Extending the water connection- Land acquisitions and economic development[1]

Kyungmee Kim and **Anders Jägerskog**
Stockholm International Water Institute, Sweden
kyungmee.kim@siwi.org; anders.jagerskog@siwi.org

Abstract

Globally large-scale acquisitions of agricultural land have increased after the food price crisis 2007-2008. This contribution aims to provide an expanded overview of how water is positioned in the bigger scheme of land acquisitions and economic development in the host developing countries. The paper takes a broader perspective to investigate the linkages between land acquisitions, water and development. As a discussion paper, the contribution brings the resource curse theory into the land acquisition discussions and highlights the role of green water in land acquisitions that take place in developing countries, a topic that has been a neglected in the research on water and land acquisitions. This is a critical area of research as a majority of the cultivated land in sub-Saharan Africa – the region where land acquisitions most frequently take place – relies on rain fed agriculture (FAO 2005: 27). The paper also notes that the acceleration of virtual water trade by the large-scale land acquisitions (Allan, 2011; Jägerskog et al, 2012; Kay and Franco, 2012) is an additional important issue that should be included in the international discourse on the subject. Theorising land acquisitions and extending the water connection can widen the scope of the global research front.

1. Introduction

After the food price crisis of 2007- 2008, various investors such as multi-national corporations, state owned enterprises, state agencies, private investors and pension funds have been signing contracts to lease agricultural land[i] with some developing country governments. Since the crisis, food prices have been volatile and steadily increasing (FAO, 2013). Coupled with water scarcity in the Middle East, North Africa and parts of Asia, this has led to an increased international and domestic investment in agricultural land, primarily in Africa and Latin America (World Bank, 2010), which has raised a series of concerns. The governments of developing countries where land acquisitions are taking place expect to modernise their agricultural sector and to provide employment in the rural areas. However, many of these investments fail to take 'socially embedded'[ii] land and water rights into account. Socially embedded land and water rights are not necessarily recognised by the bureaucratic system. For example, the rights to use water derived from land ownership, the water use guaranteed in customary practices are socially embedded water rights (Water Governance Facility, 2012). Formalisation of land

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rights in Africa frequently means to centralise the national law, but it often fails to legally recognise the socially embedded land rights such as communal use of land of small holders (Anseeuw et al, 2012).

Mobility of capital enables the flow of investments into the developing countries, but mobility of water is certainly limited. Without water, the land has no use for agricultural purposes. Human water demand has dramatically increased as a consequence of population growth and industrialisation, and the expansion of irrigated agriculture. In many developed and developing countries, water demand has exceeded water supply. Freshwater scarcity affects more than a billion people and the integrity of many of the world's ecosystems (UNEP, 2006). In the light of climate change, the projection on the freshwater availability and variability indicates that the competition for freshwater will be more intense in many parts of the world in the future (Bates et al, 2008).

The issues related to freshwater uses revolve around various water users, therefore addressing water issues often involves conflicting interests between users in different sectors. Irrigation is responsible for 70 % of the freshwater withdrawals globally (Molden, 2007). Dietary changes, increased food consumption (particularly meat), and the steadily growing population indicate "there will be not enough water available on current croplands to produce food for the expected population in 2050" (Falkenmark, 2012: 14). The competition for freshwater will be intensified due to the increased water demand for the food production for the increased population.

The paper begins with an overview of land acquisition literature, which frames the theoretical discussion. This contribution aims to provide the theoretical overview of the relationship between water as the global common good and development in the context of land acquisitions. *First, the paper reviews how water is positioned in the bigger scheme of land acquisitions and development in the host developing countries.* Different aspects of water in land acquisitions including green and blue water, water quantity and quality, ecosystems service and socio-economic development are explored. *Second, the paper discusses the theoretical side of how water and land acquisition is related to development.* It is not the intent of the authors to draw definitive conclusions or make value based judgements from this research. Instead, the conclusion presents a possible direction of future research on land acquisitions and establishes potential policy links..

2. Water in the research on land acquisitions

The role of water as both a driver and target of recent large-scale land acquisitions has been addressed in a number of recent studies (Mehta et al, 2012; Woodhouse, 2012 a & b; Jägerskog et al, 2012). The discussions around water and land acquisitions have mainly focused on the additional irrigation facilities in semi-arid regions (see Houdret, 2012; Hertzog *et al*, 2012; Bues and Theesfeld, 2012). An expanded analysis that includes the water in soil (green water), the decrease in water quality and

water required for ecosystem services would better reflect water dynamics and contribute to a broader understanding of the implications of land acquisitions on water resources.

Green water vs. Blue water

Water is a renewable resource. The conceptualisation of green and blue water is based on how water is used in food production. First, green water is the precipitation that is absolved by biomass such as forest, grasslands, wetlands and crops, which evaporates into the atmosphere. Alternatively, blue water infiltrates to aquifers or flows to lakes, rivers and dams (see Figure 1). Green water is not as visible as blue water since it cannot be stored in liquid form instead being infiltrated in soil, evaporated to the atmosphere or recharged into the underground aquifer, thus blue water has been receiving the most attention in terms of water resource management (Falkenmark and Rockström, 2006). However Green water is crucial for food production. Green water sources account for 80 % of the total global agricultural water use and the remaining 20 % comes from blue water sources (Molden, 2007). Many developing countries are heavily dependent on green water in their food production. For example, in Sub-Saharan Africa, 96 % of farmland is rain fed (FAO AQUASTAT, 2013). Woodhouse (2012) emphasised the role of green water in foreign agricultural investment deals and highlighted the ambiguity in water requirements for agricultural projects. Empirical case studies focusing on irrigation projects are abundant (see Bues and Theesfeld, 2012; Houdret, 2012; Hertzog et al, 2012; Duvail et al, 2012).

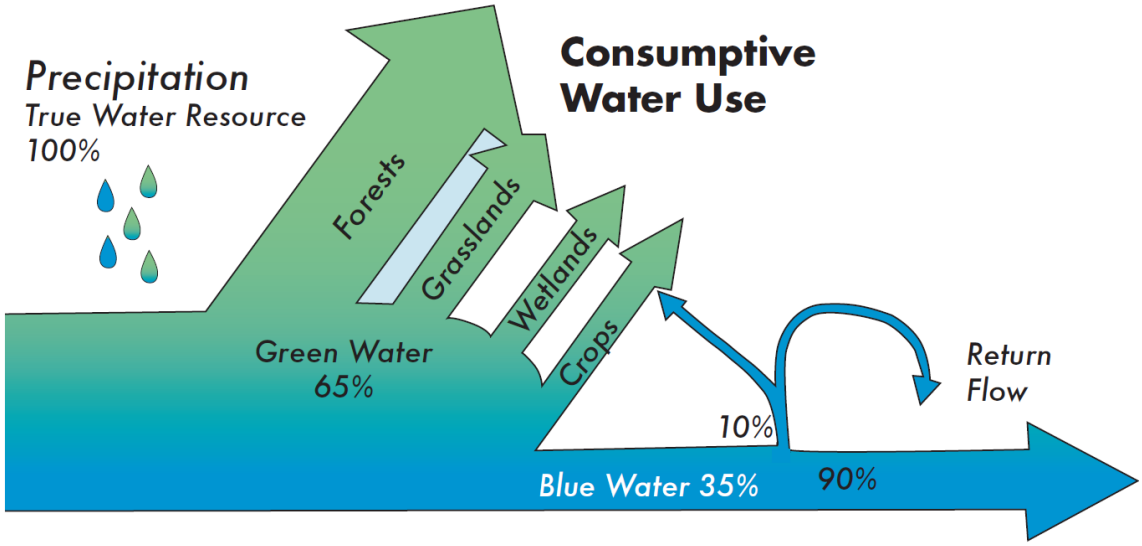

Figure 1 Green water and blue water (SIWI, 2005)

Quantity versus Quality

How much water will be needed to implement the agricultural projects developed through recent land acquisition globally? This research question is relatively well-covered. Rulli et al (2012) provided the quantified blue and green water requirements of the recent land acquisition claims (47 million ha)

which is approximately 0.31 * 10^{12} m^3 of green water and 0.14 * 10^{12} m^3 of blue water. This amount is a fraction of the total amount of the global internal renewable freshwater resources, 42.022 * 10^{12} m^3 per year. However, the blue water requirements (i.e. water needed for irrigation) by the land acquisitions account for approximately 10% of total freshwater withdrawal for agricultural sector which is 2.710 10^{12} m^3 per year (FAO AQUASTAT, 2010).

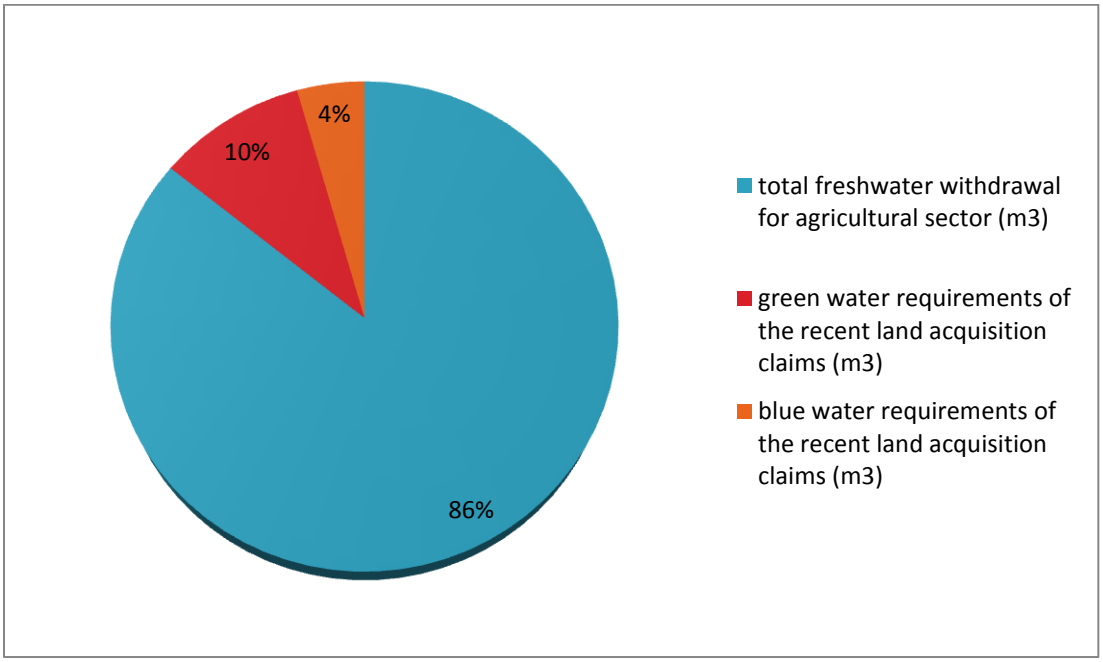

Figure 2 Green and blue water requirements of the recently acquired agricultural land (based on Rulli et al, 2012 and AQUASTAT, 2010)

Considering the geographical disproportion of the agricultural land subjected to land acquisitions, the shortage of available agricultural water use can be exacerbated in the regions where freshwater resources are already scarce. Recent studies covering the issues regarding irrigation projects mostly focus on the water quantity concerns (see Bossio et al, 2012; Bues and Theesfeld, 2012; Houdret, 2012). Some consider both quantity and quality aspects of water in land acquisitions (e.g. Williams et al, 2012). Arduino et al (2012) studied the case of water contamination in the rural community by the agricultural investment. However, water quality concerns have generally received less attention compared to issues of quantity. It is important to note that reduced water quality may limit the quantity of water that is available for ecosystem services, water retention, aquifer recharge, water purification and water regulation. This closely knit relationship between water quality and quantity is often ignored leaving the story of water in the context of land acquisitions being only half-told.

3. Theoretical overview & discussion: land acquisitions and development, and water

There is a wide body of research from the NGO and private sectors focused on the impact of land acquisitions since 2009. Many research projects on land acquisitions use a case study methodology that often take empirical and descriptive approaches. While the case study method can provide better understanding of the development of land acquisitions in a specific context, this approach is not as useful for drawing general lessons and conclusions at a wider scale. The specific dynamics of water systems are highly variable across the world meaning lessons learned from a case study in the Ethiopian lowlands might be completely different than those arising from a study in the Northern Laos. Thus, there is a need to strengthen efforts to theorise this emerging field. Theorisation of land grab has been discussed using the political economy tools for understanding 'new colonialism' (see Gasteyer, 2012) or 'neoliberal capitalism' (see Torres, 2012). The connections between the land and water resource exploitation in the land acquisitions emerge in the disciplines such as international political economy. Framing the land acquisitions into new colonialism or spreading of neoliberal capitalism has a certain advantage to link the political, social and economic dimensions of the land acquisitions. However it does not catch the interactions between the land acquisitions and development. Resource curse theory has the merit to explain the relationship between the risks of low-development and natural resource dependency, in this case depending on agricultural sector as a source of income. In this paper an attempt at theorising is made by using the 'resource curse literature' (Collier and Hoeffler, 2004; Humphreys, 2005; Collier, 2007; Humphreys et al, 2007) as a starting point for framing the land acquisitions, water and development discussions.

There are limitations to applying common theories linking conflict over natural resources to the land acquisitions because the mobility of commodity, scarcity of the resources, and prices per volume are highly varied. Most of the international political economy theories that do link natural resources to conflict have been centred on non-renewable resources such as oil reserves (Humphreys et al, 2007) and precious metals and minerals (Synder and Bhavnani, 2005). Unlike these non-renewable resources, land and water resources are renewable for agricultural purposes. Agricultural products such as food or textile crops are not widely used to facilitate conflict. The logistics involved with long planting and harvesting cycles, storage, and transport make agriculture an impractical choice for the black-market trade usually associated with functioning conflict economies. Alternatively, precious minerals such as diamonds, cassiterite, and coltan have been used to fuel, fund, or facilitate a number of recent African conflicts because they can be extracted and transported more efficiently and provide exponentially higher returns considering their price per unit traded (Griffiths & Bromley, 2009). Where these non-renewable resources present a more logical option to maintain a conflict economy, the weak state mechanism that often enables conflict does suggest that land and water resources may have a closer link to long-term development.

The “weak state mechanism” discussion is one of the hypotheses that could explain the relationship between natural resources and conflicts (Humphreys, 2005). When the bulk of a state’s GDP stems from natural-resource exports, the weak state mechanism assumes that the state structures may be weaker. As the reasons, Humphrey (2005) defines two variants on weak relations between society and state; one perspective is that an untaxed public may have less control over their regime; and the other perspective being that the state does not rely on the taxation for its income but on the natural resources. Collier (2010) also argues that the resource curse is confined to countries with weak governance. In many countries, the right to use land and water is given to the government which are destined to manage the resources for the benefit of its people. Regardless of the responsibility as the delegated manager of the natural resources, the government often troubles with deciding the use of natural resources. Then a core question arises: How can the public ensure the government to utilise the natural resources in equitable and efficient? If the government does not manage the resources appropriately, the potential utilisation of natural resources for socio-economic development can be limited. A result of many recent land acquisitions, the local populations who previously used the land and water resources for subsistence-based farming are forced to rely on the income from a new and often unfamiliar agricultural project. If basic democratic principles had been observed, the local population would have had a wider and more influential representation during the initial decision making phase of appropriating land. In reality, weak governance is detrimental to the local population’s ability to protect their embedded rights to their most important natural resources: land and water.

Collier (2010: 45) differentiates the effects of agricultural and non-agricultural commodity price booms and defines the long-term consequences of the agricultural booms as benign. Although Collier favours large-scale commercial farms considering economies of scale, the recent land acquisitions were considered to be “too opaque, too large, and too long (Collier, 2010: 218).” Collier’s argument points out the contractual problems of *land* acquisitions but excludes the problems caused by the transfer of *water* resources. If the land transferred to the investors requires additional water resources for implementing the agricultural project, ‘blue water’ withdrawal from an existing source must increase or an entirely new source must be connected to the new project site by the irrigation facility. If the transferred land already has an adequate annual rainfall, the competition for green water is less obvious. Internationally, green water consumption is mainly managed through virtual water trading. At the local level, the green water requirements by a new crop introduced through land acquisition can result in green water deficits for surrounding areas that were previously stable. For example, if a plot of meadows and pastures had been transformed to a large-scale agricultural project, there could be a significant increase in green water demand resulting in an insufficient supply for the rest of the land within the same watershed. The concept of ‘virtual water’ explains that the international trade of agricultural products is essentially the trade of green water since the water used per unit of agricultural output can be quantified. (Allan, 2011; Liu et al, 2009). The large-scale land acquisitions have been

seen as a potential driver for the significant increase in virtual water trades between water and land resource endowed countries and countries with inadequate land and water resources. Stakeholders at the state and local levels could benefit by taking these aspects into consideration when forming water management policy.

States that allow foreign investors to lease or purchase agricultural land may not take into account the loss of green water. The contractual terms of green water use are not often specified, if recognised at all, and the fees and tariffs attached to blue water use are often insufficient in their compensation (Cotula, 2011 b). Governments of developing nations may see some financial gains when granting land use to foreign investors through land resource rents but the development potential of that land can be marginalised by neglecting the role of green water. Some argue that the agricultural products produced through agricultural projects initiated in land acquisitions will become a new income source for developing nations. However, this perspective will be challenged by the lack of implementation or capacity to regulate and tax these products. Lack of transparency in the land acquisition process also indicates the financial gain returning to the government can be ambiguous.

The land and water are the essential natural resources to acquire primary commodities such as agricultural products and timber. Some point out that the increase in global demand for non-food agricultural commodities, biofuels and their higher expected returns by private investors is a major driver of recent land acquisitions (Zoomer, 2010; Cotula, 2009). Agricultural products have been traded as commodity prior to the food price crisis in 2007. The international commodity market can evoke speculations of investors and speculative demand pulls can occur through the use of financial derivatives. Agricultural products such as wheat, corn, soybeans, cotton, sugar, coffee, and cocoa have been traded in the commodity market (S&P Dow Jones Indices, 2013). The changed notion on agricultural products as tradable and profitable commodities has increased the influx of foreign investors to destinations perceived to have 'cheap' land. The strengthened investor protection laws (see Cotula, 2011 a) and influence of investors in the countries where land acquisitions take place will continuously weaken the governance of the local governments.

4. Conclusion

As it was mentioned in the introduction, the links between resource curse theory and land and water acquisitions have been established. With a caution, the paper does not intend to draw the conclusion that land acquisitions universally have either negative or positive development consequences. As the resource curse theory emphasises, the key is governance of the natural resources. The weak governance often results in the lack of enforcement of regulation and taxation and the inadequate representation of the public opinion in decision making. Many countries with a high frequency of

selling or leasing agricultural land are also highly dependent on agriculture to buoy the economy. Achieving socio-economic development objectives inevitably requires industrialisation and modernisation. Through the economic policies, governments of developing nations must utilise the natural resources in their control to achieve industrialisation and modernisation. The recent land acquisitions represent the development objectives (or hopes) of the developing country governments and global market forces. Whether land acquisitions result in greater opportunities for development or simply lead to the exploitation of water and land resources is greatly determined by the strength and capacity of the institutions responsible for their oversight. Though there have been attempts to assess the enabling circumstances that allow land acquisition by foreign investors and how these processes have affected water systems to an extent, there remains a glaring need for further analysis. This analysis should include a broader reflection on water dynamics and the direct and indirect impacts on water by land acquisition.

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[i] By definition, agricultural land includes arable land, permanent crops and permanent pastures (source: FAO Statistics Division).

[ii] Using the terms , 'bureaucratic' and 'socially embedded', is preferred than using either 'formal' and 'informal', or 'modern' or 'traditional'/'customary' which are rather simplistic clarifications (Bejaminsen and Lund, 2001).