



Viikki Tropical Resources Institute (VITRI), University of Helsinki

Institutional profile

The present Viikki Tropical Resources Institute VITRI was established as a tropical silviculture unit at the Department of Forest Ecology, University of Helsinki, in 1980. Initially it was a research group for educational and research collaboration especially with Kasetsart University in Bangkok, **Thailand**. The cooperation between University of Helsinki and Thailand had started already in 1966 as a scholarship programme.

By 1984, when the professorship in tropical silviculture was established at University of Helsinki, VITRI had become involved in afforestation and tree nursery projects supported by the Finnish government in **Indonesia, the Sudan and Kenya**. Other essential tasks were forest researcher training and institutional support in partner countries and education of Finnish tropical foresters and forest researchers. The activities have later expanded to Central America, West Africa and **China**. Presently, VITRI has ongoing research, development or training activities also in **Ethiopia, Tanzania, Ghana, India, Laos and Costa Rica**.

Current research topics at VITRI are:

- community-based management of forests and trees both in humid and dry regions, including women as natural resource managers;
- forest landscape restoration (ecological, social, economic and cultural aspects);
- regeneration and succession ecology of trees in natural forests, including GIS-based watershed management;
- tropical forest biodiversity management and modelling;
- forest tree eco-physiology and population ecology;
- carbon sequestration dynamics of natural and man-made production systems;
- plantation forestry; and
- agroforestry system management and modelling.

The leading theme in most of the work carried out by VITRI is now **rehabilitation of degraded lands, forests and agricultural production systems**.

Strong institutional links are maintained especially with Kasetsart University, Bangkok, Thailand; Bogor Agricultural University, Indonesia; Chengdu Institute of Biology (Chinese Academy of Science); Wondo Genet College of Forestry, Ethiopia; University of Khartoum Faculty of Forestry, Forests National Corporation, and Forestry Research Centre (Sudan); Kenya Forestry Research Institute (KEFRI); Forestry Research Institute of Ghana (FORIG); ICRAF, CIFOR and CATIE; and with a new partner, the National University of Laos (NUOL) in Vientiane, Laos.

VITRI has been led since its establishment in 1980 by Dr Olavi Luukkanen, professor of tropical silviculture. The staff of VITRI also includes a lecturer in tropical silviculture, a project director, two postdoctoral researchers, about 15 researchers working on their doctoral theses, and usually about ten Finnish or international students working for M.Sc. theses. For full list of completed and ongoing doctoral theses, see Attachment. - VITRI publishes its own international journal, "**University of Helsinki Tropical Forestry Reports**", with 36 issues printed as of 2009.

Olavi Luukkanen represents Finland in the ICRAF Board of Trustees and University of Helsinki in the Finnish University Partnership for International Development (UniPID; now also as Chair of this network). VITRI acts as the Finnish focal point for the European Tropical Forest Research Network (ETFRN) and collaborates with several European countries. VITRI staff also work on national and international assignments related to tropical natural resource management as well as environmental and forest policy.

Recent projects and selected doctoral thesis topics (see www.mm.helsinki.fi/mmeko.vitri)

The following research, training and development projects have been implemented by VITRI:

- ***Tropical forest management and rehabilitation as means of biodiversity conservation in Africa.*** This project was led by Prof. Luukkanen and coordinated by Dr Wending Huang under the Academy of Finland FIBRE Programme from 1997-2002; from 2003-2008 it continued in Tanzania with additional financing from the Finnish Graduate School for Forest Sciences); it included the following sub-projects:
 - Biodiversity rehabilitation of Ethiopian highlands using fast-growing plantation trees as nurse crops (Dr Eshetu Yirdaw);
 - Domestication of Iroko (*Milicia excelsa*) in Ghana (Dr Mark Appiah);
 - Agroforestry development in the East Usambaras, Tanzania (Dr Teija Reyes).
- ***Trees, agroforestry and land-use in dryland Africa (TALDA).*** This project was led by Prof. Luukkanen and coordinated by Dr Mohamed Elfadl with Academy of Finland support for 2002-2008; it included the following components:
 - Gum arabic production in natural stands of *Acacia senegal* in W. Sudan (Dr M. El-Mukhtar Ballal; completed)
 - Dryland agroforestry on clay soils in Sudan (Dr Elamin Y. Raddad, completed)
 - Improvement of traditional *Acacia senegal* agroforestry on sandy soils in W. Sudan (Dr Abdalla Gaafar Mohamed, completed)
 - Tropical dryland rehabilitation: case study on participatory forest management in the Gedaref area, Sudan (Dr Eddie Glover, completed).
 - Environmental-economic analysis of *Prosopis* in Sudan (Dr Jörn Laxén, completed).
 - Genetic diversity and biotechnology of date palm (Ms Sakina Elshibli; previously also supported by the Islamic Development Bank, Riyadh; continuing).
- ***The role of environmental literacy in the conservation of tropical forests in northern Thailand.*** University of Helsinki and Academy of Finland, 2001 onwards, supervised by Prof. Luukkanen in cooperation with UH Dept. of Social Science History and graduate school, UH Institute of Development Studies (Dr Minna Hares, completed).
- ***The role of Sudanese women in land degradation and forest-based rehabilitation.*** University of Helsinki, 2003 onwards, supervised by Prof. Olavi Luukkanen in cooperation with UH Dept. of Social Science History (Dr Anu Eskonheimo, completed).
- ***Trees for the Yangtze River: Watershed management and ecosystem rehabilitation in Sichuan Province, China (WAMEC)*** Led by Prof. Olavi Luukkanen; supported by Academy of Finland with coordination by Prof Chunyang Li, Chengdu Institute of Biology (CIB), Chinese Academy of Sciences; 2004-2006; continuing with CIB doctoral student visits to Finland.
- ***Managing the genetic resources of indigenous mahoganies in Africa and America: development of multidisciplinary procedure*** (Academy of Finland; led by Dr Ari Pappinen, University of Joensuu, 2004-2006; second phase from 2008 onwards).

- **Watershed rehabilitation for the Nile (WREN).** Participation in pre-planning of a development project under coordination by ICRAF, Nairobi, completed).
- **Gum Arabic management in Sub-Saharan Africa.** Feasibility study coordinated by Jörn Laxén for UN Convention to Combat Desertification, supported by Ministry for Foreign Affairs, Finland (in Burkina Faso, Chad, Ethiopia, Kenya, Mali, Mauritania, Niger, Tanzania, Senegal and Sudan; 2004-2005, completed).
- **North-South educational cooperation.** Forestry student and staff exchange between Finland, Sudan and (from 2008 onwards) Ethiopia (coordinated by Eshetu Yirdaw, supported by CIMO, Ministry of Education, Finland; 2004-2009, with extension pending). Field courses held in Sudan in 2007 and 2009, and in Ethiopia in 2008 (and tentatively in 2010).
- **Partnership between public and private actors in forest-sector development: options for dryland Africa, based on experiences from Sudan.** Study commissioned by the Ministry for Foreign Affairs, Finland (2004-2005). Researchers: Olavi Luukkanen, Mohamed El-fadl, Edinam Glover and Pia Katila (Finland); Elnour Elsiddig and Huda Sharawi (Sudan).
- **Improving the productivity of rubber smallholdings through rubber agroforestry systems ”.** Research project in S Thailand 2004-2007 (in co-operation with Kasetsart University) and W Kalimantan, Indonesia, with the World Agroforestry Centre (ICRAF) and the Common Fund for Commodities (CFC); publication of results continuing.
- **Tropical forest restoration and rehabilitation in Southeast Asia (FORRSA).** EU/Asia Link-supported training project (2005-2008). Led by Olavi Luukkanen and coordinated by Eshetu Yirdaw at VITRI, Partners: Kasetsart University (Thailand), Bogor Agricultural University (Indonesia), University of Copenhagen (Denmark) and University of Munich (Germany). Included five intensive courses with a total of about 150 participants.
- **Landscape management planning and training for the environment in South Sudan (LAMPTESS).** Development project financed by the Finnish Ministry for Foreign Affairs; implemented by VITRI in cooperation with the Government of Southern Sudan (GOSS) Directorate of Forestry (inception 2008-2009 completed; pilot phase of implementation ongoing until end 2009).
- **Carbon sequestration and soil fertility on African drylands: Implications for food and woodfuel production, land rehabilitation and community development (CASFAD).** Research project led by Prof. Olavi Luukkanen with support from the Academy of Finland for 2009-2012; coordinated in Sudan by the Faculty of Forestry, University of Khartoum (Assoc. Prof. Huda Sharawi).
- **Forest landscape rehabilitation in the Mekong River Basin (FORMEB).** Institutional Capacity Instrument (ICI) project for supporting the National University of Laos (NUOL). First phase completed in 2009 included one intensive course for participants from Lao PDR and Finland.
- **Strengthening of institutional capacity of Wondo Genet College of Forestry and Natural Resources (Ethiopia) for higher education and research on sustainable natural resource management (HESNARM).** Project planning phase in Ethiopia and Finland with HEI-ICI financial support (Finnish Ministry for Foreign Affairs, 2009, completed).
- **Strengthening of the institutional capacity of the Kenya Forestry Research Institute KEFRI for dryland resource management (SUDREMA).** Project planning phase in Kenya and Finland with HEI-ICI financial support (Finnish Ministry for Foreign Affairs, 2009, completed).

International workshops organised by VITRI

- IFS/ IUFRO workshop **“Dryland forestry research”** 31 July-4 August 1995 in Hyytiälä, Finland (proceedings published by IFS, Stockholm).
- VITRI/FNC workshop **“Management of trees for farmland rehabilitation and development”** 27 Oct.-7 Nov. 2000, Khartoum, Sudan; supported by CTS, IFS, AAS and DFID Forestry Research; for concluding recommendations see TACCDA 2003 proceedings at www.etfrn.org
- VITRI workshop **“Tropical dryland rehabilitation”** 11-14 June 2002 in Hyytiälä, Finland; for selected papers see TACCDA 2003 proceedings at www.etfrn.org
- DIDC/EFI/VITRI workshop **“Forests in poverty reduction strategies – capturing the potential”** 1-3 October 2002, Tuusula and Helsinki, Finland. Proceedings available at http://www.efi.int/portal/virtual_library/publications/proceedings/47/
- **“Trees, Agroforestry and Climate Change in Dryland Africa (TACCDA)”**, 30 June – 4 July 2003, Hyytiälä, Finland. This workshop was organised by VITRI together with the European Tropical Forest Research Network (ETFRN) and the Special Programme for Developing Countries of the International Union of Forestry Research Organisations (IUFRO-SPDC). Proceedings, background papers and results from a pre-workshop e-mail conference are available at ETFRN website www.etfrn.org (CD-ROM edition distributed by VITRI, ETFRN and IUFRO-SPDC).
- **Research Collaboration on Responsible Natural Resource Management.** The 1st UniPID Workshop. Hyytiälä, Finland, 16–17 October 2007 & Helsinki 19 October 2007. Organised by VITRI on behalf of the Finnish University Partnership for International Development (UniPID). Proceedings: Luukkanen, O. & Hares Minna (ed.). 2008 Research collaboration on responsible natural resource management. Univ. Helsinki Tropical Forestry Reports 36 (available at <https://www.jyu.fi/hallinto/unipid/julkaisuja/tropicalforestryverkko>).

APPENDIX

List of doctoral dissertations completed or under preparation at Viikki Tropical Resources Institute (VITRI) under the leadership of Prof. Olavi Luukkanen (* indicates major academic supervision by another professor); present positions of former VITRI researchers/students are also shown.

1. (1989) *Acacia mangium*: studies of the genetic variation in ecological and physiological characteristics of a fast-growing plantation tree species. By (Ms.) **Ladawan Atipanumpai** (now **Puanchit**) (Associate Dean, Kasetsart University, Thailand).
2. (1990) Shoot growth and flower development in tropical pines: studies on genetic and environmental variation. By (Mr.) **Winai Sirikul** (Researcher, Pine Improvement Center, Royal Forest Department, Thailand).
3. (1990) Salinity effects in *Eucalyptus camaldulensis* and *Combretum quadrangulare*: eco-physiological and morphological studies. By (Mr.) **Jesada Luangjame** (Director, Silvicultural Research Sub-Division, Royal Forest Department, Thailand).
4. (1995) Forestry in irrigation agricultural schemes with special reference to the Bura Irrigation and Settlement Project, Kenya. By (Mr.) **Stig Johansson** (Regional Director, National Heritage Services, Metsähallitus).

5. *(1996) Genetic variation in *Faidherbia albida*: Implications for conservation of genetic resources and tree improvement. By (Mr.) **Abdelazim M. Ibrahim** (General Manager, National Forests Corporation, Sudan).
6. *(1996) An analysis of the functional and structural basis of the yield in *Eucalyptus camaldulensis* progenies grown in Thailand. By (Mr.) **Damrong Pipatwattanakul** (Asst. Professor, Faculty of Forestry, Kasetsart University, Bangkok, Thailand).
7. (1996) Management of bushland vegetation using rainwater harvesting in eastern Kenya. By (Mr.) **Vesa Kaarakka** (lecturer in tropical silviculture, VITRI, on leave; forestry adviser, Ministry for Foreign Affairs, Helsinki).
8. (1997) Physiological and morphological responses of *Eucalyptus microtheca* provenances to water availability in tropical drylands. By (Mr.) **Kari Tuomela** (Director for Forest Management, Guangxi Stora Enso Forestry Co., China).
9. *(1997) Socioeconomic evaluation of land-use alternatives in the Blue Nile flood basin of the Sudan. Univ. By (Ms.) **Huda A. Sharawi** (Associate Professor, Dept. of Forest Management, University of Khartoum, Sudan).
10. (1997) Regeneration of *Acacia seyal* forests on the dryland of the Sudan clay plain. By (Mr.) **Abdelrasoul F. Mustafa** (Former Director, Forestry Research Centre, Khartoum, Sudan; currently researcher, Gezira University, Sudan).
11. (1997) Management of *Prosopis juliflora* for use in agroforestry systems in the Sudan. By (Mr.) **Mohamed A. Elfadi** (docent & senior researcher, VITRI).
12. (1998) Productive coexistence and gain in agroforestry systems. By (Mr.) **Wending Huang** (docent and senior researcher, VITRI; professor, Nanjing Forestry University, China; currently Deputy CEO, APP China Forestry, Haikou, Hainan Province, China).
13. (1999) Drought adaptation and genetic diversity in *Eucalyptus microtheca*. By (Mr.) **Chunyang Li** (Professor & Laboratory Director, Chengdu Institute of Biology, Chinese Academy of Sciences, Chengdu, Sichuan, China).
14. (1999) Natural regeneration of sal (*Shorea robusta*) in the Terai region, Nepal. By (Mr.) **Jouni Suoheimo** (councillor for forestry education, Ministry of Education, Helsinki).
15. *(2000) Growth of grass-stage *Pinus merkusii* seedlings as affected by interaction between structure and function. By (Mr.) **Jarkko Koskela** (programme coordinator, Bioversity International, Rome, Italy).
16. (2000) Integration of indigenous tree species into fast-growing forest tree plantations on Imperata grasslands in Indonesia. By (Ms.) **Riikka Otsamo** (Planning Officer, Ministry for Foreign Affairs, Helsinki).
17. (2001) Forest plantations on Imperata grasslands in Indonesia – establishment, silviculture and utilization potential. By (Mr.) **Antti Otsamo** (senior forestry expert, Finnish Forestry Industries Federation, Helsinki).
18. *(2002) Variability and trends in yield of gum arabic from natural stands of *Acacia senegal* in Western Sudan. By (Mr.) **M. El-Mukhtar Ballal** (Director, Forestry Research Center of the Agricultural Research Corporation, Khartoum; co-supervised by Dr. Elnur Elsiddig at Faculty of Forestry, University of Khartoum).

19. (2002) Rehabilitation of the native woody-species diversity, using plantation species as foster trees, in the degraded highlands of Ethiopia. By (Mr.) **Eshetu Yirdaw** (docent, ag. lecturer in tropical silviculture, VITRI).
20. (2003) Domestication of an indigenous tropical forest tree: Silvicultural and socio-economic studies on Iroko (*Milicia excelsa*). By (Mr.) **Mark Appiah** (senior researcher, VITRI).
21. (2005) Improvement of *Acacia senegal* agroforestry: Ecophysiological characteristics as indicators for tree-crop interaction on sandy soil in western Sudan. By (Mr.) (Mr.) **Abdalla GAAFAR MOHAMED** (Director, Technical Division, FNC, Khartoum, Sudan).
22. (2005) Tropical dryland rehabilitation: case study on participatory forest management in Gedaref, Sudan. By (Mr.) **Eddie Glover** (senior researcher, UH Faculty of Law).
23. *(2006) Community forestry and environmental literacy in northern Thailand: Towards collaborative natural resource management and conservation. By (Ms.) **Minna Hares** (desk officer, Ministry for Foreign Affairs, Helsinki). Thesis co-supervised by Dr. Timo Myllyntaus, University of Turku).
- 24*. (2006) Women, environmental changes and forestry-related development: Gender-affected roles of rural people in land degradation and environmental rehabilitation in a dry region of Sudan. By (Ms.) **Anu Eskonheimo** (counsellor, Embassy of Finland, Nairobi; Ministry for Foreign Affairs). Thesis co-supervised by Dept. of Social Science History
25. (2006) Tropical dryland agroforestry on clay soils: Analysis of systems based on *Acacia senegal* in the Blue Nile region, Sudan. By (Mr.) **Elamin Yousif Raddad** (Associate Professor, Agricultural Research Corporation Forestry Research Centre, Wad Medani, Sudan).
26. *(2007) Is prosopis a curse or a blessing? An ecological-economic analysis of an invasive alien tree species in Sudan. By (Mr.) **Jörn Laxén** (VITRI Project Director; co-supervised by Prof. J. Sumelius, UH Dept. of Economics and Management).
27. (2008) Evolution of forest-related rights: Comparative analyses of six developing countries. By (Ms.) **Pia Katila** (external researcher, Finnish Forest Research Institute METLA).
28. (2008) Agroforestry systems for sustainable livelihoods and improved land management in the East Usambaras, Tanzania. By (Ms.) **Teija Reyes** (consultant, Washington DC, USA).
29. *(2008) Landscape-scale soil erosion modelling and ecological restoration for a mountainous watershed in Sichuan, China. By (Ms.) **Ping Zhou** (co-supervised by Prof. Timo Tokola, University of Joensuu). Staff member, Guangdong Forestry University, Guangzhou, China.
30. *(2009) Genetic diversity and biotechnology of date palm. By (Ms.) **Sakina Elshibli** (VITRI researcher; supervised by Dr Helena Korpelainen, Dept. of Applied Biology). Supported by the Islamic Development Bank, Jeddah, Saudi Arabia.
31. (Under preparation) Global governance for sustainable forest management. By (Mr.) **Roope Husgafvel** (VITRI researcher; with external financial support).
32. *(Under preparation) Role of forests in poverty reduction in Caprivi region, Namibia. By (Ms.) **Tuulikki Parviainen** (supervised by Prof. J. Sumelius, UH Dept. of Economics and Management).
33. *(Under preparation) Use and management of prosopis by rural communities in dryland areas in India. By (Mr.) **Kurt Walter** (VITRI researcher; co-supervised by Prof. Karen Armstrong, Department of Sociology).

34. *(Under preparation) Variation in soil properties as related to tree cover in the Taita Hills, Kenya: Implications for forest regeneration and water balance. By (Ms.) **Loice Omoro** (VITRI researcher; co-supervised by Prof. Petri Pellikka, UH Department of Geography).
35. *(Under preparation) Tree planting as a livelihood strategy for smallholder farmers in Indonesia. By (Ms.) **Maarit Kallio** (VITRI researcher in cooperation with CIFOR, Indonesia; supervised by Dr Markku Kanninen).
36. *(Under preparation) Impacts of dryland agro-ecosystems and fulewood plantations on carbon sequestration and greenhouse gas emission in Sudan. By (Mr.) **Syed A. Alam** (VITRI researcher, co-supervised by Prof. Eero Nikinmaa, Dept. of Forest Ecology).
37. *(Under preparation). The role of forest policies and products in supporting adaptation of society to impacts of climate change in Sub-Saharan Africa (Burkina Faso, Ghana and Sudan). By (Mr.) **Fobissie Blese Kalame** (VITRI researcher and doctoral student; previously JPO at CIFOR Regional Office, Ouagadougou, Burkina Faso; co-supervised by Dr Markku Kanninen, CIFOR).
38. *(Under preparation). Livelihood impacts of exclusionary vs. integrated management scenarios of forest biodiversity: exploring outcomes in tropical landscape mosaics. By (Ms.) **Salla Rantala** (VITRI doctoral student; previously JPO at ICRAF, Nairobi; co-supervised by Prof. Juhani Koponen, Institute of development Studies).
39. *(Under preparation). Non-wood forest products under proper fire regime in Burkina Faso: An environmental-economic analysis. By (Ms.) **Tina Byring-Ilboudo** (VITRI researcher and doctoral student; visiting researcher, CIFOR, Ouagadougou, Burkina Faso; co-supervised by Prof. John Sumelius, UH Department of Economics and Management).
40. *(Under preparation) Microcredits as a tool of improved natural resource management in Laos. By (Ms.) **Marjo Paavola** (senior expert, Ramboll Finconsult Co., Finland; co-supervised by Prof. Heimo Karppinen, Dept. of Forest Economics).
41. (Under preparation). Improved fallows as a means for conservation and sustainable medicinal plant production in the Gambia. By (Ms.) **Minna Stubina** (VITRI researcher).
42. (Under preparation). Management and control of an alien invasive species in the Horn of Africa region: ecological and socio-economic studies on *Prosopis juliflora*. By (Mr) **Omar Abdulkadir Abdi** (VITRI researcher).
43. (Under preparation). Policy frame for the REDD initiative and comparative analysis of forestry legislation for selected countries in the Mekong River basin. By (Mr) **Adrian Monge Monge** (VITRI researcher & course coordinator).
44. *(Under preparation). The effects of *Pheidole* spp. ants on the seed dispersal cycle of a tree *Altingia excelsa*, in Indonesia. By (Ms.) **Silvija Budaviciute** (VITRI researcher, co-supervised by Prof. Kari Heliövaara).
45. *(Under preparation). Management of *Commiphora* trees as components of silvopastoral farming systems in Wajir District, Northeastern Kenya. By (Mr.) **Badal Hassan** (VITRI researcher). Co-supervised by Director Ben Chikamai (KEFRI, Kenya).