



Our Journeys

Published 2 October 2023

The online version is available on www.crisisgroup.org

By Claudia Gazzini, Crisis Group Senior Analyst for Libya

When the Dams in Libya Burst: A Natural or Preventable Disaster?

In the aftermath of massive flooding that killed some 20,000 people, Crisis Group expert Claudia Gazzini travelled to Libya to look into what caused the disaster and who might bear responsibility.

After visiting Derna and witnessing the devastation caused when the city's two dams crumbled in the early hours of 11 September, I decided to see what remains of the largest of the barriers, the Wadi Bu Mansour Dam. It was the collapse of this dam and another smaller one on the city's outskirts, known locally as Sadd al-Bilad (City Dam), that turned the flooding of Derna into a human tragedy. I wanted to understand what happened that night and why the dam did not withstand the torrential rainfall that the huge Mediterranean storm named Daniel had unleashed on eastern Libya the day before.

To reach the source of the deluge requires a major detour, because the road that flanks the valley and connects it to the city was wiped away along with everything else in its vicinity. As a result, a journey of what would have been 13km is now more than seven times as long. An old Libyan friend from the area accompanied me when I went. We drove south from Derna into the desert and then slowly made our way through the barren hills and deep valleys of the Green Mountains. We passed a checkpoint called Bawaba al-Nuwar, which has an ignominious past: when Islamic State militants controlled Derna between 2014 and 2016, guards killed many military officers who were

travelling along the road connecting Tobruk to Benghazi. A row of rocks was blocking the last stretch of asphalt leading to the dam, but we managed to manoeuvre around it.

I wanted to find out why this dam built by a Yugoslav company in the mid-1970s fell apart. Libyans, rightfully outraged by the calamity that killed an estimated 20,000 people (with thousands still missing), have blamed politicians for failing either to properly maintain the dam or to give orders in time for Derna residents to evacuate, even though they knew that a dangerous storm was headed toward the city. There are other theories circulating about the collapse. Some Derna residents say the dam's valves were not open when Daniel hit, which would have made it much more vulnerable to failure in a storm of that magnitude. There are also **troubling allegations** about politicians embezzling funds earmarked for the dam's renovation.

Which official Libyans single out for censure often depends on which side they pledge allegiance to in the country's fragmented political system. Since 2022, the administration has been split between an internationally recognised government headed by Abdelhamid Dabaiba based in Tripoli, and its rival in eastern Libya, led by Osama Hamad. It is the Hamad



Views of Wadi Bu Mansur valley as seen from a cliff overhanging the Wadi Bu Mansur dam, 13km south of Derna in eastern Libya days after its collapse, September 2023.

government, backed by Field Marshal Khalifa Haftar’s Libyan National Army, that oversees the east and has control of Derna. Western Libyan activists opposed to Haftar point their fingers at him and his forces. In turn, Haftar’s forces tend to scapegoat Derna’s former mayor, who is related to the east-based parliament speaker, Aghila Saleh. Both men come from the Derna area. Saleh backs the east-based government, and is nominally a Haftar ally, but he

has been at loggerheads with the field marshal over the past year. For their part, Tripoli-based Islamists intimate that Egypt (which backs Haftar) blew up the two dams intentionally, though I have seen no evidence supporting this charge. No matter which side they fall on, most ordinary Libyans are inclined to blame some combination of neglect and malfeasance, rather than solely forces of nature, for the disaster.

At the Site

When I arrived at a cliff overlooking Wadi Bu Mansour, it dawned on me what may have happened that terrible night. Below lay a valley at least 200m deep that descends from the south and continues to the north. It is a dry valley, which collects water only when it rains. I could see just the last 10km of it, but I knew from maps that upstream it goes on for at least another 100km to the west, running roughly parallel to the Mediterranean coast. At the bottom of the valley, I detected what remained of the dam: a clay mound that used to be covered with rocks. (More technically minded people called the Wadi Bu Mansour structure a clay-injected embankment dam.) Water smashed through the central part, breaking up the road that ran along the top of the dam. Experts say this type of clay-and-rock dam is quite sturdy,

but its foundations are vulnerable to the eroding effects of overflows, especially when it is built on a clay base, as appears to have been the case here.

Eyewitnesses told me the flood seemed to come out of nowhere. “At sunset, the valley was still dry”, a young man who lives nearby said. He was referring to a valley that descends at least 200m and feeds into Wadi Bu Mansour. The dam’s security guard joined us and gave a recitation of that evening’s events that confirmed what the young man said. “The dam started filling up around 8pm, but at midnight it was only half-full. It was between midnight and 2am that [the water] started rising at a dangerous speed. By 2am, the water reached 2m above the dam, pouring over to the other side. That gradually weakened the dam’s structure,

CRISIS GROUP / MAPBOX / OSM



The water catchment area of the valleys of the Green Mountains behind Derna, where the two collapsed dams are located.

causing it to collapse”, he said. “We could hear the friction of the rocks as they gave way, which also left a peculiar smell of burnt material in the air”. The dam finally caved in at 2:40am.

The guard added an important data point to this description. The valves of the dam’s passageways were open – and had been since the 1990s. Later, I spoke by telephone to his boss in Derna, Abdullah Tunisi, who is in charge of the dams in the valley; subsequently, I spoke with Tunisi’s superior in Benghazi, Abdelqader al-Sweisi, who administers all the dams in eastern Libya. Both work under the authority of the Tripoli-based government’s water ministry. They both asserted that the valves had been open since the 1990s. Tunisi explained that the dam was originally conceived for irrigation, but in the late 1980s officials realised it had structural problems (as water was leaking from underneath it, creating a new canal), and so they stopped using it to retain water. For this reason, the valves were left open. If the valves were in fact open, that would undermine the allegation that has circulated in Derna pinning



Crisis Group’s senior analyst Claudia Gazzini takes photos of what remains of the Wadi Bu Mansur dam, 13km south of Derna in eastern Libya days after its collapse, September 2023.



Pomegranate trees in Wadi Bu Mansur valley downstream from the collapsed Wadi Bu Mansur dam, 13km south of Derna. The region is considered the best producer of the fruit in Libya, and pomegranate farms downstream were washed away by the flood and the collapse of the nearby dam, September 2023.

some of the blame for the calamity on the dam operators. A number of Derna residents, however, say they do not believe the valves were open. They claim that local farmers closed the valves to irrigate pomegranate trees at the base of the dried-up wadi below the dam.

I am not in a position to determine who is correct, but according to the Tripoli-based water ministry's calculations, the dam was

doomed no matter how it had been operated. Up to 100 million cubic metres of water may have filled the valley that night. The pressure it generated eventually led the dam, which is designed to retain no more than 22 million cubic metres of water, to collapse. Sweisi told me that the total water discharge capacity of the dam is 170 cubic metres per second but, that night, "we calculated that to discharge all the



What remains of the Wadi Bu Mansur dam, 13km south of Derna in eastern Libya days after floods caused its collapse, September 2023.

water entering the valley would have required a discharge capacity of 1,200 cubic metres per second”. In essence, according to their calculations, what befell Derna was a natural disaster rather than one of human provenance.

One point upon which there appears to be widespread agreement is that almost no one in Derna or in the dam’s vicinity saw the calamity coming. Just a few days before the storm, a group of Derna residents met to discuss how to protect themselves. A person who attended the meeting said no one seemed overly alarmed. “It was a theoretical, hypothetical discussion”, he said. “It did not prompt anyone to alert the authorities and warn of serious danger of collapse”.

A few days later, I met Abdelmonem al-Gaithi, the mayor of Derna who was fired in the storm’s aftermath, in a hotel lobby in al-Bayda, a city to the west. (Four days after our meeting, he was arrested and taken into custody.) During our meeting, he claimed that “nobody in the city had suggested to us that the storm could cause the dam to collapse”. Furthermore, in the days before the storm struck eastern Libya, the local authorities’ principal concern was Benghazi, the

region’s main city, which lies in what was Daniel’s predicted path. Instead, the storm unexpectedly turned east, leaving Benghazi relatively unscathed. He also rejected the claim that the Derna municipal council he headed bore any responsibility for the dam’s maintenance. “Dams are strategic sites, and they come under the authority of the competent ministries, not of the local council”, he said.

In Derna, the greatest fear before the storm was that it could damage the seafront residential area. “We thought the danger would come from the sea”, al-Gaithi said. Residents were also bracing for a possible overflow of the dams – something they had experienced already twice before – but not the dams’ actual collapse. The mayor nevertheless insisted that the city’s emergency committee set up three days before the storm had given orders to evacuate the three neighbourhoods (Sayda Khadija, Heyy al-Bilad and Jebeila) most at risk of flooding because they were on lower ground. On social media there are videos that show policemen in their vehicles instructing people to leave. “Unfortunately, few heeded the warning”, the mayor told me.

Unanswered Questions

Still, Libyans across the country suspect that the authorities are to blame, and their suspicions are understandable. Since the tragedy, it has been widely reported that while the authorities knew that the dam needed upkeep, the necessary maintenance was never done. As far back as the 1990s, when Colonel Muammar al-Qadhafi still reigned over Libya, Sweisi said, government officials understood that Wadi Bu Mansour had structural deficiencies. “We contracted a Swiss consultancy to study the issue and draw up a plan for how to resolve it”, he told me. “Eventually, we hired a Turkish company to carry out the dam’s renovation works”. The company, Arsel, signed a contract in 2008 and started working on the dam in 2010. Sweisi said the two-year lag in starting work on the

dam was due to delays in payment. Then, with the 2011 uprising against Qadhafi and the ensuing NATO-led intervention that led to his ouster, the Turkish team left. Subsequently, thieves made off with all the equipment Arsel had left behind.

Sweisi went on to explain that in 2014, the government (then led by Prime Minister Ali Zeidan) signed a new contract with Arsel, compensating it for the lost equipment. But by that time, Islamic State militants had taken over Derna and the security situation did not allow the company to resume the renovation. By the time other local Islamists defeated the Islamic State, and the Haftar-led Libyan National Army subsequently stepped in to control Derna, it was 2018. By then, Libya had already split into two



The control tower and the overflow spillway of the Wadi Bu Mansur dam are seen still standing on days after heavy rain caused the collapse of the dam and in turn the catastrophic destruction of Derna, September 2023.

rival governments, one in the east and the other in Tripoli. Türkiye was supporting the Tripoli government, with which Arsel had the contract. It was thus impossible for the company to operate in the east.

Still, Sweisi was categorical that the disaster could not have been prevented even if a brand-new dam in tip-top condition with the same dimensions had served as the barrier. “Not even a perfectly new dam could have blocked that amount of water”, he told me. “For us, this was 100 per cent a natural disaster”, echoing the Tripoli-based water ministry’s official position.

Maybe Sweisi is right, but it is hard to be sure. The tragedy indeed started as a natural phenomenon: a passing storm dropping record-breaking volumes of rain. But it is also clear that the infrastructure protecting Derna was not in optimal condition and that its neglect had many parents. War and political division are among them, but there are also questions about

how the renovation contract with Arsel was managed. In particular, *The New York Times* has [raised questions](#) about whether some of the money allocated for rehabilitation of the dam went to kickbacks to Libyan officials.

Libya’s audit bureau, which has hundreds of documents related to the Arsel contract, has handed them over to the General Prosecutor’s office for investigation. The latter is conducting a range of probes of the dam collapse and he has reportedly ordered the detention of several individuals in relation thereto. Both Tunisi and Sweisi could be among those who have been detained as part of these inquiries (I could not reach them by telephone at the time of writing). If they have been detained, it does not mean they are guilty or that a crime has been committed, of course: in Libya people can be arrested without probable cause. Adherence to due process safeguards will be critically important as Libyan authorities look into why the dams

burst – both to avoid ensnaring innocent people and to help make sure the truth comes out.

Finally, there is a further reason to question whether this tragedy would have happened in a country with a functioning and unified government, one in which the population trusts state institutions. Many Derna residents are deeply

wary of the security forces controlling the city after years of strife as well as the war to defeat the Islamic State, in the later phase of which the Haftar-led forces also targeted Islamist groups that enjoyed popular support. Some suggest this history could have led people to resist the police's evacuation orders.

What Now?

To reach a definitive assessment of what happened on 10-11 September, local and international experts will need to verify precipitation levels, carry out on-site inspections of what remains of the Wadi Bu Mansour dam, analyse contracts and other documents, and speak with eyewitnesses. Understandably, Libyans want answers. Given people's pervasive distrust of their country's institutions, the authorities and

foreign partners should consider appointing an independent commission of inquiry tasked with conducting a thorough investigation into this tragedy. It is too late for the thousands of people lost in the Derna flood, but the lessons learned can help the city prepare for a safer future, while also offering insights to other communities that sit downstream of dams and may be similarly exposed. ■



Text and images, except page 3, by **Claudia Gazzini**,
Crisis Group Senior Analyst for Libya