

The Times of India- 27- October-2023

56% storage at 14 major dams, Karnataka stares at water crisis

Situation In State Serious, But Not Critical: Officials

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Bengaluru: With the south-west monsoon failing and no relief coming in yet from the retreating monsoon, water

level in all 14 major dams of Karnataka has hit a low, plunging the state into the throes of a water crisis.

As per the October 26 data, the overall water capacity in the 14 major dams was 56% of its capacity, with only 502tmcft of water left till the next monsoon season in Ju-

KRISHNA BASIN SAFE; CAUVERY INFLOW HIT

► Karnataka is left with only 502tmcft of water in 14 major dams till the next monsoon season in June 2024

► Krishna basin is on the safer side with 63% storage but the Cauvery basin is under stress due to zero inflows and release of 8,117 cusecs water daily



► Despite a total storage capacity of 114.6tmcft, reservoirs of Harangi, Hemavathi, Kabini and KRS left with only 61.6tmcft of water

► Three hydel power plants are also under stress, with Linganamakki, Supa and Varahi reporting only 152.5tmcft of water as opposed to the combined capacity of 328tmcft

inflows and 8,117 cusecs of release of water every day.

Despite having a capacity of 114.6tmcft of water, the reservoirs of Harangi, Hemavathi, Kabini and KRS have reported a storage of only 61.6tmcft of water. Of this, as much as 34tmcft of water is required for domestic and industrial purposes, and the rest has to be calculated as "contingency" if the monsoons fail yet again in the next cycle, thereby giving little or no respite to farmers and the agriculture sector.

On the other end, the weather predictions have not offered much optimism, with a 65% deviation in the northeast monsoon rains in the past 25 days.

► **Water situation, P 4**

ne 2024. This means that the same reserve of water needs to be managed for agriculture, domestic purposes, and industrial use for the next eight months. Government officials classified the situation as "serious", not "critical" at the moment, with the stress on the infrastructure

likely to increase in the next two to three months.

While the Krishna basin is relatively on the safer side with 63% storage and will cater to the demands of the population in North Karnataka districts, the Cauvery basin is coming under increasing stress due to zero

Water situation in north districts manageable, says min

► Continued from page 1

We are being told by IMD that there may be chances of better rainfall post October 30," said one government official.

Revenue minister Krishna Byregowda said, "While there is a depletion of water level in our reservoirs, we still are on the safer side. We expect the severity to come at the end of the crop season. But an advisory has been issued to all officials in revenue, water resources and agriculture departments

to not dip their hands into the drinking water allocations. Each reservoir has got its own thresholds of drinking water levels with the highest being in Cauvery basin followed by Tungabhadra and Almatti based on the requirements for drinking water."

The RDPR department has started monitoring the water situation for rural water supply every two weeks, and instructions have been given to zilla panchayat CEOs to start sourcing water locally in major drought-hit districts to meet



drinking water demands. "Our priority has been ensuring drinking water demands are met, and we have sought Rs 554 crore towards rural and urban water supply," said RDPR minister Priyank Kharge.

According to Kharge, water situation in the northern dis-

tricts of the state is "manageable", with water still being released from dams for agriculture purposes as well. "We expect the strain on our infrastructure to increase in the next three months when water levels continue to recede and the depth of the groundwater levels increases," he said.

Three hydel power plants are also under stress, with Linganamakki, Supa, and Varahi having only 152.5tmcft of water as opposed to the combined capacity of 328tmcft, which is 46% of the total storage levels.

KALESHWARAM CONCERN

THREE BARRAGES

Lakshmi, Saraswati and Parvathi — built across the Godavari River at Medigadda, Annaram and Sundilla.

RAFT FOUNDATION technology used for all three barrages.

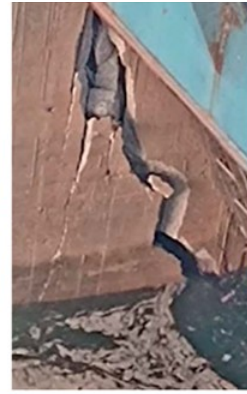


Aim of barrages, built under KLIS, was to facilitate lifting **160TMC** of water per annum for irrigation and drinking needs.

VIDEO SHOT by local irrigation officials after mishap shows oozing of water and whirlpools near the pier that sunk in. Experts say these are clear indicators of piping or holes in the raft foundation.

IRRIGATION EXPERTS suspect the damage might not be limited to one section, say all 85 piers need to be thoroughly checked as scouring (sand below the raft foundation getting washed away) may have occurred.

EXPERTS EXPRESSED doubts on whether the thickness of raft foundation, that too if built without pile foundation, is sufficient to withstand higher storage capacity.



A VIDEOGRAB shows the cracks on a pillar of the Medigadda barrage.

BARRAGE OF DOUBTS ON KLIS' SAFETY

Revelations by top official raise concerns over structural integrity of Medigadda, other barrages

N. VAMSI SRINIVAS | DC
HYDERABAD, OCT. 26

The startling revelation by Telangana state's top irrigation official C. Muralidhar that the Medigadda barrage was constructed on a raft foundation, that too on an unstable soil, raised serious doubts over the structural safety of not just the two or three pillars that sank a few of days ago but all the three barrages built as part of the ₹13 lakh crore Kaleshwaram Lift Irrigation Scheme, the brainchild of Chief Minister K. Chandrababhan Rao who claimed it as the flagship of Telangana state's economic turnaround.

The government built barrages across the Godavari river at Medigadda, Annaram and Sundilla and named them after Hindu goddesses Lakshmi, Saraswati and Parvathi respectively under KLIS to facilitate lifting 160 TMC of water per annum for irrigation and drinking water needs.

The raft foundation technology was used for all the three barrages and a video shot after noticing the mishap by local irrigation officials, which is available with *Deccan Chronicle*, showed oozing of water and whirlpools near the pier that sunk in and irrigation experts say these are clear indicators of piping or holes in the raft foundation. Irrigation experts, who were shocked over the engineer-in-chief's revelation on the raft foundation, were of the view that the damage might not be limited to one section and hence all the 85 piers need to be thoroughly checked as scouring (sand below the raft foundation getting washed away) would have already taken place under the other piers as well.

They were also of the

strong view that bringing the project back to use might take a few years and till then the storage of water, which is the very purpose of the KLIS, is ruled out.

"Pranahita and other tributaries joining the Godavari receive heavy inflows during Eastern monsoon in November and December and we can't store a drop of it," admitted an irrigation official.

"The local engineers have been suspecting similar phenomenon of scouring and dislodged sand at Annaram barrage also," highly placed sources in Central Water Commission told *Deccan Chronicle*.

Sources said the team that came for inspection is being replaced by another team from National Dam Safety Authority headed by its chairman A.B. Pandya for an in-depth study. "The local officials are non-cooperative," sources pointed out. The

worst news, according to experts, is that no repairing could be done to the damaged piers, which need to be rebuilt again and this time the cost would be much higher because pile foundations have to be built before laying the raft foundation.

"Despite my repeated efforts to elicit information through RTI on whether or not pile foundation was done, the government did not respond. The way scouring took place in Medigadda indicates that pile foundations were not laid," former MP and BJP leader Konda Vishweshwar Reddy told *Deccan Chronicle*.

"I was most respected by the Chief Minister, but as an Engineer I felt humiliated by the Kaleshwaram design and left the party," he added. An engineer, Reddy has been producing 3D videos with simulations to take to people what he claimed was a criminal waste of public money by the government in KLIS.

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— **KONDA VISHWESHWAR REDDY**
BJP leader

LAPSES IN SAND DISPOSAL AT KLIS BLAMED

DC CORRESPONDENT
HYDERABAD, OCT. 26

Irregularities in disposing of the sand excavated during the construction of the three barrages under the controversial Kaleshwaram Lift Irrigation Scheme will continue to expose thousands of acres and human settlements to the danger of submersion.

In gross violation of norms, contractors were said to have dumped the sand within the river at a

short distance from the dam site, though rules mandated them moving the excavated sand out of the river and dumping it on the ground.

According to a report of the Central Water Commission (CWC), an unprecedented submersion of agricultural lands and residential areas in the combined Warangal and Karimnagar districts in 2022 floods was due to the increased bed level of river and reverse flow of flood water into canals



The site of Medigadda barrage before construction works began in 2016.

and drains.

"The foundation waste should be removed and transported out of the river. The project cost factors in the cost of transportation and contractors are paid accordingly. In case of the three barrages, it did not happen," said a highly placed source in the CWC. The

CWC sent a report to Telangana government explaining the reasons for the 2022 submersion which also highlighted the havoc being played by the sand miners. The ramps for sand collection were causing hindrance to the free flow of water, it said, adding that the ramps are also causing a

way for flow of silt into rivers.

Sources said state officials offered an explanation that the foundation waste was expected to get washed away but the same did not happen.

The rainwater collected through tributaries, streams, canals and drains normally flows into rivers and makes their way into sea.

However, in the catchment areas of these three barrages, the source in CWC said, the river bed level increased due to siltation and there was a reverse flow leading to submersion.

"The government must reveal the details of payments made to contractors for transporting sand to the designated lead areas," demanded senior Congress leader Bakka Judson.



Kaleshwaram Lift Irrigation Scheme project.

— FILE PHOTO

Barrages needed more safeguards, say experts

DC CORRESPONDENT
HYDERABAD, OCT. 26

Irrigation experts, who came to know of building Medigadda barrage on rafter foundation apparently without following adequate safety norms, are of the strong view that the storage capacity should have been less than the present 16 TMC of water.

The experts also expressed doubts on whether the thickness of rafter foundation, that too if built without pile foundation, is sufficient to withstand the higher storage.

"Barrages are usually used as diversion structures and even if it is used for storage the

capacity would not be more than 5 TMC," a former Engineer-in-Chief told *Deccan Chronicle*.

"If they want to have a higher storage capacity they should have taken more precautions," he said, adding that the design should be such that flow of water would not take away particles (material used in piers).

Central Water Commission officials were also believed to have questioned the location of the barrage at the present site and inquired if rock surface was not available in the near vicinity. Sources said a lot of precautions were taken in Polavaram though it was built entirely on rock surface.

The officials carried out 25 metres of jet grouting as extra precaution and it seems they did not take up any such exercise in Medigadda or the two other barrages at Annaram and Sundilla.

The construction giant L&T took a lot of pride in completing the structure in a record time of one year but the irrigation experts suspect that building the structure in a hurried manner led to the damage. In Polavaram, sources said, it took one year to carry out soil testing, grouting and preparing bed to build the structure on it and on the contrary, the entire Medigadda barrage was built in one year.

Repair works to cost time, money

BALU PULIPAKA | DC
HYDERABAD, OCT. 26

Contrary to claims that the sinking of a section of the 'Lakshmi' barrage at Medigadda is something that can be dealt with without too much of trouble, it appears that the Telangana Irrigation department, and L&T Construction — which built the barrage and according to officials which will take up rectification work at its cost — the task of refurbishing the hobbled barrage would be much tougher than being made out to be.

Even as getting to the bottom of the problem by digging down to the foundation of Block 7 of the barrage is expected to take much longer than the wishy-washy predictions that it could be done sometime next month, sources said that the affected piers of the sunken barrage block will have to be removed and rebuilt. But before any reconstruction and repair can be started, the radial gates on the affected block will need to be removed and "it will be like rebuilding it afresh," according to the sources.

L&T, meanwhile, maintained a studied silence owing to the 'sensitive' nature of the issue, and

on its role in the repair work other than the statement issued by the company earlier that it will take up the repairs. All efforts to reach the company to get some clarity on its role, the possible repair costs, were met with silence. The information about the Medigadda barrage and the construction work it did, as posted by the company on its website, however provides an indication on the magnitude of the task on its hands.

Incidentally, it was learnt that the barrage was not insured either during the construction phase or later against any damages. Experts in geological studies have raised questions if any hydrological modelling to figure out water flows during expected floods, or during normal times and the impact of such flows on the sand bed of the river were conducted.

For instance when Sripada Yellampalli dam and reservoir was built, the Geological Survey of India, and NGR conducted studies and to the best of available information at this point of time, no such work was done either for Medigadda, or the barrages at Annaram and Sundilla," an expert on the subject said.

Millennium Post- 27- October-2023

UN report warns India heading towards groundwater depletion tipping point

India is world's largest user of groundwater, exceeding use of US & China combined

NEW DELHI: Some areas in the Indo-Gangetic basin in India have already passed the groundwater depletion tipping point and its entire north-western region is predicted to experience critically low groundwater availability by 2025, according to a new report by the United Nations.

Titled "Interconnected Disaster Risks Report 2023" and published by the United Nations University Institute for Environment and Human Security (UNU-EHS), the report highlights that the world is approaching six environmental tipping points: accelerating extinctions, groundwater depletion,

Around 70 per cent of groundwater withdrawals are used for agriculture, often when above-ground water sources are insufficient

mountain glacier melting, space debris, unbearable heat and an uninsurable future.

Environmental tipping points are critical thresholds in the Earth's systems, beyond which abrupt and often irreversible changes occur, leading



to profound and sometimes catastrophic shifts in ecosystems, climate patterns and the overall environment.

Around 70 per cent of groundwater withdrawals are used for agriculture, often when above-ground water sources are

insufficient. Aquifers play a crucial role in mitigating agricultural losses caused by drought, a challenge expected to worsen due to climate change.

However, the report warns that the aquifers themselves are approaching a tipping point. More than half of the world's major aquifers are depleting faster than they can naturally replenish. When the water table falls below a level accessible by existing wells, farmers may lose access to water, posing a risk to entire food production systems.

Some countries, like Saudi Arabia, have already exceeded the groundwater risk tipping point, while **Continued on P4**

others, including India, are not far from it.

"India is the world's largest user of groundwater, exceeding the use of the United States and China combined. The northwestern region of India serves as the bread basket for the nation's growing 1.4 billion people, with the states of Punjab and Haryana producing 50 per cent of the country's rice supply and 85 per cent of its wheat stocks.

"However, 78 per cent of wells in Punjab are considered over-exploited and the northwestern region as a whole is predicted to experience critically low groundwater availability by 2025," the report says.

Jack O'Connor, the lead author and senior expert at UNU-EHS, said, "As we approach these tipping points, we will already begin to experience the impacts.

Once crossed, it will be difficult to go back. Our report can help us see risks ahead of us, the causes behind them and the urgent changes required to avoid them."

AGENCIES

Business Line- 27- October-2023

Storage levels drop further this week

Dropping water levels[#]

Zones	Live storage*	This week**	A year ago**
North	19.663	79.96	88
East	20.43	76	74
Central	48.227	81	88
West	32.577	88	96
South	53.334	46	92

[#]In 150 major reservoirs * In billion cubic metres

** storage as %age to capacity Source: CWC Weekly Bulletin

Subramani Ra Mancombu
Chennai

The water level in the 150 major reservoirs in India dropped further by two percentage points this week as nearly two-thirds of the country has received deficient, largely deficient or no rain since October beginning.

According to data from the Central Water Commission (CWC), the storage dropped to 71 per cent (127.591 billion cubic metres) of the 178.784 billion cubic metres (BCM) capacity this week from 73 per cent (129.636 BCM) a week ago.

The water level in reservoirs has declined since the week-ended October 5 by three percentage points due to lack of rain over a major part of the country's catchment areas. As such, the level is below the last 10 years' average as also last year by 21 percentage and 9 percentage points, respectively.

SOUTH WORRISOME

The water level continued to decline in the South further below the 50 per cent of the capacity witnessed since the beginning of this month. This week, the storage was 24.574 BCM or 46 per cent of the capacity in the peninsular region.

Among southern States, the storage in Karnataka dropped to 35 per cent below normal (-32 last week) and Andhra Pradesh to 56

per cent below normal (-52). In Kerala and Tamil Nadu, the level is lower than normal by 22 per cent (-23 per cent) and 53 per cent (-52 per cent), respectively.

According to the India Meteorological Department, 37 per cent of the 713 districts, from which data has been received, was largely rain deficient, while 19 per cent was deficient with another 7 per cent receiving no rain.

The CWC's weekly bulletin said 105 of the 150 reservoirs had a storage of above 80 per cent of the capacity and of the rest, 14 (13 last week) had water level of up to 50 per cent. This week, the Lower Bhavani reservoir joined the list of those with storage up to 50 per cent.

NORTH PICKING UP

The water level in Punjab improved this week to 8 per cent below normal against 15 per cent last week but it declined to 10 per cent from 13 per cent in Bengal. The situation seems to be improving in Maharashtra, where the storage was 3 per cent below normal versus 4 per cent last week.

The storage declined in Uttar Pradesh to 31 per cent below normal, (29 per cent last week) and to 12 per cent in Chhattisgarh (9 per cent). In Bihar, the level dropped to 19 above normal (26 per cent).

The situation will likely improve next week as the IMD has forecast a fresh spell of heavy rain on October 29 and 30 in South India.

Jansatta- 27- October-2023

खतरे की चेतावनी

भूजल के अतार्किक दोहन को लेकर लंबे समय से चिंता जताई जा रही है। इस पर समय रहते रोक लगाने के सुझाव भी दिए जाते रहे हैं। मगर हकीकत यह है कि इस दिशा में अभी तक कोई व्यावहारिक कदम नहीं उठाया जा सका है या जो कदम उठाए भी गए वे कारगर साबित नहीं हो पाए हैं। इसी का परिणाम है कि अनेक क्षेत्रों में भूजल का स्तर तेजी से घटा और खतरनाक बिंदु के पार पहुंच गया है। सिंधु और गंगा के इलाकों में भूजल का स्तर जोखिम बिंदु को पार कर चुका है। अब संयुक्त राष्ट्र ने चेतावनी दी है कि 2025 तक उत्तर-पश्चिमी क्षेत्र में भूजल का गंभीर संकट पैदा हो सकता है। यह क्षेत्र देश के खाद्यान्न का बड़ा हिस्सा पैदा करता है। इसमें हरियाणा और पंजाब धान और गेहूं का सर्वाधिक उत्पादन करते हैं। जाहिर है, इन इलाकों में भूजल का स्तर जोखिम बिंदु से नीचे चला जाएगा, तो खाद्यान्न उत्पादन बुरी तरह प्रभावित होगा। संयुक्त राष्ट्र विश्वविद्यालय- पर्यावरण और मानव सुरक्षा संस्थान द्वारा प्रकाशित 'अंतरसंबद्ध आपदा जोखिम रपट 2023' में कहा गया है कि पंजाब के अठहत्तर फीसद कुएं अतिदोहन का शिकार हैं। जलवायु परिवर्तन के कारण यह चुनौती और विकट होने की आशंका है।

हालांकि नलकूपों के जरिए भूजल के दोहन पर लगाम लगाने के लिए कई जगहों पर कुछ सख्त कदम भी उठाए गए हैं। खासकर पंजाब और हरियाणा में सरकारें किसानों से लगातार अपील करती रही हैं कि वे मौसम से पहले धान की खेती न करें, भूजल का दोहन कम करें। इसके लिए दंड का भी प्रावधान किया गया। मगर जब उसका असर नजर नहीं आया तो समय से पहले धान की खेती न करने वाले यानी भूजल का दोहन रोकने में मदद करने वाले किसानों को प्रोत्साहन राशि की भी घोषणा की गई। हालांकि जिस तरह इन इलाकों में भूजल का स्तर निरंतर नीचे जा रहा है, उसमें ये कदम बहुत प्रभावी साबित नहीं हो रहे हैं। संयुक्त राष्ट्र की रपट के अनुसार सत्तर फीसद भूजल का इस्तेमाल खेती के लिए किया जाता है। ऐसे में खेती-किसानी के तरीके बदलने पर भी जोर दिया जाता रहा है, जिसमें सिंचाई के लिए कम पानी की खपत हो सके। जीन प्रसंस्कृत बीजों वाली फसलों को अधिक पानी की जरूरत होती है, इसलिए अब जैविक खेती को प्रोत्साहित किया जा रहा है। मगर अधिक उत्पादन के लोभ में किसान जीन प्रसंस्कृत बीजों का मोह त्याग नहीं पा रहे।

जलवायु परिवर्तन की वजह से अनेक इलाके सूखे का सामना कर रहे हैं, तो कई इलाकों में अतिवृष्टि देखी जा रही है, जिससे जल संचय के पारंपरिक तरीके विफल साबित हो रहे हैं। इस तरह जमीन से जितना पानी खींचा जा रहा है, उतना नीचे नहीं पहुंचाया जा पा रहा। भूजल का स्तर जोखिम वाले बिंदु के नीचे पहुंच रहा है। हालांकि खेती के अलावा भी बहुत सारी औद्योगिक इकाइयों में भूजल का अंधाधुंध दोहन हो रहा है। उन पर भी काबू करने की मांग उठती रही है। दरअसल, सूखे के समय भूजल बहुत उपयोगी संसाधन साबित होता है। इसलिए जलवायु परिवर्तन की वजह से सूखे के बढ़ते संकट में भूजल के स्तर को बचाने की जरूरत ज्यादा महसूस की जा रही है। संयुक्त राष्ट्र की ताजा रपट के मद्देनजर एक बार फिर सरकारों से अपेक्षा की जाती है कि वे भूजल के अतार्किक दोहन को रोकने के लिए व्यावहारिक और स्थायी उपाय निकालें।

Hindustan- 27- October-2023

चेतावनी : देश में भूजल की कमी से कृषि पर गहरा सकता है संकट

दुनिया के आधे भूमिगत जल स्रोत प्राकृतिक रूप से फिर से भरने के बजाय कम हो रहे



नई दिल्ली, एजेंसी। भारत में वर्ष 2025 तक भूजल का गंभीर संकट होने का अनुमान है। देश में बारिश कम होने की स्थिति में कृषि के लिए लगभग 70 प्रतिशत भूजल निकासी का उपयोग किया जाता है। ऐसे में भूजल घटने से देश के कृषि उत्पादन पर संकट गहराने का अनुमान है।

'इंटरनेक्टेड डिजास्टर रिस्क रिपोर्ट 2023' शीर्षक से संयुक्त राष्ट्र द्वारा प्रकाशित रिपोर्ट में ये चेतावनी दी गई है। इसके मुताबिक, दुनिया के आधे भूमिगत जल स्रोत प्राकृतिक रूप से फिर से भरने के बजाय तेजी से कम हो रहे हैं। कुओं में जिस भूमिगत जलस्तर से पानी आता है, अगर पानी उस भूमिगत जलस्तर से नीचे चला जाता है तो किसान पानी तक पहुंच खो सकते हैं, जिससे खाद्य उत्पादन प्रणालियों के लिए खतरा पैदा हो सकता है।

2025

तक भूजल के गंभीर संकट का अनुमान



अमेरिका-चीन के कुल भूजल उपयोग से ज्यादा इस्तेमाल

भारत दुनिया में भूजल का सबसे बड़ा उपयोगकर्ता है, जो अमेरिका और चीन के संयुक्त उपयोग से अधिक है। रिपोर्ट में कहा गया है, पंजाब में 78 प्रतिशत कुओं का भूजल के लिए बेहद ज्यादा उपयोग किया जाता है और पूरे उत्तर-पश्चिमी क्षेत्र में 2025 तक गंभीर रूप से कम भूजल उपलब्धता का अनुभव होने का अनुमान है। हालात यही रहे तो कृषि पर इसका असर पड़ना तय है।

पूरी दुनिया को भुगतना पड़ सकता है भारी नुकसान

रिपोर्ट में इस बात का जिक्र किया गया है कि धरती पर प्रकृति का जो चक्र है, उसकी बर्दाश्त करने की एक सीमा होती है। अगर यहाँ अचानक कोई बड़े बदलाव होते हैं तो वो अपरिवर्तनीय होते हैं। जिससे इको सिस्टम, जलवायु के पैटर्न और पूरे पर्यावरण पर गहरा और कभी-कभी बेहद विनाशकारी असर होता है। यदि ऐसा जारी रहा तो दुनिया खतरनाक खामियाजा भुगतेंगी।

Rashtriya Sahara- 27- October-2023

भारत में भूजल स्तर घटकर खतरनाक बिंदु की ओर!

नई दिल्ली (भाषा)। संयुक्त राष्ट्र की एक रिपोर्ट के अनुसार, भारत में सिंधु-गंगा के मैदान के कुछ क्षेत्र पहले ही भूजल की कमी के खतरनाक बिंदु को पार कर चुके हैं और पूरे उत्तर-पश्चिमी क्षेत्र में साल 2025 तक कम भूजल उपलब्धता का संकट होने का अनुमान है।

‘इंटरकनेक्टेड डिजास्टर रिस्क रिपोर्ट 2023’ शीर्षक से संयुक्त राष्ट्र विश्वविद्यालय-पर्यावरण और मानव सुरक्षा संस्थान (यूएनयू-ईएचएस) द्वारा प्रकाशित रिपोर्ट इस बात पर प्रकाश डालती है कि दुनिया पर्यावरणीय रूप से छह महत्वपूर्ण बिंदुओं के करीब पहुंच रही है-तेजी से विलुप्त होने, भूजल की कमी, पर्वतीय ग्लेशियर का पिघलना, अंतरिक्ष मलबा, असहनीय गर्मी और अनिश्चित भविष्य।

पर्यावरणीय रूप से चरम बिंदु पृथ्वी की प्रणालियों में महत्वपूर्ण सीमाएं हैं, जिसके परे अचानक और अक्सर अपरिवर्तनीय बदलाव होते हैं, जिससे पारिस्थितिक तंत्र,

जलवायु के पैटर्न और समग्र पर्यावरण में गहरा और कभी-कभी विनाशकारी बदलाव होता है। भूमिगत जलस्रोत अपर्याप्त होने की स्थिति में अक्सर कृषि के लिए लगभग 70 प्रतिशत भूजल निकासी का उपयोग किया जाता है। सूखे के कारण होने वाले कृषि

■ संयुक्त राष्ट्र की रिपोर्ट में दी गई चेतावनी

नुकसान को कम करने में ये भूमिगत जल महत्वपूर्ण भूमिका निभाते हैं। जलवायु परिवर्तन के कारण यह चुनौती और भी बदतर होने की आशंका है।

रिपोर्ट में चेतावनी दी गई है कि भूमिगत जल स्रोत खुद अपने चरम बिंदु पर पहुंच रहे हैं। दुनिया के आधे से अधिक प्रमुख भूमिगत जल स्रोत प्राकृतिक रूप से फिर से भरने के बजाय तेजी से कम हो रहे हैं। कुओं में जिस भूमिगत जलस्तर से पानी आता है अगर पानी

उस भूमिगत जलस्तर से नीचे चला जाता है तो किसान पानी तक पहुंच खो सकते हैं, जिससे संपूर्ण खाद्य उत्पादन प्रणालियों के लिए खतरा पैदा हो सकता है। सऊदी अरब जैसे कुछ देश पहले ही भूजल जोखिम चरम बिंदु को पार कर चुके हैं, जबकि भारत समेत अन्य देश इससे ज्यादा दूर नहीं हैं।

रिपोर्ट में कहा गया है, भारत दुनिया में भूजल का सबसे बड़ा उपयोगकर्ता है, जो अमेरिका और चीन के संयुक्त उपयोग से अधिक है। भारत का उत्तर-पश्चिमी क्षेत्र देश की बढ़ती 1.4 अरब आबादी के लिए ‘रोटी की टोकरी’ के रूप में कार्य करता है, जिसमें पंजाब और हरियाणा राज्य देश में चावल उत्पादन का 50 प्रतिशत और 85 प्रतिशत गेहूं भंडार का उत्पादन करते हैं। रिपोर्ट में कहा गया है, पंजाब में 78 प्रतिशत कुओं को अतिदोहित माना जाता है। पूरे उत्तर-पश्चिमी क्षेत्र में 2025 तक गंभीर रूप से कम भूजल उपलब्धता का अनुभव होने का अनुमान है।