



# How do staff motivation and workplace environment affect capacity of governments to adapt to climate change in developing countries?



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## ABSTRACT

Government ministries are increasingly mainstreaming climate change adaptation within policies and plans. However, government staff in key implementing ministries need to be empowered to ensure effective delivery of policy goals. Motivation to act on climate change, combined with the capacity to make decisions and apply resources to programmes, is crucial. Informed by theories of motivation and workplace environments from social psychology and organisational theory, this paper reports findings from a questionnaire of government staff (103 respondents) in Malawi, Tanzania and Zambia. The questionnaire was designed using self-determination theory to investigate the role of external influences, institutional structures and resources and how these, in turn, affect staff motivation and capacities to design and implement new policies and strategies. The study finds that whilst external influences and hierarchical structures are recognised, these do not have a strong direct influence on staff motivation, but they do appear to inhibit capacities to act. The results show that lack of staff and limited government-allocated budget reduce the ability of ministries to be self-determined and set their own agendas. Instead they are dependent on donor-determined projects which may be selective in the aspects of climate change adaptation plans and policies they support and even divert focus away from government priorities.

## 1. Introduction

Climate change is increasingly recognised as an issue in southern Africa and many countries are responding by introducing policies and programmes to support adaptation (Reid and Huq, 2014; Ampaire et al., 2017; Nightingale, 2017). Since 2009, fourteen countries in sub-Saharan Africa (SSA) introduced national climate change policies or strategies (Climate Change Laws of the World database, 2018) and more are under development. Yet, for these policies and strategies to be implemented effectively, certain conditions need to be met. In particular, those tasked with implementation require the capacity and motivation to prioritise climate change adaptation and take action.

Lack of resources is typically cited as a key capacity constraint to designing and implementing climate change adaptation, but the specific ways in which this is manifest are rarely elaborated (Amundsen et al., 2010; Clar et al., 2013; Biesbroek et al., 2014; Shackleton et al., 2015). There are other factors which affect the extent to which government staff are motivated and able to take decisions. A more nuanced understanding of these will enhance understanding of barriers to, and enablers of, climate change adaptation, and how motivation and agency

can be maximised for effective delivery. In this paper we build on insights from social psychological and organisational theory to examine a range of factors that affect capacities to implement climate change adaptation agendas.

Despite its relevance, Self-Determination Theory (SDT) has rarely been applied in the context of adaptation (Conway and Mustelin, 2014) and, to our knowledge, only once in a sub-Saharan African country (Hepworth, 2009). Applications to pro-environmental behaviour, including action on climate change, have previously focussed on individual and household levels, and experiments have tended to be conducted in laboratory environments, with students as the main subjects (de Groot and Steg, 2010; Lavergne et al., 2010; Wolf et al., 2013). We argue there is strong potential to apply SDT in more complex, real world environments at different levels of governance, and in developing country contexts. Hence, the aim of this paper is to apply organisational theory and SDT to characterise the nature of workplace environments and capacities, and examine their influences on motivation to implement actions on adaptation.

The paper examines findings from a sample of national and local government planners in sectors concerned with climate change (103

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individuals, including water, agriculture, energy, environment, health and planning) in Malawi, Tanzania and Zambia. These three southern African countries all face disruption to rainfall patterns and higher temperatures associated with climate change (Niang et al., 2014). They all have policy frameworks for climate change in place (a policy in Malawi and strategies in Tanzania and Zambia (GOM, 2011, 2016; ; GOT, 2012; GOZ, 2010, 2016)). Whilst motivation to act is personal, the capacity for individuals to exert their agency is contingent upon institutional structures, which differ within and between each country. This paper begins by providing background on climate change activity at the national level in the three countries. This is followed by presentation of the theoretical framing of motivation and workplace capacities, drawing on insights from social psychology, and organisational theory. Data collection and methods (a questionnaire administered among government staff) are then described. The results show various aspects of motivation and the workplace environment, highlighting the importance of specific factors and the nature of barriers to public sector responses to climate change. The paper ends with a discussion of implications for action to enable adaptation in sub-Saharan Africa.

## 2. Background

### 2.1. Responses to climate change in southern African case studies

Public sector responses to address climate change are incorporated in policies, strategies, plans and programmes in which the formulation stage is often driven by negotiations at the international level. Member states are then tasked with translating the agreed international policy agenda into their own national policy landscape. Since climate change is a cross-cutting issue, this often takes the form of a national overarching policy or guidance document with influences on other sectoral policies (Huq et al., 2011; England et al., 2018).

Malawi, Tanzania and Zambia all have multiple policies, strategies, plans and programmes in place to address climate change. Malawi's National Climate Change Management Policy was adopted in 2016 (GoM, 2016). The country also has a National Climate Change and Environment Communication Strategy 2012–16 and a Strategy on Climate Change Learning (GoM, 2012, 2013). Tanzania has a National Climate Change Strategy that was finalised in 2012, as well as Guidelines for Integrating Climate Change Adaptation into National Sectoral Policies, Plans and Programmes (GoT, 2012). Zambia has a National Climate Change Response Strategy and a National Climate Change Policy that was adopted in 2016 (GoZ, 2010; 2016).

The policies and/or strategies of all three countries provide a framework for climate change to be integrated into sectoral policies, which staff in the relevant sector ministries are tasked with implementing. However, challenges with implementation in southern Africa are well documented and include issues of coordination and policy coherence across sectors, and lack of political will (Lawrence et al., 2015; Pardoe et al., 2017; England et al., 2018; Spires and Shackleton, 2018). For practical barriers, lack of resources is commonly cited, relating to human resources, equipment and technology, data and information, or inadequate budgets to carry out tasks (Amundsen et al., 2010; Biesbroek et al., 2013; Clar et al., 2013; Spires et al., 2014). However, action to overcome these barriers has not been forthcoming and this suggests that, among other things, there is a need to better understand the contextual factors that influence (in)action (Biesbroek et al., 2013; Azhoni et al., 2017).

### 2.2. Motivation and workplace environments—insights from social psychology and organisational theory

Within the social psychology literature there is a substantial body of work that examines what affects the extent to which staff are likely to engage in their jobs. Definitions of employee engagement differ, but common elements are “the notion that employee engagement is a

desirable condition, has an organizational purpose, and connotes involvement, commitment, passion, enthusiasm, focused effort, and energy” (Macey and Schneider, 2008: 4). Levels of engagement can reflect elements of motivation, which can be both intrinsic (internal to an individual) or extrinsic (generated externally).

Intrinsic and extrinsic motivation relate to the ways in which rewards are generated (Ryan and Deci, 2000). Intrinsic motivation refers to behaviour that is internally-driven by a sense of meaning and interest. The rewards generated by intrinsic motivation include a sense of meaning and value, or experience of competence which, in turn, generates positive emotions within an individual. In contrast, extrinsic motivation occurs when the motivation to act is driven by potential to earn a reward or avoid punishment. Attempting to improve employee engagement is thus more likely to be effective when an employee's motivation is understood. Intrinsic motivation is strongly linked to effort and performance (Lawler and Hall, 1970).

The growth in evidence for the role of intrinsic motivation suggests that staff are more productive and positive work outcomes are more likely where staff are motivated by the task itself and recognition of its inherent value (Gagne and Deci, 2005; Schreurs et al., 2014). Since developing effective climate change responses and adaptation requires a sense of collective purpose and agency for creativity and innovation, a workplace environment that supports autonomy is likely to be helpful. However, differently designed workplace environments can have different effects on motivation and engagement (Cameron and Pierce, 1996; Cameron et al., 2001; Baard et al., 2004).

Organisational theory provides insights into the design of the workplace environment which, in turn, is linked to motivation. Classical theory is based on several principles: that there is a method to perform each task; workers should be trained to carry out this method; they should be closely supervised; and that the role of management is planning and control (Shafritz et al., 2016). Under the classical paradigm organisations were strongly hierarchical, exhibited a high degree of control, and focused on external reward as the main motivator and driver of change. However, this did not consider the role of individual freedom and the importance of social relationships in influencing outcomes (MacGregor, 1960; Scott, 1961).

Recognition of the fact that the external workplace environment can affect level and type of motivation has given rise to SDT (Hackman and Oldham, 1976; Deci and Ryan, 1985; Ryan and Deci, 2000). SDT assumes that, for active employee engagement and positive workplace outcomes, a range of motivational needs should be satisfied. This can take place through, for example, the existence of an inspiring vision in which work tasks contribute to a collective sense of meaning and value in a common purpose (Gagne and Deci, 2005). It can also be encouraged by other organisational behaviour and management practices that allow staff to feel they have the autonomy to make decisions, and that they are competent and able to carry out their assigned tasks (Deci and Ryan, 1985; Ryan and Deci, 2000), develop new ideas, and challenge convention when it is no longer appropriate (e.g., Bass and Avolio, 1990; Dvir et al., 2002).

SDT has been widely applied in the field of social psychology relating to health (e.g. Blevins et al., 2016), particularly motivation for sport (e.g. Amorose et al., 2016; Sebire et al., 2016), and education (e.g. Andrews, 2016). In terms of environmental action and climate change adaptation, SDT has been applied in studies examining pro-environmental behaviour, again focussing on the individual and examining motivating factors such as the perception of government support for pro-environmental behaviour (De Groot and Steg, 2010; Lavergne et al., 2010).

Application of SDT in developing country contexts, particularly for national government/public sector staff, is very rare. To our knowledge, only Hepworth (2009) has applied SDT to public sector staff in Kenya, Tanzania and Uganda. This work was focussed on staff motivation in relation to the implementation of integrated water resource management. The study highlighted how autocratic management and external

influences from donor support undermine intrinsic motivation.

Climate change, as a relatively new issue, requires characteristics of intrinsic motivation: the agency, motivation and capacity to implement new approaches. Yet, bureaucratic institutions, such as government, can be hierarchical, whereby technical staff are required to follow the orders of senior staff, which can often result in a failure to motivate staff to be proactive (Azhoni et al., 2017). Institutional inertia can be found within the influence of leaders who, similar to overarching policy, affect the perceptions of government ministry staff (Berkhout, 2012; Williamson and Nelson, 2017). In these cases, it is only when the higher echelons see climate change as a priority that the technical staff will be pushed to take action, which is often overlooked when considering effectiveness of climate change response (Dovers and Hezri, 2010).

Insights from social psychology, organisational theory and SDT can, therefore, help to reveal the nature of workplace environments and whether they are autonomy-supporting institutions that enable staff to act with agency, or whether they are control dominated with top-down, hierarchical decision making structures. In this way, SDT and organisational theories help to highlight the institutional barriers to, and enablers of, effective climate change response and adaptation.

### 3. Methods

A questionnaire was designed for use with national and local level planners in climate-relevant sectors. The questionnaire followed a structure and some specific questions used by Hepworth (2009), adjusted to focus on climate change adaptation. In addition to basic demographic data to determine the sample characteristics, the questionnaire comprised a combination of Likert scale, multiple choice and open answer questions on motivation, the workplace environment and capacities. An additional section comprised questions devised by Deci and Ryan (1985) to determine the General Causality Orientation Scale (GCOS, an integrated measure of motivation orientation and experience). The full questionnaire is available in the Supplementary Information (note that this paper only reports on the questions highlighted). For the questions on resource constraints, respondents were invited to mark the extent to which they agreed or disagreed with statements on; staff numbers, general financial/budgetary resources, equipment, data, access to field transport, training and a general category. The questions were repeated in two different sections of the questionnaire with both positive and negative phrasing in most instances to reduce the potential for acquiescence bias.

The questionnaire was targeted specifically at sectoral planners and, as a result of personal connections made, response rates were fairly high (over 65% in all three countries). In total, 103 questionnaires were completed between July 2016 and November 2017: 20 in Malawi; 29 in Tanzania and 54 in Zambia. Just under half (40%) of responses were provided by staff at the senior/management level and the other 60% were completed by junior professional/technical staff. The questionnaire was designed to be self-administered (after an introduction of the aims and process by members of the research team) and anonymity was ensured in order to encourage candid responses and reduce social desirability bias.

Results were analysed primarily through descriptive statistics complemented by multiple regression analysis between the GCOS scores and questions specific to motivation and the workplace environment to determine whether intrinsic motivation, compensation and reward factors specific to the respondent's context may have influenced their GCOS scores. Analysis to test for differences in results between junior professional/technical staff and senior/management level staff was carried out, however, no statistically significant differences were revealed. As such, the results are reported based on an analysis of the sample as whole with some key case study differences elaborated where relevant. In order to understand the implications of the hierarchical structure on motivation the GCOS scores of respondents were assessed through the questionnaire, based on vignettes

that were developed by Deci and Ryan specifically to test the degree to which respondents experience events as autonomy or control motivating (Deci and Ryan, 1985). The GCOS questions ask respondents to state, on a scale of 1–7, how likely they are to respond to the situation depicted in the vignette in a particular way. Each vignette has three responses corresponding to autonomy, control and impersonal (or lack of) motivation. The results for each type of response are summed per respondent and an average taken across the case study country to provide an overall score for autonomy, control and impersonal motivation per country.

For some of the questions, additional insights from interviews and researcher observations have been included to support the analysis and interpretation. In total, 96 semi-structured interviews (40 in Malawi, 38 in Tanzania and 18 in Zambia) were carried out between June 2015 and October 2017 as part of the same research project with national and local planners in climate-relevant sectors. A list of organisations that interviewees represented along with the interview protocol is included in the Supplementary Information. As a result of anonymity of questionnaire responses it is not possible to determine the extent to which the samples overlap in the individual respondents, however, the questionnaire responses were drawn from organisations that have been interviewed. The interviews were captured through audio recording which was then transcribed or through handwritten notes and were coded along key themes relating to climate change adaptation as a priority, progress and barriers to action on climate change adaptation, including questions on capacities, and the influence of external actors. The interviews thus provided insights to aid the interpretation of the questionnaire results, providing greater contextual detail, whilst being a different sample.

## 4. Results

### 4.1. External influences and motivation

Respondents were asked if they felt that external forces or agents influenced their departmental agenda and if so whether this influence was significant (Fig. 1). Three quarters of respondents (75%) agreed that decisions made by their office are interfered with by politicians and powerful stakeholders. Similarly, 71% agreed that their priorities tended to reflect what donors (overseas development agencies) wanted and 65% agreed that interference from within or outside the ministry prevents them from acting independently. For example, “the priorities of the government may not be your priorities. You may prioritise this but that may not be the priority in terms of politics” (local government agency, Tanzania). This illustrates how some respondents in the questionnaire and interviews have found their agendas diverted by donor priorities and politics, undermining their autonomy.

In spite of high agreement that decisions made by their office are interfered with, only 32% of respondents agreed that climate change adaptation was being rolled out because of influence from the international community, 90% agreed that adaptation was important in their activities, and 80% agreed it is a priority compared to other issues (Fig. 1). This suggests that although climate policy development is often funded and promoted by donors, adaptation is, nonetheless, recognised as important by the survey respondents in its own right, irrespective of donor influence. However, turning this recognition of the importance of climate change into action on adaptation will depend on capacities to implement the strategies and where resources are insufficient, donors may be required to provide support, potentially diverting or altering the nature of action to suit their priorities: “the most challenging [thing] is that NGOs, development partners etc. have different policies. That is the challenge, how to fit to our plans. They have their priorities, you may find a place where some issues are abandoned even if you feel they are important, they may be abandoned” (local government agency, Tanzania).

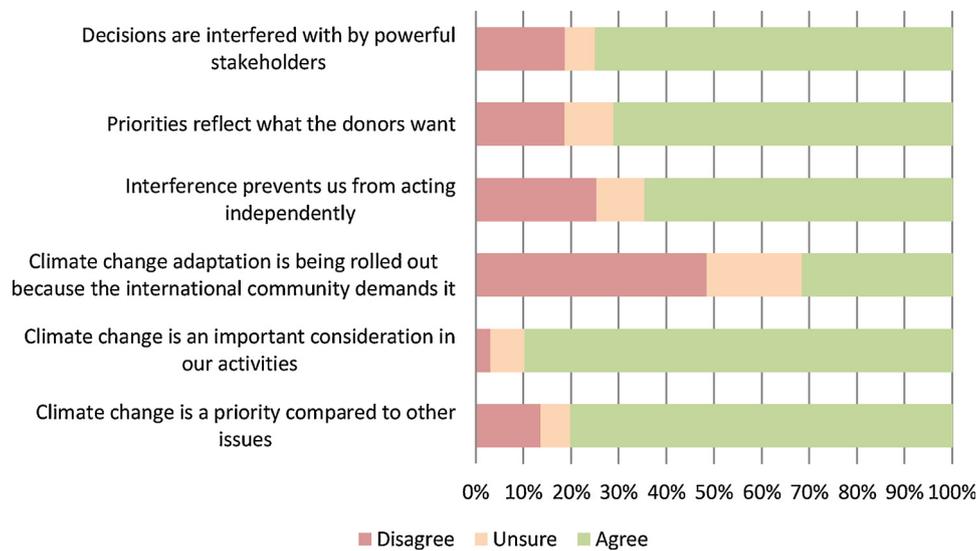


Fig. 1. External influences and impact on departmental agendas. Results are averaged for all three country studies with agree scores reflecting the proportion of respondents that felt external influences were present and impactful.

4.2. Internal structures and motivation

The majority of respondents (82%) recognised and agreed that there are clear hierarchical structures and processes for decision making within their institutions. Even more (89%) agreed that they had a written job description which clearly defines their role within the department. These results, shown in Fig. 2, demonstrate a clear organisational structure within which the actors understand their place and what is expected of them. In terms of decision making in such hierarchical structures, 75% of respondents agreed that decisions were made in line with the department’s general vision, suggesting that decisions are seen as largely determined by the overarching department goals and, as such, can be construed as relatively legitimate. Furthermore, respondents appeared satisfied that they were included in decision making, with 61% agreeing that the reasons for decisions being made were communicated and only 22% felt that decisions were frequently made by the manager or supervisor without consulting employees. However, whilst employees felt that they are consulted and are aware of decisions being made, staff exhibit some restricted agency to make their own decisions.

Almost half of the respondents (43%) agreed that they would have to consult with their manager before taking decisions in the field (Fig. 2). The proportion of respondents that agreed with this statement was slightly higher in Tanzania, followed by Zambia (See Supplementary Information). Indeed, an interviewee from a local government agency in Tanzania commented that they needed to install some equipment and that the “funds have already been allocated” but they were “waiting for permission from the boss” to purchase and install the equipment.

Respondents from Malawi demonstrated a greater degree of decision making autonomy, with 35% agreeing that they would have to consult with their manager before taking decisions in the field, compared to the higher proportions of 53% and 42% in Tanzania and Zambia, respectively (see Supplementary Information). Similarly, only 38% of respondents felt that employees frequently or very frequently make decisions with freedom and creativity, although these results varied between the case studies, with a greater proportion of respondents in Malawi agreeing that employees frequently make decisions with freedom (55%) compared to Tanzania and Zambia (35% and 36%, respectively).

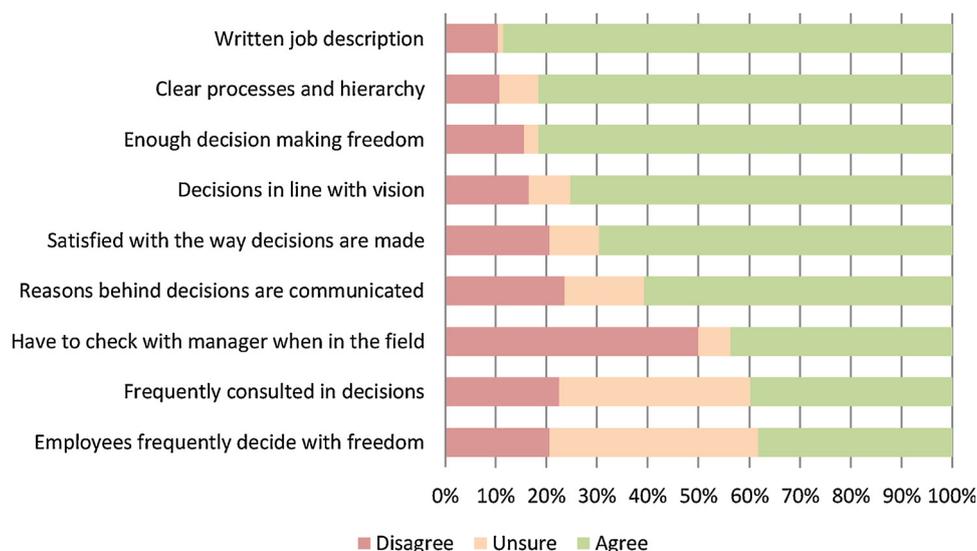


Fig. 2. Internal workplace structures, autonomy and decision making freedom. Results are averaged for all three country studies with agree scores reflecting the proportion of responses that reflected a sense of autonomy and decision making freedom.

**Table 1**

General Causality Orientation Scale (GCOS) results. Values are average sums of responses to the vignette questions reflecting autonomy, control and impersonal (lack of connectedness). Standard deviations (s.d.) are given, along with a Cronbach's alpha score as a measure of internal consistency.

	Malawi	Tanzania	Zambia	Cronbach's $\alpha$
Autonomy	71 (s.d. 7.96)	65 (s.d. 11.23)	70 (s.d. 5.82)	.615
Control	50 (s.d. 9.34)	49 (s.d. 8.79)	55 (s.d. 9.64)	.615
Impersonal	33 (s.d. 7.38)	38 (s.d. 8.22)	36 (s.d. 9.23)	.501

Although freedom to take decisions themselves may be constrained by the hierarchical structures, the majority of respondents (82%) still agreed that they have enough freedom to decide the best way to do their job (within the bounds of their job description) and 70% agreed that they were satisfied with the way decisions are made in their work unit. These results suggest that hierarchical structures are present which can restrict the freedom and creativity of staff to make decisions independently/autonomously. However, the relatively high levels of satisfaction with the decision making processes suggest that these structures may not necessarily undermine autonomous motivation and are, instead, accepted as norms within the wider social context.

#### 4.2.1. The General Causality Orientation Scale (GCOS) and autonomous motivation

The results from the GCOS vignettes in the questionnaire are presented in Table 1 and these highlight that motivation orientations lean strongly towards a perception of autonomous motivation with most of the respondents (95% fully completed GCOS responses) scoring higher on the autonomy scale than the control scale. Comparison with Hepworth (2009) shows scores similar to those found in the water sector, specifically in Kenya, Tanzania and Uganda. Similarly, Hepworth (2009) also sampled water resource managers in the UK and compared results with engineers in the USA. Again, the results of this research are comparable with the autonomy scores of staff working in developed country contexts. Hepworth found that GCOS scores for water resource managers in the UK and engineers in the USA were similar with autonomy scores of 72 and 70 (Hepworth, 2009).

The questionnaire results on motivation were put through a multiple linear regression. The regression explained 26.7% of the variance ( $R^2 = 0.267$ ) in the autonomy score with two factors (being rewarded with money and the team being recognised for doing outstanding work) showing significant influence on this score (Table 2). These results suggest that recognition but also money, usually seen as an external/control type of reward, both support a sense of autonomous motivation. In this way, team recognition and monetary rewards appear to be 'informational' (Deci and Ryan, 2000).

The results suggest that, although respondents face restrictions on their autonomy and ability to take decisions independently, staff are satisfied with decision making processes and thus retain a comparably high sense of autonomous motivation. These results may highlight important differences between the norms of institutional structures in developed and developing country contexts as many of the factors that

have been found to undermine autonomy in developed country contexts do not appear to have the same effect in the context of the samples in the three countries in this study. In particular, and as elaborated in the discussion, these results suggest that hierarchical structures in developing country contexts do not undermine autonomy to the same extent as has been found in developed countries.

#### 4.3. Capacities

The results suggest that autonomous motivation and recognition of the importance of climate change are high in the country studies. Yet, decision making freedom is only part of the necessary conditions for staff to work effectively.

As Fig. 3 shows, nearly all respondents (97%) agreed that more resources are needed to implement their work plans effectively and 93% agreed that the government should provide them with more resources if they are serious about climate change adaptation. However, more specifically, the most commonly acknowledged resource gaps were in staff and financial/budgetary resources. Although the staff generally felt they had received enough training (66% agreed), a key issue was that there are too few people to carry out the tasks and too little funding for their activities on climate change. Only 21% of respondents agreed that they had sufficient funding to be fully effective in their work on climate change adaptation and 81% of respondents agreed that more staff are needed. This was also highlighted in interviews: "there is over 50% vacant positions in the Department of Irrigation, and 40% in agriculture. There is a freeze on recruitment because of the insufficient budget" (donor, Malawi) and "each zonal office really should have about 20 technical staff but at the moment they only have about five" (national government agency, Tanzania).

Without sufficient staff and budgets, external donor support is required to support programmes with an attendant need to align government and donor priorities (see Fig. 2). Interviews further highlighted these resource gaps and their implications: "since the money is not enough from the government, you need someone writing good proposals to attract the donors" (national government agency, Tanzania). Another interviewee commented that "the agency is only really functioning because of donors – who provide money- and NGOs – who support implementation of projects" (donor, Malawi). However, "all the donors have different requirements for reporting against funds – which requires a lot of additional effort on the ground" (national government ministry, Zambia)

Insufficient tools (55%) were also mentioned with lower proportions of respondents highlighting deficiencies in data and technology (36% agree that these are deficient) (Fig. 3). Interviews corroborated that the main resource deficiencies related to operational budgets rather than access to data and technology, for example "to carry out our duties, we need to spend time in the field and we need equipment but funds are scarce. We want to do more but it is a question of capacity" (national government agency, Tanzania).

There were some differences between staff responses by country, although they were not very substantive (results not shown). In Zambia staff appear to be better equipped, with most respondents agreeing that they did have sufficient data and technology but were rather lacking sufficient tools. Respondents in Malawi were less likely to feel they have sufficient data and technology and were evenly split about whether they have sufficient tools. For Tanzania, there was stronger disagreement that respondents have sufficient data and technology but greater agreement that they had sufficient tools. The issue for Zambia, therefore, appears to be a lack of tools and equipment. For Malawi and Tanzania it is more a lack of sufficient data and technology, with insufficient data being particularly highlighted in Malawi and insufficient technical capacity being particularly highlighted in Tanzania. However, the average response across all questions suggests that these deficiencies are not as prevalent as staff and budget resource deficiencies.

**Table 2**

Multiple linear regression results showing beta values for questions on motivating factors.

Motivational aspect	Beta coefficient
Accomplishing plans	-.073
Reward with money	.441*
Recognised by supervisor	-.090
Team recognised	.499*
Department recognised	-.208
New opportunities	.072

\*denotes results significant to  $p < 0.05$  and  $p < 0.01$ .

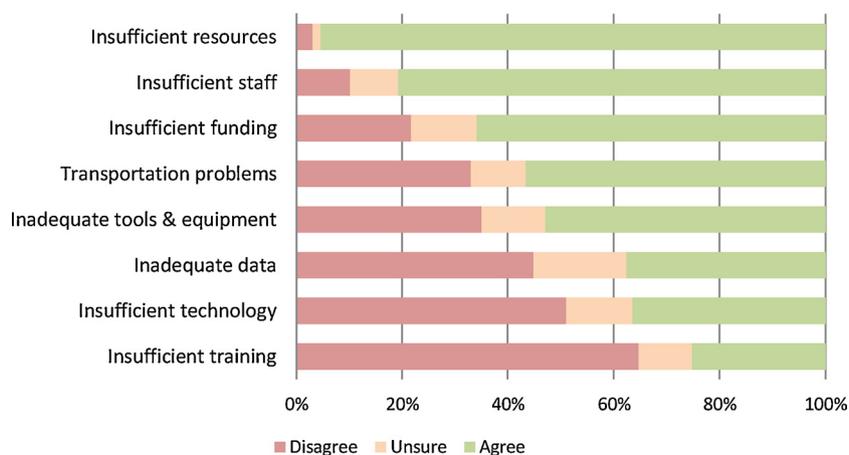


Fig. 3. Resource limitations. Results from Malawi, Tanzania and Zambia showing average responses to questions on levels of different types of resources.

### 5. Discussion

The findings have highlighted that hierarchical structures prevail in the sector ministries with responsibilities for implementing climate change adaptation strategies. According to theory and insights from other studies (mainly in developed countries), this is expected to negatively impact on staff perceptions of autonomous motivation. However our results suggest that, across the three countries studied, responses indicate that autonomous motivation is high and relatively unaffected by the fact that decision making freedom was felt to be rather limited (questions are designed to provide a measure of motivation, rather than asking respondents to evaluate their motivation directly). Staff appear to reconcile hierarchical structures within their workplace as normal and hence can remain autonomously motivated; they felt they had sufficient freedom within the bounds of their roles. In contrast, the hierarchical structure and limited ability of ministries to fund their own activities allows external agents to influence activities and agendas. Questionnaire respondents and interviewees highlighted the role of donor agencies in influencing agendas and generally agreed that ministries are under pressure to accept offers of support as they have limited budgets of their own. This support often comes with further reporting requirements which in turn, re-direct resources to support donor agendas and reduce institutional autonomy.

The literature on donor dependency has highlighted how donor support has focussed on supporting ministries through technical capacity and in developing policies (Lockwood, 2013). This appears to be supported by our findings, as multiple policies and strategies exist and issues with technical capacity, particularly training and access to technology, appear less of a problem than other capacities. Instead, the main resource constraints revealed were limited domestic budgets, which are allocated but often not disbursed on time or in full, and insufficient staff levels. Interviews and other sources reported substantial staff vacancies with 50% reported in some sectors in Malawi (donor interviewee, Malawi) and 40–50% vacancies reported in certain government sectors in Tanzania (national government agency, Tanzania; Ministry of Water, URT, (2012)). Unless ministries are provided with the staff and budgets required to implement climate change adaptation policies and plans, which they quite strongly recognise as priorities, they will remain dependent on donor agencies and external influence. This suggests that external funding through international or bilateral climate finance mechanisms will be required to implement adaptation, alongside alignment with in-country priorities. The reported low demand for training and new technology raises questions about the design of technical assistance and delivery of capacity building through training courses, mechanisms that are already contentious.

The results from the multiple regression (see Table 2) highlighted that autonomous/intrinsic motivation is supported by recognition of

the work that staff carry out but also that monetary rewards support autonomous motivation. Although the SDT literature often describes monetary rewards as a type of extrinsic or control motivation, the literature does acknowledge that monetary rewards may also be seen as informational (Ryan and Deci, 2000) in that they reinforce a sense of competence.

As the results have shown, counterintuitively, the influence of extrinsic motivation, specifically being rewarded with money and the team being recognised for outstanding work, were found to support autonomous motivation. In addition, autonomous motivation remained high and comparable to motivation in developed country contexts where institutions are less hierarchical and control structured. This suggests that the different institutional structures and norms in our three developing countries do not necessarily impact on autonomous motivation. This could be explained by an acceptance of control structures as institutional norms and that a sense of autonomy is fostered within these accepted constraints. This relates to theories of the logic of appropriateness, whereby staff adapt to the institutional structures of their workplace environment, working within rather than challenging the accepted norms (March and Olsen, 1989). In this respect, the results draw together organisational theories and SDT to challenge the ideas that autonomous motivation is fostered through decision making freedom. Instead, this study finds that for the developing country context of our three samples, where control structures dominate, autonomous motivation can be promoted through extrinsic rewards. Overall, it appears that being provided with sufficient resources, through the full disbursement of parliamentary-allocated funds, would support autonomous motivation through enabling government departments to determine their own agendas and to reward staff or fill vacancies. Further research is needed to understand the role of institutional structures and the acceptance of these as norms and how this in turn provides different conditions for the promotion of autonomous, intrinsic motivation.

The results from this research are based on a self-administered questionnaire that surveys the perceptions of staff working in government ministries and departments in three countries of sub-Saharan Africa. The questionnaire was specifically targeted to national and local level sectoral planners, and provided face-to-face, which likely resulted in the high response rate. The questionnaire was, however, self-administered and anonymous to encourage candid responses. The third section was designed to triangulate findings by framing questions both positively and negatively. The results of the questionnaire were supplemented by interviews and observations that provide an important insight into the workplace contexts of the case study countries. Whilst the method would have reduced the likelihood of acquiescence social desirability biases, these issues cannot be completely ruled out.

## 6. Conclusion

As adaptation is increasingly mainstreamed and moves into implementation, delivery mechanisms require greater attention. The role of motivational factors and the workplace environment are important for this agenda, yet their influence is poorly understood, particularly in developing countries. Our results point to some important considerations for adaptation policy and implementation. There is further scope to explore the influence of the workplace environment in adaptation delivery, particularly through additional qualitative research which examines influences on the objectives of adaptation, performance indicators (monitoring and evaluation are critical to ensure effective outcomes) and modes of delivery that ensure local salience and legitimacy. These aims are relevant beyond the public sector and include civil society which often plays an important role in raising awareness and programming adaptation related activities (many national and international NGOs are large organisations with many staff).

Our questionnaire using SDT and interviews with government staff in adaptation relevant sectors in three southern African countries highlights the following. Climate change adaptation is deemed important and a priority compared to other issues. However, there was some dichotomy between reports of fairly hierarchical work structures whilst at the same time staff felt they had enough freedom to decide the best way to do their job and were satisfied with decision processes. As SDT has predominantly been applied in developed country contexts, our findings point towards an important nuance that challenges the standard notions of workplace conditions and autonomous motivation. We find that in all three country samples, extrinsic motivation through monetary rewards supports autonomous motivation. In the context of highly structured, hierarchical institutional contexts, autonomous motivation can be best supported by rewards that support a sense of competence and reinforce a perception that an individual is progressing within, rather than challenging, the structure. This suggests a need for greater consideration of the way that different institutional structures, particularly in developing country contexts, may influence and support autonomous motivation in different ways.

The research reported here has found that freedom to make decisions and take action is most clearly limited not by interest or willingness to engage on climate change, but rather by a lack of crucial, internal/departmental resources. Key resource gaps were not perceived to be a need for more data and technological capacity, but rather a need for more staff and for allocated budgets to be fully disbursed. Without this, staff are dependent on external sources of funding, particularly donor-funded projects. Whilst such projects can provide much needed income and support for staff, the funding often comes with additional reporting requirements and can divert the agenda of the department to suit the particular interests of the donor. Although such influences are accepted within a hierarchical structure, these influences can undermine self-determination and autonomous motivation. It is therefore important that external influences (climate finance, donor organisations) align carefully with in-country priorities and modes of delivery, supporting rather than diverting domestic agendas.

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## Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.envsci.2018.09.020>.

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