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Political Economy of China's Overseas Investment in Critical Infrastructure: Examples from Greenland and the UK

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Abstract

Keywords

1. Introduction

As China expands overseas investments, their involvement increases in other countries' critical infrastructure, defined as infrastructure that is closely related to issues of sovereignty and national security. In particular, Chinese companies are aggressively seeking entrance into the European market because they have gathered experience in developing countries and perceive individual European countries as the doorstep towards the developed world at large. European countries may find Chinese companies to be the only serious bidders for expensive, low-profit and long-term infrastructure projects. In many host countries, this has become a sensitive issue for governments and media, in particular in Western countries. In their view, Chinese investment in nuclear and telecommunications infrastructures entails consequences for nuclear security and safety and information security.[1]

As will be covered in this paper, host country attitudes towards Chinese investment in telecommunications and nuclear power vary widely, from outright rejection, to ambiguity, and to acceptance. Given the widely held suspicion of Chinese state involvement in these investments and a historical distrust of the communist regime, why have some Western countries accepted Chinese investment in their critical infrastructure? Is it simply because of lack of funding alternatives for their infrastructure needs?

The existing studies of China's overseas investment, including initiatives of the New Silk Road and the AIIB have mostly focused on Beijing's overall intentions,[2] without much focus on critical infrastructure or analysis of the host country attitude. This paper therefore focuses on the host country environment for China's interest in strategically sensitive sectors and analyses how economic and political factors have encouraged or constrained Chinese efforts in these sectors, with case studies from the nuclear power and telecommunications industries. The paper analyses the cases from Greenland and the UK for nuclear power and uranium mining and the UK for telecommunications.

In a nutshell, this paper argues that the specific form of democratic institutions and the ideology embedded in them are very important in determining how they receive Chinese investment in critical infrastructure. The ideology of free market economy and the trust in formal institutions have opened the door to Chinese investment, sometimes by outsourcing security to private entities or their entrusted allies or countries.

1.1 Analytical perspective

1 Here, nuclear security refers to the prevention and response to theft, sabotage, unauthorised access and illegal transfer of nuclear material and facilities. Nuclear safety refers to proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation hazards. Information security refers to the prevention of and response to unauthorised access by state and non-state entities to critical information and critical government infrastructures.

2 François Godement, Agatha Kratz (eds) *"One Belt, One Road": China's Great Leap Outward*, (ECFR, 2015.) Yong Wang, 'Offensive for defensive: the belt and road initiative and China's new grand strategy', *The Pacific Review*, 29, 3, http://dx.doi.org/10.1080/09512748.2016.1154690. Xiao Ren, 'China as an institution-builder: the case of the AIIB', *The Pacific Review*, 29, 3, (2016) http://dx.doi.org/10.1080/09512748.2016.1154678.

Existing studies of China's overseas investments have attempted to weigh their strategic intentions against economic motivations, and debated over the extent to which the Chinese state have influence over company behaviours. Neither discussion, however, has produced conclusive results.

In 2005 when the Chinese state-run oil company China National Offshore Oil Corporation's (CNOOC) attempted takeover of Unocal in the US triggered Congressmen to call it a 'Trojan horse' that would enable China to conduct secret nuclear tests underground, as well as to obtain control of energy assets of the USA (Pelosi, 2005). Other countries remain concerned that China's sovereign wealth funds and SOEs will continue to buy large stakes in publicly listed American companies. Apart from national economic security, many democratic countries are also concerned that China's state-owned companies, while claiming non-interference in domestic affairs of other countries, support regimes guilty of gross violations of human rights, such as Iran, Sudan, Zimbabwe, Myanmar, and Venezuela, by investing heavily in and possibly providing military assistance to those countries. Some observe that China may be trying to challenge the dominance of liberal democracy in the world by showcasing the merits of China's liberal economic and authoritarian political model to other developing countries, or by trying to establish a "Beijing Consensus" (Jian, 2011). Still others suspect that China tries to establish a global "Chinese empire" (Terrill, 2004). At the same time, there is concern that China is in a desperate global scramble for control over sources of energy and raw materials, thereby posing a threat to international energy security. China's thirst for energy and resources has also caused resource nationalism in other countries, fearing that their governments would give up too many resources or resource sovereignty to China so that local development would be affected (Burgess and Beilstein, 2013).

The debate over the state's influence over overseas investment is similarly inconclusive, with critical knowledge lacking over state-business relations.[3] Existing literature mainly describes Chinese business activities and speculates about the relations with the state (e.g. Cai, 1999; Holslag, 2008; Luo and Tung, 2007; Wu and Chen, 2001; Yang, 2005). Some existing studies found that Chinese companies, when they invest overseas, seem to perceive political and business risks differently from industrialised country firms, which may reflect government influence (Buckley et al., 2007; *The Economist* 2010). Or simply, it is asserted or assumed that they are driven by the government's political motivations (For example, Cai, 1999; Filipov and Saebi, 2008; Forney, 2005; Friedberg, 2006; Zweig and Bi, 2005). Some studies have casted doubt on the conviction of the state's control over China's overseas investment, although their voices remain a minority in academic and public opinion. They argue that there is a principal-agent problem in state-business relations with diverging aims of the government and companies (Gill and Reilly 2007; Houser 2008); that commercial pressures on Chinese companies and banks are growing rapidly (Rosen and Hanemann, 2009; Hurst and Wang, 2012; Drysdale and Findlay, 2009); and business interests are often regarded by the state as national interest (Jiang 2014).

[3] For studies on China's outward investment, see Luo *et al.*, 1993; Zhan, 1995, p. 72; Cai, 1999; Wu and Chen, 2001; Xue and Han, 2010; Yang, 2005. For broader discussions on outward investment of developing countries, see for example, UNCTAD, 2005; Sauvant, 2008.

With China's launch of the Belt & Road Initiative in 2013, despite an unfruitful debate over whether its main goal is political or economic, there is wide consensus in the policy, media and academic circles that this Initiative has an overarching strategic goal of enhancing China's influence and presence in Eurasian continents and maritime territories.

Given the suspicion of hidden agenda in Chinese overseas investments and China's interest in strategic industries, it is extraordinary that some Western countries have accepted Chinese investment in their critical infrastructure. Is it simply because they need foreign capital so badly to improve their infrastructure and stimulate growth, that they put aside strategic risks? Or are these countries simply too naïve and not aware of the security risks? Is it because of the exclusive power that individual decision-makers have obtained, as is in the case of George Osborne's push for the UK to get closer to China, including allowing the latter to build a nuclear power station? What about the well-established British parliamentary democracy, and the continuation of the project after Osborne was fired by the new Prime Minister Theresa May?

Studies have also pointed out that the widely assumed association between democracy and free trade policy or international cooperation should not be taken as an iron-clad rule. On the contrary, protectionist constituencies in democracies have more power than those in authoritarian countries to block the national government from engaging in free trade activities. However, when an executive can have autonomy or fast-track power to conduct foreign economic policy without much constraint from the legislative or judicial branches, the executive can more easily conduct free trade and engage in international cooperation.

This paper therefore analyses the specific forms of democratic institutions in Greenland and the UK, as well as how they have determined their attitudes towards Chinese investment in critical infrastructure. The following factors will be taken into consideration:

1. The formal set-up of democratic institutions, in particular the relationship between the executive and legislative branches, including the role of the parliament;
2. Government-business relations, and openness of the economy;
3. The role and power of state security (intelligence) agencies;
4. The degree of trust in formal institutions and mechanisms, when there is limited knowledge or information;
5. The relationship between foreign policy and economic policy agencies, and the priority that national security enjoys in national policy discourses.

2. China's investment in overseas nuclear power

2.1 Uranium projects in Greenland

Greenland's economy currently relies on seafood exports and the block grant from Denmark. Achievement of economic growth is critical for Greenland because it wants to achieve a more 'self-sufficient economy' in order to achieve more political independence from Denmark.[4] Moreover, due to demographic changes, its economy is predicted to be in

[4] To the benefit of Greenland, p.10.

huge deficit by 2040. In order to maintain the current level of public services, Greenland will need additional DKK 800 million per year (on average) over the next 25 years.[5]

In recent years, Greenland has been actively seeking to transform itself from a fishing society to a mining economy. Global warming and ice melting in areas of Greenland have made this transformation possible. Although it is difficult to evaluate the economic potential of Greenland's natural resources due to fluctuation of global commodity prices, experts assure that "[i]f all goes well, the extraction of hard minerals could begin to contribute significantly to Greenland's economy within five to ten years."[6]

Greenland enjoys Self-Rule based on the Greenland Self-Rule Act enacted in 2009, which grants the rights for Greenland to manage all natural resources in Greenland as well as the economic zone off its coast. However, uranium mining by foreign companies and uranium export have been controversial as it has potential security and foreign policy implications beyond Greenland and to the Kingdom of Denmark, which is bound by the Non Proliferation Treaty (NPT) administered by the International Atomic Energy Agency (IAEA). In the case of uranium export, IAEA requires that a uranium exporting country needs to conclude international nuclear agreements with a recipient country. There was a difference in opinion between Copenhagen and Nuuk, the capital of Greenland, with regards to who should be responsible for the negotiation and conclusion of such agreements. According to Copenhagen, Denmark should be in charge, as the Greenland Self-Rule Act sections 12(4) and 13 stipulate that agreements affecting defence and security policy are to be negotiated and concluded by the Danish government (with the involvement of Nuuk), while Nuuk's position was that such agreements concern only Greenland.[7]

Despite many controversies surrounding uranium mining as well as the idea of using foreign capital in its pursuit, Greenland gradually paved the way for its realisation. During the administration of Premier Kuupik Kleist (12 June 2009 - 5 April 2013), Greenland maintained the Danish practice and abstained from mining uranium. However, it passed a law known as the Large Scale Projects Act to facilitate the immigration and management of large numbers of foreign workers needed to build and operate the mines, in view of a future possibility of opening mining sites with non-Greenlandic workers.[8] After the elections in 2013, during which the issue of mining became an important point of discussion, Aleqa Hammond became the new Premier. During her administration (5 April 2013 – 30 September 2014), the policy direction was to further accelerate Greenland's transformation to a mining economy, particularly by attracting foreign investment. As a result, on October 24, 2013, Greenland's legislature overturned a 1988 ban on the mining of radioactive materials, which meant minerals including uranium, thorium, and rare earth deposits could now be mined in Greenland.[9] Among potential foreign investors, Nuuk regarded China as one of the most prospective candidates. In November 2013, Jens-Erik Kirkegaard, Minister of Industry and

[5] To the benefit of Greenland, p.9.
[6] To the benefit of Greenland, p.11.
[7] To the benefit of Greenland, p.15.
[8] Boersma, Tim and Kevin Foley (2014), The Greenland Gold Rush: Promise and Pitfalls of Greenland's Energy and Mineral Resources, Brookings. P.2.
[9] http://www.loc.gov/law/foreign-news/article/denmark-greenland-greenland-votes-to-lift-uranium-mining-ban-considers-independence/

Minerals of Greenland, made an official visit to China to attract Chinese investment to its mining industry. According to Kirkegaard, "the island has large amounts of mineral resources while China's economic development needs such resources to maintain growth."

Against this background, on 24 March 2014, Greenland Minerals and Energy Limited (GMEL) and China Nonferrous Metal Industry's Foreign Engineering and Construction Co. Ltd. (NFC, a state-owned enterprise that specialises in overseas engineering contracts and mining projects) signed a non-binding Memorandum of Understanding (MoU) to cooperate in aligning the rare earth component of GMEL's Kvanefjeld Project with NFC's rare earth separation experience and capacity. GMEL is an Australian domiciled mining company that has been operating in Greenland since 2007. It has approximately 50 employees and mainly focuses on the Kvanefjeld multi-element project (rare earth elements, uranium, zinc). Kvanefjeld is located in Southern Greenland and it is by far the most advanced uranium project in Greenland. GMEL asserts that the uranium deposit in Kvanefield is the world's sixth largest,[10] but experts suggest it only corresponds to less than 2% of the global annual uranium production.[11]

A year later, on 7 April 2015, GMEL announced that a second MoU was agreed and signed with NFC. The second MoU stipulated that: a) GMEL would be responsible for finalising the exploitation license application to the Greenlandic government and commencing the permitting process; b) GMEL would complete pilot plant operations in the coming months; c) NFC would provide assistance to GMEL in preparing the exploitation license application; d) Both parties would cooperate in identifying and completing further work programs required for the Project to reach bankable status.

It is worth mentioning that NFC's main interest appears to be on rare earth materials, with which a large amount of uranium is extracted as a by-product. Although China is now the world's largest rare earth producer, companies like NFC are always on the lookout for rare earth oxides to sell to their separation facilities in China.[12]

On 19 January 2016, Greenland and Denmark finally reached an agreement on how to cooperate on foreign, defence and security policy issues related to the mining and commercial export of uranium from Greenland.[13] On 1 February, the Danish Ministry of Business and Growth/Danish Business Authority (DBA) and the Greenlandic Department of Industry, Labour and Trade (DILT), released a joint declaration on export controls of dual-use items and technology. The declaration set out a framework for Greenland and Denmark to ensure "compliance with the Kingdom's international export control obligations in relation to uranium and all dual-use items."[14] 'Dual-use' refers to items such as software and technology that can be used in both commercial and military applications and/or as

[10] http://www.theaustralian.com.au/business/mining-energy/greenland-minerals-poised-to-move-on-kvanefjeld-rare-earths-plan/story-e6frg9df-1225917279706

[11] The Committee for Greenlandic Mineral Resources to the Benefit of Society (2014), To the benefit of Greenland, p.15.

[12] Boersma, Tim and Kevin Foley (2014), The Greenland Gold Rush: Promise and Pitfalls of Greenland's Energy and Mineral Resources, Brookings. P.52.

[13] http://www.world-nuclear-news.org/UF-Denmark-and-Greenland-reach-uranium-export-agreement-2001165.html

[14] http://www.diis.dk/en/research/danish-greenlandic-declaration-towards-uranium-trade

precursors or components of weapons of mass destruction; therefore, the declaration refers to uranium exports as well as the trade of all dual-use items in Greenland.

The Greenlandic Parliament followed this by passing four bills on 25 May 2016 to set up a regulatory and legislative framework that meets the Kingdom's international non-proliferation commitments. On 2 and 3 June, the Danish parliament passed legislation that creates a legal framework to allow Greenland to export uranium. The legislation states that Denmark assumes responsibility for the application of international safeguards to ensure peaceful use of Greenland's uranium. The legislation came into force on 1 July. With all these combined, Greenland now has the framework and regulations that allow the island to produce and export uranium while ensuring compliance with international treaties concerning uranium trade.[15]

On 23 September, GMEL made a surprise announcement that another major Chinese rare earth company called Shenghe Resources would acquire a 12.5% holding in GMEL and start a 'strategic working relationship'. Under the agreement, GMEL would receive $4.625 million through the issue of 125 million shares priced at $0.037 to Shenghe. Once the agreement becomes unconditional, Shenghe will have the right to nominate a non-executive director to the board and will have anti-dilution rights to maintain a 12.5% position in GML.[16] Shenghe is engaged in the smelting, separation and deep processing of rare earths with a headquarter in Chengdu, China.[17] As mentioned earlier, Shenghe is mostly interested in rare earth materials, but with this agreement uranium extraction in Greenland will be for certain conducted by a company part owned by a Chinese enterprise.

2.2 Hinkley Point in the UK

The UK is the top European destination for Chinese FDI with 12 billion EUR between 2000-14.[18] China's FDI to Europe has been historically low, but has recently shifted the focus to services, thereby rapidly increasing investments to the UK in particular. Chinese companies tend to carry out sales and marketing operations or establish headquarters in the UK, mostly in the manufacturing sector followed by financial and business services. The UK is regarded as an ideal investment destination for developing knowledge and innovation as well as expanding market presence. Moreover, Chinese companies view London, which is home to more Chinese headquarters than elsewhere in Europe, as a gateway to Western markets.[19]

While the UK has been an advocate of a more liberal, less state-interventionist economy since Margaret Thatcher was prime minister, the so-called Brexit referendum on 23 June 2016 as well as a subsequent change of cabinet could change this direction. The vote to leave the EU is widely considered as an expression of popular disappointment with the

[15] http://www.ggg.gl/docs/ASX-announcements/Denmark-Passes-Export-Legislation.pdf
[16] http://www.proactiveinvestors.com.au/companies/news/71183/greenland-minerals-and-energy-ltd-agrees-to-landmark-strategic-investment-71183.html
[17] http://markets.ft.com/data/equities/tearsheet/profile?s=600392:SHH
[18] https://next.ft.com/content/5136953a-1b3d-11e5-8201-cbdb03d71480
[19] Burghart, Nora and Vanessa Rossi (2009), China's Overseas Direct Investment in the UK, Chatham House.

elites and the workings of the liberal market economy advocated by Brussels.[20] Indeed, the new prime minister Theresa May has set up a ministry of "industrial strategy" and suggested the idea of adding more sectors to the list in which foreign takeover bids can be subjected to a "public-interest test".[21] At the moment, this is possible for defence, financial services and media companies.

The controversy regarding the Chinese investment in nuclear power in the UK centres on the Hinckley Point C nuclear power station in Somerset, England. The proposed site is one of eight sites announced by the UK government in 2010 to avoid an energy crisis in the mid-2020s when many of the existing nuclear plants reach the end of their lives.[22] On 26 November 2012, the UK government awarded a nuclear license to NNB Generation Company (NNB GenCo), which handled the bid to build new reactors and is owned by the French state-owned EDF (Électricité de France).[23] The new reactors, which were estimated to cost 14 billion GBP, were due to start operating in 2023 if constructed on time and run for 35 years. It was calculated that the reactors would produce 7% of the UK's electricity, equivalent to the amount used by 5 million homes.

The Hinkley project caught media attention in October 2013 when the UK government and EDF finally made an agreement on the commercial terms of the project.[24] EDF announced that the company would build the nuclear plant with two Chinese nuclear companies, with EDF Group taking 40-50% shares, French AREVA 10%, and CGN in combination with CNNC 30 - 40%.[25]

The criticism at that time was focused on the fact that no British company would gain profit from this expensive project, to which the UK government was set to pay a massive amount of subsidy.[26] The UK and EDF had to seek for an investment from China because it was clear that EDF could no longer operate the Hinkley project on its own as the costs inflated from the original plan. This was due to unexpected issues with the AREVA European Pressurised Reactor (EPR), which was to be used for the Hinkley plant.[27] As it was a political project, UK and France had to avoid a deadlock.

Agreements between the UK government and EDF were for a long-term contract for the electricity generated at the Hinkley plant, which would have two 1600 megawatt AREVA EPR units, and for a guarantee for the project's debt.[28] The European Commission approved the agreements in October 2014. Under the Strategic Investment Agreement, signed in October 2015 in presence of the Chinese President Xi Jinping and the UK Prime Minister David Cameron, CGN agreed to take a 33.5% stake in the Hinkley project, as well as to jointly develop new nuclear power plants at Sizewell in Suffolk and Bradwell in Essex. Indeed, the Hinkley Point C project became the key investment of deals between the UK and China that

[20] https://next.ft.com/content/e3125454-5402-11e6-9664-e0bdc13c3bef
[21] The Economist, July 23 2016, p.10 "Britain's 'industrial strategy': Open for business?"
[22] http://www.bbc.com/news/uk-politics-11564152
[23] http://www.bbc.com/news/uk-england-somerset-20499033
[24] https://www.edfenergy.com/energy/nuclear-new-build-projects/hinkley-point-c
[25] http://www.areva.com/EN/news-9986/structure-of-the-partnership-for-hinkley-point-c-project.html
[26] https://www.theguardian.com/environment/2013/oct/20/nuclear-power-station-hinkley-edf
[27] http://mainichi.jp/articles/20151230/ddm/008/030/080000c
[28] http://www.world-nuclear-news.org/NP-UK-confident-of-Hinkley-deal-18051601.html

was worth more than 30 billion GBP during Xi's official visit to the UK in October 2015.[29] Already years behind schedule, the Hinkley project has been given a revised start date.[30] In March 2016, the Commission approved the partnership between EDF and CGN for the development, construction and operation of three new nuclear power plants in the UK including the Hinkley Point C project.

Around the time of Xi's visit to the UK, critics began to raise security concerns about allowing Chinese nuclear companies to build a nuclear power plant as part of UK's critical national infrastructure. In particular, the involvement of the second Chinese nuclear company CNNC, which was set to supply its engineering expertise to the project, was considered problematic. As mentioned earlier, CNNC is a state-owned enterprise directly under the Chinese central government. Although CNNC now specialises in nuclear power and uranium exploration, it has a track record of developing atomic bombs, hydrogen bombs and nuclear submarines since its foundation in 1988.[31] Combined with the fact that the government investment in a large-scale, risky nuclear plants goes against the industry trend of moving to renewable energy, one British critic called the Hinkley Point C project with China as "one of the maddest ever struck".[32]

A further delay of the project began to pose a serious threat to the financial stability of EDF. Already in October 2015, rating agencies said EDF would lose its credit rating if it took the lead in the UK projects without proposals; in response, EDF announced that it planned to sell as much as 10 billion EUR worth of assets over the next five years.[33] In June 2016, senior figures of EDF told the UK parliament's energy and climate change committee that the Hinkley project should be postponed, until it has "solved a litany of problems", including EDF's soaring debts and reactor design problems.[34][35] Although publicly denied, it is rumoured that CGN has considered an independent plan to build reactors without EDF, if/when it should decide to withdraw. The situation regarding the Hinkley C project suggested a possible future of UK's major nuclear power plant almost fully designed, built, managed and owned by Chinese state-owned nuclear companies.[36]

On 29 July, EDF announced that it had a board meeting and the board narrowly voted to approve the Hinkley scheme. However, almost immediately after this, Greg Clark, Britain's new Business and Energy Secretary, announced that ministers would once more review the project.[37] This means that the commencement of the project would further be delayed, as it

[29] https://next.ft.com/content/fc187680-774a-11e5-a95a-27d368e1ddf7
[30] http://www.itv.com/news/westcountry/story/2015-10-21/hinkleys-construction-to-begin-within-weeks/
[31] http://www.rist.or.jp/atomica/data/dat_detail.php?Title_No=14-02-03-07
[32] https://www.theguardian.com/commentisfree/2015/oct/21/nuclear-power-deal-china-uk
[33] https://next.ft.com/content/fcd6a462-7578-11e5-a95a-27d368e1ddf7
[34] https://www.theguardian.com/business/2016/jun/17/edf-senior-managers-hinkley-point-postpone-letter-mps-energy-committee
[35] Adding to the uncertainty is the challenge by Austria. It is reported that Austria is preparing to go to the European Court of Justice with an argument that the UK is breaching state aid rules by guaranteeing a set price for electricity produced at the reactor for 35 years. (https://next.ft.com/content/905342fa-b214-11e4-80af-00144feab7de#axzz4DoB0Kq8u)
[36] https://www.theguardian.com/business/2016/may/13/hinkley-point-cgn-china-general-nuclear-power-corporation-edf-energy
[37] https://next.ft.com/content/181077e2-54dc-11e6-befd-2fc0c26b3c60

needs a final approval from the UK government in order to proceed. It was reported that the reasons behind the renewed review of the Hinkley project were: a) the new UK prime minister Theresa May would like more time to study the project, b) May has doubts about China's involvement in an important domestic project[38], c) the renegotiating of costs, d) the possible use of the review as a negotiation tactic for Brexit as UK looks for leverage with France, and e) the scrapping of the expensive project without losing anyone's face.[39]

In response to UK's deferral of the Hinkley project, China reacted strongly. Its ambassador to London Liu Xiaoming published an article in the *Financial Times* stating that the China-UK relationship was at a crucial historical juncture and that the deferral imperilled the relationship. He urged London to approve Hinkley as soon as possible and expressed a hope that "the UK will keep its door open to China". [40]

In mid September 2016, Theresa May approved the Hinkley project, but with the condition that EDF will not sell its stake in the plant during construction and the government would take a "golden share" in future nuclear schemes. This latter measure appeared aimed at addressing Mrs May's security concerns over plans by CGN to take the lead in the construction of further reactors at Bradwell in eastern England, using Chinese technology. The UK government also stated: "There will be reforms to the government's approach to the ownership and control of critical infrastructure to ensure that the full implications of foreign ownership are scrutinised for the purposes of national security."[41]

2.4 Discussions on nuclear

China is building a large number of nuclear plants within its borders and is actively seeking to construct or export nuclear power stations overseas. The domestic boom is part of an effort to diversify energy usage and reduce pollution, while overseas investment is aimed at exporting nuclear capacity, technology and construction services, as well as strengthening political and economic ties with certain countries. Chinese nuclear companies are big state-owned enterprises. They have learned Western technology in the past three decades from collaborating with them on domestic plants, and now they are developing and building indigenously designed reactors and trying to export them overseas. Their overseas investments are supported by the state with financing from policy banks or state commercial banks as well as the state's active diplomacy.

Used as a foreign policy tool, Chinese overseas nuclear investment enables China to obtain oil and gas resources and to enhance relations with a range of host countries in the Middle East, Central Asia, Africa and Europe. In particular, China prioritises countries along the One Belt and One Road, which is the most important foreign policy strategy of the current government. With Western companies downscaling their activities due to economic

[38] It was reported that May had long been skeptical of the "gung-ho" approach that the UK government took, mainly by then-chancellor George Osborne, in making deals with Beijing. (https://www.theguardian.com/uk-news/2016/aug/01/osborne-rejected-safeguards-over-chinese-role-in-hinkley-point-says-ex-energy-minister)
[39] https://www.theguardian.com/uk-news/2016/jul/29/hinkley-point-c-why-has-government-delayed-final-approval
[40] Xiaoming Liu, 'Hinkley Point is a test of mutual trust between UK and China', *Financial Times* 8 August 2016.
[41] 'Hinkley go-ahead after 'national security' safeguards', *Financial Times*, 15 Sep. 2016.

slowdown, Chinese nuclear investment offers an attractive alternative, in particular to developing countries, because of its large capital and competitive price. There is, however, still a question of economic safety, as nuclear projects are all very expensive and can be a heavy burden on the host country, or as the Western company that is partner in a project may not be able to carry through due to financial troubles.

In terms of nuclear safety, China prides itself in having built and run many reactors domestically, but its overseas record is limited. China's involvement in overseas nuclear projects has mainly been contributing capital and construction workforce, to match with Western design. However, it has started to export its own technology, with two nuclear plants under construction in Pakistan and more contracted with other countries, with the intention of demonstrating the safety of China-built reactors to the world. Because China is using its latest technology in building nuclear plants overseas and domestically at the same time, it is too early to judge their safety. Moreover, the rapid development is taking place despite a recent Chinese official document pointing out insufficient safety control measures or disaster response programmes within China.

As for nuclear proliferation, China is a member of the NPT and the Nuclear Suppliers Group. It is suspected to provide nuclear technology to Iran, North Korea and Pakistan in the early years of the Communist regime, but the government now does not wish either Iran or North Korea to possess nuclear weapons. Beijing encourages a peaceful nuclear programme in Iran after the latter had reached a nuclear agreement with major powers in January 2016, getting international sanctions gradually lifted. China's export of nuclear technology to Pakistan, however, raises international concerns because Pakistan was the source of proliferation in the early years despite the government's denial of involvement. Even though the international community allowed China to build the first two plants in Pakistan as a counterweight to US help with India's nuclear programme, now China is going beyond this exemption and the risk of proliferation depends on how Pakistan and other countries, like Iran, use their newly obtained technology.

For Western countries, China is an important market for their nuclear companies. Although the US has indicted a Chinese for illegally obtaining nuclear technology and warned against technology leakage, Western companies will continue to try to get a share of China's domestic nuclear boom. In the UK, the Hinkley Point nuclear plant will go ahead after a change of government and another round of security reviews. More caution is expected in other Western countries, too, towards Chinese nuclear investment, as nationalism and protectionism are on the rise, while the governments are not certain about the security or strategic implications of letting Chinese nuclear companies into this critical sector.

The same could be said about uranium and rare earth export to China, the area where China has a major interest in Greenland. The Greenlandic government has in the past several years been interested in inviting Chinese investment in mining rare earth that contains uranium, and the Australian company operating in Greenland has signed MoUs with a major Chinese state-owned enterprise on exploitation and is scheduled to be partially owned by another Chinese company. The new agreement between Greenland and Denmark in 2016 will put more checks on the export of uranium and rare earth to China. Therefore, how much China can tap into the rare earth resources in Greenland depends on the interpretation and

application of the new rules. If China is hindered by the new rules, the Chinese government and companies are likely to regard it as an unfriendly gesture from Denmark, and with it could come economic and foreign policy implications, even though uranium from Greenland would still make a small portion of China's demands for its ambitious nuclear programme at home and abroad.

3. China's investment in telecommunications: UK

According to a list of Chinese companies in the UK by the UK Trade & Investment, there are eight Chinese telecommunications companies, of which Huawei and ZTE are the two biggest.[42] Both companies opened their first offices in London in 2001. In 2016, Huawei has 15 offices across the UK and over 1,100 employees.[43]

Huawei's investment in the UK became an issue when BT, a British telecommunications services company formerly owned by the British government, awarded Huawei the contract to supply some of the transmission equipment in December 2005. In January 2006, the UK Intelligence and Security Co-ordinator wrote to the Home Secretary to seek agreement to assist BT to monitor Huawei's work upon BT's request. This was the first time that the British Ministers were made aware of the security concerns of using Huawei's technology in UK's Critical National Infrastructure.[44]

After a few years of investigation, in February 2010, the UK government raised concerns about Huawei equipment with Huawei UK, and proposed the establishment of a security centre. The Cyber Security Evaluation Centre (called the Cell) was launched in November within Huawei in Banbury.[45] The Cell is funded entirely by Huawei and staffed by security cleared UK personnel. Its function is to test all updates to Huawei's hardware and software for high-risk components before they are deployed on UK networks, not necessarily to find every single vulnerability but to reduce the risk of using Huawei equipment "to a similar level to that of established manufacturers" including large suppliers from the US.[46] Meanwhile, in June 2013, the Intelligence and Security Committee of the UK Parliament released a report raising concerns about the central role of Huawei in Britain's telecommunications infrastructure.[47] The report provides details of how Huawei came to supply equipment to BT and criticised the attitude of the British government to have turned a blind eye to potential security risks in working with a company like Huawei for the sake of financial benefits or to avoid jeopardising future Chinese investment.

Despite the release of the report and extensive media coverage, however, the British government continued to rigorously promote Chinese investment in the UK, Huawei being one of the prime examples. This is largely due to then-chancellor George Osborne and his

[42] UKTI, Investments from China.
[43] http://huawei.com/uk/about-huawei/huawei-uk/index.htm
[44] Intelligence and Security Committee (2013), Foreign involvement in the Critical National Infrastructure: The implications for national security, p.23.
[45] http://pr.huawei.com/en/news/hw-093468-ukcenter-security.htm#.V4-PhmPGfUB
[46] Intelligence and Security Committee (2013), Foreign involvement in the Critical National Infrastructure: The implications for national security, p.15.
[47] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/205680/ISC-Report-Foreign-Investment-in-the-Critical-National-Infrastructure.pdf

so-called “Osborne Doctrine”, in which he hoped China to become the UK's second-largest trading partner by the end of 2025.[48] In May 2016, Huawei announced that it concluded a three-year MoU with the UK Trade & Investment (UKTI) to “identify the best UK technology partners for Huawei’s global supply chain and support Huawei’s investment and business development in the UK.”[49] On 28 June, it was reported that Huawei would continue with its planned investment in the UK worth 1.3 billion GBP (1.73 billion USD) despite the UK’s vote to leave the European Union.[50] However, as seen in the case of the Hinkley Point C nuclear power project mentioned earlier, it would not come as a complete surprise if the current Prime Minister Theresa May intervenes with Huawei’s plans in the UK over security concerns. Indeed, the new National Cyber Security Centre is scheduled to open in November 2016.[51] The new centre will focus on conducting cyber defence operations to improve the UK’s protection from digital attacks and providing assistance to public and private sector organisations to improve their cyber security.[52]

3.1 Discussions on telecommunications

Telecommunications is a commercial area that has seen widespread privatisation and outsourcing of services and technical equipment over the last decades, and especially Western countries have now privatised formerly state-owned entities. Accordingly, the logics of operation are gradually shifting from nationally- and stability-focused to short-term profitability and private investments. This leaves open a space for involvement for companies able to offer appropriate technology and services at a commercially competitive level.

Across the cases accounted for in this part, Chinese involvement differs greatly from issues of intensity and depth of engagement to host-country perception of the involvement. In the US, both ZTE and Huawei are banned from bidding for government contracts, and can neither be used as subcontractors for pieces of equipment because of continued worries over industrial espionage. In the UK, the commercial engagement of especially Huawei is extensive, and it was here that the company’s Cyber Security Evaluation Centre (the Cell) was established to screen Huawei equipment. The Cell is also used to service other countries such as the Scandinavian ones, where especially Huawei involvement continues to grow (ZTE appears to not have the technological edge to enter into more advanced markets).

Across these Western contexts, Chinese involvement in national telecom infrastructure has been received with widespread skepticism, not least in political circles and related to national security concerns. On the other hand, consumers have welcomed especially Huawei, whose sales of products continue to grow exponentially. In an African context, Chinese engagement has widely been welcomed, not least for the cheap provision of infrastructure technology and of smartphones. The difference between these contexts is not

[48] http://www.bbc.com/news/world-asia-china-34539507
[49] http://www.huawei.com/en/news/2016/5/Huawei-and-UKTI-sign-MoU
[50] http://www.reuters.com/article/britain-eu-javid-huawei-tech-idUSU8N19701M
[51] https://next.ft.com/content/73fbae2c-f81c-11e5-96db-fc683b5e52db
[52] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/525410/ncsc_prospectus_final_version_1_0.pdf

least the degree of involvement from ZTE, which enjoys a much larger presence in Africa than elsewhere, where it provides borderline totalitarian governments with telecom systems that may be used as tools of surveillance and potentially oppression, as we see it *inter alia* in Ethiopia.

While ZTE's strong bonds to the Chinese state remain undisputable, it is more difficult to determine the degree of influence of the Chinese state on Huawei. Especially in the Western context, it seems that the commercial potential of Huawei makes it questionable whether it would dare to engage in any substantial forms of industrial or political espionage. Thus far, scrutiny of Huawei has yet to expose any such activities, and actual exposure of espionage would seriously hamper, if not completely put an end to, Huawei involvement in telecom infrastructure in Europe, and eliminate its chances of ever being allowed to bid for US government contracts.

From a narrow national-security perspective, Huawei does not appear, thus, to represent any significant threat, not least because of the devastating effect that the exposure of e.g. espionage would have on its commercial activities. In that sense, we see a noteworthy difference between Huawei and ZTE, with the last appearing to represent a potentially greater security risk. In a wider sense, examination of Huawei's work in the UK and elsewhere have revealed that there might be issues with potential loopholes for hackers to exploit, unrelated to China and contingent on the technology used by the company, posing a more general cyber security risk. Furthermore, the decision to bypass other Scandinavian companies in contract tenders amounting to upwards $1 billion (such as in the case of Denmark) naturally puts into focus economic security and the financial consequences of seeing funds in such sizes transferred out of the region.

The dilemma, especially in Denmark and elsewhere in Europe, remains that no other company, including Ericsson, Nokia Siemens Network or Orange, can provide advanced technology at the competitive prices that Huawei can. Whether the competitive prices can be attributed to favorable (and anti-competitive) agreements between Huawei and the Chinese National Development Bank (CDB) or similar financial institutions in China, as is widely claimed, is in principle unrelated. The issue, if one at all, can be seen to be that short-term financial concerns override broader national interests, whether in regards to security or economic growth in the Scandinavian region.

For Denmark, the rule-set governing TDC's cooperation with Huawei is, at least on the surface, quite significant, with security measures likely beyond those that Huawei work under in the UK. These include screening of hardware in The Cell in the UK, full authority of the Center for Cyber Security to monitor Huawei and network activities, and the transfer of network control back from Romania (where it had been outsourced to) to Denmark in a Network Operation Center, where security-cleared Huawei employees work alongside Danish employees from TDC. These measures are important to ensure continued monitoring and control over a critical part of Danish infrastructure, but also require *de facto* adherence, something put into question a year ago where the Danish Broadcasting Corporation (DR) found that at least 35 Huawei employees worked in the NOC without proper security clearance.

4. Conclusion

China is actively seeking to expand its overseas investment in critical infrastructure, including in nuclear power and telecommunications. The major actors are big state-owned or big private companies, both of which receive strong state economic and diplomatic support. Economic motivations are important behind these initiatives, and China is an important investor due to economic slowdown in traditional developed economies. Infrastructure projects are nonetheless often expensive and can cause economic security problems or reliance of the host country on China, even though this has not been the focus of this paper.

Because critical infrastructure has immediate connection with sovereignty and national security, Chinese involvement in this kind of sectors stirs up security concerns, in particular in Western countries. For information security, reviews in the US, UK and other countries have not published non-classified information that is solid evidence of Chinese espionage through its telecom companies' involvement in telecom infrastructure. There are concerns, however, about the indirect influence that the Chinese government could have on the companies, and that there exist loopholes in Chinese technology, which could be abused by hackers. How Chinese technology is used by host country governments is a concern as well, as it impinges on privacy and democracy.

For nuclear security and safety, Western-designed nuclear plants with Chinese financing and construction are expected to increase, their safety monitored by IAEA. The safety of China-built nuclear plants in Pakistan that use Chinese technology remains to be tested in the coming years. The risk of nuclear proliferation depends on whether recipient countries like Pakistan, Saudi Arabia and Iran abide by international rules.

Used as a foreign policy tool, investment in critical infrastructure enables China to obtain oil and gas resources and to enhance relations with a range of targeted host countries. China regards the agreement on projects as a measure of trust between the two countries, often rightly so. Countries that suspect China of using such investment for gaining access to crucial information and control over crucial assets for strategic purposes have rejected Chinese investment, even though they have not found or published solid evidence of such risks. Countries that seek to improve relations with China and focus on pragmatic economic gains would welcome Chinese investment, in a hope that their actions would gesture how much they value their relationship with China, though some put into place more stringent monitoring mechanisms than others. In this sense, a country's perspective towards critical infrastructure and to what extent foreign involvement contains security risks varies depending on the political and economic environment in each country and can be subject to change over time.