Rivalis

Using Water Wars theory and Resource Curse theory to discover if water scarcity played a role in causing the Darfur conflict and the environmental conflicts in China

‘The Root of the English word ‘rival’ is from the Latin term ‘rivalis’ which originally meant using the same stream.’[1]

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[1] Asit K. Biswas, ‘Management of international water resources’, in: Asit K. Biswas (ed.), *International waters of the Middle-East from Euphrate-Tigris to Nile*, (Oxford, 1994) 185-203, 202.

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Introduction

'If you end the oil supply, the motor stops… But if you stop the water supply, life stops.'
(Turkish minister of state)[2]

4500 years ago the nations of Umma and Lagash went to war over water. The access to the river Euphrates was of such economic importance, that war erupted between them over how to divide the fresh water running through both states. The nations believed that only a war could solve the conflicting economic interests.[34] The example of Umma and Lagash highlights the high value ascribed to water. If a nation is prepared to go to war to have access to water, the resource is valuable. With the world facing a growing fresh water scarcity, will people start fighting to have access to the scarce water resources of the planet?

Water has always been a vital necessity for human life. We need to drink water to survive, our cattle, our crops and hygiene systems require it. Regions that have abundant fresh water have the opportunity to develop their agriculture and economy without having to worry whether water scarcity might hamper growth, production or human welfare. But in water scarce countries the government has to decide how to distribute the small amount of water across the population. If you have only one liter of water, do you decide to drink it, feed it to your cattle, irrigate your land, use it in industrial production or do you generate electricity with it? Some parts of countries like the United States, Sudan, Spain and China are extremely arid. Faced with scarcity the distribution decisions the government makes, or does not make, are of vital importance to the population. In rapidly industrializing China, the choice between irrigating the rice fields, providing for industrial output or delivering water to the growing urban population is a question that is increasingly faced by government officials and water managers. If the government of China decides to divert the water to the citizens of Beijing instead of irrigating the rice paddies of rural farmers, then what will the farmers do? When threatened in their

[2] Neda A. Zawahri, 'International rivers and national security: The Euphrates, Ganges-Brahmaputra, Indus, Tigris, and Yarmouk rivers', *National Resources Forum* 32 (2008) 280-289, 284.
[3] Juha I Uitto and Aaron Wolf, 'Water Wars? Geographical perspectives: introduction', *The Geographical Journal* 168:4 (2002) 289-292, 289.
[4] Sandra L. Postel and Aaron T. Wolf, 'Dehydrating conflict', *Foreign Policy* (September/October 2001) 2-9, 2.

livelihoods, will they decide to fight the government of China, just as Umma and Lagash decided to fight each other?

Growing demand or declining availability of water makes distribution decisions based on water scarcity an increasingly acute problem across the globe. Because policy makers are facing distribution decisions, the academic community (economists, social scientists and historians) is devoting a growing amount of time and attention to what the consequences of these scarcity-motivated decisions will be. In my research, I will focus on the question whether water scarcity can lead to conflict. To investigate how water and conflict are connected I use two theories which are the most relevant when dealing with the connection between water and conflict.

The first theory is called the Water Wars theory. Research into water scarcity has led to a theory which states that water scarcity can lead to conflict, as people start fighting to grab access to a vital resource.[5] The war between the two ancient Mesopotamian states is a prime example of how a water war can occur. The nations shared a water resource and both were powerful states that economically depended on the access to that water resource. This clash of interests led to conflict and a water war was born. As there was no other source of fresh water than the Euphrates water scarcity eventually led to this conflict.[6] Simply put the basic assumption of the Water Wars thesis is Neo-Malthusian in nature.[7] The world has a limited amount of water and the amount of water per person is on the decline globally. In 1800 there was 40.000m³ of fresh water available per capita; in 2025 the amount of water per person is expected to have fallen to 4.962 m³. According to Water War theory, the fact that water is becoming scarcer will eventually mean that countries and groups in societies will clash with each other in order to protect the water supply of their population or interest group.[8] Thus water scarcity will lead to conflict.

Although Water War theory is specifically designed to research water scarcity conflict, there also exists a broad body of literature based on how all natural resources can lead to conflict.

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[5] Joyce R. Starr, 'Water Wars', *Foreign Policy* 82 (Spring 1991) 17-36, 19.

[6] Uitto and Wolf, 'Water Wars', 289.

[7] Bernice Lee, 'Managing the interlocking climate and resource challenges', *International affairs* 85:6 (2009) 1101-1116, 1105.

[8] Nils Petter Gelditsch, Taylor Owen, Kathryn Furlong and Bethany Lacina, 'Conflicts over shared rivers: Resource wars or fuzzy boundaries?' *Paper presented to the 45th annual convention of the international Studies association* (Montreal, March 2004) 1-26, 3.

These studies are based on the Resource Curse thesis. Resource Curse is an economic theory which states that countries with abundant natural resources have relatively smaller economic growth than resource-poor countries.[9] As conflicts have a negative effect on economic growth, internal and external conflicts are part of the theoretical framework of the Resource Curse thesis. Studies investigating the relationship between natural resources and conflict revealed various mechanisms behind resource driven conflicts.[10] The causes and factors contributing to the outbreak of resource conflicts differ depending on the societal position of the groups having a clash of interests, the individual, group, economic position and societal level matter for the reasons behind turning to violence. A government has different reasons for turning to conflict than a farmer. But the causes and factors behind the way all these groups act can be summarized as greed or grievance driven.[11] For example, if local elites are consuming vast amounts of luxury import products while the mass of the population is bereft of even the bare necessities for survival, this will lead to grievances with the marginalized groups in society. Elites in resource rich societies have the tendency to use the resources to provide income for themselves instead of using the resource income for investments in society that will stimulate the economy. This is called the "looting of resources". This greed for resource income leads to grievances with other groups in society. An important factor in resource driven conflict is therefore how elites deal with the income natural resources generate.[12] How different interests groups in society act and the reasons behind their actions are investigated by studies about resources and conflict.

The theoretical framework provided by the Resource Curse thesis for studying resource conflicts has so far not been applied to water conflicts. In my thesis I want to combine Water War theory with Resource Curse theory. This allows us to look into Water Wars using the methods and analysis tools provided by Resource Curse thesis. Although war over water seems

[9] Jeffrey D. Sachs and Andrew M. Warner, 'Natural resource abundance and economic growth', *National Bureau of Economic Research Working paper* No.5398 (December 1995, revised 1997, 1999), 1-47.
[10] Philippe Le Billon, 'The political ecology of war: natural resources and armed conflict', *Political Geography* 20 (2001) 561-584, 561.
[11] Paul Collier and Anke Hoeffler, 'Greed and grievance in civil war', *Oxford Economic Papers* 56 (2004) 563-695, 663-695.
[12] Macarten Humpfreys, 'Natural resources, conflict and conflict resolution: uncovering the mechanism' *The Journal of Conflict Resolution* 49:4 (August 2005) 508-537, 511.

like a logical outcome of water scarcity, the theory is not exclusively accepted. Amongst scholars there remains a lot of doubt and discussion about the theory. In fact, the war between Umma and Lagash 4500 years ago was the last war where water was the driver of the conflict. So one may wonder if conflicts driven by water scarcity, are a viable cause for interstate war or local conflict. There does not seem to be evidence, which shows that water scarcity actually leads to conflict.[13] By using the framework provided by Resource Curse I hope to discover if water scarcity actually can lead to conflict. Literature about resource conflicts identifies several internal conflicts in which water was considered a factor for the outbreak of that conflict. My research therefore focuses on two cases in which water is said to have been a contributing factor for the outbreak of the conflicts.

My hypothesis is: water scarcity can lead to conflict as elites try and divert the scarce resource away to the most easily lootable production method. The water distribution decisions an elite group makes are not based on independent grounds or the general interest of a nation, but are the result of the selfish goals of that group. Looting in this context means that the resource income is not used for public investments but used for personal gains. Groups in society that lose water because of the diversion of the elite have no other option to express their grievances than getting into conflict with the elite. This research question derives from combining the ideas from Resource Curse Thesis and Water Wars. First, from Water Wars, I use the assumption that water scarcity will lead to conflict. Second, from Resource Curse thesis, I use the academic framework for investigating resource driven conflict. Finally, I use the outcome of various studies into resources and conflict that stipulate that greedy income seeking elites lead to grievances in society; more explicitly greed and grievance lead to conflicts within societies.[14]

To test this hypothesis I investigate two cases; the Darfur conflict and the Chinese environmental conflicts. The Darfur conflict is a full scale war between a rebel movement and the central government in which water scarcity is said to be one of the driving forces of the

[13] Postel and Wolf, 'Dehydrating conflict', 2.
[14] Collier and Hoeffler, 'Greed and grievance', 663-695.

rebel movement.[15] For my second case, I chose China because water conflicts are said to break out all over the country.[16] The conflicts in China can be small protests against the government or clashes between different societal groups which have different water priorities. Fact is that in China, conflicts are breaking out and water is named a factor for these conflicts to erupt. So the first reason to choose both cases is because water conflicts are said to occur in both nations. The second reason to choose these cases is because they can be contrasted against each other. For example, the sort of water conflict differs; in Darfur a civil war took place and in China the conflict takes the shape of small local protests. Another example, China is on the rise economically and is developing its industrial complex at a fast rate. Darfur is economically stale and has almost no export or economical surplus. Because the economic, political and societal factors in China and Darfur differ to a great extent, the outcome of my case studies hopefully says something about water conflicts in general and not only on these particular cases. By comparing and contrasting these cases I hope to conclude if the Resource Curse framework is applicable to water conflict. I hope to find regularity behind water driven resource conflict.

My thesis will be structured as follows. To ensure the reader is fully acquainted with the economic and environmental position of fresh water I provide the reader with a more extensive political-economic study of water in the first chapter. In the second chapter I give a more thorough explanation of the Water War, Resource Curse and Scarcity theory so the reader is fully informed of the theoretical background of my two case studies. At the end of chapter 2, I also give a more elaborate version of my hypothesis in order to provide a more comprehensive overview of the theories which form the theoretical framework of my research. Subsequently in chapter three, I look into the role water played in the Darfur conflict. And in chapter four, I examine how water conflicts in China develop and sometimes turn violent. In my conclusion, I will give my vision on how water can play a role in the development of conflicts.

[15] Alex de Waal, 'Is climate change the culprit for Darfur?'. June 2007. http://africanarguments.org/2007/06/25/is-climate-change-the-culprit-for-darfur/ (12 augustus 2011).
[16] Postel and Wolf, 'Dehydrating conflict', 2.

1. Water

1.1 Introduction

This chapter provides an introduction to the role of water in politics and economics. I will discuss how water is used, will be used in the future and what the difficulties facing water managers are. When discussing water scarcity and the consequences of water scarcity, it is illuminating to have an overview of how one must consider water in an economical and political context. How do you value water and can it be treated as an economic resource?

1.2 Present, Future and Trends in Water Use

Fresh water is a scarce and rare commodity compared to all the non-usable water in the world, 97,4% of the water in the world is salt ocean water, almost 2% of worldwide water is contained in Ice caps and glaciers, which leaves 0,6% of all worldwide water in the hydrological cycle.[17] Fresh water is the only water that is taken into account when discussing water resources.[18] Humans use fresh water foremost for agriculture (89%). Reservoirs (6%), industry (3%) and municipal waters (2%) are the other large fresh water consumers.[19] The overall expectation is that fresh water will be more in demand in the future. First, the earth is faced with a growing human population; the United Nations estimates that in 2050 the world will be populated by 9,3 billion people, compared to 6,9 billion in 2010.[20] Those people not only need to drink water, they also need to be fed. As shown in the statistics above, water is vital for agriculture. Next to the human, livestock and agricultural demand, the growing population will also increase industrial product consumption. To keep up with demand for products, the industrial sector will also need more water.[21] Second, the world is confronted with countries that are developing

[17] J.A. Allen, *The Middle East water question, hydropolitics and the global economy* (Londen and New York 2002) 114-116.
[18] Allen, *The Middle East water question,* 116.
[19] Leif Ohlsson, *Hydropolitics,conflict over water as a development constraint* (Londen 1995) 7-10.
[20] Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 'World Population Prospects: The 2010 Revision'. 3 May 2011. http://esa.un.org/unpd/wpp/index.htm (8 October 2011).
[21] United Nations Economic and Social Commission for Western Asia (henceforth ESCWA), *Water scarcity in the Arab world*, *Population and development report, first issue* (New York 2003) 11.

quickly; China, Brazil, India and Russia are on the rise economically. Simultaneously with their economic growth, their water consumption will rise. The wealthier a nation is, the more its population is consuming and in the end all the products people consume cost water. For example, the wealthier a person gets, the more meat he or she eats. The production of a kilogram of potatoes costs 500 liters of water, whereas the production of a kilogram of beef requires 15.000 liters. To provide the world with the lifestyle the global population demands, the availability of water is vital.[22] Third, climate change will cause additional water stress. Scientists predict that the world is becoming warmer. With the rise of temperatures, sea levels will rise and areas of the world will become more often affected by drought. Part of the population of the world relies on glacier melt water for its fresh water supply. With the melting of glaciers, this fresh water source will dry up eventually.[23] Decreased rainfall and rising temperatures will increase the amount of farmland that depends on irrigation to sustain cultivation. So the changing world climate will make fresh water an even scarcer and more needed commodity than it already is.

Due to the reasons listed above, the world is faced with growing water demand while the fresh water availability is in decline. However, this growing scarcity does not mean that we will eventually run out of water. Countries still have the possibility to choose for technological and institutional rearrangements which will enlarge the available water supply. The options are reducing the demand for water, enlarging the supply of water and treating water more as an economical resource which makes trade and cooperation a more feasible possibility.[24] In this paragraph I will treat the subject of the reduction and enlargement of the water supply, in the next paragraph I will deal with water as an economic resource.

Countries can prevent the waste of water by improving existing technological systems or by switching to new technology. Half of the water used in the water system of the Jordanian capital Amman is not available for consumption by inhabitants of the city. This water is lost, due to leaks, evaporation and illegal pipeline connections. If the government would invest in the

[22] Bernice Lee, 'Managing the interlocking climate and resource challenges', *International affairs* 85:6 (2009) 1101-1116, 1105.
[23] Lee, 'Managing the interlocking climate', 1106.
[24] Aaron T. Wolf, *Hydropolitics along the Jordan river* (Tokyo 1995) 130-131.

repair of the water system the city would safe a vast amount of water.[25] An example of a technological improvement is drip irrigation; which leads water through pipes to the roots of plants. In contrast, flood irrigation which is the most used irrigation method causes a lot of water to evaporate before it is consumed by plants. Investing in drip irrigation prevents these evaporation losses and is therefore more water efficient.[26] Another water saving method is genetic modification. Genetic improvements of plants might create crops which are more resistant to water stress, caused by drought or salinity. By creating plants that require less water for the same crop yield, water consumption can be reduced. Technological improvements and more investments in water development can also increase the amount of fresh water at the disposal of humans. Waste-water reclamation, desalination and fossil-aquifer development are improvements which will enlarge the total water supply available in the world.[27]

By using political policy domestic use can be cut back. Realistic prizing of water, by cutting subsidies on water, ensures that people are more often confronted with the value of water; in this way they are less likely to waste it. Another policy choice is using educational programs to raise public awareness for water-saving methods. The promotion of more frugal use of water and providing the public with information about the amount of water that products require raises public awareness of water saving methods.[28] For example, the Dutch energy label gives information about the amount of water a machine consumes when in operation.[29] Policy which reduces population growth will also reduce demand for water.[30] Furthermore, international policy can also increase the yields of water. The development of interbasin-water management, shared information and technology and joint-regional planning will ensure that water is used in the most efficient way. The problem is that all these technological and policy changes require vast sums of money. As long as politicians, corporations and the population do not feel the

[25] ESCWA, 'Water scarcity', 17.
[26] Christine Drake, 'Water resource conflict in the Middle East', *Journal of Geography* 96:1 (1997) 4-12, 9-11.
[27] Wolf, *Hydropolitics*, 131.
[28] Ibidem, 130.
[29] www.energielabel.nl (June 2011).
[30] ESCWA, 'Water scarcity', 28-30.

pressure to act, needed changes will not be made.[31] But policy and technological choices can influence how much water is used and by using these methods large amounts of water can be saved.[32] So even though water is going to be more in demand and the amount of fresh water available for humans will diminish, this does not necessarily mean that water will eventually be a scarce resource. Humans still have a large amount of water saving and water supply enlarging options left.

One option often touched upon in the literature about water conflicts between nations is that water can be more handled as a resource. By dealing with water as a resource it can be traded in an international water market.[33] But compared to other resources, water is (for various reasons) a lot more difficult to describe as an economic resource. Water trade options therefore are not always viable. The next paragraph will deal with if water can be treated as an economic resource.

1.3 Water Economics

In most countries, the state is the owner of the water. Because water is a public good, you can own land on both sides of a river, but you do not own the river that runs between those pieces of land. This makes the government of a country responsible for the water management of that country. This might also be the case with oil or other mineral resources in a wide variety of countries, but water is not only state-owned, it is also vital for the lives of all inhabitants of the state. Governments that deal with water resource management are confronted with different problems when handling water resource distribution. First, water is a re-usable good, but only if you are able to contain it and keep the quality above a certain point. Since water is easily polluted, and once polluted it has no substitute.[34] The amount of fresh water is limited, so the use of the resource by one person detracts from the use of others in society, or in other

[31] Malin Falkenmark, 'Global water issues confronting humanity', *Journal of Peace Research* 27:2 (1990) 177-190,, 189.
[32] Wolf, *Hydropolitics*, 131.
[33] Allen, *The Middle East water question*, 114-116.
[34] Wolf, *Hydropolitics,* 89.

states.[35] In case of rivers the upstream riparian always has a geographical advantage compared to the downstream riparian. If you use or pollute the water upstream, the water cannot be used by the downstream riparian.[36] Second, water distribution is highly dependent on climate and weather. The amount of water available can differ highly depending on season, weather conditions and geographical position (even within countries). Furthermore, water is a motile resource; it flows downstream in rivers and groundwater tables rise and drop. Large amounts are contained in different parts of the hydrological cycle which makes it hard to quantify. Also you never know how much water you will get; the weather is difficult to predict. Flowing and unpredictable, it is difficult to quantify because you never know exactly how much water you actually have or will receive. These characteristics make water management tricky; the actions of one actor might hamper the use of water by others, future availability is unpredictable, it does renew itself but you never know at what rate and it is vital for the domestic, industrial and agricultural users within the nation.[37]

But can water be considered an economic resource?

If you buy half a liter of chilled bottled water and you pay 2 euro for that bottle, then everybody agrees that water is a commodity. You can buy this commodity or sell it on the economic market. But when it starts to rain on a farm, most people agree that the farmer should not pay for the rain that is coming out of the sky to irrigate his land, and most definitely not pay 2 euro per half a liter. This is exactly the problem with water as an economic resource; not all types of water are considered equal and can be commoditized equally. The willingness of people to pay for this resource differs highly from one type of water to the other. This is one of the reasons why water as an economic resource is problematic; the different perceptions and varying functions of water make it hard to value.[38]

[35] Mirjam R. Lowi, 'Rivers of conflict, rivers of peace', *Journal of International Affairs* 49:1 (Summer 1995) 123-144,126.
[36] Lowi, 'Rivers of conflict', 127.
[37] Allen, *The Middle East water question*, 114-115.
[38] Allen, *The Middle East water question*, 114-115.

In addition to the difficulty of valuation, water has also been placed outside the "rational" economic theories.[39] Water is not considered a pure economic good by politicians and people, and it often has a big emotional and political value. Governments have been reluctant to privatize the water market, even if other sectors with a large public responsibility like energy, infrastructure and healthcare were privatized.[40] The fact that the market might establish a water price that makes water unavailable to a part of the population, or deliver water of such poor quality that it is unsuitable for human consumption, is such a terrifying thought that governments have refrained from privatization of water.[41] The reluctance of governments to do so illustrates the additional values besides economic ones which people contribute to water. Water can have all kinds of values besides economic. It can provide physical security; rivers often form the border between nations. It can furnish political and emotional values like national pride and historic rights. Water self-sufficiency can provide a nation with the psychological value of control, and a shared water resource might furnish bonds between nations or create tensions because of perceived (past) injustice. And it can be considered as a beautiful and intrinsic part of the environment.[42] These non-economic values make it complicated to treat water as solely an economic resource. Take for example the water distribution Israel organizes on the Golan Heights. The water the Golan settlers require needs to be pumped up from Lake Kinneret, which is located 600 meters below the Golan heights. This water is used by the settlers mostly for agricultural purposes. If they were to pay for the actual cost of pumping all this irrigation water to their fields, their crops could never be sold on the world market for a competitive price. But Israel subsidizes the water the settlers use. The country considers the residence of settlers on the Golan Heights essential to the security of the country. They are a buffer against Syrian military action and create a base for the territorial claim to the Golan, thereby protecting access to Lake Tiberias, which is a strategic component

[39] R. Coopey and T. Tvedt, 'Water as a unique commodity' in: R. Coopey and T. Tvedt (eds.), *A history of water, volume 2: The political Economy of Water* (London 2006) viii-xxviii, ix-x and xxvi.
[40] Jessica Budds and Gordon McGranahan, 'Are the debates on water privatization missing the point? Experiences from Afrika, Asia and Latin America' *Environment and Urbanization* 15:2 (October 2003) 87-114.
Germa Bel and Mildred Warner, 'Does privatization of solid waste and water services reduce costs? A review of empirical studies', *Resources, Conservation and Recycling* 52 (2008) 1337-1348.
[41] Coopey and Tvedt, 'Water as a unique commodity', xx-xxi.
[42] Wolf, *Hydropolitics,* 114.

of the Israeli water provision. The water the settlers use therefore needs to be subsidized. Without the cheap water, there would be no settlers en without these settlers Israel would lack the safety buffer it now has.[43] Economically it is not a sound decision to pump water upwards for 600 meters to use for irrigation but (geo)politically the monetary cost are justified by the (geo)political benefits to the country.

Such non-economic values attributed to water can hamper efficient water management. Even if a water distribution project has a favorable economic outcome for all the participants, politics might stop the project from happening.[44] This problem can be illustrated by "virtual water", the amount of water which the import products of a nation use. For example, Saudi-Arabia is a country bereft of rainfall, thus to sustain agriculture the country uses a lot of ground water from aquifers[45] for the irrigation of cereals. Given that it takes about 1.000 m^3 of water to produce one metric ton of grain the country could be more thrifty with its water supply by switching to less water-intensive crops. In this way they could export the harvest of this water "scarce" crop and import a water demanding product like grain. This would lead to the import of virtual water, the water needed to grow the grain in the exporting-country, resulting in increased water efficiency for Saudi-Arabia. But the Saudi-Arabian government believes that it is in the strategic interest of the country to grow its own grain, so the country can reach a certain amount of self-sufficiency in food production. So even though importing virtual water (by switching to other agricultural crops) is the economically and environmentally most logical water saving policy, the measure is not taken because it is not the most politically feasible policy.[46] For water management to be effective and politically feasible it has to balance politics, economics, environmental aspects and national security.[47] Water is a resource with dimensions beyond the scope of economics. Treating water solely as an economic commodity is therefore impossible.

[43] Wolf, *Hydropolitics,* 113.
[44] Heather L. Beach, et al, *Transboundary Freshwater Dispute Resolution* (New York 2000) 27-35.
[45] A body of permeable rock, for example, unconsolidated gravel or sand stratum, that is capable of storing significant quantities of water, is underlain by impermeable material, and through which groundwater moves.
[46] ESCWA, 'Water scarcity', 11.
[47] Allen, *The Middle East water question*, 184.

1.4 Concluding remarks about water

"*When you drink the water, remember the spring" (Chinese Proverb)*[48]

Water has no substitute and is vital to the livelihoods of inhabitants and essential for the economic performance of states. Dependency upon water is not necessarily linked to the level of economic development of a country, with rich countries like the United States and Israel being water scarce and poorer countries like Myanmar and Vietnam being water rich. In regions where water is in short supply water stress can occur, i.e. when water is so scarce that political pressure is placed on actors within the states to make sure there is enough water to maintain the state's infrastructure.[49]

Hydrologist Malin Falkenmark, notes in *Global Water Issues Confronting Humanity* that in case of global water issues: "*No one is responsible, no one has the comprehensive overview, nor does anyone have the competence to act."* The global water shortage is depicted here as a modern tragedy of the commons, where nobody feels responsible for a shared and vital part of the local economy, until it is too late. She notes that the global water crisis is in fact: "*a crisis in man's behavior in the living environment, the disrespect for the available water and water cycle, and the unwillingness to adapt to these hydrological laws, by climatic-biased and water-illiterate decision-makers"*.[50]

So water is quite essential for the functioning of the state but water is not valued accordingly. Instead it is wasted and distribution decisions are made on non-hydrological grounds.

For my thesis these conclusions imply that water scarcity could be more of a political issue in the future and that therefore if water scarcity leads to conflicts, these conflicts will become more frequent in the future. However, these conflicts might be prevented by investments in water saving methods. The changes necessary for water savings are costly and require an active mindset of the general public as well as politicians. As discussed in this chapter water is not an

[48] The Quotations page, *Quotation #2604 from Laura Moncur's Motivational Quotations*, http://www.quotationspage.com/quote/2604.html (september 2011).
[49] Kevin Freeman, 'Water wars? Inequalities in the Tigris-Euphrates river basin', *Geopolitics* 6:2 (autumn 2001) 127-140, 127-128.
[50] Malin Falkenmark, 'Global water issues confronting humanity', *Journal of Peace Research* 27:2 (1990) 177-190, 189.

economic commodity in a strict sense, and therefore cannot be treated as only an economic resource. In the next chapter I will discuss Water War theory and Resource Curse theory. As Resource Curse theory is a theory which is based on resources solely, can this theory be applied to a resource which is not completely economic?

2. Water and conflict

"As Malthusian pressures depress per capita incomes, it comes to a choice between fighting and starving".[51]

2.1 Introduction

In this chapter I will describe the Water Wars theory and the Resource Curse theory and how both theories are relevant for my conflict cases. First I will deal with Water War theory; describing what the theory states and how the theory came to be part of the academic discourse. Then I will elaborate on the Resource Curse theory and the part of Resource Curse which deals with how resources can lead to conflicts. Finally, I will explain how both theories form the setting of my hypothesis and explain the grounds on which I base my research.

2.2 Water Wars in an international context

- *The next wars in the Middle East will be fought over water. (World Bank Vice-President Ismail Serageldin, 1995)*[52]
- *The only matter that could take Egypt to war again is water*. *(Egyptian president Anwar Sadat in the spring of 1979)*[53]

What will be the international consequences of the water stress if politicians refrain from hydrologically sound policy? In 1991 Joyce R. Starr published the article Water Wars in Foreign Policy.[54] In the article Starr argued that the growing water scarcity in the world would eventually lead to armed conflict with nations fighting a vital, increasingly scarce resource. The Middle East was especially in danger because the region is one of the most arid regions of the world and is overusing its water supply and exhausting its ground water reserves. The Middle

[51] Christa N. Brunschweiler and Erwin H. Bulte, 'Natural resources and violent conflict: resource abundance, dependence, and the onset of civil wars', *Oxford Economic Papers* 61 (2009) 651-674, 654.
[52] Ismael Serageldin cited in: Aaron T. Wolf, Annika Kramer, Alexander Carius and Geoffrey D. Dabelko, 'Water can be a pathway to peace not war', *Navigating Peace* 1 (July 2006) 1-5, 1.
[53] Anwar Sadat cited in: Starr, 'Water Wars', 19.
[54] Starr, 'Water Wars', 17-36.

East was and is fraught with international conflict and has a high rate of interstate violence. The First Gulf War (1990-1991) was considered a resource war by some politicians and scholars. Saddam Hussein tried to grab the Kuwait oil reserve and America stepped in to defend its strategic regional partner and economic interests.[55] The fact that a resource war had already occurred combined with the military and political tension in the region would make another conflict a realistic possibility. The fact that the region has a lot of shared transboundary fresh water sources, could easily turn water stress into water war. Because of this, the author considered the entry level for water conflict low.[56] According to Starr, the solution would be for the United States to step up and realize that water is of enormous strategic importance in the region. Water should be taken into account when international negotiations take place. Preferably, this should lead to treaties in which all nations who share the same scarce water resource participate and agree on how to use and share water resources, whilst taking into account the interests of other nations.[57]

According to Peter Gleick, a scientist working on environment, economic development and international security, water can lead to resource conflict when the specific water resource has a great economic and political value to a nation. This value is determined by different factors: the degree of scarcity, the extent to which the water supply is shared and the alternative water resources which are available.[58] This compared to the degree to which water is vital for the economy makes water of strategic importance, and as such part of "Realpolitik". If politicians and policy makers consider water to be an important and valuable commodity, they might be prepared to defend it with force should the need arise.[59]

But Gleick and Starr have not been the only ones who published about Water Wars theory. A vast amount of literature is available. Not only the Middle East is considered a region in danger of water conflict, other regions are also considered at risk. The nations sharing the same water of the Danube, Ganges or Zambezi, or the problems facing the countries sharing Lake Chad, the

[55] Michael T. Klare, 'Clearing the air', *The National Interest* (Jan/Feb 2008) 28-31, 29.
[56] Starr, 'Water Wars', 17-36.
[57] Starr, 'Water Wars', 17-36.
[58] Gleick, 'Water and Conflict, Fresh water resources and international security', *International Security* 18:1 (Summer, 1993) 79-112, 84.
[59] Gleick, 'Water and Conflict', 80-82.

Aral Sea or Lake Victoria, are all named as potential water conflicts.[60] Basically, the reason for all potential water conflicts can be summarized as follows: We have a limited amount of water, how do we share it? And if we cannot reach an agreement with friendly means, violence might turn out to be the option which solves the problem, at least temporarily.[61]

Often Water Wars literature has the tendency to be alarmist, raise awareness and spot potential conflicts. Politicians, United Nations publications and NGO's are very fond of using water conflict rhetoric; as the quotes at the beginning of the chapter exemplify. Water Wars theory is widely used in journalistic publications and quoted by policy makers because Water Wars has credibility with the public. But Water Wars is not a theory which is widely accepted in the academic world. A vast amount of literature has been written which doubts the assumption that water scarcity will inevitably lead to conflict. Since the water war in Mesopotamia no war, where water was the main driver of conflict between nations, has occurred.[62] Scholars publishing about Water Wars have provided a wide variety of description of water related tensions and a few conflicts in which water was a contributing factor.[63] But researchers at Oregon State University found that if water was a contributing factor in violence between states, in 30 of the 37 cases of water related violence, the conflict was between Israel and its neighbors.[64] Since this relation cannot be described as stable, even without water as a factor on can question why water war still causes so much stir in the academic circles? And what is the reason that even though water is becoming scarce, water scarcity does not translate to hostilities, violence and interstate wars?

There are a number of possible explanations for this. First of all, wars are expensive and resource wars rarely achieve their goals. The First Gulf War is a very good example of why resource conflict is unlikely to erupt in the near future. Saddam Hussein's invasion of Kuwait cost approximately $100 billion, and he was not able to secure the Kuwait oil production of 1.5 million barrels a day. In fact, this risky move eventually cost him his regime and his head. In comparison, on the stock market Exxon paid $80 billion to secure Mobil's 1.7 million oil-barrels

[60] Postel and Wolf, 'Dehydrating conflict', 7.
[61] David G. Victor, 'What Resource Wars', *The National Interest* (November/December 2007) 48-53, 52.
[62] Uitto and Wolf, 'Water Wars', 289.
[63] Postel and Wolf, 'Dehydrating conflict', 2.
[64] Uitto and Wolf, 'Water Wars', 291.

a day, a merger which was very successful. Trade offers a much cheaper and more reliable way of attaining resources than war.[65] In chapter 1 I have argued that water is not a normal resource which can be traded as easily as oil. But still economic viable options besides war are available to nations. War is very expensive and as long as states have cheaper options for attaining water they will not go to war over water. Water is simply not valuable enough. To cite an Israeli mayor-general responsible for military strategy during the 1967 and 1982 wars: "*For the price of one week of fighting, you could build five desalination plants. No loss of life, no international pressure, and a reliable supply you don't have to defend in hostile territory".*[66]

This critique of the Water Wars theory is based on the Cornucopian model which beliefs that the free market will eventually relieve scarcity.[67] As water becomes more scarce, prices will increase, which will lower demand and prolong depletion of the resource. In the meantime technological innovations can help relieve water scarcity pressures.[68] Part of this theory is supported by the water saving options still available in the world. At this moment, water saving options are not always the politically and financially viable solution for a country. However as water scarcity will put more pressure on the water resources of nations, these investments might prove more feasible in the future. Rising oil prices made deep sea drillings for oil an economically viable investment. In the past the technically complicated off shore oil platforms where too expensive to operate, but rising oil prices made these oil platforms, despite of high cost, profitable. The same mechanism might occur with water saving options.

The second critique of Water Wars is based on political realism. Nations only go to war if there is a likeliness that they will win and if the proceeds of victory are high. Otherwise the risks of going to war are greater than the eventual benefits. Kevin Freeman, a professor in the study of government and public services, offers a simple matrix based on the research (1984) by Naff and Matson about water and cooperation/conflict in the Middle East.[69] The matrix (see table 1) shows the likeliness of nations going into conflict over water of the Euphrates River. The matrix

[65] David G. Victor, 'Smoke and Mirrors', *The National Interest* (Jan/Feb 2008) 34-36, 34-35.
[66] Wolf, *Hydropolitics,* 76.
[67] Travis Sharp, 'Resource conflict in the Twenty-First Century', *Peace review: A journal of social justice* 19:3 (2007) 323-330, 324.
[68] Sharp, 'Resource conflict', 324.
[69] Freeman, 'Water Wars?', 135-136.

shows three criteria for water related conflict, 1) state interest and issues in the watershed, 2) riparian position, and 3) external and internal power. He applies a weight to the criteria with 1 being weak and 5 being strong. Conflict potential is high when the sum of the criteria is roughly equal.[70]

Table 1: The Kevin Freeman model for conflict in the Euphrates River Basin[71]

State	Interest	Position	Power	Total
Turkey	4	5	5	14
Syria	4	3	2	9
Iraq	4	1	2	7

Because Turkey is militarily so much stronger than the other states and Syria is stronger than Iraq the chance of conflict over water erupting in the Euphrates River basin is unlikely. The fact that in most shared water resources one of the shareholders is a much stronger political and military power reduces the probability of military conflict over water. Power politics deters the likeliness of conflict over shared water resources.[72]

Finally, a large amount of the discourse over water management between nations is focused on how shared water resources more often stimulated negotiations and cooperation instead of leading to conflict. Despite tremendous tension, nations who have been at war with one another have stayed at the negotiation table when water was concerned. So Indians and Pakistani, Arabs and Israeli and Azeris and Armenians have negotiated water treaties while being political and military enemies.[73] According to Wolf et al, the acts of cooperation outnumber the acts of violence over shared water resources. Politicians seem to use fiery rhetoric when water is concerned, but rarely use violence. The harsh words are more often aimed at their own constituencies than towards the enemy.[74] Different scientific studies advocate unitary basin-wide agreements under the guidance of international institutions as the

[70] Freeman, 'Water Wars?', 135-136.
[71] Freeman, 'Water Wars?', 135-136.
[72] Drake, 'Water resources', 11.
[73] Uitto and Wolf, 'Water Wars?', 289-290.
[74] Wolf, et al, 'Water can be', 1-3.

best way of preventing interstate violence.[75] But the cost of war in combination with the difference in strength between nations often already seems to prevent the outbreak of armed conflict, so cooperation and international negotiations are not even necessary to prevent conflict over water. Water is just not valuable and not hard enough to attain to be a reason for war between states. States still have many alternatives of obtaining water before reverting to warfare and this prevents water tension from becoming water war.

That said about water war between states, water scarcity *within* states is also often named as a reason for armed conflict or violent protests. Although often not the root cause of conflict, water seems to lead to conflict within states as protest erupts over the over tapping of water resources. Water has been named a contributing reason for the internal conflicts in Rwanda, China, Sudan and Karachi.[76] But the systems and methods of scholars studying Water Wars is often inexplicit. The overall argument seems to be that Water Wars will occur because water is becoming a scarcer commodity. How scholars reach this conclusion and based on which cases is often unclear. There does not seem to be a lot of proof for the Water Wars theory except that it does sound logical that scarcity will lead to conflict. But the overall evidence for Water Wars is very thin. Because Resource Curse does offer tools to study internal resource conflicts, the next paragraph deals with this topic. With the tools Resource Curse theory provides, hopefully we will be able to look into local water conflicts and see if water is a contributing factor or even the driver of conflicts.

2.3 Resource Curse

Armed conflict in the post-Cold War period is increasingly characterized by a specific political ecology closely linked to the geography and political economy of natural resources.[77]

[75] Lowi, 'Rivers of conflict', 123-144. Zawahri, 'International rivers', 280-289. Wolf et al, 'Water can be', 1-6. Uitto and Wolf, 'Water Wars?', 289-292. Meredith Giordano, Mark Giordano and Aaron Wolf, 'The geography of water conflict and Cooperation: Internal Pressures and International Manifestations', *The Geographical Journal* 168:4 (December 2002) 293-312.
[76] Postel and Wolf, 'Dehydrating conflict', 2-4.
[77] Le Billon, 'The political ecology', 561.

Various economic studies indicate a correlation between being rich in mineral resources and having low economic growth rates. [78] The first renowned publication on the so-called Resource Curse was authored by economists Jeffrey Sachs and Andrew Warner in 1995.[79] Sachs and Warner showed that economies with a high ratio of natural resource exports to GDP in 1971 (the base year) tended to have low growth rates during the subsequent period 1971-89.[80] According to Sachs and Warner, these negative growth rates came forth from Dutch Disease effect; high percentages of mineral resources in exports harm the rate of exchange of the local currency, and this high exchange rate harms the local industrial sector.[81]

After this path-breaking publication, more research into the effects of resources on the economy has been done. Historians, economists, econometricians and social scientist have all since then published extensively on the effects of resources on economic growth rates.[82] Even if studies take different factors into account, still the effect of natural resources on economic growth is proven to be negative. But there is no scholarly consensus about causes. Why do countries that are rich in mineral resources have a smaller economic growth rate than countries that do not have these mineral resources at their disposal?[83] Various factors are blamed for the bad economic performance of mineral rich countries. Bad institutions, rent seeking by elites, Dutch Disease, economic instability (originated in the dependence on an export commodity), unproductive investments done by the governments to satisfy the population whilst keeping state power in the hands of a lucky few, lootability of the natural resources and decreased productivity of the population are just a few of the explanations used.[84] For my thesis, the part of the Resource Curse theory that is about how resources will lead to conflict is most relevant.

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[78] Raymond F. Mikesell, 'Explaining the Resource Curse, with special reference to mineral exporting countries', *Resource Policy* 23:4 (1997) 191-199, 191.

[79] Ivar Kolstad and Arne Wiig 'It's the rents stupid! The political economy of the Resource Curse', *Energy Policy* 37 (2009) 5317-5325, 5317.

[80] Sachs and Warner, 'Natural resource abundance', 1-54.

[81] Xavier Sala-i-Martin en Arvind Subramanian, 'Adressing the Natural resource Curse: an Illustration from Nigeria', *IMF working paper WP/03/139* (May 2003) 1-46, 5-6.

[82] Mohsen Mehrara, 'Reconsidering the resource curse in oil-exporting countries', *Energy Policy* 37 (2009) 1165-1169, 1165.

[83] Regnar Torvik, 'Why do some resource-abundant countries succeed while others do not?', *Oxford review of economic policy* 25:2 (2009) 241-256, 244.

[84] Torvik, 'Why'. Mehrara, 'Reconsidering. Sala-i-Martin and Subramanian, 'Adressing'. Kolstad and Wiig 'It's the rents'. Hanne Fjelde, 'Buying peace? Oil wealth, Corruption and Civil war, 1985-1999', *Journal of peace research* 46 (2009) 199-217. Mikesell, 'Explaining'.

As conflict has a negative outcome on economic performance, it can be a cause for the Resource Curse. Before investigating the effect in the cases of water resources on conflict, it is relevant to look at how resources are connected to conflict.

2.4 Resources and Conflict

"Economically, if it is scarcity that creates value, it is abundance that creates wealth"[85]

According to political scientist Travis Sharp, resource scarcity stems from the social and political condition of inequality and injustice that humankind has created and perpetuated in its struggle for power and dominance globally and within states.[86] In other words, natural resources are unevenly distributed across the globe. To gain or maintain access to resource for a specific group, humans create and maintain systems to gain access to resources. These systems humans have created result in economic inequality. This inequality in resource access leads to resource scarcity among nations or within countries between different societal groups. But does this resource inequality cause tension and conflict? The availability in nature of any resource is not in itself an indicator of conflict. Rather the value people attribute to the need of a resource makes the possession of a resource an indicator for resource conflict.[87] Resource conflicts happen because people and nations start fighting each other to secure access to resources. The more scarce and valuable the resource, the more bitter the fighting to gain, regain or maintain access to that resource.[88] According to the political-economists John Maxwell and Rafael Reuveny resource scarcity needs to be combined with economic decline, population migration, weak political institution, the erosion of confidence in the government or an already political unstable situation to be able to lead to resource conflict.[89] For example the natural resource scarcity in El Salvador caused migration to Honduras which created tension whis eventually led

[85] Le Billon, 'The political ecology', 565.
[86] Sharp, 'Resource conflict', 324-325.
[87] Le Billon, 'The political ecology', 563-564.
[88] Ibidem, 564.
[89] John W. Maxwell and Rafael Reuveny, 'Resource Scarcity and Conflict in Developing Countries', *Journal of Peace Research* 37:3 (May 2000) 301-322, 303.

to the 1969 Soccer War.[90] The more apparent cause of the conflict was the cultural and economic strains which were caused by the migration of a large portion of the El Salvadorian population. But without the resource scarcity in El Salvador these people would not have migrated in the first place. Resource scarcity was the root cause and combined with one of the trigger factors this led to resource conflict.

Resource scarcity can lead to conflicts but resource abundance can also lead to conflicts. Within society the access of one social group to abundant resources can cause friction. The unequal distribution of resources between social groups leads to a gap in society between people who do have access to resource income and people who do not, this can cause friction.

Wars over resources happen frequently because primary commodities are easily and heavily taxable, and are therefore attractive to both the ruling elites and their competitors. The availability of resources represents the prize of winning the state or territorial control. The higher the prize gained by winning the state, the greater the risk of greed-driven conflicts. For example, an elite having control over the oil industry of a country not only enables the elite to extract an income from that oil sector, but also creates tension between the elite and other groups in society who also want to have access to that resource income. If rebels gain control over part of the oil industry, that does not only provide them with an income, it also offers them the money to purchase military equipment. New military equipment enables the rebels to fight the elite further, thus enabling the escalation of the conflict.[91] Economists Collier and Hoeffler show that resource abundance escalates conflicts. According to them, the financing for a conflict is easier when the loaner believes he or she will receive a profit when the fighting ends. As the prize for the winner is greater than in resource poor nations, gaining financing for and persisting in your rebellion is easier. Because of these mechanisms resource abundance can cause conflict. The resource rents or loot that can be extracted from resources is therefore an important cause for conflict.[92] But resource income does not only provide a reason to start fighting in undemocratic nations, it also provides a reason to start fighting in democratic ones.[93]

[90] Maxwell and Reuveny, 'Resource Scarcity', 303.
[91] Le Billon, 'The political ecology', 564.
[92] Collier and Hoeffler, 'Greed and grievance', 663-695.
[93] Silje Aslaksen and Ragnar Torvik, 'The theory of civil conflict and democracy in rentier states', *Scandinavian Journal of Economics* 108 (2006) 571-581.

Economists Silje Aslaksen and Ragnar Torvik show that a high prize value of the state actually leads to conflict. This effect occurs because when you get to power by using force, you are not accountable to voters, which makes it easier to extract the resource rents. The great prize of winning conflicts in resource rich nations makes it more likely that people who want to get to power use force instead of democratic processes.[94]

Resource abundance or resource scarcity within a nation heightens the likeliness of resource conflict. Research into the subject of resources and civil war resulted in the following causes for resource conflict: greed and grievance.[95] Natural resources can have two different ways of generating greed and grievance. First, there are results that have an effect on rebels and other people in the state. Second, there are effects that are influencing the state itself. How the state or its inhabitants are influenced by natural resources results in different sorts of grievances or greed.[96]

Greed can be a reason for resource conflict for three different reasons. First, domestic groups may use quasi-criminal activities to benefit from resource income independent from the state. Sierra Leone is a good example. Here rebel groups created illegal diamond extraction areas, which they shielded from the state and protected with force.[97] This method of resource greed is also known as spoil politics, where the economy shows a shift from normal economic activity to illicit but profitable economic activities (drug trafficking, money laundering) and downright plunder of available resources.[98] Second, having control of the government provides more income than in resource poor nations. This leads to the second form of resource greed, capturing the state. In Chad, oil reserves led to violent coups, sanctioned by military men trying to grab control over the state. It should be noted that the first method shields the state off from certain areas of its territory, and therefore leads to the weakening of the state. The second method however is focused on capturing the state so a maximum of income can be

[94] Silje Aslaksen, 'Oil and Democracy, more than a cross-country correlation?', *Journal of Peace Research Onlinefirst* 47:4. May 2010. http://jpr.sagepub.com/content/early/2010/05/27/0022343310368348.abstract (October 2011).
[95] Brunschweiler and Bulte, 'Natural resources' 651-674.
[96] Päivi Lujala, 'The spoils of nature: Armed conflict and rebel access to natural resources', *Journal of Peace Research* 47 (2010) 15-28, 16.
[97] Macarten Humphreys, 'Natural Resources, Conflict and Conflict Resolution: uncovering the mechanism', *The Journal of Conflict Resolution* 49:4 (August 2005) 508-537, 511.
[98] Le Billon, 'The political ecology', 569.

extracted from the resources. The coup plotters or rebels want to use the state because it has the best extraction mechanism available to a greedy group wanting to provide a maximum of resource income to its members.[99] So the coup that killed president Tombalbaye of Chad in 1975 was organized in such a way that the new president and his supporters could reap the benefits of the Chadian oil fields in the south.[100]

Third, natural resources might lead a region to believe it will be better off without the country it originally belongs to. This can lead to secessionist rebel groups which try to split the state into multiple new states. Most often this is the case with a resources rich region which is trying to achieve secession from a resource poor region. Like Aceh, an oil rich region in Indonesia which for years had a very active rebel militia trying to achieve independence.[101] Resources provide rebels with a cause and a prospect for the future. They fight because they believe that if they win there will be more resource income for them and their supporters.

When resource greed leads to conflict it can be very difficult for a nation to return to normal economic circumstances. The whole economy can be corrupted by criminal acts and illicit economic activities by rebels, governments and elites. Bad governance becomes a symptom of states faced with greedy rebels and governments. In its most extreme form peace treaties cannot be enforced by leaders, because followers and subordinates are more influenced by their personal economic gains.[102] People choose to fight if it pays better than their alternative sources of income.[103] This is the reason why greed and conflict can be connected to resource scarcity. Resource scarcity increases the financial and political demands on a government dealing with the distribution of the scarce resource.[104] If a resource becomes scarcer this leads to tensions, especially if there is an elite group which is dependent on the extraction of the income generated by this resource. A widening gap between the state capacity to provide its subjects with the income they demand and the income the state can make available, leads to tension. This tension can become conflict if the state has few other grounds for legitimacy

[99] Humphreys, 'Natural Resources', 508-511.
[100] Humphreys, 'Natural Resources', 509.
[101] Humphreys, 'Natural Resources', 511.
[102] Le Billon, 'The political ecology', 578.
[103] Lujala, 'The spoils of nature', 16-17.
[104] Thomas F. Homer-Dixon, 'Enviromental scarcity and violent conflict: evidence from cases', *International Security* 19:1 (Summer 1994) 5-40, 26.

except the distribution of income derived from resources.[105] The Arab Spring is a good example of how resource scarcity can lead to conflict. Rising food prices and growing populations can cause undemocratic governments to fall. Governments ruled by autocrats like Zine al-Abidine Ben Ali and Muammar Ghadaffi, are foremost founded on the oil wealth they distribute to the population and especially their own ruling elite and social class. The harsh economic climate made the regimes unattractive to other parts of the population.[106] Faced with a government based only on distribution of oil wealth to its own societal group other societal groups started to revolt because they were lacking in income caused by rising food prices. An unfair distribution of resource income combined with harsh economic conditions led to conflict. Resource conflict only happens if scarcity leads to economic stress which is severe, persistent and pervasive enough to erode the legitimacy or moral authority of the government and/or dominant social order.[107] The legitimacy of the state is interconnected with the chances of civil unrest. The power balance and legitimacy of a government might be disrupted by growing scarcity. Domestic groups pursue their interests by pressuring the government to adopt favorable policies and politicians seek power by constructing coalitions among those groups. Scarcity might force the politicians to favor one group over another group and thereby creating civil unrest.[108] Especially the marginalization in society of a powerless group by elites can lead to conflict.[109] The powerless group has no other option than violence because otherwise the elite will redistribute the resources to the disadvantage of the powerless group. The level at which the powerless group in society reverts to violence depends on how much the elite is undermining its own power and authority. The extent to which the greed of the elite is harming the other groups in society translates to how deep the grievances of the powerless group become.[110] In the eyes of the marginalized, the greed leads to a perceived economic injustice. A widening gap between the level (of income, scarce resources or other commodity) the

[105] Homer-Dixon, 'Enviromental scarcity', 25.
[106] Brian Whitaker, 'The Arab Spring is brighter than ever', *The Guardian.* 14 March 2011. http://www.guardian.co.uk/commentisfree/2011/mar/14/arab-spring-protest-crackdown-freedom (September 2011).
[107] Homer-Dixon, 'Enviromental scarcity', 26.
[108] Shlomi Dinar, 'Water, security, conflict and cooperation', *SAIS Review* 33:2 (Summer/Fall 2002) 229-253, 245.
[109] Brunschweiler and Bulte, 'Natural resources', 652-674.
[110] Pal Tamas, 'Water resource scarcity and conflict: review of applicable indicators and systems of reference', *Unesco/IHP/WWAP, Technical documents in hydrology, PCCP series,* 21 (2003) 1-24, 4.

marginalized believe they deserve and the level they actually receive reaches a point in which dissatisfaction leads to conflict.[111]

The point above also proves the difficulty in discerning between the different reasons for resource conflict. The above noted situation is listed as elite greed. Where an elite is trying to capture a scarce resource. But this resource conflict might also be considered part of the grievance mechanism of resource conflict, because marginalized groups in society feel that conflict is the only option left to them to prevent loss of a vital resource. Next to greed, grievance is the other mechanism at work when considering resource conflict. The grievance mechanism is based on political and economic inequality; but this mechanism can work in different ways.[112]

First, resources might create transitory inequality. A change in the amount of resources in a society leads to a new distribution of resource income. The effect of this new resource distribution on society might be considered unfair, especially if a group in society is facing the negative effects of the resource and is not profiting from the positive effects.[113] For example, after oil was found in Saudi-Arabia, the manufacturing sector of the country faced severe terms of trade shocks and their competitiveness on the world market was harmed by the strong local currency. But the manufacturers were not the group in society which was reaping the benefits of the oil dollars. The oil dollars were spent on luxury import products by the elite controlling the state. This resulted in impoverishment and grievances of the handicrafters. They did not consider oil a positive change for the country, because they only faced the negative consequences without profiting from the benefits.[114] This dichotomy in the distribution of profit and loss can lead to tensions in society, especially if the dichotomy is considered unjust.

Second, the process of resource extraction might cause grievances because of forced migration, environmental damage and loss of land rights. The devastating impact of the Papua New Guinea copper mine on the environment is considered one of the root causes for the rebel activity in the region. [115] If you pollute the land that is the source of income for the population

[111] Homer-Dixon, 'Enviromental scarcity', 26.
[112] Päivi Lujala, 'The spoils of nature', 16.
[113] Humphreys, 'Natural Resources', 511.
[114] Raymond Knauerhase, *The Saudi-Arabian economy* (New York 1975) 230-250.
[115] Humphreys, 'Natural Resources', 511-512.

and democratic processes do not offer an outlet for resentment, then you leave people no other means to express their grievance than through conflict.[116]

Third, the terms of trade shocks apparent in states which are highly dependent on natural resources, creates economic vulnerability and great economic fluctuations. These economic shocks can create civil unrest as people see their livelihood threatened.[117] The dramatic collapse on the world market of the price of coffee, and the devastating economic consequences for countries totally dependent on this commodity resulted in tensions within states.[118]

And finally, natural resource wealth distribution differences are considered less just than other economical differences in society. Income differences caused by the job or intelligence level somebody possesses are considered fair. Gaining income from resources causes wealth differences which are not based on personal capacity and are therefore considered less just. The conflict over uranium in Niger is a good example of this; the insurgent groups from the north not only claim that the political center in the south is not investing enough in the north but also that the south is economically relying heavily on the uranium wealth of the north.[119]

Next to the resources greed and grievances mechanism a few other observations about resources and conflict have been made in the academic literature. One of these is that resources which lead to conflict do not have to be mineral resources. Even though agricultural commodities only generate modest rents, they still generate a significant risk for conflict.[120] This effect of resources and conflict is surprising as a large part of the literature focuses on how conflict results from the probability of loot extracted from resource income. Looting in this context means that the resource income is not used for public investments but used for personal gains.[121] As the income from water is mostly generated by agricultural produce this

[116] Humphreys, 'Natural Resources', 511-512.
[117] Humphreys, 'Natural Resources', 511-512.
[118] Andy Storey, 'Economics and Ethnic Conflict: Structural Adjustment in Rwanda', *Development Policy Review* 17:1 (March 1999) (pagina's) 43-64.
[119] Humphreys, 'Natural Resources', 511-512.
[120] Paul Collier and Anke Hoeffler, 'Resource Rents, Governance and Conflict', *Journal of Conflict Resolution* 49 (2005) 625-633, 628.
[121] Collier and Hoeffler, 'Resource Rents', 630.

fact is very relevant for the question if water can lead to conflict. This link is also applicable for land scarcity.

The literature on resource scarcity conflict faces the same problem as Water Wars; resource conflicts only happen if there are multiple other factors besides resource scarcity/abundance contributing to the conflict. Energy policy expert David Victor argues in his article "What resource wars" that resource at best have mixed and indirect effect on conflict. According to the author the real problem is that resources can undermine the democratic transitions taking place within countries and conflict arises when societies fail to organize their economies around investments and productivity.[122] This is in accordance with the findings of economists Brunschweiler and Bulte that resources can only be a reason for small scale conflict and not for full blown war.[123] It all comes down to the discussion: what is the root cause of a conflict? As political scientist Homer-Dixon points out; resource scarcity in a society might emphasize the impact of already existing vulnerabilities, including its ethnic cleavages and skewed distribution of land, wealth and power.[124] Victor believes that resource wars are not a realistic threat to humanity, or the real cause of conflict.[125] So can the real cause of conflict originated in greed or grievance caused by water scarcity? Or do other factors contribute more and is water only a contributing factor of conflict? Defense and governance specialists Goodman and Kern argue that the fact that resource wars have not happened often in the past does not mean they cannot happen in the future.[126] Can water really be a cause for conflict? The next paragraph explains how I want to link Water Wars with resource conflict.

2.5 Water resources and internal conflict

In the first chapter I noted how fresh water is becoming scarcer, has a limited supply in the world and is an unusual economic commodity because it has such a large emotional and political value. In my second chapter I explained how Water War theory states that water

[122] Victor, 'What Resource Wars', 52.
[123] Brunschweiler and Bulte, 'Natural resources', 651-674.
[124] Thomas F. Homer-Dixon, 'Straw man in the wind', *The National Interest* (Jan/Feb 2008) 26-28, 26.
[125] Victor, 'What Resource Wars', 52.
[126] Sherri W. Goodman and Paul J. Kern, 'Bad Tidings' *The National Interest* (Jan/Feb 2008) 31-33, 33.

scarcity can lead to water conflict. But I also highlight the fact that the theoretical foundation of Water War theory is questionable. It seems if politicians use Water War as a way to shake up debates but do not actually stand their ground when the discussion on water becomes heated. And scholars do not find convincing evidence for the theory.

In the previous paragraph I looked into how resources are related to conflict. Here the systems behind resource driven conflicts and the methods and explanations used in the academic discourse are elaborated on. Furthermore I showed the different greed and grievance driven reasons for resource conflict. These systems will be used to test the hypothesis that water scarcity is an important driver in the conflict cases.

After providing the reader with the necessary background on the context of water and the theoretical framework of my thesis I formulate my hypothesis about water scarcity and water conflict within states. My thesis combines two main elements from Water Wars and Resource Curse. First, from Water Wars the claim that water scarcity will eventually lead to conflict. Second, from Resource Curse Thesis, the notion that grievances, caused by greedy resource income seeking elites will lead to conflict. Combining these theories leads to the following hypothesis:

Water can lead to internal conflicts within states when elites try to divert the scarce water to the most easily lootable production method.

The background of the hypothesis is the following. Countries are facing water distribution decisions as water is becoming more scarce. The state is based on a coalition of different groups in society. And to secure itself of the base it needs for survival, the state has to provide certain interest groups with the income they demand. If water becomes scarce, the state makes distribution decisions based on which elite groups are supportive of the state. As water resources become scarce, greed for the water will lead groups to try and attain as much of it as possible, herewith providing for their own income. As marginalized groups in society are faced with elites diverting the water, transitory tension within society arises. I expect that farmers are especially vulnerable to water diversions. For farmers, irrigation water is of vital importance for their economic survival. Farmers rarely belong to the ruling elite of a nation and are therefore

easily marginalized within society. So farmers are faced with growing water scarcity, which will lead to a negative revaluation of their land and income. If water is diverted away from agricultural use the output of the fields will decline, and so will the income of farmers. The damaged agricultural output leads to transitory tension, this tension leads to grievances as one group in society is profiting from the new distribution, while the other faces only negative consequences. If these grievances have no other outlet, this leads to conflict. When the state is not receptive to the complaints of the marginalized farmers, no other option is left open to these farmers than conflict. In this way water scarcity can lead to conflict.

The erosion of confidence in the government and weak institutions of the government are necessary criteria for this hypothesis. Because the government needs to be receptive to the pressures from an elite and the marginalized farmers need to have no other option than conflict to resolve the grievance they feel towards the government or elite.

Anthropologist Mary Douglas has made a group/grid theory about how water connects to power and control in society.

Tabel 2: The Douglas grid theory [127]

2.1 Inspiration of the players

No-Control	Fatalists	Hierarchists	**Control**
	Individualists/ Entrepreneurs	Ethicists/ Egalitarians	

= Important alignment

2.2 Description of the players

No-Control	The mass of the governed, civil society	Secular & religious institutions to regulate affairs (Government)	**Control**
	Industrial, commercial & trading interests (Private sector)	Reformers inspired by egalitarian and environmental principles (non-government)	

First, there are individuals, and political and bureaucratic elites which can exert influence on affairs by holding high positions in political hierarchies. These are the hierarchists of power, in

[127] Theory Mary Douglas consulted in: Allen, *The Middle East water question*, 317-319. The main publication of Mary Douglas is: Mary Douglas, *How institutions think,* (New York 1986).

positions in government departments, in religious bodies or in other institutions that regulate and provide public services. Second, there was the mass of the people who were fatalists, because their only role is to respond to the other three actors in society. Third, she identified individualists or entrepreneurs, who seek opportunities to use and combine resources to provide goods and services. And finally there were the egalitarians or ethicists who are inspired by principles of equity and environmental and economic principles.[128]

The Douglas grid can clarify my hypothesis in a simple way. The alignment between the hierarchists and the individualists/entrepreneurs explains why the fatalists resort to violence to express grieve. The actions by the hierarchists can lead to conflict over scarce water resources in the following circumstances. The hierarchists are the ones in power, but the base of their power lies in support from the individualists/entrepreneurs. To make sure their base of support stays happy and to make sure this group keeps supporting the hierarchists, decisions have to be made which please the individualists/entrepreneurs. If a change in the base situation leads to scarcity, redistribution decision have to take into account how the hierarchists try to keep their base of power intact. In practice the scarce fresh water resources will be used by the hierarchists in a way which pleases the individualists/entrepreneurs the most. The fatalists are the victims of the new redistribution of available fresh water resources. The fatalists are without power and the hierarchists feel that support from the fatalist is not necessary to keep them in power. To try and influence the decisions of the hierarchists and to achieve control, the fatalist resorts to violence. For this group, violence is the only way to receive attention from the people in control. They hope that this negative attention leads to a reconsideration of the water distribution decision.

Water historians Coopey and Tvedt offer a good example of how this system of disempowerment might work. In South Africa during apartheid, water distribution reinforced the existing racially based political power structure. White farmer settlers had a big water advantage over rural black Africans. The water distribution was based on the fact that the power of the government was based on the white farmers supporting apartheid. Blacks had no

[128] Allen, *The Middle East water question*, 317-319.

legal way to influence the policy of the South African government.[129] According to my hypothesis a change in distribution might have caused the rural black farmers to see no other option to express their grievances than conflict.

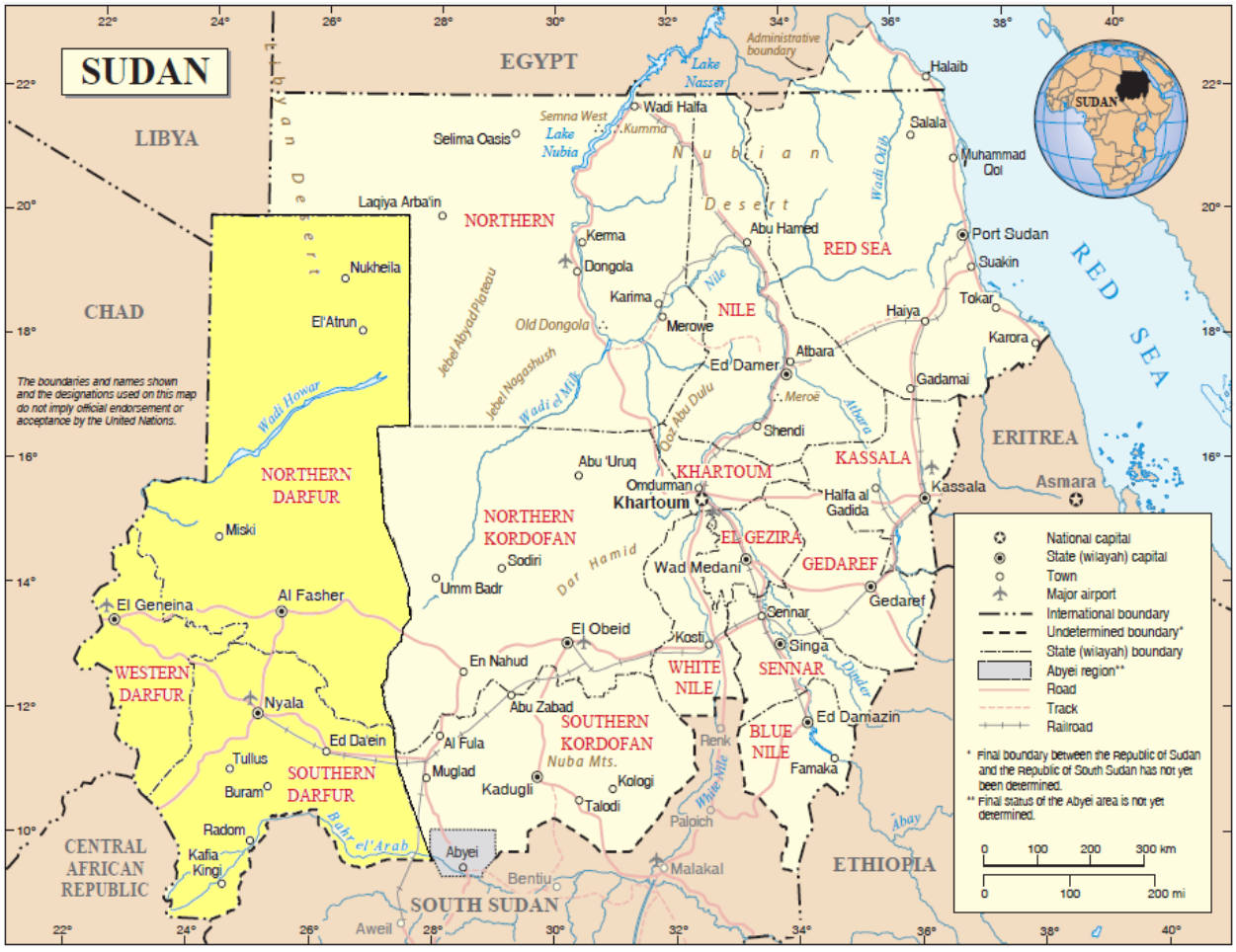
In chapter three and four I will explain if my hypothesis is correct for the Darfur and Chinese conflicts. Next to testing my hypothesis I will also explain if water scarcity caused these conflicts. At the end of my thesis I will conclude if water scarcity can lead to internal conflicts and if the framework of the Resource Curse thesis offers the tools required for studying water conflicts.

[129] Coopey and Tvedt, 'Water as a unique commodity', xxii-xxv.

3. Case study 1: Water and conflict in Darfur

"There is a very strong link between land degradation, desertification and conflict in Darfur. Northern Darfur—where exponential population growth and related environmental stress have created the conditions for conflicts to be triggered and sustained by political, tribal or ethnic differences—can be considered a tragic example of the social breakdown that can result from ecological collapse." (UN Secretary General Ban Ki-Moon)[130]

Map 1: Sudan



Source: Adapted from: The United Nation Cartographic section, 'Sudan, map: 4458' (September 2011).

[130] Ban Ki-Moon cited in: Alex de Waal, 'Is climate change the culprit for Darfur?', *Boston Review.* October/November 2004. http://africanarguments.org/2007/06/25/is-climate-change-the-culprit-for-darfur/ (June 2011)

3.1 Introduction

When asked about the fate of the surrounding Arab villages, he replied, "The people who were in the villages around us were the ones who were killing us, so how can they kill themselves?" (Eyewitness account of the attackers of his village)[131]

In 2003 large groups of sedentary Nomadic Darfurians cooperated with the central Sudanese government to attack farmer communities in Darfur. Villages were bombed by airplanes of the government in Khartoum before the attackers riding on horses, camels or pick-up trucks armed with machine guns arrived. The attackers killed, raped, plundered and set fire. In 2004 the second wave of attacks began. Various estimates put the death toll of the outburst of violence in 2003-2004 and the ensuing drought, famine and destitution, at between 100.000-400.000 victims.[132] 2,7 million Darfurians currently reside in harsh conditions in refugee camps in Darfur and Chad. Although the outburst of violence in Darfur must be considered multi-causal, this chapter examines the role water played in this tragedy. In chapter two I gave five reasons how resource scarcity can lead to conflict: economic decline, population migration, weak political institution, erosion of confidence in the government or/and an already politically unstable region.[133] In this chapter I explain how resource scarcity led to conflict in Darfur and if water was the scarce resource which caused the conflict. I use the greed and grievances mechanism to describe the actions taken by the different actors in Sudanese and Darfurian society. In the first paragraph the historic background of the Darfur conflict is covered. In the second paragraph I discuss how the Darfur conflict escalated into the mass violence of 2003. Finally, I conclude what role water scarcity had in the Darfur conflict.

[131] Eyewitness cited in: John Hagan and Wenona Rymond-Richmond, *Darfur and the crime of genocide* (New York 2009) 132.
[132] Tim Allen, 'Is 'Genocide" such a good idea?', *The British Journal of Sociology* 62:1 (2011) 26-36, 26-30.
[133] Maxwell and Reuveny, 'Resource Scarcity', 303.

3.2 Background of the Darfur conflict

Sudan is the former largest country in Africa (until the secession of Southern Sudan in 2011) and Darfur is the western region of the country.[134] A Dar was the name the English gave to the homeland of an ethnic group, the name Darfur therefore means the homeland of the Fur.[135] Darfur is about the size of France and is divided in three parts: North-, West- and South-Darfur. As the provinces compromise a large territory there are different climatic conditions depending on the region. While the south of Darfur is a rich savanna where a relatively large amount of rain falls, the northern part of North-Darfur is a desert. Between north and south the climate slowly changes from desert to savanna. Darfur is the only region in Sudan which does not border the Nile. Water access in Darfur is essential for economic survival as most people are pastoralists or farmers.

Although the Fur were the largest ethnic group in Darfur (2 million people) they have never comprised a majority of the Darfurian people. Darfur is a region with very distinct ethnic groups with their own tradition and culture, but the ethnic boundaries were never impermeable. For example, a successful Fur farmer could invest his profit in cattle, and if his herd grew it could have been more profitable for him to become a cattle-nomad. To become a nomad he would have to cross the ethnic frontier. With the right cultural adaptations and marriages his descendants would have become part of the Baqqara ethnic tribe within a few generations.[136] Ethnic boundaries in Darfur are not solid and permanent, they are intermittent and flexible. So even though the Darfur conflict is highly racialized; the differences between the ethnic groups in Darfur are more based on culture and the way of living than grounded in religion or race. Even so in newspapers and other journalistic publications the distinction between Arabs and Africans is considered one of the root causes for the conflict.[137]

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[134] Stephan P. Reyna, 'The disaster of war in Darfur, 1950-2004', *Third World Quarterly* 31:8 (2010) 1297-1320, 1298.
[135] Reyna, 'The disaster', 1298-1299.
[136] Rex S. O'Fahey, 'Conflict in Darfur, Historical and contemporary perspectives', *University for Peace, Environmental degradation as a cause of conflict in Darfur, conference proceedings Khartoum* (December 2004) 23-32, 29.
[137] Rex S. O'Fahey, 'Review Article: *Umm Kwakiyya* or the damnation of Darfur', *African Affairs* 106:425 (2007) 709-717, 711-714.

Map 2: Ethnic tribes in Darfur

Source: Micheal S. Miller for Human Rights Watch, 'Map of Darfur, Sudan: Ethnic Groups', (2004).

Darfur is very dry, but still people have always been able to survive and extract an economic surplus from harsh environmental conditions. But during the last fifty years this started to change. First, Darfur has faced an exponential population growth. In 1956 Darfur had a population of 1.08 million people, or a person/km² ratio of 3. In 2003, before the violence erupted, Darfur had an estimated population of 6.48 million, or a person/Km² ratio of 18. This sixfold increase of the population had its consequences on resources; demand for food,

livestock and water increased in accord with the rise in population.[138] Farmland had to be used more intensely to provide enough food for the community. This greater agricultural intensity led farmers to abandon practices which enabled them to restore soil quality. The resulting deforestation and shortened fallow periods, eventually led to declining crop yields.[139] The increased agricultural intensity led to soil depletion this combined with droughts affecting the area led to desertification, were soil turns to desert and becomes unsuitable for cultivation. The desertification led to even greater reductions in the yields of the agriculture.[140] Environmental scientist Abduljabbar Fadul greatly expounds the effects of this process with an example of crop field yields of a Darfurian farmer in Al-Fashir: In 1960 the farm area of Yaqub Ahmed was 60 mokhamus (5046 square meters) of which he cultivated 12, the yields were 84 sacks of millet (100 kg). Which means a yield of 700 kg per mokhamus. In 1984 Yaqub cultivated his entire plot of 60 mokhamus and the yield was 12 kg per mokhamus. A dramatic drop in output from 700kg to 12kg.[141] The declining crop yields resulted in the first reason for resource scarcity conflict, economic decline. The combination of land and water scarcity caused by a growing population was the origin of this economic decline.

The progressive desertification of the Darfurian soil proved a great threat for Darfurian livelihoods. Not because of the famine that followed the desertification but because of the conflicts between farmers and cattle-nomads which resulted from the greater agricultural intensity. Over the years conflict between nomads and farmers over grazing areas, watering holes and land became more frequent.[142] Land rights in Sudan are not organized as they are in western parts of the world. Possession of land is not personal and it is indefinite. If a household stops using a piece of land, the community leader can reallocate the land to some other household who is deemed to need it more. Similarly, newcomers from other villages can be given land plots if they show a willingness to contribute to the community. Uncultivated land is

[138] Abduljabbar Abdalla Fadul, 'Natural Resources Management for Sustainable Peace in Darfur', *University for Peace Environmental degradation as a cause of conflict in Darfur, conference proceedings Khartoum* (December 2004) 33-46, 34-36.
[139] Hassan Abdalla Al Mangouri, 'Combating desertification: experience from Umm Kaddada District in Eastern Sudan', *University for Peace Environmental degradation as a cause of conflict in Darfur, conference proceedings Khartoum* (December 2004) 47-58, 46-47.
[140] Fadul, 'Natural Resources' 36-37.
[141] Fadul, 'Natural Resources' 36-37.
[142] Mahmoud Mamdani, *Saviors and survivors* (New York 2009) 346-347.

free for anyone to use. This system is called usufructuary land rights. The principle of usufructuary land rights means that the person who uses the land owns the land temporarily. Nomadic tribes in Darfur (Baqqara, Zeeyadiya, Rizeiqat and Bani Halba) are in a very vulnerable position, they do not use the land all year round and therefore they do not have a legal claim to the lands onto which they migrated and let their animals graze. This insecure legal position of the nomadic tribes is in contrast with the position of the farmer tribes (Fur, Masalit and Zaghawa) who use land all year round and settle on the land they cultivate. Pastoralist and Cattle-nomads depend for their livelihoods on the seasonal migration of herd and household to grazing areas.[143] In the usufructuary land system this means that the farmer tribes have legal rights to the land but the nomadic tribes land claims are contestable.

Migration and population growth led to very intense farming in certain, mostly southern, Darfurian regions. Plots of land in Darfur, which were formerly uncultivated, were increasingly used for agriculture.[144] As nomads do not use the lands all year round, they cannot be assured that their grazing areas are not cultivated by farmers the next time they arrive. The growing agricultural intensity thus means a declining availability of pasture and water sources for nomads. Nomadic groups are in great need of areas in which they are assured that next year, when they come back they and their livestock are welcome to water, graze and rest.[145] For the nomads the expansion of agricultural land therefore was a threat to their livelihood.[146] Migratory routes illustrate the dire nomad position; of the eleven traditional migratory routes available and agreed upon in the 1950s only three remained in 2007.[147] Due to the impoverished environmental conditions, farmers needed more land and started to fence off areas which were formerly used for grazing. In the past, migratory routes bordered the fields or were fields of which the crops had been harvested; the nomads could feed their animals of the stalks and crop residue left after harvest. The farmers would accept this practice because of the fertilization of their soil by the cattle and because the transportation and trading options the

[143] P.J. Blackwell, 'East Africa's Pastoralist Emergency: is climate change the straw that breaks the camel's back', *Third World Quaterly* 31:8 (2010) 1321-1338, 1321-1322.
[144] Ola Olsson, 'After Janjaweed? Socioeconomic Impacts of the conflict in Darfur', *The world bank economic review* 24:3 (January 2011) 386-411, 390-391.
[145] Olsson, 'After Janjaweed?' 386-391.
[146] Blackwell, 'East Africa's', 1321.
[147] Mamdani, *Saviors and survivors,* 243-244.

nomads offered.[148] But declining agricultural yields resulted in farmers raising their own cattle as a way of diminishing food shortage. The cattle the farmers raised started feeding off the crop residue and grazing areas formerly used by nomads. The nomadic lifestyle became threatened because of the pasture shortage and nomadic tribes became the most marginalized groups in Darfurian society. Because of this economic pressure on their lifestyle the nomadic tribes were becoming grieved about their economic position. These grievances were caused by the usufructuary land system that did not protect the nomadic land claims. The existing laws were not capable of dealing with the outcome of changing environmental conditions. Weak institutions are a second reason for resource conflict.

The increase in population and the growing demand for natural resources happened at a time when nature was becoming less forgiving. Darfur was struck by severe droughts in the mid-sixties, 1973-1975 and 1982-1984. These droughts not only had famine and human suffering as a consequence. The droughts caused a severe degrade in soil quality especially in northern areas. Former nomadic grazing grounds turned to desert and as a consequence a mass migration from the dry northern areas to the milder south occurred.[149] In the late eighties the southern parts of Darfur were flocked by destitute nomadic tribes searching for land to settle on because the drought in the north had driven them off their homelands. Mamdani estimates that about 384.000 people migrated from North-Darfur to South-Darfur in 1986 alone.[150] In a period of extensive drought and growing population this meant a severe strain on the natural resources of South-Darfur.[151] The water scarcity in the north led to mass migration and growing pressure on an environment which was already hard pressed because of population growth. The expansion of the farmlands in the south made the mass migration problematic; the lands were already taken for agricultural use. There was no land available to sustain the nomadic tribes, and tension between “Arab” nomadic tribes and the Fur farmers grew. The Fur decided they should defend their land against the Arab invasion. Whilst the Arabs believed they had just as much historical rights to the lands of South-Darfur as the Fur farming communities. What

[148] Fadul, ‘Natural Resources’, 39-40.
[149] Reyna, ‘The disaster’, 1306.
[150] Mamdani, *Saviors and survivors,* 348.
[151] Reyna, ‘The disaster’, 1306-1307.

emerged were two uncompromising ideologies, the one Arab-Supremacist and the other Fur-Nativist. Both groups were claiming they had the ultimate right to the land in Darfur and claiming the other group had no reason to live on "their" land.[152] With tensions rising the two groups started to arm themselves. In 1985 the tension and local conflicts exploded in a full blown war.[153] Thousands perished in this conflict until finally in 1989 the region resembled a peaceful state again.[154] What made the Arab-Fur war special was that for the first time large militias rose in the province. The Fur and the Arab nomadic tribes both fully mobilized their people across the whole Darfur region; these ethnic "armies" on both sides contained more than 10.000 fighters.[155] The term Janjaweed[156] was coined in the Arab-Fur war of 1985-1989.[157] Mass migration is the third reason for resource conflict, and the Arab-Fur war was a direct cause of the land scarcity in South-Darfur. The land scarcity in South-Darfur was a direct consequence of the lack of rainfall in North-Darfur. Water scarcity led to the mass migration that led to the Arab-Fur conflict.

Climatic conditions, population growth and a changing economic situation had since the sixties resulted in increasing tension between the nomadic tribes and the farmer communities. These conflicts were difficult to solve because of actions taken by the central government. Darfur has always been ruled through a system of native administration and tribal leadership.[158] When violence erupted among local groups, tribal leaders, whose followers were not part of the conflict, acted as mediators. These mediators had great concern for the protection of life and property and in the fifties this system worked perfectly well for ending conflicts.[159] But after a radical government gained power of Sudan in the seventies it dissolved the native government ruling system. However, the government in Khartoum did not replace the native administration

[152] Mamdani, *Saviors and survivors,* 243-247.
[153] Reyna, 'The disaster', 1307-1309.
[154] Gerard Prunier, *Darfur the ambiguous genocide* (Ithaca 2005) 65-69.
[155] Mamdani, *Saviors and survivors,* 236.
[156] Janjaweed means evil horsemen, and is also the term used for the Arabic nomadic tribes that started attacking the farmer tribes in 2003-2004.
[157] Prunier, *Darfur*, 65.
[158] Alex de Waal, 'Tragedy in Darfur, understanding and ending the horror', *Boston Review Archive.* October/November 2004. http://www.bostonreview.net/BR29.5/dewaal.php (August 2011).
[159] Adam Azzain, 'Indigenous institutions and practices promoting peace and/or mitigating conflicts: The case of Southern Darfur of Western Darfur', *University for Peace, Environmental degradation as a cause of conflict in Darfur, conference proceedings Khartoum* (December 2004) 69-82, 72.

with effective rule of law by the central government.[160] For example, the police lacked fuel, weapons, bullets and a local network so they could not offer safety or justice to the population of Darfur. The only way for Darfurians to settle conflicts remained through their respective local tribal leaders.[161] Therefore justice and violence are not a monopoly controlled by the government. The Khartoum government actually has little influence on the local administration of justice. The tribal leaders kept their respective roles within their communities, but the conflict resolution system between different ethnic groups does not function anymore. This means that since the seventies Darfur lacks an accepted, neutral and effective form of conflict resolution.[162] This means that if conflict occurs between different ethnic groups it becomes very difficult to settle in a non-violent way. The tribal leadership has no legitimacy over other ethnic groups and the central government does not offer an alternative conflict resolution system. The growing tension between pastoralists and farmers and the lack of effective conflict resolution systems shows in the frequency of conflicts between ethnic groups. Between 1932-1969 there were two conflicts which needed resolution about grazing and water rights, between 1970-2000 there were 27.[163] This means that the environmental stress and growing tension resulted in more inter-ethnic conflicts and the Sudanese government fails in offering an effective non-violent way of resolving these problems. Violence offers the only possible way out. A politically unstable situation and weak government institutions are the fourth reason for resource scarcity conflict.

In 1989, a military coup brought Omar al-Bashir and fellow military officers to power in Sudan. The new elite in Khartoum was very focused on its newly gained power and was not prepared to share the political and economic power with other groups in society. The volatile and harsh economic conditions made Darfur an unstable region to govern. The new ruling elite decided that the best way of guaranteeing continued support in Darfur was appealing to historic and cultural bonds between the regime and the nomadic tribes. The leaders, of the regime were of Arabic descent and so were the nomadic tribes of Darfur. As the regime believed that Arabic

[160] Mohamed, 'Indigenous institutions' 73.
[161] de Waal, 'Tragedy in Darfur' 4.
[162] Ahmed Ibrahim Abu Shouk, 'Native administration in Sudan', *video interview for* www.understandingsudan.org. 2006. http://video.google.com/videoplay?docid=-6289834384162004268 (August 2011).
[163] Mamdani, *Saviors and survivors,* 346-347.

superiority would appeal to the nomadic tribes these racial superiority ideas were actively promoted.[164] In Darfur, community confrontations and the hardening of ethnic distinctions was the result. In 1994, the regime decided to divide the former region of Darfur into three new regions, North, West and South Darfur. To make sure Darfur would pose no threat to the new regime, the government made sure that in every region the Fur, the largest ethnic tribe in Darfur, were a minority. Thus marginalizing the Fur political power and grieving the largest ethnic group in Darfur. In 1995 the government started to carve out Dars for some nomadic tribes, who were grieved for their lack of legal rights to land. What could have been considered a reform to protect the marginalized nomadic "Arab" tribes, resulted in enormous grievance and the feeling of being marginalized with the Masalit (farmers/Africans).[165] A feeling not totally unfounded, as they were losing a significant amount of political power and territory formerly designated to them as Dar.[166] In 1996, the government appointed eight "Arab" emirs in West-Darfur, an area with mostly Masalit tribes.[167] Governmental actions further magnified the racial divide in Darfur. For example, in the mid-eighties the government provided arms to the Baqqara (Arab/nomad tribe) of Southern Darfur, so they could defend themselves against attacks of the Southern Sudanese rebels (the SPLA). Amongst raising ethnic tension it was not surprising that the Baqqara started to use the guns the government provided against their farmer neighbors.[168] As a consequence of the spread of racial ideologies, economic hardship and the feeling of marginalization, the Arab-Masalit war (1995-99) broke out. Local conflicts between "Arab" and Masalit farmers eventually led to government military intervention which pacified the conflict but did not solve its root cause.[169]

By appealing to Arabic unity and by putting the rights of nomadic tribes before those of the farmer tribes the government ensured the support of the nomadic tribes. For the Fur, Masalit and Zaghawa this meant that their political and social power was diminished in favor of the

[164] Prunier, *Darfur*, 54-58.
[165] Mamdani, *Saviors and survivors,* 247-249. Prunier, *Darfur*, 75.
[166] Mamdani, *Saviors and survivors,* 247-249.
[167] Reyna, 'The disaster', 1299.
[168] O'Fahey, 'Conflict in Darfur' 26-27.
[169] Prunier, *Darfur*, 75.

nomads.[170] The central government had clear stakes in racializing Darfur, and the climate in Darfur was receptive of racialized ideologies about superiority and historic rights to the lands.[171] The erosion of confidence in the government is the fifth reason for resource scarcity conflict.[172]

All this time during the eighties and nineties the regions bordering on Darfur were conflict ridden. In southern-Sudan you had the conflict between the government of Sudan and the SPLA. (which eventually resulted in Southern Sudanese independence on the 9th of July 2011)[173] In Chad, the civil-war raged, hugely influenced by involvement of America and Libya. The provinces of Darfur were part of the Libyan drive for unity of the Arabic states, and Libyan troops moved freely across the border into Darfur. The Arab-Fur war and Arab-Masalit wars militarized Darfur even further. The available arms and mass mobilization methods were never forgotten by the ethnic tribes. Because of all these conflicts Darfur was flooded with rebellions, militias, arms and political ideologies.[174] The militarization of the Darfurians stayed, even as the wars ended. As Mamdani puts it: "There may have been no water, but the province was awash with guns".[175]

The wars and conflicts of the eighties and nineties illustrate that conflicts between the nomads and the farmers about grazing rights, camel theft and the access to water happened before but these conflicts never resulted in the systematic and ideological slaughter of one group by the other until 2003.[176] Under enormous environmental pressure, the tribes had been in conflict but in previous cases this did not result in mass murder of civilians or into crimes against humanity. At least not on the massive scale which now make president Bashir of Sudan a suspect of the international criminal court in The Hague.[177]

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[170] Hagan and Rymond-Richmond, *Darfur*, 110-113.
[171] Hagan and Rymond-Richmond, *Darfur*, 110-113.
[172] Mamdani, *Saviors and survivors,* 247-249.
[173] New York Times, 'Sudan: recent developments'. 14 juli 2011. http://topics.nytimes.com/top/news/international/countriesandterritories/sudan/index.html (August 2011).
[174] Reyna, 'The disaster', 1312-1313. Prunier, *Darfur*, 42-75.
[175] Mahmood Mamdani, 'There may have been no water but the province was awash with guns', *New Statesman* (8 june 2009).
[176] de Waal, 'Tragedy in Darfur' 1.
[177] Hagan and Rymond-Richmond, *Darfur*, 110-113.

3.3 The 2003 conflict

In May 2000, a black book spread quickly throughout Sudan. In the months leading to the publication, various Darfurians, who had studied at Khartoum University, had fabricated a book containing state archive documents and other factual information. The black book confirmed with statistics and numbers what most Sudanese already knew; there was an enormous imbalance in the power and wealth distribution of Sudan. Three tribes hailing from the northern Nile valley in Sudan, who compromised 5% of the Sudanese population, had held in post-colonial governments more than 50% of the cabinet positions and always held the presidency. For the Sudanese government the content of the black book was highly explosive.[178] The black book became the origin of the rebel movement in Darfur. Making clear that the government had neglected Darfur and clarifying why the rebels had a reason for their resentment against the government in Khartoum.[179] The governing elite in Khartoum was reaping the benefits of control over the Sudanese state while people in Darfur were facing growing interethnic violence and economic hardship. As the elite in Khartoum is mainly concerned with dividing the wealth extracted from the Sudanian oil industry, good governance does not have high priority. In 2002, resentment against the government over this power and wealth inequality peaked.[180] Harassed by the nomadic militias and without somebody who would take their grievances seriously; the Fur, Masalit and Zaghawa organized in rebel movements, the SLM/A and JEM, with the former being secular and the latter based on Islamic grounds. Grievances caused by the neglect of the greedy ruling elite led the farmer tribes to start a secessionist rebellion against the central Sudanese state. In 2003 the rebels started attacking police posts and when unleashed, the rebels won 32 of the first 34 battles.[181] It is no coincidence that the SLA and JEM launched their attacks when they did. The peace process between the Khartoum government and the SPLA in South-Sudan was drawing to a close. In the southern peace process, different north and south Sudanese groups were sidelined. The fear of the rebel groups in Darfur was that they inevitably would be sidelined even more in Sudanese

[178] William Wallis, 'The black book history or Darfur's darkest chapter', *Sudan Tribune.* 21 august 2004. http://www.sudantribune.com/The-Black-Book-history-or-Darfur-s,4868 (august 2011).
[179] Reyna, 'The disaster', 1310.
[180] de Waal, 'Tragedy in Darfur', 5.
[181] Reyna, 'The disaster', 1299.

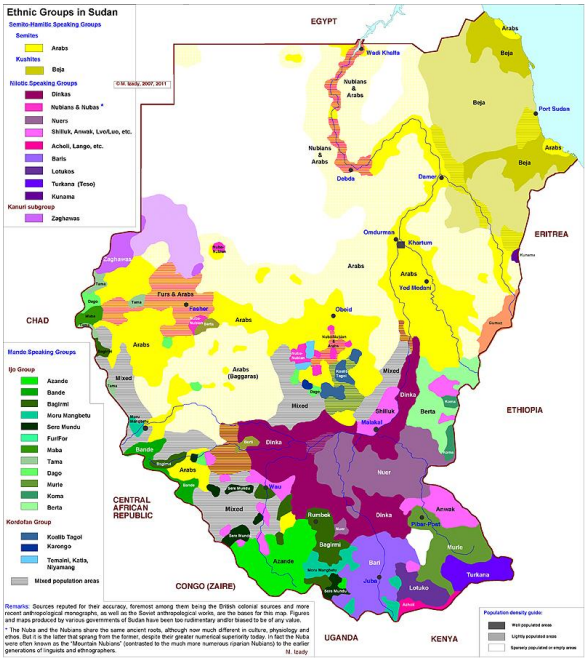
politics. Without legal or governing power and harassed by hostile nomads interfering with their lives, the Darfurian tribes were afraid that they would be even more politically marginalized in the new Sudanese state. As large segments of the Sudanese army were still active in South-Sudan, the rebels believed their guerilla movement might actually have a fighting chance against the Sudanese government.[182]

But the governing elite did not want to be disturbed by rebels who claim neglect by the central government and start demanding rights and resources for their own communities. The elite in Khartoum is greedily enriching itself and grieved rebels who want to share in the wealth of the Sudanese nation are not acceptable. For the elite in Khartoum the main concern is not to provide the population with a just and rightful government which respects human life and property. The main concern of the government was the way the oil wealth of Sudan was divided. So the rebellion in Darfur needed to be suppressed. But the governing elite had a problem with the method of how the rebellion needed to be crushed. Normally the government would send the Sudanese army into Darfur to deal with the rebels, but in the Darfur case this was problematic for two reasons. First, most sections of the Sudanese army were engaged in South-Sudan fighting the SPLA, so the Sudanese army did not have the capacity to start fighting a second rebellion. Second, most of the foot soldiers enlisted in the military were originally from the ethnic farmer tribes in Darfur. The government feared that the scarce soldiers available would side with the rebel cause, and therefore the rebellion had to be crushed in another way. Negotiating with the rebels was unacceptable because the security officers behind the regime of Bashir were against concessions to another rebel movement. Bashir and his regime were already under pressure for giving to many concessions to the SPLA in South-Sudan. The government hardliners also feared the domino effect. The black book indicated that power in Sudan was concentrated in the hands of three tribes originated from the northern Nile valley. There were a lot of other tribes and groups in Sudan who have reason to feel neglected and marginalized. With a government centered on enriching itself, rebellions could easily spread in many regions of Sudan.[183] Darfur was not a region which was economically very valuable for the Sudanese elite but other areas in Sudan do have value. For

[182] O'Fahey, 'Conflict in Darfur', 27-28.
[183] Wallis, 'The black book', 2.

example, the Beja ethnic group controlled the access to the harbor in Port Sudan, a city in the North-East of Sudan. All the main oil pipelines in Sudan run from the oilfields in the South to Port Sudan so the oil can be shipped to consumers all over the world. The loss of the North-Eastern territory to a Beja rebellion would mean a great economic loss for the ruling elite. Therefore it was very important for the Sudanian government that the message that rebellions will be suppressed was sent.

Map 3: Ethnic tribes in Sudan and South Sudan



Map 4: Sudan Oil Fields and Pipelines

Source: Map 3: Michael Izady, 'Sudan Ethnic subdivisions', *The Gulf/2000 project* (3 March 2011).
Map 4: BBC world, 'Map of Sudan: oil fields', *Sudan: one country or two* (27 May 2011).

Faced with the fear of spreading secessionist movements and unable to use the Sudanese army, the government decided to use another way of crushing the Darfur rebellion. Siding with and arming the nomadic tribes, Khartoum created a cheap, effective and brutal militia, which could keep the Darfurian people in control. Counter-insurgency on the cheap, it costs almost nothing except a few weapons, gas and food.[184] So the government released from prison Musa Hilal, the leader of one of the larger "Arab" militias. They provided the Janjaweed with air support during attacks on villages. And security officers freely talked, interacted and collaborated with the

[184] de Waal, 'Tragedy in Darfur', 3-5.

Janjaweed.[185] The attacks on the farmer villages were vicious, aimed at making life in the village impossible, scorched earth tactics were combined with random killings, violence and mutilations.[186] Water was used very effective as a weapon against the civilian population. As illustrated with the following descriptions made by two Masalit males of the Janjaweed attack on their villages: "*All the wells were poisoned with what smelled like DDT. Birds and animals that drank from the wells died."*[187] Another male claimed that: *"The next day someone went out to draw the water and found that oil had been put in the well. We could not drink the water."*[188] In a water scarce region as Darfur, water is vitally important for survival. An important strategy for attacking villages was poisoning the wells. By denying the civilian population access to wells, wadis and other water resources the attackers ensured the population had to flee from the area. The search for water made civilians vulnerable to attacks by the Janjaweed and made it easy for the attackers to isolate small groups of civilians. Especially women looking for water were vulnerable to rape and kidnappings.[189] By stealing their water resources, the Janjaweed were able to capture the territories and displace the local population. The Janjaweed militia forces were brutal, violent and inhumane, but very effective in eliminating the base of support for the Darfur rebellion.

By giving the Janjaweed free reign in the handling of the counter offense, the government elite secured Darfur for Sudan, even if this meant removing the largest part of the native Darfurian population from the area.[190] The primary aim of the central government seems to have been to finally gain control over an area which was rife with tribes who felt neglected by the central government and could therefore rise up in rebellion. The combined forces of the government and the Janjaweed eradicated every base of support of the rebellions.[191] As journalist William Wallis found out while visiting Darfur, "*most displaced populations I came across were huddled*

[185] de Waal, 'Tragedy in Darfur', 3-5.
[186] John Hagan and Joshua Kaiser, 'The displaced and dispossessed of Darfur: explaining the sources of a continuing state-led genocide', *The Britisch Journal of Sociology* 62:1 (2011) 1-25, 14.
[187] Hagan and Kaiser, 'The displaced', 14.
[188] Hagan and Kaiser, 'The displaced', 16.
[189] Hagan and Rymond-Richmond, *Darfur*, 19-29.
[190] Olsson, 'After Janjaweed?', 390.
[191] Hagan and Rymond-Richmond, *Darfur*, 216.

in makeshift camps. Under close government and Janjaweed control these people were too terrified to forage for food, let alone grow it to feed guerilla forces".[192]

The nomadic tribes were prepared to fight their neighboring ethnic groups because the large droughts of the eighties had led to destitution. The droughts had occurred because the rains were meager for several consecutive years. The water scarcity made the tribes willing to be used as a pawn by the Sudanese government. The tribes which supplied the Janjaweed with men were not the large nomadic tribes which had land concessions and dars. The fighting forces came forth from the small tribes which had meager political and social power and were hit hard by the droughts. Under the harsh climatic pressure these tribes were subjective to racial ideology, government propaganda and the pledge of land for their efforts. Desperate people are willing to do the most ridiculous things. Water scarcity created the circumstances for the nomads from which the government could profit. Water actually is the prize the nomads won by fighting the farmer tribes in Darfur. Research by development economist Olsson shows that abandoned Darfurian villages are increasingly squatted by "Arab" tribe civilians. The villages that are being squatted are located on areas which are rich in rainfall, soil quality and near wadis. The availability of water is one of the main reasons to settle on certain lands. Water rich lands are the trophy the victors received for the expelling of the former inhabitants.[193] The government is actually actively promoting the settlement of "Arabs" on the lands of the Masalit, Fur and Zaghawa. Witnesses saw trucks with settlers arrive under government escort in Darfur.[194] And there are rumors of nomads with "Arab" credentials arriving from Chad and occupying abandoned lands.[195] What is happening in Darfur at this moment is that Fur, Zaghawa and Masalit tribes are in internally displacement camps in Darfur and in refugee camps in Chad. In their absence, their former villages are rebuilt and occupied by the civilians of the tribes that drove them from these villages. The mass violence ordained by the government makes these refugees fearful of returning to their homes and lands. The removal of the tribes has led to a mass redistribution of the lands, in favor of the Arab tribes. These tribes will

[192] Wallis, 'The black book', 2.
[193] Olsson, 'After Janjaweed?', 392-410.
[194] Hagan and Rymond-Richmond, *Darfur*, 28-29.
[195] Hagan and Rymond-Richmond, *Darfur*, 216-217.

continue supporting the Bashir regime, which made the redistribution of land possible. For the displaced tribes this means that their chances of returning to their lands are diminishing every minute they are not working on their lands. Without active use of the agricultural fields, the land is free for the first person who claims it. As the nomadic groups are the only ones who feel safe enough in Darfur to work the land, the nomadic groups will settle in the abandoned villages.

Because of this the Darfurian refugees are losing all hope of ever returning to their homes. If they are not working the fields, they do not hold legal claims to the land they used to cultivate. The Janjaweed are difficult to suppress, now the jack is out of the box. The Janjaweed have a fully-developed racial ideology, a warrior culture, weapons, enough means of transport and foremost: government support.[196] Even if the government in Khartoum decided the Janjaweed needed to be stopped, this would mean an enormous task. Darfur is remote, the tribes are intact and will support their kin and they know the area better than any other group. The government in Khartoum has never had full control over the area and has been governing through the native administration; the situation now is no different. The government in Khartoum is ruling Darfur by using proxy forces to suppress rebellious ethnic groups. One might say they have handed Darfur over to the proxy forces to do as they like in Darfur, as long as they are loyal to the central government. The government in Khartoum will in all likelihood use the income generated by oil to buy arms and suppress every shimmer of opposition in Sudan. The ultimate reason for the onslaught in Darfur was therefore the central governments fear of losing control, not only over Darfur but also over the rest of Sudan. Any rebel will think twice before standing up to a government which can unleash mass-murder and violence not only on rebels but also on the civilian population.

The institutions in Sudan are of a very low quality. The Sudanian institutions are biased, corrupt, unavailable and often in total neglect of the needs of the population. There is no conflict resolution system. The government is not accountable for its actions and for the population of Darfur there was no way to express their grievances but turning to conflict, because legal and democratic processes were not available to them. The low institutional quality of Darfur

[196] O'Fahey, 'Conflict in Darfur', 29.

therefore led to the Darfurian rebellion. The only response which seemed logical to the government was suppression of the rebellion. The most cost effective way in Darfur was using the Janjaweed, an extremely brutal, militia based, counter insurgency.[197] The Darfur conflict seems to be a classic case of resource leading to conflict. A government is taking all the wrong decisions for the population, just so the ruling elite can keep enriching itself with the Sudanian oil wealth. The population of Darfur became the victim of the determination of the elite to keep power and share it with no-one. That said, the greed and grievance mechanism of resource conflict is applicable on Darfur. The central government is acting based on greed for the oil-wealth of Sudan. The Darfurian rebels were grieved by the unwillingness of the government in Sudan to act on their behalf to end violence and conflict. The Janjaweed were grieved because they were losing the grazing lands to the expansion of farmland by the farmer tribes. Greed from the Janjaweed for land resulted in the expelling of the farmer tribes in Darfur and the change of lifestyle from nomad to farmer, which is happening at this moment. The grievances felt by all the different tribes in Darfur were caused by desertification and harsh climatic conditions. These mechanisms combined resulted in the violence in Darfur. But did water scarcity lead to violence?

3.4 Conclusion

Wherever there is land and rain will be my homeland.[198] (Darfurian migrant)

Is water the main reason the conflict in Darfur happened? When looking at the facts of the Darfur conflict one most say no. The deliberate actions taken by the government to counter the rebel movement in Darfur are far more important. Then what was the role of water in the conflict, amidst all other factors?

Since the big drought of the eighties water became available on a much larger scale in Darfur. International relief agencies, the Sudanese government and the United Nations invested in the installation of water points like wells, hand-pumps and dams. The efforts of these agencies

[197] O'Fahey, 'Conflict in Darfur', 29.
[198] Reyna, 'The disaster', 1306.

were very effective in providing water to the Darfurian population. Actually some studies reveal that the greater access to water led to an explosive rise in animal population.[199] Water was available to the population, and although scarce, there were no specific weather shocks around or before 2003 that would have motivated such an outburst of violence.[200] Lack of rainfall did accelerate the desertification of Darfur, and the land degradation that simultaneously occurred. But weak institutional quality has caused this resource stress to become a full-scale war. Better protection of land rights for nomads, cooperation between the ethnic groups on conflict resolution, or the option for the farmer communities to express their grievances in a non-violent way by using the courts or through voting, could all have helped to prevent the resource stress from escalating into mass murder.

The government arming and supporting the Janjaweed was a risky move. The government released frustrated, anxious people who were armed onto the civilian population of the farmer communities. The Janjaweed got the chance to take revenge on the population that was endangering their livelihood, and they did. With brutal and systematic methods they tried to eradicate Darfurian Fur, Masalit and Zaghawa life, and remove these populations from Darfur. Sadly, they succeeded. The Darfurian refugees currently in camps in Chad are faced with the fact that they are not likely able to return home. If they dare to return home they are going to live under a government that allowed the violence inflicted on them, have neighbors that took part in the killing of their loved ones and probably have civilians of the formerly nomadic tribes farming the land they used to live on. In other words, returning civilians have no security, no land and no means of living.

If the Sudanian government had acted differently this tragedy would not have happened. So water is not the main reason the Darfur conflict erupted.

But the Janjaweed might not have acted so brutally to remove the civilian population if they did not believe there was something to gain from the removal of the population. There was a prize to win, land, and by gaining this land the tribes ensured themselves of a future in Darfur. The nomadic tribes are currently settling on the most fertile lands left behind by the refugees. Abandoned land with good soil and close to wadis is the most popular area to settle on. Water

[199] Fadul, 'Natural Resources', 41-42.
[200] Olsson, 'After Janjaweed?', 390.

therefore does play a role in the conflict. It is the prize the nomadic tribes gained from winning this conflict on behalf of the government.

What does this mean for my hypothesis that water can lead to internal conflicts within states when elites try to divert the scarce water to the most easily lootable production method? The hypothesis does not hold in the Darfur case. The focus of the elite in Khartoum, is to stay in power and to derive as much wealth as possible from Sudan for their tribes. But in Darfur there was not much wealth to gain. The most important reason for the harsh backlash of the government to the rebellion was the domino effect Darfur might cause. The fear within the government was that another rebellion would undermine the power and income of the ruling elite. The harsh governmental reaction was not based on greed for Darfur, because the outcome of the Darfur conflict did not enrich the governing elite. It was greed driven because other conflicts in Sudan might impoverish the governing elite. The elite in Khartoum already lost the rich oilfields in the South of Sudan, they would not allow another big loss to their income. Even if that means they have to prove that point by acting without conscience in a remote and poor region. This means that the Sudanian government's greed is not driven by the water availability in Darfur. But the acts perpetrated by the Janjaweed can be considered an act of resource greed. For my hypotheses this means that there is a second level of resource driven greed. The elite is only concerned with its main sources of loot. For the lower groups in society, in this case the "Arab" tribes the loot can consist of water. In the case of Darfur this means lands which have access to water. The governing elite did not care what happened in Darfur as long as Darfur remained a part of Sudan and the rebellion was suppressed. The elite "outsourced" this task to the Janjaweed who acted on their own greed driven motives. The elite gave a marginalized group in society a carte blanche to act as they pleased. The marginalized group acted out of greed for resources and grieved by perceived past injustice. This anger was directed against another marginalized group. If the government had provided other ways for conflict resolution or acted on the growing water and land scarcity in Darfur this conflict would not have happened. But as the government was just focused on remaining in power, water was redistributed in a violent way. This leads to the conclusion that water driven greed and grievance does play a role in the Darfur conflict. The bad institutional quality of the Darfurian

state is a prerequisite for this conflict. But the local actors in the conflict were driven by water. Water was not the main cause of the conflict because the bad institutions were the root cause of the conflict, but water was a factor. In the final conclusion I will present an overall conclusion about what this means for my hypothesis.

4. Case study 2: Water and conflict in China

'No clean official, no clean water' (Rural Chinese wisdom)[201]

Map 5: China

Source: National Geographic, *Map of China*.

[201] Yim Yardley, 'Rules ignored, toxic sludge sinks rural village', The New York Times. September 4, 2006. http://www.nytimes.com/2006/09/04/world/asia/04pollution.html?pagewanted=1&sq=jim%20yardley,%20water&st=nyt&scp=64 (August 2011).

4.1 Introduction

'The pollution of Lake Tai has sounded the alarm for us. The problem has never been tackled at its root'. (Prime minister of China, Wen Jiabao)[202]

In November 2007, environmental activist Wu Lihong was convicted to three years imprisonment by the court in Wuxi, Jiangsu Province. Wu was charged with blackmail and fraud.[203] He had confessed to the charges but claimed that the police had deprived him of food and sleep for five days forcing the confession out of him. Wu had made himself exceedingly unpopular with the local authorities by consistently attracting attention from the central government and press for the terrible pollution which was ravaging lake Tai.[204] Wu was concerned by the fact that the fish that had lived in the streams which flowed into the lake were disappearing. He investigated and found that the chemical plants built around the lake were spilling toxic waste into the streams surrounding the lake. Wu started to protest with the central government in Beijing and started to inform the press of the pollution and corruption which endangered the ecology of Lake Tai. As Wu was a great nuisance to local authorities and factory owners, he was arrested on April 13, 2007. A few weeks later it became apparent that Wu was right about his concerns regarding Tai Lake. In the last week of May, floods of industrial and agricultural waste resulted in an algal bloom of toxic cyanobacteria, more often referred to as pond scum. The algae turned Lake Tai fluorescent green, the stench choked anyone who came within a mile of its shores and more than two million people were deprived of their drinking water source. The authorities called it a natural disaster but images of factories dumping toxic waste in the lake quickly surfaced.[205] As the public became aware of the real cause of the algal bloom, the government started to take steps to prevent algae outbreaks in the future. The Government shut down polluting factories, banned pesticides and improved

[202] Wen Jiabao cited in: Joseph Kahn, 'In China, a lake's champion imperils himself', *The New York Times.* 14 October 2007. http://www.nytimes.com/interactive/2007/10/14/world/asia/choking_on_growth_3.html (August 2011).
[203] Joseph Kahn, 'Protector of lake loses appeal in Chinese court', *The New York Times.* 6 November 2007. http://www.nytimes.com/2007/11/06/world/asia/06lake.html?scp=1&sq=protector+of+lake+loses+appeal&st=nyt (August 2011).
[204] TaiHu lake in Chinese, located in Suzhou, Jiangsu, China.
[205] Kahn, 'In China'

sewage treatment facilities.[206] But even though Wu was proven right about his environmental concerns about Lake Tai, he was still convicted to prison.[207] The balance between local protests and government is delicate in China, Wu apparently crossed a line.

Protests are becoming more frequent in China; the number of protests grew from 8.700 in 1993 to 87.000 in 2005.[208] As there is no research available which investigates all these protest-cases and their origin, leaders and aims, the insight into the reasons behind protests in China remains limited. When conducting research on how water and conflict in China are related, one cannot depend on large overall figures or on one conflict case as with the full scale war that happened in Darfur. Water conflicts in China are local conflicts that erupt across the country.[209] Therefore this chapter about water conflict in China is based on news items and case studies done in scientific literature. These sources indicate clearly, that water and environment are increasingly the reason for conflicts to erupt in China. For example, in July 2000, farmers clashed with police in Shandong province in eastern China's Yellow River basin. The farmers were protesting against the government decision to capture the runoff from a local reservoir, which would be re-used for a nearby city for industrial and domestic users. Previously, the runoff was used by the farmers for the irrigation of their crops and it was essential for their livelihood.[210] To protect an essential part of their economic system the farmers protested and clashed with the Chinese government. Small scale water conflicts like this are happening all over China.[211]

In this chapter, I first discuss the water conditions in China at this moment and how these came to be. Thereafter, I discuss why conflict can erupt over water in China and which conditions must be met for tension to become conflict. Finally, I will cover my hypotheses and discuss if scarcity leads to water conflict in China.

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[206] Keith Bradsher, 'China offers plan to clean up its polluted lakes', *The New York Times.* 23 January 2008. http://www.nytimes.com/2008/01/23/world/asia/23china.html?scp=1&sq=china%20offers%20plan%20to%20clean%20up&st=cse (August 2011).

[207] Yim Yardley, 'China vows to clean up polluted lake', *The New York Times.* 26 October 2007. http://www.nytimes.com/2007/10/27/world/asia/27china.html?scp=3&sq=china%20offers%20plan%20to%20clean%20up&st=cse (August 2011).

[208] Andrew C. Mertha, *Chinese Water warriors, citizen action and policy change* (Ithaca, 2008) 153.

[209] Mertha, *Chinese water warriors,* 25-64.

[210] Postel and Wolf, 'Dehydrating conflict', 2.

[211] China is also facing larger scale international water management problems but as the nature of my research is domestic I will not look into the international water problems, of which the sharing of water in the Mekong basin is the most pronounced. (Hu, 'Water conflicts in China' 70-71.)

4.2 Water in China

"We don't have much extra water resources. We have the same resources and much bigger pressure from growth." (Ma Jun, environmentalist)[212]

Tabel 6: The rivers of eastern China.

Source: Patricia Buckley Ebrey, *Map: Rivers of China proper*

[212] Ma Jun cited in: Jim Yardley, 'Beneath booming cities, China's future is drying up', *The New York Times.* 28 September 2007. http://www.nytimes.com/2007/09/28/world/asia/28water.html (August 2011).

China's water resources are substantial in comparison with other countries, but China has a large population which needs to be provided with enough fresh water.[213] In China, in 1997, the total amount of water resources was 2.220 m³ per capita; in 2030 this number is expected to have dropped to 1.760m³.[214] Besides the fact that China is one of the most populous areas of the world, China is also developing rapidly. Because of the economic development, water use in China has quintupled since 1949.[215] The great push for urbanization, industrialization and economic growth is pushing an already heavily taxed ecological system to its edges. The fast pace of development is taking its toll on the Chinese water resources. For example, the stream of the Yellow River had zero flow for the first time in the seventies. Over the years this problem exacerbated leading to zero flow for 700 km in 1997 and over the longest period, 226 days in a year.[216] Research, into the reasons for these fluctuations and reductions, shows that human activity is the most important factor influencing water quantity of the Chinese rivers. Besides the fact that human activity has the greatest influence on river flow human influence is also showing an upward trend in the impact on water availability of rivers.[217] The rivers are not only overused for consumption; a survey in 1998 found that 436 of the 532 investigated rivers were badly polluted and 80% of the waste water discharged into the rivers was untreated. In 1993, roughly 8% of farmlands received river water which was so polluted that it could not be used for irrigation.[218] Overuse and pollution of rivers is not the only problem China faces. Over 448 of the 668 Chinese cities suffer water shortages, producing an annual water supply deficit of more than 6 billion m³. The shortages in supply have driven areas in China to overexploitation of the available fresh water resources. This overuse resulted in the over pumping of water supplies

[213] Bryan Lohmar, Jikun Huang, Jinxia Wang, Scott Rozelle and David Dawe, 'China's agricultural water policy reforms' United States department of agriculture, *Agricultural Information Bulletin* 782 (March 2003) 3.
[214] X. Mao, 'Market-oriented sustainable water resources', in: P. Coopey and T. Tvedt (eds.), *A history of water, Volume 2: The political economy of water* (London 2006) 205-218, 207.
[215] Yardley, 'Beneath booming cities'
[216] Desheng Hu, *Water rights, an international and comparative study* (London 2006) 50-53.
[217] Xiao-jun Wang, Jian-yun Zhang, Ruin-min He, ElMahdi Amgad, ElSawah Sondoss and Man-Ting Shang, 'A strategy to deal with water crisis under climate change for mainstream in the middle reaches of Yellow River', *Mitigation and Adaption Strategies for Global Change* 16:5 (2011) 555-566, 556-564.
[218] Jun Jing, 'Environmental protests in rural China', in: Elizabeth J. Perry and Mark Selden (eds.), *Chinese Society 2nd edition, Change, conflict and resistance* (London 2000) 204-222, 205.

leading to ground surface subsidence, reduced local water tables and in coastal areas in seawater infiltration.[219]

Although industrial and domestic consumption of water is growing at a fast rate, still the most important consumer of Chinese water resources is agriculture.[220] In northern China, the installation of pump wells in the sixties created a major increase in amount of land irrigated. Since then, there has only been a slight increase in agricultural irrigation and the total area of land irrigated stabilized at around 48 million hectares. Irrigation remains the largest riparian of Chinese water, but is in relative decline because of the diversion of water for industrial purposes and human consumption, especially in cities.[221] In the total amount of water used by the Chinese the percentage for agricultural users fell from 99% in 1949 to 69% in 1998. With the high rate of economic growth in the 21st century this downward trend is continuing.[222] Agriculture remains the most important consumer of Chinese water, but in relation to the total consumption agricultural consumption is in decline.

Especially in northern China, the water scarcity is growing. As a relatively dry area, with few water resources and relatively little rainfall, water scarcity is becoming a severe problem. The great population density and the intensive farming of north-eastern areas have always put heavy strains and reliance on the scarce waters of the north. But in the north this water shortage is amplified by the fact that the new industrial, economic and population centers of China are located in the area.[223] Although water has always been in short supply the economic development is pushing northern water scarcity to its limits.[224] The North China plain (Yellow river basin, Huai river basin and Hai river basin) represent 39% of the country's farmland, 35% of the country's population, 32% of the country's GDP but possess only 7.7% of the country's water supply.[225] These numbers underpin the fact that distribution of water in China does not match the distribution of population and farmland. Although China is one country

[219] X. Mao, 'Market-oriented' 207.
[220] Nickum, 'Is China living' 883
[221] Nickum, 'Is China living' 883-885.
[222] Lohmar, et al, 'China's agricultural' 3.
[223] Shui Qingshan, translated by Li Rong, Wang Li and Xiao Ying, *Moving the flow, China reshapes its water supply* (Beijing 2008) 4-13.
[224] Jun Jing, 'Environmental protests', 204-205.
[225] X. Mao, 'Market-oriented' 207.

geographically; hydrologically it has many different water systems.[226] In comparison with the North, South-China has a more humid climate, more rivers, water is relatively abundant and not in short supply.[227]

The Chinese government has realized the water shortage is very acute and is undertaking extensive water management projects to curtail water scarcity.[228] For example, the waters surrounding Beijing are severely polluted; the waste water discharge of agriculture, industry and households is polluting the drinking water supply of the 14 million inhabitants of the city and its surroundings. To try and elevate the water shortage and pollution, the government has decided to divert water from the southern Chinese Yangtze river to the north of China, to the Huai, Hai and Yellow river basins. The annual water volume provided by this diversion should supply Beijing and the dry north with enough fresh water. The South-to-North water diversion project is one of the largest water management projects of the world and the ecological and social implications are enormous.[229] Next to big water development projects, water management has still other options available that could lead to water saving. The water scarcity in China could be alleviated by other economic, institutional and local choices.[230] A new water law is under consideration that would sharply increase fines against polluters. Different coastal cities are building desalination plants. Multinational waste treatment companies are being recruited to help tackle the enormous wastewater problem.[231] (Wastewater discharge increased fivefold between 1984 and 1994; in 2001 only 61 percent of urban sewage water was treated. This wastewater is polluting the Chinese rivers.)[232] According to the World Bank, Chinese industry uses 4 to 10 times more water per unit of production than the average in industrialized nations, so there are still large amounts of water which could be saved with the

[226] James E. Nickum, 'Is China living on the water margin', *The China quarterly* 156 (December 1998) 880-898, 880.
[227] Qingshan, *Moving the flow,* 4-13.
[228] Weiluo Wang, 'Water management in the people's republic of China', In: Manas Chatterji, Saul Arlosoroff and Gauri Guha (eds.), *Conflict management of water resources* (Aldershot 2002) 88-115, 98.
[229] Christoph Peisert and Eva Sternfeld, 'Quenching Beijing's thirst: The need for integrated management for endangered Miyun reservoir', *China environment series, Woodrow Wilson International Center for Scholars* 7 (2005) 33-54, 33-36.
[230] Nickum, 'Is China living' 898.
[231] Yardley, 'Beneath booming cities'
[232] Sam Cole, 'Water resources in China's Yellow River Delta', In: Manas Chatterji, Saul Arlosoroff and Gauri Guha (eds.), *Conflict management of water resources* (Aldershot 2002) 116-144, 119.

right policy choices or technological innovations.[233] But at this moment, Chinese water resource management is not effectively organized. There is not one government agency which is responsible for all the different stages of the administration of water, and water management projects are often of large quantity but of low quality.[234] Water management in China was originally principally concerned with the prevention of flooding. The task of dealing with water scarcity and distribution dilemmas is new for the agencies and they are ill-equipped to handle it.[235] China could save large amounts of water if the government succeeded in organizing its water management in a more efficient way. Water management bureaus are decentralized and are accountable to the local governments of different regions. This makes the national water policy fragmented, as the goals and ambitions of local government officials might not correspond with the water policy ambitions of the central government.[236] Between agencies, there is overlap in responsibilities and there is not one department with definite and total authority over the water system. The government is aware of the water management problem and is trying to get the water management agencies better organized. But so far the government has not succeeded in achieving this goal. So high costs, large bureaucracies and administrative fragmentation constitute the Chinese water management system at this moment.[237] The result of this disorganization is the absence of coherent and binding water management policy. For example, the Beijing authorities expect the upstream users of rivers to provide the city with enough water. This forced delivery harms the economic development of certain areas, as industrial development and other potential economic development propositions cannot be implemented because of water restrictions. Beijing offers no compensation for the water used, not even if drought forces farmers to relinquish their irrigation water to the Beijing water authority.[238]

The distribution decisions are at this moment not monitored and are not made compulsory. This results in a free for all playground where local interests are leading in water distribution,

[233] Yardley, 'Beneath booming cities'
[234] Wang, 'Water management' 114.
[235] Lohmar, et al, 'China's agricultural' 5.
[236] Mertha, *Chinese Water warriors,* 153.
[237] Mao, 'Market' 217.
[238] Feng Yongfeng, 'Sharing water and cutting pollution', *China Dialogue.* 20 July 2006. http://www.chinadialogue.net/article/show/single/en/209 (August 2011).

without taking the national interests or those of other actors into account. This results in inter-regional and local conflicts where everybody attempts to gain access to the scarce water available. The outcome of these water management impracticalities are borne by the local governments, entrepreneurs and civilians. The lack of institutions and policies which regulate water distribution is a clear reason for Chinese water protests. James Nickum, an economist specialized in water and natural resources, notes that there is still a high potential for water savings. Water scarcity is therefore more a localized, economic and institutional problem and not actually the total depletion of the resource.[239]

That said, the push for economic development is still the first priority of the government. Jim Yardley records this process in the new industrial city Shijiazhuang. Here the rate of decline of the ground water table is very well recorded. Wells at some places in the city have to be drilled to 500 meter deep to reach the ground water. The water management of the city acknowledges this problem and admits that with this rate of consumption the city will run out of groundwater eventually. But the problem of overconsumption remains, for the Chinese economic development is a more urgent necessity than saving water. According to a water management professional: "*We have a water shortage, but we have to develop. And development is going to be put first".*[240] For China economic growth is the most important issue at stake, and the environmental, distribution and scarcity problems of water are only considered after this economic growth is attained and sustained. The building of water management institutions that are capable of making just, thoughtful decisions which respect and balance the hydrological, economical, national and local interests is a low priority. In the absence of such institutions grand projects that divert water to water scarce areas seem to be an adequate and realistic solution. But eventually the Chinese government will have to give priority to water scarcity and make choices which will elevate the scarcity. But to achieve this the government has to create effectual institutions, invest in technological improvements and create incentives for lower governments to uphold environmental laws.

[239] Nickum, 'Is China living' 898.
[240] Yardley, 'Beneath booming cities'

4.3 Water conflict

Reservoirs and hydropower stations are sprouting up all over China, damaging ecosystems and causing conflict. It's time to leave the rivers alone.[241] (Feng Yongfeng, journalist)

Conflicts over water are becoming more frequent in China, in 2000 there were 6.037 domestic conflicts over water, in 2001 there were 6.338 and in 2002 9.972; in all years eco-environmental cases were not included in these figures.[242] In 2005 China was shaken by 60.000 pollution-triggered public disturbances, demonstrations or riots of a hundred or more people protesting the contamination of rivers and farms. The Ministry of Public Security has ranked pollution among the top five threats to China's peace and stability.[243] The recorded conflicts are large scale protests and conflicts, isolated cases like the court ruling against Wu are not included in these figures. So what are the reasons these protest in China erupt about water? First, pollution of water sources by industry or agriculture. Second, redistribution of water resources to other users. Conflicts are erupting more often than before because of the fast pace of social and economic transformation. The rapid development of China into an industrialized nation is causing water scarcity, rising pollution and stimulated hydropower development. All these changes are causing transitory tension. Finally, this tension can lead to protests if a change in water distribution affects the allocation to one of the actors in society and this group becomes grieved about the new situation.[244] The government has to make distribution choices about who gets water. With water resources over-tapped, the Chinese government is faced with the question which users have priority. Do the users that historically used the water have priority? Or do other reasons to distribute the water prevail? Does the Chinese government decide to provide the water to the user which can use the water in the way: that is most economic productive, most politically relevant or most favorable for local administrators. As the water management bureau is not equipped to deal with these questions nor empowered to enforce

[241] Feng Yongfeng, 'Wringing China dry', *China Dialogue.* 05 March 2010. http://www.chinadialogue.net/article/shows/single/en/3520 (August 2010).
[242] Desheng Hu, 'Water conflicts in China', in: Velma I. Grover (ed.), *Water a source of conflict or cooperation?,* (Enfield 2007) 69-82, 70-71.
[243] Christina Larson, 'China's new environmental advocates', *China Dialogue*. 18 August 2008. www.chinadialogue.ne.ne.net/article/show/single/en/2310 (August 2011).
[244] Hu, 'Water conflicts in China' 70-71.

its decision, there is not an overall policy which guides the local administrations when faced with problems about water distribution. Governmental decisions about water distribution are made, but the lack of effective institutions results in an arbitrary distribution process. The government of China cannot be considered as one single entity, different administrative units of the Chinese government have different priorities and goals. As a consequence, the different provinces located on the Yellow River have gotten in conflict with each other over the over-tapping of the basin. Upstream provinces used Yellow River water for new industrial projects and to provide water to the growing urban centers. The downstream areas ended up cut off from their original supply of fresh water. The new consumption upstream harmed the downstream economic and political interests. As a result the governments of the respective provinces clashed and harsh words were spoken. Eventually the central government stepped in and ruled over the water distribution.[245] But even though harsh words were spoken, the central government eventually ruled in this conflict and although not to the satisfaction of all parties involved, this ruling was accepted. The different provincial governments did not mobilize the army or the police force to force the other province to accept the new water distribution. The conflict between the Chinese provinces therefore remains political and does not turn to violent solutions. Water causes political friction and not violent conflict between the different government levels. When discussing the Chinese government position and actions it is necessary to distinguish which part of the government is involved as friction over water distribution between different governmental agencies and administrative levels have occurred.

The reform of the Chinese economy of the past decades expanded the power of the local administrations. Decentralization of the government was part of the development strategy and therefore different departments of the Chinese government can actively pursue exactly the opposite goals.[246] This dichotomy is beautifully clarified by Liang Congjie. When asked what the government thinks about his organization (Friends of Nature, a Chinese environmental NGO) Liang responded: "*It is hard to generalize what the government thinks about us. The government is not a monolithic bloc in this regard. SEPA (the State Environmental Protection*

[245] Lohmar,et al, 'China's agricultural water' 13.

[246] Elizabeth J. Perry and Mark Selden, *Chinese Society 2nd edition, Change, conflict and resistance* (London 2000) 1-21.

Administration) supports us and has called us their "natural ally". The MOWR (ministry of water resources) probably likes us much less and the provincial government in Yunnan undoubtedly hates us".[247]

Chinese history and politics scholars Perry and Selden, argue that the central Chinese government accepts protests as long as they are not about higher government officials and/or central government authority and policy. As long as the population does not attack a central government policy they are allowed to express their grievances by petitioning, protesting or by making claims in the courts. The governing elite accept protest as long as they are not the direct target of the grievances expressed or of the direct goals of the protest. Because of this, local protests about wages, pollution or other small scale grievances are acceptable if the protests remain local, small scale and do not cross over to other locations and social groups.[248] The protest and conflicts that constitute water conflicts are often within this category. Political scientist and China specialist Andrew Mertha, investigated these local water protests and found that local water grievances were often expressed in a context where the local population said to agree with the government policy. So the rural population in Hanyuan county; grieved over being relocated by the new Pobugou dam, did not complain about the dam or the national policy of development of the west, which was the reason the dam was built in the first place. Initially, they complained over not being properly compensated by the local government for their relocation.[249] The local government not only undervalued the property of the population which had to be relocated. The government also over-valued the land on which the population was to be resettled. Compensation for resettlement in China is determined by law, but fraud with the value of property is still possible. The local authorities were in this way pocketing a large amount of the compensation money which was intended for the rural population. By protesting the unjust compensation the local population hoped to get the support of the central government and eventually possibly modify the dam building plans to a less radical development scheme. The grievances of the local population resulted in mass-scale protests, where eventually tens of thousands of rural people gathered, to express their discontent with

[247] Mertha, *Chinese Water warriors,* 27.
[248] Perry and Selden, *Chinese Society,* 1-21.
[249] Mertha, *Chinese Water warriors,* 65-93.

the authorities. The protesters eventually achieved more compensation, but this compensation was still inadequate in covering the actual cost of relocation.[250] The central government has legally codified in law the rights of the populations which have to be respected when they are mandatorily relocated. The local authorities profit from a relocation that is as cheap as possible for the local government finances. They offer the population compensation which is fraudulent, inadequate and below the statutory minimum. The population already grieved over relocation in the first place starts protesting when they realize they are not sufficiently compensated. The grievance caused by this infringement on their rights and the hope they have of a higher government level supporting their claim leads to the protests. Larson summarizes this mechanism as follows: "*The longer the law fails, with China's business elite prospering while millions of farmers stand to lose everything, the closer the countryside comes to erupting into revolt*."[251]

The Hanyuan conflict insightfully elucidates a few points about water protests in China. First, there is a strong dichotomy between the different levels of government. Second, when protesters are not attacking the central government they are allowed to protest. Third, power abuse by government is a strong reason for grievance with the marginalized groups in society. Fourth, institutional weakness led to this conflict because for the villagers there was no other option to express their grieve than resorting to conflict.

The laws China has for environmental protection and water relocation are often clear enough, the problem lies with enforcing these laws. China has laws that shield the downstream riparians from upstream pollution. However, the push for economic growth and making profit often lead government officials and enterprises to ignore these standards and pollute streams.[252] Villagers will not obtain justice by the hands of the people who authorized the pollution in the first place and receive the taxes extracted from these enterprises. To achieve that the law is actually enforced, villagers or urban victims have to get attention from higher levels of government.[253]

[250] Mertha, *Chinese Water warriors,* 65-93.
[251] Larson, 'China's new environmental advocates'
[252] Hu, 'Water conflicts' 72-73.
[253] Yim Yardley, 'Rules ignored, toxic sludge sinks rural village', *The New York Times.* 4 September 2006. ttp://www.nytimes.com/2006/09/04/world/asia/04pollution.html?pagewanted=1&sq=jim%20yardley,%20water&st=nyt&scp=64 (August 2011).

To gain the attention of these bureaucrats, citizens in China have a number of non-violent possibilities, they can petition the central government about their grievance or sue the government or enterprise involved.

The petitions written by villagers have to be handed in at the petition office in Beijing, but these cases are often redirected back to a local level of government for settlement.[254] When their petitions are rejected or nothing changes for the better, villagers can resort to violence as part of their strategy to get their petitions and grievances taken seriously. Resorting to conflict is not a move quickly made. Before water problems force villagers to take action, they need to feel the urge to act. For this need to arise villagers need to be faced with an extreme water scarcity situation. For example, in Dachuan, a village in North-West China, located in Gansu province villagers slowly started to realize how serious the pollution of their drinking water and agricultural water was. They knew that their water source was being polluted by a recently built fertilizer factory. But before the villagers got into action, they first had to realize the damaging consequences the water was doing to the population. After 30 sheep and a horse went blind from drinking the polluted water, the villagers became scared of the human health and economic effects of the pollution. In China, a country with a very restrictive human reproduction policy, healthy children are incredibly important. The fact that in the village stillbirths occurred more than average was a second reason for action. These reasons, combined with the land degradation caused by the pollution made the villagers ready for protest. Their health and income were endangered by the pollution. After complaining with the local authorities to no avail, the villagers started to block the entrance to the factory, use the polluted water to hose the factory and demanded that the owners of the factory and their families drink the water that they expected the villagers to drink. These demonstration tactics were drawing attention to the problem whilst not being overly violent or showing a high level of civil disobedience.[255] Water was the driver of this local conflict as the factory owner needed the water for industrial use. The local administration was greedy enough for income and economic growth to pay no attention to environmental laws. The local agricultural population was grieved by the fact that they were faced with threats to their physical and economic

[254] Larson, 'China's new environmental advocates'
[255] Jun Jing, 'Environmental protest in China', 206-209.

survival. Faced with these different water priorities, water conflict erupted. Violence often is an effective way of not only getting attention for their grievances at a higher level of government, but also of forcing local party members into action.[256] Local cadres and higher-level officials initially often reject the petition of villagers. Local cadres want to prevent intervention by a higher administrative unit of government, as this undermines their stature and career opportunities. There is nothing in China that draws the attention of higher levels of government more than civil disobedience by the population. Villagers resorting to conflict can therefore change and influence local policy. Especially if protests gain media exposure, the authorities will feel a need to respond by curbing the protest with violence or with concessions.[257]

Protesting through media attention and/or civil disobedience is a risky business as the amounts of money involved gives government officials enough incentives to resort to violence if journalists or villagers seek to give attention to a local problem.[258] Villagers try to avoid violence by officials against them by using peaceful protests methods. By using non-violent protests, the protesters believe that a higher administrative level of government will eventually support their claim.[259] Chinese citizens have the right to petition the government. They do know that there are laws protecting them and believe that if a higher level of government would hear of their grievances caused by local administrators or companies that there will be a solution to the problem. But for the citizens to reach the central government with their petition they already have to face obstruction by local and central government agencies. How far this obstruction goes shows movie director Zhang Zanbo in his movie "*The interceptor from my hometown*". In this movie the director follows his former friend and classmate who became an interceptor in his hometown. An interceptor has is to ensure that no petitioner from his locale reaches the central government agencies with petitions. The local administrators created this job because they are judged by higher administrators based on the amount of petitioners that originate from their region. Of course the lower the amount of petitioners the more positive this judgment, so the friend of the director uses all methods possible to prevent the petitioners

[256] David Zweig, 'To the courts or to the barricades,' in: Elizabeth J. Perry and Mark Selden (eds.), *Chinese Society 2nd edition, Change, conflict and resistance* (London 2000) 113-135, 116-118.
[257] Mertha, *China's water warriors,* 150-162.
[258] Zweig, 'To the courts' 119.
[259] Zweig, 'To the courts' 129-131.

from reaching the central government. The director follows the interceptor while he bribes train conductors, isolates petitioners and forces them to return to their hometown.

But even though petitioners are severely obstructed, the amount of petitions directed at the central government is on the rise.[260] Environmental protests in China are becoming more frequent because Chinese citizens feel that they have rights and feel that these rights have been breached. Grieved by the fact that their rights are not upheld they resort to civil protests and violence, not to overthrow the government, but to force the government to uphold its own laws.[261]

The other option open to Chinese citizens is suing the governments or companies that are harming their water supply. Suing can be an excruciating process that takes a long time and the outcome is uncertain. Being right and actually getting recognition for this fact are two totally different things. The institutional quality of China is so low that even if laws are evidently breached you do not always obtain a positive ruling in court.[262] New NGOs that specialize in environmental cases are sprouting up in China, but their successes are mixed.[263] Even if a positive ruling is obtained these rulings have to be enforced by local government officials. These are often the same officials who allowed the pollution or diversion of water in the first place, and are the ones profiting from it. The results can be disastrous, as in the village of Sugai, which was flushed with toxic waste from the spill of two nearby paper mills. What was disturbing about the case was that both mills had already been sued, fined and ordered to upgrade their equipment, after severely polluting the Yellow River two years earlier. The toxic spill in Sugai demonstrated that nothing was done by the local government with the earlier court rulings about the cleanup of the toxic waste.[264]

Enforcing court rulings and environmental laws remains difficult in China. As a villager seeking help from an environmental law professor states, "*I hope she can make the law work".*[265] This is

[260] Zhang Zanbo (director), "The interceptor from my hometown" (China, 2011). *International Film Festival Rotterdam* (februari 2012).
[261] Zweig, 'To the courts', 132.
[262] Tian Lei, 'Zhang Jinjing, environmental litigator', *China Dialogue.* 20 October 2008. http://www.chinadialogue.net/article/show/single/en/2484 (August 2011).
[263] Larson, 'China's new environmental advocates'. Tian Lei, 'Zhang Jinjing'.
[264] Yardley, 'Rules ignored'
[265] Larson, 'China's new environmental advocates'

a direct reason for water conflict. If Chinese laws were upheld by local administrations a lot of these village protest would not erupt. If the villagers could obtain positive court rulings about breached laws, they would not need to resort to protests. If companies knew they would be forced to oblige by environmental law just as their competitors, they would dodge policy on a much smaller scale. And if the central government would more actively check if local officials upheld the law, villagers did not need to try and draw the attention of the central government by protesting. As long as villagers do not believe that justice can be obtained through the legal system they will keep resorting to civil disobedience and violent solutions. If the central government would take the petitions of local farmers seriously, local officials would know they had to prevent the local population of becoming grieved by policies or actions. So as long as the institutional quality of China is low enough for companies to dodge laws, officials to be corrupt without consequences and the central government to ignore local grievances, water conflicts will erupt. The absence of a peaceful and successful way to express grievance results in water protests and violence.[266] The ruling elite tries to contain and manage these local water conflicts, so that they do not grow in intentions or magnitude. With rural China rampant with corrupt and violent government officials, the countryside will prove to remain a fertile soil for protests and social unrest about water.[267]

But the local government officials do not only fear a loss of income from lower tax revenues or bribes, if they start maintaining the environmental protection laws and start respecting the water management authorities. They also fear the central government. The central government is assessing the different regional authorities primarily based on economic growth. For local communist cadres this means that they are foremost judged based on the performance of their region in the economic area. The central governments pressure for growth is severe. Therefore, the local cadres response towards groups in society that can provide this economic growth is very positive. Factories, hydropower plants and other industries are facilitated if they are prepared to set up business in that specific locale. Environmentalist, empowered local populations and low ranking government officials which are undermining the economic growth are considered a great nuisance to officials trying to achieve central government development

[266] Jun Jing, 'Environmental protest in China', 209-212.
[267] Zweig, 'To the courts' 129-132.

goals. So eventually the whole Chinese society is subject to the consequences of the central governments drive for industrialization and development.

But there is only one thing that the Chinese government considers more important than economic growth, and that is staying in power through maintaining social stability and rest. The first priority of the central governing elite remains staying in power.[268] When the marginalized groups within the population dare to resort to conflict because of local grievances, the central government tries to contain this by ensuring that the basic rights of the local population are enforced. For the population this means that social unrest and conflict draws the attention of the central government and might reverse local government policy considered unjust. Action to prevent pollution and maintain water resources in a sound condition often have to be enforced by local protests.

Then why was Wu Lihong convicted to prison and not protected by the central government? To obtain the level of economic growth, the central government's ruling elite knows sacrifices need to be made. The elite knows that the country needs to deplete its water resources and needs its polluting industry. If China reaches the growth goals it set out to obtain, then China will start enforcing water saving methods and environmental laws.[269] The environmental agency of the government is lean and overstretched; NGOs are not developed or big enough to deal with pollution more effectively.[270] Only when the elite is faced with a direct threat to its authority through protests, then measures to uphold the laws of the nation are taken. And that is the reason why Wu Lihong was convicted. Wu was right about the breach in the environmental law and his concerns for the consequences of that breach. But at this moment economic growth is more important than the rule of law.

4.4 Conclusion

What do the previous paragraphs about water in China mean for my hypothesis that water can lead to internal conflicts within states when elites try to divert the scarce water to the most easily lootable production method? Just as with Darfur, the first conclusion must be that low

[268] Elizabeth C. Economy, ´The great leap backward', *Foreign Affairs* 86 (October 2007) 38-59, 50-53.
[269] Economy, 'The great leap', 58-59.
[270] Mertha, *China's water warriors,* 27-64.

institutional quality is a precondition of water conflicts to erupt in the first place. If Chinese villagers, local governments or entrepreneurs believed that the distribution of water was properly monitored, divided based on fair grounds, and every factory in the whole country was dealing with the same governmental restrictions, then water conflicts would most likely not erupt as easily. But as the proper institutional base for fair water management is not available to the population, people resort to different strategies to obtain the water they need. The central government creates grand water management schemes so the country remains hydrated. Industry ignores laws and regulation, to obtain water for cooling and the drainage of waste water from the factories. The industrial elite is able to do this by forming bonds with the local governmental elite. These connections can be based on income provided to the local elite by industry or the economic and political goals that are achieved because of the link between governing elite and industrial elite. Local governments obtain water by diverting it from other users; this can be other local governments or other consumers. Rural agricultural users petition the government or sue the government to provide water for irrigation and waste discharge. Domestic users are part of the drive for urbanization, development and societal rest, therefore the water provision to the urban users in the cities is first priority of the central government and the local governments alike. As economic development is the most important goal after societal peace and calm this means industrial users have priority over local agricultural users. Because there is no official government policy or decision which approves of the redistribution that favors the new economic profitable users over the local agriculture users, conflicts over water erupts. The law is clear enough, when a new user harms the water provision of an old user the new user should offer compensation. For rural farmers to get this law maintained they have to grab the attention of higher levels of government. As social rest is more important to them than economic growth the most effective way for the rural population to get this attention is through civil disobedience.

All the different Chinese water users are in constant competition. This competition is taking place because there is no government agency available to mediate water conflicts. And even if there was an agency available this agency would have to juggle all the differing government priorities. So we have an elite which is focused on remaining in power and economic growth. A

lower or local elite which wants to remain in power by pleasing the central government. The method for this is ensuring economic growth. There is a private sector with entrepreneurs who are focused on their own personal material gains and use the possibilities provided by local elites for industrial development to obtain this goal. There are NGOs who are focused on ensuring the Chinese laws are upheld by all government levels, activists who try and provide for better governance and journalists who report on government and entrepreneurs breaching laws. The latter groups are relatively new in China and their power and room for action are not clearly defined at this moment, as the conviction of Wu demonstrates. And finally there are the groups without power, the marginalized groups, the urban and rural populations that are without political or economical power. These groups are looking for means to ensure laws are upheld and water distribution is fair and profitable for them. As the urban population is of eminent importance in central governmental policy this group does not have to fear the diversion and reallocation of their water source. But for the rural population who are not as important in central governmental policy their rights to water are easily breached. The only means of ensuring that their rights are respected is by becoming relevant to the government, as maintaining societal control proves to be the most important government goal. The marginalized rural population resorts to violence and protest as a method to get central government attention and support. By using civil obedience as a way to express their grievances, they ensure that their interests are also relevant for the governing elites.

For my hypothesis this means that there are different levels of elites who act in different ways to obtain what they need. The local elite diverts the water away to the most income and economic or political power providing production method. The elite is doing this for self-enrichment but also to obtain central governmental support. Both ways for diverting water are a form of resource greed. The central government allows this resource greed to control local policy because it is part of a nationwide strategy for economic development. When water conflicts erupt it is partly because grieved marginalized groups in a population act out of grievances caused by water diversion. But it is also because the marginalized groups in society believe the central government will support their claims. They believe that in contrast to the local government, the central government does not have direct financial and political stakes in

the distribution decision. Citizens in China believe they have rights and that the government will uphold these rights in the face of grave infringements. The fact that the population believes this leads to small scale, local and non-violent protects. This shows that the citizens of China have a certain fate in the righteousness of the central government. This conclusion leads to a new interpretation of the Douglas grid theory for water distribution in China, table 4.1.

For China the new Douglas grid theory would look like this:

Tabel 4.1 Description of the players in China

No-Control	The mass of the governed rural civil society	Reformers inspired by egalitarian and environmental principles (non-government)	Central institutions to regulate affairs (government)	**Control**
	The Urban governed civil society	Industrial, commercial & trading interests (Private sector)	Local institutions to regulate affairs (Government)	

Important alignment:

Between the groups without governing or economical power
Between the local governing elites and economical elites
Central government forms alliances based on political or economical motives with both groups, depending on what serves its interests best

Slowly there is a switch to upholding the rule of law by the central government because local protests are erupting more often and are of a greater magnitude. The central governing elite has to rethink how economic growth can be obtained without constantly creating grievances with the local marginalized populations. At this moment they let the lower administrative levels do the dirty work but this does not provide a solution in the long term. Institutional quality will need to improve if water conflicts are to stop breaking all over the country. When water scarcity leads to distribution decisions the governed population needs to believe these decisions are just. So the institutional improvements the government makes and the policy they not only decide to make but also actively pursue will determine if water will lead to conflict also in the future. At this moment water leads to local distribution conflicts as right-conscious rural populations try to achieve that the rule of law is upheld, as there are no effective non-violent methods available to them to express their resource scarcity grievances. The government is

unwilling to crack down on these protesters but does not want the entrepreneurs to stop developing. Water conflicts will stop when the central government finds a way to juggle the interests of all societal groups.

5. Conclusion

5.1 Cases: Darfur and China

The hypothesis of my master thesis was that water diversions of societal elites would lead to grievances with powerless societal groups and that these grievances would lead to conflicts. I studied the Darfur conflict case and the Chinese water conflict cases to test my hypothesis. In Darfur and in China the water scarcity is caused by overuse of the available water supply. In Darfur this led to desertification and in China this leads to pollution, drying of riverbeds, seawater infiltration and dropping groundwater tables. In both cases water scarcity was the outcome of a complex range of social and economic circumstances; population growth, industrialization, intensive farming and changing societal structures caused existing water consumption patterns to change and increase overall water consumption.

But did water scarcity lead to conflict because greedy income seeking elites divert water to the most easily lootable production method? The answer to this question is no. In the Darfur case it was not the diversion of the elite that caused the water scarcity for the lower levels of society. In Darfur overall water consumption grew because of population growth. Water scarcity contributed to the outbreak of the conflict but not because of water redistribution by the elite.

In China the government levels that divert the water are not doing this because of loot which can be extracted from the water. The lower governmental levels divert water because they have to balance various national interests. For water management to be effective and politically feasible it has to balance politics, economics, environmental aspects and national security. Water is not considered a pure economic good by politicians and people, and it often has a big emotional and political value. The problem in China is that central governmental policy does not take the maximum available water into account when economic policy is made.

The problem in both states is that water management has no political and economical priority until water gets scarce. Water distribution policy is often neglected. So the scarcity is originally not caused by deliberate choices made to favor the elite. The scarcity is caused by societal overuse. But when water becomes scarce the central government is unwilling to make the

crucial policy choices which will determine which water user has priority. When water scarcity occurs the government has to make sure water consumption is reduced. The problem is not that the government redistributes the water; the problem is that the government does not officially decide to cut back consumption. In both cases water had become scarce but the government does not take action until the water stress escalates into conflict.

In Darfur water scarcity led to desertification, leading to changing land use patterns which threatened the means of living for nomadic tribes. The central government was unwilling to protect the land rights of the nomadic tribes until the tribes had become so desperate and destitute that they started harassing their neighbors. The fact that the central government was unwilling to stop these harassments led to the eventual rebellion of the farmer tribes and large scale conflict. The Darfurian rebels believed that they would be better off without the central government, so they started a secessionist rebellion.

In China the government wants to give priority to the consumption of water by industry but is unwilling to compensate the former water users or face the conflicts with peasants that might arise from this decision. So instead of making a difficult policy choice the government of China lets lower levels of government deal with the water scarcity, industrial growth and unsatisfied citizens.

In both nations the government has no overall water policy and only acts to contain the conflict that arises from the immediate water shortages. In both conflict cases water scarcity led to local conflicts in which differing social groups are fighting to gain access to the scarce water. In the Darfur case this happens between different ethnic groups whom had different consumption patterns and different land rights. In China the conflict is between industrial entrepreneurs supported by the local governments on the one hand and peasants/other lower societal groups on the other hand.

In both cases different societal interests clash. The conflict arises because there is no higher government body which will issue a verdict in a conflict case that will be accepted as fair and unbiased. Failing government institutions are therefore a prerequisite for water conflict to turn violent. If the government had implemented water policy and this policy was accepted as fair by the population, because compensation was given or different societal interests were properly

weighted, than these conflicts would have been suppressed before they erupted. Proper government actions might have contained these conflicts.

This is also the main difference between the conflict in Darfur and the conflict in China. In both cases the local population has become grieved by the water scarcity. But in China the grievances can be expressed without escalating the conflict to higher levels of government. The central Chinese government is willing to allow protests and sometimes even meet the demands of the protesters, as long as the conflicts stay local and contained. In Darfur the central government did not listen to grievances expressed by the nomadic and farmer tribes. Instead when grievances were expressed the protesters were ignored, locked up or faced harassments by officials. Eventually the grievances escalated into a full scale rebellion by the Darfurian farmer tribes. In China the second step of conflict, a full scale rebellion, has so far not been taken by the protesters. This is because the institutional structure of China allows for containment of the protests to a local scale. This means the role of the local governments in China is crucial and these local governments have a very difficult position. They have to balance the central government requirements for economic growth, societal rest and local demands for clean water and historic water-rights. To achieve the central government requirements they have to provide favorable business conditions to entrepreneurs. But to maintain the societal calm they have to support already existing water provisions to the local population. This position is a difficult balancing act and often fails to achieve all requirements made to the local government by different societal levels. When water is consumed by other users, local populations become grieved so they resort to protest, as a way of obtaining their water goals. But as local government officials are mainly judged by the central government based on economic growth rates, these local officials also have to satisfy the water demands made by industry. When grieved by the choices made by local officials the Chinese population starts to protest. They have this option, and the central government is sometimes willing to reverse decisions made by local governments. The local population still hopes to obtain a fair ruling by the central government.

In Sudan the central government was utterly disinterested in Darfur. The only aim of those in power seems to be to maintain that power, because through this power they have access to the

income generated by Sudanese oil rents. Darfur is of no particular interest except that the central government wants to maintain in control of all of Sudan and therefore needs to suppress every rebellion nationwide. So when conflict erupted between nomadic tribes and farmer tribes the government was unwilling to press for a settlement. Instead the government left the Darfurians to handle the case themselves until the unrest became a rebellion seeking power in the central government or secession from Sudan. From that moment on the central government became aware of Darfur en wanted to settle the dispute ones and for all by removing the rebellious population and replacing them with loyal subjects. The government was able to do this because of the support of the distraught nomadic part of the population. The Chinese government decides to contain and confront protesters much earlier on in the grieve process. The Sudanese government waited until the conflict escalated to a scale that could only be contained with massive violence. This massive violence resulted in large scale redistribution of land and water.

So water was a contributing factor to both conflict cases but the systematic actions taken by government officials and the institutional quality of both nations was far more important. Therefore the conclusion of my thesis is: Water can only be a cause for a local conflict about distribution. For water to become a large scale conflict poor institutional quality is a prerequisite. Converted into tangible examples this means that neighbors can get into conflict with each other over the distribution of a stream that runs between their lands and this conflict might turn violent. This is probably how the Romans decided that rivalis, using the same stream, was a good way of expressing competition.

But before a group of farmers starts protesting water diversions to industry with violent means they must believe the diversion ruling is unjust and that the government is unfair. Competition over water is more of a local issue, to escalate into higher government levels the institutional quality must be poor. In China the conflict resolution systems forestall the escalation of conflict into large scale rebellion. In Darfur a large scale rebellion was the only escalation possible for the farming tribes who were harassed by nomads (the nomadic tribes were facing water but most of all land scarcity). The central government always resolved these small scale conflicts in favor of the nomadic tribes. The large scale farmer rebellion that followed was secessionist and

therefore threatened the Sudanese central government. The government had ignored previous smaller scale conflicts, or was not able to solve the conflict to the liking of those concerned. In China the government is able to contain the water protesters in an earlier stage of the conflict. One of the main fears of the central Chinese government is a large scale rebellion reminiscent of Tiananmen Square. To prevent this fear from becoming reality, rebellions and conflicts are resolved before their goals become national. If protesters start attacking central government institutions and policy, the containment policy did not work. So to prevent escalation the Chinese government tries to resolve conflicts as early on in the conflict as possible.

The conclusion of studying both conflict cases therefore is: Changing social or economic circumstances like population growth, industrial growth or climatic degradation can cause water stress. But water stress only causes local small scale conflicts. Before local water conflicts lead to large water conflict other factors are a prerequisite. Water stress needs to be combined with: poor water management policy, low quality government institutions and a government not accountable to public with non-violent means. Therefore water can only be the contributing factor for conflict. The low institutional quality of the government and other authorities is the main reason for conflict to erupt within a nation. Surprisingly although the economic, political and societal factors in China and Darfur differ to a great extent, the same conclusion is applicable to both cases.

5.2 Theoretical framework

What does this conclusion mean for my theoretical framework?

The prize which can be gained by winning or maintaining access to water differs highly according to the economic and societal situation. In Darfur having access to water makes survival possible for people living in harsh climatic conditions. In China access to water can mean the difference for a local administrator between stagnated economic conditions and rapid economic growth. The access to scarce water represents a certain value, but because of these different conditions between different societies, groups act according to their water goals. If a group becomes marginalized in society this powerless group can have no other option than violence. This violence might be triggered because otherwise the elite will redistribute the

water to the disadvantage of the powerless group. Water scarcity might emphasize the impact of already existing societal differences in like ethnic cleavages and skewed distribution of land, wealth and/or power. But if groups were not politically or economically powerless in the first place they would have non-violent options to express their grievances.

Violence might also be triggered because water scarcity becomes water stress without the additional redistribution on which my hypothesis was based. In Darfur the powerless group did have access to water but was grieved about a lack of political rights. In China water is often not redistributed but polluted which harms the use of farmers but does not officially cut of farmers from water. My hypothesis that the elite will redistribute water to other groups in society therefore is incorrect.

In chapter 2 I stated the following about my hypothesis: The state is based on a coalition of different groups in society. For hierarchists to secure themselves with the base they need to maintain in power, they have to provide individualists/entrepreneurs with the income they demand. If a change in the base situation leads to scarcity, redistribution decision have to take into account how the hierarchists try to keep their base of power intact. As water resources become scarce, greed for the water will lead groups to try and attain as much of it as possible, herewith providing for their own income. As marginalized groups in society are faced with elites diverting the water, transitory tension within society arises. When the state is not receptive to the complaints of the marginalized farmers, no other option is left open to these farmers than conflict. In this way water scarcity can lead to conflict. With other words I describe how I thought water loot was going to be redistributed among supporters of the state and how the state would get into conflict with marginalized groups.

But the fact is that in Darfur and in China the water distribution decisions are not made based on which societal group supports the state the most. In Darfur the most bereft of water were the nomadic tribes who did support the central Sudanese government. They started harassing their neighbors because of land and water scarcity. Eventually the farmer tribes escalated the local conflict to a national level and the outcome was that the scarce water was redistributed to the nomadic tribes. But this redistribution happened after water scarcity led to conflict. The redistribution in itself did not lead to conflict.

In China the redistribution of water to industry is mostly a way for the central government to attain the economic goals set for different local areas. The redistribution is not based on the fact that entrepreneurs/industrialists are more vehemently supporting the state, they are a way for the state to obtain their own goals. This means that my hypothesis about water considered as loot should be rejected. Water does not seem to be important enough for higher levels of government to redistribute. The total lack of water management exemplifies this. But it might be a trigger factor for local actors, the Janjaweed in Darfur expelling the farmer tribes and low level administrators available for bribing by entrepreneurs. Water can be a local cause for conflict because local actors might be greed driven for water. The central government does not really mind who gets the water, as long as the group is supportive of the central government. The farmer tribes in Darfur were and the local protesters in China are safe as long as they do not attack the central government. But on a local scale water can lead to greed driven conflict and the redistribution of water. The price the Janjaweed won because they fought the war for the Sudanese government was water rich territory. For local administrators in China a polluting factory can mean the difference between promotion or demotion. The main question for future research is which loot/rents can be extracted from water and how these rents interconnect with the outbreak of water conflict. How come the income generated by water is only important for local actors and not for higher government levels? And can the right government policy prevent these local conflicts from erupting? Because local actors can be driven by water greed and local conflicts therefore can be triggered by water scarcity. But can the water greed of local actors be prevented with the right institutions? I believe this is also the case on a local level. Even on a local level water can only lead to conflicts if other factors are contributing.

For example, if I owned a piece of land in the Netherlands and an entrepreneur would want to build a factory next to my land, I would have other ways to express my grievances. If I was a farmer and expected that the factory would start polluting my water supply I would first protest with the local government about the building of the factory. Then if the factory was approved by government officials and indeed build, I would want to be financially compensated for my loss of income. If the factory was build and I was not compensated I would write the factory owner and the local government's environmental agency about upgrading the factory's water

purification systems. And if that did not solve the polluting then I would sue the company in court. If all the above would not lead to a solution to my problem I would be severely frustrated and might turn violent. But I believe the Dutch government would not allow a polluting factory to take away my source of income without proper compensation. So before water redistribution turns violent people must not have any other option left to express their grievances. Therefore even if an actor on a local scale does need water for survival, even on a local scale the actor only turns violent if institutional quality is low.

5.3 Further research

Having answered the question does water lead to conflict within states, I now come to the other topic of my thesis. Is a theory originally based on resources applicable for water? Is the framework of the resource curse thesis applicable to water conflicts? First I most note that there is a large hiatus in the resources and conflict research when resources do not provide large rents or other lootable income. The only research into this topic is the research into if abundance in agricultural produce leads to conflicts within states. More quantitative research into the connection between conflict and non-lootable resources must be done before the link between resources and conflict can be firmly established for resources that do not generate easily monitored rents or loot. But for my research the tools and methods provided by the research into resources and conflict were very useful. The theory systematized the large topic which I studied and provided much needed insight into how conflicts erupt. The framework of resources and conflict with the grievance and greed mechanism is very applicable to water conflict. Because of these systematizations it became clear that the higher levels of government do feel greed, but this greed is not focused on water but on the other sources of income. This shows that if conflict erupts between higher levels of government and local people other factors than water must come into play. The theory therefore makes it easier to distinguish between drivers of the conflict and contributing factors. Water does have a large emotional dimension but by studying water scarcity with the insights of the water and conflict theory one must note that this emotional dimension is mostly rhetoric or serves as motivation whilst other more important reasons are the true causes for conflict. Water is just not important enough for

higher government bodies and elites to get into conflict. Therefore the base for water wars theory, that water scarcity will lead to conflict is baseless.

For future research I suggest a large scale quantitative research into how non-lootable resources that become scarce interconnect with the outbreak of conflict. Which factors can be seen in all nations that are faced with resource scarcity and conflict. In China and Darfur these connecting factors are weak conflict resolution systems and the absence of government policy that would diminish the effects of the water scarcity or contain these effects. These weak institutional qualities are essential for the outbreak of the conflicts in both nations.

5.4 Summarization of conclusions

- For water conflict to erupt bad-institutional quality is a pre-condition
- A change in water distribution can cause conflict but these conflicts are local
- The eventual scale of the conflict depends on the elites reaction to the conflict
- Water alone is not important enough to cause internal conflicts

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Epilogue

Ik wil graag de volgende mensen bedanken voor hun steun tijdens het schrijven van mijn scriptie. Ik wil Pim Kor graag bedanken voor de mooie definitie van het woord aquiffer. Daarnaast wil ik graag mijn tweede lezers bedanken voor hun verbeteringen, suggesties en op en aanmerkingen. Dankzij hun is mijn scriptie beter dan dat hij voor hun input was, dus heel erg bedankt Gary Barnes, Bart Braun en Myra van der Meulen voor het zo uitgebreid nakijken van mijn scriptie. De tijd en energie die jullie daarin hebben gestoken waardeer ik ontzettend, dus heel erg bedankt daarvoor!

En als laatste wil ik graag mijn scriptie begeleider, Vincent Lagendijk, bedanken voor het feit dat ik mijn scriptie heb afgerond met een resultaat waar ik helemaal tevreden mee ben. Zonder met u praten over mijn onderwerp, de verbeteringen en suggesties die u gedaan heeft maar vooral ook het begrip voor het scriptie-schrijfproces waar ik doorheen ging, had ik het nooit zo naar tevredenheid kunnen volbrengen. Ik wil u dus heel erg bedanken voor het feit dat hier een eindresultaat ligt waar ik heel erg trots op ben. Zonder u was het een ramp geworden.

Verder wil ik mijn ouders, vriend, familie, cordial genoten, vrienden, duikers, augustijnen, studie-maatjes en anderen die mijn studententijd tot een feest hebben gemaakt, heel erg bedanken voor alle mooie momenten. Het is mooi geweest, maar vooral dankzij jullie!

Annabel van Gelder

0313432

Mei 2012