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A FAILURE OF CONSCIENCE: HOW PAKISTAN'S DEVASTATING FLOODS COMPARE TO AMERICA'S EXPERIENCE DURING KATRINA

by *Oded Cedar**

Americans, seeing the destruction this summer from floods in Pakistan, cannot help but draw comparisons to the devastation in New Orleans during Hurricane Katrina.¹ Both raised serious questions about governmental response to natural disasters,² although the failings of both governments do not permit easy comparisons.³ Despite the differences between the two, Pakistan can learn from the U.S. response to Katrina: that with overcrowding in urban areas⁴ and limited resources, Pakistan will likely be unable to overcome the geographic challenges of evacuation. Instead, Pakistan must rely on flood prevention techniques, primarily in its cities, as its central line of defense.

Various natural and human causes contributed to the flooding in Pakistan. Two leading preventable causes were deforestation and waterway planning.⁵ For years, the "timber mafia" has plundered Pakistan's forests, reducing the country's tree cover from 14% to 5.2% in the last seventy-five years.⁶ Pakistan's forests provide an essential defense against floods by trapping water and breaking up forceful currents.⁷ Because of their loss, floodwaters rose with unprecedented rapidity.⁸ Adding to the catastrophe, the floodwaters swept away the illegally harvested logs, which destroyed bridges and filled the dams meant to defend against flooding.⁹ Illicit loggers act with impunity in Pakistan through representation in the government and by bribing politicians.¹⁰ By corrupting elements of Pakistan's government, the "timber mafia" destroyed Pakistan's most important natural defenses against flooding.

Pakistan's waterway infrastructure also exacerbated the damage from flooding. The waterway system was built to benefit wealthy landowners, without regard for environmental impacts or flood prevention.¹¹ After the floods, Prime Minister Gilani claimed that a proposed dam at Kalabagh would have averted much of the devastation.¹² But his belief in the ability of large dams to prevent flooding is misplaced.¹³ The Kalabagh dam project is meant to take pressure off the weakening Tarbela dam.¹⁴ Like the Mangla and Tarbela dams, Kalabagh's dual objectives are hydro-electrical and agricultural, not flood control.¹⁵ Studies show that the Mangla and Tarbela dams actually increased the severity of flooding.¹⁶ The Taunsa Barrage, one of Pakistan's most vulnerable water diversion mechanisms, also increased flooding by routing water to higher grounds that do not normally flood.¹⁷ Many worry that the Kalabagh dam will simply be another ticking time bomb for future floods.¹⁸

Historically, Pakistan's dams are the product of centralized decision-making to increase agricultural and electrical output, with little input from environmentalists or local communities.¹⁹ Environmental organizations have criticized Pakistan's water system engineers for paying insufficient attention to the environmental effects of large dam projects.²⁰ One such effect, sedimentation, worsens

flooding by raising riverbeds and minimizing the capacity of dams to hold water.²¹ By ignoring the environmental impacts of these large projects Pakistan's government missed an opportunity to mitigate the flooding and instead made it worse.²²

Pakistan's flood policy failed for different reasons than did the U.S. government's during Hurricane Katrina. The levees failed during Katrina because the U.S. Army Corps of Engineers did not design them to withstand a storm surge from a Category 5 hurricane, and because all levels of government failed to maintain the levees, which caused them to leak and give way.²³ The decision to reduce levee maintenance funding in the months prior to Katrina exemplifies the federal government's failure.²⁴ But, despite the overwhelming evidence of government mismanagement, government investigations found no evidence of corruption or class favoritism in the case of Katrina.²⁵ Still, Pakistan can learn from America's experience.

Even the United States, with all its resources and access to timely information,²⁶ could not effectively evacuate masses of people.²⁷ With its limited resources,²⁸ Pakistan cannot rely on evacuation. The current flooding in Pakistan left ten million people displaced and submerged twenty percent of the country.²⁹ Pakistan spreads across more than 300,000 miles,³⁰ almost ten times the area of New Orleans,³¹ with a population of about 170 million,³² compared to 223,000 residents in New Orleans.³³ The national government is weakened by constantly bickering provincial authorities.³⁴ Most of Pakistan's population lives in rural areas along the Indus riverbanks.³⁵ However, migration caused an annual urban population growth of three percent.³⁶ Urban decay, overcrowding, and weak infrastructure in the cities create vulnerable pockets of dense population.³⁷ These factors make an effective evacuation exceedingly difficult, and the shaky Pakistani government risks further destabilization if it does not prepare appropriately for the next flood.³⁸

The government cannot rely on evacuation to cope with future floods. Instead, Pakistan must look to flood prevention. The cities must be Pakistan's central focus, as the weakened rural areas will drive more people to the cities.³⁹ Nationally, the government must legislate to conserve the remaining forests, and invest in reforestation.⁴⁰ It must adopt a cost-benefit analysis for large dam construction that accounts for flood mitigation, sedimentation, and population displacement.⁴¹ Finally, the international community, speaking through organizations such as the World Bank, must fund projects that further flood prevention.⁴²

Endnotes: A Failure of Conscience on page 70

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¹ See Cheree Franco, *Can Pakistan Learn from Katrina?*, THE EXPRESS TRIBUNE WORLD BLOG, <http://blogs.tribune.com.pk/story/1258/can-pakistan-learn-from-katrina/> (last visited Oct. 20, 2010).

² See Snehal Shingavi, *From Natural Disaster to Social Catastrophe*, SOCIALISTWORKER (Aug. 16, 2010), <http://socialistworker.org/2010/08/16/disaster-to-social-catastrophe> (noting failures of Pakistan's infrastructure and actions by government officials that call into question their ability to protect the population during floods); U.S. HOUSE OF REPRESENTATIVES, A FAILURE OF INITIATIVE: FINAL REPORT OF THE SELECT BIPARTISAN COMMITTEE TO INVESTIGATE THE PREPARATION FOR AND RESPONSE TO HURRICANE KATRINA, H.R. REP. NO. 109-377, at 1-5 (2006) [hereinafter HOUSE REPORT] <http://www.gpoaccess.gov/katrinareport/fullreport.pdf> (discussing the failure of government at all levels to prepare and respond to Hurricane Katrina).

³ See Shingavi, *supra* note 2 (citing Pakistan's dam and canal system built to benefit wealthy landowners); Peter Bosshard & Shannon Lawrence, *The World Bank's Conflicted Corruption Fight*, INTERNATIONAL RIVERS (May 1, 2006), <http://www.internationalrivers.org/south-asia/pakistan/world-bank's-conflicted-corruption-fight> (discussing corruption in Pakistan's water sector); *A Land Left to Drown by the 'Timber Mafia'*, THE HERALD SCOTLAND (Aug. 29, 2010), <http://www.heraldscotland.com/news/world-news/a-land-left-to-drown-by-the-timber-mafia-1.1051230> (reporting a local Pakistani journalist's story about government collaboration with the "timber mafia"); HOUSE REPORT, *supra* note 2, at 359-62 (drawing conclusions about the failure of the U.S. federal, state, and local government to appropriately plan for Hurricane Katrina).

⁴ See *CIA World Fact Book: Pakistan*, CENT. INTELLIGENCE AGENCY, <https://www.cia.gov/library/publications/the-world-factbook/geos/pk.html> (last visited Oct. 23, 2010) (providing statistical data about urban population growth from

2005 to 2010).

⁵ See Medha Bisht, *Pakistan Floods: Causes and Consequences*, INST. FOR DEFENCE STUDIES AND ANALYSES (Aug. 19, 2010), http://www.idsa.in/idsacomments/PakistanFloodsCausesandConsequences_mbisht_190810 (asserting that a variety of natural and man-made causes led to the flooding in Pakistan); Shingavi, *supra* note 2 (noting the failure of Pakistan's waterway system to adequately protect against flooding); Alex Rodriguez, *Pakistan Flood Crisis Blamed Partly on Deforestation*, L.A. TIMES (Oct. 13, 2010), <http://articles.latimes.com/2010/oct/13/world/la-fg-pakistan-logging-20101013> (noting the role of deforestation in exacerbating the flooding).

⁶ See PETER GIZEWski & THOMAS HOMER-DIXON, ENVIRONMENTAL SCARCITY AND VIOLENT CONFLICT: THE CASE OF PAKISTAN, pt. 2 (Apr. 1996), <http://www.library.utoronto.ca/pcs/eps/pakistan/pak2.htm> (noting that the Pakistani government and the "timber mafia" have exploited the forests and caused heavy deforestation that eliminates much of the tree cover in the country). Several other articles published after the floods provide statistics of deforestation and the role of the "timber mafia" from different regions and provinces around Pakistan. See also Bisht, *supra* note 5; Rodriguez, *supra* note 5; *A Land Left to Drown*, *supra* note 3; Amir Mohammad Khan, *'Timber Mafia' Made Floods Worse* (Aug. 17, 2010, 8:12 PM), <http://english.aljazeera.net/focus/floodofmisery/2010/08/20108161411704604.html>; *Pakistan Floods and the Timber Mafia*, UNITED PRESS INT'L (Sep. 2, 2010, 2:56 PM), http://www.upi.com/Science_News/Resource-Wars/2010/09/02/Pakistan-floods-and-the-timber-mafia/UPI-92421283453799.

⁷ See Khan, *supra* note 6 (quoting the head of Pakistan's Forest Institute that forests play an important role in mitigating the force of floods).

⁸ *Id.* (discussing the role of "inadequate forest cover" that allowed the flood

waters to rise quickly); *Id.* (noting that Shakil Quadir, the provincial head of the National Disaster Management Authority (“NDMA”), estimates that if Pakistan had preserved twenty to twenty-five percent of its original tree cover, the flooding would have been greatly mitigated).

⁹ See Bisht, *supra* note 5 (noting that timber stored away for transportation was washed away in the flood, destroying bridges and dams); see also Khan, *supra* note 6.

¹⁰ See *A Land Left to Drown*, *supra* note 3 (noting that the “timber mafia” has representatives in Pakistan’s government and connections with the military); GIZEWSKI, *supra* note 6 (providing a brief history of the development of “timber mafia” entrenchment in the government).

¹¹ SEE PETER GIZEWSKI & THOMAS HOMER-DIXON, ENVIRONMENTAL SCARCITY AND VIOLENT CONFLICT: THE CASE OF PAKISTAN, pt. 1 (Apr. 1996), <http://www.library.utoronto.ca/pcs/eps/pakistan/pak1.htm> (discussing the construction of large dams and other “mega projects” without consideration for the social impacts); SHAHEEN RAFI KHAN, THE KALABAGH CONTROVERSY, at 8-10, <http://www.sanalist.org/ Acrobat/A-14.pdf> (last visited Oct. 20, 2010) (highlighting the adverse environmental affects of large dams built in Pakistan); Shingavi, *supra* note 2 (asserting the general claim that Pakistan’s waterway infrastructure benefits only wealthy landowners); Bosshard & Lawrence, *supra* note 3 (noting the ways in which Pakistan’s waterway infrastructure has supported wealthy elites and landowners).

¹² See *Kalabagh Dam Could Have Averted Destruction of Floods: PM Gilani*, PAKTRIBUNE (Aug. 10, 2010), <http://www.paktribune.com/news/index.shtml?230425> (directly quoting Prime Minister Gilani’s statement regarding the devastation caused by the flooding).

¹³ See KHAN, *supra* note 11, at 8 (asserting that large dams provide little as a flood prevention mechanism).

¹⁴ See *id.* at 1 (discussing the controversy of the Kalabagh dam as a replacement for the Tarbela dam).

¹⁵ Khan’s study of the Kalabagh dam project indicates that supporters of the dam are largely in favor of the project for its increase in agricultural and hydro-electrical output. Yet, as Khan shows, there is sufficient evidence to prove that the environmental impacts of the dams will mirror the negative impacts of past large dams on the Indus river valley ecosystem. See *id.* at 8-10.

¹⁶ The Mangla and Tarbela Dams were completed in 1967 and 1974 respectively. Table 4 of Dr. Khan’s study provides figures that show no reduction in the lives lost, villages affected, or area affected by floods since the construction of the dams. If these large dams were built to prevent flood damage (which they were not) then presumably there would be a reduction in lives lost and villages affected. See *id.* at tbl. 4.

¹⁷ See Mushtaq Gaadi, *Understanding the Flood Disaster at Taunsa Barrage*, INT’L RIVERS (Aug. 20, 2010), <http://www.internationalrivers.org/node/5723> (describing the causes that led to flooding at the Taunsa Barrage, a key failure in Pakistan’s waterway system that contributed to the devastation).

¹⁸ See *id.* (expressing a general concern about the use of reasoning by engineers to justify the construction of the Kalabagh dam); see also KHAN, *supra* note 11, at 6-9 (providing evidence as to the ecological harm and concerns of sedimentation that would occur from construction of the Kalabagh dam).

¹⁹ See KHAN, *supra* note 11, at 1, 8 (highlighting the selective use of data by the Pakistani government, and a historical system of centralized decision making that ignores the concerns of local communities).

²⁰ SEE PETER GIZEWSKI & THOMAS HOMER-DIXON, ENVIRONMENTAL SCARCITY AND VIOLENT CONFLICT: THE CASE OF PAKISTAN, pt. 3 (Apr. 1996), <http://www.library.utoronto.ca/pcs/eps/pakistan/pak3.htm> (noting that planners of large dams have consistently neglected the impacts on groundwater, local water quality, etc.).

²¹ See Gaadi, *supra* note 17 (citing the impact of sedimentation, specifically at the Taunsa Barrage, which led to the flooding of higher grounds).

²² See *id.* (using the Taunsa Barrage as an example of the larger effect that large dam projects had in exacerbating the flooding).

²³ HOUSE REPORT, *supra* note 2, at 87-97 (discussing the role of the U.S. Army Corp of Engineers in failing to design the levees with the ability to withstand a Category 5 hurricane, and the continued operation of the levees with the knowledge that they would not withstand such a hurricane. Also, discussing the failure of federal, state, and local government to appropriately maintain the levees, which led to leaking even prior to Hurricane Katrina).

²⁴ See Will Bunch, *Why the Levee Broke*, ALTERNET (Sept. 1, 2005), <http://www.alternet.org/story/24871/?page=entire> (discussing several instances where people in charge of maintaining the levees reported a lack of funding from the federal government to complete the maintenance projects).

²⁵ Nothing in the U.S. House Report indicates that class favoritism or government corruption played a role in the government failures to prepare and respond to Katrina. See HOUSE REPORT, *supra* note 2.

²⁶ See *id.* at 1 (noting that the U.S. government is the world’s largest purchaser of intelligence and information, and it could still not respond quickly enough to Hurricane Katrina).

²⁷ See *id.* at 103-04, 108-23 (discussing the failure of local officials to evacuate a larger portion of the population in a timely manner from New Orleans and Jefferson Parish despite the successful evacuations in Mississippi, Alabama, and other affected parts of Louisiana).

²⁸ See GIZEWSKI, pt. 1, *supra* note 11 (highlighting the economic, geographic, and demographic diversity of Pakistan); *CIA World Fact Book: Pakistan*, *supra* note 4 (noting that Pakistan only has about 125,000 miles of paved roads and about 3,500 miles of railways ranking 20th and 28th respectively in the world).

²⁹ See Michael Georgy, *Pakistan Floods Cost \$9.7 Bln in Damage: ADB/WBank*, REUTERS (Oct. 14, 2010 12:19 PM), http://news.yahoo.com/s/nm/20101014/pl_nm/us_pakistan_floods_damage_2/print (providing recent statistics about the floods in Pakistan); *Pakistan Floods and the Timber Mafia*, *supra* note 5 (noting that the floods submerged about twenty percent of Pakistan).

³⁰ See *CIA World Fact Book: Pakistan*, *supra* note 4 (providing data about Pakistan’s size).

³¹ See *State and County Quickfacts: New Orleans (city)*, U.S. CENSUS BUREAU, <http://quickfacts.census.gov/qfd/states/22/2255000.html> (last visited Oct. 23, 2010).

³² See POPULATION CENSUS ORGANIZATION, <http://www.statpak.gov.pk/depts/pcoc/> (last visited Oct. 23, 2010).

³³ See *State and County Quickfacts: New Orleans (city)*, *supra* note 31.

³⁴ See GIZEWSKI, pt. 1, *supra* note 11 (discussing the consistent battle over resources between provinces).

³⁵ See *id.* (describing geographic distribution of the population, and noting that most of the population is rural and lives along riverbanks).

³⁶ See *CIA World Facts Book: Pakistan*, *supra* note 4 (providing statistical data regarding urban population growth between 2005-2010); GIZEWSKI, pt. 3, *supra* note 20 (highlighting the effects of population growth on urban decay).

³⁷ See GIZEWSKI, pt. 3, *supra* note 20 (noting the adverse effects of the urban population boom on the structure of Pakistani cities).

³⁸ See Bisht, *supra* note 5 (noting the fragile relationship between the general population and the government, and recognizing that a lack of response by the government could elevate the anger of the people).

³⁹ Gizewski and Homer-Dixon note that Pakistani’s are already swarming to the cities where there is comparatively more prosperity than in rural areas. The flooding destroyed much of Pakistan’s ability to produce crops. It is likely that more people will flood to the cities, where shelter, food, services, and opportunity are more likely than in the isolated rural areas. See GIZEWSKI, pt. 3, *supra* note 20.

⁴⁰ See KHAN, *supra* note 6 (quoting the NDMA regional director about securing lands that were affected by the floods because of deforestation).

⁴¹ See KHAN, *supra* note 11, at 8 (discussing the new approach to large dam projects).

⁴² See Bosshard & Lawrence, *supra* note 3 (providing historical data about the World Bank’s investment in Pakistani waterway infrastructure).