Central Water Commission Technical Documentation Directorate Bhagirath(English)& Publicity Section

West Block II, Wing No-5— R K Puram, New Delhi – 66.

Dated 7/9//2

Subject: Submission of News Clippings.

The News Clippings on Water Resources Development and allied subjects are enclosed for perusal of the Chairman, CWC, and Member (WP&P/D&R/RM), Central Water Commission. The soft copies of clippings have also been uploaded on the CWC website.

SPA (Publicity)

Encl: As stated above.

Ç.19.

Deputy Director (Publication)

Cul of 1/9/2017

Director (T.D.)

and of 9

For information of Chairman & Member (WP&P/D&R/R.M.), CWC and all concerned, uploaded at www.cwc.nic.in

the me were here there is the college of the college energy of

Himbuston Times Etatesman The Times of the context The Line Himbusta (among the i i i Andras Temas i Aimi Autopas massas i Hibb Tona Hillos Rejasonam Postiko /Aimi Dascari Chromfod Dascari Harajo

<u>enti podpriversios et Etres retti Entreshió Fubboti. Section De</u>

Development must be climate-smart

As the frequency of extreme weather events increases, urbanisation has to heed ecological principles



SUJATHA BYRAVAN

Heavy rains this year from the southwest monsoon and accompanying floods have devastated people's lives in parts of Mumbai, Chandigarh and Mount Abu (Rajasthan), all in the same period as Hurricane Harvey's rampage through Houston. Mumbai is reported to have received 400 mm of rain within a matter of 12 hours while Houston received about 1,300 mm over several days with Harvey.

Climate models have indicated with high confidence that climate change will lead to an increase in extreme rainfall events. According to the Intergovernmental Panel on Climate Change (IPCG) Special Report on Extreme Events, global warming leads to "changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events, and can result in unprecedented extreme weather and climate events".

For India, the average monsoon rainfall is expected to increase initially and then reduce after a few decades. Examining daily rainfall data between 1951 and 2000, B.N. Goswami, former Director of the Indian Institute of Tropical Meteorology. Pune, showed that there has been a significant increase in the magnitude and frequency of extreme ainfall events along with a decrease in the number of moderate events over central India. These changes interacting with land-use patterns are contributing to floods and droughts simultaneously in several parts of the country.

Understanding extreme events

The main reason for understanding extreme events is to help policy-makers, emergency responders and local communities to plan and prepare for them. Cities could be laid out to reduce flooding by following natural contours, drainage and tank systems. Emergency responders should be well prepared to transport and care for people who may become stranded during disasters. Insurance companies might also be concerned about underwriting places that are at perpetual risk in the future. Once an extreme event such as a heat wave or heavy rain ocsule.



Hardship in August: A waterlogged road in Mumbai this monsoon. • AF

curs, people want to know to what extent a single event has been caused by climate change, that is, by greenhouse gases released through human activities.

Research that tries to understand this relationship between anthropogenic climate change and extreme events in particular locations is called "attribution". Is an extreme event, such as torrential rainfall or record storm surges, part of a natural cycle of variability or due to humaninduced climate change? In what extent do poor preparedness and ecologically insensitive land-use worsen the impacts? According to much of the literature, it is easier to determine attribution for severe heat or cold waves. NASA scientist James Hansen earlier found, for instance, that the Texas heat wave of 2011 and the Russian heat wave of 2010 were due to climate change.

Conversely, for rainfall simulation, climate models cannot mimic or simulate extreme rainfall such as the kind Chennai experienced in 2015. According to a paper by Geert Jan Van Oldenborgh and colleagues, the 494 mm rain in Chennai was a rare event, with less than a 0.2% chance of occurring in any given year. The Chennai flood of 2015 did not have a clear climate signature to show that it was due to warming of the earth. On the other hand, with regard to Hurricane Harvey, Michael Mann, a well-known climate scientist, wrote in *The*

Guardian that climate change made the impact much worse, because of higher sea surface temperatures and a blocking region of high pressure that kept the rain clouds over Houston for a long period.

Urbanisation and hydrology

The actual patterns of flooding in Chennai. Mumbai and Houston, however, were due to several human-induced activities: rampant increase in built-up area across natural drainage change in the diversion of damming of rivers upstream leading to sediment transport and siltation. coastal subsidence and other effects of development.

Any rain that falls on soil or vegetation is mostly absorbed into the earth's surface. Some of it slowly trickles into shallow or deep protected aquifers that make up what we call groundwater. The rest usually flows downhill along surface or subsurface stream channels. The spread of infrastructure such as roads, highways, buildings, residential complexes, tiled or asphalt-covered land obstructs rainwater from percolating into the soil. Often there are further barriers that block movement of water and increase flooding.

In many parts of the world, construction in cities or in urbanising areas does not take into consideration the existing topography, surface water bodies, stream flows or other parts of terrestrial ecosystems. In

much of India, urban growth over the past few decades has blithely ignored the hydrology of the land. In Chennai, for example, systematic intrusion into the Pallikaranai marsh and other wetlands by housing complexes and commercial buildings, slums along Cooum and Adyar rivers, and large-scale construction along the coast are just examples of the flagrant encroachment of the built environment that obstructs rivulets and absorption of rainwater into the earth.

When it rains heavily, exceeding the capacity of the soil to absorb it and regular stream flows are blocked from proceeding into the sea, these heavily built-up areas get inundated. Satellite images from 15 or more years back show the existence of hundreds of lakes and tanks, and several waterways within the city's boundaries.

For decades, urbanisation has ignored ecological principles associated with water bodies, vegetation, biodiversity and topography. These are not 'environmental' issues to be disregarded or attended to only after we have attained 'growth'. Rather, they are part and parcel of and integral to how we live and whether we prosper.

What is to be done?

Development needs to be climatesmart, but also avoid social and institutional challenges such as moral hazard. If investments are made in places where severe impacts are likely, the government will end up bailing out lose engaging in suchrisky activities. If the built environment and structures of financing and housing are 'locked-in' or get firmed up with regard to institutional arrangements, these can lead to further complications.

Still, construction on existing lake beds and other waterbodies needs to be removed or redesigned to allow flood drainage along natural water channels. As the frequency of extreme weather events increases around the world, losses in rich countries are higher in terms of GDP, but in terms of the number of people at risk, it is the poor countries that suffer the most. Those who are the most vulnerable and the poorest end up bearing the brunt of the burdens of climate change and mal-develop ment, which together operate to worsen impacts.

Sujatha Byravan is a scientist who researches science and technology policy

tvalva itami lemen am die admontal buith skied b

Pinno Geston (Tamer) State aman The Consession on his ones Grupsen (Express)

-jir sustan a Hutil

HELI, de mester i Hills The Hirsol Payastram Pathyaire hil Deposer Chromoir Deposer Herair A CONTROL OF A CON

and packimentation Englinetin English & Publicati Section (CVI).

गलत सरकारी नीतियों और ढीले-ढाले रवैये ने बढ़ाया आपदाओं का खतरा

सारा कसूर जलवायु परिवर्तन का नहीं



हिस्सा बाढ़, भू-स्खलन और भूमि कटाव की चपेट में हैं। ये तीनों आपदाएं कई स्तरों पर एक दूसरे से जुड़ी हैं। बहुत पहले से बाढ़ प्रभावित समझे जाने वाले अनेक क्षेत्र आज फिर बाढ़ झेल रहे हैं, तो

आज देश का एक बडा

भारत डोगरा

कई ऐसे क्षेत्र भी हैं जहां लोगों ने पहले कभी बाढ़ की चर्चा तक नहीं सुनी थी, लेकिन अभी बाढ़ प्रभावित हैं।

आरंभिक आकलन के अनुसार इस वर्ष की बाढ़ हमारे देश में पिछले एक दशक की सबसे विनाशक बाढ़ रही। 280 जिलों में 3.4 करोड़ इससे लोग प्रभावित हुए और 3 लाख हेक्टेयर कृषि भूमि पर फसल नष्ट हुई। 1000 से अधिक लोग मारे गए। इसके अतिरिक्त दूर-दूर तक फैले कुछ ऐसे क्षेत्र भी हैं, जहां भूमि-कटाव ने किसानों की जमीन छीन ली। भू-स्खलन अनेक पर्वतीय क्षेत्रों में पहले से अधिक विनाशकारी होते जा रहे हैं।

🗷 बढ़ता असंतुलन

यह स्थिति केवल भारत में नहीं है बिल्क कई अन्य देशों से भी ऐसे समाचार मिल रहे हैं। 'डरहम फेटल लैंडस्लाइड डेटा बेस' के आधार पर कहा जा रहा है कि विश्व स्तर पर भू-स्खलन से होने वाली मौतों की संख्या पहले के अनुमानों की अपेक्षा पांच से दस गुना अधिक हो चुकी है। वर्ष 2004 और 2010 के बीच जहां भू-स्खलन से 3000 मौते हुईं, वहां अब 32300 तक मौतें का अनुमान है। इस वर्ष हिमाचल प्रदेश में भूस्खलनों से एक ही दिन में जितनी मौतें हुईं, उतनी पहले कभी नहीं हुई थीं।

बचाव कार्यों में सुधार से बाढ़ से होने वाली मौतों में कहीं-कहीं कमी भी आई हो, पर तथ्य यह है कि बाढ़ पहले से अधिक उग्र रूप ले रही है। यह प्रवृत्ति बनी रही तो इसकी जानलेवा क्षमता भी बढ़ सकती है। कुछ लोग इसके लिए जलवायु बदलाव को दोषी मानते हैं और ऐसी



पश्चिम बंगाल के एक बाढ़ग्रस्त इलाके में रास्ता तलाशते लोग

हाल के वर्षों में बांधों से अत्यधिक पानी छोड़ने पर ही बाढ़ की सबसे विनाशकारी स्थिति उत्पन्न हुई है। इस पर अनेक विवाद हो चुके हैं

कई वारदानों की ओर ध्यान दिलाते हैं जिनमें किसी खास इलांक में साल भर की वर्षा दो-चार दिन में ही हो गई। यह सच है कि ऐसी कुछ अनहोनी घटनाएं हो रही हैं मगर बाढ़ की बहत उग्रता के लिए सरकार की नीतियां और उनके क्रियान्वयन में होने वाली गड़वड़ी भी कम जवाबदेह नहीं है। यह ठीक नहीं कि जो गलतियां हमसे हो रही हैं उनसे ध्यान हटाने के लिए सारा दोष जलवायु परिवर्तन के मत्थे मढ दिया जाए।

जहां तक हिमालय या पश्चिमी घाट जैसे पर्यावरण की दृष्टि से संवेदनशील क्षेत्रों में भू-स्खलनों की बिगड़ती स्थिति का सवाल है, तो इसका एक बड़ा कारण है वनों की अत्यधिक क्षति, अंधाधुंध खनन तथा विभिन्न कार्यों के लिए विस्फोटकों का अत्यधिक उपयोग। इन कारणों से केवल पर्वतीय क्षेत्रों की आपदाएं ही नहीं बढ़ी हैं बल्कि मैदानी क्षेत्रों में भी ऊपर के जलग्रहण क्षेत्रों से आए अधिक मलवे व मिट्टी के कारण बाढ़ की समस्या उग्र हुई है। बाढ़ नियंत्रण के प्रयासों में निदयों के जल-ग्रहण क्षेत्रों के पर्यावरण की रक्षा पर समुचित ध्यान नहीं दिया गया है। इसी तरह जल निकासी के प्राकृतिक मार्गों को खुला बनाए रखना भी सरकारों कुंक्तभोगियों का मानना है कि समस्या बाढ़ नहीं है बिल्क बाढ़ के पानी का अधिक समय तक बने रहना है।

जल निकासी के प्राकृतिक मार्गों के अवरुढ़ हो जाने से अनेक स्थानों पर बाद की समस्या बिगड़ी है। कहीं सड़क बनाई गई और जल-निकासी का मार्ग नहीं रखा गया। कहीं (विशेषकर शहरी क्षेत्रों में) जल-निकासी के मार्ग पर ही कोई कॉलानी बसा दी गई। कहीं नालों की सफाई में भ्रष्टाचार के कारण यह कार्य नहीं हो सका। कहीं इनमें बहुत से पतले पॉलिथिन फंस गए। सरकार की बाद नियंत्रण नीति में मुख्य ध्यान तटबंधों व बांधों पर केंद्रित किया गया है। उत्तर बिहार जैसे कुछ

स्थानों पर तटबंध बहुत अधिक बनाए गए, पर इसके बावजूद बाढ़ प्रभावित क्षेत्र यहां बढ़ गया। तटबंध या एंबैंकमेंट कुछ विशेष स्थानों के लिए जरूरी हो सकते हैं. पर इन्हें बहुत व्यापक स्तर पर अपनाना एक ट्रैप में फंस जाने जैसा है क्योंकि एक स्थान पर बचाव करने वाला तटबंध दूसरे स्थान की बाढ़ समस्या को बढ़ा सकता है। कई जगह तटबंधों से शहर को बचाने का प्रयास किया पर आसपास के गांवों का समस्या बढ़ गई। पर जिन स्थानों को सुरक्षा वी जाती है, वहां भी नदी का विस्तार सिमट जाने और उसमें मिट्टी-गाद निरंतर आते रहने से नदी का जलस्तर बढ़ता रहता है।

एक दिन पानी तटबंध को पार करने लगता हैं। या उससे पहले ही नदी का वेग बढ़ने से तटबंध कमजोर पड़ जाता है या टूट जाता हैं। ऐसी बाढ़ सबसे विनाशकारी होती हैं। सरकार ने डेम बनाने को बाढ़ नियंत्रण का बड़ा साधन बना लिया है, पर हाल के वर्षों में डैमों से अत्यधिक पानी छोड़ने पर ही बाढ़ की सबसे विनाशकारी स्थिति उत्पन्न हुई है। बांध अधिकारी यह कह कर पल्ला झाड़ लेते हैं कि बांध म होता तो और भी अधिक बाढ़ आती। पर प्रलयंकारी बाढ़ झेल रहे लोगों को इस बयान से कोई सांत्वना नहीं मिलती। इस बारे में अनेक विवाद हो चुके हैं। कुछ राज्य सरकारों ने भी सवाल उठाए हैं कि बांध से छोड़े गए पानी से लोगों को बहुत क्षित हुई है।

समीक्षा जरूरी

समय आ गया है कि बाढ़ और उससे जुड़ी अन्य आपदाओं से बचाव के लिए अब तक अपनाई गई नीतियों की निष्पक्ष समीक्षा की जाए। जलवायु बदलाव के कारण इन आपदाओं के अधिक उम्र होने का खतरा निश्चय ही बढ़ गया है। पर यदि जलवायु बदलाव की आड़ लेकर सरकारों ने अपनी अनुचित नीतियों पर पुनर्विचार नहीं किया तो इससे समस्याएं और बढ़ जाएंगी। इसलिए अब तक की नीतियों का मृल्यांकन करते हुए भावी रणनीति तय की जाए और इसमें जलवायु बदलाव से उत्पन्न नई चुनौतियों को भी शामिल किया जाए।

Mining And Commercial Forestry Have Destroyed A Mi

When main strea

Viju.8@timesgroup.com

ivers like stories have a beginning, end and, of course, a middle where they attain fell low Bharathapuzha. The low Bharathapuzha and full-fledged middle, hong, and intermittent stretches have become desiccated like a desert, with rocks and invasive stands of edge defacing a landscape where, just a few years ago, sediment-rich ochre-coloured water hurtled downstream east to west at an average of three to four metres depth.

Bharathapuzha still irrigates most parts of Palakkad district. known as the granary of Kerala, which produces 84,000 hectares of paddy annually, and all along its 208-km stretch is living evidence of the centuries-old cultural efflorescence he river, known locally as Nila, has fostered. The Bharathapuzha has been, both, muse and motif to an array of arts—from the blossoming of Kathakali and Koodiyattam to contemporary literature and cinema.

. Todav, its cultural watermark comains but the river itself is a travesty of its former tumultuous self. Massive deforestation along the banks, unscientific damming and pervasive sand mining has led to the slow destruction of a river, which is a primary water source for 8 lakh people across 108 panchayats. "This was not the case a decade ago, as the southwest monsoon would have replenished the river and its vast sandbed would have been submerged." says Dr A Biju, head of the department of aquatic biology. University of Kerala.

Environmentalists point out that the state forest department made a historical mistake by cutting down natural forests along the banks and planting acacia, eucalyptus and teak trees for commercial purposes. "The forests used to hold back the water and replenish the groundwater table around the river." says Biju.

Bharathapuzha has the maximum dams among all rivers in Kerala -11 in all. "Over the years, his has destroyed the natural flow of the river. The water in check dams could not prevent the lower portion of the river from getting dried up," says Dr Latha Anantha, founder of River Research Centre and member of the Madhay Gadgal committee. The deforestation of four major tributaries - Gavatri, Kalapati, Kunti and Chittur—has

1 Periyar The rivers of Kerala Longest river in Kerala. Originates in the deri 🕝 liger Reserve, Lately, Periyan and water discharg has st 22% of its average flow All of them are entirely monsoon-fed. Kerala's rivers 3 Chalivar 4 Chalakudy flow faster owing to-5 Pamba the hilly terrain and 6 Kallada the short distance between the Western-Ghats and the sea Demands of Bharathapuzha 🦿 Samrakshna Samiti Reduce dams. restore natural flow > Remove water absorbing acacia and eucalyptus trees from banks, grow native trees Westward > Take penal action against 🖟 🐧 locals, lorry owners who Flow dump waste in river **Eastward** Conduct awareness campaigns Ban sand mining till river gets Kabani into new lease of life Karnataka, Pambar > Involve local communities living and **Bhavani** into along the bank to check sand mining Tamil Nadu

also led to drastic reduction in Bharathapuzha's water flow.

To worsen matters, Kerala, which historically received annual rainfall at twice the national average, has recorded below normal readings over the past three years. The incessant downpour so typical of monsoon months has been replaced by intermittent dry spells. Last year, the state had 34% below normal rainfall; trend seems to be the same this year—eficit is at 22% as end of the season approaches.

Sand mining too has become rempant and its effect catastrophic. Environmentalist C Rajagopalan, who lives on the banks of the river and is part of Phrunthapuzha Sannaksina Samiti, says only 60 cm depth of sand dredking is permitted, but miners dig pits nearly 10 feet ace-p and this has mayerted the over into sacilow drains.

Panchayats have been authorised to issue licences to mine sand from various kadavus (piers) in an indiscriminate munt at "There has been

no sand audit till date. As a result, the tributaries have got rock-beds and water flows quickly into the sea. Earlier, the expansive sand bed used to slow down the flow of the river, thereby increasing groundwater table," says Dr Latha Anantha.

Sahitya Akademi award-winning writer C Radhakrishnan, who was born and raised next to the Bharathapuzha and has seen its sad decline, says almost every region around Bharathapuzha has a history that is integral to the development of modern Malayalam language, its culture and arts. "The river witnessed the blossoming of Malayalam culture and literature. Poets like Kunchan Nambiar, Melpathur and Ezuthachan were born and nurtured here. Even many modern writers like VKN, O V Vijayan and M T Vasudevan Nair lived in villages surcounding the river," he says.

Radhakrishan still hopes that the river can be reclaimed but his warning is dire. "The river is a university in itself ...if you destroy it, you are killing a civilization."

34

With a war 6 186 the character among all

2 Bhara has a larg its flow is less comp other long Kerala bed portion of located in drier region



BHARATHAPUZHA IS PLUNDERED FOR SAND & WATER

With a watershed of 5 186sakm,

the Gasathanuzha basic sine largest among all the river basins in Kerala

2 Bharathapuzha

has a large basin, but its flow is relatively less compared to other long rivers in Kerala because a large portion of the basin is located in comparatively drier regions

4,400 sqkm is within Kerala and the remaining 1,786sqkm is in

Tamil Nadu

CULTURAL CRUCIBLE

 The world-renowned Kerala Kalamandalam, a finishing school for performing arts like Kathakali. Koodiyattam and Ottamthullal, is located right next to this river

The Adhaytma Ramayana, the epic's first rendering in Malayalam, was composed by Ezhuthachan who lived beside the Bharathapuzha

and called it 'Shokanasini' or destroyer of sorrows

> The Thirunavaya temple, called the southern Kashi, is situated on the banks of Bharathapuzha

Spiritual guru in God's own country

A TRICKEE After

the rains, Isolated

streams are all that's

left of the vast river:

3 K Sreeiith

Spiritual leader Sadhguru Slaggi Vasudev's pan-India Rally for Rivers reached Thiruvananthapuram on Tuesday where he called upon the entire country to emulate the state's initiatives. "Kerala has proved revival of rivers is practical by rejuvenating a couple of them recently," he said. He met with CM Pinaravi Vijayan who assured his full support to the Raily, aimed at rejuvenating India's fastdepleting rivers. Sadhguru said he chose to campaign through 16 states where depletion of rivers was most alarming due to heavy farming, "Though Kerala is only behind Uttarakhand in number of rivers, a majority among these 44 rivers run

On Wednesday, the rally reached Trichy in TN, from where he left for Puducherry.

dry during most of the year."

he said.

...A clean-up forces a shutdown

Viiu.B@timesgroup.com

itting on the banks of the Chaliyar, PKM Chekku smiles as boys go boating in its clear, flowing waters. Till two decades ago, this was one of the most polluted channels in the state. But with Gwalior Rayons

shutting down its unit 16 years ago. the 168km-long perennial river flowing through Kozhikode and Malappuram districts in north Kerala has gradually returned to its pristine state.

It took a people's movement to put an end to the massive dumping of effluents into the river.

Chalivar began turning toxic after Gwalior Rayons set up its textile unit on its banks at Mayoor in the sixties. Though the factory provided jobs to around 3,000 people, there was no awareness about the amount of heavy metal effluent flowing into the river till people in the region turned ill.

The air too was so polluted the moss on roof tiles withered away due to sulphur compounds," Chekku says.

found that during the period from 1993 to 1998 there were 245 cancer patients from the village alone undergoing treatment at the Kozhikode Medical College.

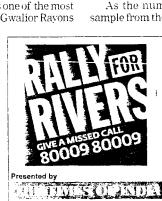
As the number of cancer cases rose and every sample from the river showed extremely high levels of

toxicity, a mass agitation began.

"Initially our demand was not to close the factory. But after activists like K.A. Rahman, who led the agitation, himself succumbed to cancer after almost three decades of relentless struggle, we demanded its closure," Chekku says.

The factory suspended production in May 1999. Though the management submitted a revival proposal, the state government rejected it and the factory had to be wound up in 2001.

"Chalivar today is not only clean but is enriched with a treasure trove of aquatic life. If we can do it in Chaliyar, why not replicate this in Yamuna or Ganga?" says Chekku.



future group -

A survey conducted by the Vazhakkad panchayat

e. As a result, got rock-beds y into the sea. sand bed used of the river,

groundwater Anantha. ward-winning ian, who was next to the as seen its sad development rlanguage, its he civer witof Malayalam re. Poets like lelpathur and and nurtured dern writers and MT Va-

but his warnsauniversity ov it, vou are

r tilllages sur-