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# **THE BELT AND ROAD INITIATIVE FROM A SUSTAINABILITY PERSPECTIVE**

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# EXECUTIVE SUMMARY

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The Belt and Road Initiative (BRI) – a more than 1 trillion USD project aimed to establish new infrastructure links and strengthen trade ties between Asia, Europe and Africa – will arguably have profound implications on aspects of sustainability in its more than 70 targeted countries. Following an outline of the BRI – what it is and how it is implemented - this report firstly examines what these sustainability implications are from an environmental, social and governance perspective; and secondly, what opportunities and challenges Swedish companies face in relation to these implications.

The Belt and Road is mainly seen as an initiative to strengthen ties between China and the countries along an overland (Belt) and maritime (Road) trade route. This ambition is mainly operationalized through state-owned enterprises and private companies, financing institutions, infrastructure and communications links. It is by examining practically how the BRI has progressed, that key sustainability implications can be identified.

From an environmental perspective, the BRI project portfolio of rail-infrastructure projects as well as coal and hydropower plants have left many questioning whether China will export its development model, historically associated with strong growth and environmental degradation. More stringent environmental requirements on state-owned enterprises, a focus on developing green financing solutions as well as foreign involvement in the application of more stringent standards in infrastructure development has given hope for a more sustainable development model. From a social perspective, lack of communication with local communities, poor labour standards and the practice of hiring predominantly Chinese staff in senior positions has led to protests in many BRI locations. From a governance perspective, lack of transparency in procurements, different standards and corruption complaints has also given reason for concern.

The above sustainability implications have caused BRI projects to be associated with significant risk for companies operating under stricter governance rules. To adapt to the new commercial environment that the BRI presents, but in a sustainable way, Swedish companies are advised to consider the BRI from four perspectives: direct project, indirect project, indirect market and supply chain. In the first case, Swedish companies need to consider the opportunities, challenges and risks associated with direct project involvement. It also entails considering the “soft factors” of such projects such as standardization processes and strict commitment to anti-corruption practices. From the other three perspectives, Swedish companies should consider the profound effects that the BRI could have on transforming supply chains in Asia, Europe and Africa as well adapt to these transformations by seeking new opportunities while adhering to already established sustainability standards.

The report outlines that the BRI initiative should be seen as a more comprehensive undertaking than just infrastructure projects, to also include aspects of extended market accessibility as well as altered supply chains. Furthermore, the report will conclude that far from being a set initiative with little room for foreign manoeuvres, activities along the Belt and Road have shown that Swedish companies are following the development of the BRI and in some cases actively participating in establishing the conditions and standards which will influence its implementation.

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# INTRODUCTION: SUSTAINABILITY ALONG THE BELT AND ROAD

China's Belt and Road Initiative (BRI) has been hailed as the most "ambitious geo-economic vision in recent history".<sup>1</sup> Indeed, this vision and strategic framework - launched by the People's Republic of China under the leadership of President Xi Jinping in 2013 - can claim to encompass more than two-thirds of the world's population, span 70 countries and boast planned Chinese investments of more than one trillion USD<sup>2</sup>.

Understanding of the initiative, and its underlying drivers, will be critical not only because of the scale of China's investment but also because of its broader implications on the sustainable development of the environment and societies on which it will have a profound impact. In fact, the BRI has importantly been positioned and discussed in the context of the UN "2030 Agenda for Sustainable Development"<sup>3</sup> as well as in light of the global agenda for the progression of the Sustainable Development Goals<sup>4</sup>.

Against this backdrop, a multilateral approach to the BRI has been advanced calling upon the active involvement of national governments, multilateral organizations, civil society organizations and international corporations to jointly forward the progress of the BRI in a sustainable manner. In this report the essence of progressing a multilateral approach to the BRI is seconded and furthered.

This report will further the discussion on the BRI in light of two important assumptions. Firstly, the sustainable progress of the BRI should be seen as strongly affiliated with the global agenda for sustainable development. Secondly, international corporations are important drivers steering the long-term dynamics of good governance and the sustainable use of natural resources and human capital.

In light of the above two assumptions, this report will consider the impact of the BRI from two highly related perspectives. Firstly, as the progress of the BRI is in many cases seen as market-driven and investment-focused<sup>5</sup>, the BRI will be highlighted from a sustainability perspective by drawing on the ten principles defined by the UN Global Compact as well as the Environmental, Social and Governance (ESG) Criteria used to screen sustainable investments. Secondly, the BRI will be highlighted in light of a broad set of consequences for companies considering both direct and indirect project implications to the opening of new markets and supply chain configurations.

The following sections will detail the BRI goals, framework and tools; later chapters will outline sustainability concerns and their implications for international companies. The report is based on interviews and discussions with some of the largest Swedish companies and organizations as well as two Chinese institutions – a prominent association and a consultancy for Chinese green investments. The report also draws on extensive literature reviews of research papers, reports issued by multilateral organizations as well as newspaper articles highlighting the latest developments with regard to the BRI.

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<sup>1</sup> Hillman, Jonathan, China's Belt and Road Initiative: Five Years Later, CSIS (2018-01-25)

<sup>2</sup> Estimates vary within the broad range of one to eight trillion USD.

<sup>3</sup> Statement by H.E. Mr Miroslav Lajcak, President of the 72<sup>nd</sup> Session of the UN General Assembly, at high-level Symposium on "Belt and Road Initiative and 2030 Agenda for Sustainable Development", UN (2018-06-13).

<sup>4</sup> Horvath, Balazs, Identifying Development Dividends along the Belt and Road Initiative: Complementarities and Synergies between the Belt and Road Initiative and the Sustainable Development, UNDP, Center for International Economic Exchanges

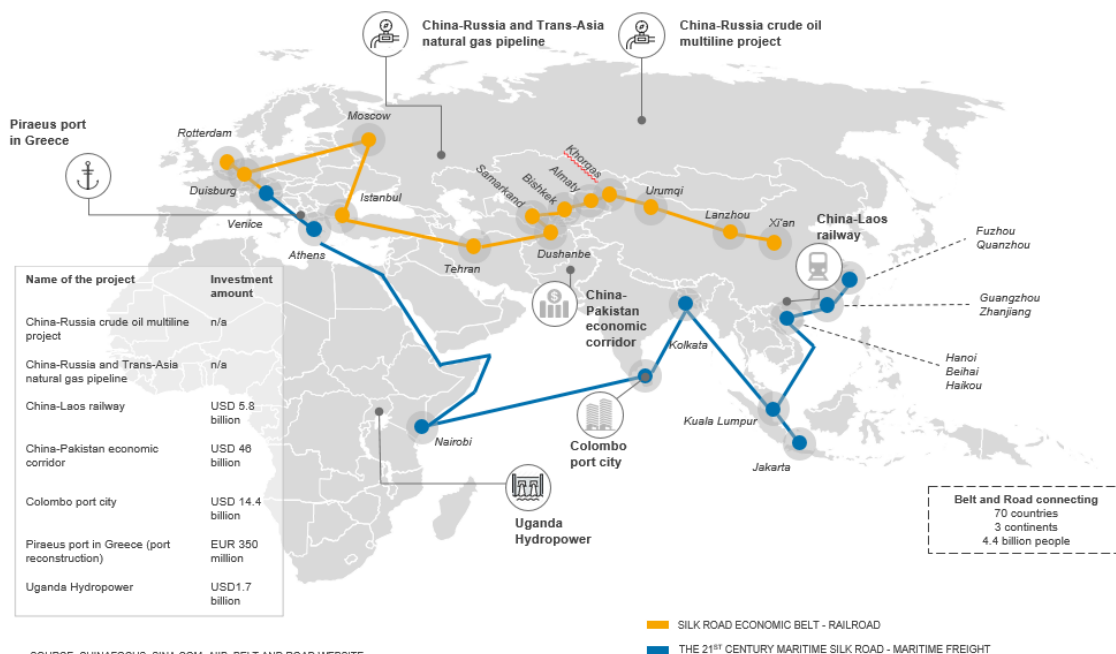
<sup>5</sup> Nordin, Astrid & Weissmann, Mikael, Will Trump make China great again?, The belt and road initiative and international order, International Affairs 94: 2 (2018) 231–249, Funded by the Marianne and Marcus Wallenberg Foundation.

## AMBITIOUS GOALS AND EXPANDING SCOPE

The aim, as identified in the initial blueprint document from 2015 - the “Vision and actions on jointly building the Belt and Road”, is to expand so called hard infrastructure such as roads and railways to connect predominantly Europe, Africa and Asia through both overland (Belt) and maritime (Road) routes (see map below). Further, it also aims to strengthen so-called soft infrastructure, such as trade and transportation agreements, communications etc; and broaden cultural ties.

From its original portrayal of two lines aimed to trace the overland ancient Silk Road and the maritime routes connecting Asia, Europe and Africa, the BRI has continued to expand in scope. More recent rhetoric surrounding the BRI has incorporated also a “Pacific Silk Road” (to connect Asia with the Americas), an “Arctic Silk Road” (traversing the Arctic Ocean) and a “Digital Silk Road” (through cyberspace).<sup>6</sup> This constantly increasing scope gives indication to the fact that the BRI evades concrete definition and has indeed been characterized as one of the “least-understood foreign policy effort(s) underway” further noting that “by design, the BRI is more a loose brand than a program with strict criteria”<sup>7</sup>.

### KEY PROJECTS ARE IDENTIFIED



Hence, in its most narrow terms, the BRI could be seen as an infrastructure initiative aimed to build transport and energy links connecting Asia, Europe and Africa, and in its broadest terms, the BRI can simply be seen as China’s attempt to “connect with the world”<sup>8</sup>.

Despite the lack of a concrete definition as to what defines a BRI project, there is no doubt that the initiative is well underway. Several high profile projects such as the China– Pakistan Economic Corridor, connecting Kashgar in China’s land bound province of Xinjiang with the Port of Gwadar in Pakistan, and the port of Kyaukphyu and associated economic zone, connecting China’s inland province Yunnan to the sea at the Bay of Bengal in Myanmar have already reached significant progress.

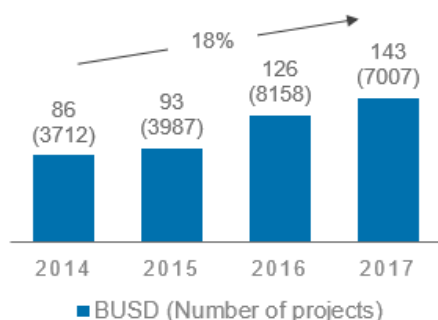
<sup>6</sup> The Economist (2018-07-28), *Planet China*.

<sup>7</sup> CSIS (2018)

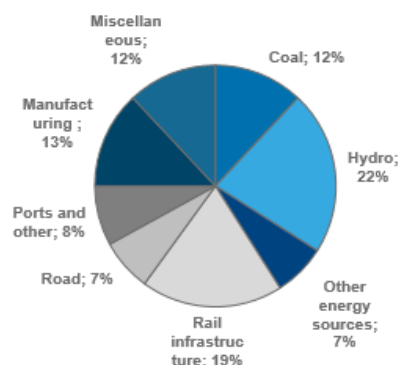
<sup>8</sup> CSIS (2018)

The estimates based on Chinese FDI can be seen in the table below, and new BRI projects are expected to total 445 billion USD<sup>9</sup>. This indicates significant progress towards reaching the more modest estimates of proposed BRI investments of 1 trillion USD but is still far from the 8 trillion USD indicated in the most generous investment estimates of the initiative. Simultaneously, the BRI project portfolio seems to be made up mostly of energy related projects, particularly coal and hydropower plants, as well as transport related projects such as rail, road and port infrastructure (see chart below).

NEW BRI-RELATED PROJECTS



TYPE OF BRI PROJECT



Before delving deeper into the implications of an increasing scope and of the current project portfolio composition from a sustainability perspective, it is necessary to consider two underlying questions governing the development of the BRI: (1) Why was it implemented? (the goals) and (2) How is it implemented? (the actors and projects). These questions will briefly be detailed in the following two sections before an examination of the sustainability aspects is presented.

## UNDERSTANDING THE BRI VISION AND GOALS

An understanding of China's international ambitions requires an examination of its domestic situation and unique context. Below is a summary of the main objectives of the BRI as outlined by literature examining state guidelines:

1. The BRI is aimed to represent a response to an increasingly challenging global environment where China has noted growing protectionism, competitive devaluation, more qualitative trade barriers and fiercer competition between companies. In this environment China aims to be accepted as a benign power forwarding its interests through openness and economic integration.
2. China aims to foster better coordination between Chinese stakeholders, between public and private institutions but also between individual companies. This ambition can for instance be seen by joint bidding and alliances between numerous Chinese companies teaming up to present a comprehensive offer including expertise, construction and maintenance towards foreign actors.
3. China has in recent years been suffering from severe industrial overcapacity and an aim of the BRI is hence to promote export of manufactured goods by tapping into foreign demand.

<sup>9</sup> WWF (2018), Greening the Belt and Road Initiative, WWF's Recommendations for the Finance Sector.

4. The BRI aims to enhance China's access to natural resources; two important aspects of which are access to food and energy. This ambition is not new to China but will take an accelerated form within the BRI context.
5. The BRI is aimed to boost service exports while also enhancing the quality and market share of new services in finance, shipping and airlines.
6. The BRI aims to enhance China's political influence, not the least from a soft power perspective. China has in recent years been driving an intense environmental agenda and as part of this attributed greater prominence to promoting CSR and environmental sustainability - as coined by President Xi Jinping, a commitment to "ecological civilization" through the propagation of a "green belt and road initiative".<sup>10</sup>

## HOW THE BRI IS IMPLEMENTED

Although many actors are involved in the implementation of the BRI, there is no single governing institution responsible for its successful execution. Instead it is organised through a complex network of stakeholders, both on a national and international level.

In China, guidelines and policy outlines developed centrally are interpreted by local governments and operationalized through a number of different facilitators or direct channels. In the context of this report, the implementation of the BRI is considered from the perspective of its key actors – state-owned enterprises and other companies as well as financial institutions and their credit lines – and from the key infrastructure projects that are effectively at the centre of the initiative.

## STATE-OWNED ENTERPRISES

State-owned enterprises (SOEs) in particular have been viewed as important actors in the implementation of the BRI, often spearheading infrastructure and energy initiatives abroad. Data from 2017 indicates that China has approximately 150,000 SOE's of which around 30 percent are owned by the central government and the rest by local governments. The central government further controls and manages 102 strategic SOEs through the State Assets Supervision and Administration Commission (SASAC).<sup>11</sup> Although SOEs have traditionally enjoyed preferential treatment from the government including favoured access to economic inputs such as land and credit, there is an ambition to level the playing field between private and state actors. The Third Plenum of the 18<sup>th</sup> Party Congress in November 2013 called for "mixed ownership" economic structures creating an even more nuanced spectrum of corporate actors with varying state influence, control or ownership.

The definition of an SOE is important as it sets the scope of the corporate actors involved in the BRI. The largest SOEs have spearheaded the development of the BRI both domestically and abroad. Perhaps the most prominent group in this context of direct BRI infrastructure implementation are the Engineering, Procurement and Construction (EPC) providers including major companies such as China Communications Construction Company, Shanghai Construction Group, China Railway, China National Petroleum Corporation Engineering & Construction Company, and Metallurgical Group Corporation of China etc. These companies are directly owned by the central government.

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<sup>10</sup> Holslag, Jonathan (2017), how China's New Silk Road Threatens European Trade, Vrije Universiteit Brussel, The International Spectator, Vol 52, No 1, 46-60.

<sup>11</sup> US State Department Office of Investment Affairs (2017), China Country Commercial Guide, China – 7 – State Owned Enterprises.

Other companies are not directly owned by the government but are still under substantial control or influence but have also taken an active role in the BRI. The spectrum of actors here is very broad and includes, for instance, Huawei and ZTE in telecommunications, but also companies perhaps less often associated to the BRI such as Alibaba and Tencent and other companies part of the “Digital Silk Road”.

## *FINANCIAL INSTITUTIONS*

Another tool for implementing the BRI abroad is the provision of generous credit lines through an array of multilateral and national financial institutions. It is important to note the institution which disburses the funds - different institutions apply more or less stringent standards, requirements and conditions on the use of the funds that they disburse.

National Chinese financial institutions are given the majority of funds from China to invest in BRI projects; yet, in many cases these institutions are coupled with less stringent standards on transparency, monitoring and sustainability. Below is an overview of the key financial players.

China Development Bank (CDB) and Exim-Bank supply the largest credit lines for BRI projects, together having extended an estimated 200 billion USD in loans at the end of 2016 to BRI projects.<sup>12</sup> Other prominent institutions in this context include state-owned investment group CITIC and China Investment Corporation (CIC) and the four biggest state-owned banks in China – Industrial and Commercial Bank of China (ICBC), Bank of China (BoC), China Construction Bank and Agricultural Bank of China.<sup>13</sup>

Another way of examining credit lines is by looking at the vehicles by which they are disbursed, the most prominent of which is the Silk Road Fund. Other vehicles in the form of bilateral and multilateral funds are less intimately tied to the BRI but still geared towards fulfilling Chinese infrastructure objectives in key BRI countries. Among these are Russia-China Development Fund, China-India Development Fund, China-Africa Development Fund etc.

In a multilateral context, China has announced contributions to the New Development Bank (NIB) and to the Asia Infrastructure Investment Bank (AIIB), an institution spearheaded by China and aimed to support the progress of the BRI. Other multilateral banks said to offer assistance in infrastructure construction along the Belt and Road countries include the Asian Development Bank (ADB), the World Bank (WB), the European Bank For Reconstruction and Development (EBRD) and The China, Central and Eastern Europe Investment Cooperation Fund (CEEFund).

## *INFRASTRUCTURE AND COMMUNICATION*

An important aspect of unlocking foreign markets for China is building infrastructure and communication lines. The composition of the project portfolio is important as it will have direct and indirect sustainability implications.

Three types of infrastructure can be deciphered in this context, namely

1. Transport networks
2. Energy and power
3. Soft infrastructure

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<sup>12</sup> Qingin, P. & Jia, D. (2017), China State Banks Provide Over USD 400 Bln of Credits to Belt and Road Projects, Caixin Global.

<sup>13</sup> Ibid.



### *Transport networks*

China aims to enhance hard infrastructure along the Belt and Road including a multitude of transport networks featuring road, railroad, port, urban transport, and air transport. The goal of enhancing transport links is already making significant progress.

Although the BRI is closely associated with rail, the development of sea and air routes should not be underestimated. Conditions in the arctic have encouraged the establishment of an arctic route which could serve to reduce transport times between Europe and China by sea. Air travel is also set to increase. Indeed, the number of international air routes run by Chinese airlines increased from 427 in 2013 to 778 in 2017.<sup>14</sup>

### *Energy infrastructure and the power sector*

China aims to enhance energy infrastructure and the power sector. This includes developing oil and gas pipelines throughout Asia. An example is the 3,666 km Central Asia-China gas pipeline project from Turkmenistan to China. However, China also has a multitude of other projects underway including hydropower projects, coal-fired power stations, nuclear power plants and to a much lesser extent solar and wind farms.

### *Soft infrastructure*

The BRI will also encompass soft infrastructure including a range of sectors such as communication equipment, customs- and trade facilitating services as well as “support industries” such as financial services and consulting. Part of the soft infrastructure build-up would comprise a digital silk road which aims to incorporate telecommunications, the Internet of Things (IoT) and e-commerce. One aspect of this is the construction of communication networks between BRI countries such as the overland cable built by Russia and China connecting Asia and Europe. Another aspect is the development of e-commerce between BRI countries including the harmonisation of customs institutions as well as construction of shipping, warehousing and logistics centres. China’s two largest e-commerce players – JD and Alibaba – have taken steps to facilitating cross-border e-commerce along the BRI.<sup>15</sup>

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<sup>14</sup> Hillman, Jonathan (2018), The Rise of China-Europe Railways, Center for Strategic and International Studies (CSIS).

<sup>15</sup> HSBC, a feature by The Economist Intelligence Unit (2018), Mapping out industries affected by or involved in the BRI.

# THE BRI FROM A SUSTAINABILITY PERSPECTIVE

Sustainability will within this report be defined from the perspective of the Environment, Social, Governance (ESG) framework while considering the UN Global Compact 10 principles structured within the areas of human rights, labour, environment and anti-corruption (see outline below). The two frameworks are seen as prerequisites for the implementation of the Sustainable Development Goals (SDGs).

It is necessary to note in this regard that the notion of sustainability has taken a somewhat different meaning in China, traditionally seen as closely affiliated with the pursuit of poverty alleviation. Hence, since the start of China's Reform and Opening Up policy in the beginning of the 1980s the country's fierce pursuit of economic development is given a sustainability perspective. It is often hailed to have facilitated an estimated 400 million people to lift themselves out of absolute poverty, albeit at the expense of severe environmental degradation and social inequality.

A most fundamental question in the context of the BRI is hence whether China will export its traditional economic model – the fierce pursuit of economic growth, infrastructure and poverty alleviation – or take a more comprehensive view of sustainability – incorporating environmental and social factors – to its ambitions in third-party countries?

Below sustainability implications of the BRI will be examined from an environmental, social and governance perspective (as defined by the ESG framework below) and with consideration of the two actors and key projects outlined above i.e. SOEs and other companies, financing and credit lines as well as infrastructure and communications.



## ENVIRONMENTAL RESPONSIBILITY

China is pushing a stringent national agenda for environmental sustainability and has issued several guidelines for the more rigorous implementation of environmental regulations, standardization and best-practice. Examples of initiatives include "The B&R Ecological and Environmental Cooperation Plan, Guidance on Promoting Green BRI" as well as Environmental Impact Assessments. Environmental responsibility is seen below from the view of use of raw materials, generation of waste and the undertakings of Chinese companies to drive initiatives to promote greater environmental sustainability.

## USE OF RAW MATERIALS

This section outlines the input-related categories affiliated to the BRI such as energy use, ecosystem use, water use and other resource use. It can be noted in this regard that the largest categories of projects of the BRI include hydropower (estimated at 22% of all BRI projects), rail infrastructure (19%), manufacturing (13%) and coal (12%) – categories associated with a negative climate impact.<sup>16</sup>

In fact, a report published by the World Wildlife Fund (WWF) identified hydro plants as having a major impact in a majority of resource input related categories (ecosystem use, water use, other resource use) and coal power plants in output related categories (greenhouse gas (GHG) emissions, non-GHG air pollutants, solid waste).<sup>17</sup> So far little investment has been made in other renewable energy sources along the BRI.

The increased use of raw materials and the so far lacking focus on renewable energy sources should be viewed with concern and would need more transparent monitoring and assessment mechanisms to be in place.

## GENERATION OF WASTE

Generation of waste in BRI projects refers in this context to the output related categories of infrastructure investments, including, GHG emissions, non-GHG air pollutants, water pollutants, solid waste etc. As was noted in the previous section, the simple composition of the BRI portfolio causes reason for concern. However, beyond this, several independent studies have been conducted to assess the progress of BRI projects in this context.

One of the more prominent BRI projects is the Lamu coal-fired power plant in Kenya. This proposed project has been found by an independent Greenpeace report to be among the largest point sources of air pollution and mercury in all of Kenya. The report finds that due to highly polluting technology, the emissions impacts of the coal plant would be much worse exceeding the emissions limits of new coal-fired power plants in the EU, USA or in China.<sup>18</sup> A similar study has been conducted in another China-owned project sometimes labelled under the BRI banner, the Tigyt power plant in Myanmar. Again emission limits were found to be much higher than international best practices, from 4 to 10 times higher. These levels of air pollution could cause harm to the health and livelihoods of the nearby population.<sup>19</sup>

Again in this regard, thorough environmental assessments by independent third parties in line with international standards are not conducted or are not published publicly, making a more comprehensive evaluation of the overall impact of BRI projects difficult.

## ENVIRONMENTAL ASSESSMENTS

SOE's and other corporate actors have been put under greater scrutiny to implement more stringent requirements on environmental standards. However, although China has issued more stern guidelines and laws on the national arena, it is not uncommon for companies to adhere to the less stringent standards imposed in third-party BRI countries:

“Regarding China's new and more stringent Environment Law and its effect on Chinese companies abroad, research has shown that even if a company knows that a standard is more effective they will not use it unless it is formally introduced and imposed. Most companies will use baseline.”<sup>20</sup>

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<sup>16</sup> WWF(2018)

<sup>17</sup> Ibid.

<sup>18</sup> Greenpeace (2018), Lamu Coal Power Plant Health Impacts. Links to the report: [https://www.slideshare.net/laurimyllyvirta/lamu-coal-power-plant-health-impacts?next\\_slideshow=1](https://www.slideshare.net/laurimyllyvirta/lamu-coal-power-plant-health-impacts?next_slideshow=1).

<sup>19</sup> Greenpeace (2018), Health risks from air pollution in Tigyt Shan State Myanmar. Link to the report: <https://www.slideshare.net/laurimyllyvirta/health-risks-from-air-pollution-in-tigyit-shan-state-myanmar>.

<sup>20</sup> Roundtable discussion (2018).

China International Contractors Association (CHINCA) is the national organization for Chinese international project investors and contractors and has among its 1,300 members (1,000 of which are engaged in international project engineering, contracting and investment)<sup>21</sup> also issued Guidelines of Sustainable Infrastructure for Chinese International Contractors, Social Responsibility Report of Chinese International Contractors Best Practice Collection reports as well as evaluation reports such as Social Responsibility Report of Chinese International Contractors indicating an increasing awareness about issues of CSR among Chinese EPC providers.<sup>22</sup>

“All projects shall go through environment assessment, and the assessment is carried out by professional firms. Chinese companies are paying more attention on environmental issues when they conduct projects in third party countries or choose sub-contractors, otherwise, it might be challenged by the local community and give negative impact to the Chinese companies...[However] CHINCA does CSR performance assessments on their membership companies and has noted that the companies are generally weak in supply chain management in terms of CSR.”<sup>23</sup>

Despite the strong official commitment to environmental impact assessments, few independent and public studies exist to show the environmental impact of BRI projects.<sup>24</sup>

## **GREEN FINANCING**

From an environmental sustainability perspective, different sources of financing would arguably hold implementing agencies and governments to varying standards of sustainable procurements:

“With regard to the conditioning of financing between different financial institutions, Chinese banks have a greater ease of getting financing and are closer to liquidity. Chinese banks are also more flexible in terms of internal compliance and control.”<sup>25</sup>

It is important that financing agencies implement strict requirements on the projects that they support, for instance, by committing to only invest in sustainable infrastructure that complies with environmental regulation, strong stakeholder participation, transparency and monitoring of impact.

“From the Chinese side, most companies use the big four Chinese banks to make their project identification and qualification. We are propagating the use of independent organizations”

In the case of the BRI, such sustainability requirements have not always been implemented. However, there is growing ambition to do more in this regard. China has thus far set up the Green Silk Road Fund, an institution particularly established to address environmental issues. The fund is estimated to account for 4.5 billion USD; yet, any disbursement so far has only occurred in China.

## **SOCIAL RESPONSIBILITY**

Environmental aspects of sustainability have been given much consideration in China and are in many cases at the top of the agenda for Chinese stakeholders with regard to sustainability measures. Social factors are not as prioritized and often go unnoticed highlighted mostly in the context of cultural differences and the difficulty of Chinese companies and stakeholders to engage with local communities. In this section two aspects will be considered, namely, community engagement and capacity building.

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<sup>21</sup> CHINCA Website (2018). Link: <http://www.chinca.org/EN>.

<sup>22</sup> CHINCA Website (2018). Link: <http://www.chinca.org/EN/info/18013108251711>

<sup>23</sup> Interview with CHINCA (2018).

<sup>24</sup> Bloomberg (2018), A Chinese company reshaping the world leaves a troubles trail.

<sup>25</sup> Roundtable discussion (2018).

## COMMUNITY ENGAGEMENT

Chinese actors have themselves highlighted the difficulty with which its international actors engage with local communities. For instance a senior representative of a Chinese green investments' consultancy, notes:

"Localization and communication are issues that Chinese companies face. Localization should be understood as a bigger concept including local supply chain, local R&D, local high-ranking managers etc. Communication with society of the destination country needs to be improved. Chinese companies are suggested to communicate with NGOs, media and to brand themselves at the destination countries"<sup>26</sup>

Chinese actors have been met with suspicion in many instances; something that has been aggravated by poor language skills and engagement with the community. A senior representative of a major Chinese association maintains that:

"The problem is that Chinese companies in general do not know how to brand themselves in a 3rd country or communicate with local communities due to cultural differences and language barriers."

In more severe circumstances communities have been alienated due to other factors such as land property rights infringements, forced or involuntary resettlements, disregard for indigenous people's rights or cultural heritage destruction.

Several examples of BRI projects can be highlighted in this regard. For instance, a report by Friends of Earth highlights forced resettlement or inadequate resettlement compensation in relation to the Jakarta-Bandung High Speed Rail (Indonesia), Lamu Coal Power Plant (Kenya), Sasan Ultra Mega Coal Plant (India) and Hambantota Port (Sri Lanka). Another example in this regard is the local and international outrage at the construction of a copper mine at the ancient ruins of Meyn Alyk in Afghanistan.

Social impact assessments with regard to BRI projects by independent actors are also scarce and are an aspect not given as much priority as environmental assessments.<sup>27</sup>

## CAPACITY BUILDING

Capacity building aspects have caused considerable discontent as it has been shown that few Chinese firms will hire local managers in third-party countries.<sup>28</sup> In other cases, the practice of bringing in Chinese workers from China, even in less senior positions, has been highlighted. In countries where unemployment is an issue for large parts of the population, this has caused public discontent and impacted the reputation of the BRI projects.<sup>29</sup>

A McKinsey report based on a large-scale dataset including on-site interviews with more than 100 senior African business and government leaders, as well as managers of more than 1000 Chinese firms and factories across eight African countries has given a broad picture of China's investments on the continent. The report shows that 89 percent of employees in Chinese companies were African, nearly two-thirds had received some kind of skills training, and half of Chinese firms had introduced a new product or service to the market. Meanwhile, only 47 percent of Chinese firms' sourcing was from local African firms by value, only 44 percent of the managers in the Chinese firms were African, and there had been instances of major labour and environmental violations.<sup>30</sup>

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<sup>26</sup> Interview (2018).

<sup>27</sup> Friends of Earth (2017), Investing in a Green Belt and Road?, Assessing the Implementation of China's Green Credit Guidelines Abroad, Washington.

<sup>28</sup> McKinsey (2017), Dance of the lions and dragons, How are Africa and China engaging, and how will the partnership evolve?,

<sup>29</sup> Interview (2018)

<sup>30</sup> Ibid.

Meanwhile, long term investments abroad in other industries that serve to meet Chinese demand can be seen in a more positive light - for instance, China's considering of substantial investments in Kazakhstan's agricultural sector, including 1.2 billion USD in oilseed processing by Zhongfu Investment Group, 200 million USD into lamb, beef and horse meat by Rifa Investment, and 80 million USD in the production of tomatoes and tomato paste by COFCO. In this case it is noted that Chinese investors are seeking to invest in processing facilities in partnership with Kazakh companies; knowledge sharing in these cases could increase the efficiency of an agriculture industry that has been described as "inefficient and under-developed"<sup>31</sup>. The net effects remain to be seen.

Further, as transport links between China and Europe increase investments in new areas, this could be seen to lead to increased knowledge transfer to less developed regions not only from the side of China but also from other countries. For instance, Sweden is currently working on developing a strategy for capacity-building in third party countries, including among other aspects, practical training in sustainable energy.<sup>32</sup>

In summary, although Chinese ventures abroad could arguably improve their capacity building efforts, the development of the BRI could also be found to show positive effects on capacity building in less developed third-party countries.

## **RESPONSIBLE GOVERNANCE**

Many international actors have raised concerns regarding the lack of transparency with which the BRI has been progressed. In this section, transparency in procurements, governing standards as well as measures to deal with corruption have been raised.

### *TRANSPARENCY IN PROCUREMENTS*

An often-referenced benefit of the BRI is the fact that the initiative will bridge Asia's infrastructure gap. In fact, the Asian Development Bank has estimated that the continent requires 26 trillion USD in infrastructure investment between 2017 and 2030 in order to maintain today's growth rates as well as adjust to climate change.<sup>33</sup>

The process of procuring goods in large infrastructure projects in a sustainable and transparent way is an essential factor in progressing the sustainable development of the BRI. China does not subscribe to several international frameworks aimed to govern development finance or sustainable procurements. For instance, China does not follow the OECD development finance standards for official development assistance in the form of either grants or "concessional" loans aimed to track funds provided "to advance development in areas such as health, sanitation, education, infrastructure, and strengthening tax systems and administrative capacity". Further, although China joined the WTO in 2001, the country has yet to ratify the WTO Government Procurement Act (GPA Art. III – Art. IV) that ensures, among others, non-discrimination of suppliers, product-neutral specifications and prior announcement of complete tender documents.

### *STANDARDS*

Differences between the standards of international organizations and China could pose a challenge from an environmental and social perspective as well as from a business perspective to individual companies.

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<sup>31</sup> Financial Times (2016), China plans to invest USD 1.9bn in Kazakh agriculture.

<sup>32</sup> Interview with Head of Sustainability at Business Sweden.

<sup>33</sup> Asian Development Bank (2017), Meeting Asia's Infrastructure Needs.

Further international standards are set to govern sustainable infrastructure development. In light of this it can be noted that China is in the process of setting its own international standards through technological advancement. For instance, the Chinese Government has marketed its standard for high-speed railway, a major example of how BRI is used to upgrade China's industry. If countries along the BRI choose to accept China's high-speed railway technology as their national standard, this would in fact mean that the standard would be accepted across a large region and would allow Chinese manufacturers and suppliers to benefit from a first-mover advantage compared to other competitors.

The Jakarta–Bandung High-Speed Railway project is a good example of how Beijing intends to use BRI to promote the high-tech sector as well as Chinese technical and engineering standards. The question in this regard is whether the Chinese standards will adhere to international standards of sustainability and environmental protection?

## *ANTI-CORRUPTION*

Companies are urged in China to refrain from making investments in deals and countries where corruption is common. However, corruption remains a major concern. For instance, Simon Pei Yun-lu, Commissioner of the Independent Commission Against Corruption (ICAC) – tasked by Beijing to help state agencies to reduce graft and live up to the UN Convention Against Corruption, has noted that “the corruption situation is very serious in some countries”.<sup>34</sup>

Anti-corruption efforts are very much prioritized by the Chinese government as noted by President Xi Jinping already in his opening speech at the BRI Forum in 2017, calling for enforcing “international counter-corruption cooperation so that the Belt and Road will be a road with high ethical standards.”<sup>35</sup>

Further corruption allegations of Chinese corporations have indeed surfaced since the launch of the BRI. A Bloomberg article highlighting the operations of one of the largest Chinese companies involved in the BRI - China Construction (CCCC) highlights several cases of potential corruption. For instance, two rail projects were highlighted in Malaysia due to suspicions of corruption. In another case, a CCCC road building subsidiary was brought up in a US corruption lawsuit for corruption in Equatorial Guinea. Similar allegations have been made against the company in Sri Lanka.<sup>36</sup>

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<sup>34</sup> South China Morning Post (2018), Hong Kong's ICAC chief warns of corruption in Belt and Road countries.

<sup>35</sup> Forbes (2017), Companies engaging in China's Belt and Road Projects must address bribery risks.

<sup>36</sup> Bloomberg (2018), A Chinese company reshaping the world leaves a troubles trail.

# IMPLICATIONS OF THE BRI FOR SWEDISH COMPANIES

The BRI can potentially yield significant opportunities for foreign companies as well as represent considerable challenges and risks. The opportunities and challenges can be divided into four different areas. Firstly, companies can be seen to compete for procurements or direct participation in major Chinese-led projects. Secondly, companies can offer auxiliary products and services to BRI projects. Thirdly, companies may see changing market conditions along the BRI countries which may favour demand and market entry conditions for their enterprise. Finally, companies should examine the effects of changing supply and value chains which could offer better infrastructure and quicker logistics routes. For an overview please see below.

## SWEDISH COMPANY APPROACH BRI DIFFERENTLY FACING ALTERNATE OPPORTUNITIES AND CHALLENGES

	OPPORTUNITIES	CHALLENGES	COMPANY EXAMPLES
DIRECT PROJECTS	<ul style="list-style-type: none"> <li>▶ Infrastructural project procurements</li> <li>▶ Directly supplying to major Chinese EPCs</li> </ul>	<ul style="list-style-type: none"> <li>▶ Opaque procurement processes</li> <li>▶ Insufficient independent sustainability assessments</li> </ul>	<ul style="list-style-type: none"> <li>▶ ABB, Atlas Copco, Volvo, Scania, Epiroc</li> </ul>
INDIRECT PROJECTS	<ul style="list-style-type: none"> <li>▶ Offering products and services to Chinese companies that serve supporting functions along the BRI</li> </ul>	<ul style="list-style-type: none"> <li>▶ Product life-cycle view including recycling materials after use</li> </ul>	<ul style="list-style-type: none"> <li>▶ Tetra Pak offering packaging to Chinese F&amp;B companies that have flourished along BRI</li> </ul>
INDIRECT MARKET	<ul style="list-style-type: none"> <li>▶ Changing market conditions and reduced risk could offer increased opportunity for market entry in unknown markets</li> </ul>	<ul style="list-style-type: none"> <li>▶ Difficult and unstable market conditions</li> </ul>	<ul style="list-style-type: none"> <li>▶ Astra Zeneca offering medicine to new hospitals and pharmacies</li> </ul>
SUPPLY CHAIN	<ul style="list-style-type: none"> <li>▶ Better infrastructure and quicker logistics routes</li> </ul>	<ul style="list-style-type: none"> <li>▶ Finding partners that comply with strict environmental and social standards</li> </ul>	<ul style="list-style-type: none"> <li>▶ Lantmännen that can take advantage of shorter supply chain for sensitive food products</li> </ul>

Many international companies simply consider project procurements as the main opportunity presented by the BRI. Yet a consideration of all four categories could underpin a broader Asia strategy. Furthermore, consideration of the sustainability offering of Swedish companies can strengthen their competitive advantage as well as improve the sustainable development of the new landscape shaped by the BRI in Asia, Africa and Europe.

A report written by the EU Parliament indeed encourages companies to look at the broader aspects of the BRI, for instance, examining the impact of new rail routes in third-party countries. The EU Parliament has stated that of concern was that “weak legislation in rail transit countries might permit environmental damage. The EU cannot impose higher standards on the construction or operation of railways in non-EU states such as Russia and Kazakhstan.” The paper goes on to note a number of ways in which the EU can still encourage higher standards including (1) through the terms and conditions of EU involvement in financing or supporting infrastructure projects, (2) through the supply of products compliant with (high) EU environmental standards, and (3) through encouraging other parties to operate rail services using locomotives and other equipment with a high environmental performance.<sup>37</sup> This report takes a similar view towards examining the broader sustainability opportunities and challenges for Swedish companies along the BRI.

<sup>37</sup> EU Parliament (2018), Research for TRAN Committee: The new Silk Route – opportunities and challenges for EU transport, Directorate-General for Internal Policies.



## DIRECT PROJECTS

Few Swedish companies have qualified thus far to either directly or indirectly be involved as suppliers to BRI projects. It can be noted that many Swedish companies have a strong competitive advantage in terms of supplying products and solutions that are ethically produced and of a high environmental standard. However, Swedish companies have seen industry protection, lack of transparency, and differences in standards limiting their ability to impact certain projects in BRI countries.

BRI projects with more foreign actors – companies or multilateral organizations such as Asian Development Bank and World Bank – are shown to more stringently follow internationally set standards for environmental and social compliance. Swedish companies have maintained their strong position in upholding environmental standards which has in some cases helped the companies win contracts while also ensuring the increased sustainability of the BRI projects.

From a social sustainability perspective, Swedish companies have significant experience and expertise in operating in many of the BRI countries that China is starting to approach. This know-how in terms of community engagement and cultural norms would be of substantial value for companies that are starting to navigate complex and in-transparent stakeholder networks and arguably, in many cases, meet a social backlash and difficulty in approaching local communities in markets that are recipients of BRI-related investments.

However, despite Swedish companies' strong competitive position and long experience in terms of sustainability, a limiting factor to the full application of their solutions have been qualitative barriers implemented by Chinese actors and aimed at ensuring considerable domestic industry protection.

Another challenge experienced by certain Swedish companies has been the lack of transparency that has thus far characterized BRI procurements. Many companies that have been successful in the BRI projects have noted an existing relationship and direct open communication channels with Chinese SOEs in order for them to be aware of the BRI projects:

“For us it is not a problem to access BRI project information because we have a very close cooperation with our SOE clients to whom we are sub-suppliers. When they have a project they will come to us at a very early stage.” <sup>38</sup>

In other cases, it has been noted that:

“For BRI it is generally very difficult to find information about the initiative. We are currently monitoring and following up on some of the initiatives but these are very difficult to find.” <sup>39</sup>

The lack of transparency in BRI project procurements is of concern for Swedish companies as it arguably enables less sustainable solutions or solutions that would not otherwise be competitive in open procurements following international standards.

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<sup>38</sup> Rountable discussion (2018).

<sup>39</sup> Rountable discussion (2018).

### **CASE: EPIROC WINNING CONTRACT BY ESTABLISHING TRUST AND ENSURING ENVIRONMENT REGULATION COMPLIANCE**

Epiroc has been involved in several BRI projects. The company has built up a trust among tunnel drilling companies that have confidence in their products and services.

In an example from Inner Mongolia, Epiroc signed an agreement to provide units for a project because the client recognized the environmental advantage of applying their products. In Inner Mongolia they used drones to monitor which companies were following environmental regulations. This is why Epiroc was chosen as a supplier for these contracts and has been winning multiple orders since in part because their equipment is recognized as environmentally friendly.

The company has taken this further and is now requested by several companies to help them to introduce digital, automatic and intelligent mining.

A third challenge that has been noted by Swedish companies is the difference in standards. This is a particularly difficult issue as it incorporates the differences in standards that Swedish companies have to adhere to as international actors subscribing to international frameworks, and the standards applied by China, as well as possible additional standards applicable in third party countries.

This challenge has been handled differently by different companies. For instance, considering the standards applied in third party countries, ABB notes that:

“BRI countries adopt different standards, and some project owners have requirement on place of origin. ABB has the competence to provide solutions to Chinese EPCs that comply with local standards/ requirement and minimize risks.”<sup>40</sup>

SEB, a Swedish bank, has on the other hand been working towards shaping standards in terms of sustainability, hence seeing this aspect as an opportunity. SEB helped CDB to issue their first green bond (1 billion USD with 20 projects in portfolio) together with the World Bank as well as to build their green investment framework.

The aspect of standards is seen as more of a challenge by other companies, noting that foreign companies are put at a disadvantage in Chinese procurements as they have to follow very high international standards:

“With regard to standards, we have to follow internationally established technology standards, product standards etc. For financial standards we look at the OECD financing standards. Not following these would put foreign companies at a disadvantage. To influence the Chinese standards commonly referenced in the BRI projects we work with partners but will need greater support in this area going forward.”<sup>41</sup>

The BRI has from a direct project perspective a lot to gain from the mutually beneficial cooperation between Chinese and foreign firms in order to ensure sustainable implementation. In order to take advantage of this, more forums for dialogue between Swedish and Chinese companies have to be considered as well as a greater transparency and creation of a more level playing field for Chinese and foreign actors in project procurements.

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<sup>40</sup> Interview with ABB (2018).

<sup>41</sup> Roundtable discussion (2018).

## INDIRECT PROJECTS/ INDIRECT MARKET

Supplying high-quality equipment compliant with Swedish and EU standards is another way of ensuring sustainability along the BRI. As the BRI progresses, new products in new markets will become more attractive. This section hence explores the downstream implications of delivering to end-consumers and customers in third party countries.

One opportunity in this regard arises with the supply of high-quality products in new markets. For instance, Astra Zeneca is working with the Chinese Food and Drug Administration to help set high medical standards along the BRI, and hence be able to more easily incorporate their medicine and medical equipment into the healthcare sector of the respective country.

### **CASE: ASTRAZENECA REACHES OUT WITH MEDICAL TECHNOLOGY TO LESS-DEVELOPED COUNTRIES**

AstraZeneca signed an agreement with China Food and Drug Administration (CFDA) in order to participate in projects along the BRI. The company is currently trying to help CFDA to promote the China Drug Administration Standard along countries on the BRI.

The AstraZeneca is also trying to integrate their medicine into the whole treatment systems of the BRI countries. "What we can do is to get our technology to less-developed countries," says an Astra Zeneca representative.

Another opportunity arises as logistics routes improve (see next section for a more elaborate discussion). This enables companies to reach new consumer groups with their products and is essential to consider as it could facilitate the dispersion of simple products that ensure the maintenance of basic human rights such as food and medicine.

A challenge in this regard of opening up new markets and supplying to new consumers is ensuring that a full life-cycle view is taken on the value chain. In terms of environmental and social impact this would entail looking into the full effects of packing/ distribution, product use/ consumption as well as end-of-life/ disposal and new life aspects. These aspects are simply mentioned as it is too early to determine the impact of the BRI on these factors.

## SUPPLY CHAIN

New opportunities and challenges can be found as the BRI extends existing supply chains or even establishes new ones. Here two perspectives will be furthered and examined in terms of their opportunities and challenges: (1) How will improved transport links affect environmental impact along the BRI?; and (2) How will new logistics hubs affect social impact along the BRI?

Firstly, as indicated previously, the BRI is aimed to enable the increase in freight through air, rail as well as maritime transport modes. Although all transport modes are promoted, the form of transport most affiliated with the BRI has been rail. Indeed, just 10 years ago regular freight services from China to Europe were almost non-existent while today they connect about 34 European cities with 35 Chinese cities. Further, rail transport share of cargo by value increased by 144 percent during the first half of 2017, compared to the first half of 2016, albeit from very low base levels.<sup>42</sup> The advantage of rail is that it is seen as considerably cheaper than air and faster than sea.

From a corporate perspective, different forms of transport have been linked to different advantages and disadvantages. From a business perspective, different costs associated with the different modes of transport have entailed that air transportation has been used more for goods of high value and low quantity. Meanwhile, maritime transport has been

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<sup>42</sup> Hillman, Jonathan (2018), The Rise of China-Europe Railways, CSIS.

used for goods of relatively lower value or higher quantities. Many of the manufacturing and logistics centers have traditionally been located on China's coast, which has entailed that the majority of goods that have been transported through maritime links have in 2016 constituted 94 percent of trade by weight and 64 percent by value.<sup>43</sup> Maritime shipping has further been seen as the most environmentally friendly mode of transport when considering CO2 emissions by mode of transport (particularly for long-distance transportation). A general comparison of the grams of CO2 emitted by transporting one tonne of goods over one kilometre shows an average of 560 grams for air, 18 grams for rail and 3 grams for ship.<sup>44</sup>

Expanding logistics routes and shifting transport modes could arguably influence the way in which companies choose to transport their goods. The environmental impact would hence be a result of the choices that companies make in relation to these shifts. If the net effect is for companies to choose rail transport over air transport, the environmental impact could be positive. If however rail transport offsets maritime transport, these could be viewed to have a negative impact on the climate.

Secondly, with improving transport links and with more bilateral trade agreements signed between China and third party countries, companies are seeing increasingly beneficial conditions to relocate production facilities and logistics hubs to more low-cost regions or low-cost countries. This could be seen to accelerate an already existing trend where China is moving up the supply chain, producing increasingly more value-added goods and sustaining increasingly higher price and wage levels. This trend has been highlighted among many multinational companies that are establishing logistics hubs and looking for suppliers along the BRI countries including in South-East Asia, Central Asia and Eastern Europe.

#### **CASE: IKEA IS ADAPTING TO CHANGING SUPPLY CHAINS ALONG THE BRI**

"We [IKEA] are exploring opportunities through new purchasing and logistics channels and we are looking for new suppliers along the BRI countries. Look at Decathlon, for instance, they are using the train from Wuhan to Germany which has had a major impact on their product lead time. We are looking to do the same."

"In China we have more than 300 suppliers mainly based in the Yangtze River Delta, in the Pearl River Delta and in Fujian province. Now we are exploring the possibility of also establishing or moving hubs to more inland cities in China such as Wuhan, Chengdu or Chongqing. We are also looking into other markets mainly based along the BRI such as in Eastern Europe and Central Asia."

For IKEA it entails setting the same high standards on their new suppliers as the company sets on all their existing suppliers. IKEA says that they work together with their suppliers to create quality and innovation.

The establishment of new logistics hubs in more low-cost regions or low-cost countries could, on the one hand, serve to incorporate these into the global supply chains and spur economic development but it could also serve to exploit the lower environmental standards and poorer working conditions enforced by these countries. From an environmental perspective, the increased strain on resources such as water and energy could serve to deplete stocks that are already strained in many countries along the BRI. It could also serve to increase output related factors such as air and water pollution as well as other wastes. From a social perspective, companies could see challenges in finding new partners and

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<sup>43</sup> Ibid.

<sup>44</sup> BlueWhale (2018), CO2 Emissions for different forms of transport. A similar picture is given by other estimates evaluating the climate impact by mode of transport.

suppliers of services that adhere to transparent and international reporting standards and that adopt a zero tolerance policy towards the occurrence of human rights infringements, child labor and hazardous work conditions.

The challenges for companies will be related to the evaluation of and cooperation with new suppliers and partners. In order to make the trend of shifting supply chains more sustainable companies would need to keep up a commitment to a strict Code of Conduct and to enforce high standards of corporate social responsibility when setting up operations in new regions and countries. The net effect would be contingent upon the standards held by the company itself; internally, this would be in terms of conducting careful due diligence before setting up operations in third-party countries and enforcing an established Code of Conduct. Externally, this would entail adhering to greater global transparency, more stringent international standards and increasingly demanding consumers.

## CONCLUSIONS AND RECOMMENDATIONS

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The BRI is one of the key initiatives launched by President Xi Jinping and can be seen as defining of China's international agenda and new role on the global stage. Against this backdrop, the successful implementation of the BRI is important in showing that China can take the role of a benevolent power, contributing to broader sustainable development.

On a normative level, as showcased by official rhetoric and government plans, China is showcasing a strong commitment to aspects of sustainable development related to the environment and to anti-corruption efforts. Environmental aspects are particularly prioritized, as can be seen by the ambition of promoting a "green belt and road", by forwarding the concept of "ecological civilization", and launching green financing instruments as well as to some extent conducting environmental impact assessments on enterprises.

On a practical level, as seen from reports discussing the implementation of BRI projects on the ground, aspects of sustainability are highlighted as more problematic. This report has presented a few cases with regards to both environmental and social problems that have arisen in the context of BRI projects.

The above outlines a context of strong official commitment to sustainable development, particularly pertaining to the environment, and a local environment that can be ridden with both environmental and social risks. In this context, Swedish companies are advised to take a holistic as well as practical approach to business with regards to the BRI, considering the implications of the initiative not only from a direct project perspective, but also from the perspective of indirect projects/ indirect markets as well as from the aspect of altering supply chains in the region. The BRI can be seen to impact Swedish companies through all of these aspects, and careful review should be conducted to adapt or even influence new market conditions.

From a direct project perspective, Swedish companies have a strong competitive position in terms of sustainability, and have an opportunity to work with Chinese actors to ensure the implementation of high standards and greater transparency in procurements in order to facilitate a more sustainable development of the BRI. In terms of indirect project/ indirect market perspective, the BRI will arguably open up new markets for Swedish companies, and from a sustainability perspective can be seen to represent an opportunity in ensuring a supply to end consumers of products that comply with strict environmental standards and social considerations. In terms of a value chain perspective, the BRI will have the effect of modifying supply chain configurations and it is essential for Swedish companies to apply the same strict criteria when starting to work with and source from new partners in BRI markets.

Ensuring the sustainable development along the BRI will be contingent upon finding a way to cooperate with China. Only then can Swedish companies participate in shaping the ambitious targets set out with potentially profound influence on BRI markets, societies and the environment across three continents.

## APPENDIX#1: EXPERT CONTRIBUTIONS

#	Organization	Interviewee	Type of Organization
1	ABB	Vice President	Company
2	AstraZeneca	Senior Staff	Company
3	Business Sweden	Head of Sustainability	Trade Council
4	CCR CSR	Senior Staff	NGO/ Consultancy
5	CHINCA	Senior Staff	Association
6	Cleanergy	Senior Vice President	Company
7	Essity	Senior Staff	Company
8	Epiroc	Senior Staff	Company
9	Ericsson	President, China	Company
10	IKEA	Senior Staff	Company
11	Scania	Senior Staff	Company
12	SEB	Senior Staff	Company
13	Syntao	Senior Staff	Consultancy

## APPENDIX #2: REFERENCES AND SOURCES

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