

Part one

Corruption in construction

1 The costs of corruption



The photo, taken following the 1999 Izmit earthquake in Turkey, suggests that steel reinforcement in concrete columns and at junctions with floorslabs offered inadequate resistance to earthquake motion and to the load upon them. The collapsed floors remained largely intact. (Mehmet Celebi)

Blowing the whistle on corruption in construction: one man's fatal struggle

Raj Kamal Jha¹

Satyendra Kumar Dubey came from a family struggling to make ends meet in a village in the impoverished eastern state of Bihar. The 31-year-old, who had trained as a civil engineer at the Indian Institute of Technology (IIT) in Kanpur, worked as

a technical manager with the National Highways Authority of India (NHAI). His job was to oversee the construction of the Bihar stretch of the Golden Quadrilateral highway project, the prime minister's initiative to knit the country with a network of four-lane modern roads.

On the night of 27 November 2003, Dubey was murdered. Stepping off a train at Gaya, a town not very far from his workplace at Koderma, he waited for his car. When it failed to show up – for reasons still unexplained, the driver was unable to start the car that night – he boarded a cycle-rickshaw. Dubey never made it home: armed men intercepted the rickshaw and shot him dead.

There was no word on his killers and no sign of the rickshaw-puller who witnessed the murder. The case was already being treated as routine, another cold statistic in a state with a poor record for law and order.

On 30 November 2003, however, the Indian newspaper the *Sunday Express* reported that Dubey had written to the Prime Minister's Office (PMO) complaining about corruption along the 60-kilometre stretch where he worked. His request for confidentiality had apparently not been honoured, making him vulnerable to pressure and threats.

In his letter, Dubey highlighted several instances of what he called 'loot of public money' and 'poor implementation' at the project site. He alleged that procurement had been 'completely manipulated and hijacked' by contractors, and that quality had been compromised by subcontracting work to small contractors.

To many in India's construction industry, this had a familiar ring. Such goings-on are commonplace, especially when it comes to contracts. Bribery of officials and muscle-power to browbeat other contenders are often used to win contracts. Substandard works are churned out and public money drained.

'Works are usually being awarded at high cost and contractors are assuring the best quality in the execution of projects. However, when it comes to the actual execution of works, it is found that most of the works (sometimes even up to 100 per cent) are being sublet or subcontracted to small petty contractors who are not at all capable of executing such big projects ... I would like to mention here that the above phenomena of subletting and subcontracting is known to all from top to bottom but everyone is maintaining a studied silence ... These petty contractors are bringing poor equipment and material, giving a big setback to the progress and quality of work', he wrote.

Dubey requested that his name be kept secret, but at the same time he let his identity be known. He had reason to. 'Since such letters from a common man', he wrote, 'are not usually treated with due seriousness, I wish to clarify ... that this letter is being written after careful thought by a very concerned citizen who is also very closely linked with the project ... [K]indly go through my brief particulars (attached on a separate sheet to ensure secrecy) before proceeding further.'

Just the opposite happened. Dubey's letter was riddled with signatures and scribbles of officials, indicating that it had done the rounds of Delhi's bureaucracy. His request for anonymity was apparently ignored, and the letter was sent to his superiors at the highways authority with a copy to the organisation's chief vigilance officer who, it later transpired, had admonished Dubey for writing directly to the PMO.

Dubey wrote a second letter, this time not to the PMO but to the chairman of his own organisation, the NHAI. He mentioned that he had started receiving threatening calls.

No one took Dubey seriously, and he paid for it with his life. Lodging a first information report with the police in Gaya, his brother stated that people whose corruption he exposed were behind the murder. The report did not name anyone.

Gaya's divisional commissioner, Hem Chand Sirohi, who knew Dubey, admitted: 'no one is safe, the mafia [criminals who grab contract tenders] will have its way'.²

The sustained coverage of his case, and the realisation that a man was murdered for speaking up against corruption, outraged the public. One of India's best known faces, Infosys Technologies chief mentor and IIT alumnus Nagavara Ramarao Narayana Murthy, issued a statement in which he urged the prime minister to suspend the contract with the contractor involved, investigate the case as a matter of priority, and swiftly and severely punish the guilty. He called for a good whistleblower policy. 'Let this be the last such tragedy in India', Murthy said.³ The prime minister at the time, Atal Behari Vajpayee, declared that Dubey's killers would be punished 'wherever they may be'.⁴

Dubey's parent ministry, the department of road transport and highways, came out with a statement two days later to deny any slip-up on its part. It echoed what then minister B. C. Khanduri had said earlier: the leak of the letter and the murder were not linked, and Dubey's murder should be seen in the context of Bihar's abysmal record on law and order.

'It is a matter of record that personnel employed in the implementation of the NHDP (National Highways Development Project) in Bihar have been under constant threat ... This has caused an atmosphere of fear and terror and is coming in the way of progress of the work', the ministry stated, claiming that NHAI itself was 'fully alive to the shortcomings of the existing systems and had already initiated a series of measures to improve the procedures'.⁵

The Dubey case was entrusted to the Central Bureau of Investigation (CBI), the country's premier investigating agency, but its handling of the case saw the rickshaw-puller, the prime witness, disappear after questioning. Two suspects were later found dead shortly after they had been questioned.

The CBI director admitted that the death of the suspects called for a harder look at the possibility of a mafia conspiracy behind Dubey's murder. Some arrests have since been made – of poor residents of a village near Gaya. The CBI claims they have confessed to 'robbing him' but no charge sheet has been filed yet.

In January 2004, the supreme court stepped in. Acting on advocate Rakesh Upadhyay's petition seeking protection for whistleblowers in the wake of Dubey's murder, the court issued notices to both the national and local governments. Upadhyay pointed out that Dubey's request for secrecy would have had legal protection had the government enacted a whistleblower act recommended by the Constitution Review Commission in 2002.

In March 2004, the Dubey case received international attention when the London-based Index on Censorship posthumously honoured him with the Whistleblower of the

Year Award. At home, pressure mounted on the government to act.⁶ On 5 April, Justice Ruma Pal of the supreme court proposed that a whistleblower protection mechanism be created through an executive order, pending the enactment of suitable legislation.

This was done in April, when Solicitor General Kirit Raval obtained the court's approval for a scheme authorising the Central Vigilance Commission (CVC) to protect whistleblowers and act on their complaints. Whistleblowers can now approach the CVC, in the public interest, with any evidence concerning alleged corruption or misuse of office by any employee of the central government or of any corporation, company, society or local authority controlled by the central government.

The whistleblower cannot withhold his identity, but the CVC is required to protect his or her identity. The CVC can take action against anyone who leaks the whistleblower's name, intervene in cases of harassment by any authority, and order protection for whistleblowers and witnesses. The commission can also request police assistance to investigate complaints and, following investigations, can recommend: departmental proceedings against the official concerned; steps to redress the loss caused to the government; criminal proceedings; or corrective measures to prevent recurrence.

Days after the mechanism came into place, Central Vigilance Commissioner P. Shankar said he would have been happier if the interim arrangement was not such a watered-down version of the proposed legislation, but called it a good beginning. 'If Satyendra Dubey had come to me earlier, I would not have been able to do what I can do for him today', he said.⁷

Notes

1. Raj Kamal Jha is deputy editor of the *Indian Express*.
2. *Indian Express* (India), 11 December 2003.
3. BBC News, 10 December 2003, http://news.bbc.co.uk/1/hi/world/south_asia/3306075.stm
4. Ibid.
5. Ministry of Road Transport and Highways, 11 December 2003, <http://pib.nic.in/archieve/lreleng/lyr2003/rdec2003/11122003/r1112200336.html>
6. On 9 October 2004, on the occasion of the Transparency International Integrity Awards 2004 ceremony, special posthumous recognition was given to Satyendra Kumar Dubey on account of the courage he showed in standing up to corruption.
7. *Indian Express* (India), 7 May 2004.

The economic costs of corruption in infrastructure

*Paul Collier and Anke Hoefler*¹

To assess the economic costs of corruption in infrastructure, we first need to understand why the sector consistently ranks as the most corrupt. Infrastructure is distinctive as an economic activity in two respects. First, it is intensive in 'idiosyncratic' capital, meaning that its capital has to be designed specifically for installation. Second, it is a

‘network’ activity, requiring government regulation. Both of these features make the activity unusually prone to corruption.

How corruption raises the cost of capital

Because capital is to an extent different each time, it is difficult to standardise and so benchmark the cost of installation. For example, new buildings are more difficult to price than new trucks. Unlike with new trucks, the supplier – the builder – has much more information about the true costs than does the purchaser. This difference in information – known as an ‘information asymmetry’ – translates into an opportunity for corruption. The direct effect of such corruption is to drive up the cost of building infrastructure – that is, the *capital* cost. This direct effect can have various secondary effects that alter the *allocation* of budgets.

Recognising the problem of corruption in the construction sector, budget decision-makers may skew spending away from the sector. For example, a former minister of finance for Eritrea adopted the policy of minimising construction expenditures because he doubted the capacity of his ministry to police such spending. While the evidence below suggests that this is a common response, if budget decision-makers themselves are corrupt, they may decide to skew the budget *towards* infrastructure spending so as to increase opportunities for corruption. If roads are more capital-intensive than primary education, the budget may be skewed towards roads and away from education. And if there is more opportunity for corruption in road construction than in road maintenance, then roads may be built, allowed to fall apart, and then rebuilt: a common scenario in Africa.

Even if decision-makers are indifferent or oblivious to corruption, the raised cost of capital for infrastructure will induce a ‘substitution’ effect whereby less of it is purchased than if its price were not inflated. So corruption is likely to lead to more being spent but less being delivered.

How corruption raises the cost of running infrastructure services

Infrastructure is not fundamentally a heap of structures; it is a flow of services. Roads are an input into transport services, power stations are an input into electricity provision, and phone lines are an input into telephone services.

Governments usually regulate infrastructure services as their distribution systems often include points of monopoly power, which operators could otherwise exploit. Regulation is difficult when regulators know less than the service provider, as is often the case. Further, the regulators themselves may need to be regulated, as suppliers may bribe them – a phenomenon known as ‘regulatory capture’.

A supplier may spread monopoly profits around the organisation in the form of reduced effort, inflated payrolls, and other forms of managerial slack. Employees may exploit the monopoly in their dealings with customers; for example, they may extract bribes for what should be standard performance.

These forms of corruption raise the *recurrent* cost of providing services. Further, as with the capital cost, excess recurrent costs have both direct and indirect effects. The

direct effect is simply the waste involved in the services actually provided. The indirect cost is that customers will substitute for the service. For example, across Africa the failure of monopoly provision of electricity has induced self-provision. Some small manufacturing firms spent three-quarters of their investment on power generators.² If this behaviour renders manufacturing uncompetitive in global markets, the true costs of corruption in electricity provision in terms of job losses are enormous.

Quantifying the impact on capital costs

For many years proposals for infrastructure construction in Nigeria were approved without serious scrutiny. Oby Esekwesili, the president's senior adviser on fighting corruption, now scrutinises the federal procurement process and has introduced a competitive bidding process. The initial introduction of such scrutiny in effect catches 'red-handed' the degree of cost-inflation that was previously normal. *The new procurement system has resulted in average cost reductions of 40–50 per cent.*³

This finding is complemented by econometric studies that take a comparative approach, relating differences in the level of corruption to differences in the cost of infrastructure (whether capital or recurrent). Econometrics has various ways of coping with the fact that many factors other than cost vary between cases. The global study summarised below controls carefully for differences between countries. The first study instead tries to minimise the differences by focusing on a single country (Italy) and studying variations between regions.

Infrastructure investment in 20 regions of Italy

Del Monte and Papagni examined regional-level public investment, which they regard as a good approximation for investment in infrastructure, to quantify the first type of cost identified above – the increased cost of capital.⁴ They use an objective regional measure of corruption, namely the official number of crimes committed against the regional administration. Their measure of performance is the rate of economic growth, again region by region. This measure captures both the direct effect of an increased cost of capital – the waste involved – and the indirect effects, the substitution into or out of infrastructure.

Unsurprisingly, Del Monte and Papagni's research shows that infrastructure investment raises the growth rate and that corruption lowers it. Their key finding, however, is that – controlling for these effects – a high level of corruption reduces the contribution that a given level of infrastructure investment makes to growth. The effect is highly significant in the statistical sense, and it is also substantial in the economic sense.⁵ Specifically, an increase of one 'standard deviation' in the level of corruption reduces the contribution of infrastructure investment to the growth rate by 0.29 percentage points. In other words, instead of the region growing by 1.4 per cent – Italy's average growth rate during the 1990s – a region one standard deviation below the average would have grown only 1.11 per cent. Over the course of a decade, that region would become 3 per cent poorer relative to the regional average.

If all of Italy's regions could reduce their corruption levels by one standard deviation, the annual savings *just from the increased effectiveness of infrastructure investment* would be double the entire Italian aid budget.

Global infrastructure investment in telephones and electricity

In a global study, Henisz presents a picture of investment in telephone networks and electricity generation over the course of a century, using data on more than 100 countries.⁶ The study uses two distinct measures of performance. The first is the length of the lag between the world's first installations of a telephone network and an electricity grid (in the United States), and their installations in each country under review. The second is the level of subsequent investment in telephone networks and electricity generation. Henisz investigates whether a high level of corruption lengthens the lag in initial adoption and whether it lowers the level of subsequent investment.

Henisz measures the level of corruption by the ability of the political environment to impose effective checks and balances on the abuse of power. He begins by counting the number of nominally independent checks and balances in the system of political decision-making. Then he introduces the extent to which each of these nominally independent centres of power is likely to be independent in practice. To do so, he looks at the political heterogeneity of power centres; for example, if all power centres are controlled by the same political party, they are less independent than if they are controlled by different parties. Finally, Henisz allows for the degree of political heterogeneity *within* each power centre. A low-corruption environment involves many checks and balances, each politically independent and each subject to the discipline of internal political contest. At the other extreme, corruption thrives where checks and balances are few in number and ineffective because of a concentration of political power.

Henisz finds that corruption, so defined, has significant and substantial effects. He considers the benefits if political constraints are one standard deviation better than the average. In Africa, such an improvement would have raised the likelihood that a telephone network would be installed within 50 years of the first global installation from 15 to 38 per cent. The study found similar effects in other regions, and for electricity generation. The same improvement of one standard deviation would also have raised the subsequent rate of infrastructure investment. It would have raised the annual rate of investment in the telephone network by 0.8 percentage points, and in electricity generation by 0.5 percentage points. Over decades, such effects amount to major differences in infrastructure provision.

Corruption and infrastructure investment: a summary

Both of these best practice studies have the same message: *corruption has large and adverse effects on infrastructure investment*. The global study finds that, controlling for other features of the environment, a high level of corruption will substantially *delay* the introduction of new types of infrastructure and will substantially *reduce* the pace at which it is subsequently accumulated. The Italian study shows that even this substantially understates the damage done by corruption. It finds that a given level of expenditure

on infrastructure investment is much *less productive* in corrupt environments. Hence the distinct effects found in the two studies are cumulative: *corruption lowers expenditure on infrastructure and reduces the productivity of that expenditure*. Yet the costs of corruption do not stop here.

Quantifying the impact on recurrent costs

Turning to the effects of corruption on recurrent costs, the following set of comparative econometric studies again adopt complementary approaches: two focus on a particular region and sector at a particular time, to reduce problems of comparability; the third takes a global approach and looks at a wide range of infrastructure services.

Water in Africa and electricity in Latin America

The regional studies focus on running costs of utilities, taking their capital investment as a given. They are concerned with how efficiently a given amount of capital investment is combined with labour and other inputs to produce a flow of services.

In their study of water utility companies in Africa, Estache and Kouassi compare productivity among 21 companies.⁷ Benchmarking on the most efficient company, they measure the extent to which the other companies fall short of this standard and attempt to explain why they are less efficient. The level of corruption prevailing in the country is one among many explanatory variables. Controlling for all other variables, the authors find that the level of corruption is highly significant in the statistical sense, and is substantial in the economic sense.

The level of corruption is measured on a 16-point rising scale with the average level being 10.2. Estache and Kouassi find that a one-point reduction in corruption raises the level of operating efficiency by 6.3 per cent. If these water utilities were operating in non-corrupt environments (1 on the scale), they would have an average increase in efficiency of 64 per cent. The prices the firms charge could thus be 64 per cent lower. In other words, nearly two-thirds of the operating costs were due to corruption. Even a reduction of corruption by one point from the 10.2 average to 9.2 (which is entirely within the range of the data) reduces costs by 6.3 per cent, which is a large effect. Indeed, the authors point out that it exceeds the total gain achieved from privatisation.

A study by Bo and Rossi of 80 electricity utilities in 13 Latin American countries uses two measures of national variations in corruption, TI's Corruption Perceptions Index and the International Country Risk Guide corruption index.⁸ It finds both to be significant. This study controls for other effects on the efficiency of electricity generation. It uses two measures of performance, the number of workers employed – and hence labour productivity – and total operational and maintenance costs. With two measures of corruption and two measures of performance, the authors are able to check the robustness of their results. They find that both measures of corruption significantly and substantially affect both measures of performance.

Bo and Rossi consider what would happen if the median country in their sample (Brazil) had the corruption level of the least corrupt country in their sample (Costa Rica). This is approximately equivalent to asking what would happen if all countries

reduced their corruption to the level of Costa Rica. The effects on efficiency would be substantial. The labour force needed to produce the same amount of electricity would be reduced by 12 per cent.⁹ Electricity would certainly be cheaper; the authors find that operational and maintenance costs would fall by 23 per cent.

Hence both studies find large and significant effects of corruption on the recurrent costs of infrastructure services. Both assess direct costs only, namely the higher prices that must be paid for services actually delivered. These studies do not estimate indirect costs from poor services, such as the loss of jobs and investment in manufacturing.

The global performance of infrastructure services

Kaufmann, Leautier and Mastruzzi take a global view of the performance of infrastructure services.¹⁰ Their basic unit of observation is not a country but a city: they consider 412 cities in 134 countries. Their measure of performance is access to services and the quality of service delivery for water, sewerage, electricity and telephones. The authors' measure of corruption includes information at the level of the city as well as for the country as a whole. They observe the extent of bribery for utilities in cities; at the national level, they measure the extent of 'state capture' of the regulatory process, and the extent to which corruption is controlled. The question is whether, controlling for other characteristics, these measures of corruption affect the delivery of any or all of the infrastructure services considered.

They find that each measure of corruption has significant and substantial effects on both access to services and on the quality of service delivery. The many findings support the conclusion that corruption at the city level is important, over and above other influences, for the quantity and quality of service delivery.

Corruption and infrastructure services: a summary

These 'best practice' studies convey the same broad message – *corruption significantly and substantially worsens infrastructure services*. Yet the detailed problems to which they point are distinct. The focused studies are concerned with the costs of operation. They show that corruption raises the cost of delivering a particular volume of service. The wide-angle study is not concerned with the cost of operation but with the volume and quality of services delivered. It finds that corruption reduces access to services, which may well be a direct consequence of the cost-raising effect: with higher costs of operation, less can be provided. The adverse quality effect is entirely distinct, however. Indeed, higher operating costs caused by corruption may have been expected to be compensated by higher quality. The opposite is the case: *corruption both raises costs and lowers quality*.

Conclusion: costs, costs and more costs

Initial research on the consequences of corruption encountered the technical problem of 'endogeneity' – corruption was clearly *correlated* with a lot of adverse outcomes but may not be their *cause*. Recent research has gone a long way to overcome these problems of

interpretation. One approach is to narrow the question. The studies discussed above all focus not on the general consequences of corruption, but on various specific problems related to infrastructure. Further, within infrastructure, some focus on investment in the sector, whereas others focus on the services it provides. Another approach is to narrow the range of observations considered. Some of the studies have concentrated on a single type of infrastructure and a single country or region.

What comes out of this more focused approach is both greater confidence in the results, and a range of distinct costs generated by corruption. Between them the studies reviewed have found four distinct, yet coexisting, costs of corruption to be significant and substantial for infrastructure:

1. Corruption delays and reduces expenditure on infrastructure investment (for example, globally, a modest reduction in corruption would increase investment in telecoms by 0.8 percentage points).
2. Corruption reduces the growth generated by a given expenditure on infrastructure investment (for example, in Italy, the same modest reduction in corruption would increase growth by 0.3 percentage points, even with unchanged investment).
3. Corruption raises the operating cost of providing a given level of infrastructure services (for example, in Latin America, reducing corruption to the level of Costa Rica would reduce operating costs in electricity by 23 per cent).
4. Corruption reduces the quality of infrastructure services and limits access, especially for the poor.

The true total cost of corruption in infrastructure is at least the sum of these costs. It amounts to lower current living standards, with the poorest hit hardest; and slower growth. Indeed, expensive and low-quality infrastructure may inflict costs on society that are far in excess of the money directly wasted in the process of provision.

However, the approach taken in these studies also carries an implicit message of hope. The basis for the studies is *variation* – we can quantify the costs of corruption only because its extent differs so markedly between places that are in other respects rather similar. In other words, *it doesn't have to be this way*.

Notes

1. Paul Collier is professor of economics at Oxford University where he directs the Centre for the Study of African Economies. Anke Hoeffler is a research officer in the economics department.
2. P. Collier and J.W. Gunning, 'Explaining African Economic Performance' in *Journal of Economic Literature* 37 (1999).
3. Personal communication to the authors.
4. Alfredo Del Monte and Erasmo Papagni, 'Public Expenditure, Corruption and Economic Growth: the Case of Italy' in *European Journal of Political Economy* 17 (2001).
5. 'Significance' is a statistical concept, indicating to what extent the result is reliable. A result can be statistically significant and yet of little interest if the effect it identifies is small in economic terms.

6. Wiltold J. Henisz, 'The Institutional Environment for Infrastructure Investment' in *Industrial and Corporate Change* 11 (2002).
7. Antonio Estache and Eugene Kouassi, 'Sector Organization, Governance, and the Inefficiency of African Utilities', mimeo (World Bank Institute, 2002).
8. Ernesto Dal Bo and Martin A. Rossi, 'Corruption and Efficiency: Theory and Evidence from Electric Utilities', mimeo (University of California, Berkeley, and University of Oxford, 2004).
9. This does not imply that in a low-corruption environment 12 per cent of electricity workers would lose their jobs. Because electricity would be cheaper, more of it would be produced.
10. D. Kaufmann, F. Leautier and M. Mastruzzi, 'Governance and the City: An Empirical Investigation into the Global Determinants of Urban Performance', mimeo (World Bank, 2004).

The environment at risk from monuments of corruption

Peter Bosshard¹

In July 2002 a British subsidiary of the Norwegian construction company, Veidekke, admitted having made a payment of US \$10,000 to a senior Ugandan civil servant in 1999. Richard Kaijuka, at the time Uganda's energy minister, acknowledged receiving the payment, but maintained it was not a bribe. After the payment Veidekke became a member of the construction consortium chosen for the Bujagali hydropower project, following a procurement decision that was not based on full international competitive bidding. When allegations of bribery surfaced the World Bank suspended its financial backing, and the project became the subject of anti-corruption investigations by the World Bank and four different governments.² At the time of writing, the Bujagali dam project is still stalled. The cumulative environmental impacts of Bujagali and other dams on the Nile have never been assessed.

A case study from Indonesia

The Jatigede dam on the Cimanuk River is supposed to produce power and bring irrigation to the farmers of West Java, Indonesia. It will submerge a land area of 49 km², drown 30 villages and displace around 41,000 people. Construction is expected to start in 2005. The US \$964 million dam project will increase erosion in the reservoir area and flood a valuable archaeological site.

In September 2003 the Bandung Legal Aid Institute, an Indonesian NGO, claimed that US \$700,000 earmarked as compensation for two communities affected by the Jatigede dam were diverted from the project budget. On average, the farmers covered by the institute's survey received only 29 per cent of the official value of their land and houses. The dam project has also been associated with serious human rights abuses.³

Environmental experts argue that the Jatigede dam is not needed. Rehabilitating deforested lands and reviving the region's silted rivers would do more to prevent floods and droughts. 'Reforestation should become the first priority for maintaining the water

catchment area, without which there would not be enough water to fill up the reservoir', says Usep Setiawan of the Working Group on Conservation for Nature and Natural Resources. Supardiyono Sobirin of the Sunda Forestry and Environment Expert Board agrees. 'The main difficulty of reservoirs in West Java is the water supply because river flow areas have been damaged and cannot provide water to the reservoirs', he said. 'Why would they build more reservoirs if there is no water?'

The plan to build the Jatigede dam rather than promote more sustainable alternatives may be part of a wider pattern of distortion in Indonesia's development planning process. In August 1997 staff members of the World Bank's Jakarta office prepared a confidential report on corruption in development projects in the country. The leaked report found that:

Most GOI [Government of Indonesia] agencies have sophisticated informal systems for diversion of 10–20 per cent of the development budget under their management, and for utilising the proceeds diverted to supplement their inadequate operations funds and their compensation. These arrangements vary widely among GOI agencies, but almost universally depend on the payment of percentage or lump sum rebates or 'kick-backs' by contractors implementing projects from the agency development budget. Such payments are informal but regarded as an overhead or informal 'tax' by most firms doing business with GOI, and are typically included in the unit prices or bills of quantity for the contract.⁴

'In aggregate', the report estimates that 'at least 20–30 per cent of GOI development funds are diverted through informal payments to GOI staff and politicians'. All payments identified by the report are linked to decisions favouring new investment projects. The document mentions numerous cases in which 50–80 per cent of the funds budgeted for land acquisition and resettlement assistance were diverted. This is hardly an incentive for minimising resettlement.

Communities affected by projects like the Jatigede dam pay the price for the diversion of development funds. Society at large and the environment also suffer indirectly from a decision-making process that is fraudulently skewed towards approving new investment projects even when other options – for example, reforestation or sustainable water management programmes – are more appropriate.

Monuments of corruption

Corruption in the development planning process is not an isolated phenomenon, nor is it confined to Indonesia. The Bataan nuclear power plant in the Philippines' largest investment project and cost more than US \$2 billion. Westinghouse was controversially awarded the main contract after the late Filipino dictator, Ferdinand Marcos, personally overturned the initial contract decision.⁵ Westinghouse admitted paying US \$17 million in commissions to a friend of Marcos, though it maintained that the payments were not a bribe. The reactor sits on an active fault line that is part of the Pacific's 'rim of fire', creating a major risk of nuclear contamination if the power plant ever becomes operational. Completed in the 1980s, the plant has never produced a single unit of electricity.

Yacyretá on the border of Argentina and Paraguay is one of the largest hydropower projects in Latin America. Built with World Bank support, the dam is flooding the Ibera Marshes, a unique ecosystem that has remained almost undisturbed for centuries. Due to cost overruns, the power generated by Yacyretá is not economic and needs to be subsidised by the government. According to the head of Paraguay's General Accounting Office, US \$1.87 billion in expenditures for the project 'lack the legal and administrative support documentation to justify the expenditures'.⁶

Enron's Dabhol power plant threatens to destroy a fragile coastal area in India. A representative of Enron admitted that the company paid US \$20 million 'on [the] education and project development process alone, not including any project costs'.⁷ The multi-billion dollar plant was mothballed in 2001 because its electricity was prohibitively expensive.

The reservoir of the Bakun dam in Sarawak, Malaysia, will submerge 700 km² of tropical rain forest. The mandate to develop the project went to a timber contractor and friend of Sarawak's governor. The contractor had never developed a power project before and lost the contract after a few years, but he managed to log the project area during this period. The provincial government of Sarawak is still looking for customers to consume the power to be generated by the project.

The list goes on. None of the projects mentioned above make any economic sense. They had serious environmental and social impacts, and should never have gone forward in the first place.

The political economy of infrastructure development

Corruption and cronyism have environmental and social impacts that go far beyond the individual projects tainted by bribery. They skew the planning and decision-making processes in important sectors of infrastructure development. Large, centralised, capital-intensive greenfield projects offer decision-makers more scope for kickbacks, bureaucratic control and political prestige than decentralised, community-based services. They also offer more scope for private gain than the rehabilitation of existing infrastructure, or non-structural options such as reforestation programmes or demand-side management measures. Because of this bias, decision makers often favour large-scale public works projects even if the alternatives would make better economic sense and would have less harmful social and environmental impacts.

Corruption – the misuse of public or private office for personal gain – extends beyond straightforward bribery. Planning processes in the infrastructure sector touch on important vested interests. Their outcomes affect the prestige of politicians, the budgets and personnel of bureaucrats, and the follow-up contracts of external consultants. Decision-makers are therefore under strong pressure to treat project options on the basis of factors other than their merits.

The special role of the consulting industry

Consultants who are commissioned to assess development options in a particular sector are usually aware that their clients have an interest in promoting new greenfield

investments. They are equally aware that environmental impact assessments should not stop projects that enjoy political support. Even if they find that a project has unacceptable environmental impacts, they are under pressure to recommend mitigating measures for it, rather than promote less destructive alternative options. If consultants assess projects solely on their merits, they risk obtaining no future contracts. This causes what a World Bank report on involuntary resettlement in 1994 called ‘excessive appraisal optimism’. It is a form of corruption that distorts the planning process to the benefit of projects with large budgets, contracts and prestige – and often with massive social and environmental impacts.

The ‘political economy’ of infrastructure development was clearly identified by the independent World Commission on Dams (WCD). The WCD’s report, published in 2000, says:

At whatever level, vested interests can distort the decision-making process, undermining development. Decision makers may be inclined to favour large infrastructure as they provide opportunities for personal enrichment not afforded by smaller or more diffuse alternatives. The consequences frequently directly affect the poor and the environment. Allegations of corruption have tainted many large dam projects in the past but have seldom resulted in prosecution in court.⁸

Overcoming corruption in infrastructure development

Transparency International has developed tools such as the Integrity Pact for combating corruption in the field of public procurement. Integrity Pacts are contracts between government offices and companies bidding for particular projects. They prohibit bribery, ensure transparency in the bidding process and foresee sanctions in the case of violations. In infrastructure projects, such pacts can also include private investors and consultants.⁹

‘Comprehensive Options Assessment’ is one of the strategic priorities proposed by the World Commission on Dams.¹⁰ The principle has been officially endorsed by many governments and financial institutions, but is often not implemented in practice.

The World Bank has adopted a specific guideline to rule out conflicts of interest in dealing with consultants. This guideline states:

Bank policy requires that consultants provide professional, objective and impartial advice and at all times hold the client’s interests paramount, without any consideration for future work, and that in providing advice they avoid conflicts with other assignments and their own corporate interests.¹¹

If strictly adhered to, this guideline would go a long way towards avoiding fraudulent practices in assessing and preparing options of infrastructure development. However, like other guidelines, it is not always implemented.

Sunlight is the best disinfectant. Complete transparency is needed to discourage fraudulent practices in the process of assessing the needs and options of infrastructure

development. Parliaments and civil society organisations must hold governments and financial institutions accountable for their decisions even during the early planning stages of infrastructure development.

Notes

1. Peter Bosshard is policy director at the International Rivers Network.
2. The Norwegian authorities dismissed the case in 2003 through lack of evidence (see Norway country report). For a summary of the Veidekke/Kaijuka case, see *Development Today*, 5 August 2002.
3. Bandung Legal Aid Institute, *Facts of the Violations of Human Rights and the Law: Corruption in the Jatigede Dam Project in Sumedang, West Java* (Bandung: 2003).
4. 'Summary of RSI Staff Views Regarding the Problem of "Leakage" from World Bank Project Budgets', undated.
5. See A. Timothy Martin, 'International Arbitration and Corruption' in *Transnational Dispute Management* 1 (2004).
6. Francisco Galiano, head of Paraguay's General Accounting Office, as quoted in *Ultima Hora*, 3 September 2004.
7. Testimony by Linda F. Powers before the Committee on Appropriations, Subcommittee on Foreign Operations, US House of Representatives, 31 January 1995.
8. World Commission on Dams, *Dams and Development* (London: WCD, November 2000).
9. For an elaboration of this principle in the context of dam building, see Michael H. Wiehen, 'Transparency and Corruption Prevention on Building Large Dams', paper for the World Commission on Dams (1999).
10. WCD, *Dams and Development*.
11. World Bank, *Guidelines: Selection and Employment of Consultants by World Bank Borrowers* (Washington, DC: World Bank, 2004).

Earthquake destruction: corruption on the fault line

James Lewis¹

Earthquakes don't kill people; collapsing buildings do. While earthquakes may not be preventable, it is possible to prevent the disasters they cause. In the past 15 years, there have been more than 400 recorded earthquakes in 75 countries rendering almost 9 million people homeless, injuring 584,000 and causing 156,000 deaths.² Many of these deaths were the result of buildings that folded in on themselves because concrete was diluted, steel bars were excised, or otherwise substandard building practices were employed. It is difficult to evaluate the extent to which corruption might have played a role. However, the accompanying examples from Italy and Turkey illustrate that the marriage of corrupt contractors and corrupt building inspectors and other public officials resulted in ignored building codes, lax enforcement and the absence of on-site inspection, which is deadly when it occurs in earthquake-prone areas.

The building process

Building construction involves a process of physical covering. Starting in the ground with foundations, it proceeds with the superstructure of walls, columns, floors, staircases and roofing. Each stage is concealed, from foundations under the ground, steel reinforcement before concrete is poured, to the last coat of paint. Mistakes and omissions (accidental or intentional) have to be identified and rectified within each stage. Pressures on builders to complete on time, increased by financial incentives and impeded by late deliveries and weather, create circumstances in which temptations are rife for expediency and shortcuts.

Areas at risk of being hit by an earthquake or other natural disaster present construction firms and engineers with an additional level of complexity. Reinforced concrete is relatively cheap and a convenient, though rigid, construction material, whereas timber is more flexible but requires skills and materials not always locally available and is inappropriate for larger buildings. Flexibility responds to earthquake motion where rigidity does not. Concrete can be used in earthquake-resistant constructions, but needs to be of high quality and applied using a vibration machine to ensure that it penetrates throughout necessarily complex steel reinforcement. Vibrators require on-site generators or mains electric power, which imply additional costs. Controlled concrete is best achieved by specialist and centrally inspected off-site suppliers; less easily inspected on-site mixing is subject to expediency, substitution and omission.

Engineered buildings design in an additional 'earthquake factor' for earthquake resistance, the degree of which is a matter for regulation or professional analysis. But the factor can be exceeded by actual earthquakes of greater magnitude. Even inspected buildings can fail; older and decayed buildings can collapse.

Problems with oversight

Most countries, regardless of their stage of development, have moderate-to-good building and safety codes. Many could be improved: in India, for instance, where an earthquake in Gujarat in 2001 killed 20,000, codes required inspectors to inspect plans but not the buildings themselves during the building process. In most cases, though, the main problem is implementation of codes. A proper enforcement system needs trained engineers, rules and regulations, and periodic inspection. Corruption adds to this problem when building permits are obtained through bribes and political favours, or inspectors are paid to turn a blind eye to design or building practices that deviate from the code specification.

Financial resources and trained personnel are needed to be able to inspect the work of contractors. Public officials employed to inspect building codes and grant permits are rarely well paid in any country, and there is almost always the problem of understaffing. Where the rate of housing growth is rapid, such as in Turkey, 'it is a daunting task to carry out proper building inspections even assuming the necessary political and ethical will', according to Alpaslan Özerdem, an expert in disaster management.³ He suggests another approach would be to increase public awareness and make potential house

buyers become the inspectors: 'if people showed as much interest in earthquake safety ... as they show in the type of tiles, doors and taps ... building contractors would stick to the rules and regulations'.

The state's role in the construction of dangerous buildings is not limited to failure to ensure proper inspections. Acts and omissions by states can actually contribute to the extent of disasters, especially when this occurs in a context where corruption is prevalent throughout government services. Research into the catastrophic 1999 Kocaeli earthquake in Turkey identified 'organisational deviance' in the pursuit of risk-laden policies, corruption tolerated or tacitly encouraged to serve organisational goals, failure to develop regulation in the construction industry, encouraging or forcing land settlements in hazardous zones, post-disaster cover-up and concealment of evidence, and promotion of policies directly contributing to corrupt practice in the construction industry.⁴

Agencies such as UNESCO and UN-Habitat have helped push for codes for earthquake-resistant construction, and international demands for improved construction are repeated after every earthquake. The *UN Chronicle* recently carried a plea by experts working in the field for 'the enforcing of internationally accepted standards of safety for schools and hospitals everywhere in the world'. To mitigate the impact of earthquakes by reducing the risk of corruption:

- legislation and enforcement should be tightened, and adequate, trained and empowered inspections should be made of construction projects both during the design and the building stage
- controls over building construction by local governments should be evaluated and redefined
- participation in earthquake insurance should be encouraged and made to be a vehicle for requiring independent certification of conformity with construction codes
- training, licensing and regulation of engineers and architects should include training in earthquake-resistant construction
- standardised design of government buildings should be re-examined with a view to more stringent applications
- strict restrictions should be placed on overcrowding and upper-storey extension of existing buildings and on maintenance of old, damaged and poorly maintained buildings
- access to controlled provision and supply of (off-site) ready-mixed concrete should be facilitated.⁵

The media and civil society have an important role to play in pushing for an improved construction system in earthquake-prone areas:

- citizens need to be encouraged to hear a second opinion on safety if they have any doubts about the work of contractors

- citizens should be trained to spot the most egregious departures from building codes
- local NGOs should provide second opinions and act as watchdogs, possibly with the help of voluntary pools of engineers from local universities or chambers of engineers.

Box 1.1 The Italian mafia's legacy of high-rise death traps

David Alexander¹

In Italy there are four mafias, all based in the Mezzogiorno, the southern half of the country: *Cosa Nostra*; the *Camorra*; the *Ndrangheta* and the *Sacra Corona Unita*. Traditionally all four have been active in extortion, racketeering, theft and smuggling. The gradual relaxation of border controls and the increase in the volume of international trade and travel led them to shift their focus to the drugs trade, gambling, people-trafficking and the construction industry, all of which are more lucrative than their traditional activities. Money laundering and illicit investment in the construction trade have been natural consequences of the vast sums accumulated in the conduct of these businesses.

During the period of the so-called 'First Republic' (1948–90), *Cosa Nostra* and the *Camorra* developed strong links with leading Italian politicians in the ruling Christian Democrat party. This enabled them to expand their business activities enormously under the cover of parliamentary approval engineered by powerful figures in the political establishment. One of the most visible effects of corruption was the huge investment in unregulated building projects, which not only caused ubiquitous environmental damage but also spread vulnerability to earthquakes.

In Italy, earthquakes are larger and more numerous in the Mezzogiorno. A major seismic event may destroy or significantly damage up to half a million buildings, leading to a massive demand for reconstruction and, obviously, the funds to achieve it. During the second half of the twentieth century the main source of the latter was direct, regressive taxation, particularly through increases in the price of gasoline at the pump. As there was no organised system of insurance of structures against earthquake damage, the government acted as the 'insurer of last resort', directing large amounts of public money to regional, provincial and local authorities, and to state agencies such as the *Cassa per il Mezzogiorno* (Southern Development Fund). South of Rome, all of them were reportedly corruptible.

In 1968 14 small earthquakes caused significant damage and more than 200 deaths in the Belice Valley of western Sicily. By 1983 very little had been done to reconstruct buildings, and large sums of government money had simply disappeared, the victim of poor accounting, opaqueness in public administration and the business interests of the underlying black economy. Eventually, reconstruction did occur, but under the impetus of concerted attempts to break the power of the mafia, attempts that led to the assassination of an armed forces general and various senior investigative judges.

The largest earthquake of the second half of the twentieth century occurred in 1980 in an area extending from Naples to the boundaries of Apulia. Some 2,735 people were killed, 8,841 were injured and 400,000 were left homeless. Some 637 settlements spread over an area of 23,000 km² reported damage. In terms of mass casualties, the worst effects took place where large, fully occupied buildings collapsed spectacularly. One of the most notorious examples was the complete collapse of the maternity wing of a



six-storey hospital at Sant'Angelo dei Lombardi, in Avellino, east of Naples. Almost all of its occupants were crushed to death. Subsequent investigation showed that the plans for this fairly new, reinforced concrete-framed building were adequate, but it had been built with substantial economies in materials (the foundations were too shallow and several hundred structural members were missing from the frame). While it is not clear that the Camorra were involved, there was certainly a failure to control and inspect the building works and a desire to flout the rules on the part of the builders. Many other such lapses were revealed amid the wreckage of modern buildings that failed to withstand the tremors. An unknown but probably large number of these were related to illicit speculation in construction promoted by the Camorra.

During the aftermath of the 1980 earthquake, clear evidence emerged of attempts by the Camorra to take command of the rebuilding process and to siphon off the funds. There were widespread delays in the reconstruction of basic infrastructure, schools and hospitals at the same time as there was a boom in speculative building of housing. This dual process indicates the success of the Camorra's strategy, as it points to interference in the urban planning and building-contract tendering processes. Many of the new buildings were not built sufficiently well to withstand major earthquakes, either because building codes were ignored or because they were slow to be updated. Prominent local politicians, such as the mayor of Pagani, who opposed the Camorra's involvement in reconstruction, were assassinated.

It was left to Italy's 'Second Republic', shorn of its most notorious corrupt political leaders, to investigate and impose controls on how central government funds were distributed to potentially corrupt local and provincial authorities. This did not happen until 1993–94.

The historical roots of corruption, and the persistence of the social and economic conditions that foster it, mean that it will not disappear overnight. The four mafias have suffered considerable setbacks, including loss of the parliamentary support that was once so unwavering, but they are resourceful and have diversified business enterprises. If nothing else, the huge rash of uncontrolled speculative building that they promoted in the late twentieth century represents a major source of vulnerability to future earthquakes in southern cities such as Reggio Calabria, Messina and Catania. In Italy, neither corruption nor earthquakes is an exclusively southern phenomenon, but they are both decidedly more pronounced and deep-rooted in the Mezzogiorno.

Note

1. David Alexander is professor and head of the disaster management subject group at Coventry University, Britain. His books include *Natural Disasters*, *Confronting Catastrophe*, and *Principles of Emergency Planning and Management*.

Box 1.2 Turkish homeowners demand an end to earthquake devastation

William A. Mitchell and Justin Page¹

During the twentieth century Turkey experienced about 60 severe earthquakes, which contributed to more than 250,000 casualties and almost 650,000 destroyed buildings.



Most of the buildings were improperly sited, poorly built and inadequately reinforced. The Dinar earthquake in 1995, occurring just over three years after the Erzincan earthquake, generated a crescendo of public awareness and media outcry. This outcry was especially strong in urban Turkey, home to over 70 per cent of the population of about 70 million.

Much of the population shift to the cities results from villagers moving from economically non-viable areas of the east and entering informal squatter communities (*gecekondu*) in the suburbs of large cities. These settlements are greatly at risk from earthquakes, and the problem is increasing. Although earthquakes are not preventable, the material and human damage that often accompany them can be greatly reduced by implementing a combination of social and technological changes. Enforcing, and complying with, statutory construction codes, honesty in granting contracts, and ethically conducted public procurement tenders could prevent thousands of fatalities in Turkey.

Corrupt construction practices place even more financial stress on the existing macroeconomic stabilisation plans to correct the chronic short-term problems of capital flight, loss of foreign exchange reserves, inflation, and large current account deficits. When an earthquake disaster occurs, the extremely difficult but important actions necessary for long-term economic stability are forced to the background and Turkey's longer-term structural adjustment challenges are compounded.

In Turkey, as in other countries, earthquake victims are often described as people simply experiencing an act of fate or God's will. What this masks, however, is inadequate knowledge of the basics of seismic-resistant construction, which has allowed a worsening of corruption within the Turkish construction industry and in the enforcement of building codes. Such a tendency was reinforced by a lack of critical scrutiny from Turkish officials and the media towards faulty construction in most major earthquakes up until the most recent disasters.

Following the 1992 Erzincan disaster, the public began to learn more about reasonable expectations for seismic-resistant construction and started to call for more efficient governmental management of construction. The print media, especially the *Turkish Daily News*, began to directly criticise the government of Erzincan for 'incompetence and inexperience' as well as 'inefficiency'. Other news stories focused on the blatant violation of construction codes in place since 1973, which prohibited the construction of buildings more than three stories tall. Many of the buildings exceeding the three-storey legal limit collapsed or were heavily damaged, presenting clear evidence of faulty construction.²

The Erzincan disaster reinforced the voluminous literature demonstrating that poorly built, non-reinforced structures constructed on improper sites with disregard for geology and seismology, particularly near and on the North Anatolian fault zone, collapse in severe or major earthquakes with large numbers of casualties.

The Dinar earthquake was Turkey's sixth significant earthquake in 25 years. There was a relatively low cost in terms of human lives, but major or total damage was suffered by 37 of Dinar's public buildings constructed entirely by government contractors using questionable techniques and standards. Following the Dinar earthquake, the level of awareness of the Turkish public towards disasters was heightened and there were increased demands for more sound construction practices.³

While the Dinar earthquake served as a catalyst for more public awareness of faulty construction techniques and corrupt practices, the 1999 Izmit disaster was a full awakening to the problem facing urban populations. More than 15,000 people died with more than



twice this number injured and 200,000 left homeless. The disaster led to a crescendo of opposition towards corrupt and shoddy building practices, spearheaded by a number of outspoken newspapers. Immediately following the earthquake, media outlets launched harsh criticism of the government's slow disaster response which caused more fatalities as victims waited for assistance in the form of sanitation, water, shelters, and search and rescue. Attention soon focused on corruption and its impact on construction as a direct reason for the massive loss of lives.

If the Izmit response represented the worst side of Turkey's public administration, the response to the Bingol earthquake in 2003 embodied the best. Governmental and military response and search and rescue were both quick and efficient and garnered high praise. The issue of past corruption in construction was brought to the forefront and the press was quick to assert that this earthquake was similar to most previous ones concerning quality of construction. Many political leaders and academics complained and accused builders, contractors and the government of disregarding building codes, quality control and geological considerations. President Ahmet Sezer publicly urged punishment for those who were responsible for constructing the government buildings that collapsed. Prime Minister Tayyip Erdogan was quick to assert that 'the ideas of stealing materials, corruption, illegalities and injustice [must be corrected]'.⁴

Corruption remains a major problem in Turkey. A first step in attempting to combat corruption is the admission of its existence, something the government has done under Prime Minister Erdogan, thanks to pressure from the Turkish people whose ambivalence and fatalistic attitudes have changed dramatically. While there has been progress, there is much more to do, however.⁵ Putting a transparent national plan into effect, with integrity, is crucial for a sustainable Turkey.⁶

Notes

1. William A. Mitchell is a professor in the political science department, holds the Jo Murphy Chair in International Education, is a Middle East Area specialist, and has lived in Turkey for more than 12 years. Justin Page is a Baylor University graduate student in Middle East international relations and has completed research in Turkey, Iraq and Egypt.
2. William A. Mitchell, *The Republic of Turkey and Earthquake Disaster Management* (New York: Global Humanities Press, 2004), p. 146.
3. *Ibid.*, p. 156.
4. Quoted in Relief Web, 4 May 2003, www.reliefweb.int/5/4/03
5. After the Izmit earthquake, public education campaigns on dangerous practices in reinforced concrete construction and introducing the basic principle of seismic-resistant construction were carried out in Istanbul by the Istanbul Governor's Office and Bogazici University's Disaster Preparedness Education Programme. This latter programme reached 1.5 million school children and hundreds of thousands of parents in four provinces and is now being expanded nationwide with the support of the ministry of education. A network of ombudsmen could also help support the public demand for safe construction.
6. The METU Disaster Management Implementation and Research Center (in conjunction with the government of Turkey – created under the UNDP cost-sharing project 'Improvement of Turkey's Disaster Management System') is an excellent initiative to bring geo-science and social science together to work for a better understanding of social attitudes and citizen participation for disaster preparedness and mitigation in Turkey.

Notes

1. James Lewis is an architect, consultant and writer on environmental hazards, and a visiting fellow in development studies at the University of Bath (Britain).

2. EM-DAT (2004) OFDA/CRED International Disaster Database: Université Catholique de Louvain, Brussels, Belgium, www.em-dat.net
3. Alpaslan Özerdem, 'Tiles, Taps and Earthquake-Proofing: Lessons for Disaster Management in Turkey' in *Environment and Urbanisation*, October 1999.
4. Green, al-Husseini and Curry, 'Disaster Prevention and the 1999 Turkish Earthquakes', http://online.northumbria.ac.uk/geography_research/radix/turkey-bingol5.htm
5. Ben Wisner and James Lewis, 'Exchange: Why do Schools and Hospitals Collapse in Earthquakes?', UN Chronicle Volume XL No. 3, 2003, www.un.org/Pubs/chronicle/2003/issue3/0303p49.asp