



Centre for Land Tenure Studies 2019 Annual Report



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Summary of activities in 2019

In the year 2019, the Centre for Land Tenure Studies (CLTS) has produced 9 working papers. These papers were circulated on both the CLTS webpage and the Scandinavian Working Papers in Economics (S-WoPEc) webpage. The papers are also available online on the library (Brage) of Norwegian University of Life Sciences (NMBU). Through these webpages, the number of abstract views for the working papers doubled while full paper downloads increased by 11 percent compared to publications in 2018.

In the year, CLTS also registered several papers published in international journals through the research work of NMBU faculty members and PhD students. An overview of the activities from faculties at NMBU involved in CLTS research-related work indicates that three PhD students completed their studies while new PhD students were recruited under different research projects in 2019.

Centre for Land Tenure Studies

The Centre for Land Tenure Studies was opened at NMBU (earlier UMB) on the 27th 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,
- Shai Andre Divon, Department of International Environment and Development,
- Inger-Lise Saglie, Department of Landscape Architecture and Spatial Planning,
- Tron Haakon Eid, Department of Ecology and Natural Resource Management,

People at CLTS

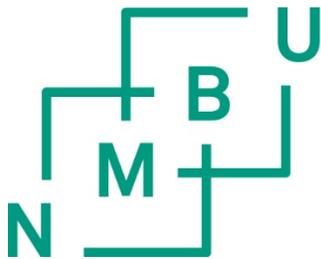
Core team: Ole Hofstad, Stein Holden, Terje Holsen and Espen Sjaastad.

Associates: Bernt Aarset, Arild Angelsen, Tor Arve Benjaminsen, Erling Berge Einar Bergsholm, Per Kåre Sky, Sølve Bærug, Einar A. Hegstad, Darley Jose Kjosavik, Eirik Romstad, Dag Einar Sommervoll, Håvard Steinsholt, Steinar Taubøll, Arild Vatn and Pål Vedeld.

Post doc researcher: Mesfin Tilahun

PhD students: Girmay Behre, Desta Brhanu, Manasbo Tesfay, Sarah Tione

Administrative support: Kateryna Krutskykh, 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 level.
- Initiate and support 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”.

2019 Report

Faculty Activities at NMBU

School of Economics and Business

The main activities of relevance in our School were under the NORAD NORHED capacity-building program, Climate Smart Natural Resource Management and Policy (CLISNARP), a collaboration with Mekelle University in Ethiopia and LUANAR university in Malawi from where a number of PhD-students come to take their PhDs in our School. We have three papers published in international journals where they are first authors. Two of the PhD-students have completed their PhDs under the program and the remaining ones are expected to complete next year. An overview chapter for the project achievements has also been published in an international book. Four papers from the project were also presented in international conferences.

The other major activity in the School was the startup of the new research project "Youth Business Groups for Sustainable Development: Lessons from the Ethiopian Model" (YOUTHBUS), funded by the Research Council of Norway under the NORGLOBAL2 program. The fieldwork under the project was initiated in Tigray Region in Ethiopia in this four-year project which focuses on resource-poor rural youth that have been offered to establish formal businesses as primary cooperatives. The project implements surveys and experiments for a large number of such youth business groups and group members in order to understand factors influencing their varying degree of success. It also includes training experiments implemented as Randomized Control Trials with focus on leadership training, female group member empowerment and risk management. Four CLTS Working Papers were prepared to summarize findings from the baseline survey of youth business groups and members.

The School is also involved in another research project, "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 recruited on the program and work on seed access is planned in Ethiopia, Malawi and Tanzania based on nationally representative surveys (LSMS) and field experiments.

LANDSAM – Department of Property and Law

Leikny Gammelmo defended her Ph.D. thesis, "Sound procedures of handling applications for changing real property" on April 12 2019. Main supervisor: Professor Per Kåre Sky.

New Ph.D. students:

- Cathrine Hoddevik: "The Land Consolidation Act's chapter on distribution of net added value from rezoning". Main supervisor: Associated Professor Terje Holsen
- Heidi Udnes: "The Land Consolidation Act's measures for project-related land consolidation". Main supervisor: Professor Per Kåre Sky

- Birgitte Akerhaugen: " Registration of public roads in the cadaster". Main supervisor: Associated Professor Helén Elvestad

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

- LANDFRAG – Land fragmentation in agriculture—causes, consequences and measures
- FUTGRAZE – Towards a Future for Common Grazing – rules, norms and cooperation in outlying grazing areas
- Plan Coast – Integrated Coastal Zone Management and Planning: Legal and structural challenges

LANDSAM – Noragric

- The project "Access to seeds: from Emergencies to Seed System development" (ACCESS) started in 2019 (see also above). No other research projects focusing on land tenure were started at Noragric in 2019; a few publications were nevertheless produced, based on earlier projects.
- Two new PhD candidates were recruited to Noragric's IEDS programme in 2019. Land tenure is not the central focus in either of them, but the topics (mining in Ecuador, forest governance in Norway) do allow for incorporation of tenure relations.

CLTS Working Papers

1. Sarah E. Tione and Stein T. Holden (2019). [Urban proximity, demand for land and land prices in Malawi. CLTS Working Paper No. 1/2019](#) . Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



Abstract of the paper: We assess the spatial and intertemporal change patterns of farmland prices using per hectare minimum willingness to accept (WTA) sales and rental prices in Malawi. We use three rounds of nationally representative household farm panel data from the Living Standards Measurement Surveys (LSMS), collected in 2010, 2013 and 2016. We study price changes by splitting the sample in quintiles based on distance from the nearest major city, building on the von Thünen theory and urban growth model.

Generally, WTA land prices decrease with distance from urban areas. However, WTA land sales prices increased more sharply between 2010 and 2013 in rural areas (+100% vs. +30% in urban proximity). Conversely, by 2016 land sales prices were again, like in 2010, about three times as high in areas near urban centres compared to remote rural areas. Even though sales prices declined in remote rural areas from 2013 to 2016, rental prices remained high. sing farm level population pressure, we show that local population pressure is a driver of WTA land prices, which is an indicator of land scarcity challenges and a growing demand for land.

Although a policy focus in the past decade within Africa has been on the new demand for large scale land transfers in rural areas, we see that shadow land prices in smallholder agriculture in Malawi were affected by this sharp increase in demand as well as by increasing population pressure and urbanization. With growing land scarcity, land markets are becoming more important and need to be factored in when formulating development policies that aim to improve access to land and land use efficiency in both peri-urban and rural areas.

2. Erling Berge (2019). [Learning cooperation from the commons](#). CLTS Working Paper No. [2/2019](#) . Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.

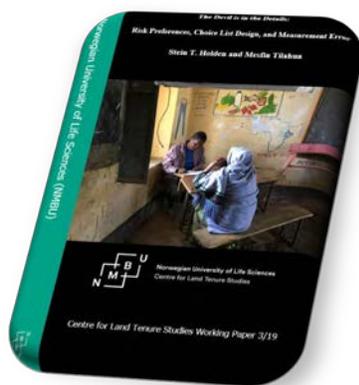


Abstract of the paper: The paper discusses the link between commons as they might have been used in prehistoric Norway and the rules concerning the exploitation of the commons as found in the oldest known legislation for regions of Norway, Gulating Law and Frostating Law.

One clear social dilemma has been identified: the setting of a common date for moving animals from the home fields up to the summer farms and home again in the fall. The problem was obvious and the solution not particularly difficult to institute. Many more problems were of course present, but they did not rise to the level of a social dilemma. All such problems were managed by the rules enacted by the bygdeting along with other problems of a community.

In particular the process of inheritance, the problems of fencing, how to change borders between neighbours and between individually owned fields and the commons, were treated by extensive rules. The bygdeting managed such issues from prehistory until the 16th and 17th centuries when reforms initiated by the Danish-Norwegian kings started to take effect, making the rule-of-law more uniquely a task for the central authorities and of less concern for the local communities. Maybe the basic legacy of the long history of local rule was a strong belief in the court system, that it would secure the old saying: "By law the land shall be built, not with unlaw wasted".

3. Stein T. Holden and Mesfin Tilahun (2019). [The Devil is in the Details: Risk Preferences, Choice List Design, and Measurement Error](#). CLTS Working Paper No. [3/2019](#) . Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



Abstract of the paper: We use a field experiment to estimate the risk preferences of 945 youth and young adult members of 116 rural business groups organized as primary cooperatives in a semi-arid risky environment in northern Ethiopia. Multiple Choice Lists with binary choices between risky prospects and varying safe amounts are used to identify the certainty equivalent for each risky prospect. Rank Dependent Utility

Models with alternatively Wilcox' (2011) Contextual Utility or Busemeyer and Townsend (1992, 1993) Decision Field Theory heteroskedastic error specifications are used to estimate risk preference parameters and parametrized model noise. The study aims to a) assess potential biases associated with Choice List design; b) assess a time-saving elicitation method; c) inspect the predictive power of the predicted risk preference parameters for respondents' investment, income and endowment variables; d) assess how the predictive power is associated with model noise and the addition of two low probability high outcome risky prospects that may help to capture utility curvature more accurately.

Substantial risk parameter sensitivity to Choice List design was detected. The rapid elicitation method appears attractive as it facilitates use of a larger number of Choice Lists with variable attributes although it is sensitive to bias due to random error associated with randomized starting points. The addition of the two Choice Lists with low probability high outcomes substantially enhanced the explanatory power of the predicted risk preference parameters and resulted in substantially higher estimates of the utility curvature parameter.

4. Stein T. Holden and Mesfin Tilahun (2019). [How related are risk preferences and time preferences? CLTS Working Paper No. 4/2019](#) . Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



Abstract of the paper: Risk and time preferences are fundamentally important for financial decisions. We study such preferences for business group members based on field experiments in Ethiopia. The relationship between risk preferences and time preferences has been subject to intensive research and debate among behavioral and experimental economists lately. We aim to contribute to this literature based on a Double Multiple-Choice List approach used in an incentivized field experiment. First, we provide strong evidence of diminishing impatience in our data that cannot be explained by present bias.

Next, we assess whether measures of diminishing impatience can be associated with measures of risk aversion and probabilistic sensitivity. We also assess whether measurement error in the risk experiment could be the culprit and create spurious correlations between measures of risk aversion and discount rate elasticities with respect to time horizon. Using a random coefficient model, we find strong evidence of diminishing impatience and large and highly significant individual variation in discount rate elasticities with respect to time horizon. We find only weak

support for the idea that diminishing impatience is explained by probabilistic sensitivity due to uncertainty about delayed payouts in the discount rate experiments.

Risk aversion and optimism/pessimism were unrelated to model noise. More pessimistic and more risk averse respondents had more hyperbolic time preferences and these results were not sensitive to measurement error. Surprisingly, more consistent responses in the risk experiments (lower measurement error) were found for respondents with more hyperbolic time preferences and respondents with higher probabilistic insensitivity.

5. Stein T. Holden and Mesfin Tilahun (2019). [Youth Business Groups and Leadership: - Group Leader and Member Survey Statistics. CLTS Working Paper No. 5/2019](#) . Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



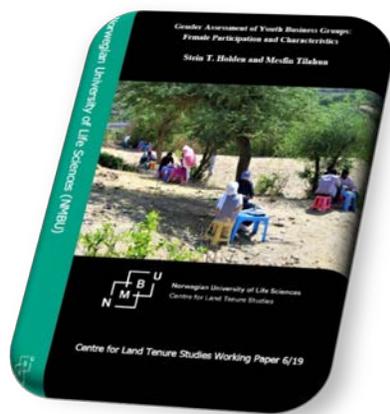
Abstract of the paper: This working paper is an output from the research project “Youth Business Groups for Sustainable Development: Lessons from the Ethiopian Model” that is funded by Research Council of Norway under the NORGLOBAL2 research program for the period 2019-2022. This working paper provides a summary of baseline survey data collected in the period January-May 2019 primarily from 2427 sampled members of 246 active youth business groups in four districts in the Tigray Region of Ethiopia. The large majority of the active groups are functioning well and have overcome the potential collective action problem associated with self-organization.

Most group members are satisfied with their group boards and group leaders and are able to change board members that do not function well. Their bylaws facilitate and enforce compulsory participation in group meetings and group work activities. Equal sharing of incomes and work responsibilities is the dominant principle. Punishment for violation of group bylaws is practiced with graduated sanctions that are socially accepted by the large majority of group members. Most group leaders were motivated to continue as group leaders, only 4% were unmotivated, although 67% of the group leaders found the job to be challenging or very challenging. The group leaders were inspired by the good social relations in their groups, and by that they learned a lot from being group leaders. 68% of the group leaders stated that the group performance had improved over the last three years and only 14% that it had deteriorated.

Most groups have been able to protect the vegetation on the allocated land and according to the group leaders the vegetation has improved on the land of 81% of the groups and has been

stable for another 14% of the groups. Most groups have been able to establish a system with border demarcation, fencing and/or guarding such that the problem with illegal harvesting by outsiders has been reduced. Most youth group members are environmentally conscious and willing to take their part of the compulsory annual 20 days of work for free for conservation of the natural resources in their community.

6. Stein T. Holden and Mesfin Tilahun (2019). [Gender Assessment of Youth Business Groups: Female Participation and Characteristics. CLTS Working Paper No. 6/2019](#) . Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



Abstract of the paper: This working paper is an output from the research project “Youth Business Groups for Sustainable Development: Lessons from the Ethiopian Model” that is funded by Research Council of Norway under the NORGLOBAL2 research program for the period 2019-2022. This working paper provides updated and extended information on the gender differences among group members and how these are related to likelihood of becoming group board members and leaders.

The study surveyed 274 groups in the period January-May 2019. 28 of the 274 groups have been dissolved by February 2019 for various reasons (internal conflicts, no land provided, low returns to their activity, migration, lack of motivation among members). Lack of support from the local authority was given as the main reason for groups being dissolved (23 of 28 groups). This means that close to 90% of the business groups are still active. Most of the statistics we present below are for the remaining 246 active groups that we intend to include in the training experiments (including control groups) and follow up surveys.

Average group size in February 2019 for the 246 active groups was 17.6 members with group sizes varying from 7 to 175 members. The average number of male members was 10.9 against 6.7 female members. 41.4% of the male and 23.6% of female surveyed members are board members. 12.7% of the male and 1.1% of the female surveyed members were group leaders. Only 30.8% of the female members compared to 72.3% of the male members owned a mobile phone at the time of the survey. This puts females in a more disadvantaged position as the mobile phones are important for within-group communication and organization of group activities.

7. Stein T. Holden and Mesfin Tilahun (2019). [Are land-poor youth accessing rented land? Evidence from northern Ethiopia. CLTS Working Paper No. 7/2019](#) . Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



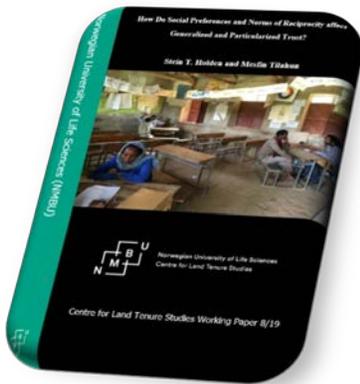
Abstract of the paper: Continued strong population growth in already densely populated rural areas in parts of Sub-Saharan Africa makes it harder for youth to choose agriculture as their main source of income. We investigate whether near landless youth still can access rented land as a complementary source of income. We utilize a unique data of rural youth that have been allocated rehabilitated communal land to form formalized business groups for joint business activity. They rely on complementary sources of income and land renting is one of these. Utilizing a sample of 3500 youth business group members from 360 youth business groups collected in 2016 and 2019 in

five districts in Tigray region of Ethiopia, we find that 42% of the youth had access to rented land in 2016 and 47% in 2019.

Average area rented was 0.66ha in 2016 and 0.74ha in 2019. Land renting is the most important source of income for 17 and 16% of the youth in 2016 and 2019 and the second most important source of income for 14 and 20% in 2016 and 2019, respectively. Access to rented land is constrained, however. Male youth who own oxen are much more likely to be able to rent in land. Utilizing a trust game to elicit trust and trustworthiness of the youth, we also found a positive association between trustworthiness and access to rented land. Trust reduces transaction costs and more trustworthy youth have better access to rented land. The importance of trust is also illustrated by the dominance of kinship contracts and contracts with close neighbors reducing the costs of monitoring tenants.

The prohibition of land sales in Ethiopia limits the potential of the “agricultural ladder” to facilitate that youth can climb out of poverty through purchase of land. The youth group model may, however, help to overcome the barrier associated with very small and shrinking farm sizes and facilitate the development of larger and more professional land-based production units. Land renting is one of the rural livelihood diversification options that youth pursue and that help to sustain the youth business groups.

8. Stein T. Holden and Mesfin Tilahun (2019). [How Do Social Preferences and Norms of Reciprocity Affect Generalized and Particularized Trust? CLTS Working Paper No. 8/2019](#). Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



Abstract of the paper: We study how social preferences and norms of reciprocity are related to generalized and particularized trust among members of youth business groups in northern Ethiopia. Members of these groups are recruited among land-poor rural youth. The Ethiopian government promotes youth employment among land-poor rural youth by allocating them rehabilitated communal lands for the formation of sustainable businesses. The groups are organized as primary cooperatives, elect their own board, make their own bylaw and prepare a business plan that has to be accepted by the local government.

The typical sustainable production activities that the groups are allowed to invest in include apiculture, forestry, horticulture, and livestock production.

A recent study found that they to a large extent organize themselves according to Ostrom's Design Principles (Ostrom 1990; 2010; Holden and Tilahun 2018) and that group performance, including trust, is positively correlated with the degree of compliance with the Design Principles. Our study has used incentivized experiments to elicit social preferences and trust. We use data from 2427 group members in 246 functioning business groups collected in 2019. We find that members with altruistic preferences have stronger norms of reciprocity and are more trustworthy and trusting both in outgroup and ingroup contexts. The norm of reciprocity is stronger in groups with a higher share of altruistic members and this enhances both generalized and particularized trust. The average levels of trust and trustworthiness among group members were low, even in the African context, but there were large variations in average levels of trust and trustworthiness across groups. We can, therefore, rule out that high levels of trust and particular social preferences are necessary for the stability achieved by the majority of these recently established youth business groups in northern Ethiopia. This indicates that the model is quite robust and may be replicable elsewhere.

9. Sarah E. Tione and Stein T. Holden (2019). [Transaction costs and land rental market participation in Malawi. CLTS Working Paper No. 9/2019](#). Center for Land Tenure Studies, Norwegian University of Life Sciences, Aas, Norway.



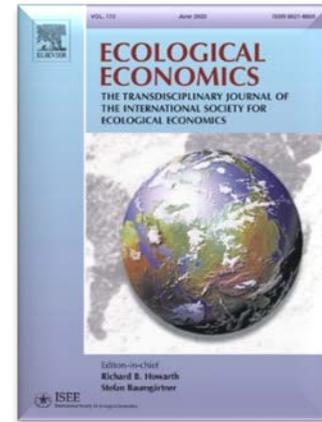
Abstract of the paper: We assess the extent of access and degree of participation by smallholder tenants in the land rental market in Malawi. Our study is based on three rounds of nationally representative Living Standards Measurement Surveys collected in 2010, 2013 and 2016, from which we construct a balanced panel. We apply the transaction cost theory, which suggests transaction costs to be non-linear and depend on resource as well as socioeconomic characteristics within the customary tenure system that determines who hold, use and transfer land.

Controlling for unobserved heterogeneity, the dynamic random effects probit and Tobit models show that transaction costs in the rental market (on the tenant side) are non-linear, high and lead to state dependency in the market. This implies that past land rental experience, social capital and networks, trust and reputation significantly reduce transaction costs and facilitate entry and extent of participation in the rental market. The results point towards the need for land tenure reforms that can reduce these high transaction costs. Access to information through social network could be one way that can improve land access for land-poor and potential tenants, thereby enhancing both equity and efficiency effects of land rental markets.

Journal Papers and Book chapters

1. Samson P. Katengeza, Stein T. Holden and Monica Fischer (2019). [Use of Integrated Soil Fertility Management Technologies in Malawi: Impact of Dry Spells Exposure](#). *Ecological Economics*, doi: 10.1016/j.ecolecon.2018.09.018.

Abstract: Integrated soil fertility management (ISFM) technologies hold potential to protect against climate risks, reduce nutrient depletion and enhance food security. In this paper, we study how exposure to dry spells influences use and use intensity of ISFM technologies, specifically focusing on maize-legume intercropping and organic manure. We use a four-round panel dataset collected from households in six Malawi districts over a period of nine years and merged with daily rainfall data from the Department of Climate Change and Meteorological Services.



The results using correlated random effects models reveal that exposure to one-year lag of late-season dry spells is associated with high likelihood of use and use intensity of organic manure and maize-legume intercropping. However, there is an inconsistent effect of two-year and three-year lags of both early-season and late-season dry spells on the use and use intensity of both technologies. We respectively attribute these positive and inconsistent impacts to farmers' perceived and delayed benefits of the technologies under dry spells. We recommend that promotion messages should properly package the technologies to include those with immediate and delayed but enduring effects and sensitize the farmers on the same.

2. Stein T. Holden (2019). [Economics of Farm Input Subsidies in Africa](#). *Annual Review of Resource Economics*, doi: 10.1146 / annurev-resource-100518-094002.

Abstract: Fertilizer and other input subsidies have been prominent components of agricultural policies in many Asian and African countries since the 1960s. Their economic and political rationale is scrutinized with emphasis on the second generation of targeted input subsidy programs that were scaled up in Sub-Saharan Africa after 2005. The extent to which they fulfill the goal of being market smart is assessed after inspecting the potential for such subsidies in Sub-Saharan Africa. The new fertilizer subsidy programs do not live up to the market-smart principles and suffer from severe design and

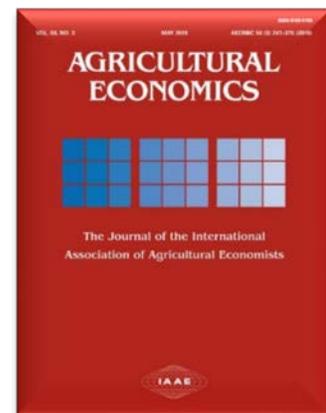


implementation failures. While a clear exit strategy was one of the key principles, this has been neglected, with the result that most current programs are more sticky than smart. They have only partially achieved the intended impacts and have resulted in a number of unintended negative impacts. Subsidy program redesign should start from a pilot stage testing basic mechanisms.

Keywords: fertilizer subsidy, externality, market failure, market smart, impact, elite

3. Menasbo Gebru, Stein T. Holden, Mesfin Tilahun (2019). [Tenants' land access in the rental market: evidence from northern Ethiopia](#). *Journal of the International Association of Agricultural Economics*, doi: 10.1111 / agec.12484.

Abstract: The purpose of this study is to investigate the allocation efficiency in the tenancy market, and thereby the potential of the market to facilitate operational farm size adjustment that can help land-poor tenant households to transform into smallholder commercial farms. We analyzed three rounds of balanced panel data for the production seasons 2005–2006, 2009–2010, and 2014–2015 collected from 320 smallholder farms in Tigray region in northern Ethiopia. Random effects dynamic probit and Tobit models are used to assess how land-poor tenants' access and extent of access to land are affected by state dependency (earlier participation in the market), kinship ties, climate shocks, and legal restrictions.

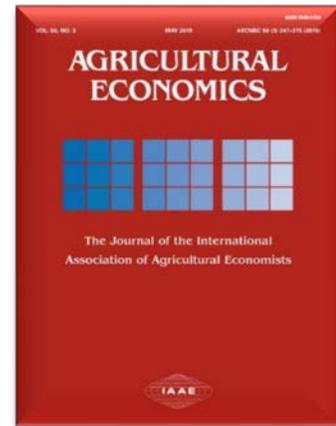


The results indicate that state dependency and kinship ties with the landholder had strong positive effects on participation and intensity of participation. Climate shocks significantly affected the intensity of participation of tenants already in the rental market. Tenants' overall access to rented land had not improved from 2005–2006 to 2014–2015. The amount of land accessed by those already in the market was insufficient for them to become commercial farmers. The important policy implication is that orchestrated interventions at community level are needed to reduce transaction costs and thereby improve land access of entrepreneurial tenants.

Keywords: Land rental market; Tenants' land access; Dynamic probit; Dynamic Tobit; Tigray; Ethiopia

4. Muuz Hadush, Stein T. Holden, Mesfin Tilahun (2019). [Does population pressure induce farm intensification? empirical evidence from Tigray Region, Ethiopia](#). *Journal of the International Association of Agricultural Economists*, doi: 10.1111 / agec.12482.

Abstract: The scarcity of land for crop and livestock production is critical in countries with growing populations. The idea that increasing population density leads to natural resource depletion and economic failure, as predicted by Malthus, or rather to farm intensification, as hypothesized by Boserup, motivates this research. This article examines how high population pressure in northern Ethiopia influences smallholders' farm intensification by applying recursive estimation with a control function approach using data from 518 randomly selected farmers. Although our empirical results are more in favor of the Boserupian hypothesis, the findings also reveal that both Malthusian and Boserupian forces coexist.

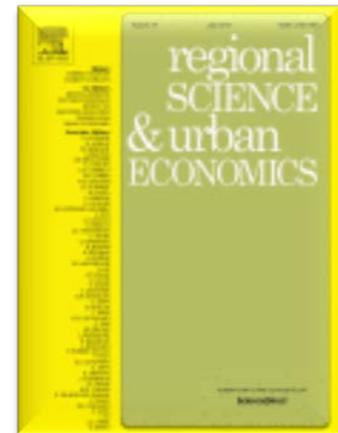


Consistent with Malthus theory, high population pressure is found to be associated with small farm size and herd size. Population pressure affected both technology use (breed cow, stall feeding, and modern cattle feed) and output supply (milk yield, milk income, and straw output). As predicted by Boserup's theory, the use of modern input and output supply initially increases with increasing population pressure but declines again when population densities pass a critical threshold (800 persons/km²), supporting Malthus' hypothesis. The estimation results also revealed that both milk and straw supply responded positively to prices. Free grazing and stall feeding are found to be complementary activities. Likewise, crop farm income and off-farm job have a nonlinear relation with population pressure, implying that both initially increase and then decrease with rising population pressure.

Keywords: Recursive model; Population pressure; Farm intensification; Tigray; Ethiopia

5. Åvald Sommervoll and Dag Einar Sommervoll (2019). [Learning from man or machine: Spatial fixed effects in urban econometrics](#). *Regional Science and Urban Economics*, doi: 10.1016 / j.regsciurbeco.2019.04.005.

Abstract: Econometric models with spatial fixed effects (FE) require some kind of spatial aggregation. This aggregation may be based on postcode, school district, county or some other spatial subdivision. Common sense would suggest that the less aggregated, the better inasmuch as aggregation over larger areas tends to gloss over systematic spatial variation. On the other hand, low spatial aggregation results in thin data sets and potentially noisy spatial fixed effects. We show, however, how this trade-off can be substantially lessened if we allow for more flexible aggregations.



The key insight is that if we aggregate over areas with similar location premiums, we obtain robust location premiums without glossing over too much of the spatial variation. We use machine learning in the form of a genetic algorithm to identify areas with similar location premiums. The best aggregations found by the genetic algorithm outperform a conventional FE by postcode, even with an order of magnitude fewer spatial controls. This opens the door for spatially sparse FEs, if economy in the number of variables is important. The major takeaway, however, is that the genetic algorithm can find spatial aggregations that are both refined and robust, and thus significantly, lessen the trade-off between robust and refined location premium estimates.

Keywords: Spatial fixed effects; House price prediction; Machine learning; Genetic algorithm; Spatial aggregation

6. Desta B. Gebrehiwot and Stein T. Holden (2019). [Variation in Output Shares and Endogenous Matching in Land Rental Contracts: Evidence from Ethiopia](#). *Journal of Agricultural Economics*, doi: 10.1111 / 1477-9552.12345.

Abstract: We investigate the extent of variation in output sharing in land rental contracts and alternative hypotheses to explain this variation. Close to half of the rental contracts in our study in northern Ethiopia have output shares that deviate from the dominant 50–50 equal sharing. Variation in land quality, the relative bargaining power of landlords and tenants, production risks and shocks are hypothesised to influence output shares. Matched data of landlords and tenants are used. The importance of endogenous matching of landlords and tenants is investigated by assessing how endogenous tenant



characteristics are correlated with landlord characteristics. We find evidence of negative assortative matching for key resource characteristics. A control function approach is used to control for endogenous matching in the output share models. The results reveal that production risks, as well as relative bargaining power, affect output shares in the reverse tenancy setting where tenants are relatively wealthier and more influential than landlords.

Keywords: Control function approach; endogenous matching; land rental contracts; output shares; sharecropping.

7. Eika, A. (2019). Urban development and cooperation games. *Journal of Property research*. [doi: 10.1080/09599916.2019.1615977](https://doi.org/10.1080/09599916.2019.1615977).

Abstract: This paper investigates what makes developers and municipal planning authorities more (or less) likely to cooperate. It borrows methods from behavioural economics for eliciting the propensity of cooperation in different groups under different circumstances. Participants from private development companies, public planning, and related fields have played simple games in which they chose whether to cooperate in an urban transformation scenario (N = 269). By altering minor details, we learn about what makes people cooperate. The paper is able to quantify some human biases affecting the actions we observe in development projects: The findings indicate that people tend to be more cooperative towards people from the same sector, are less likely to cooperate in riskier scenarios, and *in situations* where some group members have fewer resources to contribute to the cooperative effort. Hopefully, the novelty of using economic experiments on planning and property development decision making could serve as an inspiration for other researchers in the field, although the methodology does carry limited external validity.



Keywords: Cooperation; externalities; behavioural economics; experiments; redevelopment

8. Elvestad, H. & Sky, P.K. (2019). Effects of Land Consolidation in Norway. *Nordic Journal of Surveying and Real Estate Research*, [doi: 10.30672/njsr.82456](https://doi.org/10.30672/njsr.82456).

Abstract: The main objective of this paper is to analyse the various effects of land consolidation and its impact on rural development in Norway. It is important to note that in Norway land consolidation remains the exclusive domain of the court system. Three cumulative requirements must be fulfilled before land consolidation can proceed in Norway. 1) The Land Consolidation Court may effectuate land consolidation if at least one property or easement in the land consolidation area is difficult to use gainfully at the current time and under the current circumstances; 2) The Land Consolidation Court may only proceed in this way in order to make the property arrangements in the land consolidation area more advantageous, and; 3) For any given property or easement, the land consolidation settlement shall not result in costs and other disbenefits that are greater than the benefits. All three criteria must be fulfilled.



This paper presents and analyses cases taken before the Norwegian Land Consolidation Court using case studies, surveys and qualitative interviews with property owners and judges at the land consolidation courts. It is based on a literature review and secondary data collected by researchers and Master's students working on land consolidation in Norway in the period from 1992 to 2015, focusing on rural areas. The observed effects of land consolidation are separated into economic and spatial, legal, environmental and social effects. The analysis shows that the effects of land consolidation are difficult to estimate or to calculate. Future research should focus on developing better methods for both valuations and impact studies.

Keywords: land consolidation; economic effects; spatial effects; juridical effects; social effects; environmental effects; rural development

9. Li, K., Dethier, P. Eika, A., Samsura, D., van der krabben, E., Nordahl, B.I., Halleux, J.M. (2019). Measuring and comparing planning cultures: risk, trust and co-operative attitudes in experimental games. *European Planning Studies*, [doi: 10.1080/09654313.2019.1612325](https://doi.org/10.1080/09654313.2019.1612325).

Abstract: Cultural impacts in planning increasingly receive attention from both academics and practitioners around Europe. However, comparative planning cultures studies face the challenges of lacking systematic comparison and empirical evidence, especially at the micro level of planning actors' behaviour in interaction. This article aims to fill these gaps by (1) operationalizing the concept of planning culture; and (2) measuring and comparing it. We base our operationalization on the culturized planning model (Knieling, J., & Othengrafen, F.



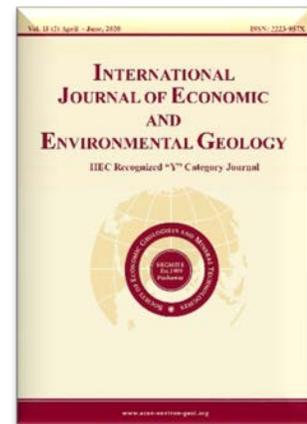
(Eds.). (2009). Planning cultures in Europe: Decoding cultural phenomena in urban and regional planning. Farnham: Ashgate). We complement its explanatory power by building a link between planning culture and planning outcome through attitudes of planning actors. This article focuses on three attitudes: risk, trust and co-operation. To measure and compare these attitudes, we adopt three experimental economic games and conduct an experiment with public and private planning practitioners in three European countries: Belgium, the Netherlands and Norway. Both cross-country and public-private differences in these attitudes are tested in the experiment. Our experimental findings suggest that Dutch planning actors value risk aversion and trust; Norwegian planning actors value cooperation; while (French-speaking) Belgian planning actors do not value these variables that much.

Keywords: Comparative planning cultures; attitudes; experiment; Belgium; the Netherlands; Norway

10. Ali, K; Bajracharya, Roshan Man; Chapagain, Nawa Raj; Raut, Nani; Sitaula, Bishal K.; Begum, Farida; Khan, Muhammad Zafar; Ali, Manzoor; Ahmad, Aftab (2019). Analyzing Land Cover Change Using Remote Sensing and GIS: A Case Study of Gilgit River Basin, North Pakistan. *International Journal of Economic and Environmental Geology (IJEEG)*. doi: [10.46660/ijeeg.Vol10.Iss1.2019.224](https://doi.org/10.46660/ijeeg.Vol10.Iss1.2019.224).

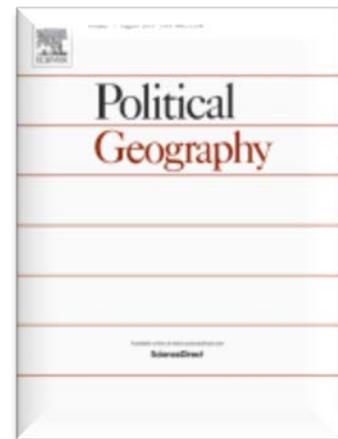
Abstract: Mountainous areas of northern Pakistan are rich in biodiversity, glaciers and key watershed of Indus River system which provide ecosystem services for their inhabitants. These regions have experienced extensive deforestation and are presently vulnerable by rapid land cover changes, therefore an effective assessment and monitoring is essential to capture such changes. The aim of this study is to analyze the observed changes in land cover over a period of thirty-nine years, divided into three stages (1976-1999, 1999-2008 and 2008-2015). Four images from Landsat 2 Multispectral Scanner System (MSS), Landsat 5 Thematic Mapper (TM), Landsat 7 Enhanced Thematic Mapper and Landsat 8 Operation Land Imager data were obtained to detect land cover change. This study used supervised classification-maximum likelihood algorithm in ERDAS imagine to identify land cover changes perceived in Gilgit River Basin, Pakistan. The result showed that the range land, glaciers, water bodies, built-up/agricultural cover are the major categories that have been altered by the natural and anthropogenic actions. In 1976, built up/agriculture, range land, water bodies and glacier cover was 1.13%, 45.3%, 0.66% and 13.2%, respectively. Whereas in 2015, built up/agriculture, range land, water bodies and glacier cover was 3.25%, 12.7%, 0.91% and 8.2%, respectively. These land cover shifts posed acute threat to watershed resources. Therefore, a comprehensive watershed resource management is essential or otherwise, these resources will deplete rapidly and no longer be capable of playing their role in socioeconomic and sustainable environmental development of the area.

Keywords: Land cover change; remote sensing; Gilgit watershed



11. Bakonyi, Jutta; Chonka, Peter; Stuvøy, Kirsti (2019). War and City-Making in Somalia: Property, power and disposable lives. *Political Geography*, doi: [10.1016/j.polgeo.2019.05.009](https://doi.org/10.1016/j.polgeo.2019.05.009).

Abstract: Rapid urbanisation in Somalia, as in many other war-torn countries, is driven by in-migration of displaced people who are often amassed in camps. Although such camps become institutionalised sites of exclusion where 'bare life' is generated and disposed, they are also characterised by socially messy and continuously evolving relations of space, power, violence and displacement. The article draws on fieldwork with displaced people in Somali cities to analyse claims to property and (often violent) competition to uphold them in contestation for sovereignty. Comparing two cities, Mogadishu and Bosaaso, we show how a broad range of international and local actors, including displaced people themselves, negotiate (urban) property and establish relations that guide and foster political authority, while rendering the lives and livelihoods of displaced people precarious and insecure. In property, politics and the economy intersect, and property relations are therefore subject to struggles for both power and profit. We underscore how sovereign power produces spaces of indistinction, but emphasise that property as an analytical category contributes to understandings of sovereignty. Furthermore, propertying as social practice draws attention to the way sovereignty emerges and is connected to the market. This enables the differentiations of forms of sovereignty and draws attention to how it is negotiated, openly challenged or silently undermined.



Keywords: Urbanisation, Urban camps Property, Sovereignty, Displacement, Mobility, Precarity, Somalia

12. Beymer-Farris B.A., Bryceson I., Peter C.M. (2019). The Human Rights Dimensions of Conservation and Climate Change Initiatives in Coastal Tanzania: Examples of Villagers' Successful Struggles for Their Rights. In: Yanda P., Bryceson I., Mwevura H., Mung'ong'o C. (eds) Climate Change and Coastal Resources in Tanzania. *Springer Climate*. Springer, Cham, doi: [10.1007/978-3-030-04897-6_9](https://doi.org/10.1007/978-3-030-04897-6_9).

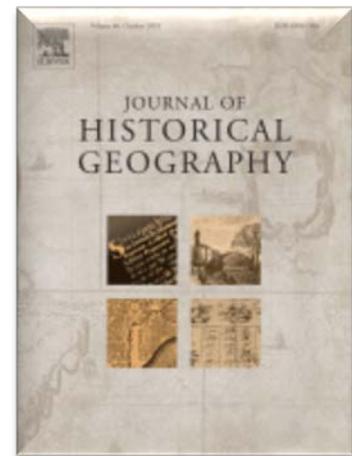
Abstract: Abuse of human rights in conservation initiatives, such as REDD+, wildlife conservation, etc., has raised concern in many project reviews. Few studies have, however, examined the human rights dimensions of conservation and climate change. In this chapter the authors address this gap by showing how outsiders, with the assistance of the state, attempted to control areas historically governed by local residents in the name of conservation and climate change policy initiatives in the Mafia Island and Rufiji Delta, Southern Tanzania. The interventions were



implemented with the old-fashioned premise that the villagers were destructive and extravagant resource users. The authors also try to illustrate how the international linkages to worldwide conservation narratives and to development aid by rich countries promoting climate measures in poor countries to try to absolve their carbon emissions revealed the ways in which such vested interests attempted “to misuse their money, power, and influence.”

13. Cavanagh, Connor Joseph. (2019). Dying races, deforestation and drought: the political ecology of social Darwinism in Kenya Colony's western highlands. *Journal of Historical Geography*, doi: [10.1016/j.jhg.2019.09.005](https://doi.org/10.1016/j.jhg.2019.09.005).

Abstract: In 1929 the administration of Kenya Colony under the governorship of Edward Grigg ordered the formation of a special committee to report on what had become known as ‘the Dorobo question’ across eastern Africa. As conceived by the committee, the Dorobo question was effectively that of how to govern ‘most hunting people’ under British rule in the region – particularly those thought to be ‘pre-tribal and pre-pastoral’ – and who were often inconveniently found to be living within newly demarcated forest reserves. An examination of the committee’s recommendations grants us insight into the ways in which colonial perceptions of incipient ‘environmental’ problems were often insidiously bound up in the social Darwinism of the period. Here, European perceptions



of the Dorobo as a supposedly ‘dying race’ of forest-dwellers brings the entanglement of the period’s nascent ‘racial’ and natural sciences squarely into focus. Engaging these phenomena in relation to the case of the Sengwer community in western Kenya’s Cherangani Hills, I suggest that renewed inquiries into such conjoined discourses of race and nature may assist us in further enriching our understanding of the multiple, perpetually contested dimensions of identity formation within (post)colonial East Africa. Not least, the nuances of these dynamics may help us to more fully understand how the afterlives of these diverse racialisations and tribalisations continue to impinge upon the grievances of affected communities in the present, enabling an explicitly postcolonial – rather than, necessarily, a primordialist, instrumentalist or constructivist – perspective on recent articulations of ‘indigenous’ or ‘ethnic minority’ rights in eastern Africa.

Keywords: Colonialism; East Africa; Nature; Race; British empire; Political ecology

14. Dobos, B; Riegl, Martin; Hansen, Stig Jarle. (2019). Territoriality of radical Islam: comparative analysis of jihadist groups' approach to territory. *Small Wars & Insurgencies* 2019, doi: [10.1080/09592318.2019.1601841](https://doi.org/10.1080/09592318.2019.1601841).

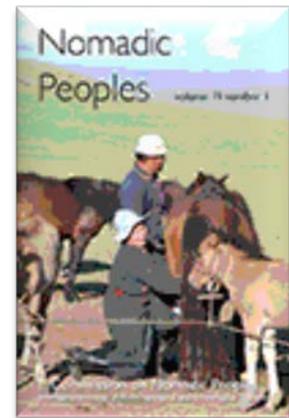
Abstract: The paper compares political territoriality of selected jihadist violent non-state actors. Looking at selected groups that attempted to control territory (Afghan Taliban, Al-Shabaab, the Islamic State), it attempts to establish a generalization regarding the use of territory by this type of violent non-state actors. To this end, it analyses connection of territory to groups' security provision, economic activity, and identity. Despite many differences among the groups, it concludes that these groups often utilize both territorial and personal characteristics. Territoriality of these actors is reactive as they are unable to present a sustained control in contested regions.



Keywords: Territoriality; jihadist groups; Africa; Middle East; insurgency; terrorism

15. Mehta, Lyla; Srivastava, Shilpi. (2019). Pastoralists Without Pasture: Water Scarcity, Marketisation and Resource Enclosures in Kutch, India. *Nomadic Peoples* 2019, doi: [10.3197/np.2019.230203](https://doi.org/10.3197/np.2019.230203).

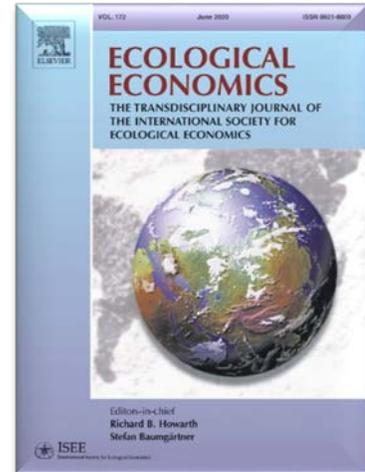
Abstract: Scarcity and uncertainty loom large over the landscape of Kutch, an arid to semi-arid district in western India, where pastoralism has been practised for generations. Despite its clear potential to tackle the dryland dynamics, the tradition of pastoralism in Kutch has been systematically denigrated and marginalised in the district over the years. Drawing on research conducted in eastern Kutch, and along the coast, this article shows how pastoralist communities have been displaced from a range of vital hydric resources – such as mangroves and water sources – in the name of development and conservation. Together, these have accelerated processes of dispossession and exacerbated both 'old' and 'new' resource scarcities.



Keywords: DRYLAND BLINDNESS; HYDRIC RESOURCES; KUTCH; MANGROVES; PASTORALISM; WATER SCARCITY

16. Nantongo, Mary Gorret; Vatn, Arild. (2019). Estimating Transaction Costs of REDD+. *Ecological Economics*, doi: [10.1016/j.ecolecon.2018.08.014](https://doi.org/10.1016/j.ecolecon.2018.08.014).

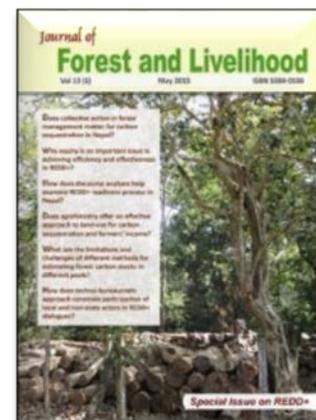
Abstract: Reducing emissions from deforestation and forest degradation (REDD+) is generally believed to be a cost-effective mitigation strategy against climate change. Some suggest, however, that costs of REDD+ are underestimated because many studies either exclude or undervalue transaction costs. A major challenge in this field of research is the absence of a common framework and methodology for assessing such costs. This paper uses the notion of governance structures to suggest a generic definition and methodology for measuring transaction costs. The methodology is subsequently used in an analysis of transaction costs for REDD+ pilots in RDS Rio Negro, Brazil and Kilosa, Tanzania. Results indicate higher unit costs – costs per ton of reduced CO₂ – of establishing the REDD+ governance structures in Kilosa, while unit costs of using those structures are higher in RDS Rio Negro. The results also show that while REDD+ was originally conceived as a market i.e., a direct trade between buyers and sellers, it could also take on a non-market governance structure or a mixture of market and non-market elements. These different forms of governance structures have implications for transaction costs.



Keywords: Transaction costs; REDD+ policy; Governance structures; Brazil; Tanzania

17. Shrestha, Him Lal; Poudel, Naya Sharma; Bajracharya, Roshan M.; Sitaula, Bishal K. (2019). Mapping and Modelling of Land Use Change in Nepal. *Journal of Forest and Livelihood*, Volume 18, pp. 39-53.

Abstract: Land use changes are a common occurrence resulting from different factors in Nepal. There is a need for better understanding of the temporal and spatial change dynamics of land uses as well as their future projections. This paper assesses the land use change and its impact on carbon stocks and provides future scenarios of land use changes and their impacts on carbon stocks. The methods involved classification of medium resolution satellite image using Object Based Image Analysis (OBIA) techniques, analysis of the change across three time frames, modelling the future land use, and assessment of the impacts on carbon stocks. OBIA was used for the image segmentation and image classification for the assessment of land uses present in two different periods i.e. 2010 and 1990. The classification of the images was carried out using the spectral characteristics of the Landsat images. Image indices, i.e., Vegetation Index were used for land use classification.



The land use changes over time and space was analysed using Geographical Information System (GIS) overlaying techniques. A future scenario model was prepared using Land Change Modeler of IDRISI software. The study has focused on the land use changes and their future projection based on the potential transition of the land uses. The comparison of land use maps from 1990 to 2010 shows that the different pattern of annual land use changes in different districts such as forest areas are increasing at annual rate of 0.3 per cent in Rasuwa, 2.3 percent in Gorkha and 0.6 per cent in Chitwan. Similarly, the agricultural land is decreasing at the annual rate of 0.2 per cent in Rasuwa, 2.4 per cent in Gorkha and 0.8 per cent in Chitwan. Likewise, the future projection of land uses in all the three sites was made using the previous land use pattern and driving forces. There was a 0.1 per cent change annually in forest coverage in both Gorkha and Rasuwa whereas Chitwan showed higher rate of forest cover change of 0.2 per cent annually.

Keywords: Land use change; Landsat Modelling; Object based image analysis

Books / e-Books

1. Sevatdal, Hans, Per Kåre Sky og Erling Berge 2019. [Eigedomsteori: innføring i samfunnsvitskapleg teoritilfang for utøving av eigedomsfag](#). Ås: Centre for Land Tenure Studies, Faculty of Landscape and Society, Department for Property and Law, NMBU.

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. In most cases, the working papers are also available in electronic form and can be downloaded from S-WoPEc. S-WoPEc is part of RePEc (Research Papers in Economics), an effort to coordinate the dissemination of information about Working Papers in Economics. The RePEc statistics in Table 1 and Figure 1 shows that the total number of abstract views and downloads in 2019 were 1,240 and 433, respectively. Compared to 2018, the number of abstract views doubled with an upward linear trend compared in 2019. The number of CLTS WP downloads also increased by 11 percent when compared with the number of downloads in 2018.

Table 1. Download statistics from RePec in 2019

| Month | Abstract views | | | Downloads | | |
|----------|----------------|------|--------------------|-----------|------|--------------------|
| | 2018 | 2019 | Percent Change (%) | 2018 | 2019 | Percent Change (%) |
| January | 50 | 62 | 24 | 13 | 54 | 315 |
| February | 31 | 55 | 77 | 7 | 18 | 157 |
| March | 78 | 60 | -23 | 16 | 14 | -13 |
| April | 85 | 99 | 16 | 4 | 39 | 875 |

| | | | | | | |
|-----------|-----|------|-----|-----|-----|-----|
| May | 46 | 87 | 89 | 162 | 58 | -64 |
| June | 41 | 65 | 59 | 88 | 29 | -67 |
| July | 37 | 55 | 49 | 24 | 24 | 0 |
| August | 40 | 111 | 178 | 9 | 28 | 211 |
| September | 33 | 89 | 170 | 18 | 24 | 33 |
| October | 66 | 175 | 165 | 29 | 71 | 145 |
| November | 47 | 222 | 372 | 15 | 40 | 167 |
| December | 50 | 160 | 220 | 5 | 34 | 580 |
| Total | 604 | 1240 | 105 | 390 | 433 | 11 |

*Downloads are the files downloaded from RePec.
Source: RePec

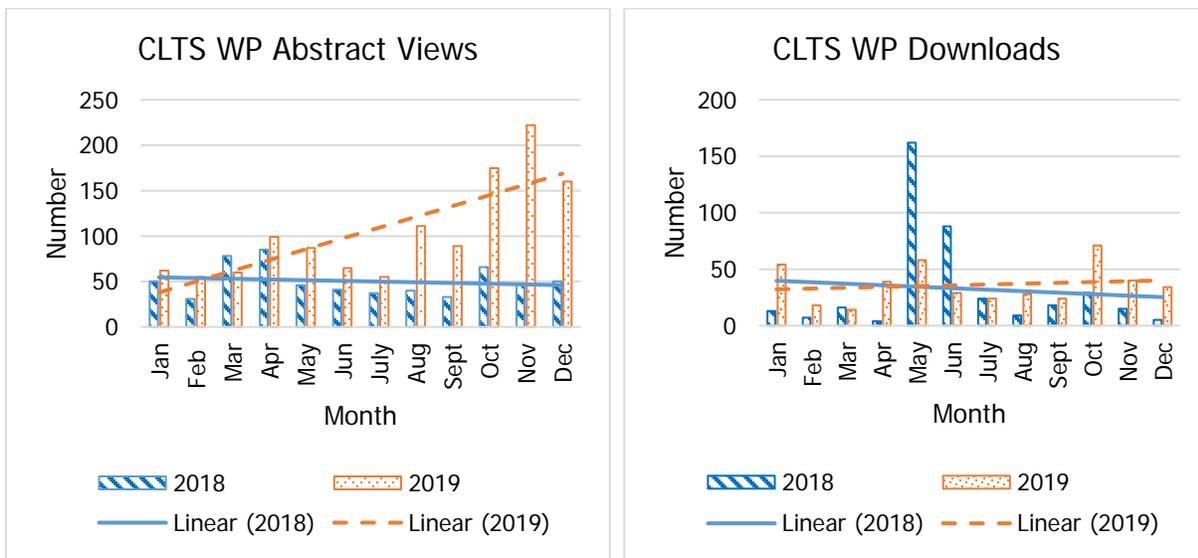


Figure 1: CLTS Working Papers abstract views and downloads

Conference participation

Holden, S. T. and Tilahun, M. (2019). The Devil is in the Details: Risk Preferences, Choice List Design, and Measurement Error. Presented at the Nordic Conference in Behavioral and Experimental Economics in Kiel, Germany, on September 27-28, 2019. [Link](#)

Holden, S. T. and Tilahun, M. (2019). Are land-poor youth accessing rented land? Evidence from northern Ethiopia. Presented in an Invited Panel on Youth and Land Access in Africa at the African Conference of Agricultural Economists arranged by the African Association of Agricultural Economics in Abuja, Nigeria, September 23-26, 2019. [Link](#)

Project Workshops

- The YOUTHBUS project arranged a start-up workshop in Addis Ababa in January 2019.
- The YOUTHBUS and ACCESS projects were presented in a workshop in Oslo arranged by the Research Council of Norway in collaboration with NORAD in April 2019.

Website

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

Brage

All of CLTS Working Papers and Reports can be obtained in Brage:

- **CLTS Working Papers:** <https://nmbu.brage.unit.no/nmbu-xmlui/handle/11250/2446458>
- **CLTS Reports:** <https://nmbu.brage.unit.no/nmbu-xmlui/handle/11250/2446455>