

Soft engineering vs hard engineering

[Engineering](#)



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" Soft engineering Is a better river flood management strategy than hard engineering". (15 marks) There are two predominant methods of flood management; hard and soft engineering. Soft engineering is the natural defense of management. They are cheaper to maintain than hard engineering strategies which is an essential advantage for LED countries who cannot otherwise afford to protect their population from flooding.

Additionally, soft defenses require less time and management to maintain.

Methods such as wetland and habitat restoration along the river bank, store flood water and slow down the flow of water, increasing interception and the lag time reducing the discharge causing flooding to be decreased. This vegetation also protects the surface soil from erosion and provides additional advantages of habitat restoration to wildlife. These soft engineering methods enable greater sustainability because of the lower economic cost and environmental impact.

Similarly, land use management is a popular defense of soft engineering; planning restrictions prevent buildings and roads from being built on the flood plain, this land is then used for playing fields, park areas or vegetation. This creation of permeable surfaces allows more water to infiltrate reducing surface run off and amount of discharge, decreasing flood speed and volume. This reduces flood impacts also as there is less new buildings and houses to be damaged if a flood was to occur. The football fields and park areas are also additional recreational opportunities for the town.

Finally, a third soft engineering strategy is that of river restoration; this allows the flood plain to flood more naturally by removing man-made levees.

This reduces the amount of flooding downstream where a major town could be as there is less water in the river channel, the river's discharge is reduced. Similarly land use change in upper catchments areas such as contour planting, increase the river's lag time by the spreading of water over a larger area. Soft engineering are also thought to be more attractive than hard engineering schemes, attracting tourists and home-makers to the area.

Man-made structures known as hard engineering strategies, although successful at reducing flooding, generally bring more destructive social and economic disadvantages in comparison to its advantages. Firstly, man-made structures such as dams, although attractive to tourists. Are expensive to build and maintain. They also require a certain level of technical skill to build, thus are an unsuccessful for LED countries. Despite creating reservoirs for people to use for recreational activities such as sailing, the dams displace this water elsewhere down the river as land is flooded when a reservoir is created.

The land chosen to be destroyed is usually farmland or recreational areas. Through construction of the three gorges dam on the Yangtze River has caused between 1.3 and 2 million people to relocate as 13 cities and 1352 villages to be submerged. Additionally, 657 factories and 1300 sites of cultural and historical interest. Sediment is trapped by the dam, reducing the protective use of this sediment being deposited; It can also cause the dam to fall, meaning more economic costs for the local residents.

Environmentally, methods such as the Siberian crane of China is now endangered and spends the winter in wetlands below the dam. To conclude,

I believe soft engineering strategies bring greater social and economic benefits to surrounding communities, especially those in LEEDS countries where the skill and finance is not available to construct man-made structures such as dams or levees. Hard engineering strategies are effective in creating HIP power and recreational areas of reservoir areas but in the long term these create larger social problems for local people.