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Gender and the construction of identity within climate technology innovation in Kenya

Marshall, M., Byrne, R. and Ockwell, D.

Gender and climate

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This paper undertakes an analysis of the discursive construction of the entrepreneurial identity within media on climate technology (CT) innovation in Kenya. Using the STEPS pathways approach along side a post-structuralist feminist identity framework, it explores the way that the narrative of entrepreneur-led innovation may include or exclude the framings of particular actors. The paper draws on ideas of antagonism in identity construction, legitimacy, and access to resources, in order to identify those actors that may perceive themselves as, or be perceived as, more or less legitimate as CT entrepreneurs, thus being more or less likely to gain access to resources for CT innovation. Although the climate technology entrepreneur aligns in some ways with more normatively feminine notions of the caring social entrepreneur, overall the CT entrepreneur remains a masculine identity. Women are underrepresented in media portrayals of CT entrepreneurship. Further, portrayals of women CT entrepreneurs tend to question their legitimacy, depicting them as either requiring the support of men, or as taking up masculine characteristics in order to gain credibility. The paper demonstrates that this might translate into more favourable attitudes towards men CT entrepreneurs when seeking access to institutional support. It recommends further research into the capacity for CT entrepreneurship to effectively incorporate marginalised framings, and where entrepreneurship will fail to meet their needs, it calls for increased support for appropriate alternative processes of climate technology innovation.

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Acronyms

AWID	Association for Women's Rights in Development
CIC	Climate Innovation Centre
CT	Climate Technology
DANIDA	Danish International Development Agency
DfID	Department for International Development
GEW	Global Entrepreneurship Week
GVEP	Global Village Energy Partnership
IFC	International Finance Corporation
ILO	International Labour Organization
infoDevel	Information for Development Program
IPCC	Intergovernmental Panel on Climate Change
IT	Information Technology
PV	Photovoltaic
SHS	Solar Home Systems
STEPS	Social, Technological and Environmental Pathways to Sustainability
UNFCCC	United Nations Framework Convention of Climate Change
US	United States of America

Summary

This paper undertakes an analysis of the discursive construction of the entrepreneurial identity within media on climate technology (CT) innovation in Kenya. Using the STEPS pathways approach alongside a post-structuralist feminist identity framework, it explores the way that the narrative of entrepreneur-led innovation may include or exclude the framings of particular actors. The paper draws on ideas of antagonism in identity construction, legitimacy, and access to resources, in order to identify those actors that may perceive themselves as, or be perceived as, more or less legitimate as CT entrepreneurs, thus being more or less likely to gain access to resources for CT innovation. Although the climate technology entrepreneur aligns in some ways with more normatively feminine notions of the caring social entrepreneur, overall the CT entrepreneur remains a masculine identity. Women are underrepresented in media portrayals of CT entrepreneurship. Further, portrayals of women CT entrepreneurs tend to question their legitimacy, depicting them as either requiring the support of men, or as taking up masculine characteristics in order to gain credibility. The paper demonstrates that this might translate into more favourable attitudes towards men CT entrepreneurs when seeking access to institutional support. It recommends further research into the capacity for CT entrepreneurship to effectively incorporate marginalised framings, and where entrepreneurship will fail to meet their needs, it calls for increased support for appropriate alternative processes of climate technology innovation.

Preface

There is currently very little research into the ways in which gender interacts with technology innovation, especially in the context of climate technologies. By exploring the discursive construction of the 'climate technology entrepreneur' identity, this paper aims to extend a gender-based analysis into the field of climate technology innovation studies. Looking at issues of identity, legitimacy and access, it will analyse the ways in which entrepreneurship may, or may not, provide a route for different actors to influence the development of climate technologies.

As a white British woman and two white British men writing on gender and identity in Kenya, we feel that it is important to disclose our own positionality. This paper was written and researched out of a concern that the current drive towards private-sector focussed technological solutions to climate change may be marginalising the voices and needs of those who do not fit within this narrative. Whilst we have sought to gain as much insight on the Kenyan context as possible from literature and our relationships with people living and working in Kenya, in a paper which talks about including the framings of different actors in innovation we believe it important to openly acknowledge our own subjective framings and the influence these may have on the analysis presented here.

1. Introduction

1.1 Technology transfer and innovation

The development of technologies to facilitate low carbon development and adaptation to climate change is of increasing concern to national governments and the international climate change community. This is evident in growing international efforts to foster technology transfer, for example through the creation of a specific Technology Mechanism within the Cancun Agreements of the United Nations Framework Convention on Climate Change (UNFCCC 2011), and through the widespread promotion of private sector activities around climate technologies (CT).

Historically, technology transfer has focussed on financing the exchange of technology hardware from industrialised to non-industrialised countries. However, this view of technology transfer fails to recognise the systematic nature of technology uptake and development, in which innovation occurs through complex, dynamic interactions of social, environmental and technical elements (Byrne *et al*. 2012; Leach *et al*. 2007), commonly collectively referred to (without the environmental element) as socio-technical systems (Ockwell and Mallett 2012). In this sense, technology is not just comprised of hardware and codified knowledge such as patents, but is also inextricably connected to contextual environmental and social systems, and tacit user understandings, which give that hardware meaning and purpose, influence innovation, and which are, in turn, influenced by the technologies themselves (Ockwell and Mallett 2012).

With this in mind, it is clear that technology transfer and innovation is not a simple process. There is an increasing recognition that the straightforward exchange or imposition of technology hardware from industrialised countries to developing countries is unlikely to meet the diverse needs of developing countries' economies and technology users therein, and is likely to prove ineffective at building the knowledge and tacit understanding that is required to underpin more widespread processes of technological change and development around lower carbon energy technologies (Byrne *et al*. 2012). There is, therefore, a growing movement towards the development of locally appropriate climate technologies through increased efforts to develop indigenous technological capabilities within developing countries (Bell 2012). This raises the potential for both more widespread uptake of pro-poor, low carbon energy technologies amongst potential users in developing countries, as well as building the technological capabilities necessary to drive sustained processes of economic development along lower carbon pathways.

1.2 Framings, narratives and social justice in innovation

There is an urgent need to tackle both mitigation of, and adaptation to, climate change (IPCC 2007). As technology is perceived to play a vital role within both of these endeavours, innovation around climate technologies is being pursued at a rapid rate (Ockwell and Mallett 2012). However, the rapid development and deployment of technologies leaves little opportunity to make allowances for the social ramifications of such developments (AWID 2004). Climate technologies will have profound impacts upon society, but evidence shows that it is benefiting some groups and individuals more than others. For example in Kenya, Jacobson (2006) has explored the unequal distribution of benefits from development of Kenya's solar home system (SHS) market (household scale solar photovoltaic (PV) applications). His empirical research found that it is predominantly the rural middle classes who are able to purchase SHSs. Many of the rural poor have simply been priced out of the market. This means that many of the economic and social benefits of improved energy access through SHSs also accrue largely to the middle classes, rather than benefiting the rural poor. He also found that, at a household level, distribution of benefit is contingent on intra-household intergenerational and gender relations. Beyond an inability to claim the potential benefits of a technology, the impact of a

technology will also differ depending on one's relation to it (Kabeer 1994: 286). For example the introduction of solar lanterns may impact positively upon someone who would otherwise spend a high portion of their income purchasing kerosene to light their home, whilst it may present a threat to the economic security of someone for whom selling kerosene provides employment.

The STEPS[1] Pathways Approach outlined by Leach *et al*. (2007) provides a useful way of conceptualising the importance of including perspectives of different actors within technology innovation. Actors within socio-technical systems will have different perspectives, or 'framings', depending on their values, experience, understanding and position within the system, for example as a farmer, policy maker or mother (Leach *et al*. 2007; Byrne *et al*. 2012). The framing of a specific actor includes and excludes certain aspects of the socio-technical system. In doing so, it forms part of a particular 'narrative', which views the world in a certain way, justifying particular actions, strategies and interventions in order to bring about certain goals (Leach *et al*. 2007; Byrne *et al*. 2012). As narratives mobilise actors and resources towards particular goals, through particular strategies, so a 'pathway' of development evolves. All actors are operating with incomplete knowledge of the socio-technical system. The pathways approach therefore proposes that it is vital to create opportunities for multiple pathways to evolve in order to meet the priorities and needs of different groups (Leach *et al*. 2007). However, narratives that resonate with powerful perspectives, and that are able to mobilise sufficient resources to support their strategies, may become institutionalised within the socio-technical system, whereas others, often the narratives of those already marginalised in society, may fail to materialise into development pathways, thereby compounding unequal distributions of power (Byrne *et al*. 2012; Leach *et al*. 2007).

Using critical discourse analysis, this paper will explore how one particular narrative, that of climate technology innovation through entrepreneurship, reinforces certain power relations, by including or excluding the framings of certain actors. By examining the construction of the entrepreneurial identity in climate technology innovation, it will look at which actors are best able to gain legitimacy within this narrative. The paper will centre its analysis on issues of gender, power, legitimacy and access to resources for climate technology entrepreneurial ventures in Kenya, with the aim of highlighting the relevance of this in terms of innovating to develop locally appropriate climate technologies.

This paper focuses on Kenya as a case study due to its relative speed of development compared to many other low-income countries in the field of climate technology industries, especially the off-grid solar PV market. Kenya is one of the showcase countries for the Climate Innovation Centre (CIC) initiative, a new initiative funded by the Department for International Development (DfID), the Danish International Development Agency (DANIDA) and the Information for Development Program(infoDev), coordinated by infoDev alongside a number of local partner organisations (infoDev 2010).

The CIC typifies a trend amongst current climate technology transfer initiatives to promote private sector growth and private sector led development (Urban and Nordensvärd 2013). It is intended to work on a business incubation model to 'accelerat[e] the development, deployment and transfer of locally relevant climate technologies' (infoDev 2010: 7). To date, one CIC has been set up in Nairobi, Kenya, which aims to 'provide an integrated set of services, activities and programs that leverage and expand existing innovation capacity and support the development and scale of climate technology

[1] Social, Technological and Environmental Pathways to Sustainbility

enterprises' (infoDev 2010: 8), with plans to set up similar centres in seven other countries including India, Vietnam, Ethiopia and South Africa (infoDev 2013a).

Within the narrative of private sector based approaches to technology innovation, one particularly dominant identity has emerged, that of the innovative 'climate technology entrepreneur'. Within this narrative, the entrepreneur is thought to play a central role in innovation processes, catalysing others to act upon and develop new ideas (Caniëls and Romjin 2008). Technology innovation initiatives such as the Kenyan CIC revolve around the idea of the entrepreneur as the driver of change, the visionary local person, able to develop and distribute the best possible locally appropriate technologies (Sagar *et al*. 2009). Indeed, infoDev, the World Bank programme responsible for coordinating the CICs, appears to equate innovation and entrepreneurship as almost interchangeable concepts. On their website home page, under the heading 'Growing Innovation', they state that 'Local needs can drive world-changing innovation. We help entrepreneurs make a difference by bringing them hands-on business coaching, access to early-stage financing, and better entrepreneurship environments' (infoDev 2013b).

1.3 Entrepreneurial identity, gender and power

There is an implicit understanding within the narrative of entrepreneurs as drivers of innovation that the entrepreneur represents a neutral, meritocratic identity. Anyone can become an entrepreneur. All they need is the right opportunity and the right idea. Support, such as funding and training, can help disadvantaged people overcome obstacles that they may face in starting a successful enterprise, but essentially the success of an entrepreneur is down to the individual's own capabilities (Caniëls and Romjin 2008; Ahl and Marlow 2012). If anyone can become a successful entrepreneur, then this narrative of market-based, entrepreneur-focussed CT innovation would have the potential to incorporate the framings of a wide variety of actors. All that needs to be done is to provide structural support, such as the training and finance provided by infoDev and the Kenyan CIC.

However, existing analysis of the identity 'entrepreneur' within the literature suggests that the entrepreneur is not a neutral category, but rather a masculine one. To say that the entrepreneur is a masculine identity is to say that it is associated with social constructions of the male gender (Gupta *et al*, 2009). Entrepreneurial ability is frequently associated with particular characteristics such as leadership, autonomy, persuasiveness, risk taking, readiness for change, endurance, lack of emotionalism, low need for support and low conformity (Buttner and Rosen 1988). Whilst the evidence that women and men exhibit these qualities and values differently within entrepreneurial ventures is refuted (Ahl 2002), there remains a common perception that many of these characteristics are associated with men more than with women (Ahl 2002; Ahl and Marlow 2012; Gupta *et al*. 2009; Buttner and Rosen 1988). Men in particular tend not to associate entrepreneurship with 'feminine' characteristics (Gupta *et al.* 2009).

This perception of entrepreneurship as a masculine identity has two potential effects on technology innovation. Firstly, there is empirical evidence that those who do not self-identify with masculine characteristics are less likely to express entrepreneurial intentions (Gupta *et al*. 2009). This does not necessarily equate to a reduction in entrepreneurial intentions amongst women, as women may self-identify with supposedly masculine traits (Gupta *et al*. 2009). However, if those who self-identify as feminine do not see themselves as potential entrepreneurs, and if CT innovation is promoted solely through entrepreneurship, this may be problematic for the inclusion of feminine framings within the development of climate technologies. Secondly, as women are assumed not to be masculine, they may be perceived as less entrepreneurial than men, regardless of the reality of their business acumen. This perception of women as inherently lacking in entrepreneurial ability can be seen as contributing to an increased difficulty in gaining access to resources and support for entrepreneurial

ventures (Ahl and Marlow 2012; Buttner and Rosen 1988; Hertz 2011). Whilst women's property rights and access to collateral is seen as a key material constraint in gaining access to business finance in Kenya (IFC[2], 2006), research shows that, when applying for finance, women may be required to have more capital, be charged higher interest rates, and have more loans refused than men (Hertz 2011). The association of entrepreneurial ability with masculine traits therefore contributes towards continued discrimination against women entrepreneurs (Gupta *et al*. 2009).

Understanding the characteristics and behaviours implicit within the identity 'CT entrepreneur' represents an important first step in analysing who the winners and losers may be within this narrative. The central positioning of the entrepreneur within discourse on CT innovation places those who fit this identity in a privileged position. By perpetuating the positive values attached to masculine, individualist characteristics and behaviours, discourse on entrepreneurs gives legitimacy to certain ways of being (Ahl and Marlow 2012). Those who do not appear to fit the identity of the CT entrepreneur may find it harder to gain support in their efforts to advance climate technology solutions, despite their actual potential for innovation and the valuable insight their framing may provide. If certain categories find themselves consistently discriminated against as a result of the construction of a socially imagined entrepreneurial identity, this will have significant ramifications, not only for the development of locally appropriate technologies, but also for wider concerns of social equity within adaptation and mitigation efforts.

These issues of legitimacy, power and access have been widely discussed in feminist literature (Kabeer 1994; Gaventa 2003; Cornwall *et al*. 2011; Connell and Messerschmidt 2005). By exploring the discursive construction of the 'climate technology entrepreneur' identity, this paper aims to extend a feminist power analysis into the field of climate technology innovation studies. It will analyse the ways in which entrepreneurship may, or may not, provide a route for different actors to influence the development of climate technologies that will in turn influence their lives and livelihoods.

The following Section provides an explanation of the theoretical foundation of this discourse analysis, followed by its methodological limitations. Subsequent Sections then analyse the discursive construction of the CT entrepreneur. In doing so, the paper aims to answer the following three questions:

1. How has the identity of 'climate technology entrepreneur' been constructed?
2. How do these constructions legitimise certain ways of being over others, thus reinforcing or altering power relations?
3. What implication is this likely to have for the inclusion of different actors' framings within innovation around climate technology in Kenya?

[2] International Finance Corporation

2. Theoretical framework

In order to undertake an analysis of the discursive construction of identity, it is first necessary to explain how identity is constructed through discourse. Jorgensen and Phillips (2002:1) define discourse as 'a particular way of talking about and understanding the world or an aspect of the world'. This definition is very broad, and would potentially lead 'discourse' to subsume definitions of both 'narrative' and 'framing'. However, for the purpose of this analysis, it is useful to maintain distinct definitions of these three concepts. Within this paper, 'discourse' will therefore refer to the broader theme of conversation. In this case discourse could refer to conversations around themes like 'climate change mitigation', 'climate change adaptation', 'development' or 'technology'. 'Narrative' refers to a particular articulation of that discourse, i.e. a notion of the way that climate mitigation and adaptation should be carried out, such as through technological innovation undertaken by entrepreneurs. 'Framing' refers to the way that the world, or in this case a socio-technical and/or environmental system, is understood. It refers to those aspects of the system that are included or excluded from the narrative, based on the subject's position within it (Leach *et al*. 2007).

This paper bases its theoretical understanding of identity on feminist poststructuralist schools of thought. A feminist poststructuralist analysis sees identity, including gender, as a social construct (Butler 1990; Irigaray 1985; West and Zimmerman 1987). It posits that our understanding of the world around us, and of our position within it, is not fixed, but is constituted through ever evolving and coexisting discourses and narratives (Jorgensen and Phillips 2002; Benwell and Stokoe 2006). The meaning of a particular object is not derived solely from any inherent property within that social phenomenon, but is taken from the labels or signs that name and describe it (Jorgensen and Phillips 2002). According to the structuralist philosopher Saussure (1960), all signs derive their meaning from their difference in relation to other signs. We constantly try to fix the meaning of signs by repeatedly articulating them in relation to other particular signs within discourse. The meanings of signs become fixed by excluding the possibility of relating those signs differently within that discourse (Jorgensen and Phillips 2002).

While we may understand the world through signs, one could argue that there is also a material world that requires our understanding (Hekman 2010). Environmental, social and technical systems have material effects, on our bodies for example, which imbue meaning. Leach *et al*. (2007) maintain that environmental and social systems are both objective and subjective, a product of material reality and of our framing, based on our position within them. However, while acknowledging the co-constructive nature of reality between discourse and materiality, the analysis in this paper will focus on discourse and its power producing effects.

As our understanding of the world is articulated through discourse, so power relations are created which manifest in material reality. The ways that discourses ascribe characteristics and behaviours to particular identities, and the ways that identities are positioned in relation to each other, reflect, recreate and restructure social orders, or hegemonies of power (Gaventa 2003; Foucault 1976). Perhaps the most ubiquitous of these hegemonies, and one that is highly relevant to this paper, is that of hegemonic masculinities within the construction of gender identity. Within discourses on gender, 'man' is consistently related to such signs as 'strong', 'brave', 'unemotional', 'aggressive', 'in charge', 'bread winner', whereas 'woman', being that which is *not* man, is related to signs such as 'weak', 'timid', 'emotional', 'caring', 'submissive', 'domestic'. These signs are articulated alongside each other so frequently as to appear natural, fixing their meaning, and outlining normative sets of characteristics and behaviours that men and women have to adhere to in order to be seen

legitimately as men and women (Jorgensen and Phillips 2002). The constant positioning of 'masculine' men as dominant over 'feminine' women, manifests itself in the subordination of women and other gender identities that are perceived as feminine, throughout patriarchal societies (Connel and Messerschmidt 2005).

However, the process of fixing meaning is never fully completed (Jorgensen and Phillips 2002). As we articulate signs in relation to alternative signs within different discourses, or through different narratives within a discourse, their meaning changes. The meaning of signs may therefore be contested through their positioning within multiple competing narratives and discourses. Discourse therefore represents and reinforces, but also reconstructs our normative understandings of the world (Gaventa 2003; Jorgensen and Phillips 2002). This can be seen in differing and changing notions of masculinity and femininity over time and between different cultural groups. In pre-colonial Kenya, for example, gender discourse contained multiple coexisting narratives associated with different ethnic groups, with differing articulations of what it meant to be legitimately male or female. Colonial rule brought with it western patriarchal constructs of hegemonic masculinities, with the result that present day normative constructions of gender in Kenya reflect negotiation and contestation between these coexisting and competing narratives (Uchendu 2008)

Within the study of identity, signs that take their meaning from those that are positioned around them may be called 'master signifiers' (Jorgensen and Phillips 2002: 42). In the narrative of the innovative CT entrepreneur, the sign 'entrepreneur' is a master signifier, which is filled with meaning by its articulation in relation to other signs such as 'innovative', 'technology' and 'climate change'. One may suppose that positioning the entrepreneur positively in relation to 'climate change' imbues the entrepreneur with a sense of social and environmental purpose; these entrepreneurs are acting to prevent the dangerous impacts of climate change. An entrepreneur in this narrative may therefore be assumed not to be running an environmentally destructive or socially irresponsible business.

Pines et al. (2012) distinguish the social entrepreneur from the business entrepreneur by their prioritisation of a social mission over profit. They hypothesise that the supposedly caring and altruistic associations of social entrepreneurship increase the number of women embarking upon these kinds of ventures. This can be seen in other studies as a marginally reduced gender-divide amongst social entrepreneurs as opposed to business entrepreneurs (Bosma and Levie 2010). However, the discreteness of the social entrepreneur as a category is refuted by Dacin *et al*. (2010: 53), who find that the social entrepreneur is not a distinct form of entrepreneur, but rather that social entrepreneurship is, '… a context in which established types of entrepreneurs operate'. In the case of this discourse analysis, the context takes the form of a discursive narrative, in which the characteristics and behaviours that are expected of the CT entrepreneur are fixed through negotiation between multiple discourses and narratives.

It is by articulating the entrepreneur in relation to gendered signs within these already gendered discourses that the CT entrepreneur may become masculine or feminine. For example, environmental and welfare discourses may ascribe normatively feminine caring qualities, whilst the predominantly masculine discourses of technology (Faulkner 2001) and business (Ahl and Marlow 2012) may ascribe masculine qualities. The way that the sign 'entrepreneur' changes its meaning when articulated in relation to specific signs within these different discourses is taken in this paper to provide justification for undertaking a specific analysis of the 'climate technology entrepreneur' identity, as opposed to translating current understanding of the business or social entrepreneur identity more broadly, into an analysis on climate technology innovation.

As with gender identity, those who take up the identity of the climate technology entrepreneur must adhere to the attributes associated with it in order to gain legitimacy. Many theories exist to explain

when and how people may take up and express identities. However, crucial to the analysis in this paper is the idea of antagonism within the uptake of identity. This refers to the fact that one can comfortably take up multiple identities, but only so long as they do not conflict with one another by 'make[ing] contrasting demands in relation to the same actions within a common terrain' (Jorgensen and Phillips 2002: 47). This is of particular relevance, as the climate technology entrepreneur may be associated with attributes that would leave it in conflict with particular cultural, racial, gender or class identities. In the case of such an antagonism, one identity would block the other (Jorgensen and Phillips 2002: 47), leaving the possibility of three potential outcomes. Firstly, the antagonism may remain, and the subject whose identity conflicts with that of the entrepreneur may simply not perceive the entrepreneur as a potential identity for them to take up. This would seem to explain the previously noted findings of Gupta *et al*. (2009), that those who do not self-identify with masculine characteristics are less likely to express entrepreneurial intentions. Secondly, where an individual is viewed by society as different from normative constructions of the entrepreneur, they may have their legitimacy questioned by society, and thus find it harder to gain access to resources such as finance, to which those perceived as legitimate entrepreneurs may have access. This would at least in part explain discrimination faced by women entrepreneurs (Ahl and Marlow 2012; Buttner and Rosen 1988; Hertz 2011). Thirdly, the antagonism may be forcibly dissolved, as one discourse or narrative rearticulates the signs within the other, thus resolving the conflict. This hegemonic dissolution of one discourse or narrative in favour of another is successful when one comes to dominate completely, enforcing particular normative constructions of the world (Jorgensen and Phillips 2002). However, partial dissolution may also occur. For example, Ahl and Marlow (2012: 546) note that those women who do become entrepreneurs are expected by others to exhibit the masculinities associated with their entrepreneurial identity, and, in so far as they do not, are judged to be deficient. However, these masculinities have 'to be attenuated so as not to fundamentally challenge the prevailing order and thus, present a gender threat' (Ahl and Marlow 2012: 546). In this way, the patriarchal narratives of hegemonic masculinity and masculinised business leave women unable to fully take up the identity of 'woman' alongside that of 'successful business person' (Eriksson-Zetterqvist 2002). At the same time, within capitalist societies, success in business has become a legitimating identifier of personhood. Thus these antagonistic discourses leave women in a sticky situation, unable fully to take up legitimate spaces within society, further compounding their subordination.

Whilst investigating the way in which the 'climate technology entrepreneur' acquires certain attributes, this paper will look to explore the ways in which these attributes, the positioning of entrepreneurs in relation to other actors, and the antagonisms between identities, maintain and create gender power relations. As these power relations are uncovered, particular attention will be paid to their relevance in regards to seeking and receiving support for entrepreneurial climate innovation ventures.

3. Method

3.1 Data collection

The dataset of text sources was compiled through an online search that aimed to give an overview of representations of climate technology entrepreneurs working in Kenya. The majority of media representations of climate technology entrepreneurs in Kenya were found within business and technology online publications designed to influence the technology industry, policymakers and development professionals. However, in order to explore how representations of the CT entrepreneur may impact upon access to institutional support for climate technology innovation, particular attention was given to texts by infoDev as a key institution influencing the development of the Kenyan CIC, and climate technology innovation more widely. The texts that were analysed are summarised in Annex 1. Building on the theoretical framework articulated in Section 2, the data was analysed to identify the main narratives and themes. This is then used to answer the paper's three key questions, namely:

1. How has the identity of 'climate technology entrepreneur' been constructed?
2. How do these constructions legitimise certain ways of being over others, thus reinforcing or altering power relations?
3. What implication is this likely to have for the inclusion of different actors' framings within innovation around climate technology in Kenya?.

3.2 Limitations and areas for further research

Signs are not just limited to words. A certain hand gesture or image, for exampl, may take on various meanings depending on their positioning in relation to other signs (Jorgensen and Phillips 2002). A key methodological limitation of this research is that the material used for analysis is restricted to written English language text, sourced via the Internet. This limits who is being directly reached by these texts to English speaking literate actors with Internet access. While these texts may reflect social and cultural constructions that have wider reach than the texts themselves, there remains the possibility of alternative articulations of the CT entrepreneur within discursive practice outside of this medium.

As du Gay (1996) notes, social identity is created through discourse both from the top down and the bottom up. In other words, the identity of the 'climate technology entrepreneur' is dependent upon the discursive construction of the identity by powerful institutional actors such as those from the epistemic community, and media, but also on the way that the entrepreneurs themselves interpret this characterisation and act on it. The dataset did not include any personal accounts of climate entrepreneurship aside from edited interviews and quotations in promotional material and news media. This analysis is therefore unable to explore in depth, the ways in which actors are contesting and interpreting the constructions of the climate technology entrepreneur identity as they appear through these media, and so any analysis of the ways in which these discourses influence material reality will be limited.

It is also important to note that the ways that identity is negotiated are not straightforward. Identities are constantly reconstructed and contested through discourse. For example, women may adopt masculinities in order to gain better access to resources. There is also the potential for women and institutions involved in entrepreneurship to overcome perception of entrepreneurship as masculine. Further research is needed into the way that this negotiation of identity may affect which

framings gain influence and, concomitantly, the types of technologies and socio-technical systems that arise. Further research is also needed into the framings and narratives of other groups that appear to be excluded from the entrepreneurial identity, such as the disabled and elderly. The capacity for CT entrepreneurship to effectively incorporate their framings must be assessed, and where entrepreneurship will fail to meet their needs, support must be provided for appropriate alternative processes of technology innovation.

4. Constructions of the CT Entrepreneur

4.1 Demographics of representations

There is a visible push by women working in Nairobi to increase their participation in information technology innovation, especially in applications with social purpose (see Risner 2013; Warner 2012). However, aside from small, micro-scale and franchise enterprises in efficient cookstoves, briquette manufacture and solar mobile phone charging (GVEP International 2013), Kenyan women entrepreneurs appear to be entirely absent from the discourse on innovation in low carbon energy and areas with greater engineering focus. According to Faulkner (2001), this lack of female representation within discourse on technology and engineering is ubiquitous, contributing to a perception of technology as masculine. She further argues that masculine perception is a primary cause of low female participation within technological professions.

Overall the analysis of texts on CT (See Appendix) found almost two and a half times more representations of men (32) than women (13) entrepreneurs. Thirty seven of these representations were of entrepreneurs working in Kenya, of which 24 were Kenyan, and 12 were from the US. Within these texts there was no mention of other potentially marginalised groups, such as openly transgender persons, the disabled, and there were very few examples of elderly persons, either as participants in entrepreneurial CT ventures, or as beneficiaries of CT.

4.2 CT entrepreneurs and social entrepreneurship

CT entrepreneurs were often portrayed in the texts as passionate, altruistic and caring characters. This would seem to suggest that climate technology entrepreneurship may, as with other forms of entrepreneurship operating within socially conscious contexts, attract more women and feminine-identified persons into starting businesses. Many of the texts in this study highlighted the importance of entrepreneurs seeing challenges as opportunities, solving social problems through business. However, the social purpose associated with climate technology appears more central in some texts than in others. For example, one interview with two young North American men describes their venture into the Kenyan agriculture sector with a solar irrigation business. Rather than being driven by any social goals, it explains that they were 'drawn to Kenya by the number of technology success stories and the great market opportunity for clean energy solutions like solar power due to the high costs of grid electricity.' (Mulupi 2013) This reminds us that highly profitable business opportunities abound within the context of CT innovation, and that there is likely to be plenty of space for the opportunistic business entrepreneur, as well as those with more social purpose.

4.3 Radicals and their wives

A commonly articulated construction of the successful CT entrepreneur, especially among North American business and technology press, is that of the rebellious entrepreneur sparking a technology revolution. Epistemic literature on technology innovation is full of ‘radical’ and ‘disruptive’ technologies. Just as those technologies are usually considered more groundbreaking than smaller, incremental innovations (Bell 2012), these radical and disruptive characters are often seen as the truly visionary, innovative entrepreneurs. In one of the other working papers from this Project (Byrne *et al*. 2014) we see an exemplary articulation of this rebellious CT entrepreneur. The text explains how the entrepreneur Harold Burris, who is accredited with ‘discovering’ the Kenyan SHS market, was a professional solar engineer in the US, but being 'politically radical and fiercely independent, [he] found it difficult to work within the constraints of traditional organisational hierarchies', even being fired from the Peace Corps assignment that brought him to Kenya (Byrne *et al*. 2014).

When considering how this construction of the CT entrepreneur might conflict with gender identities, it is clear that the idea of the 'fiercely independent' (Byrne *et al*. 2014), rebellious entrepreneur does not fit with hegemonic constructions of the subservient, well-behaved woman. Indeed, the only woman portrayed in Byrne *et al*.'s (2014) account is that of Burris's wife, a Kenyan seamstress, who although supportive of solar PV, is predominantly noted as the inspiration behind a failed solar sewing machine venture (Byrne *et al*. 2014). After this failure the sequence of the text shows Burris struggling to be taken seriously by his male counterparts. His future business partner, Hankins, initially attempts to improve the credibility of this venture by 'attribut[ing] the failure of this project to an abortive coup in Kenya' (Byrne *et al*. 2014.). By associating the failed sewing machine project with a military operation, Hankins and the author act to disassociate the idea from its less business-credible feminine subtext. However, it was not until Burris had convinced Hankins and a local school headmaster to use solar PV instead of a diesel generator that he began to regain credibility. Eventually Burris and Hankins could see that there was a viable market for solar PV (Byrne *et al*. 2014), not to power the sewing machine, but the arguably more masculine television.

This negative association with feminine technology and the only female character within this text can be seen to compound existing preconceptions of women as less entrepreneurial than men. According to Ahl and Marlow (2012) women are frequently portrayed as hindrances to entrepreneurship. Despite often playing vital roles in the setting up and running of businesses, their positive contributions are commonly written off as wifely duty, or not written about at all.

The perception of women's contribution in the public sphere as an extension of their wifely duties is exemplified in the following particularly striking portrayal of Lorna Rutta, a Kenyan entrepreneur working in recycled plastics manufacture:

> Waste not, want not
>
> Lorna has been troubled by this plastic litter ever since she was a schoolgirl. At the time she used to collect bits left lying around and turn them into earrings, 'though it wasn't really the earrings I was interested in—I just wanted to find a way to get rid of all that plastic!' […] Two years ago, she took the entrepreneurial plunge.
>
> Her love of the environment found an echo with a young biochemical engineer she met at her first job, now her business partner, who brings his technical expertise to her financial and managerial know-how. After researching potential avenues for their cause they found that plastic was the best place to start, much to Lorna's delight!
> (Cartier and the Women's Forum, 2011)

Not only is Rutta painted as the model industrious housewife, cleaning up Kenya's plastic litter, but also, as her 'love' finds 'an echo with a young biochemical engineer', even her business partnership is depicted in the form of a romantic, domestic relationship.

This is not to say that women are never portrayed as revolutionary, innovative technology entrepreneurs. Where they are, however, their revolutionary qualities and technological innovative capabilities are often qualified within the text, by association with men and the adoption of masculinities. Henn (2012) qualifies US solar engineer Eden Full's decision to drop out of Princeton University with the trusted opinion of entrepreneur Peter Theil, who 'is perhaps best known for his insistence that higher education is overvalued in America'. In the previous example, Rutta's male partner is the one who provides technical expertise. Whilst this may simply reflect the reality of their business, when women are shown to have technical understanding, there appears to be a need to explain this. Warner (2012) for example, justifies Kenyan IT entrepreneur Susan Ogoya's technical

expertise with an anecdote about her uncle. These gender roles are never reversed; women are never shown as validating the business achievements or technical abilities of men. Towards the end of the previous article, under the heading 'Muscling in on the Market', Rutta also explains how she has had to take on a more powerful, masculine persona, even becoming more physically strong, in order to gain respect within regulatory and administrative institutions:

> "It can certainly be challenging to get people in administrative and regulatory bureaux to listen to me," she confides, "but I have acquired powerful negotiating skills! It's also a manual activity that requires strength and muscle; I'm very hands-on, so it's keeping me fit!"
> (Cartier and the Women's Forum 2011)

5. Competing for Legitimacy

Entrepreneurship competitions provide us with a lens into the minds of the institutional structures that exist to support entrepreneurs. These high profile events make public the judgements that all entrepreneurs face when seeking financial and structural support for their business. Coverage of these events is often provided by the institutions themselves, explicitly or implicitly telling us what attributes constitute a successful entrepreneur in their eyes. As one of the central actors in the development and operation of the CICs, the attitude of infoDev holds particular relevance for CT innovation in Kenya. As the entrepreneurship and innovation programme of the World Bank, infoDev is also in a particularly strong position to influence wider discourse on these issues.

'Meet the Lions', reads the headline for infoDev and Global Enterpreneurship Week's (GEW) 2012 competition designed to encourage social entrepreneurship in Africa (infoDev, 2012a). In this case, a good title tells a whole story. In reading those three words we conjure a vivid image of these entrepreneurs as strong, powerful, violent and predatory. They will tear down the competition with their teeth and claws. Despite the matriarchal nature of a lion's pride, one can't help but picture the lone male in this vision. Firstly, the title does not read 'Meet the Lionesses'. But we may also justifiably assume that the World Bank is unlikely to intend for us to imagine a pack of women, who exile the men upon sexual maturity and band together to bring down their opponents. Such an image of women's collective action would stand at odds with mainstream discourse on entrepreneurship and empowerment, which is clearly focussed on individual agency (Kabeer 2008). And so, there he is, king of the savannah: impressive, competitive, strong, the archetypal predatory male.

The image of the aggressive entrepreneur was repeated the following year, when infoDev released a showcase of the 50 most innovative technology entrepreneurs from developing and emerging markets. This time the headline invites the reader to 'Meet the Dragon Slayers'. Another masculine figure, the 'dragon slayer' paints a conspicuous picture of the courageous hero, who is expert at using violence to save others, or themselves. However, as the dragons themselves represent the competition judges, the elite of the entrepreneurial world, the ultimate goal is to become a dragon oneself.

The opening paragraph conjures a second image of the entrepreneur:

> Entrepreneurs are a rare breed. Creative, ambitious, and versatile, they are outgoing, comfortable with change, and see opportunities where many others only see challenges. These characteristics and more are why entrepreneurs are able to create innovative business models that drive economic growth, and why finding new and better ways of supporting them was a primary focus of infoDev's 5th Global Forum on Innovation and Technology Entrepreneurship.
> (infoDev 2013c).

Like the lions from the previous text, entrepreneurs are metaphorically animalistic. But this time the beasts are domesticated, bred to exhibit a set of characteristics that infoDev is privileged to dictate, and stated in such a way as to seem irrefutable, natural. The text makes it clear that exhibition of these characteristics, and presumably also those associated with the dragon slayer, make entrepreneurs deserving of infoDev's support. It is, apparently, the qualities of the individual that lead to innovation and economic success.

The text concludes:

> Drawn from pools of winners of previous business competitions globally, the companies profiled represent some of the most innovative startups in their respective industries. (infoDev 2013c)

Here the reader comes to understand that winning competitions, by exhibiting the personal qualities and meeting the entrepreneurial standards expected by infoDev and other global actors, is not only how one gains legitimacy as an entrepreneur, but also as an innovator. For entrepreneurs *are* the technology innovators. By extension then, technology innovators must be competitive, brave, aggressive, outgoing, opportunistic, ambitious, creative, versatile and comfortable with change. Innovation becomes a dangerous pursuit, suitable only for Lions, Dragons and Dragon Slayers.

The 2012 infoDev and GEW competition was held in collaboration with LIONS@frica, an initiative that is heralded as a 'champion of entrepreneurship in Africa' (infoDev 2012a). However, rather than being an African-led platform, the initiative is headed by the US Department of State, and modelled after the Startup America Partnership (LIONS@frica 2013; US Department of State 2012). The stated goal of this collaboration, 'to develop a network of mentors working across borders to continue to drive the continent's economic development' (infoDev 2012a), demonstrates a perception that Africans must still be taught, by actors in the industrialised world, how to be entrepreneurial in order achieve economic success.

This perception has its roots in Kenya's colonial history. Entrepreneurship, as a facet of capitalism, came to Kenya with colonial rule (Blaut 1989). According to Blaut, the process of colonisation justified itself with the beliefs that:

> (1) Europe naturally progresses and modernizes; (2) Non-Europe naturally remains stagnant, traditional, unchanging; (3) The essential reason for progressive cultural evolution in Europe is some force or factor, which is ultimately intellectual or spiritual; (4) Progress comes to non-Europe only through the diffusion of European ideas, institutions and people – that is through colonialism.
> (Blaut 1989: 260)

Christianity and capitalism, both spread by European colonisers, provided a mutually reinforcing foundation for the 'modernisation' or 'civilisation' of Africa. European, Christian values and capitalism were credited as a crucial reason as to why Europe had flourished, whilst Africa, at least in the eyes of the colonisers, had not (Blaut 1989). Just as women are perceived as not possessing the qualities needed for entrepreneurship, so Africans were supposedly inherently lacking entrepreneurial ability. Their cultural values did not promote the individualistic ambition embodied within the protestant work ethic, deemed necessary for successful entrepreneurship (Weber 1976; Elkan 1988).

This is not to deny Kenyan actors of agency in pursuing entrepreneurial ventures, or to try and undermine or refute demand from Kenyan actors in receiving training and support from external sources. However, it appears that this remains a discourse in which legitimacy is sought from and given by powerful actors, dominated by the Global North. And so, whilst entrepreneurship may provide a route to economic empowerment, and no-doubt fruits many innovative ideas, the promotion of the entrepreneur-as-innovator may also maintain neo-colonial control over which identities and activities gain access to resources, thereby restricting which voices are able to influence technology pathways.

6. Legitimacy and Access: Comparing two texts

To see how this may translate into attitudes towards entrepreneurs and access to support, let us compare the portrayal of two entrepreneurs who have been given some degree of assistance by infoDev. The first is Jamila Abass, an interview with whom was published in the 'Women's Entrepreneurship' section of infoDev's website. The interview begins by describing the nature and origins of the company that Jamila Abass started with her colleague Susan Oguya in 2010:

> How can technology be leveraged to help farmers buy and sell goods competitively? The Kenyan agribusiness company M-Farm provides a unique solution to this problem that lets farmers receive crop prices and market information via SMS on their mobile phones. Although it now reaches over 2,000 farmers, the company sparked from humble beginnings in late 2010, when Jamila Abass and Susan Oguya of Akirachix were reading newspapers at Nairobi's iHub…
> (infoDev 2012b)

This paragraph is worth deconstructing, particularly the assertion that, although M-Farm is *now* successful, the origins of the company were 'humble'. Humble seems an interesting and revealing choice of word. According to the online Oxford English Dictionary (2013) 'humble beginnings' refers to having come from 'modest pretensions or dimensions'. But it is not quite clear what the humble beginnings are that this text refers to. It makes no reference to a lack of material wealth or assets, which might justify some tone of surprise at these two women's ability to start such a successful enterprise. Instead it describes two women reading newspapers in a technology centre. Not just any two women either, these are two of the founding members of Akirachix, a successful women's technology collective, started specifically to overcome prejudice against women in the Information Technology (IT) industry (Warner 2012). However, the article fails to effectively highlight this fact, lumping 'Akirachix' in as part of M-Farms' 'humble beginnings' and ignoring, even downplaying, the historical achievements that had led these two women to occupy space within Nairobi's iHub. The text implies that Abbas, Oguya and their activities prior to setting up M-Farm, were humble. In this sense, humble would be more appropriately read as 'having or showing a modest or low estimate of one's importance', or being 'of low social, administrative, or political rank' (Oxford English Dictionary 2013). Perhaps the author's intention was to tell a heroic story of two women overcoming prejudice and structural obstacles in a patriarchal environment, to start a highly successful enterprise. However, these structural challenges were never mentioned, and arguably much of their work in overcoming prejudice had already been achieved by the time they were 'reading newspapers in Nairobi's iHub'. And so, without any other explanation, infoDev's text reads as though these two women were themselves inferior, unimportant, until they proved themselves otherwise through success in business.

The text continues:

> 'The newspapers always had sad stories of farmers getting exploited by middlemen,' explains Ms Abbas. She cites an article about farmers who were forced to depend on corrupt intermediaries who routinely squeezed money out of their customers. 'I remember getting emotional and sick to our stomachs that some people could ride on other people's sweat like parasites.'

> 'Little did we know,' Ms. Abbas goes on, 'that sympathizing with the farmers will change our lives forever.'
>
> Abbas and Oguya, both IT professionals in Kenya, set out to think of ways to empower farmers. Their brainstorms yielded M-Farm, which provides a digital marketplace for subscribing farmers using mobile phones…
> (infoDev 2012b)

Here, the first paragraph paints a very different picture from that of the ruthless lions and dragon slayers of the previous texts, one that fits much more closely with ideas of the caring social entrepreneur. Being a text designed to 'inspire girls' into entrepreneurship (infoDev 2013d), this may be intended as an effort to encourage passion and social purpose within entrepreneurial ventures, making entrepreneurship more appealing to those who self-identify as feminine. Sympathy, for example, can lead to success, success, of course, meaning acceptance within the otherwise masculine world of business.

However, the text struggles in its mission to achieve this. Perhaps conflicted over the antagonism between the feminine identity of the caring and emotional woman, and existing notions of the credible entrepreneur as masculine, un-emotional and somewhat ruthless. Having already described Abbas and Oguya as humble, the third quote gives prominence to four powerful words, 'Little did we know', that further serve to undermine their credibility as knowledgeable and competent entrepreneurs. This is of course a quote from Abbas herself. One could then relinquish the author of responsibility, and claim that they are simply reporting the views of the entrepreneur. Indeed, this expression of self doubt may well reveal internalised power relations, showing that perhaps even Abbas herself felt unsure about her legitimacy within this narrative (Scott 1990). However, it was the decision of the author to include and highlight this phrase, reinforcing the image of two, humble, emotional, and now clueless women, their lives about to be transformed, almost through happenstance, into important, business savvy professionals.

It is only once this transformation has occurred, in the fourth paragraph of the interview, that the reader finds out Abbas and Ogoya are IT professionals. Even then, the language of the text detaches these entrepreneurs from their achievements. As the two 'set out' like characters in an adventurous fairytale, to think of ways to empower farmers, there is an element of chance. Will they think of something or won't they? In the end the text does not accredit the entrepreneurs directly, as it was 'their brainstorms' that came up with the idea for M-farm. This uncertainty continues when the text comes to talk about infoDev's support of M-Farm:

> …Ms. Abbas hopes to turn to infoDev for support in scaling M-Farm globally. She has a 'vision of replicating the same model to other emerging countries,' forging relationships with entrepreneurs at events like the Global Forum, where M-Farm was featured as an infoDev Top-20 SME Access to Markets and Finance Selectee.
>
> Being involved in the iDisc incubator network also plays a role in M-Farm's growth. 'We were voiceless before,' says Ms. Abbas, 'but now the voice of entrepreneurs is heard through the incubator networks…'
> (infoDev 2012b)

These two paragraphs effectively set up a powerful dynamic, in which infoDev, as the gatekeeper of resources and support, maintains power over Abbas and the success of M-Farm. Here, the first sentence positions Abbas as vulnerable and dependent. She 'hopes to turn to infoDev for support', which despite M-Farm being a top-20 selectee in one of their own entrepreneurial events, infoDev

do not commit to providing. At the same time, infoDev are obviously keen to play up their role in the success of M-Farm through the iDisc network, which is provided as an explanation for the company's growth. As the author quotes Abbas as being 'voiceless' without the iDisc network, again she is portrayed as powerless without their support.

For comparison, we can see a striking difference in the way that infoDev portray Kenneth Ndua, an entrepreneur receiving support from the Kenyan CIC. The following text is from an article about the achievements of the Kenyan CIC, however Ndua's profile has been used repeatedly in Kenyan CIC press releases:

> Since its launch in September 2012, the center has accepted over 25 entrepreneurs into its program. One of the successful applicants is Kenneth Ndua, who has designed and developed an energy efficient cookstove that simultaneously boils water.
>
> Kenneth has been working with women's groups in Kibera, Kawangware and Ruiru since 2002. Through this work, he observed that many local residents were suffering from illnesses related to smoke inhalation and contaminated water, 'poor families [were] suffering from common water borne diseases such as diarrhoea just because they could not afford to boil water for drinking or were not in a position to afford the water purification chemicals. Many women would also speak of a lack of time to boil water.
>
> In response to this challenge, Kenneth designed a multipurpose fuel efficient cookstove… (infoDev 2013e)

Again, the power relations within this text are clear. The Kenyan CIC is in a position of ultimate authority over the entrepreneur, who has been 'accepted' into its program and given the stamp of approval. However, as someone who has been working with women's groups, Ndua is then legitimised as a professional authority, on issues faced by women no less. Thus a hierarchy is created that places women as poor and powerless, suffering, beneficiaries, beneath both the entrepreneur and the innovation institution. This is not to say that this technology will not be useful for the women mentioned. One could argue that, as someone who has worked closely with women, Kenneth is able to bring their framings into the innovation of cookstove technology. However, worryingly, analysis of the texts in this study found no women mentioned publicly as successful applicants to the Kenyan CIC. As with this text, where women are referenced, they are depicted as the vulnerable beneficiaries of technology, and almost always spoken for by men. One wonders therefore whether this is how these women would frame themselves, and whether these are the technical or social solutions that they feel would be most suitable.

Unlike the text on Abbas, Kenneth is directly accredited with designing a cook stove that will meet their needs, not once but twice, in the first three paragraphs. The wording describes a logical sequence of events that doesn't once put his abilities into question. The text mirrors the language of 'seeing challenge as opportunity', that was previously provided as one of the characteristics deserving of infoDev's support, directly recognising one of their desired qualities within him. Whilst he is shown as exhibiting the social purpose that characterises a social entrepreneur, it is through his professional experience that Kenneth came up with the cook stove solution, rather than as an emotional or sympathetic response. Thus, unlike the previous text, there is no conflict, or struggle to negotiate between antagonistic identities. And, when the text comes to talk about the support that the CIC is providing, there is no hint of apprehension:

> In September 2012 Kenneth applied for support from the CIC to address these challenges. GVEP[3] International, as the lead partner for advisory services to the CIC, has been working closely with Kenneth since then to identify and evaluate manufacturing options (e.g. evaluating the pros and cons of manufacturing stoves components like lining and cladding separately vs. together), evaluate potential manufacturing partners, review stove transportation options, and prepare applications for financing. 'I was attracted to the CIC due to its goal of assisting innovators… So far I would say the technical advice and support in visiting and identifying credible fabrication facilities have been of great benefit.
>
> Going forward, the CIC will further assist Kenneth to quantify the company's financial needs, and to identify sources of working capital and other forms of financing.
> (infodev 2013e)

Even though this text is designed to highlight the importance of the Kenyan CIC, there is no attempt to portray Kenneth as powerless without them. Instead, the text depicts a somewhat collaborative relationship, in which Kenneth's opinion acts to increase the credibility of the CIC. And, unlike Abbas, for whom infoDev were seemingly unable to commit, Kenneth receives full and unquestioning backing.

[3] Global Village Energy Partnership

7. Conclusions

This paper has explored the way that one narrative, that of private sector development, in which climate technology entrepreneurs catalyse innovation, may include or exclude the framings of particular actors within the context of Kenyan climate technology innovation via the construction of the CT entrepreneur identity. The analysis of texts on CT entrepreneurship found almost two and a half times more representations of men than women entrepreneurs. Whilst Kenyan women in Nairobi are beginning to find representation in information technology applications, women are particularly absent in texts on technologies with a greater engineering focus. Within the texts analysed, the innovative technical capabilities of women were frequently qualified through association with men. In texts focussing on male CT entrepreneurs, however, their capabilities and achievements were never justified through association with women. On the contrary, women may have been portrayed as hindrances to their entrepreneurial ventures. This lack of female representation and recognition of women's contribution to entrepreneurial ventures in CT contributes to the masculinisation of CT innovation, which is typical within discursive constructions of technology innovation more widely. Whether this lack of female representation is indicative of the difference in the number of women and men entrepreneurs operating within this field is an area for further research. At the very least however, this underlines a need to provide more representations of women as role models for women CT entrepreneurs.

Those operating within the context of social entrepreneurship, including many CT entrepreneurs, are commonly represented as caring, and passionate. These characteristics, being associated with femininity, may potentially increase uptake of the CT entrepreneur identity by women and others who self-identify as feminine. It could also lead to these qualities being seen as legitimising qualities within CT entrepreneurs, thus increasing access for women and those perceived as feminine, to resources for entrepreneurial CT innovation. However, the analysis above suggests that women may still feel the need to exhibit masculine characteristics in order to gain legitimacy as entrepreneurs. This is affirmed by highly masculine representations of the idealised entrepreneur found in texts by infoDev, an institution responsible for providing support to CT entrepreneurs through the Kenyan CIC and, as part of the World Bank, one particularly well placed to influence wider discourse on innovation and entrepreneurship. Within further texts by infoDev that report on the assistance that infoDev has provided to CT entrepreneurs, one can clearly detect a difficulty on the part of the institution in overcoming their perception of entrepreneurship as being in antagonism with feminine characteristics. Despite infoDev's welcome attempts to report on the entrepreneurial successes of women, the language used continues to question their legitimacy as entrepreneurs, especially when compared to representation of male entrepreneurs. Ultimately, this paper found that infoDev expressed less commitment towards supporting women-owned ventures, than those run by men. In this regard, it is worth noting that this study found no women publicised as successful applicants to the Kenyan CIC. When it comes to gaining support for entrepreneurial ventures therefore, the differences between the aggressive business entrepreneur and the caring social entrepreneur seem superficial, and women may still find more difficulty in accessing entrepreneurial support.

This paper has demonstrated how dynamic around discourse, framings and narratives can serve to sustain the power of institutions which are often dominated by the Global North, and play out in ways that are deterministic of the attributes and activities of those to whom this power is extended to, in this case by signifying legitimacy as an entrepreneur and thus access to resources for CT innovation. This can serve to undermine the potential for other forms of technology innovation, and limit which framings are able to influence technology pathways. Just as there is a need for innovation in technical solutions to climate change, there is a need for innovation in the ways that we conceive

of innovation processes and what it means to be an innovator. Whilst entrepreneurs may have a valuable part to play in CT innovation, involvement in the development of climate technologies must not be contingent on adoption of capitalist, individualist values, or masculine identities. Although other actors may be able to influence entrepreneurs into pursuing ventures that lead to technological innovation in directions that meet their needs, those who fit the identity of the CT entrepreneur remain in a particularly privileged position. Entrepreneurs are able to seek support for technologies that they deem important. Those who do not fit the entrepreneurial identity, and whose technological needs prove unpersuasive to potential entrepreneurs, perhaps due to lack of 'market potential', may find themselves unable to gain support in developing the climate technologies that they require.

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Appendix

Annotated bibliography of text sources on CT entrepreneurship used in discourse analysis

Available from	Text position	Entre-preneur Sig.	Characteristics and behaviors	Gender	Nation-ality	Institution actor	Text motivation	Entrepreneur type
Reference: infoDev (2012c) *Revolutionizing ICT and Agribusiness: A Conversation with M-Farm's Jamila Abass* [online]								
http://www.infodev.org/highlights/revolutionizing-ict-and-agribusiness-conversation-m-farms-jamila-abass	distance (close/involved)use of quotes, institutional actor also subject of article	High	revolutionary emotional caring sympathetic trustworthy visionary exciting	Woman	Kenyan	infoDev	promoting women entrepreneurs	High growth IT, Agriculture Innovator Company 'Founder'
infoDev (2013e) *Innovative cookstove business secures support from the Climate Innovation Center* [online]								
http://www.infodev.org/highlights/innovative-cookstove-business-secures-support-climate-innovation-center	distance (close/involved) use of quotes, institutional actor also subject of article	High	Rises to challenge	Man	Undis-closed Kenyan	infodev	Promote success of the Kenya CIC	Growing Cookstove Innovator

Reference: Bayrasli, E. (2011) Who Gives A Crap? Sanitation, Energy and Entrepreneurship in Kenya. *Forbes* [online]								
http://www.forbes.com/sites/elmirabayrasli/2011/05/23/who-gives-a-crap-sanitation-energy-and-entrepreneurship-in-kenya/	Distance	High/ med	Rebellious altruistic aggressively competitive impressive	Men x2	Undis-closed (USA)	Business media - Forbes	News article promote work of author's former colleague '(and my former colleague at Endeavor)'	High growth Sanitation and energy Sanitation Innovators (not sole designers)
Reference: Mulupi, D. (2013) Two entrepreneurs looking to transform agriculture through solar-powered irrigation. *How we made it in Africa* [online]								
http://www.howwemadeitinafrica.com/two-entrepreneurs-looking-to-transform-agriculture-through-solar-powered-irrigation/25674	Semi - Personal (interview)	High	Opportunistic	Men x2	USA / Canada	Business media - How we made it in Africa	Advice for entrepreneurs	Climate Smart Agriculture
Robbins, S. J. (2013) Bright Idea: Startup Aims to Advance Solar Energy in Developing Countries. *Entrepreneur* [online]								
http://www.entrepreneur.com/article/226451	Semi - Personal (interview)	High	Disruptive networker enterprising not seeking profit independent brave	Woman	USA	Business media - Entrepreneur		High growth Solar PV

Douglas, K. (2012) Entrepreneur watch: Powering Kenya's tea factories with wind energy. *How we made it in Africa*[online]								
http://www.howwemadeitinafrica.com/entrepreneur-watch-powering-kenyas-tea-factories-with-wind-energy/20617/	Semi - Personal (Interview)	High	Opportunistic ambitious	Man	Dutch	Business media (How we made it in Africa)		High Growth Wind Power Small hydro
World Bank (2012) *Climate Innovation Center Opens in Nairobi to Unleash Kenya's Green Business Potential* [online]								
http://www.worldbank.org/en/news/press-release/2012/09/26/climate-innovation-center-opens-nairobi-unleash-kenya-green-business-potential	distance (close/involved) use of quotes institutional actor also subject of article (not central)	Med		Man	Undisclosed (Kenyan)	World Bank	Promote Kenya CIC	Innovator Cookstove Growing
Achia, G. (2013) The real ground breakers: innovation in Kenya. *Sci Dev* [online]								
http://www.scidev.net/en/science-and-innovation-policy/features/the-real-ground-breakers-innovation-in-kenya-1.html	Distance	Med	ground breaking assertive creative learning motivated passionate problem solving respected competitive	Men x3	Kenyan	Development and tech media - Sci Dev	influence decision-making	Innovator High tech Wind power military security robotics telecoms

Davies, G. (2013) *Building an African Market: Solar Energy Entrepreneurs on the Rise* [online]								
http://www.renewableenergyworld.com/rea/news/article/2013/03/building-an-african-market-solar-entrepreneurs-on-the-rise		high	Only commercially minded people who already have the means to purchase their initial consignment up front are recruited directly.		Kenyan	Climate tech media Renewable Energy World.com	influence decision-makers	Franchise - selling solar products, building the market. Incremental innovation
GVEP (2012) *Climate Innovation Center Opens in Nairobi to Unleash Kenya's Green Business Potential* [online]								
http://www.gvepinternational.org/en/business/news/climate-innovation-center-opens-nairobi-unleash-kenya%E2%80%99s-green-business-potential	distance (close/involved) use of quotes, institutional actor also subject of article (not central)	Med		Man	Undisclosed (Kenyan)	GVEP international	Promote Kenya CIC	Innovator Cookstove Growing
Cartier and the Women's Forum (2011) Laureate 2011 of Sub-Saharan Africa - Lorna Rutto, EcoPost, Kenya [online]								
http://www.cartierwomensinitiative.com/candidate/lorna-rutto	distance (close/involved) use of quotes, Subject and institution connected (award winner)	High	Brave, passionate, strong (physically), powerful (negotiating skills)	woman	Kenyan	Business and institutions supporting/ promoting entrepreneur-ship -Cartier, McKinsey & Co, INSEAD business school	Promote entre-preneurship amongst women.	Business manager (not technical)high growth recycling conservation

Homer, A. (2013) *Innovative enterprises boosted kenya climate innovation centre* [online]								
http://www.gvepinternational.org/en/business/news/innovative-enterprises-boosted-kenya-climate-innovation-centre	distance (close/involved) use of quotes, institutional actor also subject of article	Med/ high	Rational/realistic, altruistic, initiative, in control	Men x2	Kenyan	GVEP inter-national	Promote work of GVEP and CIC	Med/large organisations Radical tech innovator, new to market (clean tech cookers) Incremental energy, new to organisation (wind turbine at hosp) Fossil fuel alternative for industrial process
Keya CIC (2013) *Keekonyoike Slaughterhouse* [online]								
http://kenyacic.org/devs/content/keekonyoike-slaughterhouse	distance (close/involved) use of quotes, institutional actor also subject of article	Med/ Low	Bold, visionary, community focused, brave, explorer	Men (group)	Kenya, Maasai	Kenya CIC	Promote work of CIC	Biogas energy Radical innovation Med enterprise, with shareholders
Keya CIC (2013) *Takamoto Biogas* [online]								
http://kenyacic.org/devs/content/takamoto-biogas	distance (close/involved)use of quotes, institutional actor also subject of article	Med	Revolutionary, tough, risk takers, predatory	Man	undisclosed (USA)	Kenya CIC	Promote work of CIC	Energy biogas high growth Novel distribution potentially large business, compared to utilities

Keya CIC (2013) *Chebich coffee factory* [online]								
http://kenyacic.org/devs/content/chebich-coffee-factory	distance (close/ involved) use of quotes, institutional actor also subject of article	Med	Visionary	charity	International charity	Kenya CIC	Promote work of CIC	Charity
Keya CIC (2013) *Sustainable Energy Systems Limited* [online]								
http://kenyacic.org/devs/content/sustainable-energy-systems-limited	distance (close/ involved) use of quotes, institutional actor also subject of article	Med	Visionary, revolutionary, exciting	Man	Kenyan	Kenya CIC	Promote work of CIC	InnovatorBiogas, fertiliser

GVEP International (2013) *Developing Energy Enterprises in East Africa.* London: GVEP International								
http://www.gvepinternational.org/sites/default/files/deep_booklet_2013_0.pdf	distance (close/involved) use of quotes, institutional actor also subject of article	Med/ high	vigorous, focused, ambitious, visionary, opportunistic, serious, passionate, persuasive, trustworthy, timely, decisive, opportunistic, flexible, un-compromising on core values, distinction between business and personal, self-confidence, encourage constructive criticism, strong work ethic, leadership, competitive	Men x6 Women x4	Uganda, Tanzania, Kenya (3),	GVEP internati onal	Promote work of GVEP	Climate tech solar pv, cookstove, briquettes smallscale and micro enterprises
Byrne, R. et al. (2014) *Sustainable energy for who? Governing pro-poor, low carbon pathways to development: Lessons from solar PV in Kenya* STEPS Centre Working Paper. University of Sussex								
http://steps-centre.org/project/low_carbon_development/	Distance (objective)	High	Social conscience, politically radical and fiercely independent, rebellious, networker, opportunistic, persistent, struggling, serious (once successful), visionary	Men x2	USA	Pub lished Aca-demic literature	Academic working paper	Technology innovator Radical Solar PV High growth

TechnoServe (2013) *About TechnoServe* [online]								
http://www.technoserve.co.ke/login.php	Personal	Med/high	Visionary, revolutionary, social conscience,	Man	US	Website – Tech-noserve	Promote Technoserve	Support entrepreneurs through technology
infoDev (2012b) *Meet the Lions - Global Entrepreneurship Week* [online].								
http://www.infodev.org/highlights/meet-lions-global-entrepreneurship-week	distance (close/involved) institutional actor also subject of article	High	Aggressive, competitive, strong, networked, purposeful, pioneering, outgoing, revolutionary, exhibitionist, ambitious, talented, spirited, motivated, champion, driven/forceful		Working in Africa	InfoDev and GEW	Competition to highlight the entrepreneurial talent	Social enterprise
infoDev (2013c) *Meet the Dragon Slayers: Profile booklet of Top 50 entrepreneurs available online* [online]								
http://www.infodev.org/articles/meet-dragon-slayers	distance (involved)institut-ional actor also subject of article	Very High	Brave, violent, heroic, animalistic, creative, ambitious, versatile, outgoing, comfortable with change, opportunistic, competitive, desire to learn, exciting, focused, social impact		Global	InfoDev	News from competition and learning event to support entrepreneurs.	Technology innovator

Right Light (2013) *Entrepreneurs* [online]								
http://www.rightlight.org.uk/entrepreneurs	distance (involved) institutional actor also subject of article	Med/ high	requiring help, wanting to support community	men x3 woman x1	Kenyan	Right light	Promote work of Right Light. Encourage support of entrepreneurs	Franchise solar light marketing
Wasserman. H (2012) *Total Badass: Young Entrepreneur Brings Solar Energy to Kenya* [online]								
http://www.good.is/posts/total-badass-young-entrepreneur-brings-solar-energy-to-kenya	Distance	High	Total Badass'	woman	US	Micro blog	Link to news article	Solar PV
Onsare, R. O. (2011) *Alternative Energy Entrepreneur Kyle Schutter '10 Brings Biogas to Kenya from US* [online]								
http://www.brown.edu/about/brown-is-green/news/%5Bfield_news_date-yyyy%5D-%5Bfield_news_date-mm%5D/articles/alternative-energy-entrepreneur-kyle-schut	Distance	Very high	Opportunistic, passionate, explorer,	Man	US	Blog - Brown Uni-versity	Promote work of alumni	Biogas

Warner, G. (2012) Kenyan Women Create Their Own 'Geek Culture'. *NPR All Tech Considered* [online]								
http://www.npr.org/blogs/alltechconsidered/2012/12/24/167961947/kenyan-women-create-their-own-geek-cuture	Distance	High	Energetic, intellegent,	Women x 3	Kenya			
Henn, S. (2012) Who Needs College? Young Entrepreneur Bets On Bright Idea For Solar Energy. *NPR All Tech Considered* [online]								
http://www.npr.org/blogs/alltechconsidered/2012/12/12/167062995/who-needs-college-young-entrepeneuer-bets-on-bright-idea-for-solar-energy?cc=share&sc=tw	Distance (with quotes)	High	Risk taker, athletic, educated, in charge, 'glowingly successful', rebellious, rational	Woman	US	Tech media - NRP All tech con-sidered	Encourage entrepreneur-ship	Solar pv energyHigh growth
CNN (2010) CNN Heroes: 'Saving lives' with solar-powered lights. *CNN* [online]								
http://edition.cnn.com/2010/LIVING/02/11/cnnheroes.wadongo/index.html	Distance (with quotes)	Very high	Heroic, visionary, caring	Man	Kenya	USA Mainstream media - CNN	Advertise CNN awards	Solar lights

Craig, J. (2012) Kenya Climate Innovation Center Helps Address Climate Change. *Voice of America* [online]								
http://www.voanews.com/content/kenyas-climate-innovation-center-helps-address-climate-change/1528784.html	Distance			Man	Kenya	USA Govern-ment media - Voice of America	Promote Kenya CIC	
NTV Kenya (2011) *Green energy solutions* [online]								
http://www.youtube.com/watch?v=tJGJyb3VoHg				Man	Kenya	Kenya Main-stream media - NTV		Biogas