ASSESSING THE COSTS OF TENURE RISKS TO AGRIBUSINESSES

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TMPSYSTEMS

DATA SHARING AND CONFIDENTIALITY

We are improving, expanding and refining our discounted cash flow model and invite businesses to take part. By sharing your company data, you can contribute to a better investment environment for the industry as a whole. All data shared with the QTR initiative is anonymised and confidential. We are happy to enter into Non-Disclosure Agreements and can provide the necessary paperwork on request.

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THE QTR INITIATIVE

Quantifying Tenure Risk (QTR) is a joint research initiative from the Overseas Development Institute (ODI) and TMP Systems funded by the UK Government. Our aim is to provide data and analysis to reduce land conflict and improve land governance through better informed investment decisions. QTR's initial focus is on Africa and agriculture, but plans are underway to expand to other sectors and regions.

ODI AND TMP SYSTEMS

ODI is the UK's leading global development think tank. ODI has an extensive body of research on land rights and an in-house team dedicated to agricultural policy.

TMP Systems is an asset management and investment consultancy specialising in global development. ODI and TMP have discussed tenure risk with nearly 80 companies and TMP manages a database of over 500 cases of tenure disputes.

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ACRONYMS

CAPEX	capital expenditure
DCF	discounted cash flow
DFID	Department for International Development
ESA	European Space Agency
ESG	environmental, social and governance
FAO	Food and Agriculture Organization of the United Nations
FPIC	free, prior and informed consent
NASA	National Aeronautics and Space Administration (US)
NGO	non-governmental organisation
NPV	net present value
OPEX	operating expenditure
TRT	Tenure Risk Tool
VGGTs	Voluntary Guidelines on the Responsible Governance of Tenure
WRI	World Resources Institute

EXECUTIVE SUMMARY

Tenure risk – or the risk of dispute between investors and local people over land or natural resource claims – is endemic in emerging markets. There are hundreds of recorded incidents of tenure disputes creating delays, violence, project cancellation and even bankruptcy at a corporate level. These tenure disputes create lose–lose outcomes for investors, local people and national governments while robbing emerging markets of the developmental benefits of responsible land investments.

Consultation with businesses operating across the African supply chain, however, shows that, with the exception of a few reputationally exposed actors, investors are either unaware of the problem or reluctant to invest time and resources to understand and address it. Others lack the means to quantify these risks and justify the allocation of resources to help mitigate them, exposing investors to significant financial damages related to tenure dispute.
This exposure will increase as pressure on land – particularly in emerging regions with complex tenure arrangements – continues to increase with worldwide population and economic growth. Yet currently investors do not have a way of quantifying that risk.

This report helps to solve the problem of tenure risk management in two ways. First, we shine a spotlight on the severity of the issue and show that tenure disputes can create substantial financial costs to investors. Cases reviewed include a $52 million greenfield sugar investment in East Africa which investors abandoned after it became apparent that the project had lost its social licence – that is, the broad-based support of the local community – to operate. This evidence can help investors recognise the importance of tenure risk in their operations, portfolio or supply chain.

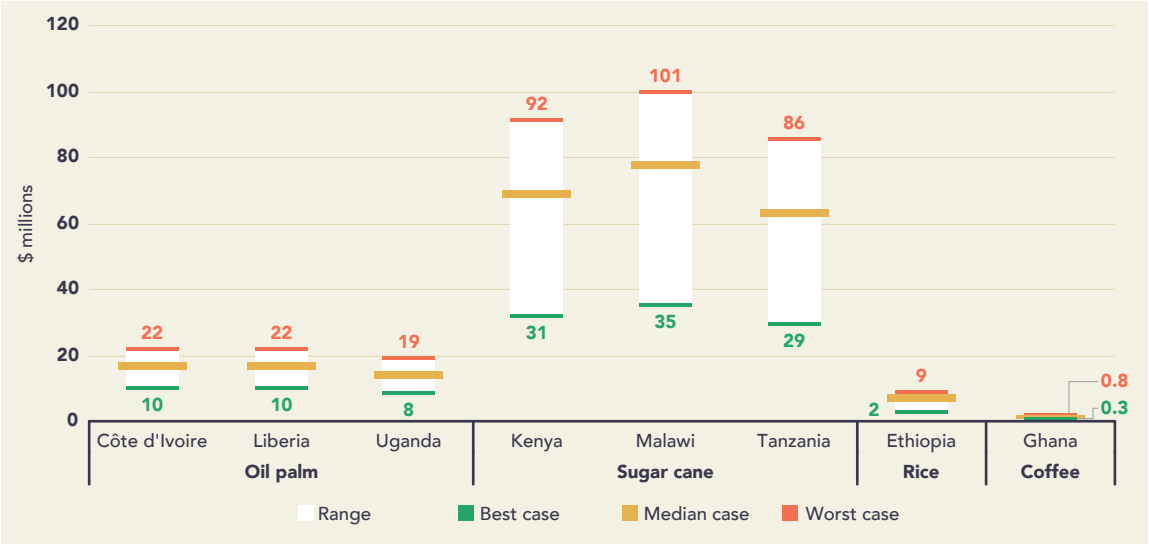
Second, the report presents a publicly available tool – the Tenure Risk Tool (TRT) – that investors can use to assess and manage tenure risk tailored to their particular project. The discounted cash flow (DCF) model was built using information and data collected from case studies and from companies directly. General statements on tenure risk will not resonate without companies seeing how they themselves are affected. Aside from helping investors recognise the importance of tenure risk, TRT will enable companies and investors to develop hard-headed business cases for targeted investments in better local engagement processes that are critical to addressing the problems associated with tenure risk.

Using real data from companies, Figure 1 illustrates headline results from the financial model which demonstrate that:

- tenure disputes can cost investors as much as $101 million – three times the projected net present value (NPV)
- impacts vary significantly according to the location, project size, commodity and stage of operations that the dispute starts in.

Our model outputs present a way for investors to understand tenure issues in quantitative terms, as they do with many other major financial risks. TRT thereby provides robust justification for investments in due diligence and improved local engagement processes that can mitigate tenure risk.

FIGURE 1: RANGE OF LOSSES BY COMMODITY AND LOCATION ACCORDING TO TRT



Investors can avoid and mitigate tenure risk by earning – and working to maintain – the social licence to operate. More simply, investors who have good relationships with the people affected by their projects and have succeeded in winning their trust are likely to achieve much better business outcomes. As in any sphere of life, these strong relationships of trust must be built over time through transparent and regular dialogue that leads to efforts and agreements that improve local outcomes and recognise the importance of local voices. Good, open relationships can give investors a way to identify possible disputes and grievances early, which reduces the chance that they will escalate and so helps avoid a situation in which antagonistic relationships become embedded. Just as importantly, maintaining such relationships with local people helps investors know how to respond to a dispute to avoid the sort of delays and shutdowns that this report investigates and quantifies.

Fortunately, a significant body of guidelines and tools have been developed by the public sector (and so are accessible for free) that help investors to identify, mitigate and avoid tenure risk. These provide instruction on parts of the investment process that can be unfamiliar to investors, such as gaining free, prior and informed consent (FPIC), conducting land entitlement processes, establishing grievance resolution mechanisms and working with customary authorities. These processes are complex and require some expertise, but they do not have to be expensive: our initial analysis indicates that they are cost effective relative to the kind of losses our model anticipates if investors become embroiled in tenure disputes. A few useful resources include:

- **Land Portal** – a compendium of material and research on tenure issues
- **Landscope** – a geospatial tool for tenure risk management
- **RIPL Guidelines** – a detailed set of guidelines on local engagement processes
- **Interlaken Group Guide** – a simple guide for compliance with FAO's Voluntary Guidelines (VGGTs).

TRT is a product of the 'Quantifying Tenure Risk' (QTR) initiative funded by the UK Department for International Development (DFID). It was developed after consultation with nearly 80 businesses and the review of over 90 cases throughout the agricultural supply chain in sub-Saharan Africa. It allows users to input their own financial assumptions (around expenditure and revenue) to observe how possible delays could impact on the NPV of their project. We provide an explanation of how this model works – with more detail in the Appendices – as well as a sense of the results it creates.

While TRT is based on case examples of – as well as data from – companies operating across agricultural supply chains in sub-Saharan Africa, the tool has a broader relevance to other regions (such Southeast Asia or Latin America) and sectors (such as mining). However, further research needs to be undertaken to collect data on how tenure disputes in different contexts manifest themselves, in terms of the length of delay and their financial impact, before they can be fed into the model.

1. TENURE RISK: UNDERSTANDING THE PROBLEM

Tenure disputes create lose–lose situations in which companies and investors suffer significant financial losses and local people/governments are deprived of opportunities for economic development.

In many cases, dispute has led to project cancellation. For example, Addax – a sugar company in Sierra Leone – was forced to dispose of an impaired asset after just two years of operation despite investing more than $250 million over seven years to get the project on its feet. As our examination of case studies demonstrates, tenure disputes cause costly delays that can reduce the net present value of the project and completely undermine its viability.[1]

Notorious incidents have contributed to growing global awareness of tenure risk. However, until now, tenure risk has not been clearly or robustly quantified in terms that investors understand. Treatment of the issue is generally anecdotal and lacks the analytical rigour required to build a strategic, proportionate and locally specific response. For example, previous efforts in this area have used approximate data from a relatively small number of cases.[2] This limited approach has not dispelled the typical but misguided perception that tenure disputes are low probability–high impact events.

Figure 2 demonstrates the distribution of 360 recorded tenure disputes across the globe between 1990 and 2018,[3] illustrating the concentration of tenure disputes in emerging markets such as parts of Latin America, sub-Saharan Africa and South or Southeast Asia. In Africa in particular, tenure-related issues are regularly cited as one of the most significant barriers to investment in agriculture, especially given the shrinking availability of suitable land for area expansion in many other parts of the world.

According to TMP Systems' Case Study Database, the number of known tenure disputes has declined since 2014, likely as a result of a correction in commodity prices (Figure 3). However, the risk of conflict will continue to grow as pressure on land increases along with worldwide population and wealth. Competition for resource rights will intensify, driving disputes with local communities who already occupy over 93% of concession areas currently allocated by host governments to sectors like forestry, mining and agriculture, according to geospatial analysis of population distribution.[4]

FIGURE 2: MAP OF WORLDWIDE TENURE DISPUTES, 1990–2018

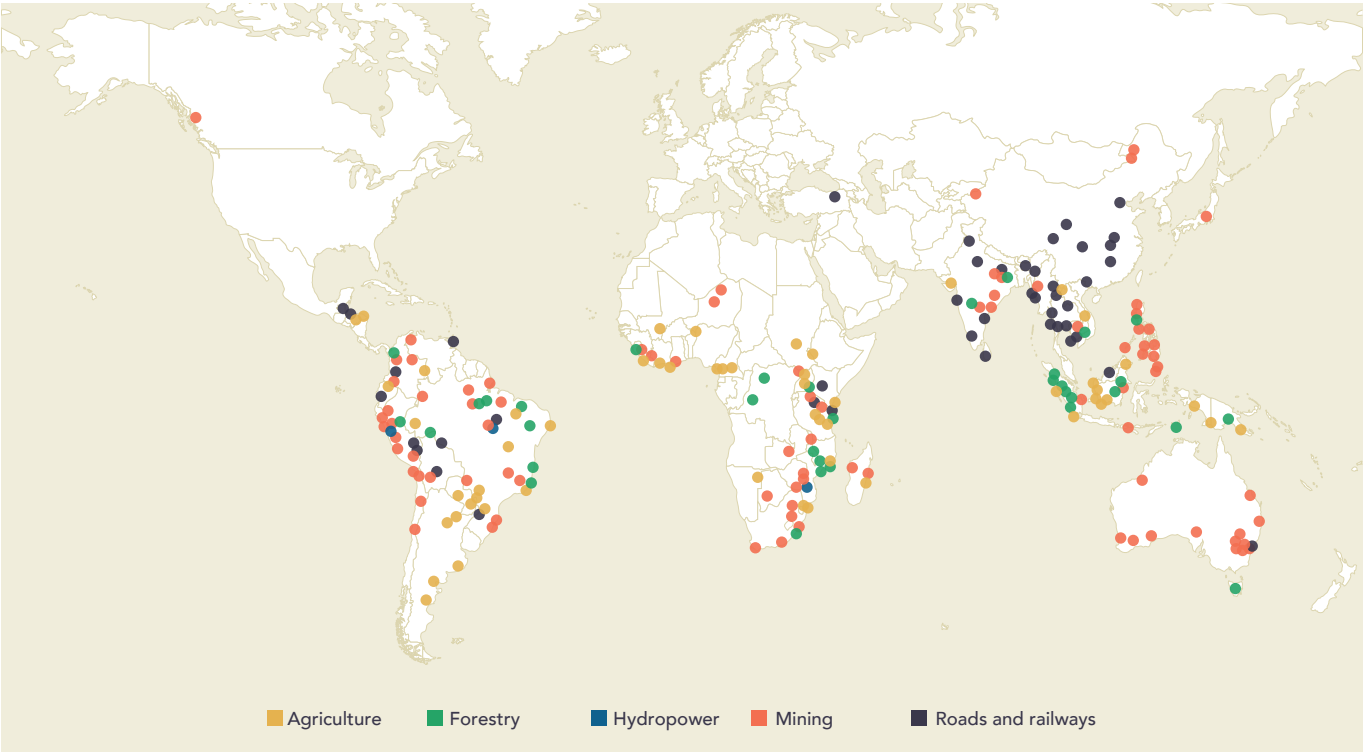
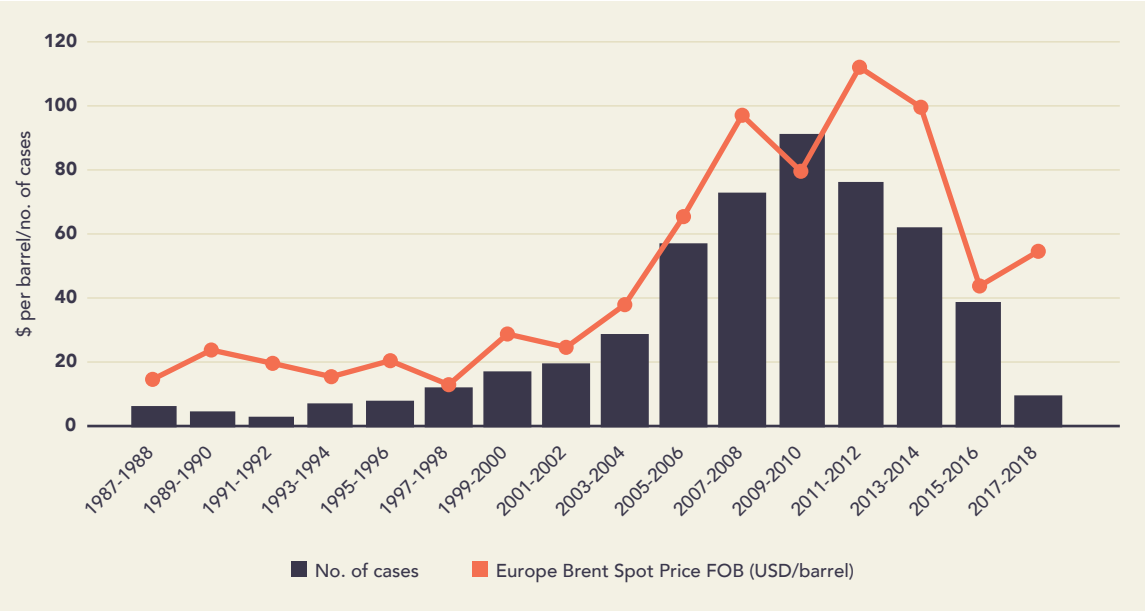


FIGURE 3: NUMBER OF TENURE DISPUTES AGAINST COMMODITY PRICES



1.1 THE PROBLEM WITH TENURE RISK MANAGEMENT

Tenure disputes are financially significant, common and seem likely to become more frequent in the future. It is therefore surprising that some investors are unaware of the problem and that others lack the means to quantify these risks and justify the allocation of resources to help mitigate them. This will create serious problems for vital sectors like agriculture, particularly if investors are unprepared when the next peak in commodity prices occurs.

Interviews with nearly 80 companies revealed that these actors lack systems and processes to assess and respond to tenure risk. Some reputationally exposed actors are attempting to respond to the problem,[5] but many have limited formal capacity to assess or manage the operational risks associated with tenure disputes. Investors do not have a way of putting a figure on the financial impact that tenure disputes can have on their operations, making it difficult to make the business case for implementing mitigation strategies in their investment process. These include gaining free, prior and informed consent, conducting land entitlement processes, establishing grievance mechanisms or working with customary authorities. These processes are complex and require some expertise, but are very cost effective relative to the kind of losses investors face when they become embroiled in tenure disputes.

This report helps to solve the problem with tenure risk management in two ways. First, using a series of case studies, we describe the way that agricultural projects in Africa have resulted in large financial losses following years of delay caused by tenure disputes. These examples and the data that emerge from them can help companies throughout the agricultural supply chain understand the importance of tenure risk and the dangers of ignoring it.

Second, this paper provides a tool – Tenure Risk Tool (TRT) – that investors can use to assess and manage tenure risk. Typically, investors are only persuaded by financial arguments once they see how they themselves are affected. General statements on tenure risk may not resonate without the TRT. Enabling companies and investors to develop hard-headed business cases for targeted investments in better local engagement processes will be critical to addressing the problems associated with tenure risk. Over time, widespread use of TRT will produce a strong demand signal for governments regarding the importance of robust and transparent tenure governance.

2. QUANTIFYING THE FINANCIAL RISKS OF INSECURE LAND TENURE

This section provides a series of examples that demonstrate how tenure disputes lead to financial losses while also quantifying these losses for illustrative purposes.

The main cause of the financial losses that result from tenure dispute is delay. Delays in either launching a project or in rolling out its operations affect a company's revenue by reducing expected production levels and revenue at a time when costs are typically either steady or increasing. Evidence demonstrates that tenure-induced delays can last years and that their financial importance vastly outweighs that of the additional costs that tenure disputes can create under current practices (e.g. legal fees, compensation payments, consulting fees, etc.).

Our research efforts focused on substantially expanding the volume and granularity of data on the types and severity of delays caused by disputes, the resulting impact on foregone revenues, and the additional costs associated with tenure disputes:

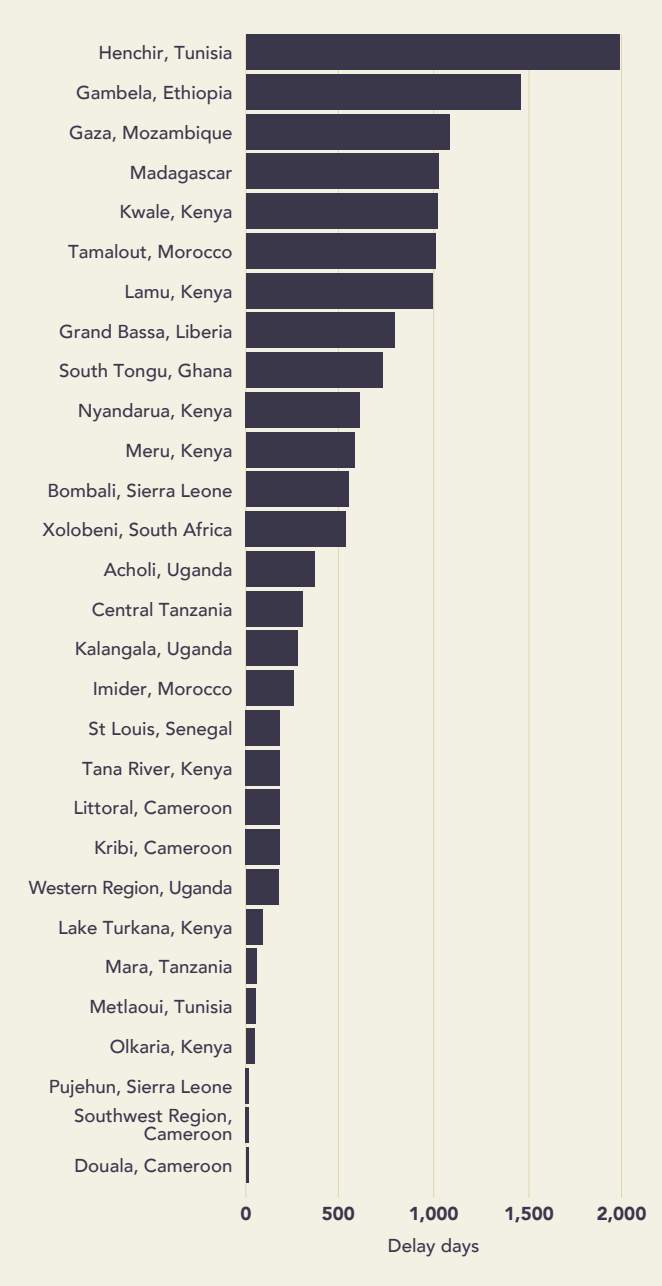
1. **Primary data collection**: We undertook interviews with 35 companies,[6] and written or verbal engagement with a further 43, to collect company-level data, particularly on foregone revenue and additional costs (see Appendices[7]).[8]
2. **Secondary data collection**: In addition, we reviewed publicly available information in literature and conflict databases on 90 cases of tenure disputes in the African agricultural sector, mainly to inform the model on the length of disputes. Choosing only those cases demonstrating extensive and reliable data coverage as well as clear reporting on incidences that could create financial impacts, we were able to select 29 cases to include in the model to inform the distribution of delays.

This data collection process has given the research team access to detailed information on how the capital expenditure, operating expenditure and revenue of agricultural projects in Africa have been impacted by tenure disputes depending on characteristics such as project location and scale, or the type of crop.

2.1 THE FINANCIAL IMPACT OF TENURE DISPUTE: CASE STUDIES

We assessed 29 disputes in detail (see Figure 4). We will briefly look at trends across this sample before focusing in greater detail on individual examples.

FIGURE 4: LOCATION AND LENGTH (DAYS) OF TENURE DISPUTES USED IN TRT



The review underscored the fact that tenure disputes create long delays: 13 of the 29 disputes we looked at in detail resulted in delays that lasted over 500 days.[9] In six cases, the period of delay extended beyond 1,000 days, or over three years.[10] In all but one of these cases, the project was cancelled or disposed of at a large loss.[11] These results, along with the focus that previous studies have placed on slippage, led us to confirm delay as the main factor driving the financial impacts of tenure dispute.[12]

We also observed the additional costs that investors face when managing tenure disputes. Specifically, we spoke to three companies of varied sizes and in different sectors (forestry, rice and sugar) that we knew had committed significant expenditure (which they believe is more than many of their peers) on mitigating and avoiding tenure disputes. In each case, overall expenditure on tenure risk mitigation strategies, in addition to the basic requirements of social engagement processes, never exceeded approximately 2% of overall expenditure.[13]

Below we provide two examples (with two further instances described in the Appendices) in which tenure dispute has created significant financial losses.

2.2 CANCELLATION BEFORE OPERATIONS: SUGAR INVESTMENT IN EAST AFRICA

In this example, a total of $52 million ($48 million expenditure, $4 million taxation from setting up a model farm and nursery) was invested over a period of 11 years before the project was cancelled, never having operated. The missed opportunity here was also significant, as the company and its investors had initially aimed to invest ~$569 million in 20,000 hectares (ha) of land with an expectation of annual revenues of ~$120 million within seven years.

In 2005, the company worked closely with the national government to identify an area for investment. It then proceeded to invest in establishing a nursery and model farm with the aim of scaling up to a full-sized plantation. These plans came unstuck after late consultations with local people failed to secure local consent for the project. In 2009, the first company backing the project went bankrupt and was reconstituted, with a 10% stake handed to the national government, which was fully supportive of the investment.

Investors remained hopeful because of government support and apparent progress in consultations with local people. But the delays in securing local support soon began to create a vicious cycle, as the hiatus in distributing compensation created frustration. Linked to this were investor complaints of people moving from other areas of the country to the project site in the hope of claiming compensation. In 2011 local communities affected by the project launched a lawsuit with the support of local and international NGOs, claiming that compensation was being withheld. This significantly increased the reputational risk of the project, further encouraging some investors to withdraw support in 2015.

By 2012, $28 million had been sunk into the project to establish the model farm and nursery. However, a number of additional licences and permits were needed before scale-up to operations could begin. The company again worked closely with local and national government in pursuit of these licences and permits, investing a further $20 million between 2012 and 2016. This was a lengthy process in part because new requirements were regularly added to the list as local discontent over land governance persisted and as international scrutiny grew.

The project was finally cancelled when the national government withdrew the project's right to occupancy, citing concerns about encroachment on environmentally sensitive and protected areas. It may seem extreme to back an investment for 11 years when success seemed so challenging but there are in fact many examples of this. We know that many investors walked away from land deals struck in the wake of the financial crisis quickly and with minimal investments made. But many companies and investors were persuaded by assurances from the government or local partners, creating significant financial exposure to tenure risk.

2.3 ESTABLISHMENT DELAYS CONTINUE DURING OPERATIONS: BIOENERGY IN WEST AFRICA

If an investor struggles to manage dispute effectively or local people are not open to negotiation, confrontations can become entrenched. As an example of a bioenergy asset in West Africa made apparent, these problems and associated delays can encourage an investor to sell the asset despite significant impairment.

In this case study, the company again worked closely with the government to secure a large plot of land (initially intended to be 50,000 ha). The expected annual output of the facility project was supposed to be 1 million tonnes of sugar cane, 85,000 litres of ethanol and 15 MW of electricity. This opportunity justified initial investments of $250 million to establish 10,000 ha of sugar cane, 4,000 ha of rice (which intended to support local food security) and 1,000 ha of ecological services.

The company encountered problems with these plans after they failed to earn social licence among local people. Disputes became entrenched before the company began to invest heavily in a social affairs department and, as a result, the establishment of the project was delayed by 14 to 18 months between 2009 and 2014 (in other words, delay accounts for about a third of the establishment time).

In addition to this establishment delay, the company had to invest in improving local relationships. These costs include approximately $3 million in compensation, $1.5 million on stakeholder engagement and $2.5 million on a food security programme. These efforts were partly successful but disputes continued and inflicted additional expenses for the project, including $1.5 million in theft of equipment and $1.5–2 million in idle equipment costs.

Ultimately, efforts to gain a social licence were not successful and the operation suffered another month of delay at the start of operations (costing ~$2 million in operating expenses). In July 2015, the operation had to be closed down again for six months (during which ~$2.5 million was allocated to operating expenses). These difficulties along with the evident, seemingly unnegotiable, limitations in expanding the project to the original extent intended caused the company to reconsider the investment and indeed a wider expansion into this market.

In 2016, the asset was sold. While details of this transaction were unavailable, our interviews pointed to the project being severely impaired, with significant losses therefore made at point of sale. We understand that delays, disputes and problems have continued under the new management regime and that plans for a large expansion have been shelved. Other factors are at play in this example, such as declining biofuel prices and the Ebola outbreak in West Africa. But tenure issues intersected with and reinforced other challenges to completely alter the calculus of investment.

3. USING THE TENURE RISK TOOL (TRT)

Despite these alarming headline figures and high-profile cases, to be truly persuaded of the negative financial impact of tenure disputes, investors need to see how tenure risk might affect their own portfolio or the exposure of a particular asset. We have therefore used the research we have conducted into delay and the quantifiable impacts of tenure disputes to create a financial model – the Tenure Risk Tool (TRT) – that investors can use to calculate their exposure and establish what they can prudently consider spending on mitigation and avoidance.

Delays in launching either a project or its operations have an impact on a company's revenue by reducing expected production levels and revenue at a time when costs are typically either sustained or increasing. Quantifying this impact relies on three pieces of data:

- the length and timing of delays
- capital and operating expenditures/projected expenditures
- revenue and projected revenue over the life cycle of the project.

The model works across two stages:

- First, it estimates the possible delay that a project might experience as a result of a tenure dispute based on its location.
- It then calculates how this delay would impact on the finances of the project, using assumptions or data provided directly by the user.

This approach provides a quantified and empirical assessment of risk exposure and the potential danger if land tenure disputes become active. Using the estimated distribution of delays, the model calculates how these delays would affect the cash flows of a project, on the basis that delays prevent a project from creating revenue even as it continues to expend capital.

Specifically, the model informs users of the likely impact of a tenure dispute on the net present value of the investment as a result of the delays incurred by land disputes. It calculates NPV loss under best, median and worst case scenarios for both greenfield and brownfield projects. The loss of NPV is given as a percentage of the original 'base case' NPV that the project would have faced without tenure disputes.

Our primary focus is on assessing project-level exposure to tenure risk much more precisely. This more granular understanding will enable investors to identify management decisions that can reduce both their operational and reputational exposure to tenure risk. As a result, their projects can be implemented more rapidly and can deliver a better return.

3.1 UNCERTAINTY SCORE

To give a sense of the sort of delay that a tenure dispute may create for a project in any given location, the model uses an uncertainty score entered by the user. The uncertainty score is obtained from a publicly available tool called Landscope. This platform collects and collates geospatial data showing environmental, social and governance (ESG) conditions[14] at the project site and its proximate surroundings (see Appendices for the statistical basis for this score).[15] This score is provided on a scale from 0 (lowest) to 100 (highest). The uncertainty score is then used to expand or contract the distribution of delay and so the potential financial losses associated with a project. Lower risk scores both contract the distribution of possible losses (due to greater certainty that is inherent in more stable areas) as well as shift the potential range of losses downwards (based on a lower number of days lost). Higher risk scores have the opposite effect.

For example, a relatively low risk score of 41 in the Volta Region of Ghana limits the financial losses of a 7,500 ha sugar investment to a worst case scenario of $26 million (equivalent to a loss of 48% of the base case, discounted NPV[16]). The exact same project faces the risk of losing up to $65 million (a loss of 121% of the value of the original discounted NPV) in Ethiopia.

3.2 USING THE MODEL

Rather than producing a static tool, we have developed a model that allows users to input their own assumptions. TRT does not attempt to integrate macro factors like foreign exchange, as most companies and investors will have their own models and processes for these purposes. However, it does require users to input their assumptions for future cash flows by providing estimates for capital expenditure (CAPEX[17]), operating expenditure (OPEX[18]) and revenue for each annual period of the project.

The user is also required to enter the discount rate at which they wish to calculate NPV, and the Landscope uncertainty score for the project site. Using this information, the model calculates the likely impact of delays on the timing of revenues, in turn impacting the NPV of the project.

The model also has a built-in function to enable users to stress test various scenarios by running randomised Monte Carlo simulations.[19] These Monte Carlo simulations are produced using algorithms which act upon the delay values, in turn producing a randomised distribution of NPV loss outcomes.

The model uses the estimated distribution of delays for a project to produce two adjusted cash flow scenarios, one for delays which occur during project inception, and the other for delays which occur during project operations. These projections are then used to produce the minimum, median and maximum losses for greenfield and brownfield scenarios.

3.3 HEADLINE RESULTS

TRT demonstrates the significant impact that tenure disputes have on NPV. To help this demonstration, we generated eight baseline cash flow examples using real data on the production costs of oil palm, sugar cane, rice and coffee.[20] Table 1 presents headline results for each of these examples, with a range between the 'worst case' and 'best case' scenario.

Companies investing in large-scale agricultural projects in Africa may suffer delays of up to five years that, in the worst case, can cause a loss of $101 million in foregone revenue, shaving 110% off the original discounted NPV of an investment. Smaller investments are less costly in absolute terms, but risk losses of up to three times (286%) the original discounted NPV.

The distribution of losses between best case and worst case scenarios also shows that there is considerable variation depending on the location, size, whether the investment is a green- or brownfield project and what discount rates are applied (see Appendices for more detail on these results):

1. **Location**: The location of a project influences the distribution of losses between best and worst case scenarios according to the uncertainty score. As described above, a 7,500 ha sugar cane investment in Ghana faces losses of $26 million in a worst case scenario versus $65 million in Ethiopia. This represents a loss of 48% or 121%, respectively, of the original NPV. See Appendix 4 for more information on how these scores vary in different locations of interest.

TABLE 1: AVERAGE FINANCIAL LOSSES DUE TO TENURE-RELATED DELAYS ON PROJECTS IN EACH COUNTRY IN TERMS OF US DOLLARS AND PERCENTAGE OF THE ORIGINAL DISCOUNTED NPV

CROP	LOCATION	BEST CASE $	MEDIAN CASE $	WORST CASE $	NPV RANGE %
Oil palm	Gôh-Djiboua District, Côte d'Ivoire	9,766,450	16,091,647	21,806,680	30-66
	Grand Kru, Liberia	9,841,372	16,351,502	22,133,101	30-67
	Kalangala, Uganda	8,251,147	13,340,337	18,770,602	25-57
Sugar cane	Tana River County, Kenya	31,221,160	68,328,748	91,919,143	34-100
	Chikwawa District, Malawi	35,082,495	77,429,863	100,862,290	38-110
	Kilombero District, Tanzania	29,373,008	63,018,219	86,363,927	32-94
Rice	Gambela, Ethiopia	2,481,356	6,621,927	8,570,430	72-248
Coffee	Volta Region, Ghana	283,908	479,987	762,148	112-286

2. **Commodity**: Results differ between commodities due to their varying production and harvesting cycles, and scale of upfront capital needed. While oil palm and coffee are considered perennial tree crops, rice is an annual crop that can be harvested up to three times a year depending on its variety and whether it is irrigated. Sugar cane sits in between as it is typically produced in two-year cycles compared to oil palm and coffee, which take several years to reach maturity. Taking Uganda as an example, a 10,000 ha greenfield sugar cane project with corresponding upfront capital costs faces a loss of $31 million under a median case scenario. This compares to $5 million for an identical oil palm project due to the more gradual growth of capital expenditure associated with a perennial crop. However, in terms of percentage of original NPV lost, both crops face similar rates (40.5% for sugar cane and 40.1% for oil palm) on account of the higher upfront capital costs associated with sugar cane investments. See Appendix 4 for more information.

3. **Size**: As a percentage of base case NPV, losses are particularly high for smaller projects but tend to stabilise the larger the project becomes. This is due to the lower base case NPVs associated with smaller investments or those with lower upfront capital costs. For instance, the base case discounted NPV (without tenure disputes occurring) for a 2,500 ha greenfield oil palm plantation in Liberia is just under $500,000. This compares to a potential loss of nearly $1.3 million under a median case scenario of delays caused by active tenure conflicts (a loss of 361% in terms of the base case NPV). As project sizes increase, so too do their original NPVs, thereby reducing losses as a percentage of those original NPVs. See Appendix 4 for more information on these results.

4. **Stage of operations**: The results of the model distinguish between green- and brownfield losses. We used a sugar cane plantation investment in Malawi to investigate these varying losses (see Appendix 4 for more information). Losses are, on balance, higher for a greenfield investment, increasing by up to $197 million for 25,000 ha against $117 million for a similar brownfield project. However, the range of losses between the two projects is as wide – or wider – for a brownfield investment. For instance, the difference between these two scenarios for a 25,000 ha brownfield project is $25 million against $23 million for an equivalent greenfield investment. Particularly in the sugar sector, we can see legacy issues broadening the range of potential losses for brownfield investments.

5. **Discount rate**: The impact of tenure disputes on financial losses typically increases from a very low discount rate (5%) but declines sharply thereafter and eventually levels off (see Appendix 4). This is because discount rates not only affect the different risk scenarios, but the base case scenario as well. Where capital costs are high, such as with oil palm and sugar cane investments, high discount rates reduce the NPV of the base case scenario (where tenure disputes are absent). This also reduces the potential loss that tenure disputes cause against that base case scenario.

4. CONCLUSIONS AND RECOMMENDATIONS

The results of the model show that, even for the best case scenario – a comparatively small coffee plantation in a country with a low risk score such as Ghana – the quantifiable risk exposure (i.e. the potential loss caused by tenure-related disputes and delays) runs into hundreds and thousands of dollars and many times more than the base case projected NPV of the project. For larger industrial crops, such as oil palm or sugar cane, active tenure conflicts can cause delays that can cost tens or even hundreds of millions of dollars. This may influence how a company wants to approach a project, since it may well be possible to pilot a land investment with a less capital-intensive crop with a shorter production cycle before moving into a crop that would be much harder hit by tenure-related delays, such as sugar cane.

This is in addition to the potential costs caused by reputational damage, especially for integrated agricultural companies with direct exposure to consumers. Tenure risk must therefore be taken seriously by any agricultural investor in Africa. Exposure to reputational risk due to land disputes is also relevant to companies in other sectors and locations given the increasing consumer pressure on traceability, sustainability and ethical business practices. This risk is very different according to location, so companies and investors can use TRT to help to identify the best destinations for their investments using two strategies. One is to target projects in locations with lower risk scores, where the potential for tenure conflicts to delay operations is less likely. These locations could be in relatively low risk locations within Africa (such as Ghana) or in other regions, although more data from case examples and companies operating outside Africa will need to be collected before it can be used to inform the present model. Another strategy is to target locations with higher risk scores but employ a greater and more diligent effort to understand and respect existing land rights and work with local land holders to minimise tenure-related disputes. These include integrating practices into pre-investment due diligence process, including efforts to gain FPIC, participatory mapping, conducting land entitlement processes, establishing grievance resolution mechanisms and working with customary authorities. There are also a host of publicly available tools that have recently been developed to help investors navigate complex land tenure arrangements, including Land Portal, Landscope, the RIPL Guidelines and the Interlaken Group Guide.

The research accompanying the development of the TRT also reveals that the costs of mitigation are considerably lower than the quantifiable risk exposure. Interviews with several companies indicate that strategies to mitigate and avoid tenure rarely exceed 2% of overall expenditure. Companies and investors can also, therefore, use the model to justify proportionate and sufficient resourcing of due diligence for tenure issues and for improved local engagement processes that help to gain and maintain social licence to operate.

Such actions not only benefit companies' bottom lines; when done well, responsible investment can *strengthen* land rights, particularly in many rural areas where they are currently nebulous. By implementing robust and well-conceived measures to mitigate land tenure disputes and build local trust, companies and investors can achieve the triple win of improving the local impact of their investments, their financial sustainability and their reputation.

Agricultural operators and processors will also thereby be able to satisfy the increasing pressure to demonstrate good social and environmental performance, and to contribute to targets like the UN's Sustainable Development Goals, for which agriculture is so vital. Tenure risks are also becoming more pronounced as pressure on land grows and as people get easier access to communication tools and grievance mechanisms of various types. Those companies that can identify and address tenure risk in their operations, supply chains or portfolios will gain a growing competitive advantage, both operationally and reputationally.

In the process of pursuing this work, we have further built networks with companies and investors interested in managing tenure risk efficiently. Our conversations have confirmed support for the approach we are taking and we are confident that TRT will help its users to improve both financial outcomes and their local impact. This lays the groundwork for future collaboration to address the problems posed by tenure risk. It also helps to ensure that TRT meets the requirements of investment decision-making processes.

Finally, there are future avenues of research that became apparent during the analysis underpinning our findings. While TRT is based on case examples of and data from companies operating in sub-Saharan African agriculture, the findings are also of considerable relevance to other regions and other sectors. However, before the tool can be applied to these sectors and regions, further research needs to be undertaken to collect, understand and feed such data into the model before it can meaningfully be applied to these areas. For instance, the severity, duration and financial costs related to tenure disputes may vary significantly for mining operations compared with agricultural investments. Further research will be required to enable a global, cross-sectoral tool to be developed that can help businesses quantify the risks of worldwide land-based investments.

ENDNOTES

1. The reputational impacts of tenure disputes are also considerable. For example, tenure-related disputes in the sugar supply chain have encouraged market leaders like Coca Cola and PepsiCo to scrutinise their suppliers. It can be hard to rehabilitate reputations following this opprobrium. In the case of Dominion Farms, among others, reputational problems led to reduced market access through cancelled supplier contracts. The oil palm company Herakles collapsed altogether following ongoing issues with land tenure. However, these reputational impacts are difficult to quantify so we have narrowed our focus to operational risks.

2. For example, TMP Systems' papers on this subject have used data harvested from public domain sources. A paper by Shift, looking at the extractives sector, uses more exact data but only for a handful of cases in a single country. This work has demonstrated that tenure risk is financially significant but it has not helped companies and investors to understand their exposure.

3. Data from TMP Systems' Case Study Database.

4. TMP Systems (2014) *Communities as Counterparties: Preliminary Review of Concessions and Conflict in Emerging and Frontier Market Concessions*. Published by Rights and Resources Initiative (RRI): https://rightsandresources.org/wp-content/uploads/Communities-as-Counterparties-FINAL_Oct-21.pdf

5. For example, Illovo has embarked on a long journey to improve its practice and impact on land rights with the support of supply chain partners like Coca Cola. Similarly, many palm oil companies, notably Olam and Sime Darby, are now leading the sector in attempting to implement better local engagement processes with the hope of reducing tenure risk and winning strong social licence to operate.

6. Companies interviewed included producers and processors; investors; downstream companies purchasing agricultural commodities; traders; and a mix of industry representative bodies, consultancy firms and a small number of NGOs outside the private sector.

7. Available at: https://landportal.org/partners/quantifying-tenure-risk

8. As financial data received from companies as part of the primary data collection was often project specific, we undertook further desk-based research to collect data on crop production (including yields and planting over the project life cycle), production costs and revenues (crop prices) for different commodities. The commodities covered were palm oil, sugar cane, rice and coffee. We collected impartial data on bananas and soybeans.

9. In most cases (11) these long disputes start while projects are in the early stages of establishment. Just two long delays started during operations.

10. We created this distribution using a strict definition of what constitutes a 'delay'. Our research only counted complete suspensions of work that could be directly attributed to land and resource disputes. We did not review instances in which progress had been much slower than originally anticipated. This choice was made because it is not possible to attribute these slowdowns to tenure issues rather than, for example, inefficient management or regulatory hurdles. As a result, the severe delays presented above are conservative estimates.

11. In Madagascar, there are signs that the project may restart under completely new design but with the same backers. This seems to be a strategic decision from a large Chinese company to keep faith with the government of Madagascar.

12. Not every dispute becomes protracted and so threatens the existence of a project. In three cases, delays lasted just 12–14 days. Investors here have typically acted quickly to engage local people and address their grievances.

13. This spending is, as we would expect, heavily concentrated on the early stages of project development, on practices like consultation, land mapping and additional impact assessment processes. More research could be dedicated to understanding exactly how efficient and effective this spending is.

14. TMP Systems has compiled this data as a part of its work on a separate project called IIT completed with funding from the United Kingdom's Department for International Development (DFID).

15. These indicators are taken from reliable and respected public sources such as the US National Aeronautics and Space Administration (NASA), European Space Agency (ESA), World Bank, United Nations, Oxford University, Columbia University and WRI (World Resources Institute). These datasets have been selected and vetted for relevance and robustness by the team at TMP Systems. They cover the likes of population; poverty and social welfare; conflict; land use classifications; water availability; regulatory quality; and corruption. These factors were identified as relevant through analysis of over 500 cases of tenure dispute globally and subsequently through the quantitative analysis described in this document.

16. The 'base case NPV' refers to the NPV of the project where tenure risks are not present.

17. CAPEX captures the costs of acquiring, upgrading or maintaining physical assets. For agricultural investments, a majority of these costs are likely to fall on clearing and preparing land (establishment costs), installing irrigation or constructing an oil palm or sugar mill. Depreciation on these costs is captured by applying the discount rate to them.

18. OPEX includes the ongoing production costs, mainly in terms of labour and inputs. For instance, agricultural projects will require labour to maintain (e.g. pruning and weeding) or harvest crops. A significant amount of OPEX also falls on the costs of inputs such as fertiliser or crop protection, as well as the fuel needed for machinery (e.g. to transport or apply crop protection).

19. The model uses the SimVoi 3.08 add-in in order to run the Monte Carlo simulations and produce the required algorithms for randomisation. For more information, see: https://treeplan.com/simvoi/

20. We made assumptions around plantation sizes and the speed at which planting took place in order to take into account differences in the time it takes for crops to mature and to be planted. Capital costs are only applied to the area that is being planted in any given year and operating costs typically only begin to incur once a crop reaches maturity. The range is given as an average across different plantation sizes and locations but with a single discount rate of 15% applied. We have expressed the financial losses that can potentially be incurred in terms of discounted US dollars as well as a percentage of the base case, discounted NPV.

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