

Forum: Engaging the environment in the relationship between China and Africa

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The changing world of limits

The path to development follows long held ideas on how to stimulate growth – variations in government control of the economy, variations in tax law, variations on which academic pursuits will stimulate most economic growth. As such there are many examples in history of different ways in which regions or states combined economics and politics to achieve economic growth. It is only in roughly the last 25 years however that the environment more strongly entered into the calculation of growth.

Growing scientific consciousness and understanding of global climate change has significantly increased in the last two decades. The world view of a planet with infinite resources and coping capacity has successfully been challenged. What is by now clearly understood is that the earth's resources and carrying capacity is

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finite and human activities have been and are affecting the global climate systems, especially through the emissions of greenhouse gasses (GHGs) that lead to atmospheric warming. Atmospheric GHG levels at present are at their highest concentration in 800,000 years (Flannery, Hueston & Beale, 2013). Additionally, demographic pressure and pollution reduces habitats for species, resulting in a loss of biodiversity of unprecedented proportions. Policy makers have to engage with this “new” finite world by accepting the limits it places on development. Due to this realisation of “limits”, the idea of sustainable development has grown in importance. This growth has to occur in such a way as to preserve the state of the environment for future generations, not only for health or aesthetic reasons but for continued and future development. The importance of sustainable development has also come to the fore in the global discussion on the Millennium Development Goals (MDGs) with some countries propagating the idea of new Sustainable Development Goals for the post-2015 era.

This forum contribution discusses the importance of innovation and conservation as methods of adaption and mitigation in the reaction to climate change. The paper, as such, looks at the field of “environmental research” within political science and asks about the place for environmental research within the China-Africa discussion. In this pursuit we can find trends of interest beyond the halls of politics and policy, moving from the direct impacts to the nuanced and indirect.

China – Africa and the environment

Environmental research often seems to be seen as the younger sibling of mainstream research, with topics that focus on the political and economic dimensions as the older more established siblings. When one approaches China-Africa analysis from an economic or political basis, the importance of this analysis seems evident. Trade relations, resource allocation and labour practices (predominantly economics) interweave with the discussion on trade agreements, global positioning and maintaining coherent internal and foreign policy goals (politics). It is also true that “issues of the environment” are often easily slotted into older areas or as part of the domain of existing global governing. However looking at “the environment”

as only a subtext in the bigger picture of changing global power patterns or as the result of development leaves many gaps and combines too many subtexts to remain fully coherent.

The idea of “the environment” brings to the fore the impression of green activism, anti-pollution drives and recycling. Whilst all of these are important, they are individually too narrow to comprehend the scope that environmental research entails. Considering the environmental aspect means being aware of the history of the global change in the environment (including climate, resources, perceptions, energy) and looking at the various smaller parts that combine to form the relatively new understanding of our world of limits. In some ways, when we say we work in “environmental research” we say that we work as researchers on the *world of limits* – looking at new ways to reduce barriers to growth. Often this has much more to do with enabling continued growth and expansion than limiting it: both progress and sustainability are central.

China’s economic growth began to increase exactly at a time that global environmental pressures entered the mainstream public consciousness at the beginning of the 1990s. This fact however seemed to have little impact on China’s mode of development as China’s economic growth still caused severe environmental damage in China. Many of China’s large cities such as Beijing and Shanghai suffer from extreme air pollution with PPM air ratings hundreds of times above levels that are considered safe by the World Health Organisation (PPM, parts per million, refers to the number of tiny pollutants in the air in a given volume and indicates harmful pollution levels). Due to increased costs (health costs for one), the lack of energy efficiency (leading to higher production costs and thus loss of competitiveness) and public pressure amongst others, China’s central government has in recent years begun to give more attention to sustainable development and economic greening in China itself (Esterhuysen, 2012). Some effects include: damaging acid rain which affects 1.5 million km² of China’s land surface (Jiang, Sun & Liu, 2010); outdoor air pollution that causes over 1.2 million premature deaths a year; and life expectancy in Northern China which has been reduced by as much as five and a half years due to pollution (World Bank, 2007). According to the World

Bank “the health costs of air and water pollution in China amount to about 4.3 per cent of its gross domestic product (GDP). By adding the non-health impacts of pollution, which are estimated to be about 1.5 per cent of GDP, the total cost of air and water pollution in China is about 5.8 percent of GDP” (World Bank, 2007). With China’s economy growing at around 7 per cent per year that “leaves” very little real growth. These costs have also partially led to China’s attempts to reposition itself as a higher value added export orientated economy compared to the current status of a low value added export economy. As part of this process it is expected that China will begin to shift its dirtier factories and industries to other developing areas including to African countries.

In China’s global self-depiction it tries to presents as a responsible power. As such the government condemns pollution at home and has pushed for (non-binding) environmental protective criteria for Chinese companies investing abroad. If China wants to play a greater role internationally it cannot shy away from the debate on climate and sustainable development at global meetings such at Rio+20 and other climate negotiations. Globally China is chastised for being the world’s largest emitter of greenhouse gasses, however in this it defends itself by siding with the developing world claiming that it is in fact the industrialised nations such as the OECD that caused climate change and that, as a developing country, it cannot be overly laboured with environmental restrictions on its growth. In this argument China and Africa have found solidarity, calling on the “industrialised West” to bear the larger costs for combatting climate change. The world of limits means that countries cannot continue to pollute the world without consequence. North America and Europe developed at extreme environmental costs. Developing countries today cannot develop in the same way, because the earth is already unable to absorb the current human impact. Change will have to happen in the developed and developing parts of the world.

In climate change we talk about the need to react to the global climate changes, with reactions divided into the areas of adaption or mitigation. Adaption is changing the way we do things to be able to cope in a changed world and mitigation is the attempts to limit the scope of change by limiting the drivers of climate change.

Adaption and mitigation as ideas however need substance if they are to materialise. Our argument looks at two possibilities of such substance: conservation and innovation.

In a world of limited resources, we need conservation and innovation – there is a need for new ways of doing things. Conservation, by protecting natural areas and by educating the public and youth on nature, is sustaining the limited natural resources the planet has. Innovation for its part evolves new ways of doing things by providing new, cleaner technologies, and it also changes how we think about development. The following two sections discuss the world of limits within the areas of biodiversity (conservation) and renewable energy (innovation).

Conservation: a focus on biodiversity

Biodiversity is the variability of life in all its forms (Birnie, Boyle & Redgewell, 2009), and conserving biodiversity is essential to sustaining the “living networks and systems that provides health, wealth, food, fuel and the vital services life depend on” (Rands, Adams, Bennun & Butchart, 2010:1298). Globally biodiversity is threatened due to a variety of factors: habitat loss, invasive alien species, over-harvesting, pollution, climate change as well as urban and rural development, industry, mining and agriculture. The increasing rate of the depletion and extinction of the world’s biodiversity has become an important issue for many involved in the conservation of the world’s natural environment – with no country able to achieve the Convention for Biodiversity’s (CBD) targets and commitments to slow down the process (UNEP, 2010). This issue has also become important in the topic of China-Africa environmental research as there are a number of areas within the biodiversity conservation topic that has had major impacts in the China-Africa relationship, however, this includes both opportunities and challenges. Some of the challenges include the global increase in illegal wildlife trade for products such as ivory and rhino horn; as well as the increases in the depletion of natural resources such as water and forests for timber products. Opportunities can be found in the need for protected areas, spaces where a variety of species, fauna and flora or wildlife can live in their natural state without disturbance or external threat. This is

an area in conservation where mutual lessons may be learned among the African countries and China.

China, known as one of the “17 mega-diverse” countries in the world, is home to a large percentage of the world’s biodiversity (Williams et al. 2001 quoted in Jordan, 2010). Due to rapid economic growth and development, industrialisation as well as a high population growth in recent decades, much of the country’s biodiversity has been harmed or threatened (McBeath and McBeath, 2006). Consequently, in China, where conservation areas have only been developed in recent years, the pressure on natural resources and natural habitats of flora and fauna has taken on a significant scale. Similar to China, many African countries has some of the richest biodiversity in the world, also threatened by both natural causes and anthropogenic factors. For this reason, protected areas such as nature reserves, botanical gardens, scenic landscapes, historical areas and national parks have increasingly been established. Although Africa is sparsely populated, one can learn from the experiences of African countries in conservation. For example, in South Africa, one of the most popular tourist destinations and high biodiversity spots is the Table Mountain National Park (TMNP) that is situated within a metropolitan city in the Western Cape. This national park is situated in and around an expanding city, with much of the park bordering urban areas; however, the park has had considerable conservation success because of the regulation and management of the park (Burgess, 2012b). Co-operation between China and African counties in conservation should include protected areas such as national parks and nature reserves as there are many mutual lessons to be learnt regarding the similar threats to biodiversity being faced in the two regions. Protected areas need to be maintained as a network rather than on their own in order to sustain biodiversity thus, many African countries can be used for lessons in biodiversity conservation, including across frontiers.

An important issue area for China-Africa environmental research has been the case of illegal wildlife trade, especially rhino poaching. In South Africa, a record of more than a thousand rhinos were poached in 2013, an increase of more than 50 per cent since 2012 (Hellwig-Bötte, 2014). Some rhino species are moving to-

wards the verge of extinction in some African and Asian regions. There are five rhino species in the world and all five species have been on the endangered and threatened species list of the International Union for Conservation of Nature (IUCN) for many years. Rhino horn have been found to be poached mainly for the Asian markets, particularly Vietnam, China and Thailand, where horn is traded illegally and said to be used in traditional medicine or as a hangover cure (Burgess, 2012a). With increasing wealth in East Asia, rhino horn demand is increasing; Rhino horns can fetch up to US\$ 110,000 per kilogram (Ibid, 2012). The rapid economic development experienced by China in recent years has further created new challenges and opportunities for the conservation and sustainable use of wild animals and plants with indirect effects on Africa. From a traditional Chinese perspective, as in many other countries, wild animals are a resource to be exploited, not something to be protected for their intrinsic value. However, as more people are able to afford traditional medicine, mounting pressure on conservation simultaneously leads to greater environmental awareness. The rhino poaching issue could be viewed as a problem not only for African countries and China but also for the global community as this crime cuts across many countries and borders. Rhino poaching has become crucial as a result of the growing need for environmental protection and conservation internationally. Thus, at a recently-held international conference on illegal wildlife trade by the UK government, global leaders agreed to a high level political commitment to take urgent action to tackle illegal wildlife trade (BBC, 2014). Illegal wildlife trade has become a serious criminal industry, with products worth millions of dollars. Combatting this trade is clearly an area for co-operation between African and Asian countries.

Innovation: renewable energy driving a new development path

China's original motivation for promoting green technologies was not part of a discovery of green values or the result of energy needs, but rather as a reaction to the needs of its changing economy. Partially as a result of China's attempt to reposition its economy higher up the value chain, China has invested heavily in the creation of a renewable energy industry. Renewable energy makes economic sense since it uses high end technology, requires skilled labour and gives potential con-

trol over a technology that will probably be the most important energy source in the future. China's aggressive government support of the industry (wind, solar, hydro) has catapulted Chinese RE industries to positions of world leaders in development, manufacturing and sales. As European markets cool due to restrictions imposed by the European Union after fears of Chinese dumping, other markets such as the developing markets of Africa have increased in importance. At the same time many African countries are experiencing severe energy shortages that have limiting effects on their economies. Even some of Africa's largest economies such as Nigeria and South Africa experience power shortages; Eskom, South Africa's state power utility, is applying load-shedding (planned power outages) to limit industrial electricity usage in South Africa for example. The fact that China is a world leader in renewable energy and that many African countries are experiencing energy shortages do provide lucrative areas of possible co-operation between China and (depending on local situations) different African countries.

Renewable energy, as mentioned has vast economic potential for the future. In terms of investment it is expected that a total of 75 per cent of world energy generation in 2050 will be renewable. This means that there is a large market that will need servicing and being at the forefront of RE development will be economically lucrative (Liu & Goldstein, 2013). China has taken the lead in global RE investment. In 2012, out of US\$ 269 billion global RE investment, China accounted for US\$ 65.1 billion (PEW, 2013. & Flannery, Hueston & Beale, 2013). RE exports allow China to produce higher end products compared to its current main low value added exports. China follows a distinct export lead growth policy and has had much success with its "go-out" policy. By 2005, exports accounted for 36 per cent of China's GDP, this is up from 9 per cent in 1980. RE both allows for economic growth and for nationally sourced energy (Liu & Goldstein, 2013).

The economic importance of RE in China's does not mean that it is not, in addition, important for its energy value. The demand for energy in China continues to increase. China already produced the energy equivalent of 620 million tonnes of coal equivalent in 1978, a figure that rose to 2370 million tonnes of standard coal equivalent by 2007. Largely due to the increase in energy production China saw a

rise in GHG emissions, with emissions for its energy sector increasing from 2.24 billion tonnes of CO₂ in 1990 to 5.65 billion tonnes of CO₂ per year in 2006, 20.2 per cent of the global total. Even in terms of per capita this is a large increase, rising from half the world per capita to equal to the average global per capita (Jiang, Sun & Liu, 2010). Thus although RE was primarily driven by economic interests, its energy value does count in its favour. It must also be understood that greening of an economy is most likely not an act driven by national feelings of environmental consciousness. Increasing the percentage of renewable energy in a country's energy mix can potential reduce the cost of energy, which increases the economic competitiveness of an economy due to higher energy efficiency. Greening therefore does not only sound good, but it also makes economic sense.

In terms of RE in Africa, the continent in general is positioned exceptionally well to benefit from RE. The need for energy in Africa is very large, with the continent in total producing a mere 600 TWh/year at present. In comparison, Africa has around 6000 TWh/year wind power potential and up to 170,000 TWh/year in solar energy potential (IRENA, 2011). Most of Africa's energy production is still reliant on fossil fuels, with coal and natural gas as well as oil accounting for more than 80 per cent of the energy production (EIA, 2014). This exposes African countries to international fluctuations in fossil fuel prices. In addition it is difficult to expand traditional energy infrastructure networks since the costs involved are increased by Africa's terrain. Although 60 per cent of Africans still live in rural areas, these areas often still have relatively low population density, making it less cost effective to expand the power grid to rural areas with increased costs and low returns. Renewable energy in contrast can be installed without grid connection and sources such as solar can provide near instant benefits after installation. China is not Africa's only "hope" for renewable energy growth and Africa is not China's last hope of having a sustainable RE sector. However, there is a case to be made for China-Africa co-operation and it does not have to be a case of "either or". Africa can engage with other international actors and states other than China, yet there is clear potential for China-Africa renewable energy co-operation through the combination of indirect but complimentary China-Africa self-interest (IRENA,

2011; EIA, 2014).

Conclusion

Growing scientific consciousness and understanding of global climate change has significantly increased in the last two decades. The world view of a planet with infinite resources and limitless coping capacity is gone. Human activities have been and are affecting the global ecological systems substantially, especially through the emissions of greenhouse gasses that lead to atmospheric warming and the destruction of biodiversity. The field of environmental research engages with this “new” finite world by accepting the limits it places on development.

Focussing on the environment allows research to understand situations from a different perspective, aiming at creating a holistic understanding of a problem with its own political and economic dimensions. In environmental research, politics (international relations or domestic), as well as economics, receive consideration – as part of the larger picture of sustainability within the *world of limits*. If economics looks at markets and politics looks at (human) institutions and power structures, environmental research looks at the “environmental economy” of the world *economics* and *politics* inhabit. Similar to politics and economics, environmental research adds perspective that allows us to understand what seems to be an increasingly complex world (even if this added complexity is only the result of increased reflection). Economically, the current ways of development are becoming environmentally too expensive, and politically, climate change is substantially adding to future uncertainty and conflict. In preparation for a future that limits the effects and scale of climate change, adaption and mitigation processes are key. Environmental research, conservation, innovation and sustainable development are areas that also contain interesting indirect effects of the China-Africa relationship, beyond the intended which is planned for and mapped out by governments. In a globalised world, conservation and innovation need to be issues for research and need to be fed into international processes, including the interaction between China and Africa.

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