water runoff. The storm sewers are easily overwhelmed by heavy rainfall as witnessed last week. Many of the sewers are clogged by dumping of solid waste, with polythene bags a major problem.

"In most mega cities, storm sewers are separate from waste disposal conduits," says Engineer Jahangir Alam, an urban planning expert. "Since the rains are seasonal in Bangladesh, waste matter hardens and blocks the drain during winter. When the rain comes, the choked sewers simply cannot cope."

Many of the Khals, vital arteries for the drainage of storm water, have been encroached and even totally blocked by roads and buildings. Many observers blame housing and land development companies for large scale encroachment.

"When I hear of river view projects, I am concerned that they may be encroaching on natural water bodies," says Syed Rizwana Hasan of Bangladesh Environmental Lawyers Association (Bela). "Many real estate companies have not been as responsible as they should have been."



The flooding exposed the flaws in Dhaka's storm drainage system. PHOTO: MARLAND D. MILLER

Aminul Karim Siddique, executive director of Amin Mohammad Lands Development Ltd agrees, but claims his company has been careful to obey government rules.

"It is true we have a development project in Ashulia," says Siddique. "But we have been very careful to start plotting 56 feet away from the natural canal, as per government regulations. We have also been careful to preserve the natural drainage system."

It is not only private developers who are to blame. The Dhaka City Corporation (DCC) and other government agencies have squeezed many of the Khals by creating box culverts.

The frequent waterlogging in the commercially important Motijheel area is a prime example of the bottleneck caused by box culverts. Since Begunbari canal was narrowed and a large water body next to Bangladesh Bank in Motijheel was filled up, flooding in Motijheel C/A has become a common occurrence after a downpour. The large water body has almost disappeared due to unplanned urbanisation after a box culvert was built on Segunbagicha canal in 1992.

This is the main reason behind the waterlogging in Fakirapool, Motijheel and Arambagh areas, say observers. Similar scenarios exist in other parts of the city.

Many experts have blamed lack of coordination between various agencies. "The Wasa maintains the sewers, but the surface drains fall into the jurisdiction of the DCC," says SM Mahbubur Rahman. "The Deputy Commissioner's office is responsible for preventing encroachment of canals while the Water Development Board operates the sluice gates through which the canals drain. Unless there is proper coordination between these agencies, problems are bound to occur."

The lack of a master plan is also evident in the way many development projects seem to be exacerbating the drainage problem. The DND (Dhaka-Naryangonj-Demra) project was created on the outskirts of Dhaka with an eye to increasing agricultural production. Rapid urbanisation has made the agricultural aims obsolete, but the unplanned settlements that have sprung up centering on the DND project are prone to severe waterlogging.

The absence of a strategic plan forces city planners to resort to short term measures. But even these, if executed vigorously, could help alleviate the suffering of Dhaka dwellers.

"The concerned authority like DCC, RAJUK, BWDB, BIWTA and DC's office will have to establish "right-of-way" over the natural drainage system and ensure that the drainage system is free from any obstruction, blocking, or encroachment," says Engineer Jahangir Alam.

Other routine measures, often neglected, would include cleaning of sewerage lines, and prevention of solid waste disposal. Dhaka Wasa could connect extra drainage lines to box culverts to reduce waterlogging in certain areas. Many experts have also suggested creation of "retarding ponds" which could hold rain water and slow down the runoff. Dredging the rivers on Dhaka's periphery is also necessary to maintain the integrity of the natural drainage system.

Long suffering city dwellers have almost given up hope that effective measures will be taken by the government any time soon. Riyad Amin of Khilkhet strikes a philosophical note.

"Six hours of rain did this. I wonder what would happen if the rain continued for another six. I guess we really should be thankful."