

Detailed analysis of Barclays' 2020 energy policy and response to Barclays' net zero ambition

On 30 March 2020, Barclays announced it would file a resolution that, if passed, would commit the bank to set a net zero by 2050 ambition covering its scope 1, 2 and 3 emissions, and “set, disclose and implement a strategy, with targets, to transition its provision of financial services across all sectors (starting with, but not limited to, the energy and power sectors) to align with the goals and timelines of the Paris Agreement”¹. It also introduced amendments to its energy policy².

Press statements about this announcement, including quotes, are accessible below:

- » ShareAction (2020). [Barclays announces 'net zero' ambition, must now address fossil fuel financing.](#)
- » EBC (2020). [Barclays risks investor revolt with new fossil fuel policy.](#)

This document provides a detailed analysis of Barclays' new energy policy, and its net zero ambition.

Part 1: Detailed analysis of Barclays' new energy policy

Arctic Oil

Previous commitment

- » **Projects:** Barclays will conduct Enhanced Due Diligence (EDD) on any financing transaction directly connected with the exploration or extraction of oil or gas in the Arctic. Under the EDD framework, “[they] would not expect such project finance proposals to meet their criteria.”
- » **Companies:** Any client conducting new exploration of or extraction of Arctic oil and gas will be subject to EDD.

Updated commitment

- » **Projects:** No financing for energy projects in the Arctic Circle, including but not limited to the Arctic National Wildlife Refuge.

- » **Companies:** No funding to ancillary businesses for use in supporting these projects. No financing to companies whose primary business is oil and gas exploration and production operations in the Arctic Circle, including but not limited to the Arctic National Wildlife Refuge.

Commentary & comparison with other banks

Barclays' new Arctic oil policy is a significant improvement on the previous one: We welcome Barclays' decision to exclude project finance for Arctic oil and gas projects, and to introduce corporate finance restrictions for companies engaging in Arctic oil and gas drilling. However, Barclays' threshold financing remains higher than some of its competitors. For example, UBS and Unicredit have specific exclusion thresholds of 30% of reserves or production and 25% of total revenues recorded in the year by the company, respectively.

Barclays' new general corporate finance restriction will only have a limited impact on the bank's financing: Between 2016-2019, Barclays financing of the Arctic oil and gas sector totaled \$1.1 billion³. Analysis of data for syndicated loans and bonds show that the bank was involved in transactions with seven out of the 30 largest Arctic oil and gas companies. These seven companies, namely ConocoPhillips, Wintershall, OMV, Equinor, Total, ExxonMobil and BP, are all diversified oil and gas companies and are thus unlikely to be covered by Barclays' corporate finance commitment on Arctic oil.

Coal-fired power

Previous commitment

- » **Projects:** No project finance to enable the construction or material expansion of coal-fired power stations anywhere in the world.
- » **Companies:** No restriction or exclusion on general corporate financing and underwriting for companies heavily reliant on coal.

Updated commitment

- » **Projects:** No changes.
- » **Companies:** No financing to clients at the entity level (i.e. not at the group level) with more than 50% of their revenue from thermal coal as of 2020, transitioning to 30% as of 2025, and to 10% as of 2030. "A residual revenue of 10% will enable us to continue supporting clients through their transition where a small, legacy element of their overall portfolio is taking longer to phase out. The emphasis on entities is important as many of our peers set targets at only the group level of their clients, thereby providing greater scope for financing; we look at the actual entity to which we are providing the financing, which is a more restrictive approach." Barclays will provide transition finance for companies reducing their thermal coal portfolio (including retrofitting of existing facilities.) For those unable to transition their portfolio, Barclays will provide financing for decommissioning plants. Barclays will also not

provide general corporate financing that is specified as being for new or expanded coal mining or coal-fired power plant development.

Commentary

Revenue-based exclusion thresholds fail to screen out some of the most polluting companies:

According to the Global Coal Exit List, at least 30 companies with a coal share of revenues of <50% have a coal share of power production (cspp) >50%, and operate 180 GW of coal capacity⁴. In Europe, Barclays' revenue threshold will not cut out most of the coal-heavy power utilities. Banks' coal policies should thus also include absolute thresholds. Europe Beyond Coal recommends absolute thresholds of 20Mt and 10GW.

Barclays' new policy will have a limited impact on its fossil fuel lending: Out of the 45 bond transactions that Barclays was involved in during 2019 in the electric utilities sector, only DTE Energy Co (>30%) and Public Service Company of Colorado (30%) are above the 30% threshold for the 2025 target in terms of coal share of revenue. Of the 38 companies where Barclays was part of syndicated loans in 2019, just 9 are above the 30% threshold for the 2025 target in terms of coal share of revenue.

Barclays does not have an exit date for coal, as opposed to many of its peers: For example, BNP Paribas will be reducing its exposure to thermal coal to zero by 2030 in the European Union and by 2040 outside of the European Union⁵.

Comparison with other banks

CREDIT AGRICOLE: No new clients with a reliance on coal above 25%. No support for clients expanding coal operations. By 2021, all clients must have a detailed plan in line with with phasing out coal in EU/OECD countries by 2030 and by 2050 elsewhere. For clients in breach of the 25 per cent threshold, only loans dedicated to renewable energy or GHG reduction projects will be authorised.

ING: No new clients with a reliance on coal above 10%. By 2025, no financing for new or existing clients with a coal exposure above 5%. ING will continue to finance non-coal energy projects for these clients.

Fracking

Previous commitment

- » **Projects:** No policy.
- » **Companies:** No policy.

Updated commitment

- » **Projects:** Partial project finance exclusion applying only to Europe and the UK.

Enhanced due diligence to projects outside of Europe.

» **Companies:** No policy.

Commentary

Barclays decides to stop financing fracking projects in Europe - but does not rule out financing fracking companies headquartered in Europe: In 2019, Barclays helped to provide a syndicated loan worth US\$2 billion to Ascent Resources, a UK-based company that operates in Slovenia, as well as loans worth US\$450 million and US\$925 million to Ascent in 2018 and 2017, respectively. Barclays was also involved in the issuance of bonds worth US\$600 million (2018) and US\$1.5 billion (2017) to Ascent Resources. This may be an indication of how the bank will approach tar sands and coal clients in the lead up to the 2025 and 2030 exclusion deadlines.

Barclays' real presence is in the US fracking market: Between 2016-2019, Barclays provided US\$17.5 billion of financing for fracking⁶. Analysis of syndicated loan and bond data shows that Barclays was involved in transactions with 15 of the 30 largest fracking companies. Of these 15 companies, the majority are headquartered in the US, and all but one have operations in the US. This level of financing makes it the world's fifth largest fracking financier over the period 2016 to 2019⁷.

According to RAN, Barclays' financing of key fracking companies in the US will contribute to the development of the Wink to Webster Pipeline, which will carry over one million barrels of fracked oil to refineries and export terminals per day⁸. The project — a joint venture of ExxonMobil, Plains All American Pipeline, MPLX, Delek US, Lotus Midstream, and Rattler Midstream LP — would enable expansion in the world's most prolific oil basin, locking in decades of overproduction and threatening the health of communities near the fracking sites. There is no project financing component specific to this pipeline, meaning that the banks that provide general corporate financing to the joint venture partners - such as Barclays - are key for these companies.

Comparison with other banks

RBS: Progressively withdrawing support from non-net zero aligned activity in the oil and gas sectors, if they do not have credible transition plans in line with the Paris Agreement in place by end of 2021.

Tar Sands

Previous commitment

» **Projects:** Enhanced due diligence

» **Companies:** Enhanced due diligence

Updated commitment

- » **Projects:** Partial project finance exclusion to oil sands projects outside of Canada.
- » **Companies:** Barclays will only provide financing to clients who have projects to materially reduce their overall emissions intensity and a plan for the company as a whole to have lower emissions intensity than the level of the median global oil producer by the end of the decade. Barclays expects its clients to, within a reasonable period, develop plans to achieve these reductions by 2030.

Commentary

Barclays is a global player in the tar sands sector: Barclays states that its exposure to tar sands is small, describing it as a “very small business” with just £20m of revenue generated in 2019⁹, representing approximately 0.1% of Barclays’ total revenue¹⁰. If Barclays’ exposure to the sector is indeed minimal, it is unclear why the bank resists introducing a more robust tar sands lending policy like that of its peers. Given Barclays’ position in the global top 10 for tar sands financing, it is wrong to downplay the bank’s role in the sector. Since the signing of the Paris Agreement, the bank has provided US\$3.2bn of tar sands financing¹¹. For example, the bank has worked on syndicated loans in 2017, 2018, and 2019 that were arranged for Teck Resources, one of the world’s largest developers of tar sands. The total value of these loans was US\$11 billion, equivalent to US\$0.94 billion per mandated arranger¹².

Tar sands have no place in a Paris-compliant world: Tar sands, or oil sands, are amongst the most carbon-intensive and environmentally destructive fossil fuels. The unchecked growth of tar sands development, one of the most carbon intensive sources of energy in the world, would see emissions from Canadian oil exhaust 16% of the world’s total carbon budget for staying below 1.5°C, or 7% of the 2°C budget¹³. Carbon Tracker recently found that no new oil sands project fit within a Paris compliant world¹⁴.

Barclays’ engagement timelines are out of step with its peers: For example, Credit Agricole gave its coal-heavy clients three years to publish transition plans consistent with the Paris goals (by 2021), and RBS asked its oil and gas clients in February 2020 to publish credible transition plans in line with the Paris goals by 2021 – or the bank would progressively withdraw support for them. These timelines are significantly more ambitious than Barclays’. It’s also worth noting that Barclays is merely encouraging its clients to materially reduce their greenhouse gas emissions, not to fully align with the Paris goals.

Relying on companies’ emissions data alone presents important risks: Barclays’ policy relies on tar sands companies demonstrating they have materially reduced their emissions. Yet, a recent study published in Nature, which used aircraft measurements over the Canadian oil sands to derive the first top-down measurement-based determination of their annual CO₂ emissions and intensities, found that CO₂ emission intensities for oil sands facilities are 13–123% larger than those estimated using publicly available data. This leads to 64% higher annual GHG emissions from surface mining operations, and 30% higher overall oil sands GHG emissions (17 Mt) compared to that reported by industry, despite emissions reporting which uses the most up to date and recommended bottom-up approaches¹⁵.

The Just Transition should not be used as a justification for inaction: Barclays invokes the Just Transition –the aim to protect workers and communities that will be adversely affected by the low-carbon transition- as a key reason behind the development of its new tar sands policy. The Chairman writes in the 2019 ESG report that “this approach takes into consideration the just transition for the workforce and communities currently dependent on the oil sands industry in Canada”¹⁶.

Within the context of the Paris Agreement, which Barclays has said it will align with, the Just Transition should not be used as a justification for inaction. ShareAction recognises the need for a Just Transition, explicitly calling on the bank to consider workers when developing phase-out targets in the supporting statement of its own resolution¹⁷. Yet, for a transition to be just, a transition needs to occur in the first place. This does not seem to be happening with Barclays’ new tar sands policy.

Barclays’ new tar sands policy is far from being Paris aligned. It is not based on science or a Paris aligned pathway or scenario. We strongly encourage Barclays to reconsider this policy given its ambition to be a net zero bank by 2050.

Comparison with other banks

BNP PARIBAS: No project finance for unconventional oil and gas (including tar sands) and pipelines transporting a significant volume of unconventional oil and gas. No provision of financial products or services for companies where unconventional oil and gas accounts for a significant proportion of reserves, revenues trading, or supply to pipelines and export terminals.

UniCredit: No financing for new or existing companies where activities provide up to a maximum of 25% of the total revenues recorded. In the case of existing clients, the bank will only provide finance to companies in breach of the threshold if they have a clear plan for reducing tar sands-related revenue below the 25% threshold.

A note on conventional oil and gas

Barclays’ 2019 ESG report suggests that the bank’s new energy statement will not include any project or general corporate finance exclusions or restrictions to conventional oil and gas companies. In February 2020, RBS announced that it would progressively withdraw support from non-net zero aligned activity in the coal, oil and gas sectors if they do not have credible transition plans in line with the Paris Agreement in place by the end of 2021. We expect more banks to make similar commitments in the coming months and years.

Part 2: Analysis of Barclays’ ambition

We welcome Barclays’ ambition to be a net zero bank by 2050, covering its scope 1, 2 and 3 emissions. This is a milestone announcement reflecting the positive pressure of shareholders

and other stakeholders, and the bank's willingness to listen. To our knowledge, Barclays is the first global bank to have officially committed to net zero by 2050. In January 2020, Lloyds committed to align its loan book with net zero by 2050¹⁸ and in February 2020, RBS committed to at least halve the climate impact of its financing activity by 2030 and intend to do what is necessary to achieve alignment with the 2015 Paris Agreement¹⁹.

It is encouraging to see that Barclays is looking to extend Paris alignment to all sectors, not just energy and power, even though these sectors are crucial. It is also worth noting that the scope of Barclays' ambition is not limited to their loan book but extends to underwriting activity in debt and equity capital markets.

Finally, the bank has set a target to provide £100bn of green financing by 2030. However, for a banks' climate strategy to be effective, and for Barclays to deliver on its net zero target, an increase in green financing must be twinned with a decrease in fossil fuel financing. As a result, we have concerns regarding how Barclays' current strategy will deliver on its net zero ambition. These are outlined below.

Barclays' baseline scenario is not aligned with Net Zero by 2050

Barclays said that its "strategy to align with the goals of the Paris Agreement will take the International Energy Agency's Sustainable Development Scenario (SDS) as its starting point." The reasoning behind it is that the scenario is "already widely used, and has a dataset that enables [the bank] to immediately begin building the tools to align [its] portfolio." Barclays claims that the "SDS (...) meets all of the conditions required for the world to be net zero in the second half of this century²⁰." The IEA itself admits the SDS is on track for net zero by 2070²¹. This seems inconsistent with Barclays' commitment to net zero by 2050. 60 leaders from the business, investment and NGO communities have recently written to Fatih Birol, the executive director of the IEA, highlighting the flaws of the IEA SDS. They called on the organisation to: "make a fully transparent Sustainable Development Scenario the central reference in the 2020 WEO. The ambition of the SDS must be increased to present a reasonable probability of reaching net zero emissions by 2050 (not 2070) and limiting warming to 1.5°C (not 1.8°C). It should include a precautionary approach to negative emissions technologies, and the steps needed to follow that pathway²²." This was a follow up to a letter the group had sent to the IEA in April 2019.

The SDS has also been criticised for relying heavily on carbon capture and storage (CCS) and negative emissions technologies²³. The supporting statement of the resolution coordinated by ShareAction encourages the bank to use climate scenarios that do not rely excessively on Negative Emissions Technologies when developing phase-out targets. These technologies may not be available in time and at the scale required to avert the worst consequences of climate change. The IPCC special report on 1.5°C states that "Carbon cycle and climate system understanding is still limited about the effectiveness of net negative emissions to reduce temperatures after they peak," adding that carbon dioxide removal "deployed at scale is unproven and reliance on such technology is a major risk in the ability to limit warming to 1.5°C²⁴."

A sector-based approach to decarbonisation needs to be accompanied by a company-based approach to decarbonisation

The strategy put forward by Barclays' to reach net zero appears to be sector-based in nature. This differs from the approach outlined in the resolution filed by ShareAction, which calls on the bank to ensure that companies financed are Paris aligned. Whilst we support banks taking a sectoral approach to decarbonisation, this always needs to be accompanied by a robust energy policy preventing financing of the most polluting companies and projects.

Barclays' approach will use a "combination of metrics to assess both the carbon intensity (e.g. kgCO₂/kWh and kgCO₂/GJ) and absolute carbon emissions (e.g. kg/CO₂) of different types of activity." Absolute measures will not necessarily restrict financing of specific activities, but rather will help the bank "track the overall reduction in absolute emissions over time."

The risks of taking a sectoral approach to decarbonisation only are the following:

1. Portfolio level intensity targets could allow banks to offset investments in brown by investing in green projects - at least in the short to medium term. For example, an expansion of lending to renewable energy companies, whilst continuing to finance coal reliant companies, could result in a drop in portfolio carbon intensity that is Paris aligned, even if the coal reliant company is out of step with the Paris goals.
2. Even if absolute targets are introduced, these do not preclude investments in the most polluting sources of energy, e.g. new tar sands infrastructure, which lasts for decades. It only caps the total carbon emissions embedded in the bank's financing of the energy or power sectors.
3. Given the bank's current starting point, as Europe's largest fossil fuel financier, we have concerns about the ambitiousness of the bank's suggested 15% and 30% intensity metrics for its power and energy sector financing, respectively. However, we will need to see the bank's methodology and assumptions to comment on these metrics further.

A reluctance to phase out from fossil fuels

Barclays' refusal to withdraw support for the most polluting companies and fuels (see above for an analysis of their new energy policy) and commitment to engage with its clients on timelines that are clearly incompatible with the Paris goals raise doubts about the bank's ability to meet its net zero ambition. We are thus urging investors to support both resolutions at the Barclays AGM in May.

Barclays is positioning itself amongst American market peers

Barclays justifies its current fossil fuel financing levels by comparing the bank with its American peers.

“Barclays has historically been a significant financier of the energy and power industries, although we are a considerably smaller player than our American peers in fossil fuel financing.” (p.3, ESG report 2019).

All banks, especially those that are founding signatories of the Principles for Responsible Banking like Barclays, need to align with the Paris Agreement regardless of location. Barclays' CEO Jes Staley stated at Davos in January 2020: “We're British²⁵”. In terms of geographic split, at the group level 33 per cent of income comes from the Americas. In Barclays International, which contains the CIB, this figure is 51 per cent. However, Europe and the UK also account for 41 per cent of income²⁶. Furthermore, in Europe, Barclays ranks in the top five for debt capital market issuance. It is also one of four European banks with significant ties to coal exposed European utilities, namely Enel, Fortum, Uniper, and RWE²⁷. Finally, Barclays' main listing is on the London Stock Exchange, and given its sizeable European operations, the bank should be viewed alongside European peers.

Conclusion

Barclays has made some progress with this new announcement, demonstrating the impact that shareholders can have when they take targeted collective action. Notably, the bank has made genuine progress on its Arctic oil and gas policy, placing it in the middle of the pack amongst its European peers. With regards to its policy announcements for other fuels, the bank has made progress in relation to its former position on these fuel types. However, it began from a particularly insubstantial starting point, historically conducting enhanced due diligence over excluding and/or restricting finance for fossil fuels.

Our analysis has highlighted the inadequacies of Barclays' new energy policy. In particular, we have demonstrated that Barclays' new policy on fracking and tar sands will have little to no material impact on the bank's financing activities. For coal power, Barclays' new policy grants most coal-heavy companies a five-year grace period in which to receive unmitigated finance from the bank.

Finally, the bank's commitment to become a net zero bank by 2050 is a step in the right direction. However, we have strong concerns about Barclays using the SDS to model its strategy and progress. The IEA itself recognises that the SDS is on track for net zero by 2070. We urge Barclays to begin modelling its strategy and progress on a scenario that brings it in line with its net zero by 2050 ambition and does not heavily rely on unproven negative emissions technologies.

We are thus strongly concerned about the significant credibility gap between Barclays' long-term ambition and the inadequacy of its new policy to restrict funding to the most polluting companies and fuels. A climate strategy cannot be considered complete if it is not

accompanied by an integrated commitment to phase out financing to the most polluting companies and projects. In this context, we recommend that investors vote for both ShareAction's resolution and Barclays' at the AGM on May 7th.

- 1 Barclays (2020). *Our commitment to help limit global warming*. Available online at: <https://home.barclays/society/our-position-on-climate-change/our-commitment-to-help-limit-global-warming/> [accessed 30 March 2020].
- 2 Barclays (2020). *Environmental Social Governance Report 2019*. Available online at: <https://home.barclays/content/dam/home-barclays/documents/citizenship/ESG/Barclays-PLC-ESG-Report-2019.pdf> [accessed 30 March 2020].
- 3 Rainforest Action Network (2020). *Banking on Climate Change 2020*. Available online at: https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change_2020_vF.pdf [Accessed 3 March 2020]
- 4 Urgewald (2020). *Global Coal Exit List*. Available online at: <https://coalexit.org/> [accessed 30 March 2020].
- 5 BNP Paribas (2019). *BNP Paribas announces a timeframe for a complete coal exit and raises its financing targets for renewable energies*. Available online at: <https://group.bnpparibas/en/press-release/bnp-paribas-announces-timeframe-complete-coal-exit-raises-financing-targets-renewable-energies> [accessed 30 March 2020].
- 6 Rainforest Action Network (2020). *Banking on Climate Change 2020*. Available online at: https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change_2020_vF.pdf [Accessed 30 March 2020]
- 7 RAN (2020). *Banking on climate change: Fossil fuel finance report 2020*. Available online at: https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change_2020_vF.pdf [accessed 30 March 2020].
- 8 RAN (2020). *Banking on climate change: Fossil fuel finance report 2020*.
- 9 Barclays (2020). *Environmental Social Governance Report 2019*.
- 10 Barclays (2020). *Barclays PLC Annual Report 2019*. Available online at: <https://home.barclays/content/dam/home-barclays/documents/investor-relations/reports-and-events/annual-reports/2019/Barclays%20PLC%20Annual%20Report%202019.pdf> [Accessed 30 March 2020].
- 11 Rainforest Action Network (2020). *Banking on Climate Change 2020*.
- 12 ShareAction (2020). *Why investors should back the 2020 climate change resolution at Barclays*. Available online at: https://shareaction.org/wp-content/uploads/2020/02/Barclays_Investor_Report.pdf [Accessed 30 March 2020].
- 13 Scott. A & Muttitt. G. (2017). *Climate on the Line: Why New Tar Sands Pipelines are incompatible with the Paris Goals*." Oil Change International. Available online at: http://priceofoil.org/content/uploads/2017/01/climate_on_the_line_FINAL-OCI.pdf [accessed 30 March 2020].
- 14 Carbon Tracker (2019). *Breaking the Habit – Why none of the large oil companies are “Paris-aligned”, and what they need to do to get there*. Available online at: <https://www.>

- carbontracker.org/reports/breaking-the-habit/ [accessed 13 February 2020].
- 15 Liggio, J., Li, S., Staebler, R.M. et al. (2019). *Measured Canadian oil sands CO2 emissions are higher than estimates made using internationally recommended methods*. Nature Communications 10, 1863. Available online at: <https://doi.org/10.1038/s41467-019-09714-9> [accessed 30 March 2020].
- 16 Barclays (2020). *Environmental Social Governance Report 2019*.
- 17 ShareAction (2020). *Special climate change resolution at Barclays Plc for consideration at 2020 AGM*. Available online at: <https://shareaction.org/wp-content/uploads/2020/01/Barclays-Plc-2020-shareholder-resolution-ShareAction.pdf> [accessed 30 March 2020].
- 18 Megaw, N.(2020). *Lloyds vows to halve emissions linked to its loan book*. Financial Times. Available online at: <https://www.ft.com/content/e3603dee-3b7c-11ea-a01a-bae547046735> [accessed 30 March 2020].
- 19 RBS (2020). *Climate*. Available online at: <https://www.rbs.com/rbs/about/climate.html> [accessed 30 March 2020].
- 20 Barclays (2020). *Our commitment to help limit global warming*.
- 21 IEA (2019). *World Energy Model*. Available online at: <https://www.iea.org/reports/world-energy-model/sustainable-development-scenario> [accessed 30 March 2020].
- 22 Mission 2020 (2019). *Joint letter to IEA*. Available online at: <https://mission2020.global/letter-to-iea/> [accessed 30 March 2020].
- 23 IEEFA (2019). *IEEFA: IEA's sustainable development scenario is not enough*. Available online at: <https://energypost.eu/ieefa-ieas-sustainable-development-scenario-is-not-enough/> [accessed 30 March 2020].
- 24 IPCC (2018). *Global Warming of 1.5°C*. Available online at: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_High_Res.pdf [accessed 13 February 2020].
- 25 CNBC Africa (2020). *World Economic Forum: Barclays CEO Jes Staley on climate change, renewable energy & the banks' future plans*. Available online at: <https://www.cnbc.com/videos/2020/01/22/world-economic-forum-barclays-ceo-jes-staley-on-climatechange-renewable-energy-the-banks-future-plans/> [accessed 13 February 2020].
- 26 Barclays PLC (2020). *Full Year 2019 Presentation*.
- 27 EBC (2019). *Fool's Gold. The financial institutions bankrolling Europe's most coal-dependent utilities*. Available online at: https://beyond-coal.eu/wp-content/uploads/2019/05/foolsgold_final.pdf [accessed 13 February 2020].