="http://www.lohmander.com/INFORMS2010c.ppt">http://www.lohmander.com/INFORMS2010c.ppt</a>

Lohmander, P., DHINV, Program for dynamic optimization of district heating and cooling systems investments in a region, Appendix 4 in: Lacruz, R.F., Economically optimal coordinated expansion of district heating, CHP and bioenergy in a region, SLU, Umea, Dept. of Forest Economics, September, 2010 <a href="http://www.Lohmander.com/Lacruz\_sept\_2010.pdf">http://www.Lohmander.com/Lacruz\_sept\_2010.pdf</a>

Lohmander, P., Optimum combination of biomass production with investments in infrastructure, CD, MarcusEvans, 3rd Annual European Biomass and Bioenergy Forum, Stockholm, 13th - 15th September 2010 <a href="http://www.lohmander.com/EBBF\_2010\_Lohmander.ppt">http://www.lohmander.com/EBB\_2010\_Lohmander.ppt</a>, <a href="http://www.lohmander.com/EBB\_2010.pdf">http://www.lohmander.com/EBB\_2010.pdf</a>

Lohmander, P., Methodology for optimization of coordinated forestry, bioenergy and infrastructure investments with focus on Russian Federation, Plenary Report and Abstract, Forests of Eurasia, Publishing House of Moscow State Forest University, September 19 - 25, 2010

Lohmander, P., Zazykina, L., Methodology for optimization of continuous cover forestry with consideration of recreation and the forest and energy industries, Report and Abstract, Forests of Eurasia, Publishing House of Moscow State Forest University, September 19 - 25, 2010

Lohmander, P., Ekonomisk skogsproduktion m.h.t. skogsindustri och energiindustri, Economic forest production with consideration of the forest and energy industries, June 7, 2011 <a href="http://www.lohmander.com/PL\_EON\_110607.pdf">http://www.lohmander.com/PL\_EON\_110607.pdf</a>

Lohmander, P., Methodology for optimization of coordinated forestry, bioenergy and infrastructure investments with focus on Russian Federation, Moscow State Forestry University Forest Bulletin, ISSN 1727-3749, No 84, Issue 1, 2012

Lohmander, P., Zazykina, L., Methodology for optimization of continuous cover forestry with consideration of recreation and the forest and energy industries, Moscow State Forestry University Forest Bulletin, ISSN 1727-3749, No 84, Issue 1, 2012

Lohmander, P., Logistics and pretreatment of forest biomass, CJES, Caspian Journal of Environmental Sciences, Vol. 10, No. 2, December, 2012, <a href="http://research.guilan.ac.ir/cjes/.papers/2304.pdf">http://research.guilan.ac.ir/cjes/.papers/2304.pdf</a>

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