synonymous with famine and deaths. At the time of independence, the nation was unable to produce enough food grains for the population one third of what it is today. So, the “wisdom of centuries” that is said to be now “dying”, was in fact never alive.

To summarize: legislation that seeks to restrict the extraction of ground water if it damages the environment; indirect restriction through higher rates for electricity; and rain water harvesting; are not going to take us far. So, what next?

There is no easy solution. In fact the atmosphere has been considerably vitiated by those who think they have all the answers. It is doubtful if there are any solutions and it is certain that there are no easy solutions. However, following may be considered.

1. Take up R&D for quantitative estimation of the potential of RWH and ARGW. A rough estimate may be made quickly, to be refined in a second round. Without such a quantitative estimate, any discussion on “traditional technologies” is as pointless as discussing the backside of the moon.

2. Exploit surface water schemes to their fullest potential. It is ironical that those who are most concerned about the ground water scenario are often the most vocal opponents of the structural measures for surface water development. It seems reasonable to argue that if adequate water was available through surface water schemes then ground water exploitation would reduce. Therefore, supply surface water to the fullest extent possible. This includes inter-basin transfer of water.

3. Initiate debate on deciding ownership of water. This is an extremely tricky issue. But eventually, it may become necessary to take a view on questions like how much water a person has right to? Does a person have a right to grow paddy or sugarcane in a drought prone area by sinking a deep tube well? These issues can not be settled overnight. Therefore, at least the debate may be initiated now.

None of these ideas are going to be easy to pursue. There will be stiff opposition from vested interest groups. For example there exists a lobby whose very existence is based on opposing any surface water scheme. For them it is necessary to insist that RWH alone is sufficient. They will indulge in their usual ploy of not making any computations themselves and rejecting any one else's computations.

Opposition to surface water scheme stems from ignorance about the scheme; due to a “fear of unknown”; due to a sincere belief that protecting the habitat of a snail is more important than providing food/water to billions and last but not least, opposition as a vocation, posturing intended.

Faced with increasing demands and limited surface water supplies, farming communities in China began to turn to groundwater sources in the late 1960s, a trend that has accelerated through the 1970s, 1980s and 1990s. Unfortunately, rising reliance on groundwater extraction has led to falling water tables and deteriorating water quality in north China. In order to promote the sustainable groundwater development, China’s government has strengthened groundwater management by issuing some management regulations since the 1990s. Water regulations related with groundwater mainly include water withdrawal permit system, water resources fee, permit system for new groundwater through water projects or machinery must apply for water withdrawal permit license except for small volume water withdrawal. Groundwater withdrawal cannot exceed annual planned available groundwater exploitation volume under their administrative regions and it should accord with well layout and requirement of water withdrawal layer. Followed by issuing the withdrawal permit, water resources fee has been collected at the same time. In order to increase farmer income, groundwater permit system and groundwater resources fee have not been implemented in rural areas. Generally, withdrawal permit system has preliminarily prevented unauthorised exploitation of groundwater and environmental deterioration. However, management conflicts among water departments have made it hard to realize integrated groundwater management, one of the major purposes of withdrawal permit system. Separate water management system has reduced the overall effectiveness of the system. In addition, practices of the system vary greatly across regions. There are two major challenges facing with withdrawal permit system and water resources fee: the first
Another important regulation is the permit system for new tubewells. No such national regulation has been issued and it is mainly in some north provinces, like Hebei Province. The purpose of this regulation is to prohibit groundwater over extraction by carefully examining feasibility of drilling new tubewells. If the new tubewell will be drilled in the overexploitation regions, the government will not issue the permit to drill. Based on our interview, some local officials believe that this regulation has played important role in sustaining groundwater use. However, the effectiveness of implementation is dubious. Based on our field survey, we found not all the new tubewells got the permit, even some tubewells have the permit, the owners do not understand the implication of the permit. Poor implementation is mainly due to relatively high administrative cost facing with many small farmers. Therefore, challenge for this regulation is how to strength the effective implementation and make it play role in prohibiting the irrational groundwater exploitation.

The latest regulation issued by the Ministry of Water Resources was in 2002; it is on prohibiting groundwater exploitation in over extraction regions. In fact, some provinces like Jiangsu Province have begun this system since the early 2000. The purpose of this regulation is to promote the sustainable development of groundwater by severe administrative measures. According to the regulation, groundwater regions will be classified into several kinds based on their exploitation degree. If certain regions have been classified as over-exploitation regions, all the tubewell there will be closed. Some provinces like Jiangsu Province have implemented this system very well and water table drop has been arrested. Many north provinces have given the priority in implementing this regulation. The challenge for this regulation is how to effectively implement this policy in the long term and in more regions.

In summary, groundwater sustainability issues are attracting increasing attention from China’s government. In order to improve groundwater management, several important regulations have been issued and the groundwater regulation system is being established. The challenge facing with groundwater regulation system is how to strengthen the effective implementation of these regulations in the long term.