

River sand abused - part 2

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(Continued from July 18)

Under the Forest Conservation Act, the channels of rivers and streams and a strip of land adjacent to the banks of such rivers (of width stipulated by that Act) are owned by the Republic. Therefore those wishing to mine for river sand should first obtain the authorisation of the relevant Divisional Secretary in order to use such land. For this purpose, a certain Royalty is levied by the Divisional Secretary.

Thereafter, a mining licence (of the relevant category) should be obtained from the Geological Survey and Mines Bureau for the ownership of minerals as stipulated by the Mining and Minerals Act.

For this purpose the following should be forwarded to the Bureau:

(a) The application form issued by the Bureau duly filled.

(b) The authorisation of the Divisional Secretary.

(c) The stipulated licence fee.

(d) Inspection charges (if necessary).

In the event the Bureau is satisfied with the application, a mining licence is issued subject to the regulations and conditions of the Act.

The licence thus obtained should be renewed before it expires (period of validity is one year), and the licensee should declare the volume of sand mined and pay the required Royalty (1% of the selling price, for the declared quantity) before the licence is renewed.

But if the licensee has violated any of the rules, regulations and conditions of the Act, the Bureau has the right to cancel his licence.

It should be noted that in addition to the mining licence, transport licences and trad-

ing licences should also be obtained for such activities.

A new procedure for issuance of mining licences was initiated for sand mining activities along Deduru Oya (with effect from January 2000) due to excessive excavation of sand along this river. This new procedure is to be extended to cover the Kegalle district and the Maha Oya with effect from January, 2003.

This procedure involves the following steps:

(a) Conducting sand surveys along rivers where excessive sand mining has taken place, in order to identify sand deposits which can be safely mined.

(b) Calling for Tenders by the Divisional Secretary of the area, for the mining of sand deposits thus identified.

(c) Issuance of licences by the Bureau to those selected by the tender procedure, under the usual regulations.

Environmental Damage caused by Sand Mining

It should be mentioned here, that rivers are complex natural systems where erosion transport and deposition of sediments tend towards a natural balance or equilibrium. These processes are in turn controlled by water discharge and supply of sediments. Water discharge is in turn controlled by, rainfall in the catchment as well as by river slopes (gradients) and by the area of the cross section of the river channel (at a given location).

Therefore, it is clear that a large scale change in any of these factors will inevitably affect most of the other factors, thus drastically changing them, often with unforeseen consequences.

Accordingly, some of the more damag-

ing consequences of indiscriminate sand mining is discussed below:-

(a) Large scale sand mining deepens the bed in the middle and lower reaches of rivers, while also changing the shape of the cross section of the river channel. This in turn disturbs the natural balances between erosion and deposition of sediments. Thus river erosion accelerates unexpectedly at certain locations of the river, while deposition of sediments speeds-up elsewhere. At locations where erosion increases, river banks may collapse, thus destroying any structures (buildings, bridges, highways etc.) built close to the banks.

(b) Where deposition speeds - up, ferries and landings etc. along the banks may silt up, thus rendering them useless.

(c) Due to changes in river processes, sedimentation may accelerate at the estuary, thus increasing the severity of the floods during the rainy season.

(d) Due to the deepening of the river bed, the foundations of bridges may become unstable, thus seriously affecting the stability of major bridges (eg: According to a news item appearing in the Sunday Observer of 26th September, 1999 twelve bridges in the North Western Province, including the Alawwa Bridge of the Alawwa - Kurunegala Highway are facing the threat of instability due to indiscriminate sand mining along Maha Oya and Deduru Oya).

(e) Due to large scale mining of sand along lower reaches of rivers and at river estuaries, the river channel is deepened, thus permitting the migration of sea water upstream during prolonged dry spells. Thus, serious challenges are posed to municipal and agricultural water supplies. (eg. Brackish water migrates upstream upto Ambathale along the Kelani Ganga, where water is

extracted for the city of Colombo).

(f) Along stretches of rivers where the bed has been deepened, water levels fall more than in usual during dry spells. Consequently, the water table (ground water level) of the adjacent lands also drop, causing wells in these areas to dry up.

(g) Due to the collapse of natural levels of lower reaches of rivers, the threat of floods on surrounding low laying areas may aggravate, during the rainy season.

(h) Due to a permanent deepening of river channels in their lower and middle reaches, the natural gradient of the whole river system (long profile of the river) is changed. This situation eventually increases the long term erosion of the upper reaches and water sheds of rivers.

Mitigatory measures that can be adopted to minimise environmental damage.

(I). Short Term Measures:

(a) A strict enforcement of the rules and regulations coming under various Acts and other legislation concerned with the protection of the Environment, in sand mining activities.

(b) As discussed earlier, mining licences for sand mining activities are issued subject to the condition that only a specified amount of sand can be mined per month. Also mechanised mining of sand is illegal. Therefore these conditions should be enforced to the letter.

(c) While taking legal action against those who mine river sand illegally (i.e. - without a licence), action should be taken so that all such activities are carried out only under the authorisation of mining licence.

(d) In areas and rivers where serious environmental damage due to sand mining

have been reported, a sand survey should be conducted in order to identify sand deposits which could safely be mined, and mining should only be allowed where such deposits are located. (As mentioned earlier, these mitigatory measures have already been taken concerning sand mining along Deduru Oya).

(II) Sustainable, Long Term Measures:

Due to the rapid economic development of the nation, an accelerated growth of construction activities is inevitable. Consequently huge amounts of sand of suitable quality will have to be made available (sand demand for construction industry is expected to be 7.3 million cubic metres per annum for 2002, and this is expected to increase to 12 million cubic meters per annum by 2006).

Also if peace prevails, Northern and Eastern Provinces will require as much sand for accelerated construction projects.

But as has been pointed out, serious environmental damage has already been done by the mining of river sand. Therefore, it is clearly inadvisable to depend upon this source for the projected massive demand. Also the damage already done to the environment would have to be mitigated.

Thus, we would suggest two courses of action to be taken concurrently in order to avert a national crisis as, disastrous as or even more disastrous than, the power crisis.

These courses of action are:

(a) To conduct of an integrated and multi-disciplinary study focusing on the dynamics of Sri Lankan river systems; including a study if factors affecting the erosion, transport and deposition of sediments, their seasonal changes etc.,



and the effects of large scale sand mining on these natural processes. Such a study would enable the drawing up of a National Plan outlining the possible limits of sustainable sand extraction from rivers, as well as outlining the steps to be taken to mitigate the environmental damage already done.

(b) The conduct of a similar study in order to identify viable alternatives to river sand for construction purposes. The following alternatives have already been identified by preliminary studies.

(i) Sand from rehabilitation of old canals and silted up waterways etc.

(ii) Quarry sand - produced as a by product of rock crushing activities.

(iii) Offshore sand on continental shelves:

Large offshores and deposits have already been located on the continental shelf off the Western and North Western coasts of Sri Lanka. Also studies have revealed that the salt content of these sands are well below the permissible maximum for construction purposes.

Therefore it should be emphasised that the only viable alternative to river sand mining is the mining of these massive offshore deposits. It is our opinion that the adoption of mitigatory measures as outlined above, is a vital matter requiring serious attention of the government, in order to avoid a national crisis involving not only the construction industry but also our natural environmental heritage.