

# City Talk



## DAM BLAST LEAVES PEOPLE HIGH AND DRY

I have said many times that human civilization cannot exist without clean water.

We need water for drinking, cleaning, irrigation to grow cereals, vegetables and fruits, and cooling in tropical areas. We could do without electricity for a few days, and definitely survive without phones, but even a day without water would be too long.

Hence it is somewhat shocking to hear of the blowing up of the Kakhovka Dam in Ukraine last month. The incident is not only of concern for Ukrainian but people in other parts of the world as well.

Soon after, villages and large areas downstream of the Dnieper River were flooded. Survivors have to be resettled and industries relocated.

The dire consequences have still not been fully assessed, but from what had been reported, the dam – whose main functions were to provide cooling water to the nuclear power plant and store water for the hydroelectric plant, irrigation and water supply – has now been substantially paralysed.

The concrete gravity dam – which was completed in 1956 after construction started in 1947 – has a height of over 30 meters and spans three kilometers across the Dnieper River. It was one of the largest dams in the world when it was built.

It started off with its water used to generate hydroelectric power for southern Ukraine to power the heavy industries developing in that area during that era.

As the region developed, it was also used to cool the 5.7 GW Zaporizhzhia Nuclear Power Plant, which supplied power to five regions in southern Ukraine.

Its blowing up not only threatens operations at the nuclear plant but also at the hydroelectric plant.

When the dam broke, a large part of the hydro plant was also destroyed.

Apart from the loss of the reservoir, more than 200 tonnes of engine oil was also spilled into the river, contaminating



the water supply and making it unsuitable for human consumption for a long time.

Such serious damage will take a long time to rectify, but in the interim, living conditions in those regions will suffer.

People will need alternative supplies of water and power, which will be extremely difficult to arrange. We can envisage a lot of commercial activities have been curtailed while normal life will not be easy.

The loss of cooling water to the nuclear plant also threatens safety at the nuclear plant and its surroundings.

For once cooling water supply ceases, the nuclear reactor will heat up and can cause an incident similar to that of the Fukushima nuclear power plant.

The dam repairs will take years, as first and foremost, a thorough inspection is needed to gauge the extent of damage.

Engineers will then need to decide how to repair and reinforce it. They may even have to decide to completely dismantle it before rebuilding, and such a rebuilding exercise will significantly affect those living downstream, as many parts will be flooded for a few years.

We build cities by improving the environment and equipping them with the necessary water and power resources.

Wars and conflicts can easily destroy these systems and render those areas uninhabitable.

Apart from rebuilding costs, the agony of having to relocate and find a new way to live will be difficult for locals.

Let us all wish these conflicts will end soon so normal life can resume. Most of the world's population love peace and need stable conditions to live.

**Veteran engineer Edmund Leung Kwong-ho casts an expert eye over features of modern life**