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The water/food/Trade/energy nexus - the epitome of the next phase of 'green capitalism'

Water has gained increased interest in the past few years by the private sector (McKinsey, 2009; Porter, 2010) and economic aspirants from the 'global south'. Drawing on Kondratieff's 'long wave cycle theory' and Kuznet's 'twenty-years-cycles' (Rostov 1975), it will be argued that we are now at the beginning of a new economic cycle where the water/food/trade/energy nexus will be crucial to understand for its analysis. Whether there will be an 'Asian age' in the global economy will be heavily determined by sustainable applications of the nexus. For the purpose of this paper, I will first provide a brief overview of the 'economic wave cycles' literature and then apply it to a new Asian 'tiger economy', Qatar. I will argue that Qatar has understood its enormous challenges to harness its revenues from gas in order to lead its economy from a mere rentier state to an active global player in international food and raw materials trade. The most crucial challenge will be however whether the Qatari decision-makers will be able to leverage their economy by making use of a sound application of the water/food/energy/trade nexus.

Have not those who disbelieve known that the heavens and the earth were joined together as one united piece, then We parted them? And We have made from water every living thing. Will they not then believe? (Surah 21:30)

It is needless to mention that water is the source of all life. In particular, cultures who were founded in geographical areas with low water availability such as in the Middle East, have traditionally perceived water as one of the most precious goods. The excerpt from the Holy Qur'an should therefore be viewed as the underlying cultural fundamental for Middle Eastern water perceptions.

Five cycles to explain economic boom and bust

The global capitalist economy of the outgoing twentieth century was in a state of constant growth. After the collapse of communism, the global economy witnessed an era of unprecedented growth until 2009, which laid the foundations for the globalised world we live in today. Whereas Western economies benefited from the revolution of information technology, the supplying economies and thus 'work benches' in the East experienced an era of increasing trade surpluses. Globalisation turned China and India not only into major suppliers of Western consumerism but also into new economic aspirants. The Middle East functioned once again as the ventricle of this era by pumping the required amounts of oil into the global economy's essential systems. The metabolism of the past twenty years worked with ever-increasing velocity turning the previous periphery into another core of the international political economy.

As hinted above, I argue that one should reflect upon 'economic cycles' theory to understand the impact of water resources in the twenty-first century. The first economist to point the academic world to such patterns of economic growth and eras was Nikolai Kondratieff, who conceived the notion that 'long cycles' determine the period of economic boom until it gradually fades into bust. Technological innovations enabled the capitalist economy to see new waves of growth (Rostov 1975). The first wave was triggered by the invention of the steam engine and the subsequent industrial revolution in Europe from 1787 to 1842; the second by railway and steel from 1842 to 1897; the third by chemicals and electrical engineering from 1897 to 1939; the fourth cycle by petroleum and automobiles starting in 1940 until to date and the fifth by information technology from 1980 until to date. However, the hey days of the fourth and fifth cycle ended in 1973 and in 2001 respectively. According to Kondratieff, these waves lasted up to fifty years (Moody and Nogrady 2010). Schumpeter (1942) linked Kondratieff's assessments on waves with innovation. What he labeled as 'creative destruction' stood for the outgoing era of boom, the tipping point between the old and the new cycle. Kondratieff as well as Schumpeter did not use statistical analysis to underpin their arguments, hence they received widespread criticism from the mainstream economists of their days. Simon

Kuznet (Rostov 1976) applied this missing link in examining 'long cycles' of an economic era by analyzing the correlation between prices and production spans. *He found that primary trends in production and prices reflected systematically the life cycle of a given technical innovation (or opening up of a new territory or natural resource); that is, a phase of rapid, then decelerating, increase in output; of rapid, then decelerating, decrease in price* (Rostov, 1976:422). Kuznet coined the term that those industries, which were most successful in such a period led the way of development. One of the most significant aspects about any economic cycle was the role of transaction costs, which the leading industries managed to decrease. I will return to this point at a later stage when discussing the relevance to the water/food/trade/energy nexus.

The creative destruction of the fifth cycle

The fifth cycle ended as early as 2001 when the IT bubble burst during the dot.com bust. However, Joseph Stiglitz (2010) links the fiscal policy of the Federal Reserve under Alan Greenspan in the early 2000s to the creation of the next bubble, which caused the most severe economic crisis after the Great Depression. In the absence of regulation, the next bubble was created by unsolicited investments in US and UK property markets. The bankruptcy of Lehman Bros in 2008 marked the final end of the artificially prolonged fifth cycle. The taxpayers, who may have risked the welfare state for the survival of the economy, almost exclusively paid the following bailout of American and European banks. The question that remains is what will follow after the fifth cycle.

The year 2008 did not only witness the worst financial crisis in history. It also included an overlooked phenomenon (because it has been hardly experienced since the end of the Second World War) by Western consumers: food price spikes. For the first time since the 1970s, staple food prices rocketed on the global financial markets (Wright, 2009). This led to growing concerns amongst decision-makers in the global south, where consumers were most affected. One consequence of these price spikes was the beginning of a new era in capitalist

thinking. For the first time in decades, inward investment in land reached new heights. Developing countries were the major targets of investors from other economies in transition, who benefitted from the previous economic cycles. It is therefore no surprise that capital flows originated from Middle Eastern, South Asian and East Asian economies. This poses a number of institutional problems in relation to the current economic cycle, where institutions to regulate such capital inflows are absent. It is likely that the price of such missing 'rules of the game' (North, 2005) will be paid by the environment.

Water as it will be shown in the next paragraphs will be the Achilles heel of the global economy. Former British Prime Minister Margret Thatcher once remarked that 'socialism is fine, until you run out of money.' Her economic policies were based on neoliberal thinking prone to deregulation to create the institutional basis for the fifth cycle. Despite the many critics of the age of neoliberalism during the fifth cycle, it was also embraced by the political left in Europe, most notably by Tony Blair and New Labour, who conceived Third Way Politics to reconcile social justice with economic growth (Heffernan, 2003). However, they did not re-regulate the financial sector, which resulted in the credit crunch in 2008. This was the final breath of the fifth cycle.

The next cycle is currently in its conception stage: the sixth cycle or the green economy. At the heart of this cycle will be resource efficiency because the preceding cycle over-consumed our resources. I would call the past thirty years the 'instant age', where consumer-demand did not take resources sufficiently into account. The changing global order, climate change, resulting resource scarcities and increasing demand for global food supplies make a leap into a new economic cycle inevitable. Cutting waste to increase resource efficiency and substitution will be the major facet of this next cycle, which is hoped to lead to even greater economic returns than the previous cycles (Moody and Nogrady, 2010, UNEP, 2011).

'Capitalism is fine until you run out of water'

The water/food/trade/energy nexus will be the greatest challenge to the sixth cycle. Especially water resources will face severe pressures if global food security should be achieved by the year 2050 when 9 billion human beings will dwell on this planet. When Thatcher remarked socialism would eventually run out of money, the neoliberal thinking of the fifth cycle could be the gravedigger of water resources. If current thinking and behavior persists in the coming twenty years, the world will require 6.9 trillion cubic metres of water - 40% more that can be provided by available water resources (Chartres and Varma, 2010). The solutions of the previous cycles would have an increase of the supply-side through desalination of water resources by using nuclear power or fossil energy. Fossil energy such as oil and gas may have peaked or will peak in the coming years through more demand from East Asia (OECD, 2010). Moreover, the tragic events in Fukushima in Japan have exposed the severe vulnerabilities of nuclear power. Technological solutions of the past cycles may therefore be poorly suitable to fill the water gap.

The energy enigma in conjunction with the deregulated economy of the late fifth cycle therefore poses grave threats for the inception phase of the sixth cycle. Moreover, the previous cycles were characterized by economically unviable resource inefficiencies. In UK supermarkets, 30% of the products on shelf are not being sold to customers but end up in huge bins normally positioned in close proximity to the car park. In addition, UK consumers and the food supply chain also have a resource inefficiency of 30% (Food Aware, 2011). Between 1997 and 2001, the UK's water footprint totaled 73 billion cubic metres of water (Hoekstra and Chapagain, 2008). One third of it got wasted through the absence of economic efficiency in the private sector, where food is produced, traded and eventually consumed (Allan, 2011). Allan highlights the ignorance of agents in the food supply chain with regards to their role in global water trade (ibid).

Another phenomenon of the fifth cycle has been the pace of development in former developing economies. If the BRICS economies only catch up to similar living standards and water inefficiencies as the Western world, water would ultimately be the most severe economic growth constraint (McKinsey, 2009).

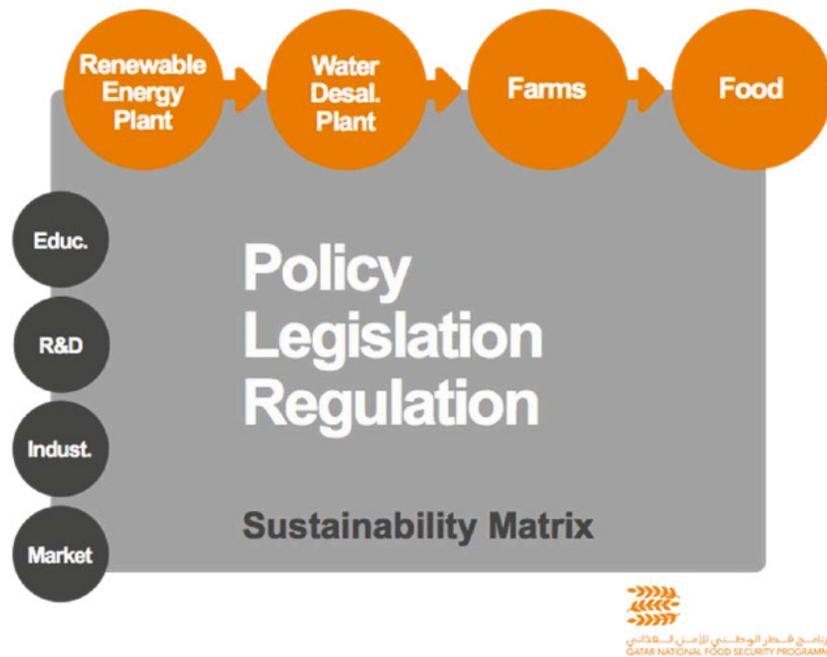
A poor man's response to water scarcity

Most of European countries are net virtual water importers (Hoekstra and Chapagain, 2010). Nevertheless, the EU could potentially provide food security for basic staple foods such as grain, dairy and meat to its people if required. The Gulf economies are in a very different situation. I will now present the case of Qatar where holistic concepts to achieve food and water security through moving on to the sixth cycle have been introduced. Qatar offers a unique case study due to its severe water poverty and dependence on food imports. It is also perhaps the most researchable case for sixth cycle strategies at present.

The island in the Persian Gulf imports over 90% of its food requirements, which is mainly because of its very limited water resources of roughly 56 million m³/per year leaving every single of the 1.7 million Qatari population with 32 m³/per year (QNFSP, 2011; AQUASTAT, 2011). Despite this endowment Qatar has one of the highest GDPs per capita, the Gulf state is a water pauper. However, Qatari decision-makers have understood the epic challenge and introduced a National Food Security Programme. This initiative is amongst placing the water/food/trade/energy nexus at the centre of its approach. Within the next ten year, Qatar seeks to increase domestic agricultural production by 30-60% through desalination plants powered by solar energy. Financed through natural gas exports (Qatar holds the largest gas field in the world), the natural resource wealth is used to transform the economy from food and virtual water import dependent to levels reaching self-sufficiency (Interviews, 2011).

The missing link in the equation is viewed in foreign direct investment in land and water in North America, Eastern Europe, Africa, and New Zealand (Interviews, 2011). In other words, Qatar intends to increase its virtual water imports through overseas land (and water) acquisitions to make full use of its fossil energy wealth. Moreover, concepts to cut waste in the supply chain are developed with supermarket chains to decrease waste and increase resource efficiency. Qatar is thus an example of an economy on the way into the sixth

economic cycle. The decision-makers view this strategy crucial to maintain economic prosperity reconciled with economic justice.



Source: QNSFP, 2011

The risks of the sixth cycle

The above-mentioned investments in overseas land pose also significant risks to the ambitious strategy of the State of Qatar. Through its state fund, the country is going to invest one billion US Dollar in Sudan to raise fodder for meat production (Interviews, 2011). On approximately 100.000 ha, the state fund plans to irrigate 'alpha-alpha' and other crops using one billion cubic metres of Nile water. Without going into the analysis of the Nile water question, this strategy may lead to further political and economic challenges in North Africa due to Egypt's dependency on the Nile. The investment in Sudan reveals the urgent need for institutional arrangements for foreign direct investments in land. The Qataris

may easily be able to finance these plans through the rent gaining experience of the fourth and fifth cycles.

The focus on blue water for the production of crops is a typical facet of old-style economic thinking of the neoliberal days of a deregulated economy. However, if the same paradigms of the Thatcher days are applied, the sixth cycle may not be able to unleash its full potential as desired by proponents of the next era in global capitalism. The enhancement of green water productivity as a sustainable avenue for overseas food production has not gained currency in current thinking of investors from Qatar, which may be the greatest weakness of the highly progressive concepts conceived in the Gulf state.

The water/food/trade/energy nexus may therefore have a great appeal to economies blessed with high natural resource revenues but may face its most severe constraints through the absence of timely 'rules of the game' and willingness to take risks with regard to environmental justice. It must be added that the current wave of foreign direct investment in land in Africa offers annual returns between 15-25%. It is needless to mention that the absence of regulation through institutional arrangements make these returns possible.

In this paper, I have argued that the global economy is at the beginning of a new economic cycle, which requires increases in resource using efficiency at a time of looming resource scarcities triggered by rapid demographic changes and economic prosperity in Asia. This resource efficiency also unveils the weaknesses of the private sector, which is highly resource-inefficient at present time. I have tried to illustrate that awareness of the water/food/trade/energy nexus will be one of the most crucial elements determining the success or failure of the next cycle in capitalism. We currently see the birth pangs of a new era in the global economy. The resource giant Qatar is amongst the most progressive economies in its evaluation of the challenge of how to turn their economy green. However, governments in recipient countries will decide upon the success or failure of such concepts.

As Douglass North (2005) stressed '*Institutions are the humanly devised constraints that structure human interaction. They are made up of formal constraints, informal constraints and their enforcement characteristics. Together they define the incentive structure of societies and specifically economies*'. Whether or not decision-makers will find the right incentive structures of the future at the global strategic scale will be determined by our understanding of the operation of the water/food/trade/energy nexus.

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