

1 Introduction

Almost a decade has passed since President Xi Jinping announced the launch of the Belt and Road Initiative (BRI), originally titled 'One Belt One Road'. The BRI has since expanded into one of China's most important tools for the build-up of soft power and the implementation of its overseas activities (Dadabaev, 2018). Simultaneously, however, the initiative has attracted controversy in the international media, particularly after COVID-19 led to widespread disruption of global economic activity¹. The downturn caused debt distress in many developing countries, many of which received massive Chinese investment prior to 2020. This raises the question as to how the sentiment towards the BRI has evolved across the globe.

On the positive side, the BRI has supplemented existing official development assistance from institutions such as the World Bank and the Asian Development Bank. With massive financing, China has provided large-scale infrastructure investment to Belt and Road countries. Prior to the COVID-19 pandemic, recipient countries, especially those lacking the financial means to satisfy their need for investment, were generally optimistic about the initiative. By 2022, the BRI had officially expanded to 149 member states. In 2018 alone, the number of countries with Memorandums of Understanding with China almost doubled. The literature has confirmed the potential benefits China could bring to Belt and Road countries, especially through trade and investment channels. García-Herrero and Xu (2017) estimated Europe's expected trade gains as 6 percent above the non-BRI benchmark case, and 3 percent above trade gains in Asia. The rest of the world would suffer a reduction in trade of 0.004 percent. Case studies for specific countries have equally portrayed a potential for positive impact. A study by the World Bank (Bogdan and Najdov, 2020) found that trade and investment flows under the BRI could increase Azerbaijan's GDP by 21 percent in the long run, depending on the implementation of complementary policies such as the harmonisation of transportation tariffs and legal conditions across the region. Additionally, Li (2018) found that the two international transport corridors (Primorye-1 and Primorye-2) under the BRI linking East Siberia with the Asia-Pacific region provide new opportunities for Russia as well.

Critics have pointed out that projects initiated under the BRI umbrella lack the appropriate regulatory framework and market coordination. Without relying on market mechanisms, countries run the risk of engaging in too many projects simultaneously, which is likely to be unprofitable in the long run. Given that most of China's financial support is to be repaid, debt sustainability in the host countries has

¹ James Kynge and Jonathan Wheatley, 'China pulls back from the world: rethinking Xi's "project of the century"', *Financial Times*, 11 December 2022, <https://www.ft.com/content/d9bd8059-d05c-4e6f-968b-1672241ec1f6>.

become a concern. For instance, Sheng (2018) studied China's investment transactions in Uzbekistan and Bangladesh and found that BRI-related investment stands at a value of over 20 percent of their gross domestic product (GDP). Watchers also doubt whether China has full economic strength to sustain 'non-profitable' overseas projects without coordinating with enough commercial interests. Beyond legal and economic aspects, international backlash can come from diplomatic considerations. For instance, India is aware of being isolated if the BRI gains strong support (Banerjee, 2016).

Eventually, circumstances have radically changed with the onset of the COVID-19 pandemic. Lockdowns all around the world inflicted a heavy toll on the global economy and stimulus for an economic revival has consumed large amounts of financial capital. Previous concerns about debt sustainability materialised. Indeed, China's lending had already declined before the pandemic and debt renegotiations became more common (Kratz *et al*, 2021). However, the pandemic has worsened the financial situation in many developing countries. Sovereign debt restructurings with China increased to a total number of 15 in 2020, and 18 in 2021, up from five in 2019 (Horn *et al*, 2022). In some cases, negotiations were preceded by debt default. For instance, Sri Lanka – a major recipient of Chinese investment – defaulted in April 2022. In September 2022 it started negotiations with its largest bilateral creditors, namely China, India, and Japan.

Given the ambiguous views of the Belt and Road Initiative, it is important to offer a comprehensive and quantitative assessment of the image of the BRI across the globe, both in BRI member countries and non-member countries. This paper conducts an analysis of international media sentiment towards the BRI based on the Global Database of Events, Language, and Tone (GDELT), a big data platform covering international and local media. A growing literature using big data to analyse economic outcomes already exists. For example, Narita and Yin (2018) constructed the Search Volume index (SVI) to measure the frequency of online searches on key economic topics and use them as alternative indicators for economic assessment. Hlatshwayo *et al* (2018) used the database Factiva to calculate the news coverage of corruption activities across countries. Factiva has also been used to study the evolving sentiment towards the BRI inside and outside China (Mokashi *et al*, 2022). However, the authors use Factiva, which does not allow a representative large-N sample to be obtained. For most countries only a single article is available. GDELT offers the possibility of a more comprehensive analysis. Besides, GDELT's contribution as a big data source to examine the connection between countries has also proven to be powerful in other contexts (Yonamine, 2013; Cadenas-Santiago *et al*, 2015; Yuan, 2017). Our methodology is explained in more detail in the Appendix.

Our results are as follows. First, the initiative is generally positively received in the world. In fact, all regions, except South Asia and North America, hold a positive average image of the BRI. However, the differences are sometimes only visible at the country level with all regions – except Central Asia – having at least one country with strongly negative sentiment. Second, perhaps not surprisingly, BRI countries have a slightly more positive view towards the BRI than do non-BRI countries. Third, we find that the image of the BRI has deteriorated faster than the image of China as a whole, but not with the same magnitude across regions. Sentiment is still strongly positive in Central Asia and sub-Saharan Africa but has decreased significantly in North America and Europe.

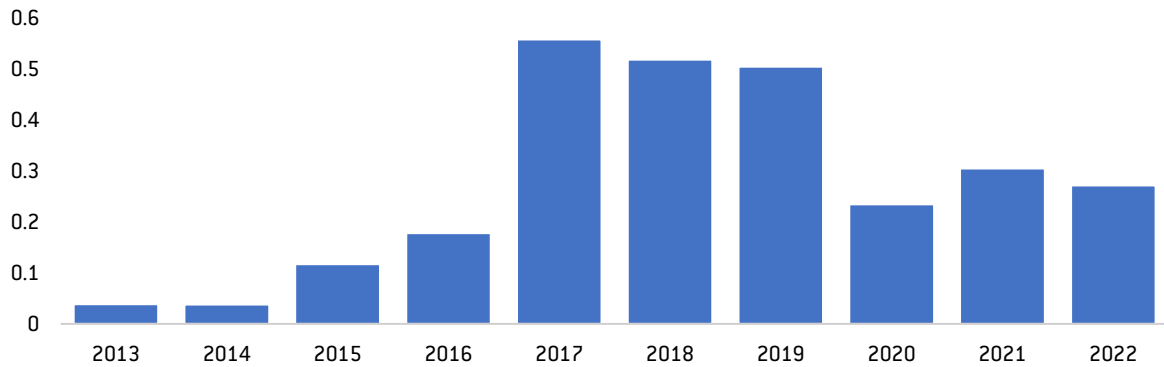
The article is organised as follows. Section 2 presents cross-country and region differences in average sentiment. Section 3 discusses how the image of the BRI changed over time. Section 4 concludes and provides policy implications.

2 Sentiment across countries

2.1 The coverage of the BRI in global media rose after 2017 but has waned since the beginning of the pandemic.

Before conducting the sentiment analysis, we document news coverage on the Belt and Road Initiative in general using Factiva. Although the initiative itself was labelled as China's flagship project in its foreign engagement, the world's attention towards the concept was quite scarce in the first two years after its establishment. In 2013, the year when the initiative was first launched, the percentage of BRI related news only accounted for 0.04 percent of all the China-related articles. Since then the number of BRI news has grown rapidly, first increasing to 0.12 percent in 2015, and then jumping to 0.56 percent within one year from 2016 to 2017. Since the pandemic the percentage of BRI-related news has declined again to an average of approximately 0.27 percent (Figure 1). In sum, this means that the BRI is still covered in the news although attention has shifted to other topics in China-related coverage during the pandemic. It also provides confidence that our period limit imposed by GDELT is not a serious issue for the validity of the analysis.

Figure 1: Intensity of the Belt and Road Initiative in China-related articles, in %

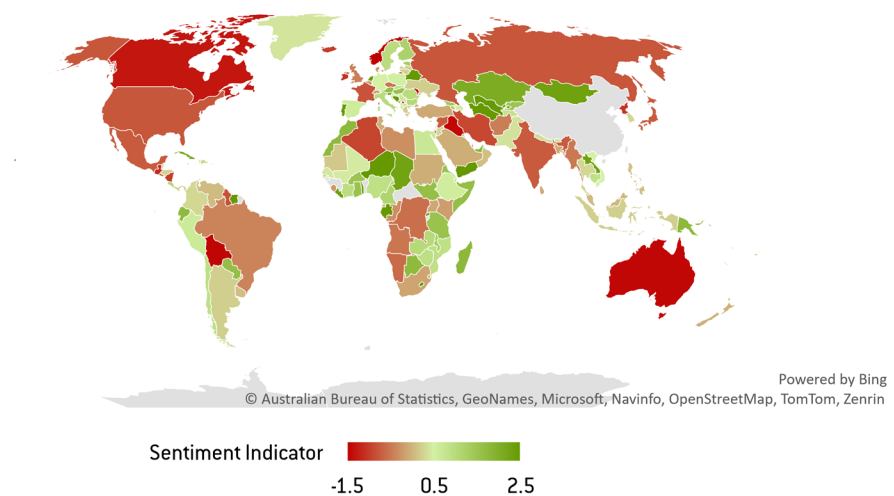


Source: Factiva.

2.2 Sentiment towards the Belt and Road Initiative is slightly positive on average.

Having confirmed the importance of the BRI in coverage about China, we calculate the average sentiment for each individual country as laid out in Section 2. Considering all countries in our sample, the mean (0.67) and median sentiments (0.49) for the Belt and Road Initiative are above zero, indicating that the Initiative is on average rather positively received. Among all the countries, the highest sentiment rating is 4.62 in Monaco, and the lowest sentiment is -1.86 for Kosovo. As depicted in **Figure 2**, there is great variance across geographies in overall sentiment. The regions that are most positive towards the BRI are visibly sub-Saharan Africa and Centra Asia. We further quantify this in Section 3.4. In contrast, the US, Canada, the United Kingdom and Australia are uniformly critical of the BRI. Next, we turn to a deeper analysis of our data.

Figure 2: Sentiment towards the Belt and Road Initiative

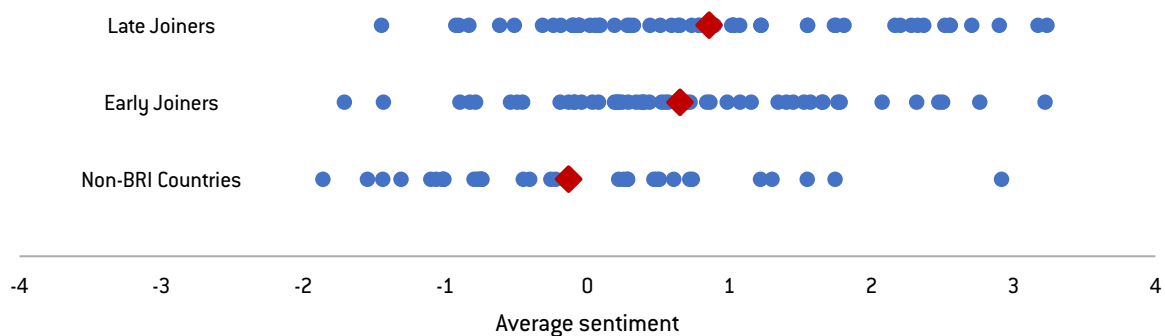


Source: Bruegel, based on GDELT.

2.3 BRI countries have more positive views of the initiative

For our statistical analysis, we exclude countries for which fewer than ten articles are available over the close to six-year period. We do this in order to not have our results driven by outliers whose media sentiment is shaped by specific events. This leaves us with sentiment data on 148 countries across all continents. In **Figure 3**, we further show the decomposition of countries into ‘Early Joiners’, ‘Late Joiners’, and ‘Non BRI Countries’. Each dot on the line represents an individual country on the sentiment scale, while the red points are the average of each group, as calculated by the mean. Unsurprisingly, the Belt and Road Initiative is received significantly more negative in countries that – as of early 2023 – have not signed an MoU yet. ‘Non BRI Countries’ hold an average sentiment of -0.13. In contrast, ‘Early Joiners’ and ‘Late Joiners’ hold an average sentiment of 0.65 and 0.86, respectively. This result still holds as we exclude the extreme observations, namely Turkmenistan (3.24), Bosnia-Herzegovina (3.22), Grenada (3.17), Netherlands (2.92), Australia (-1.44), Bolivia (-1.45), Moldova (-1.71), and Kosovo (-1.86) from the sample. As we show later, the slight difference between early joiners and late joiners is largely driven by a huge cohort of African countries joining in 2018 whose sentiment has been consistently positive throughout our period under observation, notwithstanding the subsequent crises having occurred since.

Figure 3: Average Sentiment in BRI and Non-BRI Countries



Source: Bruegel, based on GDELT.

2.4. Regional disparities in sentiment towards the BRI are quite large

We next analyse regional disparities in sentiment. **Figure 4** shows the average sentiment across the regions under observation. Central Asia and sub-Saharan Africa generally hold positive views towards the BRI, while North America and South Asia are on the other extreme. The remaining regions tend to be somewhat around or slightly below the average, though still positive in absolute numbers. **Figure 5**

displays the distribution of sentiment across regions and country observations. We highlight specific outliers and important countries involved in diplomatic feuds over the BRI (see Appendix 10 for a more detailed depiction of countries at the extremes).

All Central Asian countries hold positive views towards the BRI with Turkmenistan leading the way. Kazakhstan which – due to its rich raw materials and its geographical position – has long been at the centre of China’s strategic focus in Central Asia also shows a strongly positive sentiment towards the BRI.

Sub-Saharan Africa’s sentiment towards the BRI is rather positive as well, although certain outliers mark the negative end of the spectrum. For instance, Angola’s view towards the BRI is remarkably negative. Initially, the country had marketed its strategy of oil-backed credit lines as the ‘Angola Model’ of economic development. The eventual failure of sustained growth to materialise and the economic downturn due to the pandemic have put Angola in a state of serious debt distress², with 45 percent of its external debt now owed to China (Machado, 2021).

In East Asia and the Pacific region, sentiment is more mixed. Australia – whose diplomatic ties with China have deteriorated quite significantly (see Appendix 12) – holds the most negative sentiment towards the BRI, while Laos has traditionally been enthusiastic about the BRI and its promise of investment.

In the Middle East, Gulf countries such as Bahrain and the United Arab Emirates exhibit strongly positive sentiment towards the BRI, while countries around the Levant such as Israel, Iran and Iraq seem to oppose the initiative.

European countries in the EU are generally more positive about the BRI than European countries outside the EU. However, even among the former, large differences can be noted. The Netherlands and Portugal are strongly in favour of the BRI, while Ireland is strongly critical of the initiative.

The two North American countries, Canada and the United States, have from the beginning uttered their opposition towards the Initiative. Top-level US politicians view the BRI as a tool to counter US dominance and to create a China-centred network of alliances. Then secretary of state Hillary Clinton

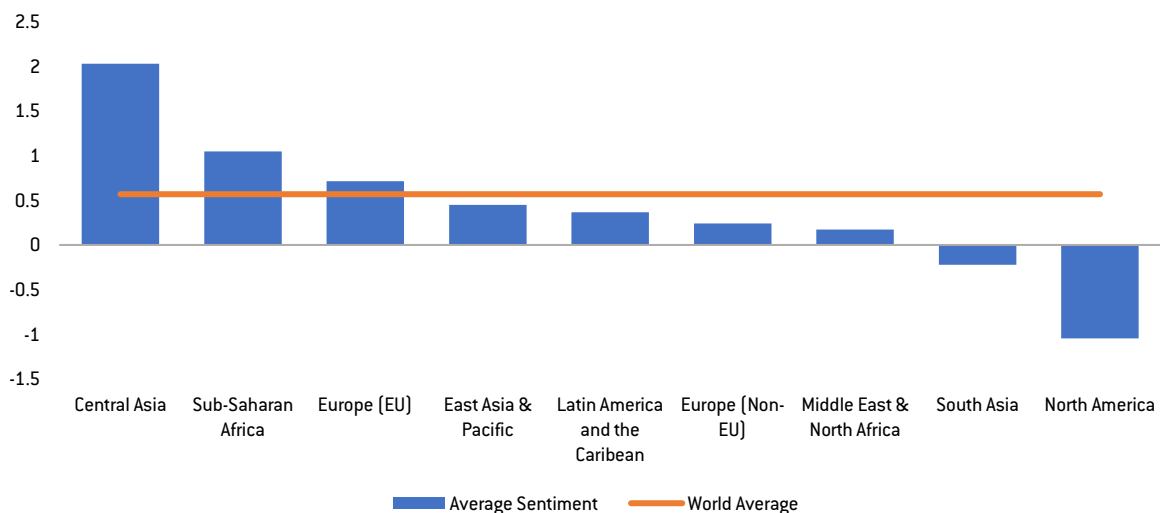
² Selcuk Gokoluk and Henrique Almeida, ‘Two more African nations fall into debt distress as debt risks rise’, *Bloomberg*, 20 July 2022, <https://www.bloomberg.com/news/articles/2022-07-20/two-more-african-nations-fall-into-distress-as-debt-risks-rise>.

famously accused China of ‘new colonialism’ in 2011³. Not surprisingly, this is reflected in US media sentiment towards the BRI. The US and Canada hold both strongly negative views towards the BRI, -0.78 and -1.31 respectively.

In Latin America, the image of the BRI is much less clearly defined. Countries vary wildly in their views. Brazil and Mexico, the two largest developing economies in the region, hold negative views of the BRI. The rather neutral stance towards the BRI in many other Latin American countries reflects diplomatic uncertainty associated with it. On the one hand, many Latin American countries do not consider Chinese lending alone to be the source of debt distress, given its limited weight in the region. On the other hand, countries are not eager to engage in an unnecessary confrontation with the US, Latin America’s most important commercial partner (Zhang, 2019).

In South Asia, Pakistan leads on the positive side. The country has long been at the centre of the BRI and the China-Pakistan Economic Corridor (CPEC) marks a strategically important trade road for China. On the other side, India’s sentiment towards the BRI is clearly negative, unsurprisingly as China and India are both strategic competitors in the region. Further, India plays a vital role in the US attempt to contain a rising China.

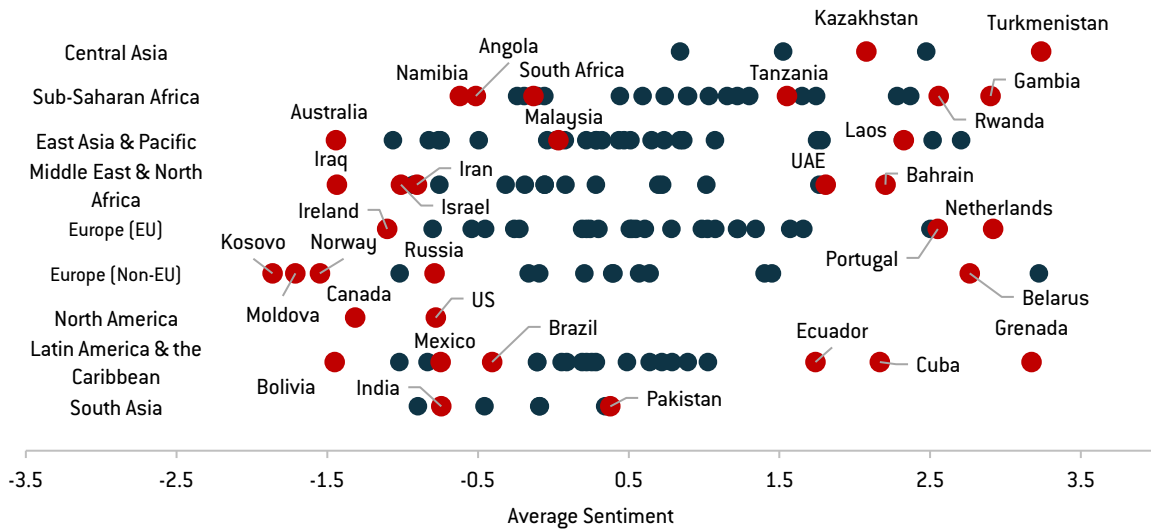
Figure 4: Regional comparison of tone of media coverage of the BRI



Source: Bruegel, based on GDELT.

³ Reuters, ‘Clinton warns against “new colonialism” in Africa’, 11 June 2011, <https://www.reuters.com/article/us-clinton-africa-idUSTRE75A0RI20110611>.

Figure 5: Distribution of sentiment across 148 countries and regions



Source: Bruegel, based on GDELT.

2.5 At the country level, differences in the BRI image are very large and sometimes unexpected

In **Figure 6** and **Figure 7**, we further report the countries with the most positive and negative sentiment towards the BRI. At first glance, a significant proportion on both extremes are European countries. This reflects the deep division in Europe towards the BRI. Portugal and the Netherlands hold positive views of the BRI, even though they have not been official members in 2017. Norway and Ireland both display strongly negative sentiment towards the BRI. Apart from that, traditional strategic competitors with China – such as Australia and Canada – appear on the negative extreme. Several smaller countries – Tonga, Vanuatu and Grenada – are found on the positive extreme, reflecting the desire for receiving long-needed infrastructure investment⁴.

⁴ Charlotte Greenfield, 'Vanuatu to seek more Belt and Road assistance from Beijing: PM', *Reuters*, 22 May 2019, <https://www.reuters.com/article/us-pacific-china-vanuatu-idUSKCN1SS0R7>.

Figure 6: Media sentiment for the most positive countries

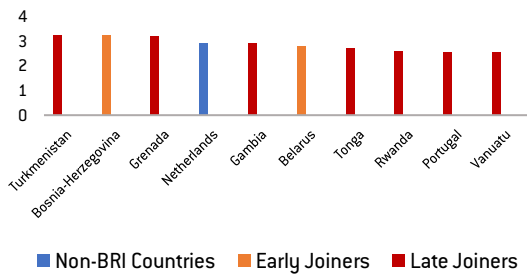
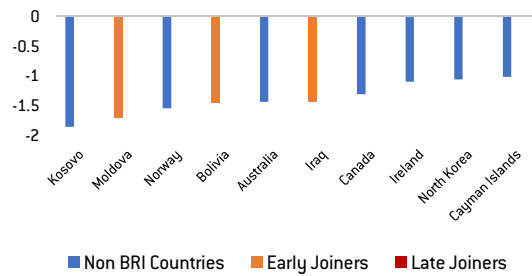


Figure 7: Media sentiment for the most negative countries



Source: Bruegel, based on GDELT.

3 Evolution of sentiment towards the BRI

3.1. Sentiment towards the BRI tends to follow that towards China

In the last section of the paper, we focused on cross-sectional comparison based on countries average sentiment towards the BRI. However, the image of the BRI is evolving over time not only because the impact of the BRI takes time to materialise but also because of China’s changing strategy in the implementation of the initiative. In this section, we analyse the time-series evolution of the initiative’s image.

Specifically, we investigate whether the change in sentiment towards the BRI simply follows the change in the general image of China. To track the time-series movement of sentiment towards ‘China’ and the ‘Belt and Road Initiative’, we use GDELT summary to search news with two sets of keywords. Specially, we extract news including both ‘China’ and ‘BRI’ in the first group whereas the second group only contains the news including ‘China’ but excluding ‘BRI’. We use an unweighted mean to calculate the average sentiment across countries⁵. The period under observation is 1 January 2017, to 16 November 2022.

Looking at the cross-country averages, Table 1 shows the sentiment towards the BRI and towards China over the entire period. Sentiment towards the BRI is much more positive than sentiment towards China. This confirms that countries differentiate between the gains of economic cooperation and China as a model in the world. Figure 8 displays the evolution of sentiment towards the BRI and towards

⁵ Applying country-weights based on the number of articles released, shifts the average sentiment towards the BRI downwards, but leaves the relative change between the two groups unaffected. In other words, countries reporting intensively on the BRI (mostly large countries like India, the US, and the UK) hold more negative perceptions, while the overall downward trend is apparent in both cases.

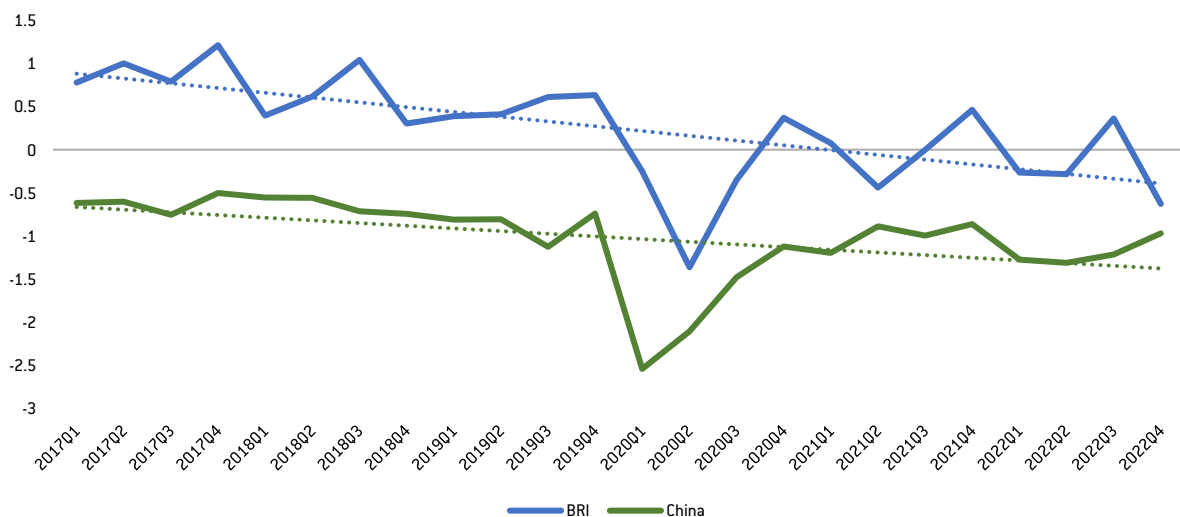
China. The selected time range is between 1 January 2017 and 16 November 2022. The spikes in sentiment coincide with the convening of the UN General Assembly where reporting on the BRI is more positive. The difference in the trendline diminished from approximately 1.5 sentiment points at the beginning of 2017 to 1 sentiment point in the final quarter of 2022 indicating that the image towards the BRI deteriorated faster than the image towards China in general. While our analysis is descriptive, we suspect several factors influencing the change in sentiment. First, countries might be subject to a levelling effect reflecting initial enthusiasm towards infrastructure investment that has cooled down over time. Second, debt distress in recipient countries – partially triggered by the pandemic – has sparked criticism towards the initiative in the media. And third, increasingly negative reporting in Europe and North America as a result of China’s investment activities in high-technology sectors triggered a shift in sentiment. To investigate the validity of these three factors, we deploy once again a regional decomposition.

Table 1: Comparison of perception towards the BRI and China-related news excluding the BRI

Statistical analysis	BRI	‘China’ excluding ‘BRI’
Average tone	0.57	-1.00

Source: Bruegel, based on GDELT.

Figure 8: Evolution of the average sentiment of the 148 countries under observation

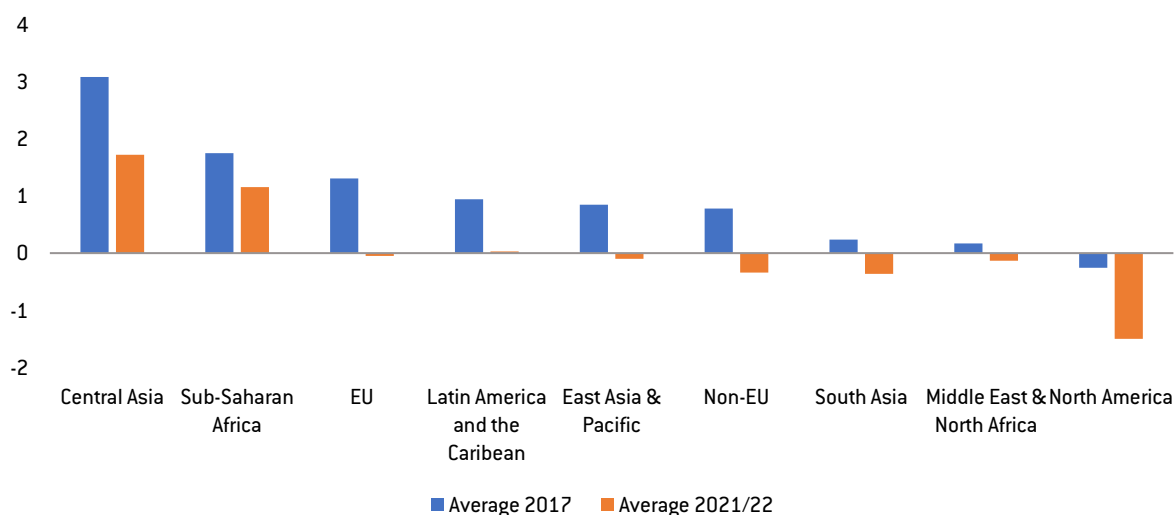


Source: Bruegel, based on GDELT.

3.2 Sentiment has changed quite widely over time and across regions

We decompose the change in sentiment towards the BRI by region which is presented in **Figure 9**. The columns in the figure correspond to the average regional sentiment in 2017 (blue) and 2022 (orange). For countries that had no media coverage in 2022, we used values for 2021. At a first glance, the image of the BRI has deteriorated across all geographies, though not by an equal magnitude. In general, sentiment decreased much less in developing countries than in the EU and North America, lending support to our suggestion that sentiment change is driven disproportionately by Western economies. In Central Asia the initiative has deteriorated from an exceptionally high average value of 3.08 to a still strongly positive value of 1.72. This in turn lends credibility to a levelling effect, at least with respect to Central Asia and possibly Europe. The drop in sentiment was much smaller in South Asia, the Middle East and North Africa and sub-Saharan-Africa, although it turned negative for the former two regions. Finally, debt distress in recipient countries which occurred predominantly in sub-Saharan Africa (Horn *et al*, 2022) does not seem to have affected sentiment across the board. Note, that among the 34 countries abstaining with China in the UN resolution on the war in Ukraine in February 2023, most were Central Asian and sub-Saharan African, indicating that a positive view of the BRI is at least correlated with political alignment on the global stage.

Figure 9: Regional decomposition of the change in sentiment towards the BRI



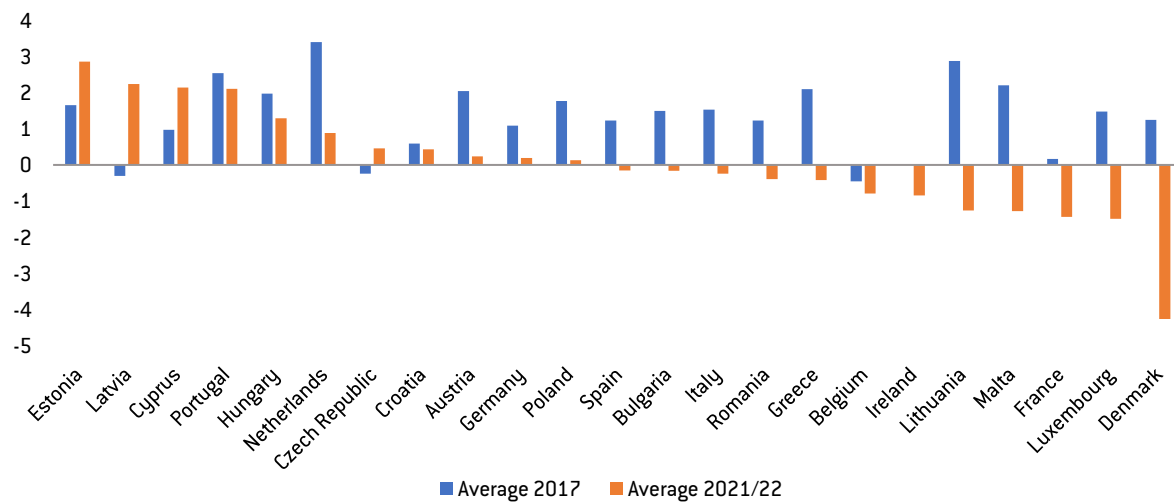
Source: Bruegel, based on GDELT.

4. A focus on the EU, Africa and China's neighbourhood

4.1 Europe has shifted away from engagement in the BRI

The EU is the region that has most moved away from a positive sentiment towards the BRI. Indeed, by focussing on the EU's perception (**Figure 10**) we can see that – except for the Czech Republic, Cyprus, Latvia and Estonia – all EU countries reported a more negative image of the BRI in 2021/22 than in 2017. This is again not surprising as events have spiralled since then. The EU's labelling of China as a 'systemic rival', tensions about Chinese investment in Europe's high-tech sectors, negative reporting on BRI projects and the COVID-19 pandemic have cast a shadow over the relationship between the two global players. Whatever combination of factors is behind the almost invariable deterioration of sentiment, the EU has appeared much more cautious now in its diplomatic engagement towards the Middle Kingdom, especially after Western dreams to induce political change in China through economic cooperation have backfired. Instead, the European Commission has promoted its own alternative to the BRI, namely the 'Global Gateway' and is in the midst of redefining its relationship with the African continent⁶.

Figure 10: Change of tone in selected EU countries



Source: Bruegel, based on GDELT.

⁶ *Euronews*, 'EU and African leaders meet in Brussels to reset relations after turbulent COVID years', 18 February 2022, <https://www.euronews.com/my-europe/2022/02/17/eu-and-african-leaders-meet-in-brussels-to-reset-relations-after-turbulent-covid-years>.

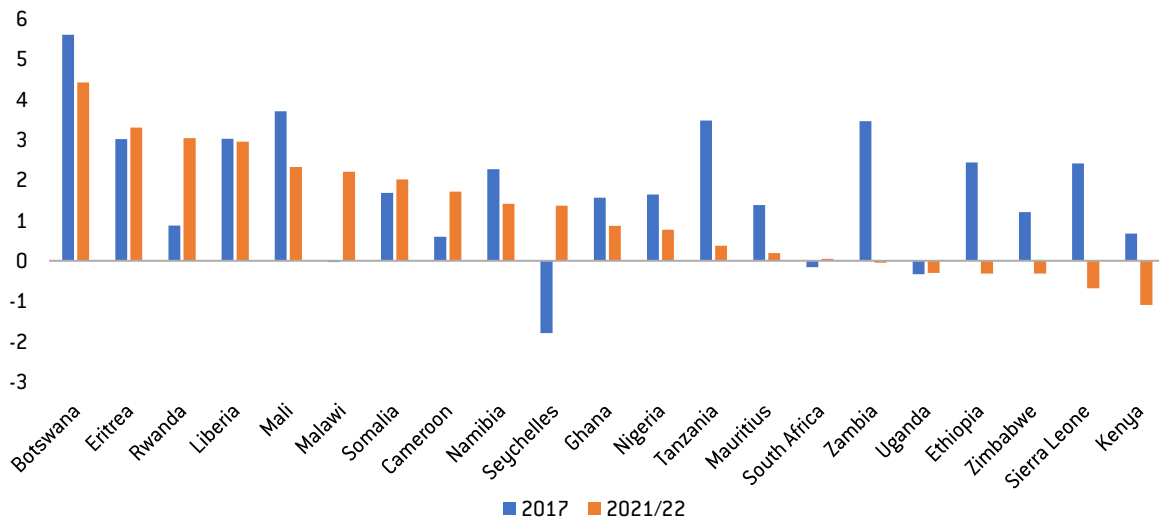
4.2 Sub-Saharan Africa has countries experiencing a collapse in the BRI's image or a major improvement

Chinese engagement in sub-Saharan Africa has been a hotly debated topic as of recently. China's investment in the forgotten continent picked up in 2005 as part of the central government's 'China Goes Global' strategy. Since then, China's foothold in Africa has been increasing and as of 2020, China represents the main source of African imports in goods (Statista, 2023). In **Figure 10** we disaggregate our sentiment indicator by country focusing on sub-Saharan Africa. As has been confirmed by scholarly work, China's story in Africa seems far from uniform and has to be evaluated on a case-by-case basis. Several countries that were initially positive about the BRI have changed their view to neutral or even negative. These include Tanzania, Zambia, Zimbabwe, Ethiopia and Kenya. Other countries who were sceptical in the beginning now view the initiative in a favourable light. Those include Rwanda, Cameroon, Malawi and the Seychelles. At the same time, the extreme examples illustrate the complexity of engagement and challenges China faces in Africa. Tanzania, for instance, moved away from BRI engagement after the Chinese side expressed concerns about political volatility and withdrew from planned projects (Freyman, 2021). In Zambia, the country's debt crisis has been blamed on the failure of BRI projects to deliver the expected large-scale economic benefits it promised (Hsiang, 2023). Both countries have shifted their view from strongly positive to neutral. On the positive extreme, Cameroon even moved beyond economic cooperation with China into military collaboration⁷. The Seychelles – having received Chinese funding for important government buildings, including the parliament – recently agreed to deepen cooperation in environmental protection with China⁸. Both nations favour the BRI now more than in 2017, with a recent sentiment score of 1.71 for Cameroon and 1.36 for the Seychelles, respectively.

⁷ R. Maxwell Bone, 'China and Cameroon's Evolving Political and Military Cooperation', *The Diplomat*, 24 October 2020, <https://thediplomat.com/2020/10/china-and-camerouns-evolving-political-and-military-cooperation/>.

⁸ Eleanor Albert, 'China's Foreign Minister Revives Belt and Road on 5-Country Africa Tour', *The Diplomat*, 12 January 2021, <https://thediplomat.com/2021/01/chinas-foreign-minister-revives-belt-and-road-on-5-country-africa-tour/>.

Figure 11: Change in sentiment towards the BRI in Africa, by country

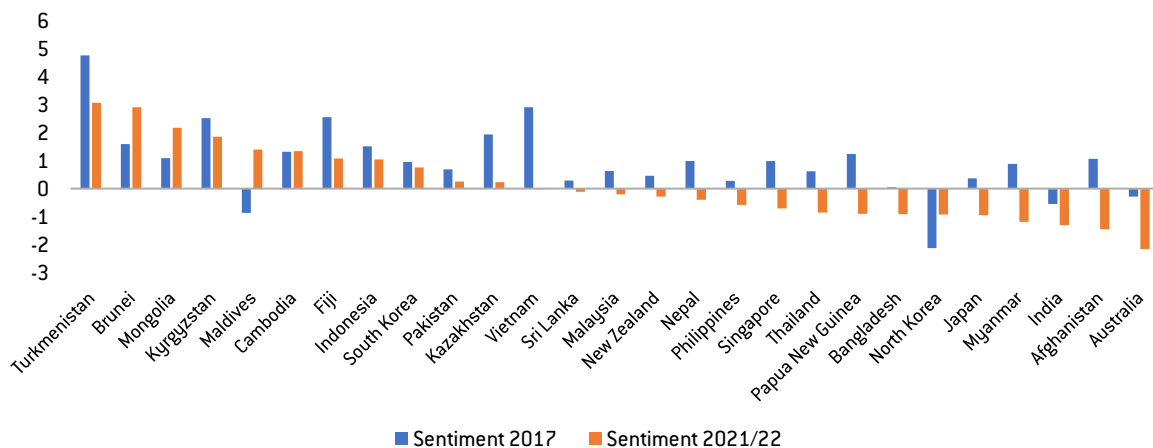


Source: Bruegel, based on GDELT.

4.3 In China’s own backyard, sentiment towards the BRI has decreased across the board, with a few exceptions remaining

Finally, **Figure 12** shows a decomposition of the change in sentiment across China’s neighbourhood, including Central, South and Southeast Asia. Notably, sentiment has decreased across the board except for a few selected countries, some of which had a prominent role in China’s overseas lending. The exceptions include Brunei, Mongolia, the Maldives, and North Korea. Cambodia, Indonesia and South Korea did not shift significantly, and are still quite positive. All other countries, most strongly Vietnam, Singapore, Thailand, and Australia, either went from positive to neutral, or from neutral to negative. The decomposition also reveals that South Asia’s rather negative sentiment (**Figure 9**) is largely driven by India whose sentiment indicator stands at a value of -1.31 in 2022. Southeast Asia on the other hand remains deeply split, even within the ASEAN states. As of today, Brunei, Indonesia and Cambodia still strongly favour the initiative, while the initiative’s image in Myanmar, Thailand, and Singapore has significantly worsened. Countries of strategic importance for the US in its attempt to contain China, namely India, Japan, and Australia are found at the lower end of the sentiment scale.

Figure 12: Change in sentiment towards the BRI in Central, South and Southeast Asia, by country



Source: Bruegel, based on GDEL.

5 Conclusion and policy implications

In this paper, we have analysed the sentiment towards the Belt and Road Initiative in the world using a large open-access dataset, namely GDEL. The key finding is that most regions in the world hold a rather positive view towards China's BRI, although wide differences appear across regions and countries. North America and South Asia hold a negative view of the initiative, while Central Asia and sub-Saharan Africa display are most positive. We also find that countries not having signed an MoU have a more negative image of the BRI than 'Early Joiners' and 'Late Joiners'. Further, our results show that – although average sentiment is positive – the sentiment towards the BRI has deteriorated. The analysis suggests that this trend is only partially connected to the deterioration of China's image in general. In fact, the sentiment towards the BRI has deteriorated faster than the sentiment towards China as a country. We also document that sub-Saharan Africa, where debt restructuring has been most frequent still holds a positive view of the BRI.

The regional discrepancies in sentiment and the deterioration of the BRI's image will have lasting effects on the nature China's foreign policy engagement. Several key policy implications can be extracted:

As a consequence of the BRI's deteriorating image in Western economies, the Chinese leadership will most likely concentrate its diplomatic efforts on regions that are still positive towards the BRI, namely Central Asia and sub-Saharan Africa. With its current engagement in the UN and its emphasis on South-South cooperation this is already well under way. Due to the strategic importance of these regions for

European economies, the EU must step up its efforts in these geographies while keeping in mind the complexities on the ground.

The EU can expect the Chinese government to adjust the narrative behind the Belt and Road Initiative in response to a generally deteriorating sentiment. Initial indications are already observable. Chinese foreign policy elites now frequently speak about 'Belt and Road Cooperation' instead of 'Belt and Road Initiative' which sounds less like a strategic push towards a nationalist goal⁹. Besides, several new concepts have appeared that complement the Belt and Road Initiative, notably the 'Global Development Initiative' and the 'Global Security Initiative'. It seems clear that any analysis of the future of the BRI needs to take into account the evolving sentiment as well as China's reaction to it, which also implies a rapidly changing narrative, as a way to adapt to the growing challenges.

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⁹ Andreea Brinza, 'What Happened to the Belt and Road Initiative?' *The Diplomat*, 6 September 2022, <https://thediplomat.com/2022/09/what-happened-to-the-belt-and-road-initiative/>.

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Appendix 1: Methodology

To measure the sentiment towards the BRI across the world, we extract data from the Global Database of Events, Language, and Tone (GDELT). GDELT is an open access, universal platform covering TV broadcast, print and online news in over 100 languages across all countries and regions. The information is updated every 15 minutes. GDELT offers two main products. First, the frequency with which a certain topic is raised in the news (i.e., intensity) and second, the sentiment or image of a certain topic covered in the media (i.e. tone). GDELT can be used in two different ways. The simplest way, based on Application Programming Interface (API), only covers the date after 1 January 2017 but has the advantage of being able to search any concept of interest, even if not included in the library developed by GDELT to locate institutions or events. The second method, which relies on google query for the searches, has the advantage that it starts much earlier (1979) but requires a certain concept or institution to be in the GDELT library. Unfortunately, none of the terms in usage for the BRI are included in the library which constrains the use of the second method. Fortunately, the BRI was only formalized in 2015. Hence, by setting our initial year to 2017 we are still able to capture sentiment over much of its existence and over the period in which it is most covered in the media (see Section 2). One caveat for the use of GDELT is its exclusion of social media. Admittedly, the widespread use of social media could represent a different angle for understanding the BRI. On the other hand, the growing importance of fake news in the social media also might make it less reliable in depicting the general thoughts of its users. Mainstream media has the advantage of being available to everyone, and is therefore more correlated with public sentiment, especially given that GDELT includes local newspapers as well. Another potential issue could be that sentiment merely reflects the general sentiment within a country. Countries who report on average more critically on other topics might also be more critical about the BRI. While we acknowledge that this might be the case for individual countries, our findings largely match the evolution of diplomatic engagement with respect to the initiative for the majority of countries. Plus, GDELT translates articles from other language into English prior to the analysis, which eliminates a potential language bias.

We extract all articles from GDELT that either contain the word 'One Belt One Road' or 'Belt and Road Initiative'. Both terms have been commonly used, with the latter gradually replacing the former (IPSI, 2017). We cover the period between January 1st, 2017 to October 5th, 2022. Finally, we differentiate in our sample between three groups based on whether they signed a Memorandum of Understanding

(MoU) with the People's Republic or not¹⁰. The Belt and Road Initiative was announced by the party leadership in September 2013. However, it took another one and a half years until the national bureaucracy was mobilized when the NDRC, the MOFA, MOFCOM released their 'Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road'. In May 2017, the Belt and Road Forum for International Cooperation was held to provide an international platform for the identification of projects and the signing of cooperation agreements. Later the same year, the BRI was finally inked into the Chinese constitution. As a consequence, in 2018 the number of new countries joining surged. We label those countries that signed an MoU before 2017 as 'Early Joiners'. In other words, these countries have been enthusiastic about the initiative before it was conceptualized properly. We label those countries that joined from 2018 onwards as 'Late Joiners'. Lastly, countries not having signed an MoU are labelled 'Non BRI Countries'. This last group is mostly composed of Western Europe and North America.

To quantitatively evaluate the image of the Belt and Road Initiative at the country level, we first calculate the tone (used interchangeably with the term 'sentiment') in one specific article published in the country i at time t and then aggregate it with the simple average method to obtain the sentiment of each country towards the BRI. The specific calculations follow the equation,

$$T_{j,i} = \frac{w_{j,p,i} - w_{j,n,i}}{w_{j,i}} \in (-100, +100) \quad [2]$$

$$T = \frac{1}{N_i} \sum_j T_{j,i} \in (-100, +100) \quad [3]$$

where $w_{j,p,i}$ refers to the number of words with positive sentiment in article j of country i , $w_{j,n,i}$ is the number of words with negative sentiment in article j of country i , and $w_{j,i}$ is the total number of words in article j of country i . $T_{j,i}$ is the tone for article j of country i . T is the average tone for all selected articles of country i .

Based on the construction of the measure, a positive tone means that the public media in the country favours the Belt and Road Initiative, whereas a negative tone indicates a negative sentiment towards the BRI. The higher the tone, the more supportive is the country towards the BRI. For the sake of regional comparison, we also aggregate the measures by a simple average for each region. The range

¹⁰ Admittedly, this is not a definition without shortcomings. In the early years of the BRI, there was a significant mismatch between the geographical focus of Chinese investment and the signing of MoUs. However, recently this gap has diminished, and hence we can expect the sentiment to at least partially present economic cooperation in addition to diplomatic intent. For further reference, refer to: <https://www.cfr.org/blog/countries-chinas-belt-and-road-initiative-whos-and-whos-out>.

of the tone lies in between -100 (the most negative) and 100 (the most positive), although most articles are found to be in the range of -10 to 10.

Appendix 2: Regional classification

Latin America and the Caribbean	East Asia & Pacific	Europe		Middle East & North Africa	North America	South Asia	Sub-Saharan Africa	Central Asia
		Non-EU	EU					
Bolivia	Australia	Kosovo	Ireland	Iraq	Canada	Maldives	Namibia	Tajikistan
Cayman Islands	North Korea	Moldova	France	Israel	United States	India	Angola	Kyrgyzstan
Guyana	Guam	Norway	Czech Republic	Algeria		Afghanistan	Sierra Leone	Kazakhstan
Mexico	Japan	Iceland	United Kingdom	Iran		Bangladesh	Kenya	Uzbekistan
Brazil	Myanmar	Russia	Kingdom	Syria		Sri Lanka	South Africa	Turkmenistan
Bahamas	New Zealand	Switzerland	Belgium	Libya		Nepal	Uganda	
Trinidad and Tobago	Cook Islands	Turkey	Denmark	Qatar		Pakistan	Sudan	
Venezuela	Malaysia	Ukraine	Greece	Saudi Arabia			Mali	
Uruguay	Philippines	Macedonia	Latvia	Tunisia			Ethiopia	
Panama	Indonesia	Serbia	Lithuania	Oman			Mauritius	
Argentina	South Korea	Azerbaijan	Luxembourg	Jordan			Nigeria	
Dominican Republic	Thailand	Albania	Germany	Egypt			Zimbabwe	
Colombia	Singapore	Georgia	Croatia	Lebanon			Zambia	
Haiti	Tuvalu	Armenia	Poland	Kuwait			Cameroon	
Peru	Vietnam	Belarus	Spain	Morocco			Seychelles	
Bermuda	Samoa	Bosnia-Herzegovina	Malta	United Arab Emirates			Malawi	
Jamaica	Solomon Islands		Romania	Bahrain			Eritrea	
Chile	Macau		Italy				Ghana	
Barbados	Cambodia		Bulgaria				Tanzania	
Ecuador	Fiji		Finland				Somalia	
Cuba	Brunei		Cyprus				Botswana	
Grenada	Papua New Guinea		Estonia				Chad	
	Guinea		Hungary				Liberia	
	Mongolia		Austria				Rwanda	
	Laos		Slovenia				Gambia	
	Vanuatu		Portugal					
	Tonga		Netherlands					

Appendix 3: Early joiners

Central Asia	East Asia & Pacific	EU	Latin America and the Caribbean	Middle East & North Africa	Non-EU	South Asia	Sub-Saharan Africa
Kyrgyzs-tan		Czechia	Panama	Iraq	Moldova	Maldives	Kenya
Kazakhs-tan	Myanmar	Latvia		Egypt	Russia	Afghanistan	South Africa
Uzbekis-tan	New Zealand	Lithuania		Lebanon	Turkey	Sri Lanka	Cameroon
	Malaysia	Croatia		Morocco	Ukraine	Nepal	Somalia
	Philippines	Poland			Macedonia	Pakistan	
	Indonesia	Romania			Serbia		
	Thailand	Bulgaria			Azerbaijan		
		Estonia			Albania		
	Macau	Hungary			Georgia		
	Cambodia	Austria			Armenia		
	Papua New Guinea	Slovenia			Belarus		
	Mongolia				Bosnia-Herzegovina		

Appendix 4: Late joiners

Central Asia	East Asia & Pacific	EU	Latin America and the Caribbean	Middle East & North Africa	South Asia	Sub-Saharan Africa
Tajikistan	Cook Islands	Greece	Bolivia	Algeria	Bangladesh	Namibia
Turkmenistan	South Korea	Luxembourg	Guyana	Iran		Angola
	Singapore	Malta	Trinidad and Tobago	Libya		Sierra Leone
	Vietnam	Italy	Venezuela	Qatar		Uganda
	Samoa	Cyprus	Uruguay	Saudi Arabia		Sudan
	Solomon Islands	Portugal	Peru	Tunisia		Mali
	Fiji		Jamaica	Oman		Ethiopia
	Brunei		Chile	Kuwait		Nigeria
	Laos		Barbados	United Arab Emirates		Zimbabwe
	Vanuatu		Ecuador	Bahrain		Zambia
	Tonga		Cuba			Seychelles
			Grenada			Ghana
						Tanzania
						Chad
						Liberia
						Rwanda
						Gambia

Appendix 5: Non-BRI countries

East Asia & Pacific	EU	Latin America and the Caribbean	Middle East & North Africa	Non-EU	North America	South Asia	Sub-Saharan Africa
Australia	Ireland	Cayman Islands	Israel	Kosovo	Canada	India	Mauritius
North Korea	France	Mexico	Syria	Norway	United States		Malawi
Guam	United Kingdom	Brazil	Jordan	Iceland			Eritrea
Japan	Belgium	Bahamas		Switzer-land			Botswana
Tuvalu	Denmark	Argentina					
	Germany	Dominican Republic					
	Spain	Colombia					
	Finland	Haiti					
	Netherlands	Bermuda					

Appendix 6: Tone ranking (East Asia & Pacific)

East Asia & Pacific	Tone	Ranking
Australia	-1.44	1
North Korea	-1.06	2
Taiwan	-0.83	3
Guam	-0.76	4
Japan	-0.75	5
Myanmar	-0.5	6
New Zealand	-0.04	7
Cook Islands	0.02	8

Malaysia	0.03	9
Philippines	0.08	10
Indonesia	0.22	11
South Korea	0.28	12
Thailand	0.29	13
Singapore	0.32	14
Hong Kong	0.44	15
Tuvalu	0.47	16
Vietnam	0.51	17
Samoa	0.65	18
Solomon Islands	0.73	19
Macau	0.84	20
Cambodia	0.86	21
Fiji	1.07	22
Brunei	1.75	23
Papua New Guinea	1.78	24
Mongolia	2.32	25
Laos	2.33	26
Vanuatu	2.52	27
Tonga	2.71	28

Appendix 7: Tone ranking for Central Asia (4 countries) and South Asia (8 countries)

Central Asia	Tone	Ranking	South Asia	Tone	Ranking
Turkmenistan	3.24	1	Pakistan	0.38	1
Uzbekistan	2.47	2	Nepal	0.34	2
Kazakhstan	2.08	3	Sri Lanka	-0.09	3
Kyrgyzstan	1.53	4	Bangladesh	-0.09	4
Tajikistan	0.84	5	Afghanistan	-0.46	5
			India	-0.74	6
			Maldives	-0.9	7

Appendix 8: Tone ranking for EU countries and Non-EU countries in Europe (43 countries)

EU	Tone	Ranking	Non-EU	Tone	Ranking
Netherlands	2.92	1	Bosnia-Herzegovina	3.22	1
Portugal	2.55	2	Belarus	2.76	2
Slovenia	2.5	3	Armenia	1.45	3
Austria	1.66	4	Georgia	1.4	4
Hungary	1.57	5	Albania	0.64	5
Estonia	1.34	6	Azerbaijan	0.57	6
Cyprus	1.22	7	Serbia	0.4	7
Finland	1.22	8	Macedonia	0.39	8
Bulgaria	1.08	9	Ukraine	0.2	9
Italy	1.02	10	Turkey	-0.09	10
Romania	0.99	11	Switzerland	-0.16	11
Malta	0.78	12	Russia	-0.79	12
Spain	0.61	13	Iceland	-1.02	13
Poland	0.55	14	Norway	-1.55	14
Croatia	0.52	15	Moldova	-1.71	15
Germany	0.51	16	Kosovo	-1.86	16
Luxembourg	0.3	17			
Lithuania	0.24	18			
Latvia	0.22	19			
Greece	0.19	20			
Denmark	-0.23	21			
Belgium	-0.26	22			
United Kingdom	-0.45	23			
Czech Republic	-0.54	24			
France	-0.8	25			
Ireland	-1.1	26			

Appendix 9: Tone ranking for Latin America & Caribbean and North Americas (22 countries)

Latin America & Caribbean	Tone	Ranking	North America	Tone	Ranking
Grenada	3.17	1	United States	-0.78	1
Cuba	2.17	2	Canada	-1.31	2
Ecuador	1.74	3			
Barbados	1.03	4			
Chile	0.89	5			
Jamaica	0.79	6			
Bermuda	0.72	7			
Peru	0.64	8			
Haiti	0.49	9			
Colombia	0.28	10			
Dominican Republic	0.25	11			
Argentina	0.22	12			
Panama	0.19	13			
Uruguay	0.09	14			
Venezuela	0.05	15			
Trinidad and Tobago	-0.11	16			
Bahamas	-0.11	17			
Brazil	-0.41	18			
Mexico	-0.75	19			
Guyana	-0.83	20			
Cayman Islands	-1.02	21			
Bolivia	-1.45	22			

Appendix 10: Tone ranking for Middle East & North Africa (16 countries) and sub-Saharan Africa (19 countries)

Sub-Saharan Africa	Tone	Ranking	Middle East & North Africa	Tone	Ranking
Gambia	2.9	1	Bahrain	2.2	1
Rwanda	2.56	2	United Arab Emirates	1.81	2
Liberia	2.37	3	Morocco	1.77	3
Chad	2.28	4	Kuwait	1.02	4
Botswana	1.74	5	Lebanon	0.72	5
Somalia	1.65	6	Egypt	0.7	6
Tanzania	1.55	7	Jordan	0.28	7
Ghana	1.55	8	Oman	0.08	8
Eritrea	1.55	9	Tunisia	-0.06	9
Malawi	1.3	10	Saudi Arabia	-0.06	10
Seychelles	1.22	11	Qatar	-0.19	11
Cameroon	1.15	12	Libya	-0.32	12
Zambia	1.03	13	Syria	-0.76	13
Zimbabwe	0.89	14	Iran	-0.91	14
Nigeria	0.89	15	Algeria	-0.93	15
Mauritius	0.74	16	Israel	-1.01	16
Ethiopia	0.59	17	Iraq	-1.44	17
Mali	0.44	18			
Sudan	-0.06	19			
Uganda	-0.11	20			
South Africa	-0.13	21			
Kenya	-0.19	22			
Sierra Leone	-0.24	23			
Angola	-0.51	24			
Namibia	-0.62	25			

Appendix 11: Selected countries and possible reasons for their holding sentiment

Region	Best		Worst	
	Country	Reason	Country	Reason
Sub-Saharan Africa	Gambia	Gambia broke diplomatic ties with Taiwan in November 2013, just one month after the BRI was announced. Since 2016, massive investment from China has flooded into the small West-African country. From then onwards, development cooperation has positively shaped sentiment in Gambia towards the BRI ¹ .	Namibia	Since the early 2000s China's influence in Namibia has steadily grown with the construction sector playing a major role. The rents of projects mainly went to established elites and has reaffirmed the social and economic exclusion of large parts of the population, specifically those without beneficial political connections (Dobler, 2017).
East Asia & Pacific	Tonga	The BRI's media sentiment in many Island States in the Pacific has been positively shaped by heavy infrastructure investment from China, also in Tonga. In 2017, construction ended of the royal St. George palace, built by the Chinese SOE Shanghai Construction Group General Co. (Li, 2022).	Australia	The strongly negative sentiment in the Australian media originates from a general deterioration in bilateral relations with China. Cyberattacks, tariff on Australian exports, and Beijing involvement in the political system led to widespread Anti-Beijing resentment (Varano, 2021). The Australian government, initially cautiously open towards the initiative has turned its back on OBOR (Jiang, 2021).
Middle East & North Africa	Bahrain	Bahrain embraces the BRI as an integrated part of its homemade Bahrain Economic Vision 2030 (BEV2030). Policy coordination, connectivity, trade and investment, and people-to-people-bonds have been identified as the cornerstones of China-Bahrain economic cooperation. This unusual degree of specificity has positively shaped the image of the initiative in the Kingdom (Chaziza, 2020)	Iraq	Economic cooperation with China has been controversial within Iraq. First, China imports oil from Iraq at a price of \$70 per barrel, while Iraq imports the same amount of gasoline at \$200. This trade imbalance has led to negative resentment within the country while China's approach to investment in exchange for energy supply goods has equally faced criticism (Jyoti Das, 2022).
Europe (EU)	Netherlands	Despite the Netherlands tough stance on human rights issues in China, the Belt and Road Initiative enjoys a strongly positive image. This is most likely	Ireland	Ireland is not a participant of the BRI, nor is it located in a geographically relevant region. It is plausible that the negative sentiment towards China's initiative

¹ Reuters (2018) 'Gambia president tells China previous Taiwan ties a "huge mistake"', 6 September 2018, <https://www.reuters.com/article/us-china-africa-gambia-idUSKCN1LM1HV>.

Europe (Non-EU)	Bosnia and Herzegovina	<p>driven by business circles who report an increase in official visits from diplomats, investors, and business actors under the aegis of the BRI (Langendoek, 2020).</p> <p>Bosnia and Herzegovina has been the major recipient of Chinese investment having received 20% of all construction loans in central and eastern Europe in 2018 (ECFR, 2022). China comes at a strong supporter of the country even when Western nations have called the long-term stability of Bosnia and Herzegovina into question.</p>	Kosovo	<p>stems from a generally sceptical view towards China's rise. A study launched by <i>The Journal</i> found that the words most commonly associated with China's rise are 'Worrying', 'Scary', 'Dangerous', and 'Frightening'²</p> <p>China's strong push for the BRI in the Balkans did was not met with enthusiasm across the entire region. Kosovo does still not have official diplomatic relations with China, the latter refusing to recognize its status as a sovereign country, and to make matters worse, Serbia is the key ally of China in the region (ECFR, 2022).</p>
Latin America & Caribbean	Grenada	<p>Since Grenada recognized the People's Republic as the true China, relations between the two countries have improved significantly. In 2017, it became public that the Grenadian government was assisted by China in the crafting of its national development strategy (Synergia, 2017). This shows how trusted the economic relationship between the two countries has become.</p>	Bolivia	<p>Bolivia has been struck by several water crises in the last 25 years. At the same time, Bolivia possesses 60% of the world's lithium reserves (S&P Global, 2021). Intense mining activities by Chinese companies and their alleged diversion of water has led to protests against China's economic footprint in the country, with 86 communities having declared a "state of emergency" (Gómez, 2017).</p>
South Asia	Pakistan	<p>Pakistan enjoys a special place in the BRI with its own title, the China-Pakistan Economic Corridor (CPEC). Initially praised as an alternative trade route to the one through the Malacca strait, many projects have proven unprofitable and widespread debt restructuring is just a matter of time (Freyman, 2021). Nevertheless, Pakistan is the most optimistic country in South Asia, although only with an average sentiment of 0.38.</p>	Maldives	<p>Authoritarian president Yameen's corrupt business deals with China and his \$1.4bn in accumulated debt to China has driven sentiment towards the BRI into the red numbers. China's influence remains strong, with much of the industry depending on Chinese tourists and fishing exports. However, India is now contesting China's position with its own development commitments³</p>

² *The Journal*, 'New poll shows deep distrust of Chinese government among Irish public', 22 May 2021, <https://www.thejournal.ie/ireland-thinks-china-5442873-May2021/>.

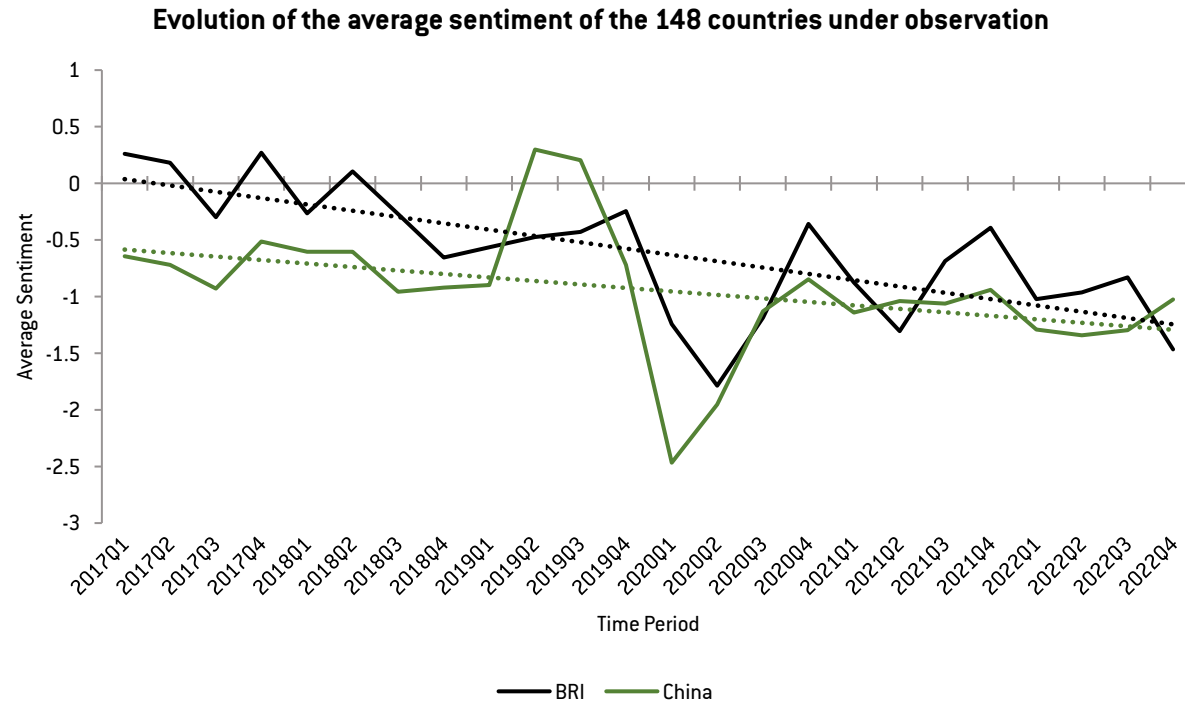
³ Sudha Ramachandran, 'Has India Won the Match Over the Maldives?' *The Diplomat*, 19 August 2020, <https://thediplomat.com/2020/08/has-india-won-the-match-over-maldives/>.

Appendix 12: Measuring overall sentiment change by weighing countries by their number of related articles

Table 1 Comparison of perception towards the BRI and China-related news excluding the BRI

Statistical analysis	BRI	'China' excluding 'BRI'
Average tone	-0.44	-0.94

Source: GDELT Summary





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