the claim that *Thalassiochelys tarapacona* was a new species of the loggerhead turtle[11] on the Pacific coast of South America was rejected on the ground that it was a misidentified specimen of *Lepidochelys olivacea* and *Thalassiochelys tarapacona* is now a synonym of *L. olivacea*[10,12]. Smith[13] reported that although the loggerhead was rare in the Gulf of Siam, 1.5 million eggs were taken annually in Burma prior to 1911. However, it appears that he was referring to *Lepidochelys* rather than *C. caretta* since he calls them *Caretta caretta olivacea*. Except for four dead loggerhead turtles reported from Tamil Nadu, there is no record available on the proper sighting or nesting of this species. Although loggerhead turtles may be traversing the Sri Lankan coast, within the south and south East Asia region, this species may rarely occur in the Indian coastal waters or nest along the coast of India as evidenced from historical records. In this context, in the absence of adequate information on a species over a period of time, it is time to carry out a systematic survey of occurrence and nesting of loggerhead turtles, if any, along the coastal waters and beaches of India and its Bay Islands with accurate identification of the species.

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Sethusamudram Shipping Canal Project

Sethusamudram Shipping Canal Project (SSCP) is about developing an offshore shipping canal in the Palk Bay, intended to cut short the distance for ships navigating between the west and east coasts of India, by avoiding the circumnavigation of Sri Lanka. In the new route, the ships would navigate through the Gulf of Mannar and the Palk Bay and enter the Bay of Bengal directly. The central idea of the project involves dredging the shallow seabed of the Palk Bay and Adam's Bridge to a depth of 12 m, in order to make this short route possible. The total length of the canal in the Palk Bay is 152.2 km, with a width of 300 m. This is divided into three legs: the southern leg in the Adam's Bridge (20 km); the northern leg in the Palk Strait (54.2 km) and the central portion (78 km). Dredging would be done in the southern and northern legs only since the central segment is considered to have the adequate depth[1]. So far, we have had the experience of dredging navigation channels near the shipping ports, and SSCP is our first effort to dredge a navigation channel, located 30 to 40 km away from the coast. This will also have the reputation of being the longest seabed-dredging project planned so far in India. Earlier, four notes highlighting the general spin offs from this project have been published in *Current Science*[2–4]. Here I address some of the short-term as well as the long-term implications of this project from the existing database. Most importantly, the present note raises some relevant questions on the technical feasibility of this project, which seems to have been overlooked by the project impact assessment studies, sponsored by the Central Government.

In general, the navigation channels near the ports of the east coast have been facing three major problems persistently. These are caused mainly by natural sedimentation, tropical cyclones, and the dumping of the dredged material. SSCP cannot be an exception to these problems and these issues could be more complicated by the fact that the project area occurs in the offshore. The central issue, therefore, is whether these issues have been adequately addressed before embarking on this venture.

The Palk Bay is one of the five major permanent sediment sinks of India, and Chandramohan *et al.*[5] have calculated the total annual sediment load for this sink as 58.8×10^6 m^3. This sediment load is said to cause a sea depth reduction of 1 cm/year. Rivers draining into the Palk Bay from the Sri Lankan and Indian coasts and the sea contribute sediments. The longshore currents from the Bay of Bengal in the north and the Gulf of Mannar in the south transport these sediments into the Palk Bay[6]. Sanil Kumar *et al.*[7] have calculated the net quantum of littoral sediments entering into the Palk Bay from the Nagapattinam coast as 0.2657×10^6 m^3. The Environmental Impact Assessment (EIA) for SSCP by National Environmental Engineering Research Institute (NEERI) has calculated the net annual sediment transport by long shore current and tides in the Adams Bridge area as 0.2657×10^6 m^3. The sediment contribution from the rivers has not been calculated yet. Therefore, it looks like we are yet to account for about 99.39% of the total sedimentation volume.

Previous studies have indicated sedimentation activity at the rate of 29 m/yr in the Vedaranyam–Jaffna stretch of the Palk Bay, suggesting the possibility for the development of a land connection[8] between

Vedaranyam to the Jaffna peninsula in another 400 years. Further, Rajamanickam[9] has noted that the spit growth in Manamelkudi is of the order of 0.75 m per year. Based on the data obtained from the maritime surveys conducted between 1960 and 1986, a sedimentation rate of ~24 cm per year has also been suggested for within the Strait. These findings tell us that there are specific regions in the Palk Bay where the annual sea depth tends to reduce by 25 to 75 times higher than the average value proposed by Chandramohan *et al.*[5]. It should be noted that the two legs of the SSCP where dredging is required coincide with two such zones with high sedimentation rates.

In addition to these routine sedimentation dynamics, the canal project area is also threatened by cyclones; sixty four cyclones have known to have hit the Tamil Nadu Coast between 1891 and 2000. Out of these, 36 (55%) were severe cyclonic storms (wind speed exceeding 89 km/hour). Twenty three storms have crossed the project area in the above-mentioned period. Based on the storm surge values (3–5 m), the India Meteorological Department considers the coastal stretch between Nagapattinam and Pamban (the canal project area) as a high risk zone[10]. For example, the cyclone of 23 December 1964 had produced a storm surge of 6 m (ref. 11). Based on the degree of uncertainty in the prior prediction of cyclones, Chaudhuri and Chattopadhyay[12] have termed this coastal stretch (and that of Bangladesh) as the most vulnerable among the many regions along the Bay of Bengal. The exact role of cyclones in influencing the sedimentation pattern has not been studied in detail; however, it has been noted that these storms have a tendency to transport sediments into the Palk Bay from the Nagapattinam Coast and from the Gulf of Mannar[1,7]. An analysis of the data on the extent of shoreline oscillation of the Tamil Nadu Coast suggests that the southern part of the Palk Bay is accretionary, throughout the year, whereas the northern part experiences both erosion and accretion. Accretionary tendency is greater during the southwest monsoon (June to August), and it is lower (or erosion is high) during the northeast monsoon (October to January)[13]. The project impact studies have ignored the issues related to cyclones, completely.

Furthermore, the environmental impact assessment study is vague on the impact of the massive dredging that would be involved with SSCP. The total quantity of spoils that would come from capital dredging is expected to be 81.5 to 88.5×10^6 m^3. The quantum of dredged spoil that would come from maintenance dredging is calculated to be 0.1×10^6 m^3/year. Specific dumping site has been identified only from 8.5 to 9.5% of the total dredged spoil. Nature of the dredged spoil is currently known only for about 38.5 to 40.5% of the total dredged spoil. The project has not earmarked the exact locations of dumping sites for about 90.5 to 91.5% of the dredged material[14]. Another concern is the degree of turbidity that will be generated during the process of dumping of dredged material and its impact on fishing. The current level of our understanding on the sedimentation patterns and associated dynamics existing in the segments of the Palk Strait both during cyclone-free years and during the cyclonic years is not adequate enough to design 'the structure and the alignment' of the canal and to draw a policy on the methods of handling the dredged material safely. The current tsunami crisis in the Bay of Bengal makes us to rethink the whole issue of our knowledge base on the geology, oceanography of this region. This note postulates, based on the above findings, that the SSCP is not feasible technically (questions have also been raised, elsewhere, on the economic viability of the project, see open page article in *The Hindu* dated 21 December 2004) at the present moment, with the current level of understanding of the sedimentation and meteorological regimes of the project area.

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