



The limits of learning from disasters

Francisco Gaetani, Bruno Queiroz Cunha and Sergio Henrique Collaço de Carvalho consider implications of recent disasters in Brazil

Fundamental tensions between demands for maximizing economic development and concerns about the mitigation of environmental impacts are central to all commodity-dependent economies. Brazil is no different. Any politics of risk management in this context is shaped by the wider politics surrounding natural resource extraction. The two recent dam collapses highlight the regulatory challenges that confront a country such as Brazil. Moreover, if 'lesson learning' is supposed to be one objective in the aftermath of such tragedies, Brazil, at least at this particular point in time, is ill-suited for learning lessons for the future.

But let's focus on the cases first. The 2015 partial collapse of the dam in the city of Mariana in the state of Minas Gerais turned out to be one of the biggest environmental Brazilian disasters in modern times. Fourteen people died. Three years later, Brumadinho, a small rural town in the same state, witnessed another dam collapse involving a much higher toll in human lives (at the time of writing, at least 206, with over hundred individuals still missing). The dam collapsed at the worst possible moment, namely lunchtime. Staff were having lunch in the administrative building, situated just under the dam. While toxic, the sludge was deemed less environmentally problematic than was the case in the earlier dam collapse.

Minas Gerais – the state in which both of these dam collapses happened – is one of the richest states in Brazil. Its population size is similar to that of Chile and it is economically dependent on the mining industry (the name of the state is derived from its long history of natural resource extraction). The state has – at least until the opening of the Amazon to resource extraction – been the most important site for mineral extraction in Brazil. Following a long history of diamond and gold exploration, iron extraction remains prominent. Iron is also the core business of Vale (previously Vale do Rio Doce), one of the largest global mining companies in the world.

There are hundreds of dams containing toxic sludge resulting from mining activities. Most of these are over three decades old and were constructed at a time when environmental concerns enjoyed limited attention. In both the Mariana and Brumadinho cases, environmental and extraction licences were deemed to be complied with and we can assume that some kind of inspection activity must have taken place before the dams' collapse. Following the disaster in Mariana, for instance, the government required all other dams to be inspected. At the same time, the political influence of the whole minerals industry onto the world of politics played out in full. We

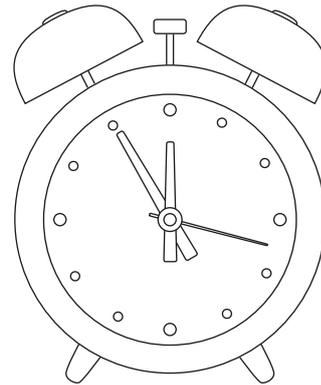
don't yet know the full story about the Brumadinho tragedy, for example, whether warning signs had been ignored or not communicated by the inspectors, or whether reports might even have been fabricated.

A proper inspection regime perhaps could have avoided the tragic loss of life. At this point, however, this is difficult to establish, as the continued tragedy of, and controversy about, the Brumadinho dam collapse are likely to stand in the way of sustained lesson learning.

The blame game has focused on Vale. The company's president and three directors were nudged into their resignation by the public prosecutors and the federal police. The stock market bounced back in delight when hearing the news. The resignations may have been good news for Vale's shareholders, but focusing on Vale alone hides the much broader structural problems underlying the regulation of dam safety in Brazil. The focus on Vale moved attention away from the roles and responsibilities of other actors involved, such as other companies, namely Samarco, a joint venture of Vale and BHP Billington, and the de facto operator of the Mariana dam, or BHP Billington itself. Similarly, responsibility is also shared with poorly resourced public servants, Minas Gerais' environmental council, or the German safety certification provider (Tüv Süd, and its recently acquired Brazilian unit).

This 'many hands problem' is further aggravated by the complexity of mining regulation. Mining activities are managed via an environmental licence issued and controlled at the state level (some are supervised at the federal level). Yet, minerals, oil and water are federal properties and concessions to extract these natural resources are issued at the federal level.

Regulatory complexity exists also because of organizational change. At the time of writing, the federal government is creating a National Mining Regulatory Agency to replace an earlier institution dedicated to the granting of concessions. This initiative to create an agency originated before the Mariana disaster, but received impetus as a result of it. The Agency has been approved by Congress, but was not yet fully operational when this article was written. Given this context, this young Agency will have plenty on its agenda; most of all, it will have to confront those vested interests that have benefitted most from the rather lax regulatory regime of the past. In addition, this Agency will have to navigate the complexity of Brazil's multi-layered political and regulatory system.



There is also an issue about compensation and recovery. Following the Mariana disaster, Samarco (and its controlling companies, Vale and BHP Billington) established the Renova Foundation to support the recovery of the affected Rio Doce region. The Brumadinho death toll is much higher and it is questionable whether corporate interests have the will and the financial muscle to cover these additional costs (at current estimates, about US\$1bn). More broadly, are the Brazilian executive and judicial systems in a position, and at what speed, to establish a compensatory sum that in any way reflects the tragedies involved in these dam collapses?

The Mariana and Brumadinho disasters have received plentiful international coverage. The scale of the tragedy transcends Minas Gerais because it also highlights the challenges involved for all jurisdictions with mineral resource dependency. Regulation is at the heart of these challenges. Mining is inherently a dirty business, and it required decades to develop environmental regulation to make its impact somewhat more palatable. Maintaining a reputation as a 'good' and 'responsible' company is a challenge for even the most successful global companies.

Nowadays the regulation of mining also extends into the post-extraction stage: what is supposed to happen when the mining operation ceases exploration? The further challenge for risk management is that the present deals with the inheritance of the past when concessions and regimes were established under very different political and social circumstances. How to renegotiate these past commitments given changing expectations in view of considerable cost implications for business is highly problematic.

The problems of such a renegotiation are further accentuated by the fact that the present Bolsonaro administration declared that it intentionally loosened environmental licence condi-

tions to accelerate mining activities in Indigenous Reserves. The Brumadinho disaster has put the brakes on these early declarations. However, the current task of enforcing environmental licensing has been worsened by the sacking of a large majority of regional directors of the responsible federal environmental regulatory agency, IBAMA.

Given the political economy of Brazil, it is likely that the government, market pressures, the courts and prosecutors will somehow find a way to ensure that Vale can economically afford the inevitable compensation payments. However, there is little hope for 'lessons learnt'. There are hundreds of similar dams in areas of mineral exploration. Brazil has been struck with two disasters in very short succession; however, the risks associated with the country's appetite for natural resource exploitation continue to remain unsurmountable.

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