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INTERSTATE CONFLICTS OVER NATURAL RESOURCES AND RAW MATERIALS FROM THE WATER-RICH AREAS IN THE ASIAN REGION

Karel Malinovský*

ABSTRACT

The aim of this paper is to quantitatively analyse interstate conflicts over resources from the water-rich areas in the Asian region. We do not concentrate solely on conflicts over water, because the cause of such conflicts could cover for example a clash over fish resources or offshore fossil fuels. Several studies analysed quantitatively interstate and intrastate conflicts in general. Researchers thoroughly analysed conflicts about natural resources and water wars, too. Nevertheless, to our knowledge, no quantitative study tried to explore interstate conflicts about resources from water-rich areas so far. We will attempt to fill in this gap. The influence of the rate of natural increase, GDP per capita, arms imports and exports, arms costs and oil exports to conflicts concerning resources from water-rich areas are investigated. The examined period covers years 1945-2013. We conclude that the more arms trade the more conflicts over resources from water-rich areas in Asian region there are.

Key words: natural resources, raw materials, water, conflicts, arms trade

Introduction

Water is an essential source for human beings. Water is necessary for the proper functioning of the healthcare system, agriculture, industry and other human activities. If we realise how important resource water presents, it is not surprising that some scientists expect water conflicts in the nearby future.

However, this paper will not focus on water conflicts. The article concentrates on conflicts about natural resources and raw materials from water-rich areas, because the cause of conflicts can be a clash over water *per se* but also a clash over resources located in the water-rich areas – both maritime and river areas. We have to point out that according to classical terminology *conflicts over abundance commodities are called conflicts over raw materials*.

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Conflicts over scarce commodities are called conflicts over natural resources. The next section presents the basic theoretical aspects of conflict issues. We will discuss basic definitions and typologies of conflicts, armed conflicts, wars, water conflicts or natural resources conflicts.

1 Conflicts – definition

We will present some basic definitions of the term *conflict*. In the Czech literature **Pšeja** (2002) recommends to define conflict as a clash between two exactly defined actors, who to seek defend their own interests in one or more identical fields. Moreover, actors perceive the mutual clash as a situation where a profit of one side means a loss for the other side.

Bartos and **Wehr** (2006) consider conflict a conflicting action between various actors who want to achieve mutually incompatible aims or express hostility.

Krejčí (2010, p. 141) considers conflict a situation when a certain group (the state, an ethnic group, a tribe, an ideological bloc) or an individual is in a purposeful clash with one or more groups or individuals. A conflict is a clash over values regarding either preservation or an increase of social security, status or the power. Through the conflict opponents try to neutralise, harm or remove their rivals.

Holsti (1983 cit Pšeja, 2002) presents four characteristic features which every conflict has to encompass – it must have actors (state or non-state actors), it must have the exactly defined so-called “*issue field*”, there has to be a “*tension*” between actors, and conflicting sides take precautions (“*actions*”). If these features are absent we can barely speak about “*conflict*”. If the fourth feature absents we can speak about a “*latent conflict*”.

1.1 Conflict typology

According to the basic classification we can distinguish conflicts armed and unarmed or violent and nonviolent. The other classification is based on the area of the affected region. Then, we speak about conflicts international, transnational, intrastate and interstate. For researchers, it is important to identify the cause of the conflict, because then we can analyse conflicts and suggest the strategy for its solution.

Šmíd (2010) distinguishes between conflicts of *interests* and conflicts of *values*. A conflict of *interests* represents a clash over tangible goods e.g. raw

materials, natural resources, political power, etc. Typical for this type conflict is that in majority of cases it can be objectively analysed and it is possible to determine, name and measure its causes. Therefore, it is easier to come to the compromise and lead the conflict to the situation which is perceived as a non-zero sum game by all actors. Conflicts of interests can be classified to three subtypes – territorial conflict, economic conflict, and political conflict. Territorial conflict develops in a situation where the territory brings an economic profit or profits for the foreign policy. If the territory brings historical or symbolic value we have to speak about the conflict of *values*. Economical conflict contains for example conflicts over the access to markets or conflicts over raw materials.

Conflicts about *values* indicate clashes about much less tangible objects than those we see above. We can speak about three conflicts subtypes – ethnical conflict, religious conflict, and ideological conflict (Šmíd, 2010).

A similar classification was presented by **P. Collier** (Collier – Hoeffler, 2004) who considers the basic cause of conflicts to be “*greed*” and “*grievance*”. Simply, we can say that greed correlate to conflicts of interests and grievance to conflicts of values. **P. Collier** objected to the academic discourse that presented grievance as the basic cause of conflicts. According to his research, grievance factors, such as economic inequality, political repression, lack of democracy, ethnical and religious polarisation, are statistically insignificant. On the other hand, the greed factors, such as slow economic development or small income per capita, are much more important. The key problem of Collier’s research is the concentration to correlations not to causalities. **P. Collier** does not reflect adequately political nor historical factors. A summary of critics of Collier’s research was published by e.g. **Nathan** (2008).

1.2 Armed conflicts and a war – definition

Now, we describe how it is possible to define and classify armed conflicts. The classical definition by the Prussian Marshal C. Clausewitz says that a war is “*the real political tool, the continuation of political contacts and its implementation by the other means* (Clausewitz, 2008, p. 36).” Nevertheless, we should look at the contemporary views from the expert literature.

O. Krejčí defines war as “*an organised violence between armed groups whose aim is either physical destruction of the enemies or the undermining of the enemies’ will to defend their own original interests* (Krejčí, 2010, s. 458).”

Furthermore, **O. Krejčí** presents a summary of theories which explain

causes of armed conflicts and wars. The first group is represented by theories which see the cause of conflicts in the *violence which is integrated in the human as an individual*. There we can recognise four types of conflicts – armed conflicts caused by the biological nature of a human, armed conflicts caused by the psychological inclination of a human, armed conflicts caused by the human intellectual insufficiency, and armed conflicts caused by the human intellectual sufficiency.

The second set of theories sees the cause of armed conflicts in the *collective human behaviour*. Three types of conflicts can be identified there – armed conflicts caused by social and psychological reasons, armed conflicts caused by clashes over territory and resources, armed conflicts caused by ideological hostility, and armed conflicts caused by prestige.

According to the third group, the cause of armed conflicts is built in the *structural characteristics*. The following types of conflicts belong to this group – armed conflicts caused by the existence of a particular intrastate political regime, armed conflicts caused by a defence of the state, and armed conflicts caused by the power balance.

Research of those authors who claim that actors of the international relations fight because of territories and natural resources may be of a great interest for us. These authors state that the territory, raw materials and water are the key factors for human life in groups. Armed conflicts could be just an instinctive wish to defend the territory. This was claimed for example by **R. Ardrey** in the publication *The Territorial Imperative* from the year 1966. The clash over a territory and natural resources could be a zero-sum conflict for some groups, because natural resources could be limited.

Šmíd (2010) considers a conflict to be a war when three specific conditions are fulfilled – there are at least two armed groups from which at least one is subordinated to the legal central government (e.g. the army or the police), both sides organise defence and actions during battles, and armed operations are at least slightly continuous.

An armed conflict, therefore, represents every other conflict which does not fit the categories presented above.

1.3 Conflicts over natural resources and raw materials

There are different types of conflicts over natural resources and raw materials. Simply, we can say that the typology of such conflicts is based on the

amount or types of natural resources and raw materials.

Resources can be *point* or *diffuse* (Auty, 2001 in Le Billon, 2001). *Point* resources are concentrated in small areas and a complicated technology is needed for their mining. Oil, natural gas or iron ore belong to this category. Diffuse resources are geographically intermittent in large regions and their mining is not complicated. Wood, rubber, agricultural crops or alluvial diamonds can be put to this category.

The dynamics and the intensity of conflict can be influenced by the geographical location of natural resources. *Proximate* resources are located in regions close to the central government; *distant* resources are located in remote areas (Mildner et al., 2011).

Le Billon (2009) classifies resources according to so called “*lootability*” and “*legality*” to four categories – illegally lootable (for example narcotics), legally lootable (for example alluvial diamonds), legally non-lootable (for example offshore oil), illegally non-lootable (for example uranium mining of which is restricted and regulated by strict international agreements).

Conflicts over resources can be divided according to the amount of the conflict resources. **Malthusians** claim that because of the resource scarcity there will be more conflicts in future. Grounds for these theories were laid by **T. R. Malthus** in 1798 who wrote in *An Essay on the Principle of Population*: “*If the population is not controlled then it grows by the geometrical line. Foodstuffs grow just by the mathematical line* (Malthus in Holman et al. 2010, p. 123).”

Later, researchers build on **Malthus's** theories. The claim that the population growth and the increased resources use lead to conflict was popular especially during 1970's thanks to oil shocks which seemingly confirmed **Malthusian** presumptions. Authors of the well-known publication *Limits to Growth* from 1972 assumed that oil and the other resources would be depleted by 1992. (Meadows et al. 1972 in Lomborg, 2006) Twenty years later in the publication called *Beyond the Limits* the authors warn that oil stock will be depleted by year 2031 and natural gas stock by year 2050 (Meadows et al., 1995). **Thomas F. Homer-Dixon** (1994) concluded that the population growth leads to the decrease of the resources availability which at the end leads to conflicts.

The most well-known critics of the neo-malthusian scenarios are probably **Julian L. Simon** (2006) and **B. Lomborg** (2006) who argue that thanks to human skills and new technologies there is not any danger of the resources depletion at all. Proponents of those views are called “*cornupians*”. **Le Billon** (2001) or **Gleditsch** (1998) claim that too many geographical, political,

economic and the others variables exist and, therefore, it is not possible to construct the direct connection between the population growth and conflicts caused by the resource depletion.

Since the 1990's we can find a hypothesis in the academic discourse that abundance of resources leads to a conflict. This so-called "*resource curse*" hypothesis is extensively researched with a connection to intrastate conflicts. We focus on interstate conflicts, though, so we mention **Colgan** (2013) who explored the influence of resource abundance on international conflicts. He concludes that so-called "*petro-states*" which revenue from the oil exports more than ten percent of GDP get involved in interstates conflicts more than other states. Petro-states with the revolutionary leaders engage the most. **De Soyssa** et al. (2009) concluded that dyads where at least one state is an oil exporter fight more likely than other dyads. In other words, oil exporters do not fight between themselves. This point could be explained by the presumption that oil exporters do not join wars and armed conflicts because of oil. Oil exporters get involved in interstate conflicts more than other states simply because they can afford to do so.

2 Conflicts over water sources

In this section we will turn our attention to conflicts over water resources. Interstate conflicts over raw materials and natural resources in water-rich areas could evolve not only because of for example oil in the seabed but also because of water *per se*. We present a brief typology of water conflicts below.

2.1 Water conflicts typology

This well-known typology was created by a prominent researcher **Gleick** (2009). He defined six types of water conflicts:

1. Conflicts about control of water resources (state and non-state actors) – the cause is a clash over water supplies or access to water.
2. Conflicts where water is used as a military tool (state actors) – water resources and water systems are used by a nation or state as a weapon.
3. Conflicts where water is used as a political tool (state and non-state actors) – water resources are used for a political goal.
4. Terrorist conflicts (non-state actors) – water resources are either targets or tools of violence or coercion.

5. Conflicts where water is a military target (state actors) – water resource systems are targets of military actions.
6. Development disputes (state and non-state actors) – water resources and systems are source of dispute in the context of economic and social development.

Different typology was made by Bächler (in Spillmann – Bächler 1995). He focuses primarily on environmental conflicts; nevertheless, he presents four types of trans-boundary water conflicts too:

1. Type Mekong – the river is in a poorly integrated region in the Southeast Asia. Countries have got relatively symmetrical relations and the river is not the object of international conflicts.
2. Type Rhine – environmental conflicts are solved on a political level thanks to regulatory mechanisms and agreements, in this case by The Rhine Commission.
3. Type Colorado/Rio Grande – the conflict occurs between a developed industrial country and a developing country. The conflict does not have to lead to violence, because the developed upstream country can express a desire to solve the clash by diplomatic and political measures.
4. Type Euphrates/Tigris – water sources are located in a poorly integrated region with developing countries. Moreover, there are autocratic or military regimes. The upstream country can solve the clash by a use of force.

2.2 Water wars

There are two main research groups in the literature. Authors from the first group claim that in future there will be water wars caused by water scarcity. More optimistic authors from the second group claim that clashes over water distribution will lead rather to cooperation between countries and to closing international agreements. We will now look at the argumentation of both of those groups.

2.3 Pessimistic scenario

According to pessimistic scenarios proponents, population growth and the increase of economic and agriculture activities demanding huge water supplies will lead to decrease on availability of water resources. For instance, **Thomas F. Homer-Dixon** writes that increases in population and economic activity will

result in “continued degradation and depletion of rivers, aquifers, and other water resources” (Homer-Dixon, 1999, p. 14). Critchley and Terriff (1993, p. 332) make a similar statement: “Intensifying population growth, agricultural production, and economic development will place ever more pressure on current water supplies in the coming years, increasing the prospects for conflict and violence.”

In past, population growth led to the decrease of water supplies from forty thousand cubic meters per capita in 1800 to six thousand eight hundred cubic meters per capita in 1995 (Beaumont in Gleditsch, 1997).

Furthermore, water sources are unequally geographically distributed. For example, population of North America has got at its disposal seventeen thousand cubic meters per capita annually, while in Africa there is at disposal just six thousand cubic meters per capita annually. Moreover, there is huge population growth in some countries with the small amount of water supplies (Furlong et al., 2006).

Pessimist highlight that some states are dependent on water imports from neighbouring states. For example countries like Egypt, Hungary or Mauretania are all dependent on water imports to the extent of more than 90 percent (Gleick, 1993). This situation could lead to interstate water conflicts between upstream and downstream countries. According to **Falkenmark** (1990) such conflicts could break out in African states.

Homer-Dixon (1999) defines four conditions when water wars are the most probable – the downstream state is highly dependent on water sources, the upstream state can influence the river flow, upstream and downstream countries share history of clashes and conflicts, downstream state is more powerful concerning military forces.

2.4 Optimistic scenario

According to optimistic point of view, cooperation is more common than water conflicts. In fact, water supplies are sufficient.

A human needs approximately from one to two cubic meters of drinking water annually to survive. For the urban life a human needs about 250 cubic meters of water per capita annually. Nevertheless, contemporary water stocks are significantly higher (see above) and in 2025 there will be in average nearly 4700 cubic meters of water per capita for urban life at disposal (Furlong et al, 2006).

Optimists claim that cooperation is more common and more probable event than conflicts over water sources. **Sadoff** and **Grey** (2002) argue that cooperation brings several advantages – improving the quality of the river, improving the water supply management, reducing of the political tension between states, regional economic cooperation development.

Yoffe, Wolf, Giordano (2003) studied 1831 international water conflicts which occurred during the period of 1948-1999. Conflicts occurred in 28 per cent of cases (507 events), cooperation occurred in 67 per cent of cases (1228), the rest 5 per cent of cases consisted of neutral or marginal events. Fifty seven per cent of events represented verbal threats. The key point from this study is that the cooperation outweighs water conflicts.

The same point is presented by **Brochmann** (2012). **Zawahri** and **Mitchell** (2011) show that water agreements reduce the risk of the water conflict outbreak.

According to **Alam** (2002), the Indus river basin clash between India and Pakistan should lead to war according to pessimistic scenarios. In reality the clash led to signing of a bilateral agreement in 1960.

The next optimists' argument says that water sources could be used more effectively and cheaply thanks to market mechanisms and economic development. Illustrative case represents Israel which does not have a lot of water sources. In spite of this, it reaches a high effectiveness of agricultural production thanks to wastewater reuse program or drip irrigation method (Lomborg, 2008). The **Allan's** "virtual water" concept should be mentioned too (Allan, 1999). **J. A. Allan** suggests substituting agriculture production by imports of crops such as wheat or rice. This would save water in arid regions. One ton of imported grain represents one ton of saved virtual water.

The last argument says that waging water war does not have any political, economic and strategic sense. **Wolf** (1998, p. 261) quoted an Israeli military analyst who explains: "*Why go to war over water? For the price of one week's 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.*"

3 Quantification of interstate conflicts

Majority of conflicts is caused because of clash over resources, at least if the territory is counted as a source. **Holsti** (1991) calculated that from 1648 to 1989 territorial war conflicts were undoubtedly the most important. Approximately 50

per cent of wars were led because of territory since the Peace of Westphalia in 1648 to the World War I outbreak. Gradually, the role of territory was dropping and 31 per cent of wars after 1945 were territorial. **Vasquez** (1995) built on this analysis and concluded that territorial conflicts were dominant for more than 350 years. Only after 1945 the factor of territory started to lose its key role. **Huth** (2009, p. 5) considers interstate conflicts about disputed territory “*one of the enduring features of international politics.*”

Hegre (2005) concluded that, generally, the conflict potential between two countries increases if one of the next conditions is valid – one or both countries are powers; two countries have got the same power position; none of those countries is democratic; countries are not allies; countries share a history of past conflicts; none of the countries is developed; countries trade between themselves sporadically; and one of the countries is already in the conflict with the third country which is the ally of the second one.

3.1 Characteristic of interstate conflicts over raw materials and natural resources from water-rich areas in the Asian region

We studied some theoretical aspects of conflicts. Now, we will try to find out what are the political and geographical characteristics of conflicts about resources from water-rich areas in the Asian region.

Firstly, we will proceed with the regionalisation. We will study conflicts whose actors are states from Asia. We do not count Egypt and Papua New Guinea, but we count Turkey and Caucasian states.

We will study interstate conflicts since 1945, both violent and non-violent, which are characterised by any clash over use of resources from water-rich areas. Water-rich areas include seas, rivers, lakes and water constructions like for example reservoirs, dams, desalinisation facilities. Resources from water-rich areas include any useable resources like e.g. water, fish resources or offshore fossil fuel deposits. We do not include in our analysis conflicts where states use resources from water as a weapon.

Now, we have to choose a proper conflict dataset. **D. Singer** and his team from the University of Michigan manage the dataset COW (Correlates of War). However, these data contain only more intensive conflicts with at least 1 000 deaths per year (Sarkees, 2010). It is not possible to determine the cause of conflicts from the COW dataset. Moreover, conflicts over sources from water

areas could be non-violent. Because of these two reasons, the COW is not the appropriate choice for our study. Data from *Uppsala Conflict Data Program* and from *The Peace Research Institute Oslo* (UCDP/PRIO) are inappropriate for the same reasons. They contain conflicts with at least 25 deaths per year (Themnér – Wallensteen, 2013). **Marshall** (2014) and the Canadian project *Ploughshares* (2014) concentrates on more intensive conflicts with at least 1 000 deaths annually. The International Institute for Strategic Studies based in London uses rather qualitative research methods, but studies mainly intrastate conflicts (IISS, 2014). There are eight interstate conflicts in IISS data; none of these are over resources from water-rich areas. *Arbeitsgemeinschaft Kriegsursachenforschung* based in Hamburg (AKUF) lists 238 wars in the period 1945-2007, 68 in Asia and 60 in North Africa and the Middle East. None of those are over resources from water-rich areas (AKUF, 2008). **Brecke** (2012) identified more than 3 700 conflicts since the year 1400 until the end of the 20th Century; however, it is not possible to recognise whether those conflicts are over resources from water-rich areas.

It seems that the best choice is to use *Water Conflict Chronology* data from **Gleick** (2013). **P. Gleick** concentrates on water conflicts studies and we can identify if the conflict fits our definition. We will also use the *Conflict Barometer* data from *Heidelberg Institute for International Conflict Research*. Those data are based on qualitative research and contain both violent and non-violent conflicts. There is no criterion of number of victims.

Conflicts are collected in table 1. We will analyse 32 conflicts. Syria, Israel and Iraq participate in conflicts most (nine, eight and six conflicts).

3.2 Hypotheses

Based on the theory described above, we will now formulate hypotheses. The aim of the first hypothesis is to test neo-malthusian theories about major influence of population growth to conflicts:

1. *States with higher average rate of natural increase engage in fewer conflicts per analysed period in comparison with states with lower rate of natural increase.*

Values of the average rate of natural increase are taken from United Nations Department of Economic and Social Affairs. Accessible data cover the period 1950-2010 in five-year intervals.

Then, we will check the role of the development factor to conflicts. We will

focus on the GDP per capita. **Hegre** (2005) argues that this index expresses the stability of the political system and effectiveness of the military forces, too. Therefore, the next hypothesis is:

2. In states with higher average GDP per capita per analysed period there are fewer conflicts than in countries with smaller average GDP per capita.

GDP per capita data are taken from the World Bank for the period 1960-2012. It is expressed in the value of American dollars in May 2014. GDP is defined as the monetary value of all finished goods and services produced within a country's borders.

Unlike **P. Collier**, we will concentrate on (geo) political factors. We will pay particular attention to arms trade and arms costs. The next hypotheses are:

3. In countries with higher arms imports there are more conflicts per analysed period than in countries with fewer arms imports.

4. In countries with higher arms exports there are more conflicts per analysed period than in countries with fewer arms exports.

5. In countries with higher arms costs there are more conflicts per analysed period than in countries with fewer arms costs.

Values of arms imports and exports and arms costs are taken from the *Stockholm International Peace Research Institute* (SIPRI). SIPRI does not express arms transfers in monetary value, but in the common units called TIV which expresses transfers of military systems and major conventional weapons. These contain – aircraft, air defence systems, anti-submarine warfare weapons, armoured vehicles, artillery, engines, missiles, sensors, satellites, ships, other (for example turrets for armoured vehicles fitted with machine gun). Data are available for the period 1950-2013. We will count the average.

Arms costs values are taken from the same source. We will count arms costs as the share of GDP for available period 1988-2013. We will count the average.

Oil export index could be considered as a geopolitical factor as well due to the fact that oil is a valuable strategic and geopolitical commodity. We will check **Colgan's** and **de Soyssa's** allegations that oil exporters (petro-states) engage in interstate conflicts more than other countries. The last hypothesis is:

6. In countries with higher oil export there are more conflicts than in countries with smaller oil export per analysed period.

Oil exports (exports minus imports) data are taken from **Ross** (2013) for the period 1932-2011, in thousands of barrels per day. We will calculate average for the period 1945-2011. Data are in the table 2.

Conclusion and Results

We used the **Spearman's** correlation coefficient for tests of our hypotheses, because we found an abnormality of the frequency distribution thanks to the **Kolgomorov-Smirnov** test (see table 3). Results are presented in table 4.

The next variables are statistically insignificant – GDP per capita, natural increase, oil exports, arms costs as share of GDP.

As we see, we did not confirm neo-malthusian theories about increased number of conflicts due to population growth. In spite of the fact that majority of countries (with exception of Russia and Japan) had got natural increase more than fourteen and in some cases more than thirty per cent.

GDP per capita index, which according to some researchers determines the stability of political system and effectiveness of armed forces did not have statistically significant influence either. This index was not relevant in the region where least developed countries (e.g. Yemen or Bangladesh) and highly developed countries (for example Japan) are located.

Hypothesis about higher involvement of oil exporters in interstate conflicts was not proved either. There are wealthy oil countries of Middle East in our analysed region, yet the oil export index was statistically insignificant.

Arms costs as share of GDP were statistically insignificant, too. Sporadic events – like for example increased arms costs of Kuwait to 117 percent after **Saddam Hussein's** attack in 1990 – did not influence the results.

Statistically significant at the 99 per cent level were arms imports and exports. *The more countries in the Asian region trade with arms the more conflicts about natural resources and raw materials from water areas there are since 1945.* We have to mention that SIPRI data collection does not include small arms weapons, which are according to some researchers the main cause of conflicts in developing countries (Craft – Smaldone, 2002). Had we used a different dataset the results could have been different.

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Annexes

Table 1 – Conflicts over raw materials and resources from water-rich areas in the Asian region

Conflict actors	Conflict cause	Period
<i>Middle East</i>		
Israel, Syria	The Dan River, Tell El-Qadi	1964
Israel, Jordan, Syria	Jordan plans to irrigate the Jordan Valley by tapping the Yarmouk River, Israel responds by commencing drainage of the Huleh swamps located in the demilitarised zone	1951
Israel, Jordan, Syria	The Sea of Galilee	1953
Israel, Syria	Israel destroys irrigation ditches in the demilitarised zone	1962
Israel, Syria	Plan to divert the Jordan River headwaters	1965-1966
Israel, Syria	Diversion works on the Jordan River headwaters, Golan Heights with Banias tributary to the Jordan; Israel occupies West Bank.	1967
Israel, Jordan	The Yarmouk River	1969
Israel, Lebanon	The Hasbani River, village Al Wazzani	2001-2010
Iraq, Kuwait	Iraq tries to reach the access to water sources	1961-2013
Iraq, Syria	The al-Thawra (Tabaqah) dam in Syria	1974
Iraq, Syria	Dams on the Euphrates River	1975
Iraq, Syria, Turkey	Euphrates, the Ataturk Dam	1990
Iraq, Turkey	Euphrates, the Ataturk Dam	1991
Iran, United Arab Emirates	Abu Musa, Greater and Lesser Tunbs, oil stocks, navigation use, exclusive economic zone	1970-2013
Iran, Iraq	Shatt al-Arab, the border	1969-2013
<i>Central Asia</i>		
Kazakhstan, Turkmenistan, Azerbaijan, Iran, Russia	The Caspian Sea, fossil fuels	1993-2013

Tajikistan, Uzbekistan	The Rogun Dam in Tajikistan	2012
Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan, Kazakhstan	The Kambarata-1 Dam in Kyrgyzstan, The Rogun Dam in Tajikistan	2012
<i>South, Southeast and East Asia</i>		
India, China	Chinese dams in The Brahmaputra River	1954- 2013
India, Bangladesh	The Ganga River, The Farakka Dam	1947- 2013
India, Pakistan	The Indus River	1947- 1969
Bangladesh, Myanmar	The maritime border in the Bay of Bengal, fossil fuels	1978- 2012
China, Japan	Senkaku Islands, fish resources, exclusive economic zone	1972- 2013
China, Vietnam, Singapore, Malaysia, Philippines, Brunei, Indonesia	Spratly Islands, fossil fuels, fish resources, maritime trade routes	1945- 2013
Cambodia, Vietnam	Islands in the Bay of Thailand, fish resources	1969- 2013
Indonesia, Malaysia	The maritime border at the Celebes Sea (Ambalat), oil and natural gas stocks	1981- 2003
Singapore, Malaysia	Pedra Branca Island, fish resources	1979- 2003
North Korea, South Korea	The Kumgansan Dam	1986
North Korea, South Korea	The Hwanggag Dam, the Imjin River, flash flood cause by the North Korea	2009
North Korea, South Korea	The maritime border at the Yellow Sea, fish resources	1948- 2013
Japan, South Korea	Takeshima/Dokdo, territory, exclusive economic zone	1945- 2013
Japan, Russia	Kuril Islands, fish resources, fossil fuels	1945- 2013

Source: Gleick (2013), HIIK (1997), HIIK (2002), HIIK (2003), HIIK (2004), HIIK (2005), HIIK (2006), HIIK (2007), HIIK (2008), HIIK (2009), HIIK (2010), HIIK (2011), HIIK (2012), HIIK (2013)

Table 2 – States and variables

Country	Oil	Arms imports	Arms exports	Arms costs	GDP	Natural increase	Conflicts
Israel	211	41337	12977	9,68	10952,36	18,5	8
Lebanon	-5,8	1300	47	4,91	4963,93	20,5	1
Syria	211,2	38413	442	5,95	936,34	31,6	9
Jordan	68	10124	564	6,14	1772,7	32,2	3
Turkey	425,8	52417	697	3,21	2972,41	21,2	2
Iran	2318,7	46395	739	2,44	2279,12	23,6	2
Iraq	1286,8	48273	219	2,52	2522,19	29,6	6
United Arab Emirate	1947,1	22786	244	5,36	33228,16	24,5	1
Kuwait	1174,4	10017	129	13,63	17498,78	28,8	1
Tajikistan	0,2	79	No data	1,66	391,73	28,6	2
Uzbekistan	10	18	1009	1,1	754,17	25,8	2
Kyrgyzstan	0,1	17	203	2,89	553,01	19,4	1
Turkmenistan	22,7	420	No data	2,68	1758,73	23,7	2
Kazakhstan	646,8	1141	260	1,06	3804,12	14,9	2
India	-1238,8	108326	343	2,83	403,95	19,4	3
Pakistan	-110,6	33317	230	4,4	401,5	25,7	1

China	-1050,1	72678	47183	2,05	867,4 7	15,4	4
Bangladesh	-23,5	4240	2	1,15	271,4 3	25,2	2
Cambodia	0	1488	2	2,05	320,7 1	20,4	1
Myanmar	-4,4	5414	No data	2,8	No data	18,8	1
Vietnam	206,5	21966	18	3,41	579,8 6	22,1	2
Indonesia	435,3	15637	268	0,77	871,7 6	20,3	2
Singapore	-933,2	16273	846	4,38	14104 ,36	17,5	2
Malaysia	305,5	10618	25	2,22	2872, 66	23,6	3
Brunei	168,7	777	24	4,72	15474 ,92	27,7	1
Philippines	-238,2	2890	5	1,69	786,3 7	28,2	1
Russia	3642	431	109859	5,1	5141, 47	4,7	2
South Korea	-1725,5	48172	3809	3,02	6612, 27	15,8	4
North Korea	-31,9	23910	2352	No data	No data	14,9	3
Japan	-3968,5	59714	1962	0,95	19512 ,47	7	3

Source: Ross (2013), SIPRI (2012), United Nations (2014), World Bank (2014)

Table 3 – Kolmogorov-Smirnov test of normality

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
hdp	.263	26	.000	.710	26	.000
bradov	.176	26	.037	.852	26	.002
bravvo	.440	26	.000	.344	26	.000
poc	.301	26	.000	.704	26	.000
prrust	.098	26	.200*	.952	26	.263
brahd	.163	26	.073	.817	26	.000
p						
ropa	.199	26	.009	.899	26	.015

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Explanatory notes: hdp – GDP per capita, bradov – arms imports, bravvo – arms exports, poc – number of conflicts, prrust – natural increase, brahdp – arms costs as a share of GDP, ropa – oil exports

Table 4 – Correlations

		hdp	bradov	bravvo	poc	prrust	brahdp	ropa
Spearman's rho	poc	.121	.516**	.576**	1.000	-	-.064	.001
		.541	.004	.002	.	.134	.742	.997
		28	30	27	30	30	29	30

** . Correlation is significant at the 0.01 level (2-tailed).

Explanatory notes: hdp – GDP per capita, bradov – arms imports, bravvo – arms exports, poc – number of conflicts, prrust – natural increase, brahdp – arms costs as a share of GDP, ropa – oil exports