

Climate Impacted Littoral Phenomena and Customary Property Rights

Franklin Obeng-Odoom* John Sheehan**

University of Technology, Sydney

This article looks at the relationship between different structures of property rights and climate change in littoral areas. It presents a critical historical political economy perspective on the Hohfeldian analysis of property as a legal and jurisprudential concept, primarily by contextualising it as embedded in broader social, economic and environmental relations. Through consideration of contemporary developments in environmental practices in Ghana and Australia, it argues that dramatic changes in customary property rights since their incorporation in the capitalist mode of production have greatly enhanced anthropogenic activities which, in turn, have placed such rights at great risk: of submergence, of losing economic and cultural value, and of disrupting extant economic and biophysical practices. The policy implications arising from such concerns are considered.

Keywords: Climate Change, Customary Property Rights, Markets, Ghana, Australia, Political Economy.

What are the ramifications of climate change for property rights, particularly littoral or coastal indigenous property rights? What about the consequences of different structures of property rights for climate change? Existing climate change research has looked at drivers, characteristics and effects of the warming of the earth in different countries and regions (Spies-Butcher and Stilwell, 2009; Spies-Butcher, 2011; Goodman, 2011, Rosewarne, 2011; Naughten, 2011; Buhle, 2012; Stilwell, 2012).

However, to date, little research has been conducted on the nexus between climate change and particular structures of property rights in coastal areas. Only a few scholars (e.g., Sheehan and Small, 2007; Hiatt, 2008; Shlager, 2009) have identified this research frontier, and even then have only dealt with the issue perfunctorily, in spite of the legal, economic, political and spiritual consequences of property rights for all sections of society (Benda-Beckmann et al., 2009) and majority of property

*Asia-Pacific Centre for Complex Property Rights, Faculty of Design, Architecture and Building, University of Technology, Sydney, NSW, Australia. Email: Franklin.Obeng-Odoom@uts.edu.au (corresponding author).

**Asia-Pacific Centre for Complex Property Rights, Faculty of Design, Architecture and Building, University of Technology, Sydney, NSW, Australia. Email: John.Sheehan@uts.edu.au.

rights being held customarily around the world. Indeed, neither the recent collection by property rights theorists, Benda-Beckmann *et al.* (2009), nor the book *Management of Carbon in the Built Environment* (Emmanuel and Baker, 2012), examined the nexus between climate change and property rights at all.

The few articles that examine climate change and property rights are typically uni-dimensional. While they analyse ‘the effect of’ climate change on property rights (e.g., Hiatt, 2008), they do not consider the ramifications of particular property rights – absolute or derived, individual or communal – on climate change. Others dismiss the topic outright (e.g., Singer and Avery, 2008). In contrast, while orthodox economists usually accept that anthropogenic factors are important, by clustering around the notion of ‘free market environmentalism’, they assume that climate change is the result of market failure or that it is a function of the absence of property markets (Alder, 2009).

This paper progresses the debate forward in three ways. First, it explores the *relationship* between climate change and one particular type of property rights – that is, customary rights. Second, it considers the ramifications of the commodification or marketization of property rights for climate change. Finally, it focuses on indigenous property rights, a much neglected albeit important class of property rights across the globe.

The paper suggests answers to five research questions, namely: 1) In what ways have customary property rights evolved under capitalism?; 2) How has this evolution affected climate change?; 3) What role have the state and other institutions played in this process?; 4) In what ways does climate change affect littoral property rights?; and 5) Which mechanisms exist to help cope, adapt or avoid the effects of climate change on property rights in the littoral zone?

Adopting a historical-institutional political economy approach and drawing evidence from Ghana and Australia, the paper tries to answer the research questions by probing ‘[f]rom where did this system evolve, how is it now developing, and in what direction may it evolve?’ (Sherman, 1993, 320). Thus, the paper develops a story of climate impacted property rights in coastal areas with the evolution of customary property rights and the role of institutions at the background. By doing so, the paper systematically shows that the attempt to depoliticise climate change as consistent with the natural cycles of the Earth’s evolution is misleading. Instead, it employs evidence to demonstrate that contemporary changes are human induced. Concomitantly, it makes the case that the capitalist state has played a significant role in driving transformations in property rights which, in turn, have had substantial implications for climate change, customary property rights and existing climate policy.

The rest of the paper is organised into 3 sections. The next section considers methodological issues. The paper then addresses the five research questions in turn, before concluding with a discussion of the political implications arising from the preceding analysis.

METHODOLOGY AND ANALYTICAL FRAMEWORK

To address the research questions, the paper adopts a critical perspective on the Hohfeldian analysis of property (Hohfeld, 1917) as purely a legal construct. It reconstructs property as a relationship embedded in a society-economy-environment nexus, suggesting that it is misleading to discuss the 'environment' without examining the society-economy interactions. By using this framework, it is possible to examine the issue of climate change within broader lenses than the notion of free market environmentalism that frames climate change only as a function of market forces (Alder, 2009). As heterodox land economists argue, it is more useful to consider the land-economy-environment relationship through broader avenues of political economy, or more specifically historical-institutional political economy because land has economic, political, spiritual and, indeed, sentimental dimensions (Barlowe, 1986, 4-7).

Within this framework, the paper regards indigenous and customary property as those rights that are normally held communally or customarily (governed by customs and practices of a people), are historically not commodified, and have metaphysical aspects which span spiritual and cultural values. These rights demonstrate the non-universality of the Western concept of property, which is captured by the metaphor of a 'bundle of rights' valued in monetary terms and often held individually (Boydell et al. 2009). Indigenous or customary property rights are usually unwritten and prevail among indigenous people such as the Bedouins and the Australian Aborigines, but also among most African populations. Within these groups, there are great differences in property rights but what they all share in common is their non-Western form and their use of traditional institutions such as chieftaincy and community elders as trustees of land (Simons and Malmgren, 2008; Sheehan, 2012).

The paper draws empirical evidence from Australia and Ghana. These two countries differ substantially in their levels of economic development and experiences about climate change. Indeed, the UNFCCC classifies Australia as an Annex I country and Ghana as a non-Annex I country (Emmanuel and Baker, 2012), though both share similar postcolonial experiences about their land economy. They both have a large class of indigenous property rights existing within an environment of Westernisation, although in the Ghanaian case the attempt to declare indigenous land *terra nullius* was never fully successful (Sackeyfio, 2012). Such differences and similarities make these countries appropriate for a comparative study of the global phenomena of the effects of climate change on littoral property rights and give meaning to the precept of 'common, but differentiated responsibilities'.

RESEARCH QUESTIONS ADDRESSED

In what ways have customary property rights evolved under capitalism?

Customary property rights have undergone substantial changes under capitalism. New markets in property have been created and old ones transformed. These variations have typically occurred through the institution of new laws to remove impediments to marketization. In some cases or for certain historical periods, only rights to land that could be appropriated in markets were recognised, as was the case in Australia before the famous Mabo decision of 1992 (McMichael, 1984; Sheehan, 2012). In other instances where formal legal recognition was extended to indigenous property rights, sustained efforts followed to privatise and marketise such rights. In Ghana, for example, the Land Title Registration Law was passed in 1986, the National Land Policy was launched in 1999, before the Land Administration Project was inaugurated in 2003 (Obeng-Odoom, 2012a). These developments systematically opened up customary tenancies to market forces and significantly enhance the number and process of exchanging property rights in the market.

These transformations have been facilitated by analogous changes taking place within the institutions of customary property rights. It has become commonplace for business executives and others in the wealthy and influential classes (e.g., academics) to jostle for positions as traditional authorities (Brempong, 2007; Bob-Milliar, 2009). Similarly, the meanings attached to land are undergoing dramatic changes. It is gradually becoming the case that most traditional authorities offer land for its monetary, rather than use value (Ubink, 2007a, b; 2008). Increasingly large numbers of traditional chiefs are now involved in large scale agribusiness. Brempong (2006, 73), a chief himself, has described a highly influential paramount chief as ‘an entrepreneur of the highest order [and he attempts] to create a new agrarian order ...’

In Accra, the capital city of Ghana, where most land is held customarily, there were some 55,000 transactions in land between 1981 and 2001 (Abusah, 2004). Some of these market transactions led to contestations between different indigenous groups, between chiefs and common people, and between indigenous groups and strangers (Yeboah, 2008; Sackeyfio, 2012). Thus, the growing commodification of customary land tenure has not only led to increased market activity – a changing form of markets in customary land in itself – but also to contestations in customary property rights.

Similar trends can be seen in Australia where indigenous people, some of whom have not always acted in the community interest, have given parcelled land out to corporate interest (O’Faircheallaigh, 2008; 2009a; 2010). This lack of representation, or ‘negotiation bubbles’ (O’Faircheallaigh, 2009b, 13) arise from many reasons: the use of outsider ‘indigenous people’ who have the technical skills to negotiate but do not fully appreciate community concerns, a limited timeframe for negotiation,

and the holding of negotiations in a way such that there is an obsession to reach an agreement, while disagreements are essentially discouraged (O'Faircheallaigh, 2009b).

Further, as a result of the imposition of capitalism and Western legal norms through colonialism, indigenous property rights now co-exist with a new class of law, previously unknown to customary rules and practices (Sheehan, 2011, 2012; Obeng-Odoom, 2012a). Such laws are written and different from indigenous property law, leading to the creation of the contentious issue of legal plurality. Not only do these laws differ from laws of custom but the two are also differentiated. Written law tends to be prioritised as superior or sometimes as an end state to which indigenous customs should strive. Overall, colonial and capitalist penetrations have substantially transformed the character of indigenous property rights, institutions and legal processes.

How has this evolution affected climate change?

The growing marketization of customary rights has led to substantial amounts of capital accumulation and hence emissions in the following cycle: the operation of competitive pressures under capitalism leading to accumulation through dispossession, increased resource usage in order to enable further accumulation, consumption, and production. This cycle requires further illustration.

The recent wave of large scale investment in land across the African continent, sometimes called 'land grabbing', has been possible in-part because of the commodification of customary property rights. The dominant rationale for the purchase of these huge parcels of land has been framed in terms of climate change mitigation or ensuring 'food security' in light of climate change (Borras and Franco, 2012). Most of these lands are utilised in the cultivation of jatropha from which biofuels, widely regarded as cleaner energy than existing fossil fuels, are produced (Hess *et al.*, 2010). Some of the land is bought as part of permanent climate offset plans and others are bought purportedly to save certain rare flora and fauna from extinction (Cotula *et al.*, 2009; Pearce, 2012). There are jatropha companies in many parts of Ghana, including the Pru District and Agogo in the Ashanti Region (see Schnoneveld *et al.*, 2011; Wisborg, 2012).

Most of these acquisitions are done by foreign entities and they radically change the original usually food land uses. Even where the new uses continue to be for food production, most of these are meant for export. While these investments create some employment opportunities for a few people, on a net basis, empirical studies (e.g., Cotula *et al.*, 2009; Schnoneveld *et al.*, 2010; Wisborg, 2012) show that the local people are made worse off. Australian examples abound in terms of land purchases for example from the Qatar company, Hassad Foods (Pearce, 2012, 159-161), while about 20 businesses and NGOs are engaged in carbon farming/forest offsets in Australia (Garnaut, 2011, 145). Whether these land investments are supposed to increase food production, generate raw materials for the production of

alternative energy, or sequester carbon in the atmosphere, they emerge from climate change related dynamics.

Such examples might be taken as representing a successful model of 'selling the environment in order to save it', reflecting the central ontological and policy-based significance accorded to markets in neoclassical economic literature on the environment (see Stilwell, 2012 for a discussion of this literature). According to this rationale, institutions and policies supporting processes of market creation, adjustment, enhancement and advancement are assumed to secure the social and environmental good. Indeed, it appears that there is evidence that if large tracts of land are taken for forest sequestration, there can be some significant decarbonisation. According to the Australian Property Institute (2007, 14), in the year 2000 the Bureau of Rural Sciences in Australia observed that the amount of carbon uptake by forests increased by 9 per cent between 1990 and 2000. While this appears to be a potentially positive story, such successes mean little without considering carbon emissions from clearing and management practices which can sometimes be more substantial than the carbon uptake itself. Further, sequestration successes are contingent, rather than assured. For instance, the ability of forests to sequester is affected by the type of trees in the area and the stage of the forest's development. These results from the Bureau of Rural Sciences demonstrate the problematic treatment of environmental effects of such processes largely as 'externalities' which cannot be priced. Also, it exposes the tokenism in the neoclassical model which tends to treat land in a compartmentalised manner separate from the broader eco-system under consideration.

Moreover, this free market sequestration approach has significant deleterious socio-economic and cultural implications. Historically, it has tended to dispossess large numbers of indigenous people, most of whom are not consulted (Pearce, 2012). Even more disturbing, this approach to mitigation does little to address the underlying structural factors driving climate change in the long run. Rather than enabling alternative, more environmentally-sound processes of production, distribution, consumption and reproduction to develop, such 'ecological modernisation' merely 'green washes' the prevailing model of economic growth (Salleh, 2011). Finally, export-oriented nature of the crops grown on the land acquired undermines the potential of such alternative fuels to contribute to the transition to alternative fuel-sources at the domestic level.

While globally Ghana produces only 0.05 per cent of emissions and is 108th in the world in terms of polluting countries (EPA, 2011a), there is an upward trend of emissions. Agriculture and land use cover and forestry (LUCF) constitute the second largest source of emissions, contributing 38 per cent of the national emissions level. That level represents a 44 per cent increase in emissions from the sector between 1990 and 2006. Within that group, agricultural soils and, among others, the use of artificial fertilizers is the key drivers of emissions (EPA, 2011a). The Environmental Protection Agency EPA (EPA, 2011b) suggests that the process of investing in large tracts of land, the use to which such land is put and the inputs of making huge jat-

ropha farms are likely to contribute to emissions and hence to scientifically proven sea-level rise and flooding. Corroboratory evidence comes from Australia, where, according to Garnaut (2011) large agricultural and forestry uses form an important share (18 per cent) of the country's emissions profile. To the Climate Commission in Australia, '[i]t is beyond reasonable doubt that human activities – burning of fossil fuels and deforestation – are triggering the changes...' (Norman et al., 2013, 9).

Recent research by EPA shows that over 172,000 people stand the risk of being displaced by flooding in Accra, the capital city of Ghana. Serious flooding issues were reported in the city in 1973, 1986, 1995, 1999, 2001, and 2002 (Rain et al, 2011). The EPA estimates that sea levels continue to rise and the risk to residents of Accra is enormous (Antos, 2011). Historically, the indigenous Ga people have lived in the coastal parts of the city, in areas (e.g., James Town, Ussher Town, and Osu) in a city which is segregated along ethnic lines (Owusu and Adjei-Mensah, 2011). Such areas are topographically lower than other parts of the city, so the indigenous inhabitants of Accra are those most vulnerable to the risk of climate change-induced flooding (Rain et al, 2011). Data collected from the Meteorological Service Department in Accra show that temperatures in Accra have consistently increased, while the mean rainfall has remained nearly the same with more torrential rains (Karley, 2009).

Of course, there are other drivers of these trends, such as haphazard physical development including the construction of some buildings on water ways (Karley, 2009). Yet, climate change is a significant contributory variable in understanding the drivers of these changes, even if the nature of its causal effects is difficult to extrapolate from the data. However, outside of Accra, there is formidable evidence of climate change-impacted warming and sea level rises in the Afram Plains (Codjoe and Owusu, 2011). In this case, the rains do not fall as frequently, but when they do, they pour heavily and sometimes lead to massive flooding. In Ghana as a whole, a sea-level rise of 2.1mm per year has been found over the last 30 years. It is estimated that there will be rapid rises to 5.8cm, next to 16.5cm and then to 34.5cm in 2020, 2050, and 2080 respectively if nothing is done about the socio-economic *status quo* (Environmental Protection Agency, 2011b).

The climate in Australia has been warming over the years. According to Hughes (2003), global warming in Australia has been around 8 degrees Celsius over the last hundred years. However, the year 2009 was the second warmest year in the history of the continent and 2010 was widely believed to be the warmest (Garnaut, 2011). However, the scientific agencies charged to track climate change in Australia have announced that 2013 was unique in the experience of climate change in Australia. For the first time in the history of the country, average temperatures reached 40.3 degrees Celsius and 44 weather stations recorded their highest temperatures ever. For this reason the rate of evaporation increased and hence expedited the formation of rainfall-giving heavy clouds (Climate Change Commission of Australia, 2013, 2). Rainfall has been heavier and the number of rainy days has increased, although these trends vary greatly over the regions. Sea levels have increased conspicuously, if not

significantly. Yet, the statutory scientific bodies (see, for example, Climate Change Commission of Australia, 2013) predict even further warming of the country – according to Hughes (2003) by 0.4–2 degrees Celsius by 2030 (relative to 1990) and 1.0–6.0 degrees Celsius by 2070.

Research shows that the organic connection between the coastal city of Newcastle and the Hunter and the disproportionate number of indigenous people and migrants in these areas put indigenous property rights at risk, leading to regular protests in the area by civil society groups such as Rising Tide Australia (Evans, 2011). Again, the severe floods that occurred between 22 and 29 January, 2013 in the east coast of Queensland and the New South Wales coast north of the Illawarra suggest that a worsening of the situation in the future for indigenous people is very likely (see, for example, Climate Change Commission of Australia, 2013, 8).

Similar concerns are evident in Ghana. Gavin Hilson (2002), for instance, has described the history and dynamics of pollution in Obuasi, Tarkwa, and Prestea, while Owusu-Koranteng (2008) discusses the activism arising from massive pollution. In both cases, the experience of indigenous peoples is akin to the Australian case, so the story is not retold here. However, unlike Australia, there is a vibrant sector of illegal small and medium scale mining activities (locally called *galamsey*) whose activities along the coast and adjacent inland areas have led to erosion, especially on the eastern shores. Coastal areas such as Sekondi, Nkotompo, and Keta, Accra, Elmina, and Ada are particularly vulnerable (Anim et al., 2013). Indeed, it has long been argued (see, for example, Banchirigah, 2008) that these petty capitalists have worked in cahoots with chiefs and other traditional authorities to exploit the environment in ways that have significantly contributed to changing climate. Small scale miners adopt practices that pollute the environment. The extensive use of mercury to extract gold is a case in point. Extensive fumes from the burning of mercury used to extract gold have contributed to heavy pollution of the air and contamination of the soil and water bodies in mining communities (Teschner, 2012). This environmental pillage has major long-term health and climate implications.

What role has the state and other institutions played in this process?

The state – conceived here as broader than government, and entailing broader institutions such as the executive, legislature, and judiciary existing in the capitalist society – has played at least four interrelated roles in supporting the transformation in indigenous property rights and their relationship with climate change. First, it has provided the rules or the laws to facilitate the process. Second, it enforces the rules and third it guarantees that anyone who abides by the rules is protected. The use of the Torrens system – a model of title registration in which an entry in the register is a conclusive proof of ownership of property (Agbosu, 1990, 104) – is a case in point. Here, the state itself guarantees the process of marketising land and takes responsibility for, while insuring against any problems related to formalisation and commodification of, property rights. It is these roles that O'Connor referred

to respectively as ‘accumulation function’ and ‘legitimisation function’ (O’Connor, 2002). Finally, the state has been keenly involved in selling off large expanse of land for biofuel production. Examples of state dispossession and alienation abound in Ghana and Australia (Yeboah, 2008; Sackeyfio, 2012; Sheehan, 2012).

As we have seen, the state has not worked alone. It has been aided by supra national bodies such as the world development bodies which have sponsored many market-oriented land reform programs in Africa. Others have laid down ground tools which, while well intentioned, have been used for commodification. Such is evidently the case in relation to the UN-FAO which, in seeking to be pragmatic by proposing the *Voluntary Guidelines on the Governance of Tenure* (FAO, 2012), has provided the ingredients for greater commodification of land (Claeys and Vanloqueren, 2013; Seufert, 2013).

Moreover, such activities have been undertaken by the state at multiple levels of governance, national and local, modern and traditional, not just the central or federal state. In Ghana for instance, local chiefs have been compliant, as we have seen, with the national and supra-national institutions, except when they were excluded such as during the colonial days during which time they were alienated from the land (see Obeng-Odoom, 2012a). However, whenever they have been brought into the process of land reform and their rights as a group have been secured, they have tended to support pro-market change *en masse*.

There are a few exceptional cases where the state has supported pro-indigenous changes. The Mabo decision in Australia is a case in point, as it challenged the idea that indigenous people had no real property rights through acknowledgment of their traditional ownership of the land (Sheehan, 2011). Subsequent to Mabo there have been a number of cases upholding the legality of indigenous property rights and even making the principles stronger and clearer such as *Mabo No. 2*¹, *Wik*², *Durham Holdings*³, *Yanner*⁴, and *Harrington Smith*⁵ even encompassing rights in biota, flora and fauna (Sheehan, 2011; 2013). Similarly, in Ghana the traditional tenure is *ab initio* upheld by the current Constitution (see articles 267; 270).

In what ways does climate change affect littoral property rights?

The foregoing shows that climate change is likely to affect property rights in at least four ways. First, substantial increases in sea levels raise the possibility of submergence. Coastal cities such as Accra, Cape Coast and Sekondi-Takoradi stand the greatest risk. Second, there are strong grounds to argue that the increase in perceptible and imperceptible tidal movements is likely to depress the market value of properties. International research (e.g. Bin and Polasky, 2004) has shown that the economic value of property rights in flood prone areas is substantially lower than that in non-flood prone areas.

Using data covering 17-20 years in Australia, Eves (2002) and Eves et al. (2010), for instance, demonstrate that flood prone areas command significantly low values and that these values become even lower when there is proof that flooding is immi-

ment. So, with the scientific evidence clearly pointing to such an outcome (sea-level rise and flooding), it is expected that the property values of indigenous people and indeed all people near the littoral zone will be greatly diminished. According to the Office of the Queensland Chief Scientist (2013), recent devastating flooding in Queensland is neither the first nor the last. While flooding is common in Australia, recording 77 in the last 35 years of the 20th century, climate change makes even more flooding possible.

Third, an increase in the number of violent storm events and rising temperatures are likely to affect agricultural productivity and vegetation change. While some plants will benefit from increased warming, this is only up to a point. In any case, a substantial amount of plants will fare badly with the changing temperature and rainfall patterns (Hughes, 2003). In Ghana, most crops have been predicted to fail owing to climate change. Indeed, many farmers in the Afram plans area have started experiencing poorer productivity, leading people in the rural areas to migrate to urban areas (Codjoe and Owusu, 2012). Invariably, such migrants end up going to live on the fringes of the city where, although relatively affordable to settle, are also prone to climate change ramifications such as flooding (Karley, 2008).

Finally, there is likely to be an evolution in property rights from land based to water based rights, from absolute to derivative and further from the remaining communal to individual. The resulting property rights are likely to be more complex. The new property rights will be different from the old, as argued several years ago by Denman (1978). They are likely to be similar because they entail, as with dry land, property rights, but different because of the new ecological and marine dimensions to the flooded lands which are unknown for property rights in terrestrial spaces. The flooded ones, as with the prior terrestrial rights, are even likely to be more nested than the bundle of rights metaphor (Adger and Luttrell, 2000). So, our policies about climate change ought to be sensitive to new understandings of property rights, especially in coastal areas.

Which mechanisms exist to help cope, adapt to or avoid the effects of climate change on property rights in the littoral zone?

A number of policy proposals have been put forward to help indigenous land owners cope and adapt to the impending changes in their property rights. The Food and Agriculture Organisation (FAO) recommends the adoption of the *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* – a number of policies which do not try to prevent the commodification of indigenous land but enable traditional authorities to play a key part in land investment decisions (FAO, 2012, 1).

A third possibility, although not always supported, has been discussed by Hiatt (2008). It entails setting up a national sinking fund that anticipates submergence and so prepares to compensate indigenous people either monetarily or via reloca-

tion. While in Ghana, education and the building of high-tech sea defence walls have been advocated and somewhat pursued by the state (Anim et al., 2013), the Australian government has been actively pursuing market based strategies (Spies-Butcher, 2011). Since accepting the free-market orientation of the Garnaut Report (2007) the prevailing policy agenda has revolved around the introduction of an emissions trading scheme, carbon tax, subsidies for green infrastructure and a minimal programme for creating 'green jobs' (for a discussion, see Stilwell, 2012).

Most of these suggestions do not give special attention to indigenous property rights, but they are significant because they progress the current apathetic discourse and policy attitude adopted in relation to indigenous lands that face the danger of declining economic value and ultimately submergence. However, they simultaneously assume that indigenous property rights lapse after submergence. That is, it is often thought that there can be no property rights in water. This view is pervasive even among property rights scholars. A key reason is that the analysis of property, as a bundle of rights, tends to be applied only to dry land (Boydell et al., 2009). Indigenous people's water has often been taken away from them or simply regarded as *aqua nullius*. It emerges from the view that no one can own water. That is evidently the case in Sekondi-Takoradi, Ghana where the state seeks to deny compensation to indigenous people who feel the discovery of oil offshore will lead to a taking of their property rights (Obeng-Odoom, 2012b; see FAO, 2010 for a discussion on compensation).

Yet, in his book, *Markets under the Sea* (1984), Donald Robert Denman, founder of the Land Economy Department at Cambridge University and its first professor, forcefully argued that 'the seabed resource in physical form is a continuation of the landmass under the sea and, by that criterion, analogous to it forms the basis of our main contention that the creation of a market in the seabed resource similar to a market in land is a proposal worthy of consideration' (Denman, 1984, 6). While Denman's contention, basically markets for everything, is highly contentious and, as we have seen, deleterious in many respects, it does show that property rights do exist even under water.

In Ghana, the long standing existence of *apofohen* (chiefs of the sea) clearly shows that indigenous people have rights to water for, as argued by Denman, '[p]roperty is ...said to be in rights and not in things' (Denman, 1984, 27). From this perspective there is no reason to believe that indigenous people do not have water property rights. So, it is important that posited solutions also recognise that while submergence, for example, is likely to change indigenous property rights, in itself it will not deny them their rights.

The prevailing checklist of solutions also contains a contested assumption: that indigenous institutions always act in the best interest of indigenous people. As we have seen, while traditional institutions have acted by-and-large within strict checks and balances and resulted in little commodification, the onset and extension of colonialism and capitalism have secularised these traditional institutions. In turn, merely

seeking the 'participation' of the 'indigenous people' – a short hand for formally considering the opinion of the leaders – is an inadequate proxy for incorporating indigenous people's concerns.

More ought to be done, perhaps including education and then surveys, on matters regarding carbon farms and their potential use for climate change mitigation. This is particularly useful because indigenous people are increasingly demonstrating awareness and concern about the use and abuse of their environment, while indigenous elites such as chiefs continue to be greatly wedded to modernisation. Recently, a survey of 2,500 people in coastal Ghana about the environment (White and Hunter, 2009) showed that most people (96 per cent) showed deep awareness of and concern for environmental quality. Asked about the famous so-called trade-off between environmental quality and economic growth, most people (77 per cent) preferred cleaner to ongoing growth. In contrast, Brempong's interviews with four paramount chiefs in Ghana showed that only one was concerned about the environment (Brempong, 2006). In Australia, public surveys have consistently indicated that the majority of participants have keen interest in reducing carbon, something Ross Garnaut (2011, xvii) referred to as the 'saving grace' of climate change. So, it is about time consultations went beyond the 'leaders'.

Further, the panoply of solutions on offer assumes that climate change is mainly a local phenomenon. That is evidently the reason for building fortified sea defence wall, as is happening in Ghana. However, the global case ought to be made too, especially because most producers are not necessarily the worst sufferers. Matters of changing global economic patterns, especially the consumption and production patterns of the advanced capitalist countries, is paramount to making significant progress in the fight against climate change. Yet, existing policies remain market adjusting, creating and enhancing (Stilwell, 2012). This is a major challenge to be overcome because, as we have seen, the tensions and contractions of the impact of climate change are a function of the secularisation and commodification of land in the global economy. They say little or nothing about sacred groves and sites whose value is spiritual and cultural.

Thus, not only are the existing posited solutions partial in terms of their effectiveness, they may potentially worsen some aspects of the climate change impact on littoral properties.

CONCLUSION

This paper has advanced existing understanding of climate impacted littoral phenomena. The current literature has tended to either disregard the role of property rights or considers them unidimensionally as being impacted by climate change, while others simply posit the extension of individual property rights as solutions for or failure of property markets as cause of climate change. However, this paper has

used evidence from Ghana and Australia and engaged a critical historical-institutional political economy perspective on Hohfeld's analysis of property to show that all these views do not sufficiently explain the dynamic relationship between climate change and customary property rights. It has argued that expansionist capitalism has dramatically transformed customary property rights in ways that have driven climate change. Similarly, a changing climate has provided the impetus for public policy that further widens the reach of capitalist markets in customary property rights regime. In turn, indigenous people risk massive deterioration in their property rights in the form of submergence, value reduction, property rights transformation to secondary and derivative forms and a decline in farm productivity. Fortunately, being largely man-made, there is room to unmake these dynamics by rethinking existing climate policy in countries in both the global north and global south. Future research on climate impacted littoral phenomena and customary property rights ought to explore how to move from here to there.

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NOTES

1. (1992) 175 CLR 1
2. (1996) 187 CLR 1; 141 ALR 129
3. [2001] HCA 7
4. (1999) 166 ALR 258
5. [2007] FCA 31

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