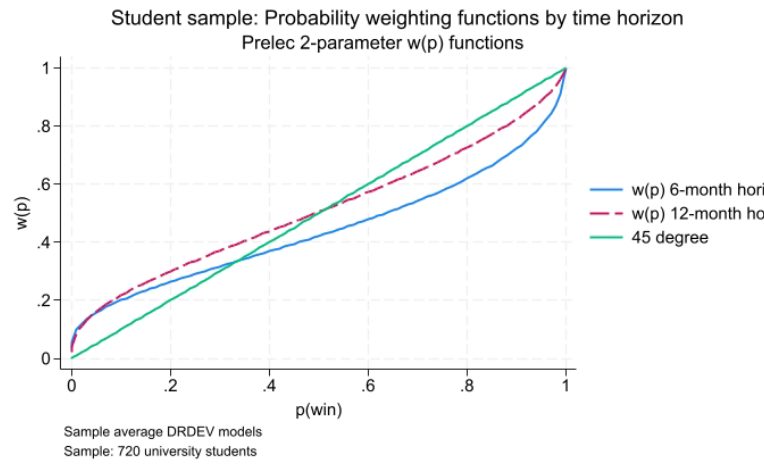


# Centre for Land Tenure Studies 2023 Annual Report

Norwegian University of Life Sciences (NMBU)



CLTS



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## **SUMMARY OF ACTIVITIES IN 2023**

The Centre for Land Tenure Studies (CLTS) published 13 peer-reviewed journal articles, 13 working papers and two (2) reports. The published work covered issues around climate response behaviour; numeracy skills and disability in education systems; livelihood diversification and migration; risk, trust, trustworthiness, beliefs and social dilemmas; local housing, price and hedonic heterogeneity measures; and choice behaviour models. Additionally, the CLTS webpage published reports that included a pre-analysis plan for the research work in Ethiopia. CLTS members also participated in several conferences to disseminate the research work.

The CLTS working papers and reports are accessible through the CLTS webpage, the Scandinavian Working Papers in Economics (S-WoPEc), the library (Brage) of the Norwegian University of Life Sciences (NMBU), the Land Portal webpage (see: <https://landportal.org/organization/centre-land-tenure-studies>) and Econstor (see: <https://www.econstor.eu/handle/10419/242695>).

Statistics on visibility show that CLTS uploaded content encouraged researchers to download, especially in February 2023. Towards the end of 2023, the CLTS webpage did not upload more content to encourage more downloads compared to the same time in 2022. The statistics on impact factor show that the current recursive impact factor for the CLTS page is 0.14 with an h-index of 8. The 10-year average impact factor for the CLTS is 0.09 and the h-index is 3.

The faculties working on CLTS-related work also reported several activities. The School of Economics and Business was involved in several projects supported by the Research Council of Norway and NORAD (NORHED II). In LANDSAM, the Department of Property and Law is involved in projects focusing on (1) the Planning and Building Act between demand, land policy and sustainability, (2) collaboration for improved participation in spatial planning, and (3) didactics in spatial planning. Again, under LANDSAM, Noragric and Byreg departments collaborated on an NFR research application focusing on sustainable recreation around the Oslo Fjord. In MINA, the Department of Ecology and Natural Resource Management worked on a collaborative project that represents a multidisciplinary approach to diagnosing and improving policy and management decisions for dry forestland and resources in the face of climate change. Two PhD students have contributed to the project, with one working since August 2021 and the other from August 2021 to May 2023. In addition, a postdoctoral researcher has been involved since March 2023, alongside a visiting researcher who joined in September 2023.

## CENTRE FOR LAND TENURE STUDIES

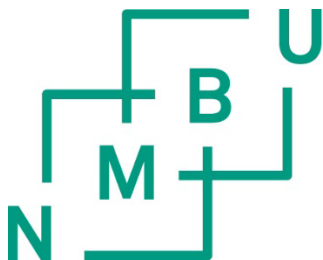
The Centre for Land Tenure Studies was opened at NMBU (earlier UMB) on the 27<sup>th</sup> of June 2011 resulting from a joint initiative by researchers at the Department of International Environment and Development (Noragric), the School of Economics and Business, and the Department of Landscape Architecture and Spatial Planning. In 2012 CLTS was joined by the Department of Ecology and Natural Resource Management.

### Board of the Centre for Land Tenure Studies

- Eirik Romstad (chair), School of Economics and Business
- Knut Boge, LANDSAM
- Meley Mekonen Rannestad, MINA

### People at CLTS

Core team:	Stein Holden, Espen Sjaastad, Meley Mekonnen Rannestad.
Associates:	Bernt Aarset, Arild Angelsen, Tor Arve Benjaminsen, Erling Berge Einar Bergsholm, Knut Boge, Meley Mekonen Rannestad, Per Kåre Sky, Sølve Bærug, Einar A. Hegstad, Darley Jose Kjosavik, Eirik Romstad, Dag Einar Sommervoll, Håvard Steinsholt, Steinar Taubøll, Arild Vatn, Pål Vedeld.
Post-doc researchers:	Mesfin Tilahun, Sarah Tione, and Sam Katengeza
PhD students:	
Administrative support:	Sarah Tione



**Norwegian University of Life Sciences**  
**Centre for Land Tenure Studies**

## Mission

The Centre for Land Tenure Studies (CLTS) at NMBU is established to further the study of land tenure. Land tenure studies define a broad and complex field of study cutting across many disciplines. For CLTS this entails, but is not limited to, the following activities:

- Provide a common arena for discussing land tenure issues, including a series of seminars directed to present new research or important theoretical perspectives. This may be designed as part of an educational program.
- Promulgate a joint series of working papers.
- Support international publication of articles and books.
- Develop and conduct joint courses at both Master and PhD levels.
- Initiate and support the exchange of researchers.
- Participate in research networks related to land tenure.
- Maintain a public list of collaborating institutions and researchers.
- Initiate and develop applications for research funds to support basic research on land tenure both by our own efforts and in collaboration with other research groups working on land tenure questions.

In its activities, the centre will use English as its working language as far as practically possible.

*In short, we may say that “the mission of the Centre for Land Tenure Studies is to enhance collaboration across departments at NMBU; to strengthen the visibility of NMBU activities within the field of land tenure; to strengthen NMBU’s international collaboration and networks within the field; to contribute to research and knowledge generation on land tenure issues; to help build capacity in the South and in Norway within the field; to disseminate policy lessons, and to contribute to policy debates”.*



## 2023 ANNUAL REPORT

### FACULTY ACTIVITIES AT NMBU

#### School of Economics and Business

The research project “Youth Business Groups for Sustainable Development: Lessons from the Ethiopian Model” (YOUTHBUS)(2018-2024), funded by the Research Council of Norway under the NORGLOBAL2 program. The fieldwork under the project in the Tigray Region in Ethiopia focuses on resource-poor rural youth who have been offered to establish formal businesses as primary cooperatives. The project implemented surveys and experiments for a large number of such youth business groups and group members in order to understand the factors influencing their varying degrees of success. It also planned training experiments implemented as Randomized Control Trials with a focus on leadership training, female group member empowerment and risk management. The implementation had started but not finished when the civil war started in November 2020 and till it ended in November 2022. Finally, from June 2023 we were again able to reconnect with Mekelle University. We made a plan for the remaining project funds given that the initial plan to run training experiments was not doable. Instead we decided to focus on the impacts of the war on the business groups and their members. We made a new Pre-Analysis Plan for Ethical Approval that was accepted by the Research Council of Norway and approved by the Ethics Committee at NMBU. Based on this, new round of Fieldwork with surveys and experiments was implemented in the period September-December 2023. The project period was extended to the end of November 2024. In parallel we also worked on the publication of papers based on the previously collected data with focus on climate shocks and impacts on risk preferences and investment behavior. The follow-up fieldwork will give very unique data that can be used to study the effects of the war on social capital, risk and time preferences, and the resilience of the business groups.

The School is also involved in another research project funded under NORGLOBAL2 (Research Council of Norway), “Access to seeds: from Emergencies to Seed System development” (ACCESS), which is the responsibility of LANDSAM (Noragric). The School is responsible for one PhD student (Clifton Makate) recruited on the program and work on seed access in Ethiopia, Malawi and Tanzania based on nationally representative surveys (LSMS). Clifton Makate defended his PhD dissertation in December 2022 but the collaboration on some joint papers continued in 2023.

Two NORAD-funded capacity-building projects under NORHED II received funding and started in August 2021. One of these projects, Experiments for Development of Climate Smart Agriculture (Smartex), is a collaboration project with LUANAR in Malawi and focuses on land and water rights related to irrigation and on climate-smart agriculture. Sarah Tione and Samson Katengeza, who received their PhDs under the previous CLISNARP project are postdocs on this project. The pandemic caused a delay in the startup of fieldwork from 2021 to 2022. Extensive fieldwork took place in 2022 but new requirements for ethical approval by Institutional Review Boards (IRBs) before data collection combined with the fact that neither NMBU nor LUANAR

had such an IRB has caused a halt in the fieldwork to get such boards established to get approval before the remaining fieldwork is implemented. The main component remaining is a study of land rights and land management in irrigation projects in Shire Valley.

### **LANDSAM – Department of Property and Law**

The Department of Property and Law has been involved in the following research projects:

- SITRAP – Centre for integrated and transdisciplinary teaching in planning (2023-27)
- LANDTIME – The Planning and Building Act between market demand, land policy, sustainability, temporality, and intergenerational justice (2021 – 2026).
- SAMBED – Collaboration for improved participation in spatial planning (2020-2023)

SITRAP is a resource centre for didactics in spatial planning. The centre contributes to better teaching and learning within landscape architecture, urban and regional planning, and property development. SITRAP is awarded status as a Norwegian Centre for Excellence in Education (SFU). SITRAP has funding over 5 years (2023-2027) with a total framework of NOK 35 million. The funds are used on various sub-projects within three strategic areas: student active learning, integration with practice, and didactic development. SITRAP arranges a range of activities throughout the year.

LANDTIME is funded by a 10 MNOK grant from the Research Council of Norway. The academic partners are Transportøkonomisk institutt (TØI) (Norway), Université Rennes 2 (France), Aalborg University (Denmark), Carl von Ossietzky University of Oldenburg (Germany), Samuel Neaman Institute for National Policy Research (Israel), and Normandy Chair for Peace (France). In addition, there are four Norwegian collaborative partners, Nordland County Council, City of Bergen, Indre Østfold Municipality, and the Norwegian Court Administration.

LANDTIME's main objective is to investigate the Norwegian planning system's functional capacity to handle multiple temporalities of spatial development, hereunder its set of plans and instruments, the role of property and property rights for public planning, and related challenges in different geographical contexts.

LANDTIME's secondary objectives are to explore the planning system from a temporality perspective, as the content of plans, temporalities of the planning processes, including transmission between plans, empirical investigations of the interplay between public spatial planning and private property, and property rights, and how the two systems lay out the premises for temporality management in terms of market demands and intergenerational justice.

LANDTIME will also investigate whether the PBA is an adequate framework for regional and municipal planning to facilitate sustainable industrial and business development, and how the PBA and relevant sector legislation handle development conflicts, i.e., environmental protection and sustainability vs. equity, social and intergenerational justice.

## **LANDSAM – Noragric**

Starting in 2021 Noragric, along with the Byreg department at LANDSAM, participated in an NFR research application focusing on sustainable recreation around the Oslo Fjord. The project is led by the Telemark Research Institute; the Byreg and Noragric departments are involved from NMBU, and property issues may be relevant to some aspects of the project.

The LANDSRESPONSE project – on land dispossession, violent conflict, and migration in the Sahel – commenced in late 2022 with EU funding, and an early publication from 2023 deals in part with property issues:

Poudiougou, Ibrahima (2023). “Dan Nan Ambassagou, un mouvement d’autodéfense armé en pays dogon,” *Anthropos* 118: 395-417.

## **MINA: Department of Ecology and Natural Resource Management**

The department has been involved in the following relevant research project: “Towards a climate-smart policy and management framework for conservation and use of dry forest ecosystem services and resources in Ethiopia”, 2020 – 2024, funded by the Research Council of Norway under the NORGLOBAL2 program. In this project, MINA is partnering with CICERO-Center for International Climate Research (Norway), ICRAF - World Agroforestry Centre (Kenya), MU-Mekelle University (Ethiopia), and HU-Hawassa University (Ethiopia).

This project represents a multidisciplinary approach to diagnosing and improving policy and management decisions for dry forestland and resources in the face of climate change. The main objective is to design an integrated analytical framework and develop and utilize a decision support tool that enables ex-ante assessments of policies, management measures, resource use plans, technologies and trade-offs and synergies between global environmental, national economic, and local livelihood objectives related to dry forest land ecosystem services in Ethiopia.

1. Two PhD students and a postdoctoral researcher have contributed to different aspects of the project's objectives through their respective PhD and postdoctoral projects. Towards Climate Smart Management of Dry Forest Ecosystem Services in Ethiopia (PhD)
2. Socio-ecological analysis of changes in dry forests in Ethiopia (PhD)
3. Bio-economic Modeling for Sustainable and Climate-Smart Management of Dry Forest Ecosystem Services (Postdoctoral)



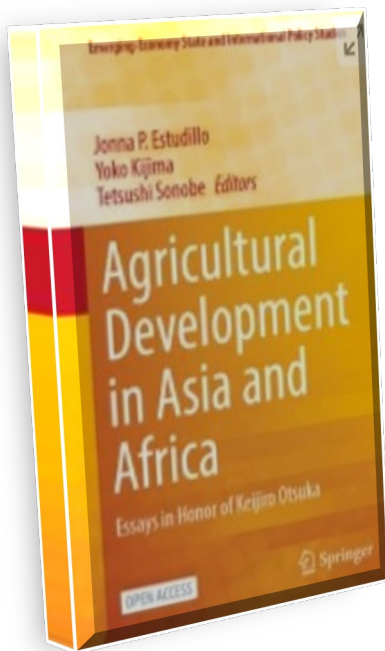
## JOURNAL PAPERS AND BOOK CHAPTERS

- I. Stein T. Holden (2023). [Fifty Years of Research on Land Tenure Policies and Land Markets: What Are the Major Lessons?](#) Chapter 9 in Jonna P. Estudillo, Yoko Kijima, Tetsushi Sonobe (Ed) [Agricultural Development in Asia and Africa: Essays in Honor of Keijiro Otsuka](#). SpringerLink

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### Abstract

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This study makes a broad review of important contributions by economists to the understanding of land and labor contracts in agriculture and the analyses of major land tenure reforms in the twentieth century. Possible disincentive effects associated with share tenancy received much attention in the early theoretical literature and have later been scrutinized empirically with the availability of better data and better methods. With the development of better impact assessment methods and the experimental revolution in economics, land tenure reforms have increasingly also been assessed based on stronger data and better methods. However, using random treatments in such institutional reforms may neither be feasible nor recommendable in many cases. Still, experimental approaches may be used to investigate short-term impacts and help to reveal otherwise unobservable variables, such as risk preferences and trustworthiness, that affect land and labor contracts. With a good understanding of important contextual characteristics and

new and better data, land tenure and land policies remain a vibrant and important area of research for applied economists. Rural transformation and adaptation to climate change put new pressures on rural factor markets and land tenure institutions in economies where shocks and pervasive market imperfections remain important challenges.

2. Clifton Makate, Arild Angelsen, Stein Terje Holden and Ola Tveitereid Westengen (2023). [Evolution of farm-level crop diversification and response to rainfall shocks in smallholder farming: Evidence from Malawi and Tanzania](#). *Ecological Economics*, doi: 10.1016/j.ecolecon.2022.107736.

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### Abstract

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This study investigates how exposure to short and long-term measures of rainfall shocks and past crop diversification decisions influence subsequent diversification in Malawi and Tanzania. We use balanced household panel data combined with corresponding historical monthly weather data to achieve our aim. Crop diversification is studied as a state-contingent risky investment decision that households make before the state of nature is revealed. We model crop diversification decisions using correlated and dynamic random effects panel Poisson and Tobit models that control for unobserved heterogeneity in household crop diversification decisions plus initial conditions that may influence crop diversification across space and time. We establish that smallholder farmers in Malawi and Tanzania respond to rainfall shocks by diversifying their crop portfolios and that crop diversification decisions are state-dependent. Thus, farmers with knowledge and experience gained from past crop diversification have elevated chances to intensify subsequent crop diversification and adapt to recurrent rainfall shocks. Heterogeneity analysis reveals that the relatively better-off farmers with sufficient land and non-land household assets to a greater extent diversify the crop portfolio post-drought shock exposure. Pro-poor policies addressing seed access constraints are needed to support diversification and adaptation to shocks.

3. Tilahun, M. and Holden, S. T. (2023): [“Livelihood diversification and migration intentions among land-poor youth in Tigray, Northern Ethiopia: do they correlate with livestock assets, trust, and trustworthiness?”](#). *Frontiers in Sustainable Food Systems*, 7, doi:10.3389/fsufs.2023.1175572
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### Abstract

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Youth unemployment has been prevalent in Ethiopia. Over the past decades, efforts to rehabilitate degraded communal lands have been taking place in Ethiopia. This has created the opportunity to organize landless and land-poor youth and implement a policy of allocating rehabilitated lands for youth to engage in agriculture as a livelihood option. However, whether these rural youth will remain in agriculture or choose other livelihood options including migration, and how their trusting behaviors (trust and trustworthiness) and other factors influence their choices are worth investigating and are the aims of this study. This will help our understanding of what would incentivize the youth to enhance their livelihoods. We used data collected from samples of 1,138 youth group members in the 2016 survey and from 2,427 youth group members in the 2019 survey in five districts of the Tigray region of Northern Ethiopia. Our results from panel data multinomial logit and probit models show that the number of oxen, access to land in the land rental market, and income from youth group activity significantly correlated with youth group members' choices for livelihood options and planning for migrating out of the country. A higher number of oxen owned by the youth group members are associated with a higher likelihood that the youth choose agriculture as a livelihood. Youth group members with a larger number of oxen are also less likely to plan for migration. We also found that more trusting youth group members are more likely to choose off-farm employment relative to staying in agriculture than less trusting members. More trustworthy members are less likely to migrate and more likely to stay in agriculture because trustworthiness is associated with better access to land in the rental market. Thus, improving youth group members' access to land and their asset endowments such as oxen for increasing the productivity of youth group activity and hence income would incentivize youth group members to stay in agriculture and enhance youth group activity as a sustainable livelihood.



4. Zhang, H., and Holden, S. T.(2023). [Numeracy skills learning of children in Africa: -Are disabled children lagging behind?'](#) PLoS ONE 18(4): e0284821.

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### Abstract

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Significant progress has been achieved in universal basic education in African countries since the late 1990s. This study provides empirical evidence on the within- and across-country variation in numeracy skills performance among children based on nationally representative data from eight African countries (DR Congo, The Gambia, Ghana, Lesotho, Sierra Leone, Togo, Tunisia, and Zimbabwe). We assess whether and to what extent children with disabilities lag in numeracy



skills and how much it depends on their type of disabilities. More specifically, we explore whether disabled children benefit equally from better school system quality. The assessment is analysed as a natural experiment using the performance of non-disabled children as a benchmark and considering the different types of

disabilities as random treatments. We first evaluate the variation in average numeracy skills in the eight African countries. They can roughly be divided into low- and high-numeracy countries. We apply Instrumental Variable (IV) methods to control the endogeneity of completed school years when assessing subjects' school performance and heterogeneous disability effects. Children with vision and hearing disabilities are not especially challenged in numeracy skills performance. The low numeracy skills among physically and intellectually disabled children are mainly attributable to their limited school attendance. Children with multiple disabilities are constrained both by low school attendance and by poor numeracy skills to return to schooling. The average differences in school performance across the high- versus low-numeracy skill country groups are larger than the within-group average differences for disabled versus non-disabled kids. This indicates that school enrolment and quality are crucial for children's learning of numeracy skills, and that disabled children benefit equally from better school quality across these African countries.

5. Holden, S. and Tione, S. E. and Tilahun, M. and Katengeza, S. (2023): “Measurement Error, Luck and Risk-Taking by University Students in a Repeated Risky Investment Game”. Available at SSRN: <https://ssrn.com/abstract=4471965> or <http://dx.doi.org/10.2139/ssrn.4471965>
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### Abstract

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We study whether luck in a repeated risky investment game can contribute to measurement errors and also help improve the predictive power of the game. We investigate how good and bad luck affect risk-taking behavior in the following rounds of the game. The luck outcome of the previous round is known when the subjects decide how risky their next choice in the game will be. A sample of 720 university students is used as subjects in the game in a recursive within-subject design. The results demonstrate a strong impact of luck on risk-taking behavior that lasts not only to the next round but also into another two follow-up rounds, with cumulative effects. A time delay of 1-2 months between Round 1 and Round 2 did not wipe out the luck effect and it was only marginally weaker than the luck effect from Round 2 to Rounds 3 and 4 that followed immediately after Round 2. Many recent studies have shown that risk preferences respond to shocks. This study indicates that random shocks such as luck in previous games (states of nature) influence risk-taking behavior. On average, luck stimulates more risk-taking and bad luck less risk-taking.



6. Zhang, H. and Holden, S. (2023): [Disability Types and Children's Schooling in Africa](https://ssrn.com/abstract=4096305). Available at SSRN: doi: 10.2139/ssrn.4096305
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### Abstract

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The Sustainable Development Goals (SDGs) set up by the United Nations include an overarching principle of “leaving no one behind” and aim for, among other goals, equal access to education for children with disabilities. Our study contributes to the knowledge on the school enrolment of disabled children with different disability types, with a focus here on eight countries in Africa. Comparing the situation with children without disabilities as a benchmark, we assess early school enrolment for young children below ten years old, school enrolment for older children aged 10–17 years old, and the dropout rates of children from school. We perform our analysis as a natural

experiment where different types of disabilities are considered as random treatments, which allows us to assume that the average deviation in certain school performance indicators from the average for non-disabled children is a result of the disability type, specifically vision, hearing, walking, intellectual capacity, and multi-disability. Our study finds that, compared with non-disabled children, children with vision and hearing disabilities do not lag behind in school enrolment. In contrast, children with walking disability have a higher risk of starting school late. Children with intellectual disabilities are less likely to enrol in school, less likely to remain enrolled, and more likely to drop out than their counterfactual peers. Children with multiple disabilities tend to experience the most severe challenges in enrolling at school, both at a young



age and later. However, once enrolled in school, children with multiple disabilities are not more likely to drop out earlier than other children. Based on the first and probably the only large-scale application to date of the standard Washington Group Child function module as a disability measurement tool, our study is the first comprehensive multi-country study of disabled children's schooling in Africa based on recent nationally representative data.

7. Clifton Makate, Arild Angelsen, Stein Terje Holden, and Ola Tveitereid Westengen (2023). [Rainfall shocks and inequality have heterogeneous effects on farmers' seed purchase decisions in East Africa](https://doi.org/10.1016/j.crm.2023.100556), *Climate Risk Management* doi.org/10.1016/j.crm.2023.100556

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### Abstract

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Weather shocks and poverty worsen seed and food insecurity in smallholder farming. Here we use rich and representative household-level data for Ethiopia, Malawi, and Tanzania, combined with historical monthly weather data to examine the effects of prior drought exposure and wealth (asset endowment) inequality on seed purchase decisions. We find that between a third and half of the farmers purchase seed, and among seed purchasers, more than half of the total seed volume used is purchased. We model seed purchasing decisions using Cragg double-hurdle models, which allow variables to have different effects on the probability and the intensity of purchase decisions. We find that drought shocks experienced in the past season encourage sourcing seed off-farm through purchase in the following season. On average, drought shock exposure



increases seed purchasing for both improved and local seeds in Malawi and Tanzania while encouraging (discouraging) local (improved) seed purchases in Ethiopia. In all three countries, farmers better endowed with household assets increase seed purchasing, particularly for improved seeds, after a drought shock exposure. In addition, smaller farm sizes and low asset wealth endowments in all study countries are significant deterrents for buying seeds in the market, particularly improved seeds. Policies need to support both formal and informal seed systems and address inequalities in access to seed from formal seed channels to achieve seed and food security under elevated climate risk.

8. Esther Kemigisha, Fred Babweteera, Johnny Mugisha, Arild Angelsen (2023). [Payment for environmental services to reduce deforestation: Do the positive effects last?](#) Ecological Economics, doi: 10.1016/j.ecolecon.2023.107840

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### Abstract

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Are the forest conservation practices sustained after Payment for Environmental Services (PES) programmes end? Using a sample of 268 (former) PES recipients and non-recipients from the Budongo-Bugoma PES programme in Western Uganda, we employ the before-after-control-intervention (difference-in-difference) approach to estimate the PES programme outcome on their privately owned forests. PES is associated with less deforestation during the operational period, but the link has vanished four years after programme termination. We label this weak permanence, i.e., PES recipients abandon the induced practices soon after the programme ended, but the gains (relatively higher forest cover) during the operational period are maintained. We also find that household and contextual variables are important in explaining PES permanence: low levels of agricultural land and remoteness from agricultural markets weaken PES permanence. Therefore monetary payments alone may be insufficient for lasting forest conservation. Integrating PES with other approaches, such as climate-smart agriculture may result in more permanent reductions in deforestation.



9. Terje Holsen and Knut Boge (2023). [Urban FM and POPS – implications for UN’s SDG 11 Sustainable Cities and Communities](#), *IOP Conf. Ser.: Earth Environ. Sci.* **1176** 012040. Doi: 10.1088/1755-1315/1176/1/012040
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### Abstract

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Urban FM (UFM) is usually understood as micro level Facility Management (FM) methods and tools applied on macro level challenges in communities and neighbourhoods in urban areas, among others to improve the citizens’ wellbeing. UFM is also often associated with smart cities, technology, and UN’s SDGs. However, many studies of UFM overlook property rights and other institutional matters that establish many of the ground rules. Property rights are frequently understood as a bundle of rights, i.e., the right of use (USUS), the right of enjoyment (USUS

FRUCTUS), and the right of disposition (ABUSUS). UFM usually takes place across property boundaries, on properties with disparate bundles of rights, including restrictions through public zoning. Many urban transformation projects have established privately owned public spaces (POPS), leading to a

restructured division of responsibilities between public authorities and private owners in the management, design, access control, and use of urban public spaces. This paper investigates whether and under which conditions UFM and management of POPS can contribute to realisation of UN’s SDG 11 Sustainable Cities and Communities, hereunder to facilitate development of inclusive, safe, robust, and sustainable cities and local communities.

10. Tin Phan and Knut Boge (2023). [The Norwegian proptech market – An incubator for game changers](#), *IOP Conf. Ser.: Earth Environ. Sci.* **1176** 012002. doi: 10.1088/1755-1315/1176/1/012002
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### Abstract

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Property and construction are some of world's largest industries, but also some of the largest producers of waste and CO<sub>2</sub>-emissions. The property or real estate industry is currently undergoing a digital transformation. Property technology (proptech) is one of the driving forces for this transformation and enablers to establish a more sustainable society. This paper



investigates the Norwegian market through 154 proprietary proptechs established between 2013 – 2023. The aim is to understand how proprietary proptech are influencing the business practices and how the real estate industry's overall capacity, efforts, and

resources have been allocated in developing novel proptech. Three theoretical frameworks, namely sociotechnical systems (STS), diffusion of innovation, and sustainability transitions, have been used to investigate how proptech influences property development, the real estate industry and facility management (FM). The results suggest there are innovations coming from at least two unexpected places, namely customised modules moving faster than proprietary proptech, and game changers enabled by feedback loops from late stage and FM big data to early stage property development.

- II. Bereket Gebremedhin, Tewodros Tadesse, Amanuel Hadera, Girmay Tesfay, and Meley Mekonen Rannestad (2023). [Risk preferences, adoption and welfare impacts of multiple agroforestry practices](#), doi:10.1016/j.forpol.2023.103069

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### Abstract

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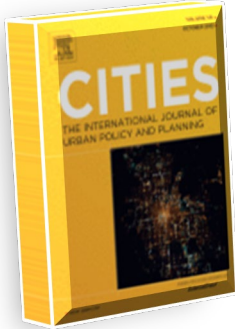
Despite growing literature on the impact of [agroforestry](#) practices on livelihoods and welfare, studies that account for the multiplicity of agroforestry practices, which may be governed by farmers' divergent risk and time preferences are lacking. This is especially the case for agro-silviculture and silvopasture agroforestry systems that entail significant fixed and management costs in which farmers' risk tolerance and patience may play a big role in adoption decisions. In this paper, we first explore the effect of farmers' risk and time preferences on the uptake of multiple agroforestry practices (MAPs). Then, we examine whether the multiplicity of agroforestry practices increases farmers' income using multinomial endogenous switching regression. We find farmers' risk and time preferences significantly govern the adoption of agroforestry practices, with risk-

averse farmers and farmers with lower discount rates more likely to adopt MAPs. More importantly, the complementarity and importance of adopting MAPs is highlighted by the 29% increase in income of farmers who practice both agro-silviculture and silvopasture. This result highlights the more important role of integrated agroforestry that creates synergy for welfare improvement.

12. Berit Irene Nordahl, Dag Einar Sommervoll (2023). [Reaping the premium in urban redevelopment](#). *Cities* 141 (2023), doi:10.1016/j.cities.2023.104450
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### Abstract

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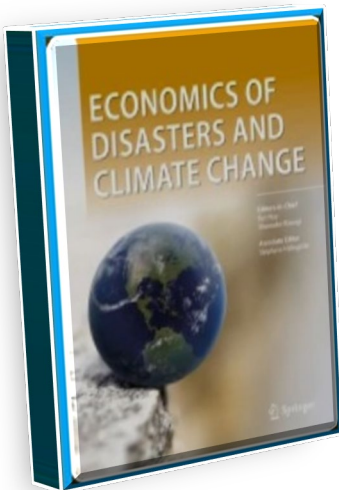


This paper investigates new new-built premium in urban redevelopments. Constructing new homes on urban redevelopment sites entails additional investments in reshaped lay-out, refurbished infrastructure, and upgraded outdoor areas. These improvements are expected to yield new-built premiums when the new units are put on the market, with ‘premium’ defined as the extra price that a developer asks for, compared to similar units in the second-hand market, in nearby locations.

13. Cuong Nguyen, Ilan Noy, Dag Einar Sommervoll, (2023). [Settling insurance claims with cash or repair and housing market recovery after an earthquake](#) *Economics of Disasters and Climate Change*, 7(1),117-134, 2023, doi:10.1007/s41885-022-00122-w
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### Abstract

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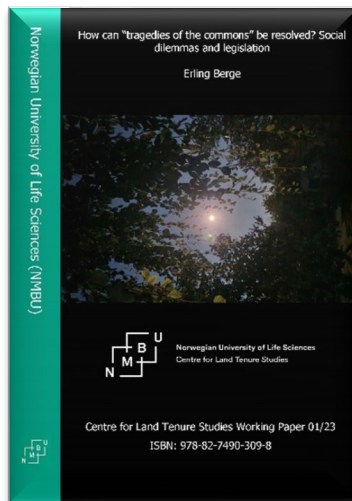
On the 22nd of February 2011, most houses in the city of Christchurch in New Zealand were damaged by an earthquake. Atypically for an earthquake, practically all were insured. We ask whether the way insurance claims were settled - in cash or through a managed repair program - was instrumental in mitigating the earthquake’s impact on the housing market. We use a genetic algorithm, which improves on a standard hedonic model, and identify the dynamics of the housing market in the city. We use four data sets: Housing market transactions, earthquake insurance claims paid by the public insurer, building consents issued by the local authority, and shake-maps measuring the intensity of the seismic shock. We find a negative correlation between insurance cash payouts and house prices after the earthquake, at the local level. We uncover evidence that suggests that the mechanism behind this result is that some

damaged houses, for which claims were provided in cash, were not actually fixed. In contrast, damages that were actively repaired by the insurer did not lead to any relative deterioration in prices. This difference in the performance of the housing market post-disaster should be considered when insurers and their regulators decide how to settle claims in future disaster events.

## CLTS WORKING PAPERS

1. Erling Berge (2023). How can “tragedies of the commons” be resolved? Social dilemmas and legislation. CLTS Working Paper No. 01/2023. Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway. [Download here](#)

### Abstract of the Paper



Humanity’s problem with climate change has been likened to a “tragedy of the commons”. If the atmosphere is seen as an open access dump for gasses like CO<sub>2</sub> or methane, Garret Hardin’s conclusion from 1968: “Freedom in a commons brings ruin to all” is obviously correct. But how do we create a regime where access to the atmosphere is controlled? The problem of cleaning up the atmosphere has also been likened to a “public good” problem. Stopping the emissions and cleaning up the atmosphere will cost. Each nation may reason that this cost might be postponed a year or two. The immediate problems of the society have to be solved first. And – if the rest of the world manages to retard the emissions sufficiently we might not have to pay that much. In the provision of public goods there is this free rider problem.

This is the background for a closer look at Norway from our earliest legislation: Did we experience collective action problems involving social dilemmas like the tragedy of the commons or the provision of public goods? If we did, did we solve the problems by developing institutions? Problems were identified in our earliest cattle farming communities and in our medieval urban settlements. The problems could be resolved through legislation.

2. Dag Einar Sommervoll (2023). [Price and Hedonic Heterogeneity Measures in Local Housing Markets](#). CLTS Working Paper No. 02/2023. Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.

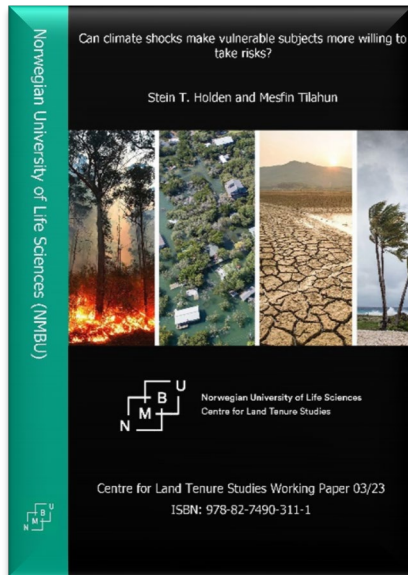
### Abstract of the Paper

In this paper, we develop a local housing stock heterogeneity measure. This measure may be used to monitor housing stock heterogeneity over time and in combination with other measures of policy interest. We illustrate the latter by looking at local housing stock heterogeneity, house price variation (measured by local Gini coefficients), and affordability measures.



- Stein T. Holden and Mesfin Tilahun (2023). [Can climate shocks make vulnerable subjects more willing to take risks? CLTS Working Paper No. 03/2023](#). Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.

## Abstract of the Paper



While economists in the past tended to assume that individual preferences, including risk preferences, are stable over time, a recent literature has developed and indicates that risk preferences respond to shocks. This paper utilizes a natural experiment with covariate (drought) and idiosyncratic shocks in combination with an independent field risk experiment. The risk experiment uses a Certainty Equivalent - Multiple Choice List (CE-MCL) approach and is played 1-2 years after the subjects were (to a varying degree) exposed to a covariate drought shock or idiosyncratic shocks. The experimental approach facilitated a comprehensive assessment of shock effects on experimental risk premiums with varying probabilities of good and bad outcomes. The experiment also facilitates the estimation of the utility curvature in an Expected Utility (EU) model, and alternatively, separate estimation of

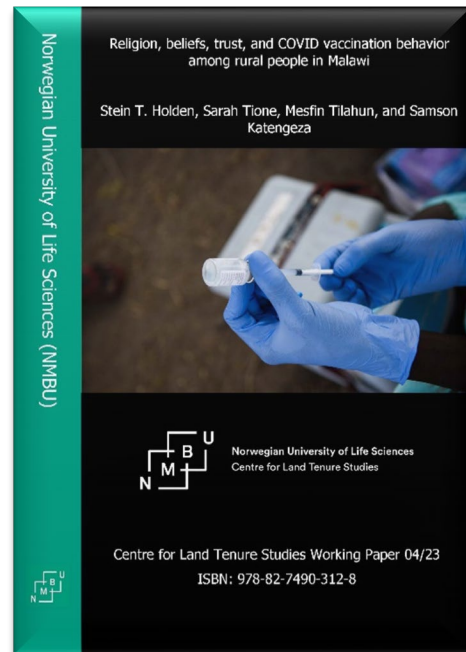
probability weighting and utility curvature in three different Rank Dependent Utility (RDU) models with a two-parameter Prelec probability weighting function. Our study is the first to comprehensively test the theoretical predictions of Gollin and Pratt (1996) versus Quiggin (2003). Gollin and Pratt (1996) build on EU theory and state that an increase in background risk will make subjects more risk averse while Quiggin (2003) states that an increase in background risk can enhance risk-taking in certain types of non-EU models. We find strong evidence that such non-EU preferences dominate in our sample and can explain the surprising result. In our sample of resource-poor young adults living in a risky semiarid rural environment in Sub-Saharan Africa, we find that the covariate drought shock had negative effects on risk premiums and the utility curvature and caused an upward shift in the probability weighting function. To our knowledge, this is the first paper to carry out such a rigorous test of a shock effect on utility curvature and probability weighting.



4. Stein T. Holden, Sarah Tione, Mesfin Tilahun, and Samson Katengeza (2023). [Religion, beliefs, trust, and COVID vaccination behavior among rural people in Malawi. CLTS Working Paper No. 04/2023](#). Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.

### Abstract of the Paper

This study investigates the religious and other beliefs related to the corona/COVID-19 pandemic and how they are related to covid risk perceptions, trust in COVID vaccines, and how these are affected by the religious beliefs, religious affiliations, trust in authorities, generalized trust, and how these affect vaccine demand/vaccine hesitancy. The study took place in rural areas in six districts in Central and Southern Regions of Malawi during April-May 2022 towards the end of the fourth wave of the pandemic that was dominated by the omicron variant of the virus, through personal interviews of 835 subjects. The study revealed five religious beliefs associated with the pandemic and one non-religious belief that vaccination would lead to infertility in women. This belief (14% of the sample) and the belief that vaccination leads to a triple-six mark from the Devil (33% of the sample) were strongly negatively associated with trust in the vaccine and the trust in the vaccine had a strong impact on the demand for vaccine/vaccine hesitancy. In addition, certain religious groups were associated with more of these pandemic-related beliefs, lower trust in the vaccines, and lower vaccine demand/stronger vaccine hesitancy. Trust in politicians, health personnel, and generalized trust contributed to stronger trust in vaccines. It may be important to address both the beliefs and some of the religious groups and their leaders to promote vaccine demand and reduce vaccine hesitancy.



5. Stein T. Holden and Mesfin Tilahun (2023). [Numeracy Skills, Decision Errors, and Risk Preference Estimation. CLTS Working Paper No. 05/2023](#). Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway. [Download here](#).

## Abstract of the Paper



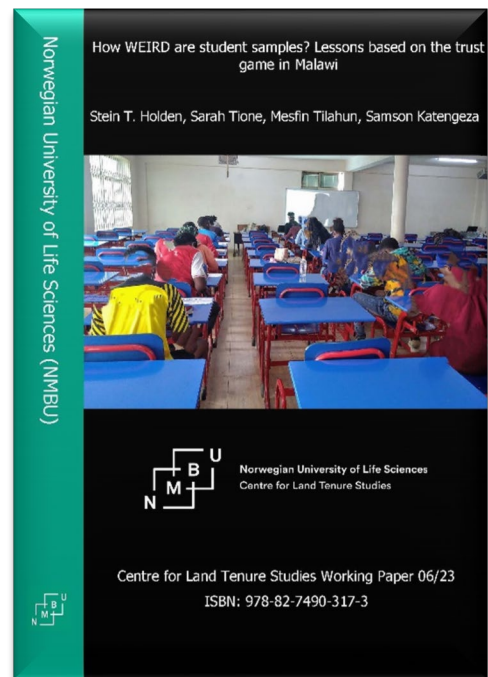
Basic numeracy skills are obviously important for rational decision-making when agents are facing choices between risky prospects. Poor and vulnerable people with limited education and numeracy skills live in risky environments and have to make rational decisions in order to survive. How capable are they to understand and respond rationally to economists' tools for the elicitation of risk preferences? Can we make designs that are simple enough for them to give rational responses that reveal their true preferences? And how much does variation in their limited numeracy skills contribute to decision errors and the estimated sizes of their risk preference parameters? Finally, we ask whether Expected Utility (EU) theory is sufficient or whether Rank Dependent Utility (RDU) does better in the analysis of decision errors and risk preferences in our context. We try to answer these research questions based on a large sample

of rural youth business group members from Ethiopia based on two variants of a Certainty Equivalent - Multiple Choice List (CE-MCL) approach with 12 and 10 Choice Lists (CLs) per subject. Numeracy skill scores are constructed based on a math test with 15 contextualized questions. The experiment facilitates the estimation of structural models while separating the effects of numeracy skills on decision errors in a Fechner error specification that is a function of numeracy skills and experimental design characteristics. The structural models estimate alternatively Expected Utility (EU) and Rank Dependent Utility (RDU) models, the latter with two-parameter Prelec probability weighting functions. It allows us to assess whether limited numeracy skills are correlated with EU-type risk tolerance (utility curvature) and RDU-type of probabilistic risk tolerance in the form of probabilistic insensitivity and optimism/pessimism bias. We find that weak numeracy skills are associated with slightly less risk tolerance in EU models, with stronger probabilistic insensitivity in RDU models, and with more random noise (Fechner error) in both types of models. However, even the subjects with the weakest numeracy skills performed quite well in the simple CE-MCL experiments with the binary choice elicitation approach, indicating that it was capable of revealing the risk preferences of such subjects with very low numeracy skills as they produced only marginally more decision errors than subjects with better numeracy skills.

- Stein T. Holden, Sarah Tione, Mesfin Tilahun, Samson Katengeza (2023). [How WEIRD are student samples? Lessons based on the trust game in Malawi. CLTS Working Paper No. 06/2023](#). Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway. [Download here](#)

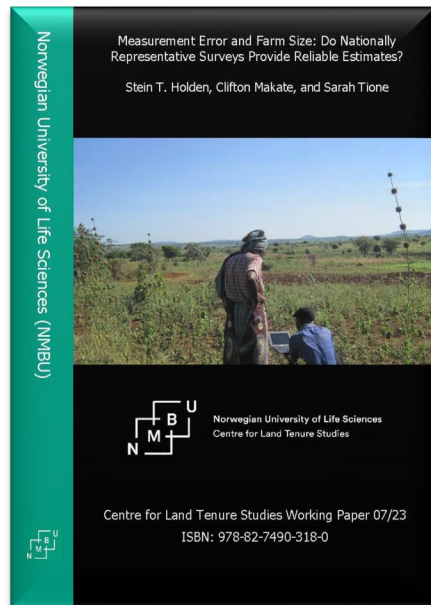
### Abstract of the Paper

We have used the standard trust game on a random sample of university students (N=764) and a random sample of rural residents (N=834) in Malawi. The study identifies social preference types (Bauer, Chytilova, & Pertold-Gebicka, 2014; Fehr, Glatzle-Rutzler, & Sutter, 2013) and how these relate to variations in trust and trustworthiness based on the standard trust game (Berg, Dickhaut, & McCabe, 1995). The games are framed as within-class and within-university for students and as within-village and within-district for the rural sample. Many previous studies have found students to represent a lower bound in experimental studies of pro-social, trust, and trustworthiness behavior compared to broader population samples. Contrary to this, we found that trust and trustworthiness were significantly higher among university students than among villagers in rural communities in Malawi. We decomposed the trust and trustworthiness to investigate the relative importance of alternative explanations for their variation and to explain the unexpected gap in trust and trustworthiness between the student and rural samples. We were able to explain most of the gap for trustworthiness and about half of the gap for trust. Factors contributing significantly to the variation in trustworthiness were social preference type, reciprocity norm, age, and gender. Trust and trustworthiness varied systematically across social preference types. Altruistic and egalitarian types were more common among the students than in the rural population, and the students also demonstrated stronger moral obligations to reciprocate in the game. On average, students and rural respondents were too optimistic about the expected returns in the trust game; students were more optimistic than rural subjects on average, and expectations influenced trust investments. Risk tolerance also enhanced trust investments; students were slightly more risk tolerant than rural subjects. Women were found to be less trusting and less trustworthy than men, and there was a larger share of women in the rural sample. There were only modest gains in trust and trustworthiness in the within-class vs. within-university and the within-village vs. within-district frames.



7. Stein T. Holden, Clifton Makate, and Sarah Tione (2023). Measurement Error and Farm Size: Do Nationally Representative Surveys Provide Reliable Estimates? CLTS Working Paper No. 07/2023. Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway. [Download here](#)

### Abstract of the Paper



We assess the reliability of measured farm sizes (ownership holdings) in the Living Standard Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) in Ethiopia and Malawi based on three survey rounds (2012, 2014, 2016) in Ethiopia and four rounds (2010, 2013, 2016, 2019) in Malawi. By using the balanced panel of households that participated in all the rounds, we utilized the within-household variation in reported and measured ownership holdings that, to a large extent, were measured with GPSs and/or with rope and compass. While this gives reliable measures of reported holdings, we detect substantial under-reporting of parcels over time within households. We find that the estimated farm sizes within survey rounds are substantially downward biased due to systematic and stochastic under-reporting of parcels. Such biases are substantial in the data from both countries, in all survey rounds, and in all regions of each country. Based on the analyses, we propose that the maximum within-household

reported farm sizes over several survey rounds provide a more reliable proxy for the actual farm size distributions, as these maximum sizes are less likely to be biased due to parcel attrition. The ignorance of this non-classical measurement error is associated with a downward bias in the range of 20-30% in average and median farm sizes and an upward bias in the Gini-coefficients for farm size distributions. We propose ideas for follow-up research and improvements in collecting these data types and draw some policy implications.

8. Huafeng Zhang and Stein T. Holden (2023). Country Socio-economic Development and Disparity in School Children's Reading Skills Learning in Africa. CLTS Working Paper No. 08/2023. Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway. [Download here](#)

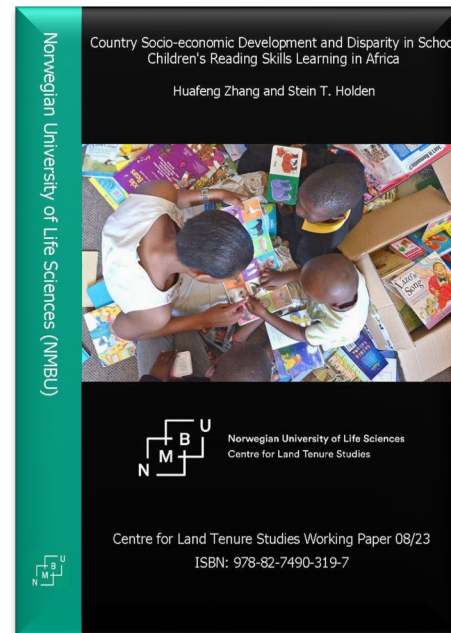
### Abstract of the Paper

To achieve the overarching goal of "education for all," there is a growing interest in understanding school learning outcomes and disparities among school children from disadvantaged backgrounds in Africa. This study employs data from standardized reading skill tests conducted in 11 low-income and lower-middle-income African countries through the Multiple Indicator Cluster Surveys (MICS) to evaluate children's learning outcomes. Drawing from recent nationally representative data, this multi-country study investigates the impact of various factors, including

a country's socio-economic development, rural-urban disparities, family background, and disability status, on children's reading skills acquisition.

Our study reveals that reading proficiency among children is generally low and exhibits significant variation across the 11 African countries under examination. Notably, reading skills proficiency rates are lower in countries with lower GDP per capita, smaller government education expenditure relative to GDP per capita, lower school enrolment, and higher pupil-teacher ratios. The study identifies notable learning gaps among children from disadvantaged backgrounds, including disabled children, those residing in rural areas, and those from poorer and less educated families.

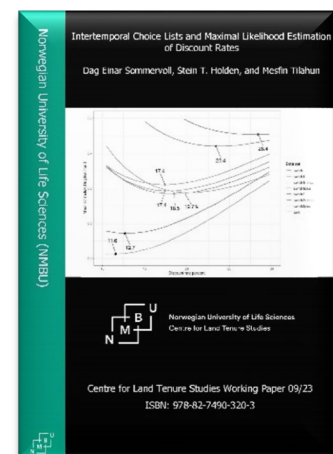
We specifically investigate the reading skills disparities between disabled and non-disabled children across various social categories and countries. These reading skills disparities remain fairly constant across the different social backgrounds, indicating that disabled children benefit equally from improved conditions as other children do. These results underscore the critical role of macroeconomic development and social equity in enhancing reading skills for all. To effectively reduce this gap, further targeted research is essential to understand the dynamics and identify tailored interventions.



9. Dag Einar Sommervoll, Stein T. Holden, and Mesfin Tilahun (2023). Intertemporal Choice Lists and Maximal Likelihood Estimation of Discount Rates. CLTS Working Paper No. 09/2023. Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway. [Download here](#)

### Abstract of the Paper

The experiments designed to estimate real-life discount rates in intertemporal choice often rely on ordered choice lists, where the list by design aims to capture a switch point between near-and far-future alternatives. Structural models like a Samuelson discounted utility model are often fitted to the model using maximal likelihood estimation. We show that dominated tasks, that is, choices that do not define the switch point, may bias ML estimates profoundly and predictably. More (less) dominated near future tasks give higher (lower) discount rates. Simulation analysis indicates estimates may remain largely unbiased using switch point-defining tasks only.



10. Øystein Jakob Bjerva, Fredrik Holth, Magne Reiten, Per Kåre Sky, and Ingrid Aasen (2023): *Jordskifteloven kommentarutgave* [The Land Consolidation Act – Annotated Edition]. Universitetsforlaget [Scandinavian University Press]. 376 pages. ISBN: 9788215023663.

### **Abstract of the Paper**

The Land Consolidation Act of 2013 provides rules for changing and determining property and rights conditions, as well as holding discretion. The 2013 Act replaces the Land Consolidation Act of 1979. It stipulates a new appeal system in cases decided by the Land Consolidation Court, and also contains a number of procedural and substantive changes. The Land Consolidation Act of 2013 is adapted to all types of properties, including properties in urban areas. The case processing is still based on rules in the Dispute Act with adapted rules in the Land Consolidation Act of 2013. The systematics of the Land Consolidation Act of 2013 are new and new terminology is introduced. The authors comment on each individual section of the law. They also provide a brief introduction to the jurisdiction of the Land Consolidation Court and the procedural rules in the new Act. In addition, the authors have prepared a mirror of laws.

11. Veslemøy Faafeng, Fredrik Holth, Dag Høgvard, and Per Kåre Sky (2023). *Matrikkelloven lovkommentar* [The Land Register Act Annotations]. Universitetsforlaget [Scandinavian University Press]. 328 pages. ISBN: 9788215032122.

### **Abstract of the Paper**

The Land Registry Act of 2005 is intended to ensure access to important property information by maintaining a reliable register (the land register or cadastre) of all real properties in the country. This commentary on the law contains a thorough discussion of the law and its provisions, and the authors comment on each section. In the introduction to the book, the Land Registry Act is put in the context of other legislation, among other things. The comment is up to date with adopted amendments to the Land Registry Act, which will come into force from 1 January 2021. This also applies to adopted amendments to the Land Registry Regulations, which will enter into force from the same date.

12. Hans Sevattal, Per Kåre Sky, and Erling Berge (2023): *Eigedomsteori: Innføring i samfunnsvitenskapelig teoritilfang for utøving av eidedomsfag* [Real Property Theory: Introduction to Social Science Theories for Execution of Land Management]. Norwegian University of Life Sciences, Faculty of Landscape and Society, Department of Property and Law. 145 pages. ISBN: 9788274903142.

### **Abstract of the Paper**

This is a revised version of the 2019 edition, which has been updated with more recent literature.



13. Julia Braun, Hans Petter Burghof, Dag Einar Sommervoll The Effect of Countercyclical Capital Buffer on the Stability of the Housing Market (2023) SSRN 4349651

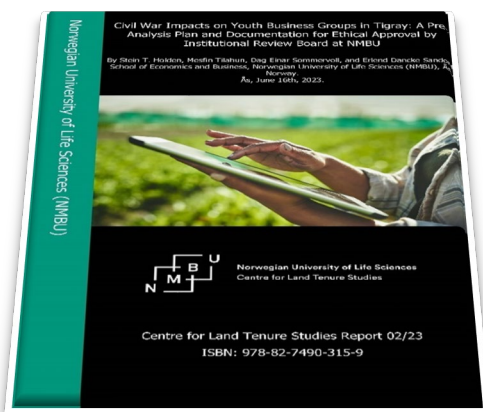
**Abstract of the Paper**

After the great turmoil of the latest financial crisis, the criticism of the regulatory frameworks became increasingly stronger. The rules that banks needed to comply with are presumed to be procyclical and unable to prevent and mitigate the extent of strong financial and economic cycles. As a result, Basel III introduced a set of macroprudential tools to overcome these regulatory shortfalls. One tool that strives to counteract the issue of procyclicality is the countercyclical capital buffer (). This paper introduces a heterogeneous agent-based model that investigates the implication of the new regulatory measure. We develop a housing and a financial market where economic agents trade residential property that is financed by financial institutions. To examine the macroeconomic performance of the , we evaluate the dynamics of key stability indicators of the housing and the financial market under four different market conditions: in an undisturbed market and in times of three different structural shocks. Computational experiments reveal that the is effective in stabilizing the housing and the financial market in all market settings. The new macroprudential tool helps to mitigate economic fluctuations and to stabilize market conditions, especially in the aftermath of a crisis. It is not able to prevent any of the crises tested. However, the extent of the stabilizing effect varies according to market conditions. In the shock scenarios, the performs better in dampening market fluctuations and increasing banking soundness than in the base scenario.

## CLTS REPORTS

- I. Stein T. Holden, Mesfin Tilahun, Dag Einar Sommervoll, and Erlend Dancke Sandorf. [Civil War Impacts on Youth Business Groups in Tigray: A Pre-Analysis Plan and Documentation for Ethical Approval by Institutional Review Board at NMBU. CLTS Report No. 2/2023.](#)  
Norwegian University of Life Sciences, Aas, Norway

### Summary



This is a revised plan for the finalization of the “Youth Groups for Sustainable Development: Lessons from the Ethiopian Model” (Researcher project under NORGLOBAL2, funded by the Research Council of Norway). The project started in 2019 and was planned to last for four years. A civil war broke out in the study areas in November 2020 and made it impossible to continue the project according to the initial plan. A lot of survey and experimental data had already been collected by this time and the project was in the process of implementing a number of Randomized Control Trials (RCTs) on business group training, leadership, and women’s empowerment. These RCTs were planned implemented and analyzed in collaboration with a number of international partners. We were unfortunately unable to do this. The civil

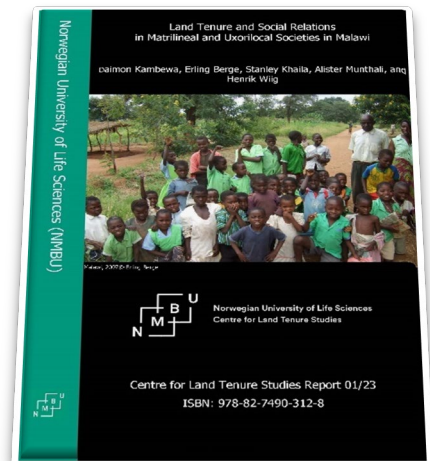
war lasted for two years and a substantial share of the project funds were locked into local banks and the local collaborating university (Mekelle University) that were closed down during the civil war. We asked for an extension of the project to the end of 2023 and was granted this by the Research Council of Norway – to enable us to do a final assessment what has happened to the youth groups, their members, and families during the civil war and to assess the youth (business) groups’ role in the recreation of the members’ livelihoods after the civil war.

We were informed on June 15th, 2023, that the project funds that have been locked in the bank in Mekelle since the civil war started can be accessed through Mekelle University for the continuation of the project fieldwork. We submitted this plan and application for ethical approval at NMBU on June 16th, 2023. Approval was received on August 3rd, 2023. Some minor revisions were implemented based on the review and further preparation of baseline data from 2019. Training of the field team and programming of final survey instruments with translation into the local language *Tigrinya* started immediately. The training and pilot testing of the instruments were completed by August 19th, 2023. The actual fieldwork started on August 22nd after some final editing of the experiments. This report thus presents the final instruments.

2. Daimon Kambewa, Erling Berge, Stanley Khaila, Alister Munthali, and Henrik Wiig. [Land Tenure and Social Relations in Matrilineal and Uxorilocal Societies in Malawi. CLTS Report No. 1/2023](#). Norwegian University of Life Sciences, Aas, Norway

## Abstract

This paper is about social relations in customary lands for the matrilineal uxorilocal culture of the Lomwe, Nyanja and Yao tribes in Southern Malawi. The study was carried out in the districts of Chiradzulu and Phalombe. Qualitative methods were used to examine local histories and practices to identify the social and power relations between males and females in matrilineal groups and the roles of chiefs, extended families, and traditional practices in access to and control over customary land. By focusing on local histories the study documents that patterns of access to and control over customary lands are historical in nature and embedded in social ties and power relations. Male and female members of the household or family have equal use rights but unequal ownership rights. The land belongs to the extended family and not to the community or individuals. Instead of saying the land belongs to 'me' the people say the land belongs to 'us' even though the individuals may have user rights in perpetuity. The 'us' implies the extended family and not the community. The power and control over the land is located in the group of sisters and not in the head of family (mwini-mbumba) or the Chief. The patterns of control have to be understood for proper decisions to be made on how to organize access to and control over land, especially in a country where livelihoods are dependent on agriculture or are land based in nature.



## CONFERENCE PARTICIPATION

1. Professor Stein T. Holden presented a paper titled "[Can climate shocks make vulnerable subjects more willing to take risks?](#)" at the [Nordic Conference in Development Economics, Gothenburg University, Gothenburg, Sweden, June 14-15, 2023](#). The paper is authored by Holden, S. T. & Tilahun, M. (2023) and published in the Environmental and Resource Economics Journal.
2. As an Invited Speaker at the [Australasian Agricultural and Resource Economics Society's 37th Annual Conference](#), Professor Stein T. Holden presented a paper titled "Social Preferences, Trust, and Performance of Youth Business Groups". The conference dates are 7<sup>th</sup>-10<sup>th</sup> February 2023, Christchurch, New Zealand.
3. Professor Stein T. Holden presented a paper titled "[Can climate shocks make vulnerable subjects more willing to take risks?](#)" at the Department of Economics and Public Policy, University of Adelaide, Australia, February 19th, 2023.
4. Associate Professor Terje Holsen and Associate Professor Knut Boge presented a paper titled "Urban FM and POPS – implications for UN's SDG 11 Sustainable Cities and Communities" at the [CIB W070 conference in Trondheim, Norway, 8-11 May, 2023](#).
5. Associate Professor Helén Elisabeth Elvestad presented a paper titled "Distribution of net added value from rezoning - A challenging measure in the Norwegian Land Consolidation Act" at the International Federation of Surveyors' (FIG) FIG Working Week 2023 in Orlando, Florida, USA, 28 May-1 June, 2023.
6. Associate Professor Terje Holsen presented a paper titled "Land tenure inertia in compact city development – How land tenure structure affects urban transformation" at the [EALD European Land Use Academy's 12th International and Interdisciplinary Symposium in Bergen, Norway, 7-9 September, 2023](#).

## CLTS PAPERS STATISTICS AT S-WOPEC AND REPEC

S-WoPEc acts as a clearing house and central repository for bibliographic data about Nordic working papers in Economics. CLTS working papers are also available in electronic form and can be downloaded from S-WoPEc and EconStor. S-WoPEc is part of RePEc (Research Papers in Economics), an online platform with an effort to coordinate the dissemination of information about Working Papers in Economics. Based on RePEc statistics, Table I and Figure I show that in the early months of 2023, CLTS uploaded content that encouraged researchers to download, especially in February 2023. As the year ended, the CLTS webpage did not upload more content to encourage more downloads compared to the same time in 2022. The statistics on impact factor show that the current recursive impact factor for the CLTS page is 0.14 with an h-index of 8. The figures in the parenthesis are the 10-year average. This implies that the 10-year impact factor for the CLTS is 0.09 and the h-index is 3. Figures 3 to 5 summarise the citations and documents published over the years.

Table I. CLTS visibility statistics from RePec in 2021 and 2022

Month	2022		2023		Percent Change in Abstract views	Percent change in Downloads
	Abstract Views	Downloads	Abstract Views	Downloads		
Jan	46	22	38	45	-21%	51%
Feb	46	56	64	138	28%	59%
Mar	46	15	50	14	8%	-7%
Apr	47	14	35	7	-34%	-100%
May	35	9	45	7	22%	-29%
Jun	43	11	48	11	10%	0%
Jul	33	8	25	3	-32%	-167%
Aug	40	7	22	3	-82%	-133%
Sep	27	5	128	13	79%	62%
Oct	26	7	33	9	21%	22%
Nov	41	109	57	9	28%	-1111%
Dec	39	25	28	13	-39%	-92%
			<b>Average</b>		<b>-1%</b>	<b>-120%</b>

Impact factors (last 10 years) - <http://ideas.repec.org/top/#series>

- Simple impact factor: 1.95 (0.6)
- Recursive impact factor: 0.14 (0.09)
- Discounted impact factor: 0.48 (0.2)
- Recursive discounted impact factor: 0.04 (0.04)
- h-index: 8 (3)
- Euclidian citation score: 30.9 (5.03)

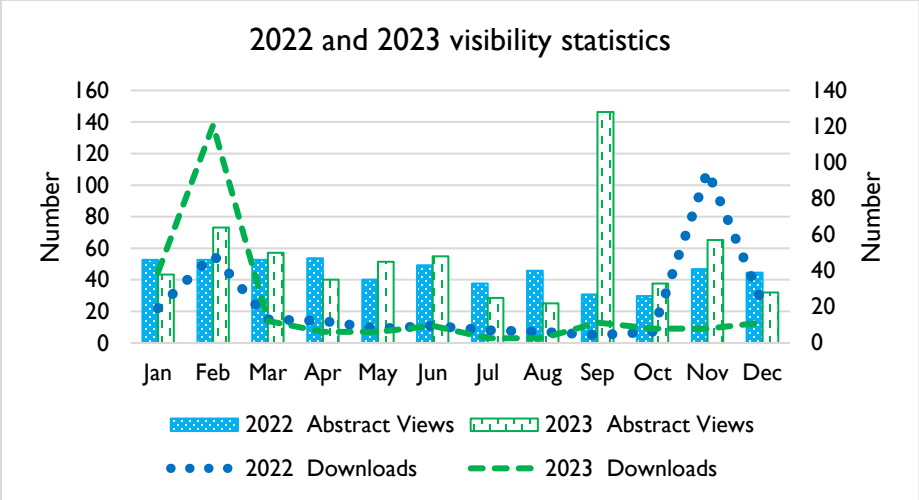


Figure 1. 2022 and 2023 CLTS Visibility statistics from RePec

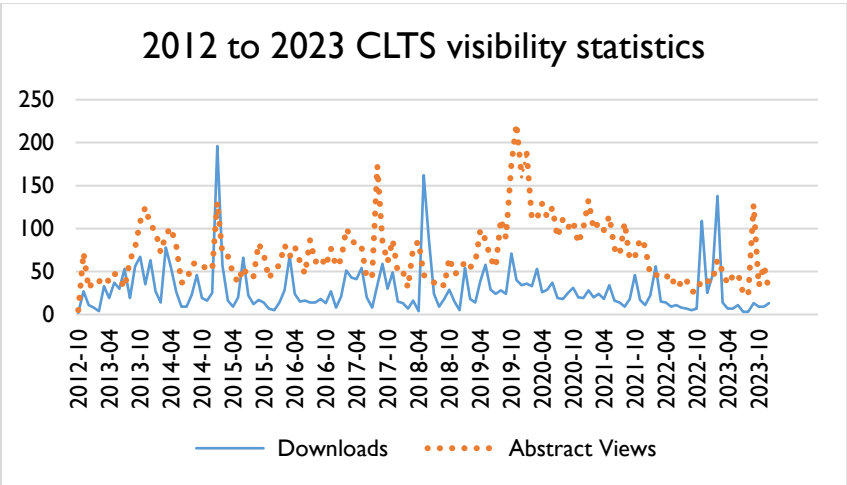


Figure 2. 2012 to 2023 CLTS Visibility statistics from RePec

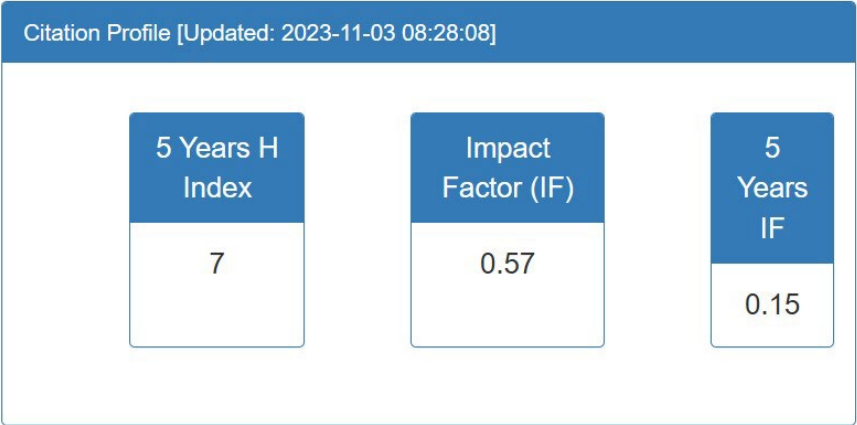


Figure 3. CLTS 5-year Impact factor



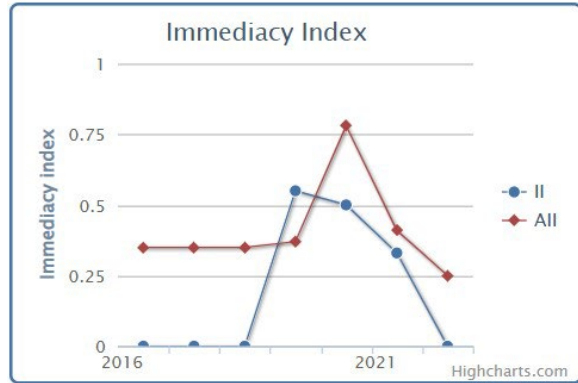
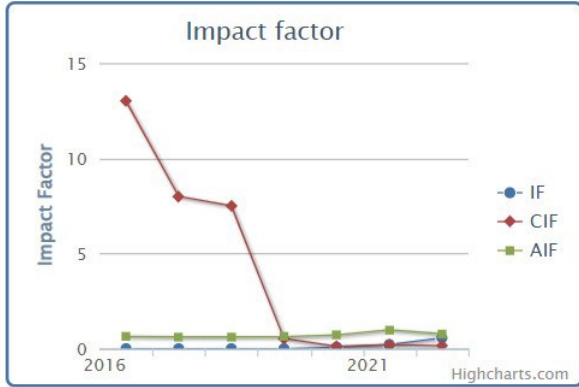


Figure 4. CLTS 10-year Impact factor

Note: IF-Two years Impact Factor:  $C2Y / D2Y$ , AIF-Average Impact Factor for all series in RePEc in year  $y$ , CIF-Cumulative impact factor, II-Immediacy Index:  $CiY / Documents$ , All-Average Immediacy Index for series in RePEc in year  $y$

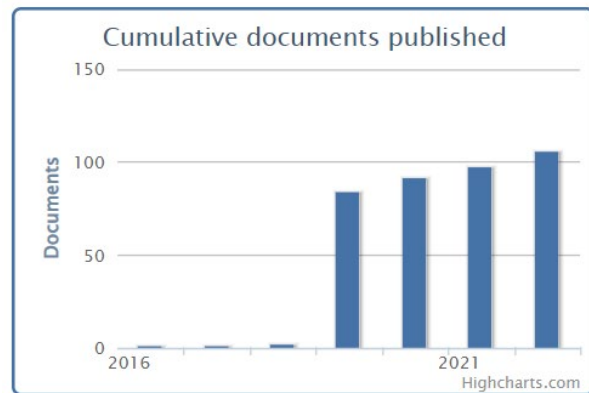
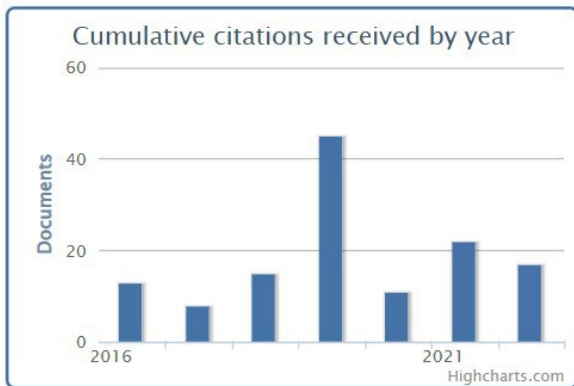
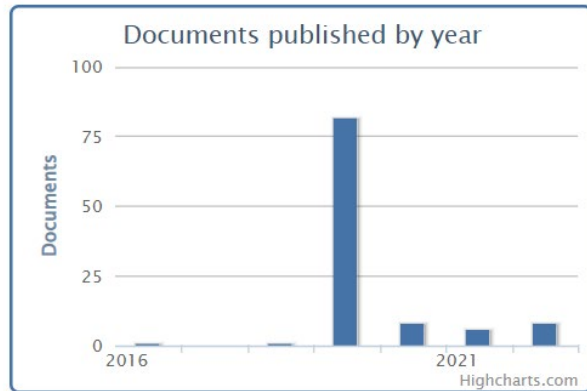
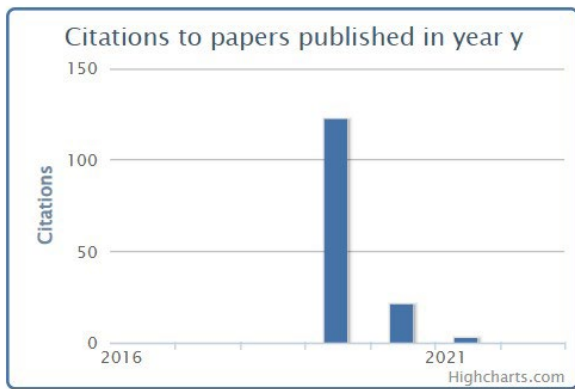


Figure 5. CLTS Citations since 2016

## CLTS WEBSITES

- The activities of the centre are documented at the website [www.nmbu.no/clts](http://www.nmbu.no/clts).
  - Our main page is in English, but we also have a Norwegian website:
  - <https://www.nmbu.no/fakultet/hh/forskning/forskningscentre/clts>, where research and activities are published in Norwegian.

## S-WoPEC Website

- Scandinavian Working Papers in Economics - <https://swopec.hhs.se/nlsclt/>

## LandPortal

- The CLTS research work is also accessible through the Landportal webpage: <https://landportal.org/organization/centre-land-tenure-studies>

## EconStor

- The CLTS working papers and reports are available through **EconStor**. <https://www.econstor.eu/handle/10419/242695>