physical, oceanographic, sea-level data and many related subjects required to critically examine the origin, timings, natural or possible anthropogenic (man-made) activity have not been followed so as to have sufficient and necessary data for arriving at a conclusion regarding 'Ram Sethu'. All the necessary data are probably not known yet and need to be collected before an objective assessment could be made. However, the S&T Ministry appears to have arrived at the conclusion that it is not an anthropogenic structure, without indicating the data basis. If the required data are available the concerned scientists and/or groups may bring them out in the public domain to satiate curiosity. But, it seems that the necessary and sufficient data to conclude either way are perhaps not yet available. If the latter is true then on the 'verdict' of the S&T Ministry, should we the 'government-supported' scientists and academies say 'Yes Minister', or be a little proactive and obtain scientific evidences. In short, shall the scientists of a developing country like ours with multitude of problems remain silent observers or participate more actively than hitherto on issues that interface S&T and the society?

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River erosion and integrated water resources development

The major concern in Orissa today is the erosion of river banks. Rivers like Brahmani, Baitarani, Subarnarekha, Mahanadi, Kharasrota, Devi, Kathajodi and Kuakhai dangerously cross their banks because of floods. Due to floods and river current there is severe erosion of river banks. As a result, a number of villages are in danger and thousands of acres of agricultural land are damaged. River erosion is severe in Brahmani, Baitarani, Subarnarekha, Kharasrota and Devi. Steps taken by the Irrigation Department in the form of stone-packing, dyke are not sufficient; high velocity of river water, tides, waves and velocity of wind increase the erosion process. Due to change in the sea process near the river mouths, there is change in the river course and extensive damage to life and property. Presently, there is also sea erosion along the Orissa coast, particularly in Puri, Gopalpur and Satabhaya.

A World Bank Identification Mission which visited the state in August 2007 has advised the State Government to take up a basin development plan in a phased manner. The Mahanadi Basin has a catchment area of over 1.41 lakh sq. km, covering Jharkhand, Chhattisgarh and Maharashtra, besides Orissa. Over 23 lakh hectares of forest land falls under the catchment area. The major components of the Mahanadi Basin Development Plan include five new irrigation projects on Brutanga, Dhauragoth, Upper Lanth, Ong and IB rivers, rehabilitation and improvement of 13 major and medium irrigation schemes, and six mega lift schemes at Mundali, Banpur, Padmabati, Baideswar and Upper Indravati.

Improvement of drainage development in eight doabs under the Mahanadi Basin and flood control below Naraj are the other components. The project also includes development of new minor irrigation schemes in the basin, basin planning and environmental action plan, formation of river basin organization, institutional strengthening and capacity building of Pani Panchayats and support for allied activities such as agriculture and horticulture, according to the Water Resources Secretary.

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Anti-infective agents: Natural products-based drug discovery

Natural products have played a key role in pharma research, as many medicines are either natural products or derivatives thereof. Indeed, it has been estimated that about 40% of all medicines is either natural products or semi-synthetic derivatives thereof. This may not be surprising as herbal medicine has been a tradition of healthcare since ancient times and one of the roots of pharma research, where penicillins and cephalosporins (bacterial infections), salicylic acid (pain relief), quinines and artimesinin (malaria) are a few well-known natural products-based medicines.

For bacterial infections, over 80% of all medicines in clinical use are either natural products or derivatives thereof. Anti-bacterial agents based on natural products include β-lactams that inhibit cell-wall biosynthesis (e.g. penicillin, cephalosporin), macrolides that inhibit protein biosynthesis (e.g. erythromycin), aminoglycosides that inhibit protein biosynthesis (e.g. streptomycin), glycylcyclines that inhibit protein biosynthesis (e.g. tetracycline), and ansamycins that inhibit RNA synthesis (e.g. rifampicin). A reason for the prominent role of natural products among anti-infective agents is the prevalence and need for such compounds among plants, other organisms and soil microorganisms to defend themselves against infections or to protect their ecological niche versus other species. It may be advantageous if such natural products inhibit several species of organisms, rather than just a narrow range.

Synthetic anti-bacterial agents that were initially derived from natural products include the quinolones which inhibit DNA synthesis/topoisomerases, derived from the quinine anti-malarials. The recently introduced linezolid inhibits protein biosynthesis and were derived from cycloserine, also a natural product and anti-bacterial agent.

It is not uncommon for natural products to have complex molecular structures, with cyclic semi-rigid scaffolds, several chiral centres, more than five hydrogen-