FOR ALL COMPETITIVE EXAMS

RNA®

REAL NEWS & ANALYSIS

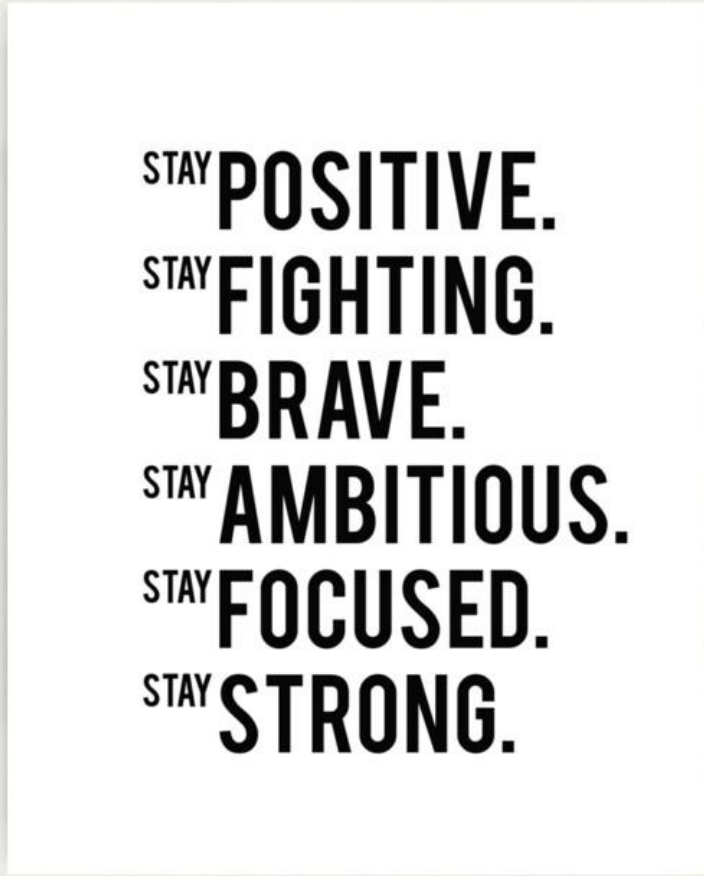
By **Ankit Avasthi Sir**

THE HINDU
THE TIMES OF INDIA
Hindustan Times
The Indian EXPRESS

23 AUGUST 2024 AT 9 AM

Apni Pathshala
एक कदम उज्ज्वल भविष्य की ओर

LIVE


STAY POSITIVE.
STAY FIGHTING.
STAY BRAVE.
STAY AMBITIOUS.
STAY FOCUSED.
STAY STRONG.


1

7 hours ago | Bangladesh | Dhaka | Dumbur dam | Flood Forecast | Gumti River

Bangladesh Floods Maroon Nearly Three Million People, Kill Two

Relentless monsoon rains and flooding have stranded nearly three million people in Bangladesh and killed two, submerging vast areas and damaging homes and infrastructure, officials from the country's disaster management ministry said on Thursday.

Reuters TV showed Bangladesh residents evacuating with their belongings by boat and other makeshift transportation as knee-deep water entered their homes.
The Flood Forecasting and Warning Centre (FFWC) has warned that with the rains continuing, water levels could rise further over the next 24 hours, raising concern about additional flooding and displacement.

Road connectivity in several regions were severed, isolating communities and hampering relief efforts, disaster management and relief officials said. The most affected districts in Bangladesh included Feni, Moulvibazar, Habiganj, Comilla and Chittagong, where five major rivers were flowing above danger levels, the FFWC said.

"I haven't seen so much water in the last 20 years. Everything in my house is wrecked because the water has risen to waist level," said Mohammad Masum, a resident of Feni district.

The Washington Post
https://www.washingtonpost.com › world › 2024/08/22

Floods maroon many people in Bangladesh and India ...

1 hour ago — At least 11 people were killed and thousands displaced from homes as floods ... The **Bangladesh Flood** Forecasting and Warning center said ...

CNN
https://www.cnn.com › 2024/08/22 › india › flooding-...

Deadly floods impact hundreds of thousands in ...

3 hours ago — Heavy flooding and mudslides have killed hundreds, displaced millions and wrecked infrastructure across South Asia in recent months. While ...

The Daily Star
https://www.thedailystar.net › News › Bangladesh

Bangladesh flood in pictures

6 hours ago — **Flood** In **Bangladesh**: At least three people were killed; a total of 43 upazilas in several districts have been affected by the flash floods.

INDIA BEHIND FLOODS IN BANGLADESH?

أمينة Amina
@AminaaKausar

India opened a dam with no prior warning at night and has now flooded half of Bangladesh, devastating the country & displacing thousands.

Those sanghis, Godi Media who shared fake videos claiming that Bangladeshi Hindus were in danger-why are they silent now?

#BangladeshFlood

7:11 PM · Aug 22, 2024 · **1,201** Views

thishfa
@__sazia__

Israel 🤝 India
No difference between them #FloodInBangladesh #SaveBangladesh #BoycottIndia #BangladeshFlood #PrayForBangladesh #ShameOnIndia #IndiaOut

8:29 PM · Aug 22, 2024 · **2,182** Views

Afran Raaj 🇧🇩🇵🇸
@afran_raaj

India has created an artificial flood in Bangladesh by releasing water from its dams and you still wonder why people hate India so much??

"Everything Will Remember"

#FloodInBDForIndia
#BoycottIndia

7:12 PM · Aug 22, 2024 · **5,129** Views

BringingJusticetoYou
@JusticeBengal

India's disregard for international water laws is causing significant harm to Bangladesh by diverting river water flow.

@IntlCrimCourt

@TheDavidBergman

@ZulkarnainSaer

BringingJusticetoYou
@JusticeBengal

We speak for our people, we fight for our people 🇧🇩 🇰🇷
bringingjusticetoyoubangladesh@gmail.com

Non-Governmental & Nonprofit Organization
facebook.com/profile.php?id... Joined July 2024

13 Following **33.2K** Followers

4:16 PM · Aug 21, 2024 · **66.5K** Views

SAKIB

@SakibulHoque_

Flood in Bangladesh is not natural disaster.
It is Indian Made.

Indian floods are Natural
While, BD's are Indian made.

They opened the Dams unleashing Floodwaters!!

Indian wasn't and isn't our Friend.

Media & News Company t.me/warnewsbysakib
Joined September 2019

820 Following **2,107** Followers

6:55 PM · Aug 21, 2024 · **51.9K** Views

Nazmus Sajid Chowdhury

@nazmussajid

India has created an artificial flood in Bangladesh by releasing water from its dams and you still wonder why people hate India so much?

8:14 PM · Aug 21, 2024 · **496.3K** Views

Nazmus Sajid Chowdhury

@nazmussajid

I used to talk a lot about cricket but currently I focus more on politics in Bangladesh.

Digital Creator Bangladesh nazmussajid.com
Joined September 2013

868 Following **5,073** Followers

salwa (30// ✍️💙💙❀ ذاتَ الخِمار(وَنَزاهَ قَريبًا
@salwa201188

Deadly floods impact thousands in #Bangladesh as India opened the dam gates in the middle of the night without giving any warning in order to take revenge for the dictator Shaikh #Hasina who is a key ally of #India. #ShameOnIndia

#IndiaOut #BoycottIndia #FloodInBangladesh

9:02 PM · Aug 22, 2024 · **8,832** Views


BAN

Derek J. Grossman
@DerekJGrossman

If India indeed opened the Dambur hydroelectric project in Tripura state without notifying Bangladesh, and if this was done in political retaliation against the new govt, then New Delhi must be held to account. To be fair, heavy rains preceded this event.

From tbsnews.net

9:42 PM · Aug 21, 2024 · **210.3K** Views

Derek J. Grossman
@DerekJGrossman

National security and Indo-Pacific analysis @RANDCorporation. Professor @uscdornsife. Words in @foreignpolicy, @NikkeiAsia, @foreignaffairs, etc. Views mine.

Santa Monica, CA · rand.org/about/people/g... · Joined July 2016

6,993 Following **91.8K** Followers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Nepal
Pakistan
Delhi
Ganges
India
Myanmar
Mumbai
Bangladesh
Bay of Bengal
Sri Lanka


CHINA
NEPAL
BHUTAN
Arunachal Pradesh
Seven Sisters
Assam
Nagaland
Meghalaya
Manipur
Chicken's Neck
INDIA
BANGLADESH
Tripura
Mizoram
MYANMAR


Siliguri
Alipurduar
আলিপুরদুয়ার
Cooch Behar
কোচবিহার
Bongaigaon
Barpeta
ASSAM
Nagaon
Jorhat
Golaghat
Guwahati
Saharsa
সহরসা
Purnia
পূর্ণিয়াঁ
Rangpur
রংপুর
Dimapur
NAGALAND
Kohima
MEGHALAYA
Shillong
Bhagalpur
ভাগলপুর
Bogura
বগুড়া
Mymensingh
ময়মনসিংহ
Sylhet
সিলেট
Silchar
Imphal
MANIPUR
Churachandpur
Deoghar
দেবঘর
Rajshahi
রাজশাহী
Bangladesh
Dhanbad
ধনবাদ
Dhaka
ঢাকা
Aizawl
Durgapur
দুর্গাপুর
Cumilla
কুমিল্লা
MIZORAM
Jashore
যশোর
WEST BENGAL
Feni
ফেনী
Khulna
খুলনা
Barishal
বারিশাল
Kolkata
কলকাতা
Chattogram
চট্টগ্রাম
Kharagpur
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Mandalay
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কুয়াকাটা
Digha
দীঘা
Balasore
Cox's Bazar
কক্সবাজার
Myingyan
Pakokku
Bhadrak
Teknaf


Gomati
Tirthamukh Poush
Mela Ground
তীর্থমুখ পৌষ
মেলা গ্রাউন্ড
Tirthamukh
তীর্থমুখ
Gomati
Tirthamukh Primary
Health Centre (PHC)
তীর্থমুখ প্রাইমারী
হেলথ সেন্টার (পিএইচসি)
Gomati
Gomati
Dumbur Hanging Bridge
দুম্বুর হাঙ্গিং ব্রিজ

Dumboor Dam was built in 1974 at Tirthamukh, a pilgrim site in Tripura, India, to generate hydel power. The dam was constructed upstream on a river without considering the consequences of its construction. Some research has highlighted the historical hardships of the displaced Indigenous people.

Dumboor Lake is a 41 sq km water body located near the dam, where the Gomati River originates. The lake is shaped like a tabour drum, or dumboor, which is a small tapered percussion instrument associated with Lord Shiva. The lake is surrounded by 48 islands, green vegetation, and hills, and is home to many species of migratory birds. The area is also popular for adventure sports like water-skiing, jet-skiing, boat racing, banana boating, water cycling, and rowing.


BANGLADESH
LOW / HILLS / MOUNTAINS
Nepal
Dinajpur
Rangpur
India
Brahmaputra River
Ganges River
Jamuna
Jamalpur
Sylhat
Mymensingh
India
Rajshahi
Meghna
Pabna
Dhaka
Brahmanbaria
Madhumati
Narayanganj
N
Bangladesh
Comilla
Tropic of Cancer
Jessore
Padma
Kaptai Lake
India
Khulna
Barisal
Chittagong
Mongla
Mouths of the Ganges
60 mi
60 km
Bay of Bengal
Cox's Bazar
Myanmar (Burma)
Indian Ocean


China
(Tibet)
Nepal
Bhutan
Bangladesh
INDIA
Calcutta
Myanmar


Bangladesh
International boundary
Division boundary
National capital
Division capital
Railroad
Road
Track
0 20 40 60 Kilometers
0 20 40 60 Miles
Lambert Conformal Conic Projection, SP 22N/26N
BHUTAN
NEPAL
INDIA
RAJSHAHI
DHAKA
KHULNA
CHITTAGONG
BURMA
Dhaka
Mouths of the Ganges
Bay of Bengal
Boundary representation is not necessarily authoritative.

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'Factually Incorrect': India Denies Reports Linking Bangladesh Flooding Due…

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Somoy News

India denies opening sluice gates amid floods in Bangladesh | International…

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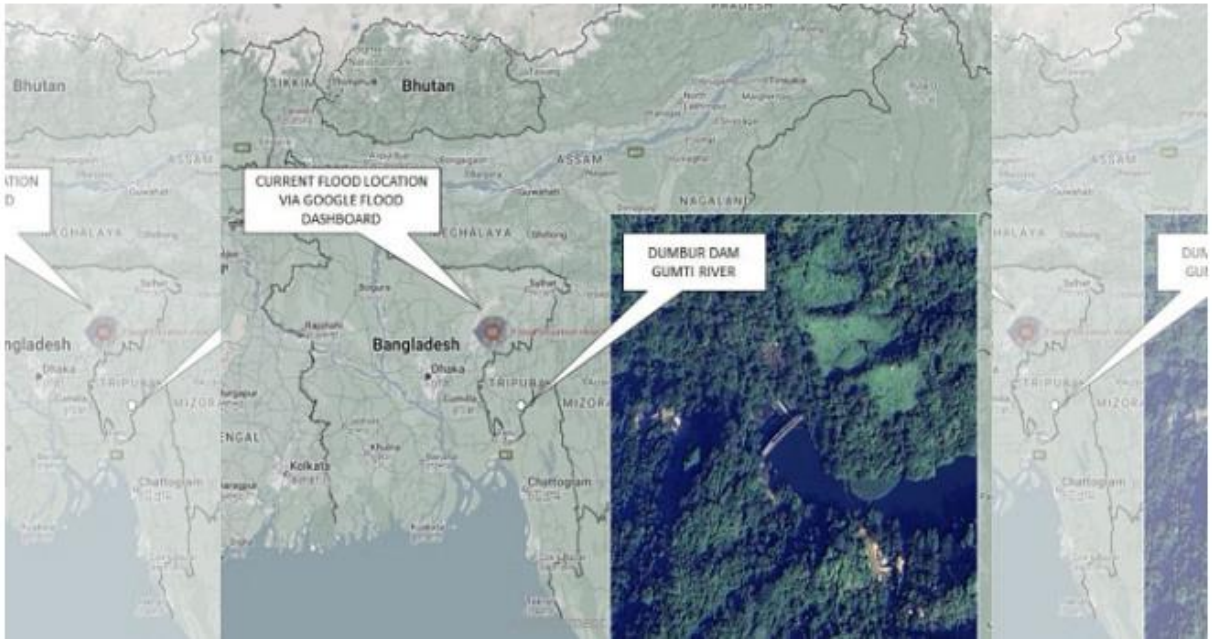
Diplomacy

Flash floods in eastern Bangladesh become latest flash point between India & Yunus-led interim govt

India says floods in Bangladesh primarily caused due to large catchments downstream of Dumboor dam. 'Still, we have tried to maintain communication through other means,' says MEA.

PIA KRISHNANKUTTY 22 August, 2024 05:59 pm IST



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Shanker Arnimesh - August 22, 2024

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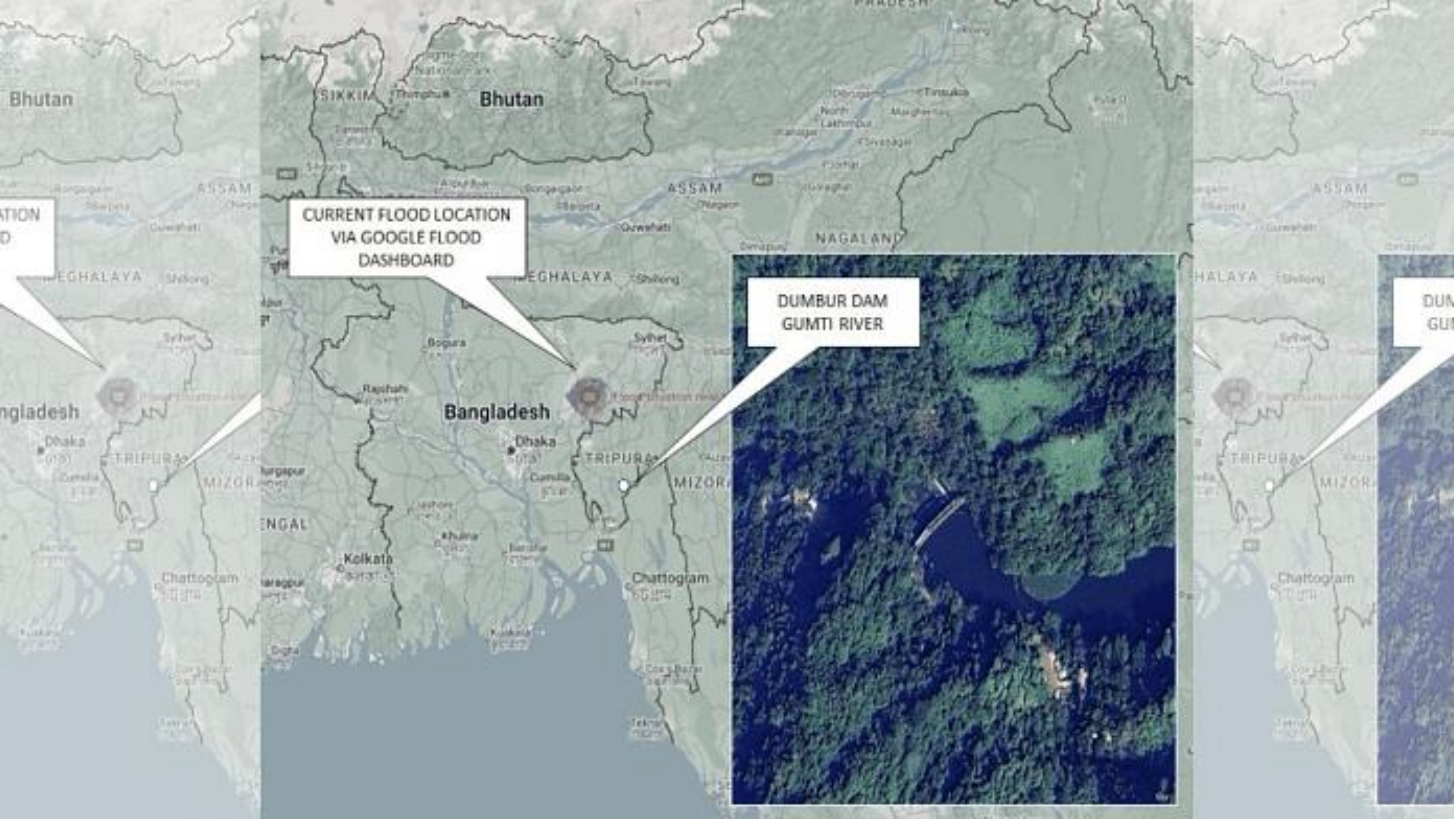
CURRENT FLOOD LOCATION
VIA GOOGLE FLOOD
DASHBOARD
DUMBUR DAM
GUMTI RIVER
Bhutan
SIKKIM
Thimphu
ASSAM
NAGALAND
Guwahati
Shillong
Dibrugarh
Tinsukia
Sylhet
Bogura
Rajshahi
Bangladesh
Dhaka
TRIPURA
Cumilla
Khulna
Kolkata
Chattogram

A blame game over floods on Bangladesh's eastern border has become the latest flashpoint between Delhi and the new interim government in Dhaka led by Nobel laureate Mohammed Yunus.

The Ministry of External Affairs (MEA) issued a statement Thursday saying Bangladeshi claims that floods were caused as a result of opening the Dumboor dam, upstream of the Gumti River in Tripura, were "factually not correct". "The flood in Bangladesh is primarily due to waters from these large catchments downstream of the dam," it read.

Earlier, students of Jagannath University (JnU) in Dhaka staged a protest blaming India for allegedly opening sluice gates of Dumboor dam without informing Bangladesh. Officials from the Bangladesh Water Development Board (BWDB) made the same claim while talking to local media.

Randhir Jaiswal
@MEAIndia

Flood situation in Bangladesh not due to release of waters from Indian dam on Gumti River, Tripura:

bit.ly/3XcF3Wk

Ministry of External Affairs
Government of India

Flood situation in Bangladesh not due to release of waters from Indian dam on Gumti River, Tripura

We have seen concerns being expressed in Bangladesh that the current situation of flood in districts on the eastern borders of Bangladesh has been caused by opening of the Dumbur dam upstream of the Gumti River in Tripura. This is factually not correct.

We would like to point out that the catchment areas of Gumti river that flows through India and Bangladesh have witnessed heaviest rains of this year over the last few days.

The flood in Bangladesh is primarily due to waters from these large catchments downstream of the dam.

The Dumbur dam is located quite far from the border - over 120 Km upstream of Bangladesh. It is a low height (about 30m) dam that generates power that feeds into a grid and from which Bangladesh also draws 40MW power from Tripura.

Along the about 120 Km river course we have three water level observation sites at Amarpur, Sonamura and Sonamura 2.

Heavy rainfall has been continuing since 21 August in the whole of Tripura and adjoining districts of Bangladesh. In the event of heavy inflow, automatic releases have been observed.

Amarpur station is in part of a bilateral protocol under which we are transmitting realtime flood data to Bangladesh.

Data showing rising trend has been supplied to Bangladesh upto 1500 hrs on 21 August 2024. At 1800 hrs, due to flooding, there was power outage leading to problems of communication. Still, we have tried to maintain communication through other means created for urgent transmission of data.

Floods on the common rivers between India and Bangladesh are a shared problem inflicting sufferings to people on both sides, and requires close mutual cooperation towards resolving them.

As two countries sharing 54 common cross-border rivers, river water cooperation is an important part of our bilateral engagement. We remain committed to resolving issues and mutual concerns in water resources and river water management through bilateral consultations and technical discussions.

22 August 2024

Ministry of External Affairs
Government of India

Flood situation in Bangladesh not due to release of waters from Indian dam on Gumti River, Tripura

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22 August 2024

Flood situation in Bangladesh not due to release of waters from Indian dam on Gumti River, Tripura

August 22, 2024

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New Delhi
August 22, 2024

Ratan Lal Nath
@RatanLalNath1

গোমতি হাইড্রো ইলেকট্রিক প্রজেক্ট এর কোন গেইট খুলে দেওয়া হয়নি। রিজার্ভারের ধারণ ক্ষমতা ৯৪ মিটার পর্যন্ত। জল এই স্তর অতিক্রম করলেই অটোমেটিক্যালি গেট দিয়ে বেরিয়ে যাবে। আবার রিজার্ভারের জল স্তর ৯৪ মিটারের নিচে নেমে গেলে অটোমেটিক্যালি গেইট বন্ধ হয়ে যাবে।

Translated from Bangla by Google

No gate has been opened for Gomti Hydro Electric Project. The storage capacity of the reservoir is up to 94 meters. Once the water crosses this level, it will automatically exit through the gate. Again, when the water level of the reservoir falls below 94 meters, the gate will automatically close.

Follow

Ratan Lal Nath
@RatanLalNath1

Minister of Power, Agriculture & Farmer's Welfare and Election Department, Govt. of Tripura.

Tripura, India Joined January 2019

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NATURAL DISASTER

Take advance preparation for floods: PM

Star Digital Report

Tue Jul 2, 2024 07:28 PM
Last update on: Tue Jul 2, 2024 09:57 PM

Prime Minister Sheikh Hasina instructed authorities to prepare for more potential floods this year, following discussions at an Executive Committee of the National Economic Council meeting held at the NEC auditorium in Sher-E-Bangla Nagar today.

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Derek J. Grossman
@DerekJGrossman

"While both neighbors have been affected in the flood, many Bangladeshis blamed India for the flash floods, saying that India opened a river dam in Tripura, causing sudden floods in Bangladesh. India's MEA denied that in a statement."

From apnews.com

8:52 PM · Aug 22, 2024 · **4,306** Views

UNICEF Bangladesh
@UNICEFBD

Catastrophic floods in southeastern Bangladesh, particularly in Noakhali, Feni, and Khagrachari, are wreaking havoc.

Over 3 million lives, including 1.2 million children, are affected, and the essential services they depend on are at risk.

UNICEF and 9 others

5:44 PM · Aug 22, 2024 · **956** Views

India in Bangladesh
@ihcdhaka

HC Pranay Verma paid his introductory call on H.E. Professor Muhammad Yunus @ChiefAdviserGoB today.

Reiterated India's committment to working with Bangladesh to fulfill shared aspirations of peoples of 🇮🇳🇧🇩 for peace, security and development. @MEAIndia

6:04 PM · Aug 22, 2024 · **32K** Views

ReConstruction @talibulilmr · 6h
we don't want work with India, we will take revenge.
12 7 90 1.6K

Debaditya @darc_elestial · 6h
Love how the Bangladeshis are crying all over the place while their leader is sitting with the Indian HC and laughing at them.

Come bangis, drop your screams and cries under my reply. I want to laugh at y'all too.
6 44 1.5K

Aarati Sharma Personal @AaratiRhea · 3h
Poor man what a tough role for him
2 253

Insomnia @nan0metre · 3h
India is a highly unreliable neighbour. If we look at Nepal and Maldives we can understand why. Don't forget Nepal is a Hindu-majority country.
5 291

Insomnia @nan0metre · 3h
India is a highly unreliable neighbour. If we look at Nepal and Maldives we can understand why. Don't forget Nepal is a Hindu-majority country.
5 291

Solayman Hossen @SMSolaymanHoss1 · 3h
we don't want work with India
1 4 299

Golam Rabbani @agrabbani · 5h
Fascist Hasina would be a much better @PMOIndia than @narendramodi when selecting a better diplomat. Who is going to take this pube seriously?
1 778

Shahadat Hossain @Shahadat_gop · 7h
Stop Water terrorism.
2 1 18 889

Shazzad Hasan (He/Him) @shazzad_hn · 7h
Get the hell out! We're ready to cut all ties with India-If Bangladesh stops trading with India, it's India that will suffer the most. Also, most of India's expensive hospitals rely heavily on Bangladeshi patients, and during COVID-19, they were desperate without them.
15 2 29 1.3K

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India Today

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Hindustan Times

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The Indian Express

Sheikh Hasina gone, her party leaders in hiding: We could sense the anger, sh…

22 hours ago

Bangladesh will ‘forcefully’ advocate for its ‘just demands’ on Teesta waters: says interim water, environment adviser

Bangladesh may approach international fora to put forth its claims “forecefully”, says Syeda Rizwana Hasan; will include those living on the banks of the Teesta as key stakeholders in negotiations

Updated - August 21, 2024 10:48 pm IST Published - August 21, 2024 10:47 pm IST - DHAKA

KALLOL BHATTACHERJEE

10.4K 5 %ER

MONGLA PORT : BANGLADESH में एक बार फिर भारत ने दी CHINA को मात !! Explained b...

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Apni Pathshala 2.06M subscribers

MONGLA PORT : BANGLADESH में एक बार फिर भारत ने दी **CHINA** को मात !! Explained by **Ankit** Avasthi ...

TEESTA RIVER DISPUTE : Why Mamata Banerjee Upset With PM Modi Decision...

402K views • 1 month ago **>100x**

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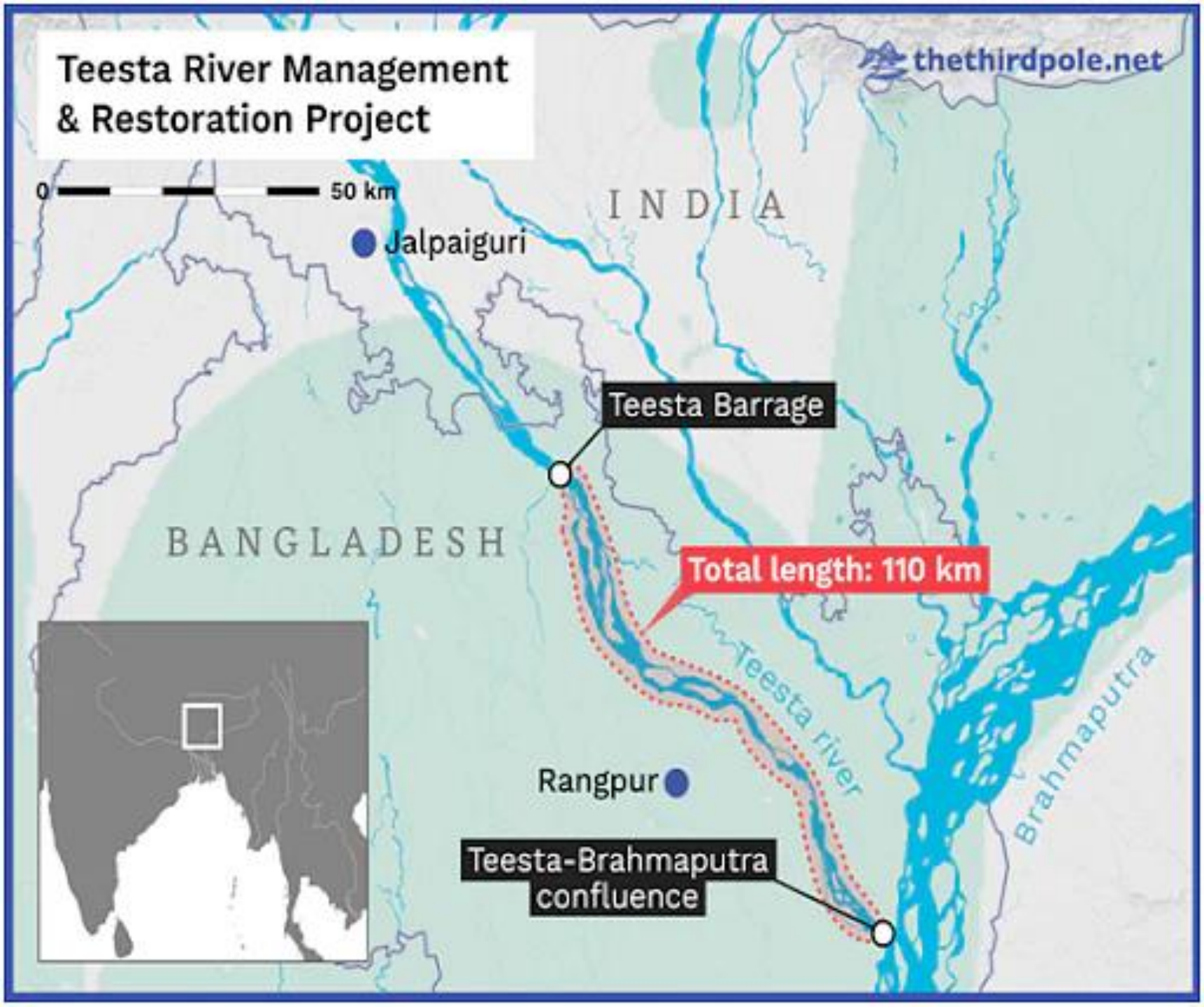
CHINA
New Delhi
Sikkim
Teesta River
Kushiyara River
INDIA
BANGLADESH
Dhaka
West Bengal
Bay of Bengal


Teesta River Management
& Restoration Project
thethirdpole.net
0
50 km
INDIA
Jalpaiguri
Teesta Barrage
BANGLADESH
Total length: 110 km
Teesta river
Brahmaputra
Rangpur
Teesta-Brahmaputra
confluence

Bangladesh's Interim Government Revokes Sheikh Hasina's Diplomatic Passport

The move to cancel Hasina's documents leaves the former autocratic leader in potential limbo, and comes on the same day that a United Nations team arrived in Dhaka to assess whether to investigate alleged human rights violations.

World News | Agence France-Presse | Updated: August 22, 2024 10:10 pm IST

TRENDING


Neeraj Chopra Throws Season Best 89.49m, Finishes 2nd In Diamond League


Microplastics Invade Human Brains, Researchers Call For Global Emergency


Day 1 At Kolkata Hospital After Rape-Murder: Top Court Highlights Anomalies

Bangladesh's interim government revoked the diplomatic passport of ousted premier Sheikh Hasina on Thursday, after she fled a student-led uprising by helicopter to India earlier this month.

The move to cancel Sheikh Hasina's documents leaves the former autocratic leader in potential limbo, and comes on the same day that a United Nations team arrived in Dhaka to assess whether to investigate alleged human rights violations.

More than 450 people were killed -- many by police fire -- during the weeks leading up to Sheikh Hasina's ouster, as crowds stormed her official residence in Dhaka and ended her iron-fisted 15-year rule.

बांग्लादेश की अंतरिम सरकार ने गुरुवार को अपदस्थ प्रधानमंत्री शेख हसीना का राजनयिक पासपोर्ट रद्द कर दिया। आंतरिक मंत्रालय ने एक बयान में कहा कि सुश्री हसीना के पासपोर्ट के साथ-साथ पूर्व सरकारी मंत्रियों और पूर्व सांसदों के पासपोर्ट जो अब अपने पदों पर नहीं हैं, उन्हें रद्द किया गया है। हसीना बांग्लादेश में छात्रों के विरोध प्रदर्शन के दौरान भड़की हिंसा के बाद स्थिति को संभालने में नाकाम रहीं थी।

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7878158882

Title: _____ Date: __/__/____

→ सिन्धु नदी का उद्गम कैलाश पर्वतीय क्षेत्र में बोखर चू हिमनद से होता है।
→ तिब्बत में इस नदी को सिंगी खंबान कहते है।
→ यह पमचोक नामक स्थान से भारत में प्रवेश करती है।
→ यह नदी भारत में लद्दाख तथा जास्कर श्रेणी के बीच बहती है।
→ पाकिस्तान में यह अटक (Attock) नामक स्थानों पर मैदानों में प्रवेश करती है।
→ पाकिस्तान में कराँची के पास डेल्टा बनाते हुए यह अरब सागर में गिरती है।
→ सिंधु नदी की दायें हाथ की प्रमुख सहायक नदियाँ :- श्योक, नुब्रा, हुनजा, गिलगिट, स्वात, काबुल तथा गोमल
→ इसकी प्रमुख बायें हाथ की सहायक नदियाँ झेलम, चिनाब रावी, व्यास, सतलज, ट्रांस तथा जास्कर
पंचनद ←

→ सिंधु में पंचनद पाक में मिठानकोट नामक स्थान पर मिलती है।
→ 'लेह' सिंधु नदी के किनारे स्थित है।

पंचनद

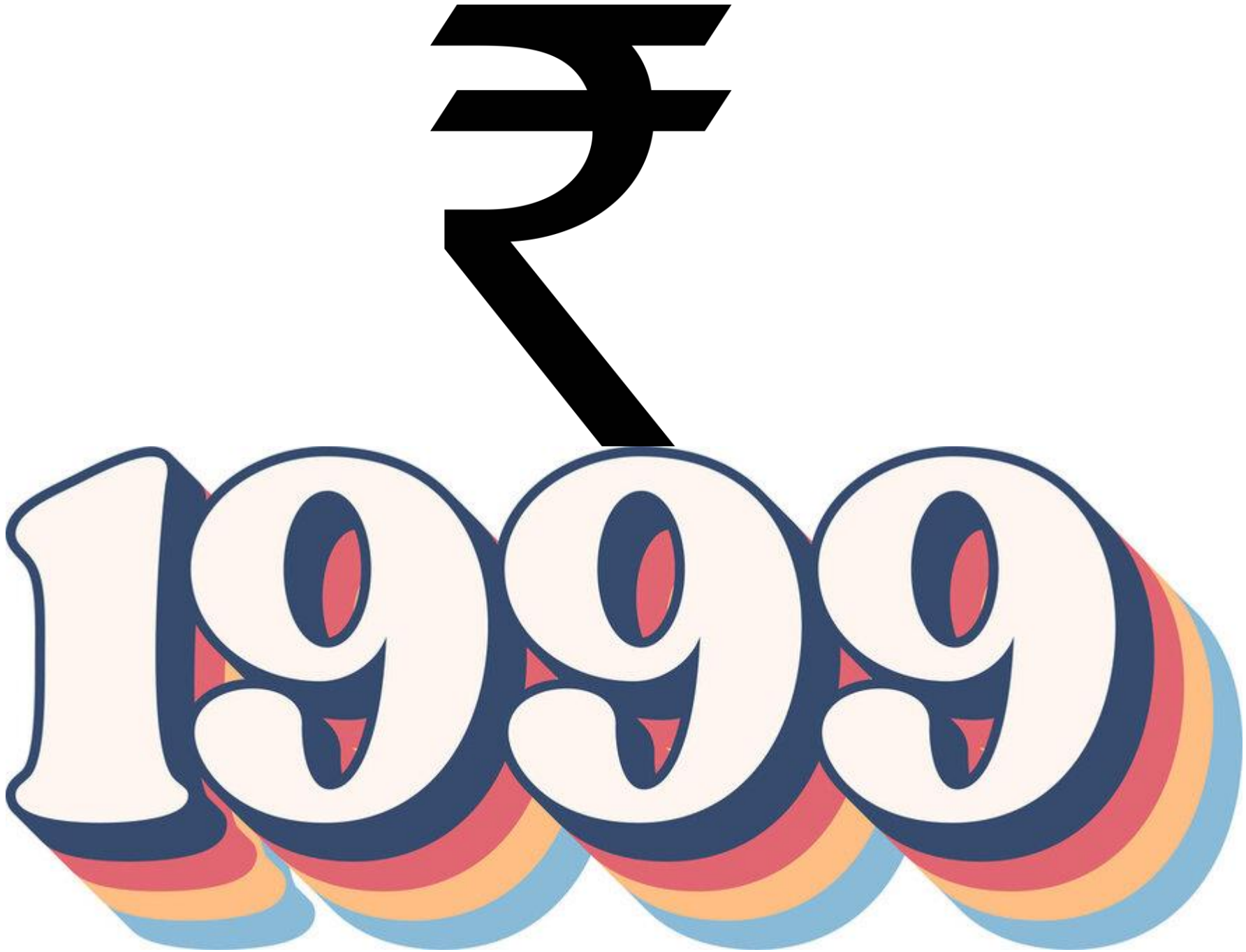
i) झेलम :- इस नदी का उद्गम जम्मू कश्मीर में

Title: _____ Date: __/__/____

वेरिनाग झील से होता है।
* यह नदी वूलर झील का निर्माण करती है जो भारत की सबसे बड़ी मीठे पानी की झील है।
→ इस नदी के किनारे श्रीनगर स्थित है।
→ किशनगंगा इसकी दायें हाथ की प्रमुख सहायक नदी है।
→ इस नदी पर तुलबुल परियोजना प्रस्तावित है। यह एक नौवहन परियोजना है।
→ यह नदी भारत तथा पाकिस्तान के बीच अन्तर्राष्ट्रीय सीमा का निर्माण करती है।

ii) चिनाब :- चिनाब नदी का उद्गम हिमाचल प्रदेश में बारालच्चा दर्रे के पास चन्द्र तथा भागा नदियों के मिलने (Confluence) से होता है।
→ J&K में इस नदी पर जल विद्युत उत्पादन परियोजनाएँ स्थित है।
उदाहरण :- दुलहस्ती, सलाल, बगलिहार
→ यह सिंधु नदी की सबसे बड़ी सहायक नदी है।

iii) रावी :- रावी नदी का उद्गम शैहतांग दर्रे के पास से हिमाचल प्रदेश में होता है।
→ हिमाचल प्रदेश में इस नदी पर चमेरा बाँध स्थित है।
→ पंजाब में इस नदी पर थीन परियोजना स्थित है।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Europe

Putin: Russia suspends participation in last remaining nuclear treaty with U.S.

By **Reuters**

February 21, 2023 5:14 PM GMT+5:30 · Updated 2 years ago

CHINA / DIPLOMACY

China, Russia wrap up joint naval drill, show 'high-level combat orientation'

By Liu Xuanzun and Guo Yuandan

Published: Jul 18, 2024 09:13 PM

A1: This is the first time China and Russia have conducted a joint air patrol near Alaska and in the northern Pacific. It is also the first time that Chinese and Russian aircraft have taken off from the same Russian air base. The bombers came within 200 miles of the coast of Alaska.

30 Jul 2024

CSIS | Center for Strategic and International Studies

https://www.csis.org › analysis › why-did-china-and-rus...

Why Did China and Russia Stage a Joint Bomber Exercise ...


RUSSIA
ALASKA
CHINA

Russian And Chinese Bombers Patrol Near Alaska In Joint Military Exercise

The patrol was part of "a plan of military cooperation for 2024 and not directed against third countries," Moscow said.

World News | Agence France-Presse | Updated: July 25, 2024 3:02 pm IST

TRENDING

Neeraj Chopra Throws Season Best 89.49m, Finishes 2nd In Diamond League

Microplastics Invade Human Brains, Researchers Call For Global Emergency

More Than 13 Lakh UP Government Employees May Lose Salaries Over This Order

ASIA

North Korean leader Kim led rocket drills that simulated a nuclear counterattack

APRIL 23, 2024 · 4:34 AM ET

By The Associated Press

The Guardian Int

Global spending on nuclear weapons up 13% in record rise

States are on course to spend $100bn a year, driven by a sharp increase in US defence budgets

Dan Sabbagh *Defence and security editor*

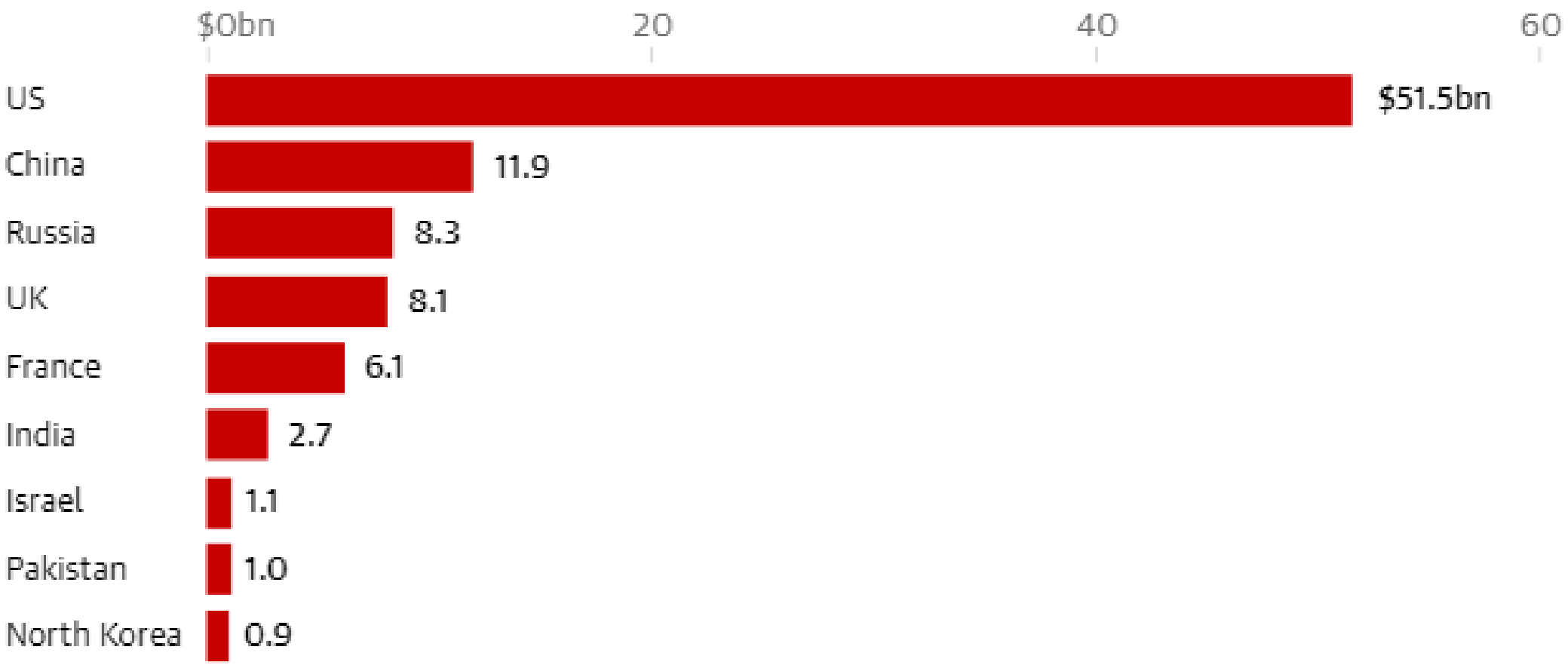
Mon 17 Jun 2024 05.00 BST

A Russian serviceman operates a non-strategic nuclear missile for Iskander during drills on the border of Russia and Belarus. Photograph: Russian Defence Ministry Press S Handout/EPA

Global spending on nuclear weapons is estimated to have increased by 13% to a record $91.4bn during 2023, according to calculations from the International Campaign to Abolish Nuclear Weapons (Ican) pressure group.

Nuclear-armed countries spent an estimated $91.4bn on nuclear weapons in 2023

Nuclear weapons spending, $bn



Guardian graphic. Source: The International Campaign to Abolish Nuclear Weapons

The New York Times

Biden Approved Secret Nuclear Strategy Refocusing on Chinese Threat

In a classified document approved in March, the president ordered U.S. forces to prepare for possible coordinated nuclear confrontations with Russia, China and North Korea.

POLITICS

China's state media slams U.S. over Biden nuclear strategy report

PUBLISHED THU, AUG 22 2024•1:20 AM EDT | UPDATED THU, AUG 22 2024•11:06 AM EDT

Lee Ying Shan
@IN/YING-SHAN-LEE
@LEEYINGSHAN

KEY POINTS

- China's state media and foreign ministry quickly moved to criticize Washington, after the New York Times reported that U.S. President Joe Biden had reoriented the U.S.' nuclear strategic plan to focus on Beijing's rapid expansion of its nuclear arsenal.
- The White House said that the nuclear strategic plan was not in response to a single country or threat.

OPINION / OBSERVER

US crying wolf over China's 'nuclear threat' while expanding nuclear arsenal

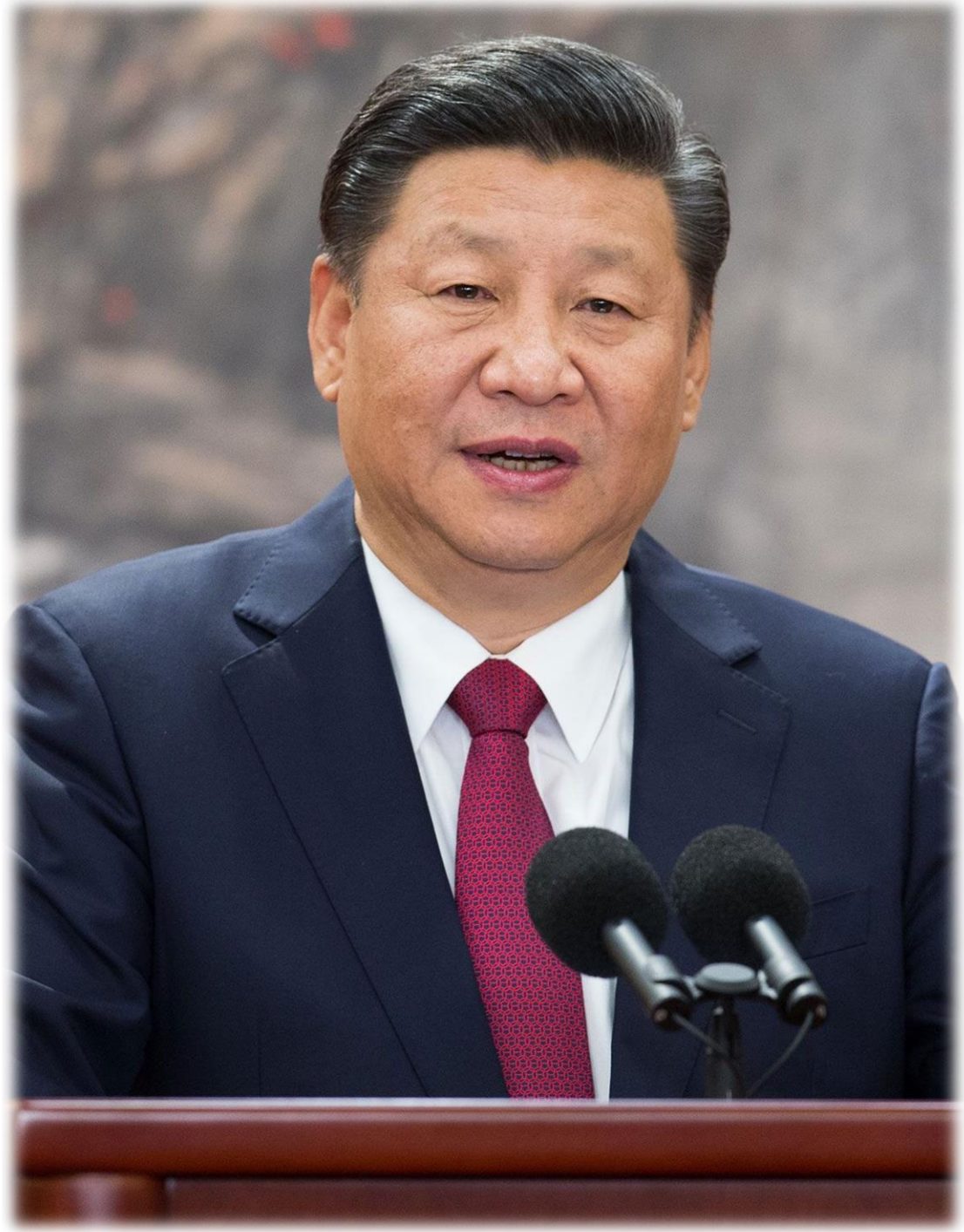
By Global Times

Published: Aug 22, 2024 12:38 AM

अमेरिका को डर है कि चीन, रूस और उत्तर कोरिया के साथ कभी भी परमाणु युद्ध हो सकता है. इसके लिए मार्च में ही अमेरिकी राष्ट्रपति जो बाइडेन ने बेहद खुफिया दस्तावेज पर हस्ताक्षर किए थे. जिसमें अमेरिका की न्यूक्लियर रणनीति में कुछ बदलाव किए गए हैं, ये बदलाव चीन, रूस और उत्तर कोरिया के बढ़ते परमाणु हथियारों के आधार पर हुए हैं. इस पर जो बाइडेन के हस्ताक्षर भी हैं. इसका नाम है न्यूक्लियर एंप्लॉयमेंट गाइडेंस (NEG).

NEG ही अमेरिका की परमाणु रणनीति को तय करता है. यह निर्धारित करता है कि किस परमाणु संपन्न देश के साथ किस तरह पेश आना है. एटमी जंग के दौरान क्या-क्या कदम उठाने हैं. इस दस्तावेज में हुए बदलावों में बाइडेन ने अपनी सेनाओं को रूस, चीन और उत्तर कोरिया के साथ परमाणु जंग के लिए तैयार रहने को भी कहा है.

यह खुलासा न्यूयॉर्क टाइम्स ने किया है. 20 अगस्त 2024 को व्हाइट हाउस ने कहा कि यह योजना अमेरिकी राष्ट्रपति ने इस साल के शुरूआत में ही अप्रूव कर दिया था. इसमें किसी एक देश से परमाणु युद्ध का खतरा नहीं है. बल्कि तीन देशों से हैं. लेकिन द टाइम्स ने रिपोर्ट किया है कि अमेरिका को सबसे ज्यादा खौफ चीन का है.



Dr. Jill Stein 🌻
@DrJillStein

Biden is planning for a nuclear war that would end humanity - because of the “Chinese threat”? What has China done to us that justifies nuking the planet?

We need to take our government back from the warmongers, end the endless wars, and lead on global nuclear disarmament. NOW.

11:11 PM · Aug 22, 2024 · **38K** Views

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@DrJillStein

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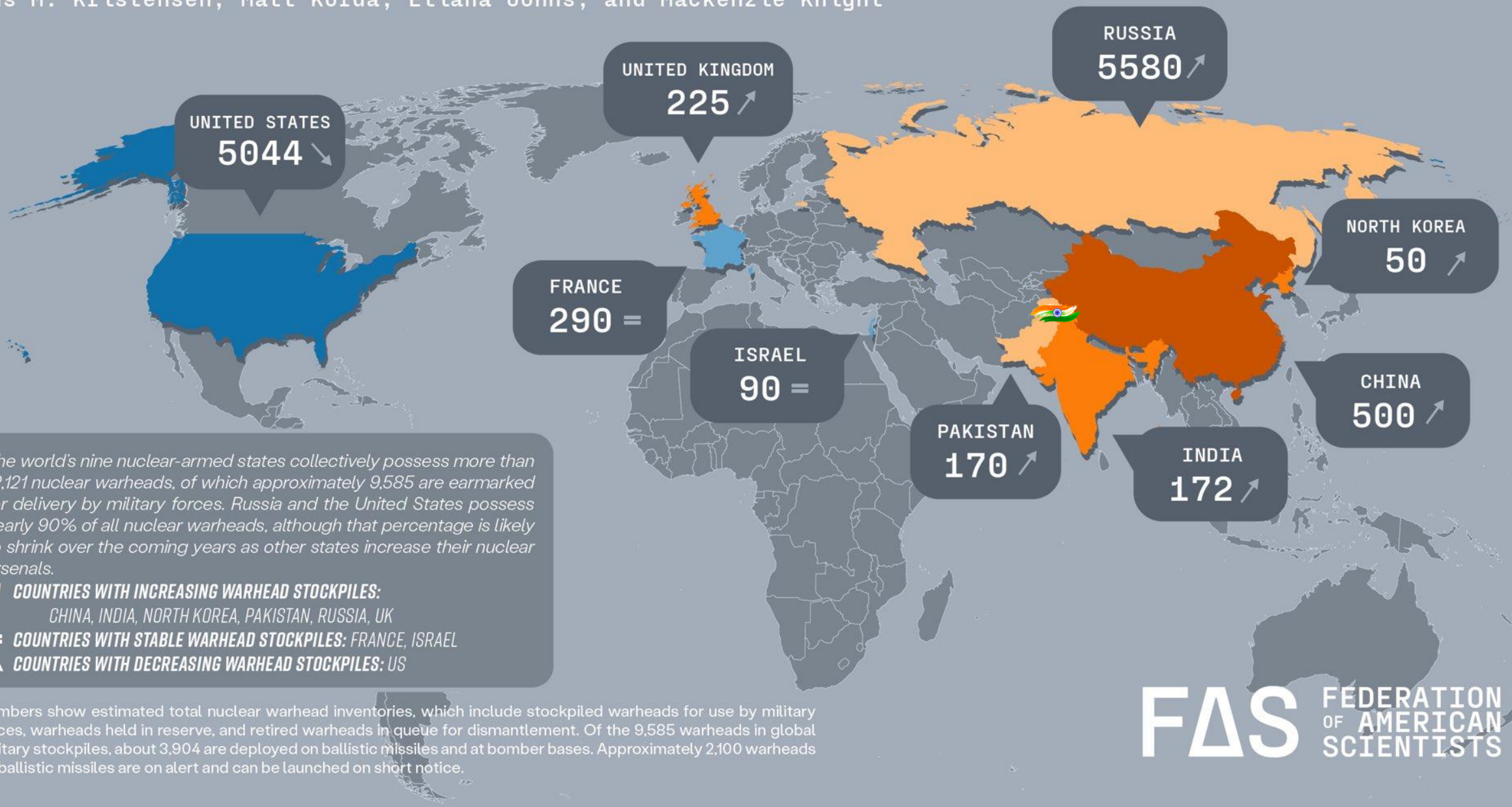
Jill Ellen Stein is an American physician, activist, and perennial political candidate. She was the Green Party's nominee for president of the United States in the 2012 and 2016 elections and the Green-Rainbow Party's candidate for governor of Massachusetts in 2002 and 2010. Wikipedia

Estimated Global Nuclear Warhead Inventories, 2024

Hans M. Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight



The world's nine nuclear-armed states collectively possess more than 12,121 nuclear warheads, of which approximately 9,585 are earmarked for delivery by military forces. Russia and the United States possess nearly 90% of all nuclear warheads, although that percentage is likely to shrink over the coming years as other states increase their nuclear arsenals.

↗ ***COUNTRIES WITH INCREASING WARHEAD STOCKPILES:***
CHINA, INDIA, NORTH KOREA, PAKISTAN, RUSSIA, UK

= ***COUNTRIES WITH STABLE WARHEAD STOCKPILES:*** *FRANCE, ISRAEL*

↘ ***COUNTRIES WITH DECREASING WARHEAD STOCKPILES:*** *US*

Numbers show estimated total nuclear warhead inventories, which include stockpiled warheads for use by military forces, warheads held in reserve, and retired warheads in queue for dismantlement. Of the 9,585 warheads in global military stockpiles, about 3,904 are deployed on ballistic missiles and at bomber bases. Approximately 2,100 warheads on ballistic missiles are on alert and can be launched on short notice.

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फेडरेशन ऑफ अमेरिकन साइंटिस्ट्स के मुताबिक दुनिया में सबसे ज्यादा परमाणु हथियार रूस के पास हैं. रूस के पास 5580 परमाणु हथियार हैं, जो पिछले कुछ समय में बढ़े हैं. इसके बाद अमेरिका के पास 5044 हथियार हैं. ये कम हुए हैं. फिर चीन के पास 500 न्यूक्लियर वेपन हैं, जो बढ़े हैं.

फ्रांस के पास 290, ब्रिटेन के पास 225, भारत के पास 172, पाकिस्तान के पास 170, इजरायल के पास 90 और उत्तर कोरिया के पास 50 परमाणु हथियार हैं. फ्रांस और इजरायल के हथियारों में कोई बढ़ोतरी नहीं हुई है. लेकिन अमेरिका को छोड़कर बाकी सबके हथियारों की संख्या बढ़ी है. इसलिए अमेरिका परेशान है.

चीन से इतने खौफ की वजह क्या है?

अमेरिका को चीन का खौफ इसलिए है क्योंकि ड्रैगन के पास 500 परमाणु हथियार हैं. ये पिछले साल 410 थे. चीन अपने न्यूक्लियर वेपन को बहुत तेजी से बढ़ा रहा है. जबकि और किसी भी देश ने ऐसा नहीं किया है. आर्म्स कंट्रोल एसोसिएशन के एक्जीक्यूटिव डायरेक्टर डेरिल किंबाल ने कहा कि अमेरिकी खुफिया के मुताबिक चीन 2030 तक अपने परमाणु हथियारों का जखीरा दोगुना कर लेगा. यानी ये संख्या 500 से 1000 के बीच होगी.

China's nuclear force now three times larger than India's: SIPRI data

ET Online • Last Updated: Jun 19, 2024, 07:26:00 PM IST

Synopsis
China is rapidly increasing its nuclear arsenal, now boasting 500 warheads, triple that of India. This expansion reflects heightened geopolitical tensions and a global trend toward modernizing nuclear capabilities. The Stockholm International Peace Research Institute (SIPRI) reports that all nine nuclear-armed states are enhancing their arsenals, with China and the US notably placing warheads on high operational alert.

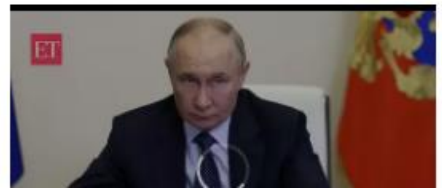
India surpasses Pakistan in nuke race but China three times ahead: SIPRI report reveals

China is accelerating its nuclear weapons buildup, now possessing 500 warheads, significantly more than India's 172 and Pakistan's 170. This growth marks the fastest expansion globally, with some warheads on high operational alert, a status previously reserved for US and Russian arsenals.

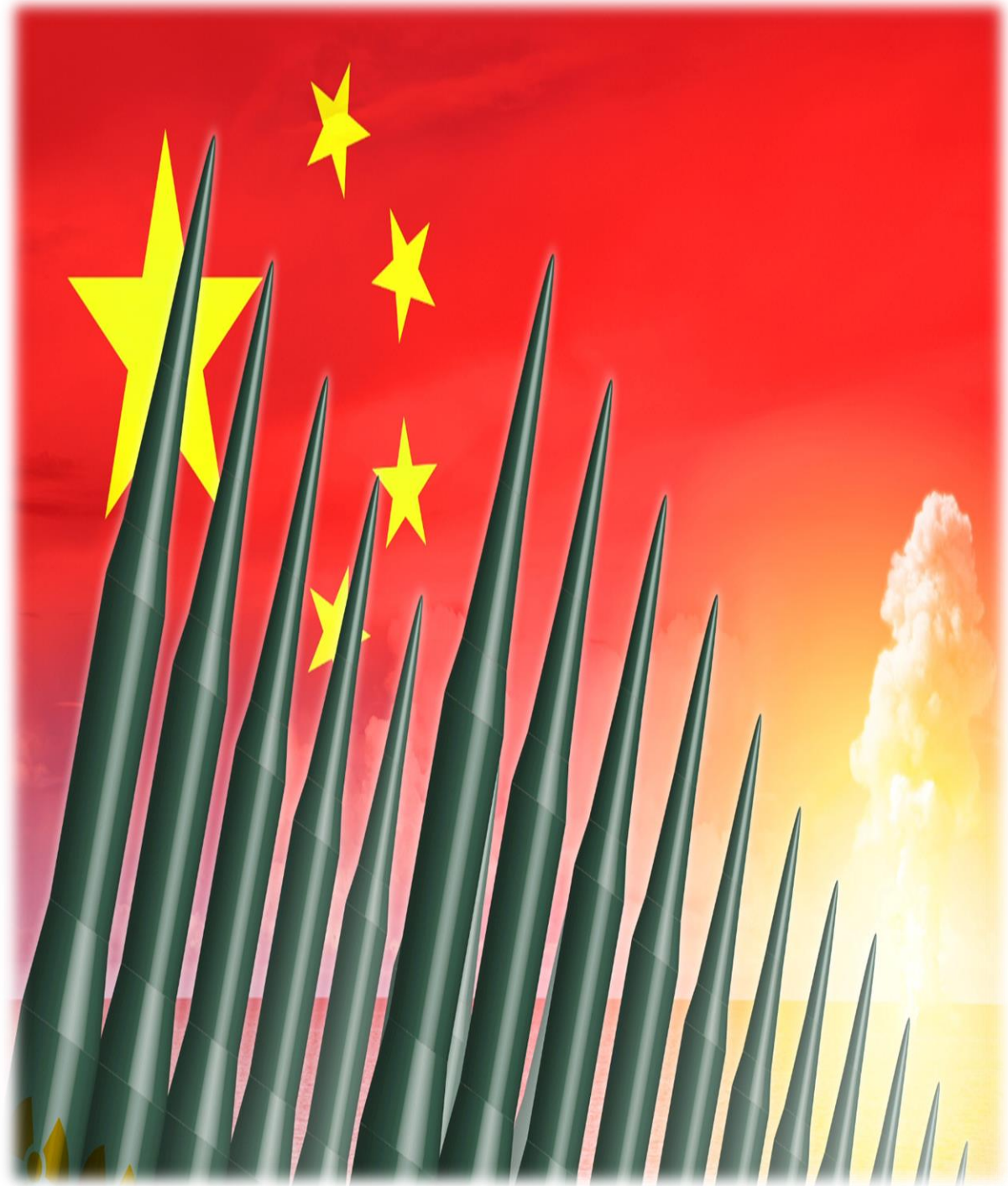
The nuclear stockpiles stand at: Russia (4,380 warheads), US (3,708), France (290), UK (225), Israel (90) and North Korea (50). An estimated 3,904 of these warheads are deployed with missiles and aircraft, with the rest being kept in storage.

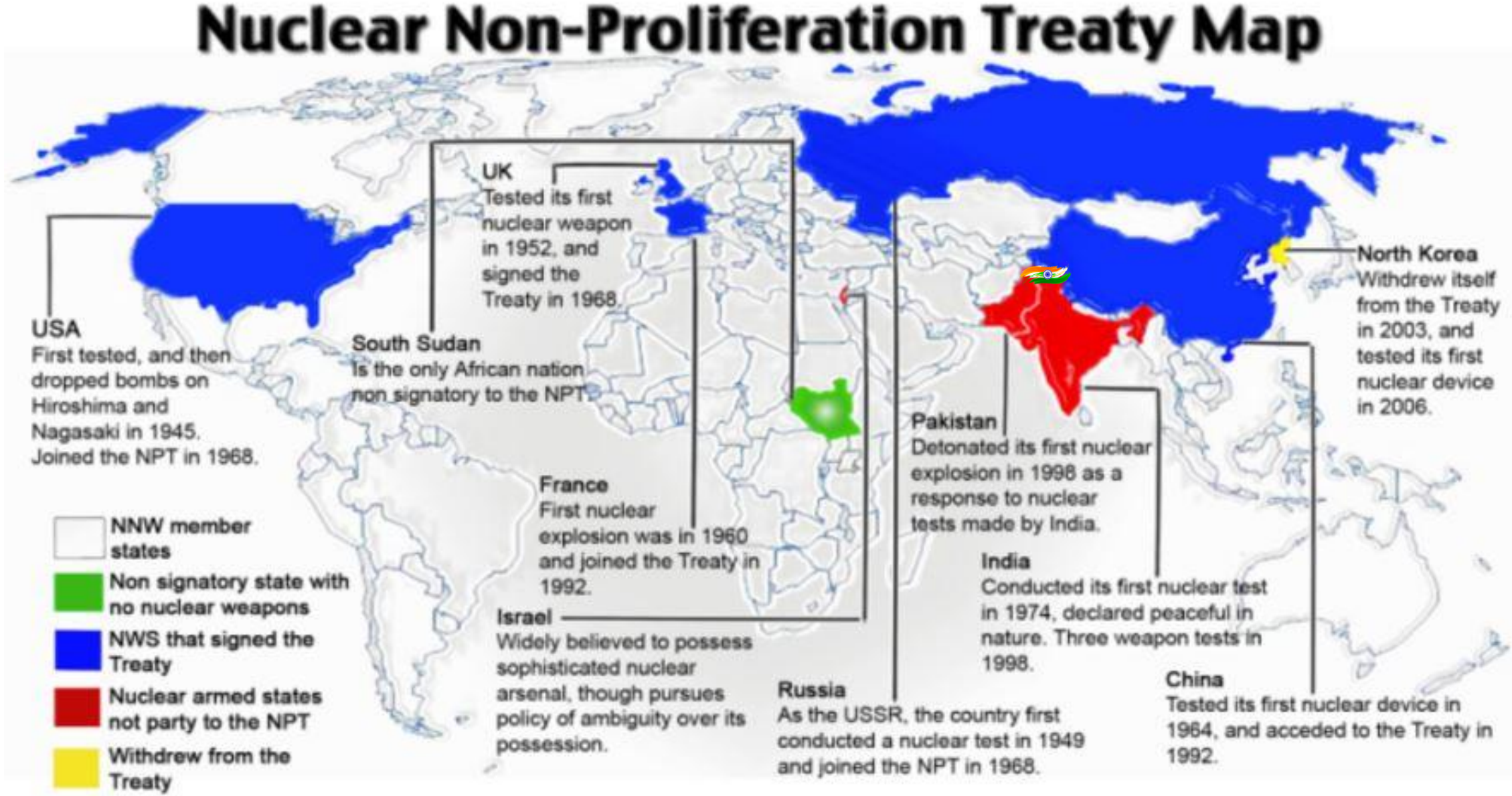
"Around 2,100 of the deployed warheads were kept in a state of high operational alert on ballistic missiles. Nearly all of these warheads belonged to Russia or the US, but for the first time China is believed to have some warheads on high operational alert," SIPRI said.

Videos



पूरी दुनिया में परमाणु हथियारों को कम करने और खत्म करने की मुहिम चल रही है. ऐसे में अगर चीन हथियारों का जखीरा बढ़ा रहा है तो इससे दुनिया को दिक्कत होगी. क्योंकि उसकी गति बहुत तेज है. चीन की सेना से रिटायर सीनियर कर्नल जोउ बो ने कहा कि बीजिंग के लिए चुपचाप बैठे रहना संभव नहीं है. वो कुछ न कुछ तो करेगा ही. अमेरिका उसके परमाणु नीतियों पर नियंत्रण नहीं कर सकता. न्यूक्लियर हमला पहले वो नहीं करेगा. चीन और भारत ने ही इस बात पर अपनी रजामंदी जाहिर की है.





World map showing nuclear weapons states (Image by British American Security Information Council)

The Treaty on the Non-Proliferation of Nuclear Weapons, commonly known as the Non-Proliferation Treaty or NPT, is an international treaty whose objective is to prevent the spread of nuclear weapons and ... Wikipedia

परमाणु अप्रसार संधि को एनपीटी के नाम से जाना जाता है। इसका उद्देश्य विश्व भर में परमाणु हथियारों के प्रसार को रोकने के साथ-साथ परमाणु परीक्षण पर अंकुश लगाना है। १ जुलाई १९६८ से इस समझौते पर हस्ताक्षर होना शुरू हुआ। अभी इस संधि पर हस्ताक्षर कर चुके देशों की संख्या १९० है। जिसमें पांच के पास नाभिकीय हथियार हैं। विकिपीडिया

हिन्दी में खोजें : परमाणु अप्रसार संधि

Condition: Ratification by the Soviet Union, the United Kingdom, the United States, and 40 other signatory states

Effective: 5 March 1970

Signed: 1 July 1968

“The president recently issued updated nuclear-weapons employment guidance to account for multiple nuclear-armed adversaries,” Vipin Narang, an M.I.T. nuclear strategist who served in the Pentagon, said earlier this month before returning to academia. “And in particular,” he added, the weapons guidance accounted for “the significant increase in the size and diversity” of China’s nuclear arsenal.

In June, the National Security Council’s senior director for arms control and nonproliferation, Pranay Vaddi, also referred to the document, the first to examine in detail whether the United States is prepared to respond to nuclear crises that break out simultaneously or sequentially, with a combination of nuclear and nonnuclear weapons.

Already, **Russia and China are conducting military exercises together**. **Intelligence agencies are trying to determine whether Russia is aiding the North Korean and Iranian missile programs in return.**

The new document is a stark reminder that whoever is sworn in next Jan. **20 will confront a changed and far more volatile nuclear landscape than the one that existed just three years ago**. President Vladimir V. Putin of Russia has repeatedly threatened the use of nuclear weapons against Ukraine, including during a crisis in October 2022, **when Mr. Biden and his aides, looking at intercepts of conversations between senior Russian commanders, feared the likelihood of nuclear use might rise to 50 percent or even higher.**

CHINA / DIPLOMACY

China, Russia wrap up joint naval drill, show 'high-level combat orientation'

By Liu Xuanzun and Guo Yuandan

Published: Jul 18, 2024 09:13 PM

A1: This is the first time China and Russia have conducted a joint air patrol near Alaska and in the northern Pacific. It is also the first time that Chinese and Russian aircraft have taken off from the same Russian air base. The bombers came within 200 miles of the coast of Alaska.

30 Jul 2024

CSIS | Center for Strategic and International Studies

https://www.csis.org › analysis › why-did-china-and-rus...

Why Did China and Russia Stage a Joint Bomber Exercise ...


RUSSIA
ALASKA
CHINA

Russian And Chinese Bombers Patrol Near Alaska In Joint Military Exercise

The patrol was part of "a plan of military cooperation for 2024 and not directed against third countries," Moscow said.

World News | Agence France-Presse | Updated: July 25, 2024 3:02 pm IST

TRENDING

Neeraj Chopra Throws Season Best 89.49m, Finishes 2nd In Diamond League

Microplastics Invade Human Brains, Researchers Call For Global Emergency

More Than 13 Lakh UP Government Employees May Lose Salaries Over This Order

“**It was an important moment**,” Richard N. Haass, a former senior State Department and National Security Council official for several Republican presidents, and the president emeritus of the Council on Foreign Relations, noted in an interview. “**We are dealing with a Russia that is radicalized; the idea that nukes wouldn’t be used in a conventional conflict is not longer a safe assumption.**”

At his last news conference in July, just days before he announced he would no longer seek the Democratic nomination for a second term, Mr. Biden acknowledged that he had adopted a policy of seeking ways to interfere in the broader China-Russia partnership.

“**Yes, I do, but I’m not prepared to talk about the detail of it in public**,” Mr. Biden said. He made no reference to — and was not asked about — how that partnership was altering American nuclear strategy.

China halts nuclear arms talks with US over Taiwan support

Beijing said the US's weapons sales to Taiwan has 'compromised the political atmosphere' for continued talks on nuclear non-proliferation.

18 Jul 2024

A spokesperson for China's Ministry of Foreign Affairs on Wednesday said the US's arms sales to Taiwan, a territory that it claims, had "seriously compromised the political atmosphere for continuing the arms-control consultations".

"Consequently, the Chinese side has decided to hold off discussion with the US on a new round of consultations on arms control and non-proliferation," Lin Jian, the spokesperson, told a regular news briefing in Beijing.
"The responsibility fully lies with the US," he said.

Lin added that China was willing to maintain communication on international arms control, but said the US "must respect China's core interests and create necessary conditions for dialogue and exchange".


China says halted
nuclear arms talks
with US over Taiwan
weapons sales

BREAKING NEWS

Vice President Kamala Harris will use her speech to frame the 2024 election as a chance to "chart a new way forward."

POLITICS

US approves new $360 million arms sale to Taiwan for drones, related equipment

Updated 9:18 AM GMT+5:30, June 19, 2024

China says it is 'seriously concerned' about US nuclear strategic report

Reuters • Last Updated: Aug 21, 2024, 01:36:00 PM IST

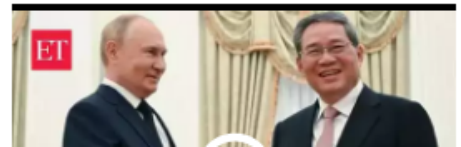
Synopsis
China has expressed serious concern over a report suggesting that the U.S. approved a nuclear strategic plan focused on China's expanding arsenal. A Chinese foreign ministry spokesperson criticized the U.S. for promoting the "China nuclear threat narrative" to gain strategic advantage. The New York Times reported that President Biden approved the plan in March, which also prepares for potential nuclear challenges from Russia and North Korea. Despite the report, the White House maintains that the strategy is not targeted at any single country.

China is seriously concerned about a report that said the United Stated approved a nuclear strategic plan to focus on China's rapid expansion in its nuclear arsenal, the Chinese foreign ministry said on Wednesday.

"The U.S. is peddling the China nuclear threat narrative, finding excuses to seek strategic advantage," a Chinese foreign ministry spokesperson said.

According to a report by the New York Times, U.S. President Joe Biden approved in March a highly classified nuclear strategic plan that focused on China's quickly growing arsenal, but also seeks to prepare the U.S for possible coordinated nuclear challenges from China, Russia and North Korea.

Videos



U.S. NUCLEAR STRATEGY ROW

BEIJING SLAMS WASHINGTON

"THE U.S. IS PEDDLING THE CHINA NUCLEAR THREAT NARRATIVE, FINDING EXCUSES TO SEEK STRATEGIC ADVANTAGE"

CHINESE FOREIGN MINISTRY

WION

OPINION / OBSERVER

US crying wolf over China's 'nuclear threat' while expanding nuclear arsenal

By Global Times

Published: Aug 22, 2024 12:38 AM

On Tuesday, a New York Times report caused quite a stir: US President Joe Biden has ordered US forces to prepare for "possible coordinated nuclear confrontations with Russia, China and North Korea." It sounds like the US president was instructing the military to prepare for doomsday, observers pointed out.

The report revealed that in March, Biden approved a highly classified nuclear strategy plan called "Nuclear Employment Guidance," which for the first time reorients the US' deterrent strategy to focus on the so-called threat posed by China's rapid expansion in its nuclear arsenal. The article states that this shift comes as the Pentagon believes China's stockpiles will rival the size and diversity of the US' and Russia's over the next decade.

No matter how the US fabricates or exaggerates the so-called China threat narrative, China's nuclear development follows its own set pace, including a measured increase in the quantity and quality of its nuclear arsenal, which will not be swayed by the US' interference. This is a necessary measure for China in a complex international environment to safeguard its national security and territorial integrity - a legitimate act of self-defense, Shen Yi, a professor at Fudan University, told the Global Times.

There will be no winners in a nuclear war. We urge the US to abandon Cold War mentality, recognize that a nuclear war cannot be won and must never be fought, reduce the role of nuclear weapons in national and collective security policies, and take concrete actions to promote global strategic stability, instead of doing the opposite. Instead of smearing and hyping up China, the US should reflect on itself and consider how to rebuild mutual trust with China through dialogue and sincerity.

August 21, 2024 6:54 AM
UPDATE August 21, 2024 1:36 PM

By William Gallo

White House downplays Chinese concerns over possible US nuclear strategy change

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FILE – Senior Airman Jacob Deas and Airman 1st Class Jonathan Marrs secure the titanium shroud at the top of a Minuteman III intercontinental ballistic missile on Aug. 24, 2023, at the Bravo 9 silo at Malmstrom Air Force Base in Montana.

White House officials on Wednesday appeared to downplay Beijing's sentiment that it is "seriously concerned" after a report alleged the United States recently approved a secret plan to shift some of the focus of its nuclear strategy away from Russia to deal with Beijing's nuclear weapons buildup.

"The guidance issued earlier this year is not a response to any single entity, country, nor threat," National Security Council Spokesman Sean Savett told VOA in response to emailed questions. "We have repeatedly voiced concerns about the advancing nuclear arsenals of Russia, [China] and [North Korea]."

"The most recent guidance builds on what was issued by previous administrations — there is far more continuity than change," he said.

Savett did not provide details of the new strategy but noted that "while the specific text of the guidance is classified, its existence is in no way secret."

2024

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अधिक जानकारी के लिए दिए गए नंबर पर संपर्क करें....

7878158882

Title: _____ Date: __/__/____

→ सिन्धु नदी का उद्गम कैलाश पर्वतीय क्षेत्र में बोखर चू हिमनद से होता है।
→ तिब्बत में इस नदी को सिंगी खंबान कहते है।
→ यह पमचोक नामक स्थान से भारत में प्रवेश करती है।
→ यह नदी भारत में लद्दाख तथा जास्कर श्रेणी के बीच बहती है।
→ पाकिस्तान में यह अटक (Attock) नामक स्थानों पर मैदानों में प्रवेश करती है।
→ पाकिस्तान में कराँची के पास डेल्टा बनाते हुए यह अरब सागर में गिरती है।
→ सिंधु नदी की दायें हाथ की प्रमुख सहायक नदियाँ :- श्योक, नुब्रा, हुनजा, गिलगिट, स्वात, काबुल तथा गोमल
→ इसकी प्रमुख बायें हाथ की सहायक नदियाँ झेलम, चिनाब रावी, व्यास, सतलज, ट्रांस तथा जास्कर
पंचनद ←

→ सिंधु में पंचनद पाक में मिठानकोट नामक स्थान पर मिलती है।
→ 'लेह' सिंधु नदी के किनारे स्थित है।

पंचनद

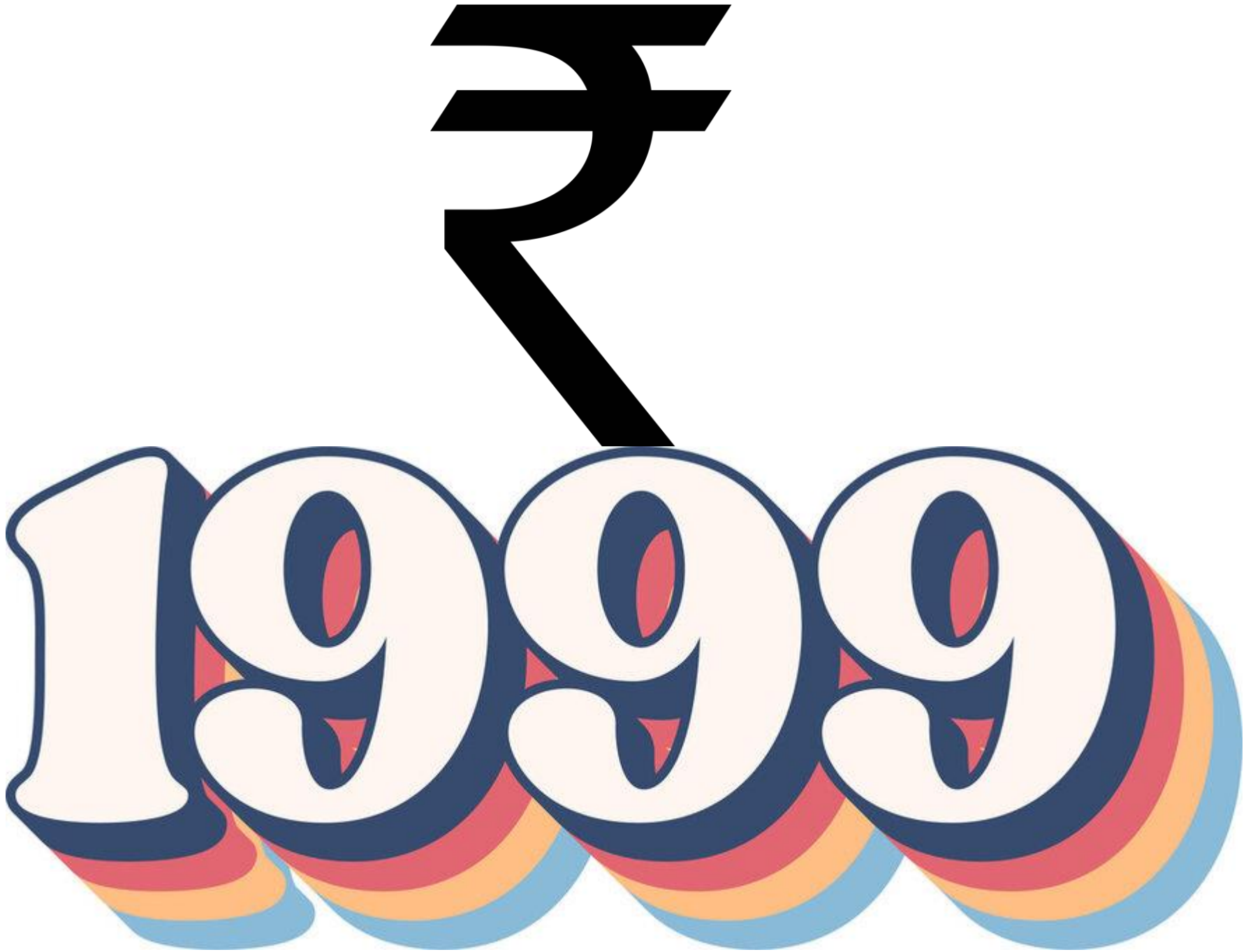
i) झेलम :- इस नदी का उद्गम जम्मू कश्मीर में

Title: _____ Date: __/__/____

वेरिनाग झील से होता है।
* यह नदी वूलर झील का निर्माण करती है जो भारत की सबसे बड़ी मीठे पानी की झील है।
→ इस नदी के किनारे श्रीनगर स्थित है।
→ किशनगंगा इसकी दायें हाथ की प्रमुख सहायक नदी है।
→ इस नदी पर तुलबुल परियोजना प्रस्तावित है। यह एक नौवहन परियोजना है।
→ यह नदी भारत तथा पाकिस्तान के बीच अन्तर्राष्ट्रीय सीमा का निर्माण करती है।

ii) चिनाब :- चिनाब नदी का उद्गम हिमाचल प्रदेश में बारालच्चा दर्रे के पास चन्द्र तथा भागा नदियों के मिलने (Confluence) से होता है।
→ J&K में इस नदी पर जल विद्युत उत्पादन परियोजनाएँ स्थित है।
उदाहरण :- दुलहस्ती, सलाल, बगलिहार
→ यह सिंधु नदी की सबसे बड़ी सहायक नदी है।

iii) रावी :- रावी नदी का उद्गम शैहतांग दर्रे के पास से हिमाचल प्रदेश में होता है।
→ हिमाचल प्रदेश में इस नदी पर चमेरा बाँध स्थित है।
→ पंजाब में इस नदी पर थीन परियोजना स्थित है।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https://indianexpress.com › ... › Explained Climate

Why climate change poses an existential threat to Panama ...

6 days ago — Threat of climate change ... The Panama **Canal needs massive amounts of fresh water to facilitate the passage of ships using** this system of locks.

Woodwell Climate
https://www.woodwellclimate.org › Stories

Drought, Climate, and the Panama Canal

20 Feb 2024 — Drought, driven by a combination of El Niño and climate change, has **disrupted shipping through** the Panama Canal in recent months.

The Guardian
https://www.theguardian.com › environment › dec › ch...

Changing climate casts a shadow over the future of ...

22 Dec 2023 — However, **in 2023 a rainfall deficit**, exacerbated by the El Niño weather phenomenon, led to the water levels in Lake Gatun dropping. The twin ...

University of Navarra
https://en.unav.edu › ... › Reportajes

The Panama Canal, exposed to the effects of climate ...

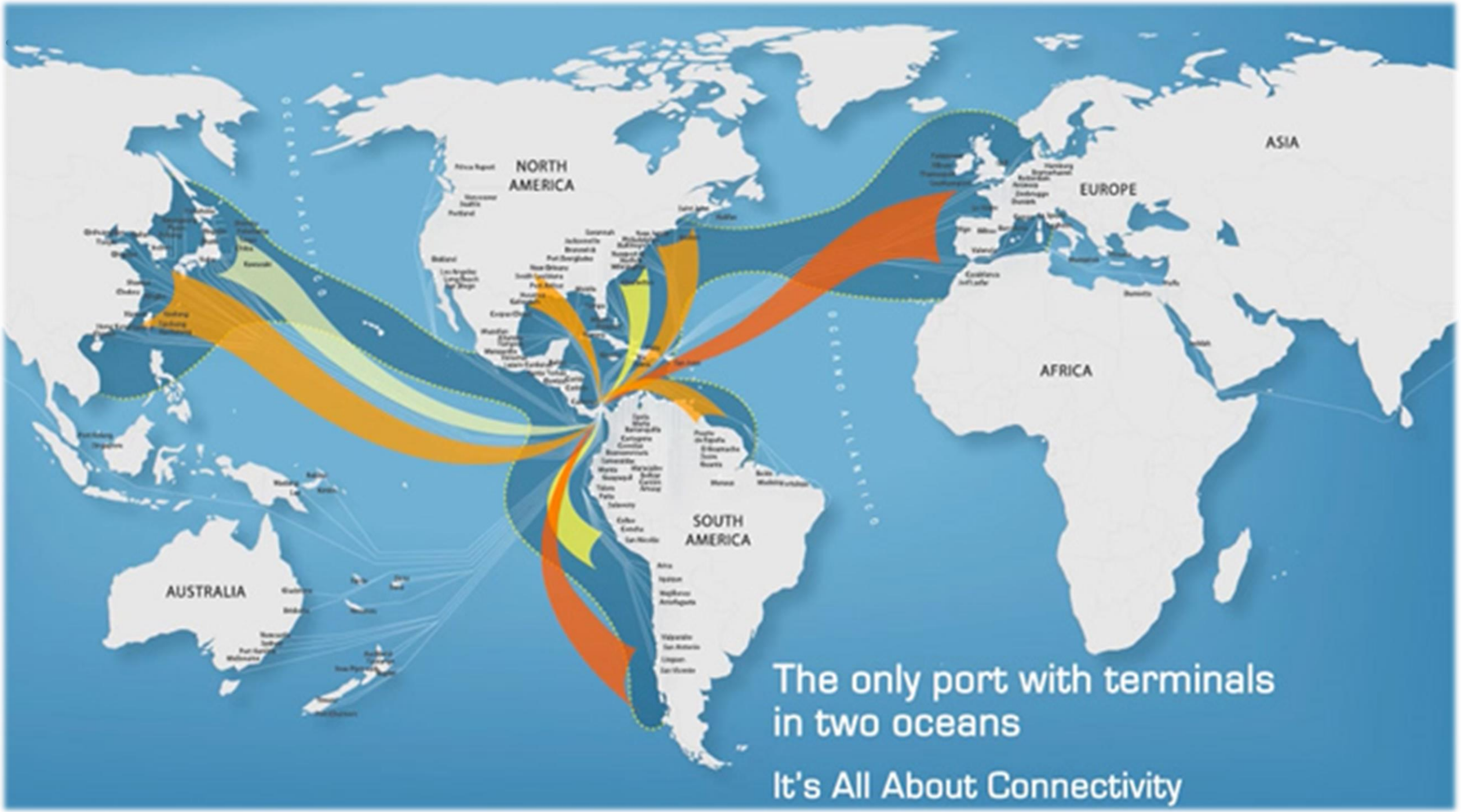
A drought driven by the El Niño meteorological phenomenon has reduced water in the Panama Canal, causing lengthy and costly disruptions to international trade ...

पनामा नहर, जो अटलांटिक और प्रशांत महासागरों को पनामा के इस्थमस (Isthmus of Panama) के माध्यम से जोड़ती है, 110 साल पहले जहाजों के लिए खोली गई थी। यह नहर वैश्विक समुद्री व्यापार का एक महत्वपूर्ण हिस्सा है, जिससे हर साल हजारों जहाज गुजरते हैं।

हालांकि, आज पनामा नहर एक अस्तित्वगत संकट का सामना कर रही है, और इसका कारण है— जलवायु परिवर्तन। जलवायु परिवर्तन के प्रभावों ने नहर के लिए आवश्यक ताजे पानी की उपलब्धता को प्रभावित करना शुरू कर दिया है। सूखे और बदलते मौसम के कारण पानी का स्तर घट रहा है, जिससे नहर में जहाजों के गुजरने की क्षमता कम हो सकती है। अगर ऐसा जारी रहा, तो पनामा नहर का भविष्य खतरे में पड़ सकता है, और इसके साथ ही वैश्विक समुद्री व्यापार पर भी गहरा असर पड़ सकता है।

यह संकट न केवल पनामा नहर के लिए, बल्कि उन देशों और कंपनियों के लिए भी चिंता का विषय है, जो इस नहर के माध्यम से अपने माल का परिवहन करते हैं। जलवायु परिवर्तन के चलते यह ऐतिहासिक नहर अपने अस्तित्व के सबसे बड़े संकट का सामना कर रही है।

The Economist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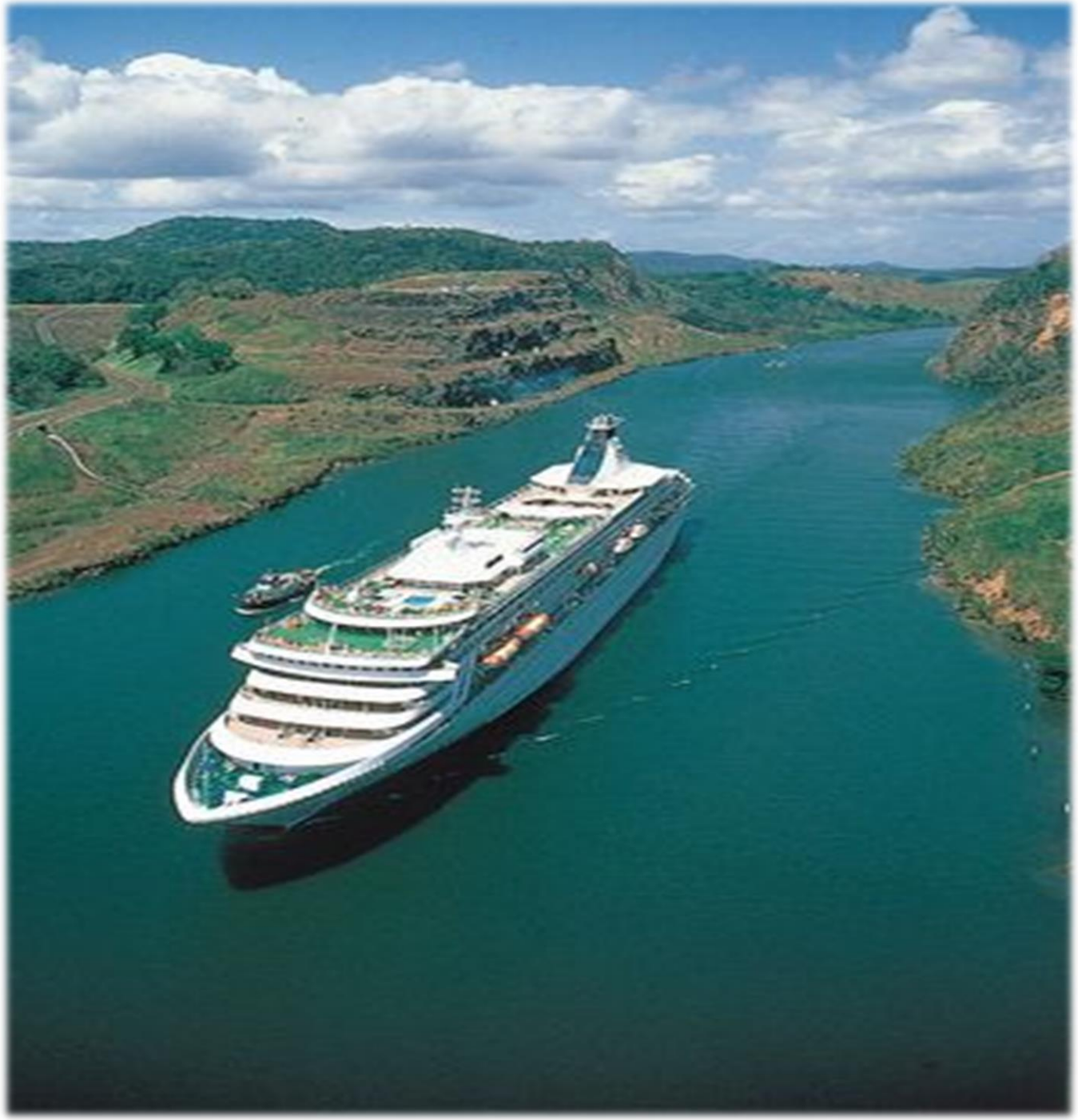


PANAMA CANAL

TIMELINE OF MAJOR EVENTS

1800s

- 1881 - First ground broken by French
- Jan. 20, 1882 - French start active work
- Feb. 23, 1904 - U.S. acquires the canal from France
- May 4, 1904 - U.S. begins work on the canal
- Nov. 6, 1906 - Pres. Theodore Roosevelt visits Panama, the first U.S. president to make an official visit outside of the U.S.
- May 10, 1913 - Waters of the Atlantic and Pacific oceans finally meet
- Aug. 15, 1914 - SS *Ancon* completes the first transit; Panama Canal is open to traffic

1900s

- 1900s - Improvements continue to be made, including the addition of lighting and the widening and deepening of the canal channel
- Sept. 15, 1977 - Treaty signed that will eventually turn over control of the canal to Panama
- Dec. 31, 1999 - U.S. hands over control to Panama

20

- Sept. 2007 - Expansion work on the canal officially begins
- June 2016 - Canal expansion completed

INTERESTING FACTS

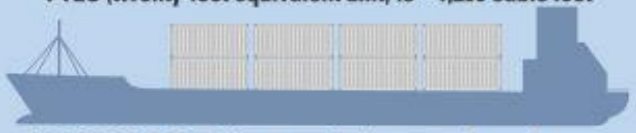
total length = 50 miles (80 km)

number of fatalities during construction: ~25,600
many due to malaria and yellow fever

average transit time: 8-10 hours

top canal users: United States and China

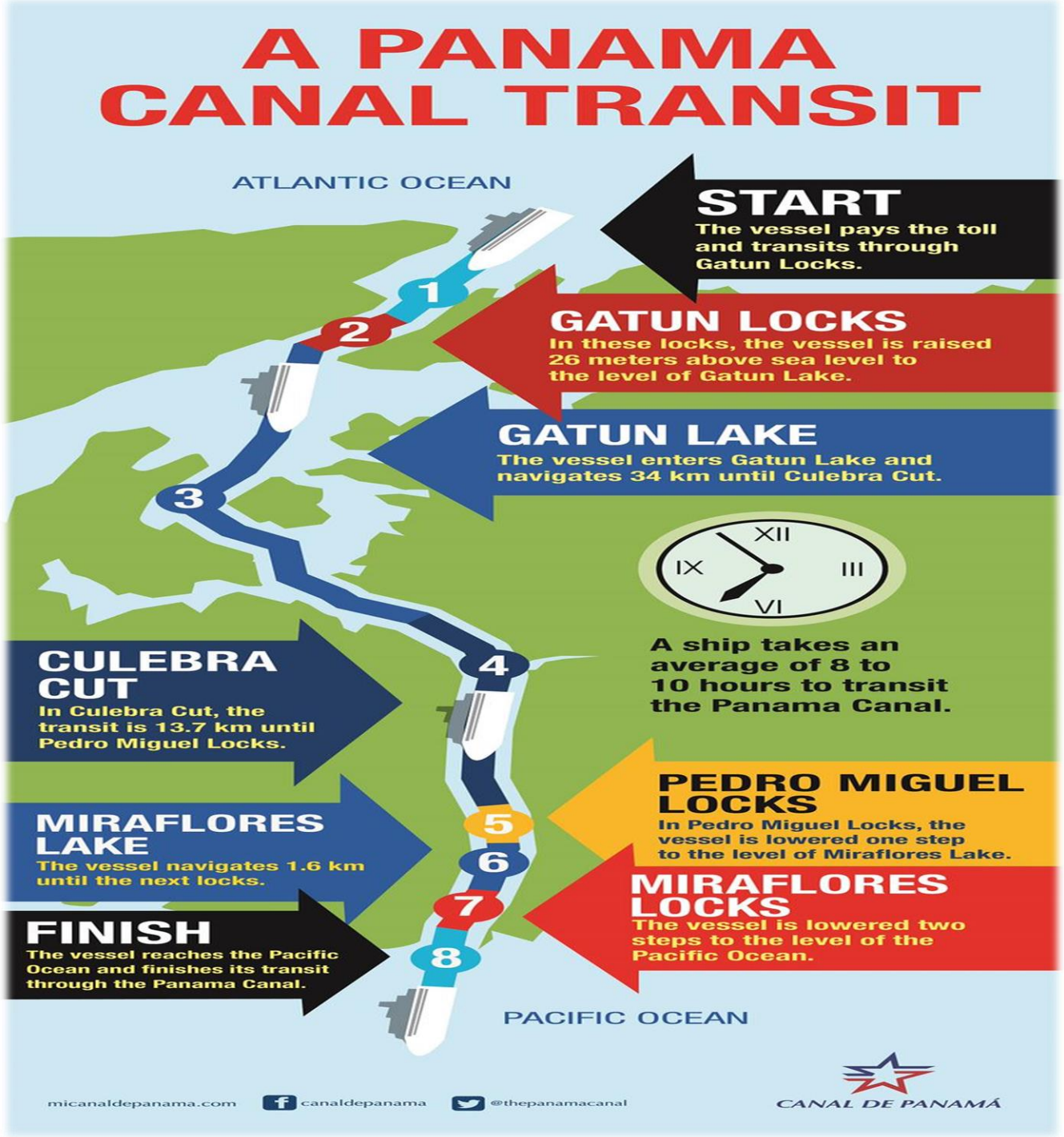
container ship capacity = 5,000 TEUs
1 TEU (twenty-foot equivalent unit) is ~1,200 cubic feet



12,000-15,000 ships transit the canal each year

52 million gallons of water used during each transit

A PANAMA CANAL TRANSIT



START
The vessel pays the toll and transits through Gatun Locks.

GATUN LOCKS
In these locks, the vessel is raised 26 meters above sea level to the level of Gatun Lake.

GATUN LAKE
The vessel enters Gatun Lake and navigates 34 km until Culebra Cut.

A ship takes an average of 8 to 10 hours to transit the Panama Canal.

CULEBRA CUT
In Culebra Cut, the transit is 13.7 km until Pedro Miguel Locks.

PEDRO MIGUEL LOCKS
In Pedro Miguel Locks, the vessel is lowered one step to the level of Miraflores Lake.

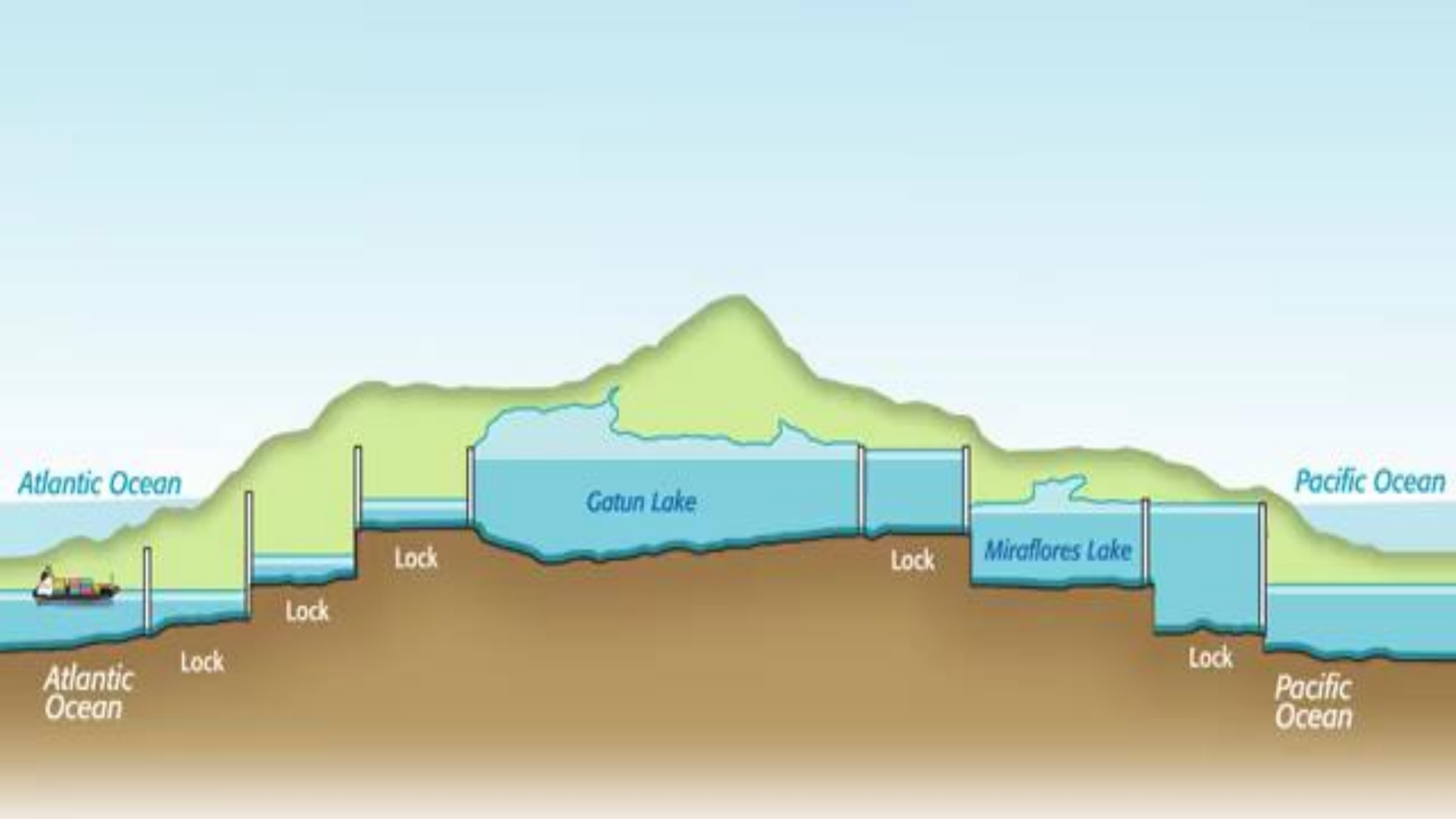
MIRAFLORES LAKE
The vessel navigates 1.6 km until the next locks.

MIRAFLORES LOCKS
The vessel is lowered two steps to the level of the Pacific Ocean.

FINISH
The vessel reaches the Pacific Ocean and finishes its transit through the Panama Canal.

micanaldepanama.com canaldepanama @thepanamacanal

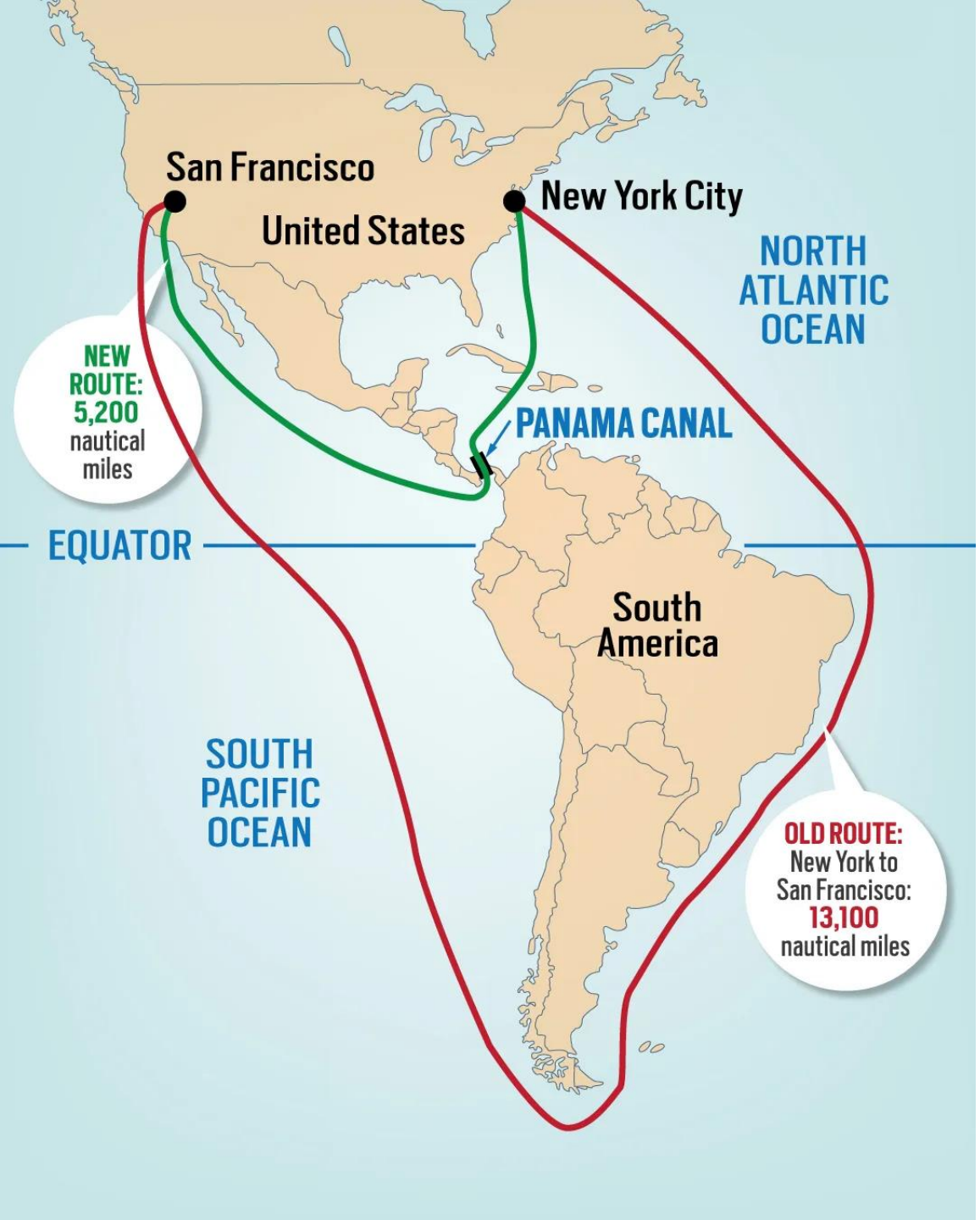
CANAL DE PANAMÁ


Atlantic Ocean
Gatun Lake
Pacific Ocean
Lock
Lock
Lock
Lock
Lock
Miraflores Lake
Atlantic Ocean
Pacific Ocean

पनामा नहर: 110 वर्षों में पहली यात्रा और मौजूदा चुनौतियाँ:

15 अगस्त 1914 को पहली बार एक जहाज पनामा नहर से गुजरा, जिसे110 साल पूरे हो गए हैं। यह 82 किलोमीटर लंबी नहर, जो इंजीनियरिंग की महान उपलब्धियों में से एक मानी जाती है, अटलांटिक और पैसिफिक महासागरों के बीच एक शॉर्टकट प्रदान करती है। यह पनामा के इस्थमस को काटती है और **न्यूयॉर्क और सैन फ्रांसिस्को के बीच लगभग 12,600 किलोमीटर की यात्रा को कम करती है।** यह दुनिया की सबसे महत्वपूर्ण शिपिंग लेनों में से एक है।

हालांकि, हर दिन **औसतन 36 से 38 जहाज नहर** से गुजरते हैं, पिछले दिसंबर में ट्रैफिक घटकर 22 जहाज प्रति दिन तक पहुंच गया था, और **160 से अधिक जहाज नहर के दोनों ओर अटके हुए थे। इसका कारण था लेक गेटुन का जलस्तर में गिरावट**, जो पनामा नहर प्रणाली के संचालन के लिए एक महत्वपूर्ण कृत्रिम जलाशय है।

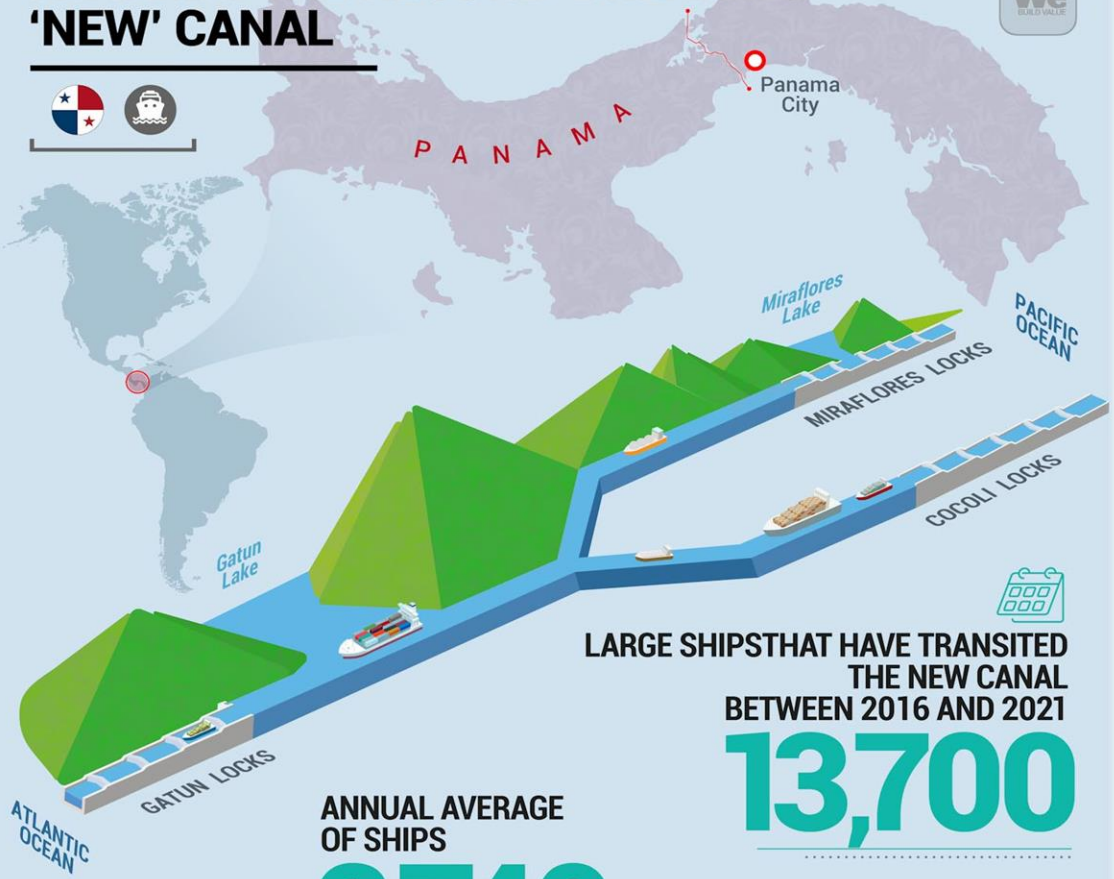

San Francisco
New York City
United States
NORTH ATLANTIC OCEAN
NEW ROUTE: 5,200 nautical miles
PANAMA CANAL
EQUATOR
South America
SOUTH PACIFIC OCEAN
OLD ROUTE: New York to San Francisco: 13,100 nautical miles

Isthmus of Panama:

- An isthmus is a **narrow strip of land** that **connects two larger landmasses** and **separates two bodies of water**.
  - They are natural sites for **ports** **and canals** linking terrestrial and aquatic trade routes.
- The Isthmus of Panama **links** the continents of **North and South America**, and **separates the Pacific and Atlantic Oceans**.
- It was formed when the **Caribbean tectonic plate** got pushed between the **North and South American Plates**. The resultant tectonic activity **raised** the seafloor.


Puerto Viejo de Talamanca
Bocas del Toro
Colón
Isthmus of Panama
Panama City
Boquete
David
Panama
Capurganá
Necoclí
Santiago
Chitre
Los Tablas
Darién National Park
Map data ©2023 Google

PANAMA: THE RECORD-BREAKING 'NEW' CANAL



LARGE SHIPSTHAT HAVE TRANSITED THE NEW CANAL BETWEEN 2016 AND 2021

13,700

ANNUAL AVERAGE OF SHIPS

2,740

TONS OF TRANSITED CARGO IN FISCAL YEAR 2021

516 mln

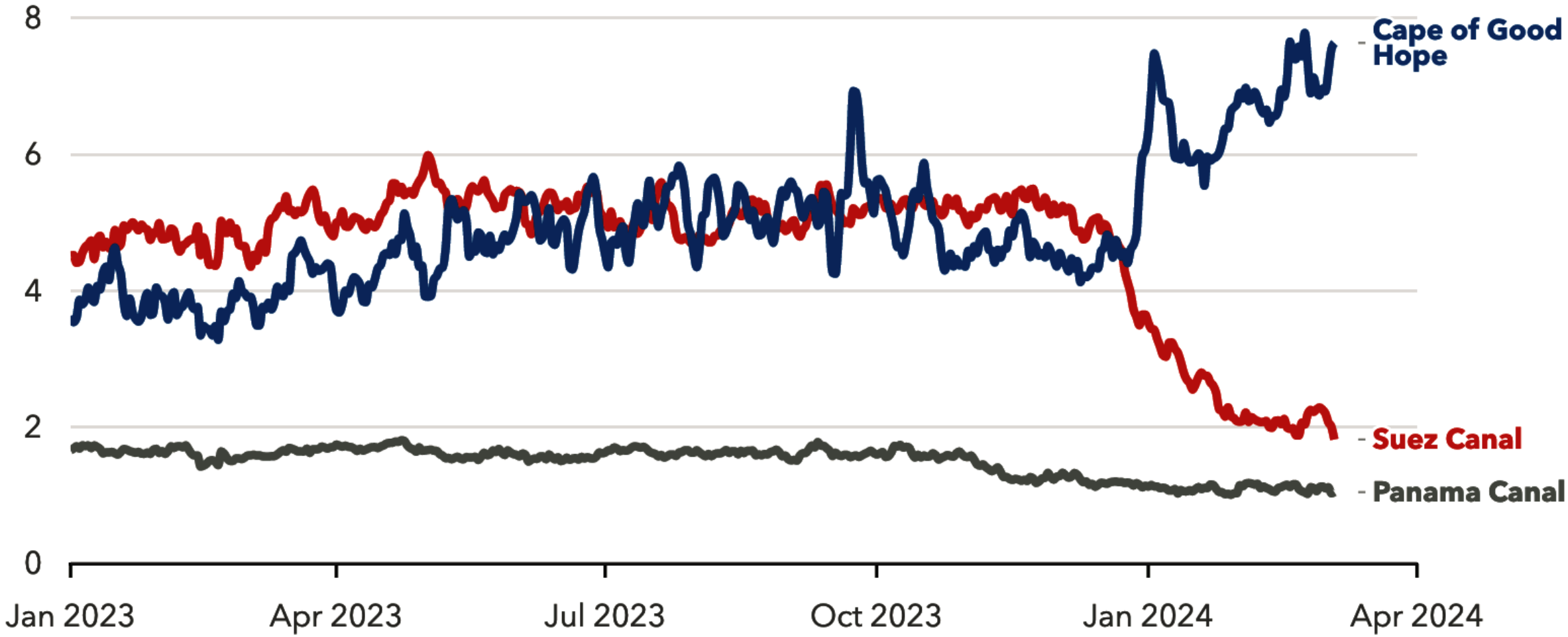
TOTAL CANAL'S REVENUE IN 2022

4,2 bln $

Source:
Autoridad del Canal de Panamá
CANAL DE PANAMÁ

Daily transit trade volume

(million metric tons, 7-day moving average)



Sources: UN Global Platform, IMF PortWatch.

IMF

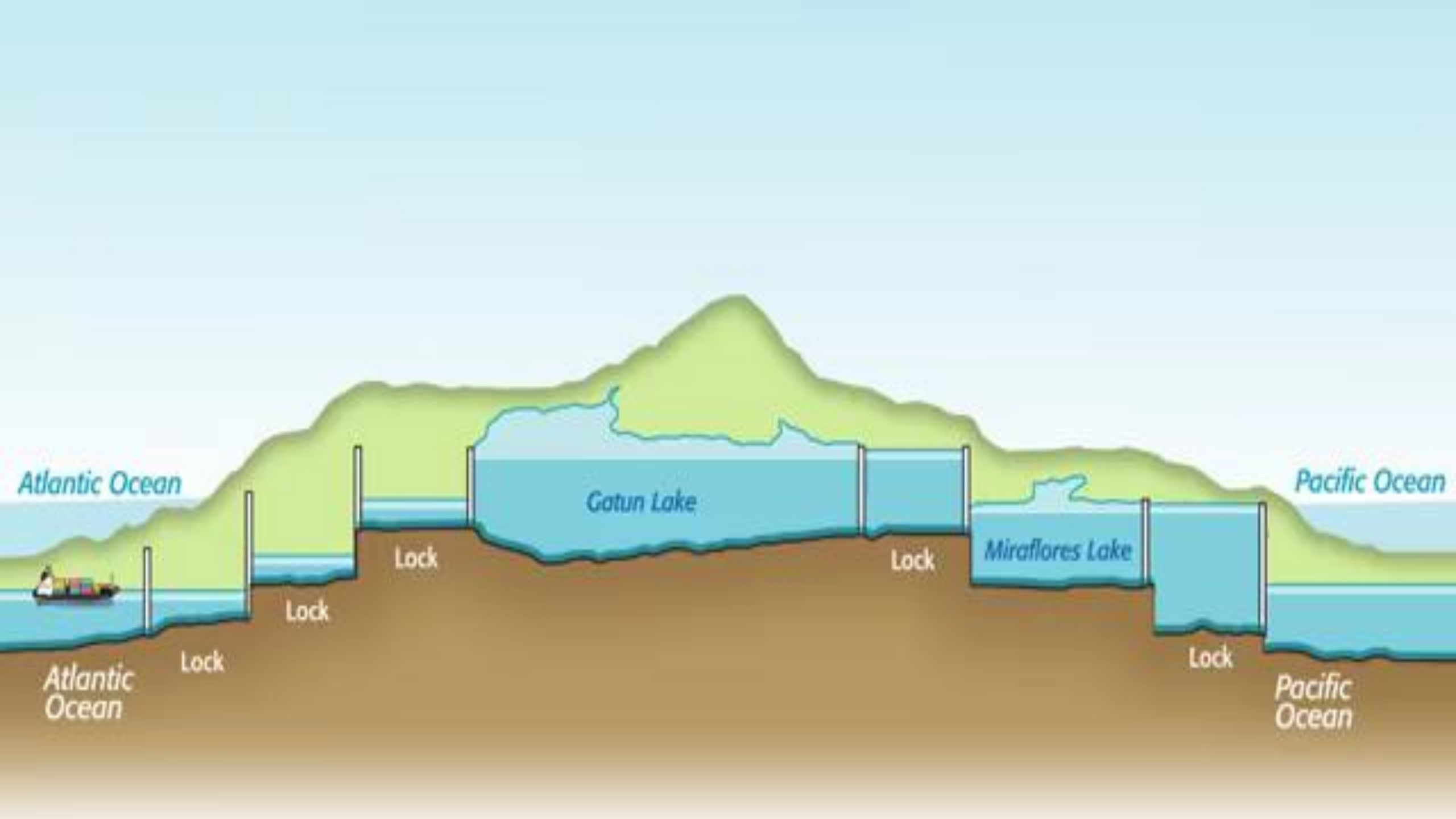
पनामा नहर का जल लिफ्ट प्रणाली:

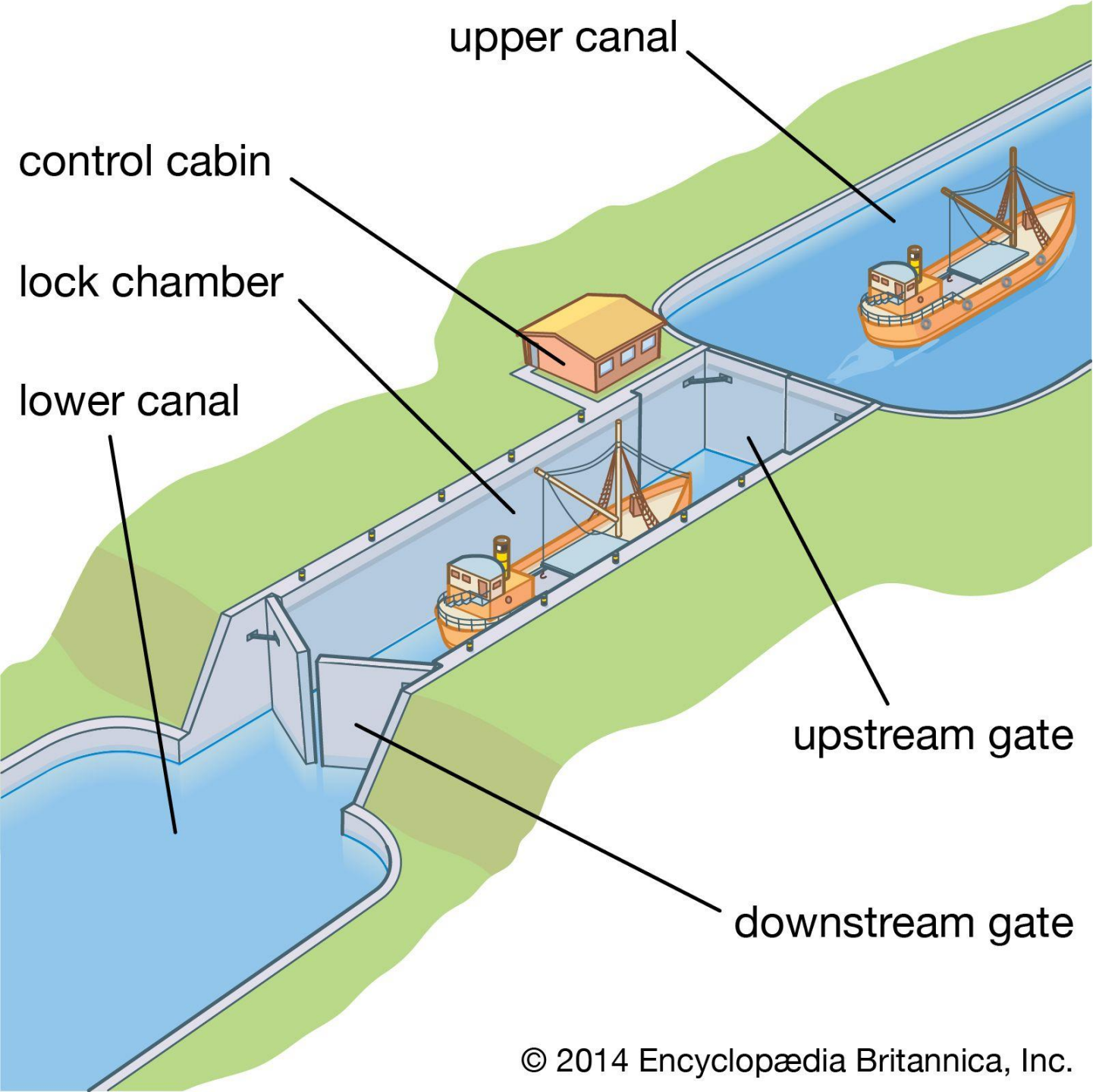
पनामा नहर केवल दो बड़े पानी के शरीर को जोड़ने वाली एक साधारण नहर नहीं है — यह एक जटिल और उच्च-प्रौद्योगिकी प्रणाली है जो जहाजों को एक छोर से दूसरे छोर तक ले जाने के लिए लॉक और लिफ्ट का उपयोग करती है।

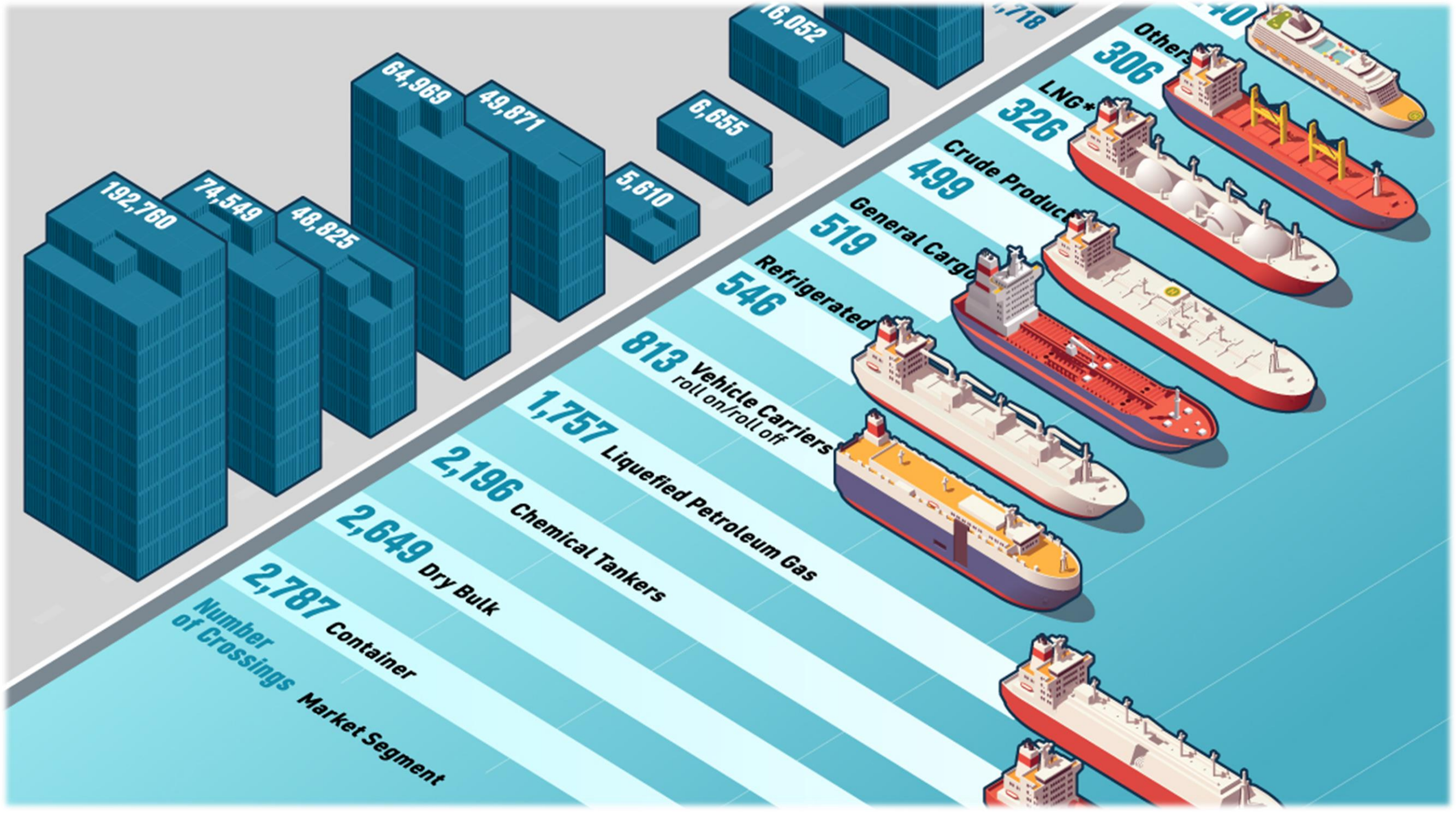
पनामा नहर से जुड़े दो महासागर समान ऊँचाई पर नहीं हैं। पैसिफिक महासागर अटलांटिक महासागर से थोड़ा ऊँचा है। इसलिए, जब एक जहाज अटलांटिक से नहर में प्रवेश करता है, तो उसे पैसिफिक महासागर तक पहुंचने के लिए ऊँचाई प्राप्त करनी पड़ती है। यह लॉक सिस्टम के माध्यम से किया जाता है, जो जहाजों को आवश्यक समुद्री स्तर पर लिफ्ट और ड्रॉप करता है।

लॉक का संचालन (Operation of the Locks):

- **जहाज का प्रवेश:** जहाज पहले लॉक चैंबर की ओर बढ़ता है, जो समुद्र स्तर पर होता है। गेट खुलता है और जहाज चैंबर में प्रवेश करता है, फिर गेट बंद हो जाता है।
- **पानी का स्तर समायोजन:** पहले और दूसरे चैंबर (ऊँचाई पर) के बीच का वाल्व खोला जाता है, जिससे पानी पहले चैंबर में बहता है और इसका स्तर बढ़ जाता है।
- **परीक्षण:** जब दोनों चैंबर के पानी के स्तर समान हो जाते हैं, तब बीच का गेट खुल जाता है और जहाज अगले चैंबर में प्रवेश कर जाता है। यह प्रक्रिया तब तक दोहराई जाती है जब तक जहाज गाटुन लेक पर 85 फीट की ऊँचाई तक नहीं पहुँच जाता।
- **नीचे लाना:** जब जहाज को नहर के दूसरे छोर पर समुद्र स्तर पर वापस लाना होता है, तो उल्टा प्रक्रिया की जाती है।


Atlantic Ocean
Gatun Lake
Pacific Ocean
Lock
Lock
Lock
Lock
Lock
Miraflores Lake
Atlantic Ocean
Pacific Ocean

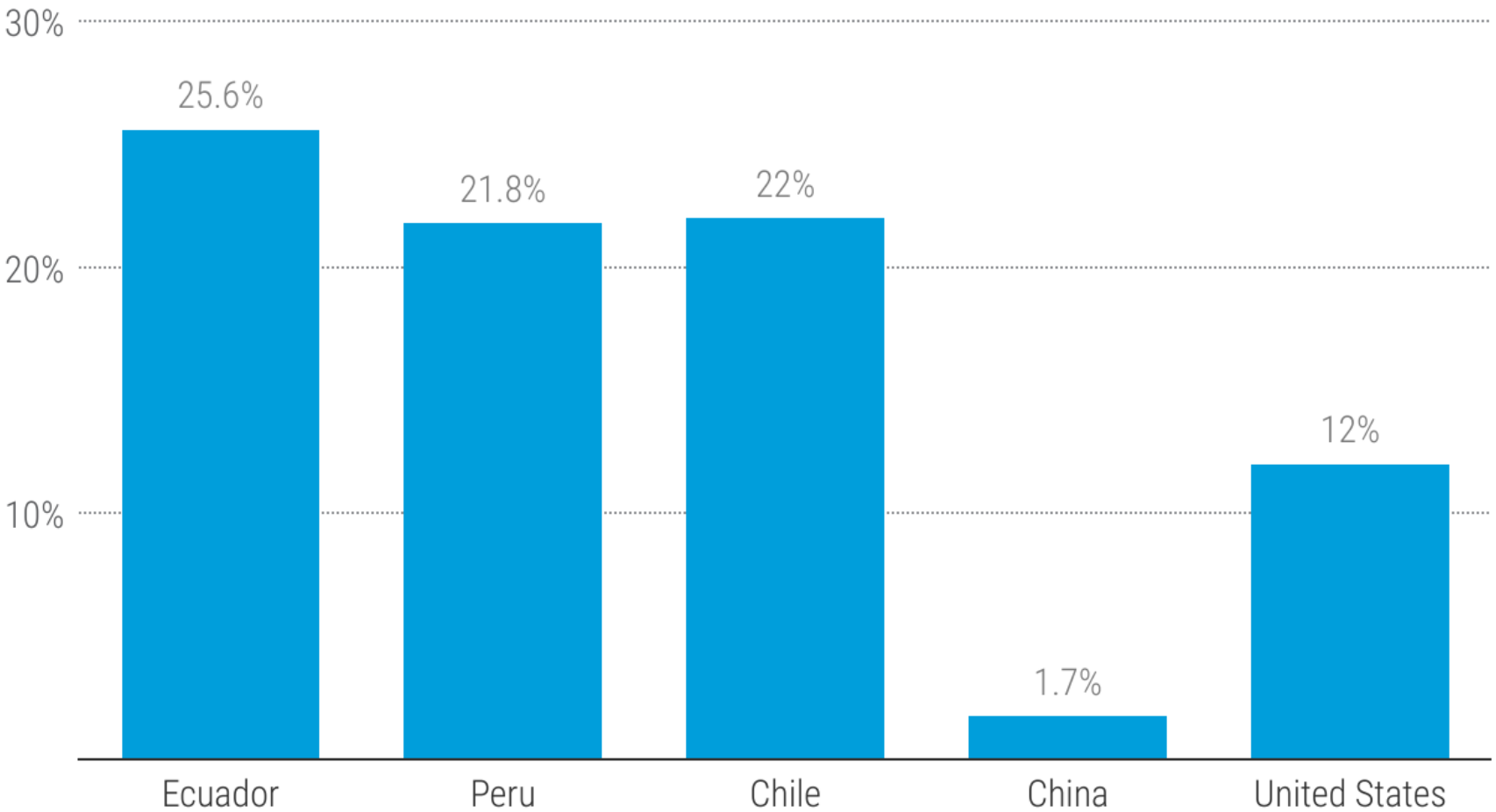



Number of Crossings
Market Segment
192,760
74,549
48,825
64,969
49,871
5,610
6,655
16,052
2,787 Container
2,649 Dry Bulk
2,196 Chemical Tankers
1,757 Liquefied Petroleum Gas
813 Vehicle Carriers
roll on/roll off
546 Refrigerated
519 General Cargo
499 Crude Product
326 LNG*
306 Others

UNITED NATIONS
UNCTAD

Importance of Panama Canal for selected countries

Share of trade volume, in tons, going through the Panama Canal, 2021



Source: NCTAD estimates, based on data from the Panama Canal Authority and UNCTAD trade volume statistics.

annual trade value through panama canal

The Panama Canal moves about **$270 billion** worth of cargo annually, which is about 5% of all global maritime trade. The canal is a 50-mile artificial waterway that connects the Atlantic and Pacific Oceans in the Isthmus of Panama. It's a key chokepoint in the global maritime network, along with the Suez Canal, the Strait of Hormuz, and the Strait of Malacca. The canal's locks lift ships to Gatun Lake, an artificial freshwater lake that's 85 ft above sea level, which shortens the travel time between the oceans and avoids the route around the southernmost tip of South America.

The Panama Canal is the largest economic contributor to Panama's services sector, which accounts for about 80% of the country's GDP. In 2021, the canal generated nearly $3 billion in revenue from tolls. The U.S. is the largest user of the canal, with about 73% of its traffic being U.S. commodity export and import containers.

india trade amount through panama canal

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हिन्दी में In English

India-Panama trade in 2022-23 was **US$ 597.91 million** (Exports to Panama, US$ 314.56 million and Imports from Panama, US$ 283.35 million).

India Exports to Panama

India Exports to Panama was US$307.32 Million during 2023, according to the United Nations COMTRADE database on international trade. India Exports to Panama - data, historical chart and statistics - was last updated on August of 2024.

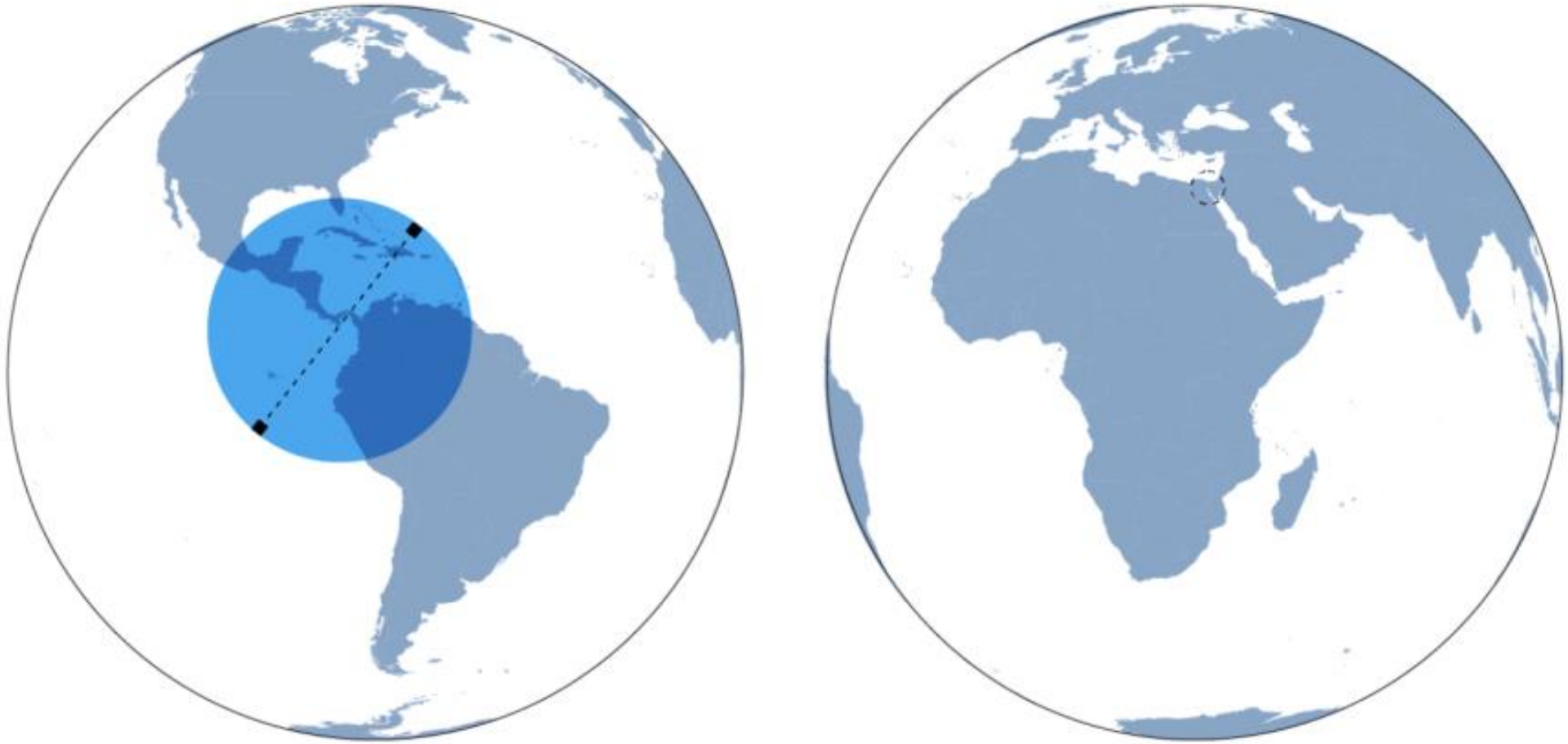
5Y 10Y 25Y MAX Compare + Export API

Panama Canal restrictions will likely cause many ships to divert to other routes.

Potential alternative shipping routes

3,964

fewer transits through the Panama Canal in 2024

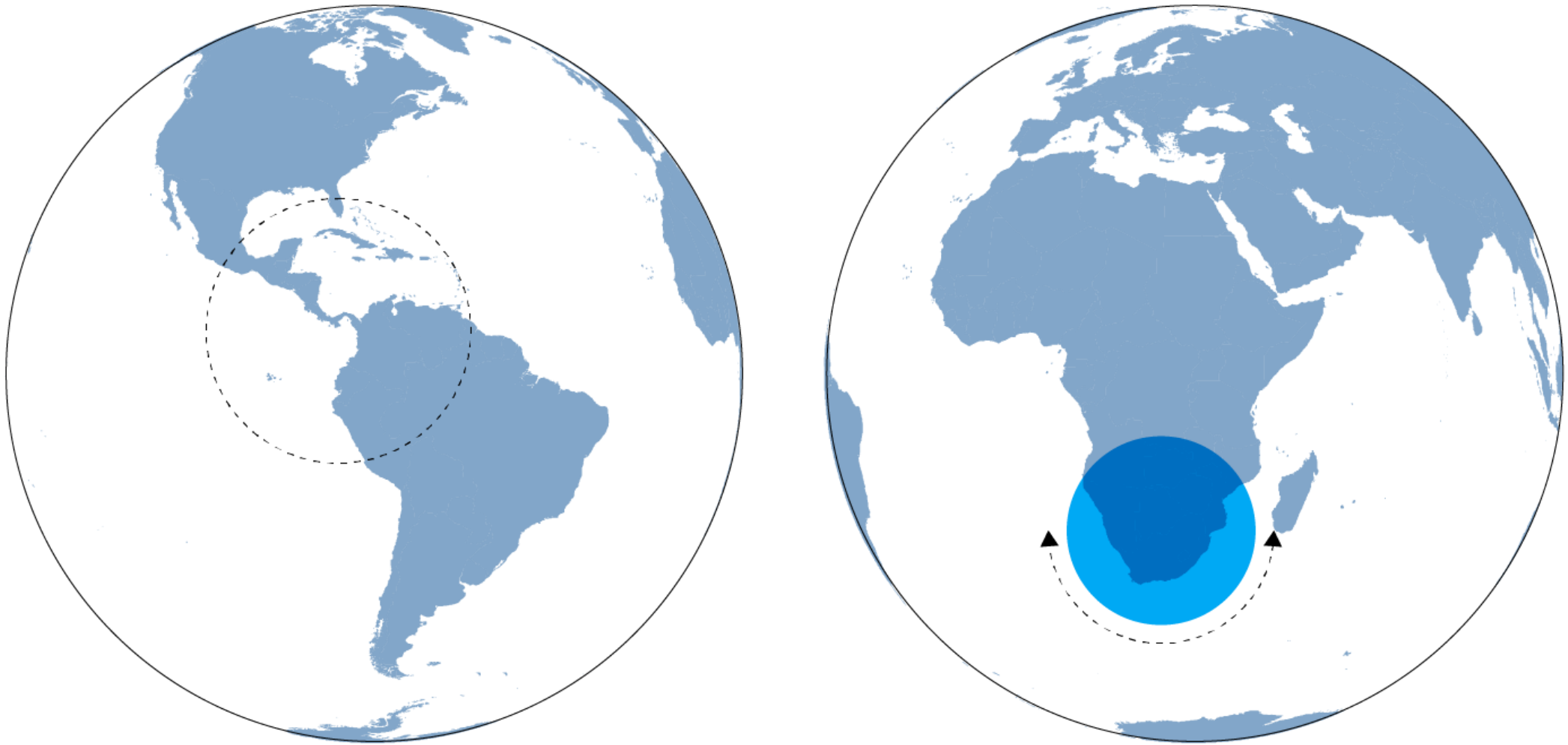


Source: world trade statistics; Panama Canal Authority

Potential alternative shipping routes

1,954

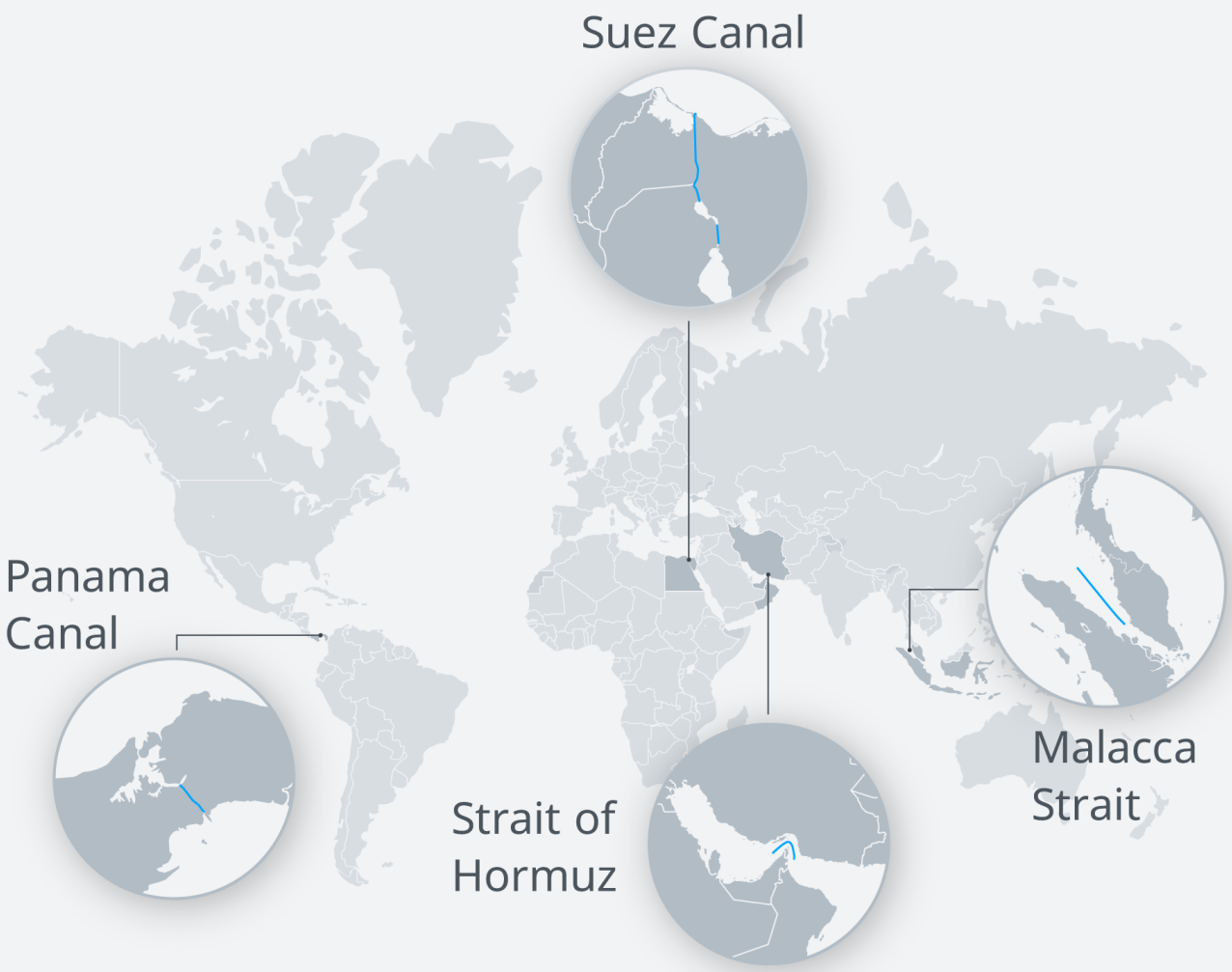
more transits around the Cape of Good Hope (~5 more ships per day)



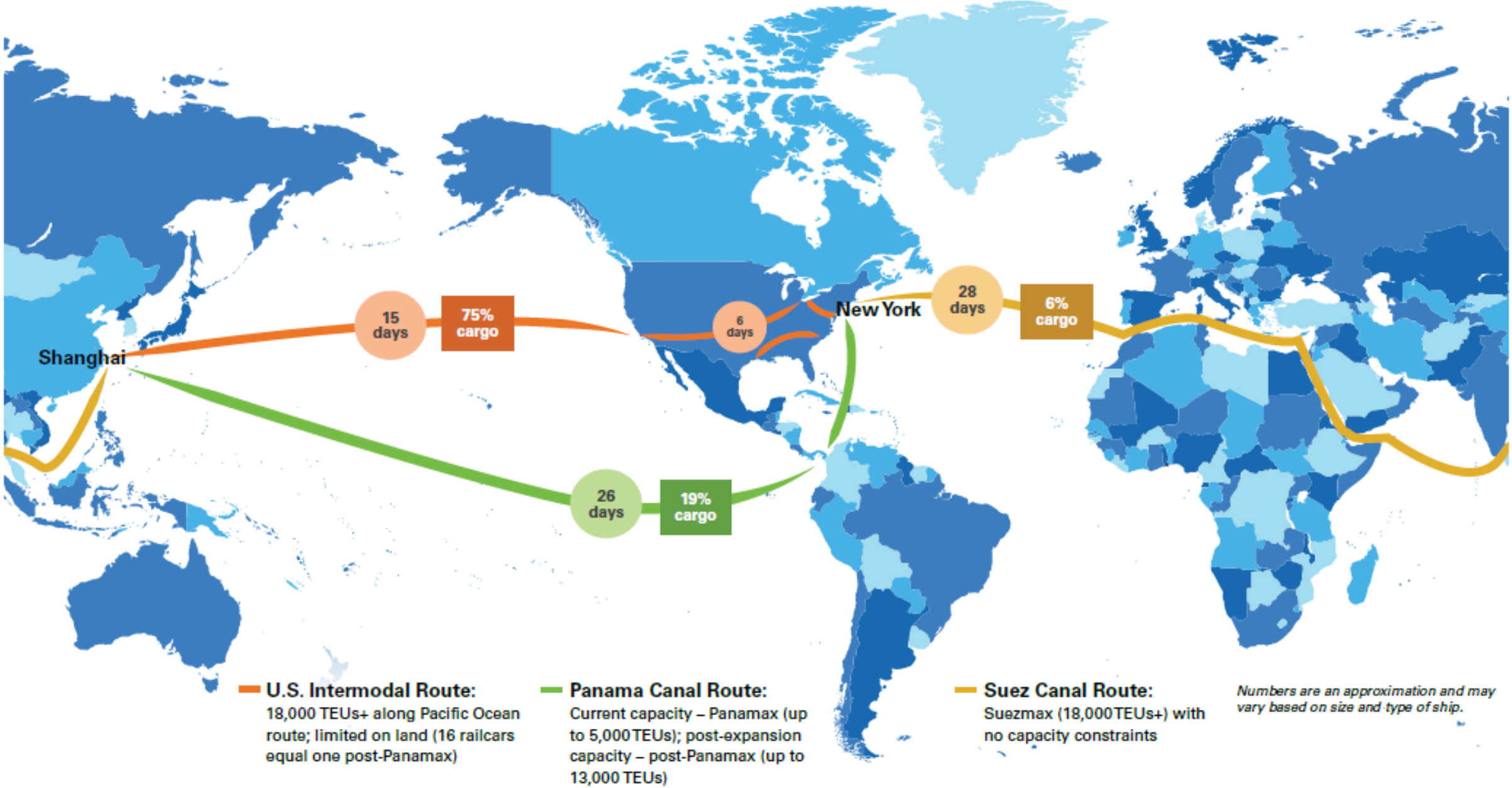
Source: Panama Canal Authority; world trade statistics

McKinsey & Company

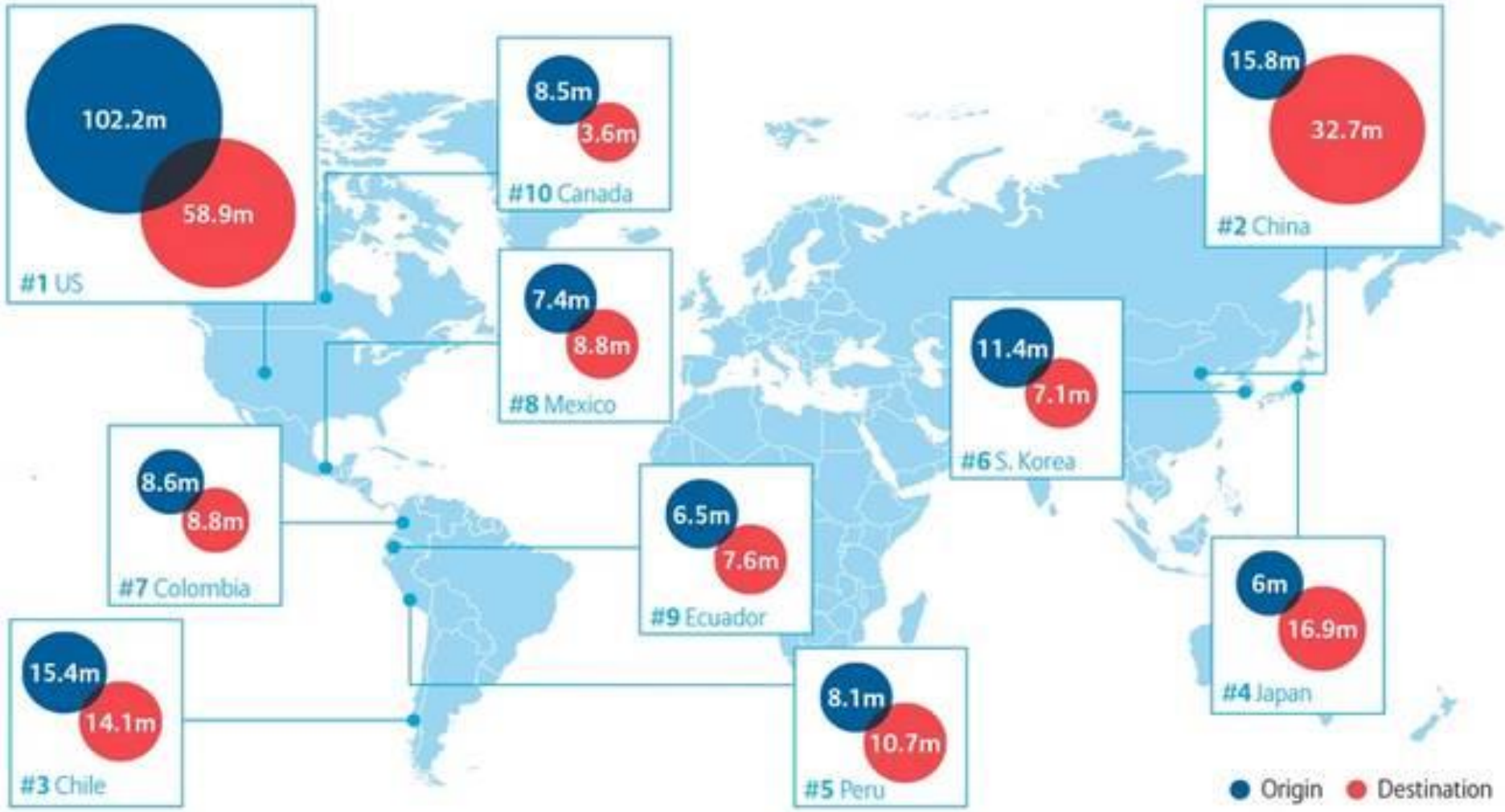
The world's biggest trade chokepoints



Source: NED, OSM


Shanghai
15 days
75% cargo
6 days
New York
28 days
6% cargo
26 days
19% cargo
U.S. Intermodal Route:
18,000 TEUs+ along Pacific Ocean route; limited on land (16 railcars equal one post-Panamax)
Panama Canal Route:
Current capacity – Panamax (up to 5,000 TEUs); post-expansion capacity – post-Panamax (up to 13,000 TEUs)
Suez Canal Route:
Suezmax (18,000 TEUs+) with no capacity constraints
Numbers are an approximation and may vary based on size and type of ship.

Panama Canal Top 10 countries by origin and destination of cargo



Source: pancanal.com. Analysis and Graphic: Allianz Global Corporate & Specialty


जलवायु परिवर्तन का खतरा (Climate
change threat):

जलवायु परिवर्तन का खतरा (Climate change threat):

पनामा नहर को जहाजों के आवागमन के लिए बहुत अधिक ताजे पानी की ज़रूरत होती है। यह पानी ज्यादातर गाटुन झील से गुरुत्वाकर्षण की मदद से मिलता है (पंप की जरूरत नहीं होती)।

पनामा नहर से एक जहाज के गुजरने के लिए 50 मिलियन गैलन (लगभग 200 मिलियन लीटर) पानी की आवश्यकता होती है। इसका मतलब है कि हर दिन, नहर न्यू यॉर्क सिटी के 8 मिलियन निवासियों द्वारा इस्तेमाल किए गए पानी की मात्रा से ढाई गुना ज्यादा पानी का उपयोग करती है।

पिछले साल, गाटुन झील के पानी का स्तर कम होने के कारण, कम जहाज ही नहर से गुजर पाए और जो जहाज गुजरे, उन्हें अक्सर अपने माल की मात्रा कम करनी पड़ी। अगर समुद्र के पानी का उपयोग किया जाए, तो इससे गाटुन झील की लवणता बढ़ जाती है, जो पनामा के 4.4 मिलियन लोगों के आधे से अधिक के लिए पीने का पानी है।

हालांकि इस साल बारिश की स्थिति बेहतर रही है, लेकिन विशेषज्ञों का कहना है कि यह केवल एक अस्थायी राहत है। SSA इंटरनेशनल के अध्यक्ष कार्लोस उर्रिओला ने NYT से कहा, "बारिश न केवल सड़कों को धोती है, बल्कि हमारी सोच को भी साफ करती है और हमें लगता है कि समस्या हल हो गई है। पानी की समस्या स्थायी है।"

यह स्थायी समस्या जलवायु परिवर्तन की बड़ी समस्या से जुड़ी है। पनामा में वर्षों से बारिश की कमी होती रही है, लेकिन अब यह अधिक आम हो गई है। विशेषज्ञों का कहना है कि जैसे-जैसे धरती गर्म होती जा रही है, यह कमी भविष्य में और भी बढ़ सकती है।

स्मिथसोनियन ट्रॉपिकल रिसर्च इंस्टीट्यूट के जलवायु परिवर्तन विशेषज्ञ स्टीवन पैटन ने गार्जियन से कहा कि "ऐतिहासिक रूप से, हर 20 साल में El Niño इवेंट के कारण बारिश की कमी होती थी। पिछले 26 वर्षों में यह तीसरी बड़ी बारिश की कमी है।

एक विवादास्पद समाधान:

पनामा नहर के अधिकारी ने नहर के लिए पानी का एक दूसरा स्रोत बनाने का प्रस्ताव दिया है, जिसमें रियो इंडियो नदी को रोकने का सुझाव दिया गया है। यह पहली बार नहीं है जब ऐसा प्रस्ताव रखा गया है, लेकिन पहले एक पुराना कानून इस नदी को छूने की अनुमति नहीं देता था। पिछले महीने, पनामा की सुप्रीम कोर्ट ने उस प्रतिबंध को हटा दिया, जिससे 1.6 अरब डॉलर की लागत से एक डेम बनाने का रास्ता खुल गया। जिससे नहर के लिए अगले 50 वर्षों तक पानी की उपलब्धता सुनिश्चित की जा सके। हालांकि, इसकी सामाजिक समस्याओं के कारण विवाद हुआ है।

विस्थापन की समस्याएँ: लेकिन सभी लोग इस प्रस्ताव से खुश नहीं हैं। जो जलाशय इस डेम से बनेगा, वह 2,000 लोगों के घरों को भी डुबो देगा, जो ज्यादातर निम्न सामाजिक-आर्थिक वर्ग से हैं। उन्हें पुनर्वासित किया जाएगा और वे दशकों से अपनी ज़मीन और आजीविका खो देंगे।

2024

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- 30+ PYQ'S
- 10+ TOPIC WISE TEST
- 65+ CURRENT AFFAIRS

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6 पुस्तकों का सम्पूर्ण सेट

अधिक जानकारी के लिए दिए गए नंबर पर संपर्क करें....

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Title: _____ Date: __/__/____

→ सिन्धु नदी का उद्गम कैलाश पर्वतीय क्षेत्र में बोखर चू हिमनद से होता है।
→ तिब्बत में इस नदी को सिंगी खंबान कहते है।
→ यह पमचोक नामक स्थान से भारत में प्रवेश करती है।
→ यह नदी भारत में लद्दाख तथा जास्कर श्रेणी के बीच बहती है।
→ पाकिस्तान में यह अटक (Attock) नामक स्थानों पर मैदानों में प्रवेश करती है।
→ पाकिस्तान में कराँची के पास डेल्टा बनाते हुए यह अरब सागर में गिरती है।
→ सिंधु नदी की दायें हाथ की प्रमुख सहायक नदियाँ :- श्योक, नुब्रा, हुनजा, गिलगिट, स्वात, काबुल तथा गोमल
→ इसकी प्रमुख बायें हाथ की सहायक नदियाँ झेलम, चिनाब रावी, व्यास, सतलज, ट्रांस तथा जास्कर
पंचनद ←

→ सिंधु में पंचनद पाक में मिठानकोट नामक स्थान पर मिलती है।
→ 'लेह' सिंधु नदी के किनारे स्थित है।

पंचनद

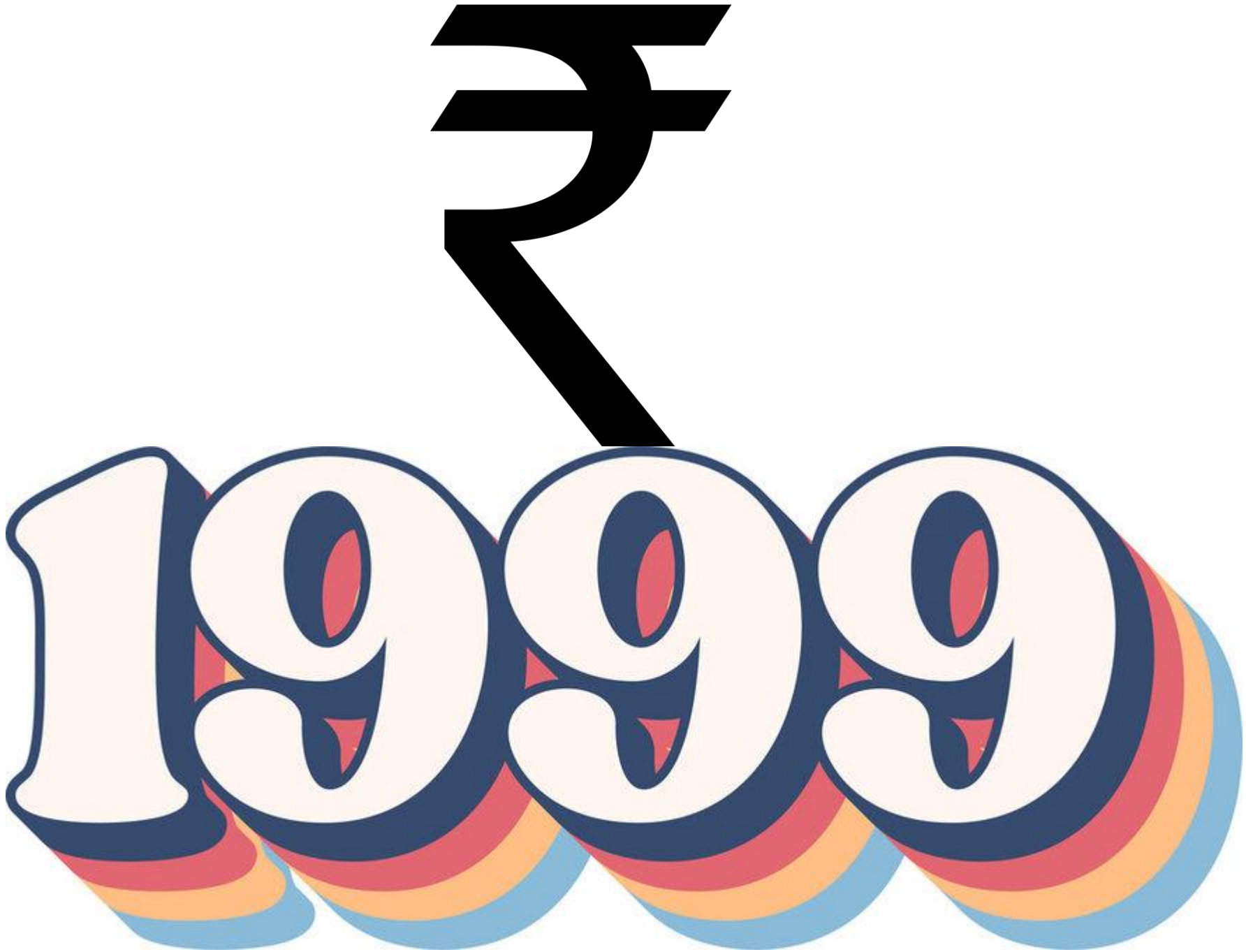
i) झेलम :- इस नदी का उद्गम जम्मू कश्मीर में

Title: _____ Date: __/__/____

वेरिनाग झील से होता है।
* यह नदी वूलर झील का निर्माण करती है जो भारत की सबसे बड़ी मीठे पानी की झील है।
→ इस नदी के किनारे श्रीनगर स्थित है।
→ किशनगंगा इसकी दायें हाथ की प्रमुख सहायक नदी है।
→ इस नदी पर तुलबुल परियोजना प्रस्तावित है। यह एक नौवहन परियोजना है।
→ यह नदी भारत तथा पाकिस्तान के बीच अन्तर्राष्ट्रीय सीमा का निर्माण करती है।

ii) चिनाब :- चिनाब नदी का उद्गम हिमाचल प्रदेश में बारालच्चा दर्रे के पास चन्द्र तथा भागा नदियों के मिलने (Confluence) से होता है।
→ J&K में इस नदी पर जल विद्युत उत्पादन परियोजनाएँ स्थित है।
उदाहरण :- दुलहस्ती, सलाल, बगलिहार
→ यह सिंधु नदी की सबसे बड़ी सहायक नदी है।

iii) रावी :- रावी नदी का उद्गम शैहतांग दर्रे के पास से हिमाचल प्रदेश में होता है।
→ हिमाचल प्रदेश में इस नदी पर चमेरा बाँध स्थित है।
→ पंजाब में इस नदी पर थीन परियोजना स्थित है।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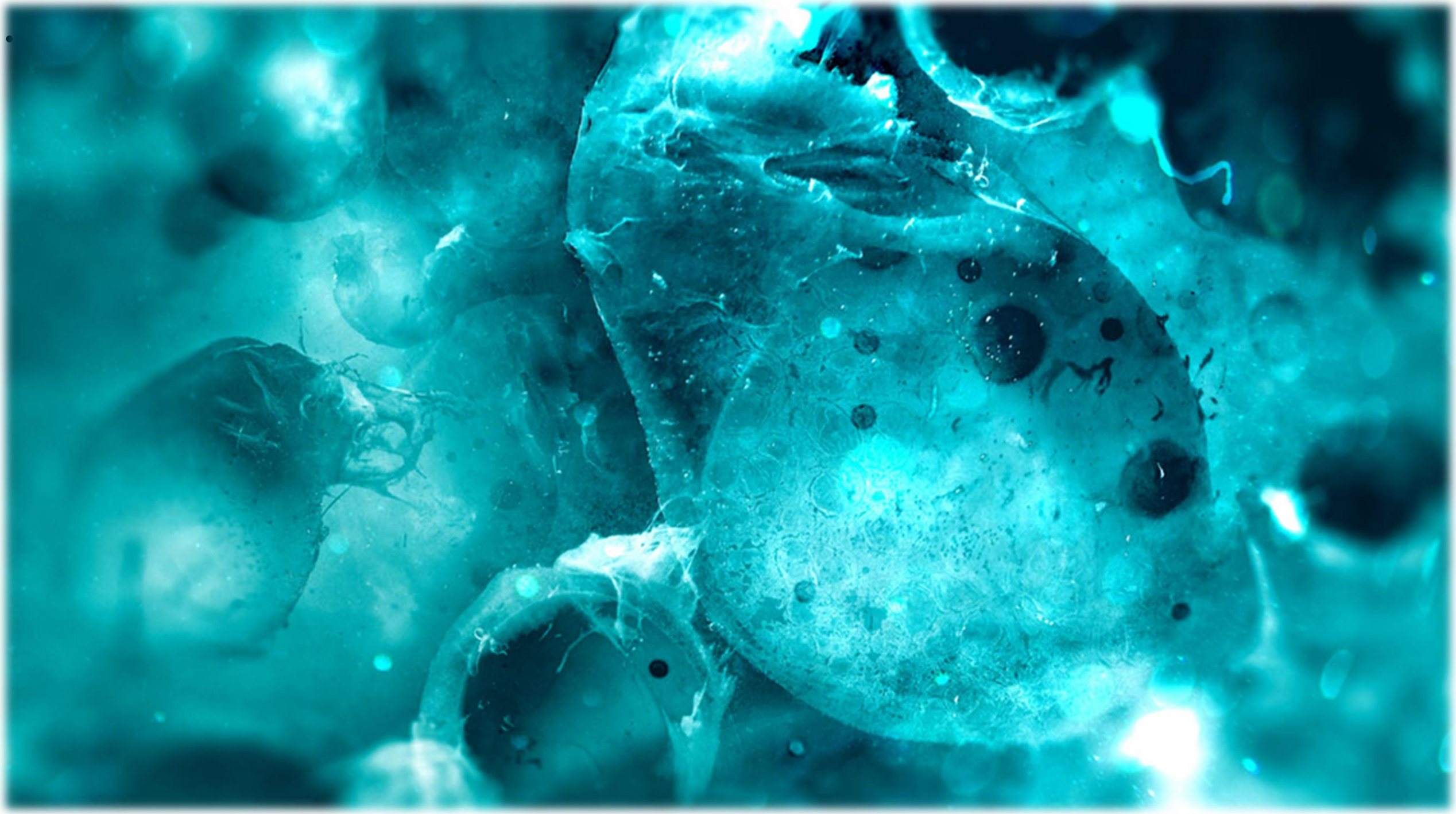
Hayflick limit



ScienceDirect.com
https://www.sciencedirect.com › medicine-and-dentistry

Hayflick Limit - an overview

Hayflick limit is **a state of cells entering into aging due to chronic inflammation and cell damage or entering the** phase of cell mutation towards cancer. From: ...

ScienceDirect.com
https://www.sciencedirect.com › topics › hayflick-limit

Hayflick Limit - an overview

Hayflick limit or Hayflick's phenomena is defined **as the number of times a normal cell population divides before entering the senescence phase**. Macfarlane ...

Nature
https://www.nature.com › ... › timeline

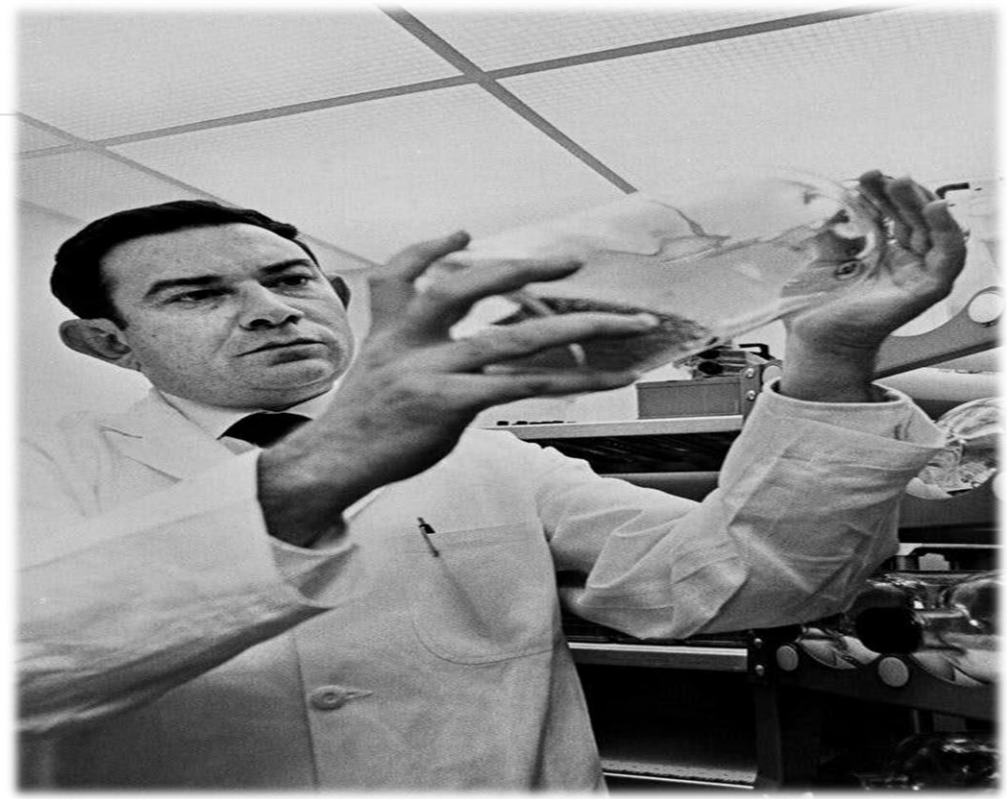
Hayflick, his limit, and cellular ageing

by JW Shay · 2000 · Cited by 1169 — Almost 40 years ago, Leonard Hayflick discovered that **cultured normal human cells have limited capacity to divide**, after which they become ...

The New York Times

Leonard Hayflick, Who Discovered Why No One Lives Forever, Dies at 96

A biomedical researcher, he found that normal cells can divide only a certain number of times before they age — which, he said, explained aging on a cellular level.



Biomedical researcher Leonard Hayflick, who discovered that normal somatic cells can divide (and thus reproduce) only a certain number of times, died on August 1 at the age of 98.

Hayflick's discovery fundamentally changed the understanding of aging — especially the thesis that cells are capable of being immortal, and aging is simply a factor of externalities such as disease, diet, and solar radiation.

Leonard Hayflick

Born	May 20, 1928 Philadelphia, Pennsylvania, U.S.
Died	August 1, 2024 (aged 96) Sea Ranch, California, U.S.
Alma mater	University of Pennsylvania (PhD)
Known for	Discovering the Hayflick limit WI-38 cell strain Vaccine Production Cell culture Aging research

Scientific career

Fields	Biochemistry Biophysics Cell Biology Enzymology Genetics Molecular Biology
Institutions	Wistar Institute University of Pennsylvania Stanford University School of Medicine University of Florida UCSF School of Medicine

About Leonard Hayflick

Leonard Hayflick, born in 1928, studied at the University of California, San Francisco. He made important discoveries about how cells age, showing that cells cannot divide forever, which challenged earlier beliefs. His research helped us better understand how aging works and has been important in the fields of genetics, cancer research, and regenerative medicine. He also pointed out the key role of telomeres—protective parts of our DNA—in determining how long cells can keep dividing.


Hayflick limit

The Concept and Proof of the Hayflick Limit

At one time it was claimed that human cells could be immortal if grown properly in cell cultures.

American anatomist **Leonard Hayflick** was able to prove that human cells actually age just as we do.

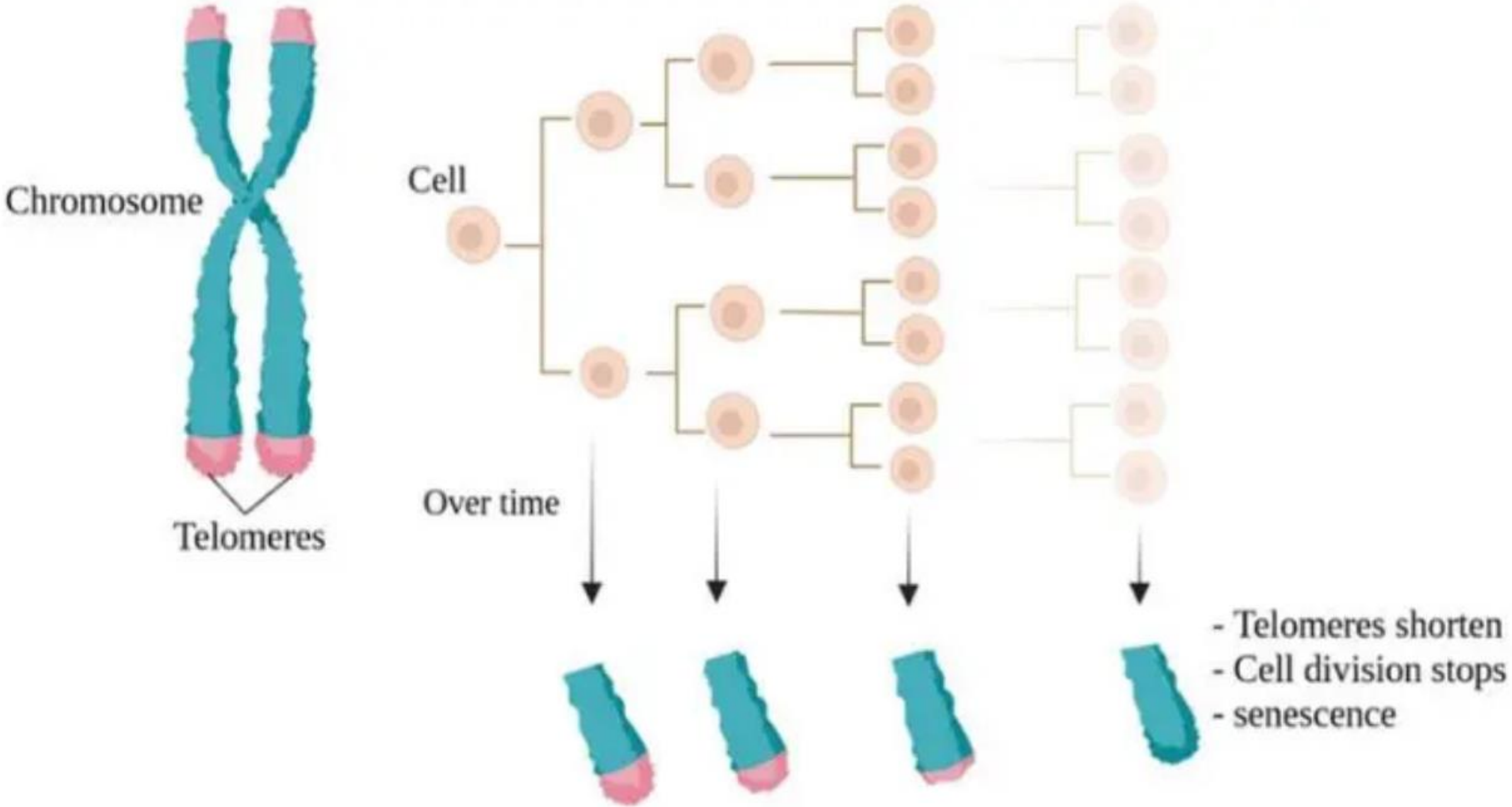
This knowledge has expanded the understanding of human longevity and how to effectively prolong it.

What is the Hayflick Limit?

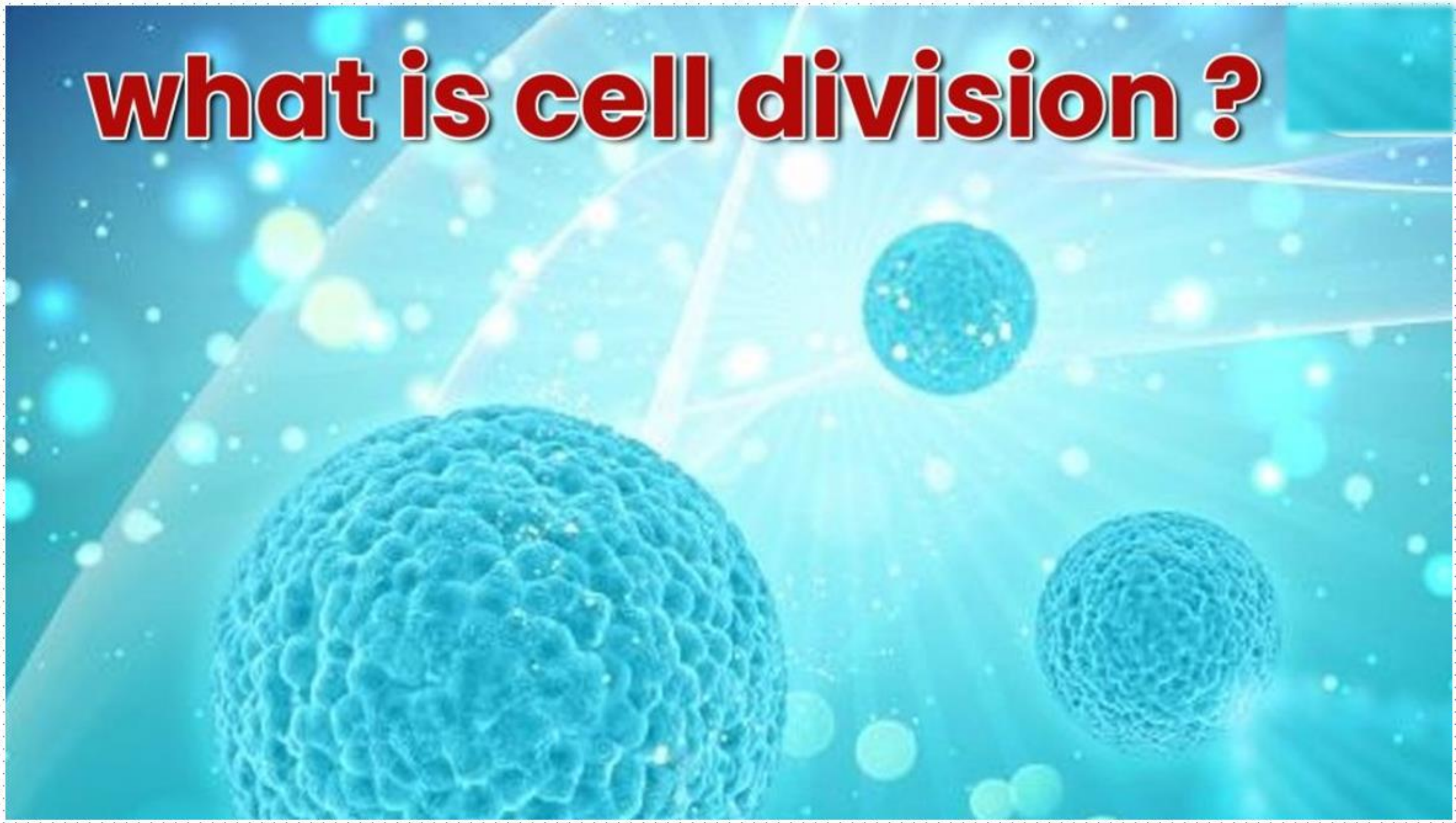
The Hayflick Limit is a concept in cellular biology that refers to the maximum number of times a normal human cell can divide before it stops dividing and enters a state known as senescence. This limit is typically around *40 to 60 cell divisions*.

The Hayflick Limit is named after Leonard Hayflick, who discovered in the 1960s that normal cells have a finite capacity for replication. The phenomenon is associated with the shortening of telomeres, which are protective caps on the ends of chromosomes. With each cell division, telomeres shorten, eventually leading to the cell's inability to divide further.

This limit is important in understanding aging and the development of age-related diseases.


Chromosome
Telomeres
Cell
Over time
- Telomeres shorten
- Cell division stops
- senescence

what is cell division ?



कोशिका विभाजन क्या है?:

कोशिका विभाजन (Cell Division) वह प्रक्रिया है जिसके द्वारा एक कोशिका खुद को विभाजित करके दो या अधिक नई कोशिकाएं बनाती है। यह प्रक्रिया जीवन के लिए अत्यंत महत्वपूर्ण है, क्योंकि यह विकास, वृद्धि, मरम्मत और प्रजनन के लिए आवश्यक है।

कोशिका विभाजन के दौरान, एक माता-पिता कोशिका (parent cell) अपनी आनुवंशिक सामग्री (DNA) को नई कोशिकाओं में समान रूप से बांटती है, जिससे प्रत्येक नई कोशिका में पूर्ण जीनोम मौजूद होता है।

मनुष्यों में कोशिका विभाजन दो मुख्य प्रक्रियाओं के माध्यम से होता है: समसूत्री विभाजन और अर्द्धसूत्री विभाजन।

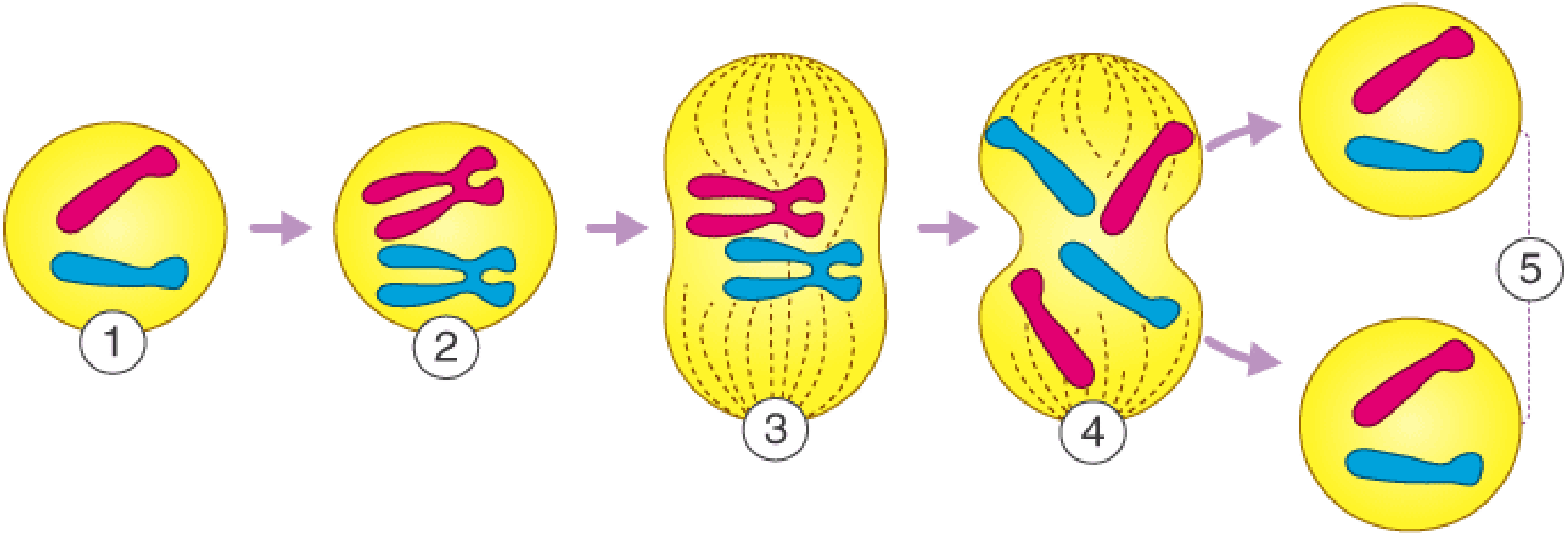
कोशिका विभाजन के प्रकार:

1. माइटोसिस (Mitosis):

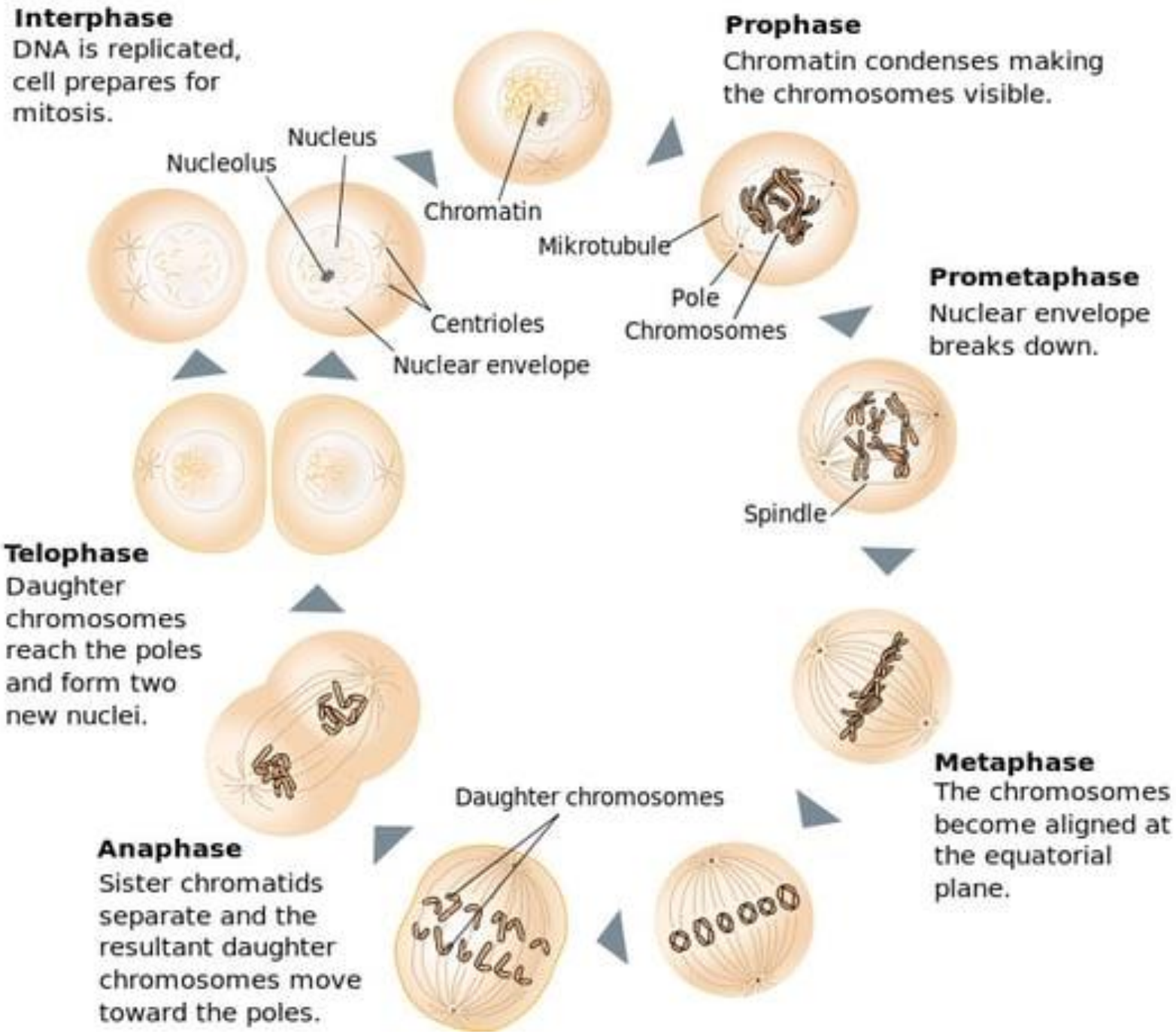
माइटोसिस एक प्रकार का कोशिका विभाजन है, जिसमें एक माता-पिता कोशिका खुद को दो समान पुत्री कोशिकाओं (daughter cells) में विभाजित करती है। यह विभाजन शरीर की अधिकांश सोमेटिक कोशिकाओं (non-reproductive cells) में होता है, जो शरीर की वृद्धि, मरम्मत और पुनर्नवीनीकरण में महत्वपूर्ण भूमिका निभाता है।

प्रक्रिया: माइटोसिस में, कोशिका की क्रोमोसोम संख्या समान रहती है। यानि, अगर माता-पिता कोशिका में 46 क्रोमोसोम हैं, तो पुत्री कोशिकाओं में भी 46 क्रोमोसोम होंगे।

MITOSIS STAGES



1 Interphase | 2 Prophase | 3 Metaphase | 4 Anaphase | 5 Telophase


Interphase
DNA is replicated, cell prepares for mitosis.
Nucleus
Nucleolus
Chromatin
Centrioles
Nuclear envelope
Prophase
Chromatin condenses making the chromosomes visible.
Mikrotubule
Pole
Chromosomes
Prometaphase
Nuclear envelope breaks down.
Spindle
Metaphase
The chromosomes become aligned at the equatorial plane.
Daughter chromosomes
Anaphase
Sister chromatids separate and the resultant daughter chromosomes move toward the poles.
Telophase
Daughter chromosomes reach the poles and form two new nuclei.

2. मीयोसिस (Meiosis):

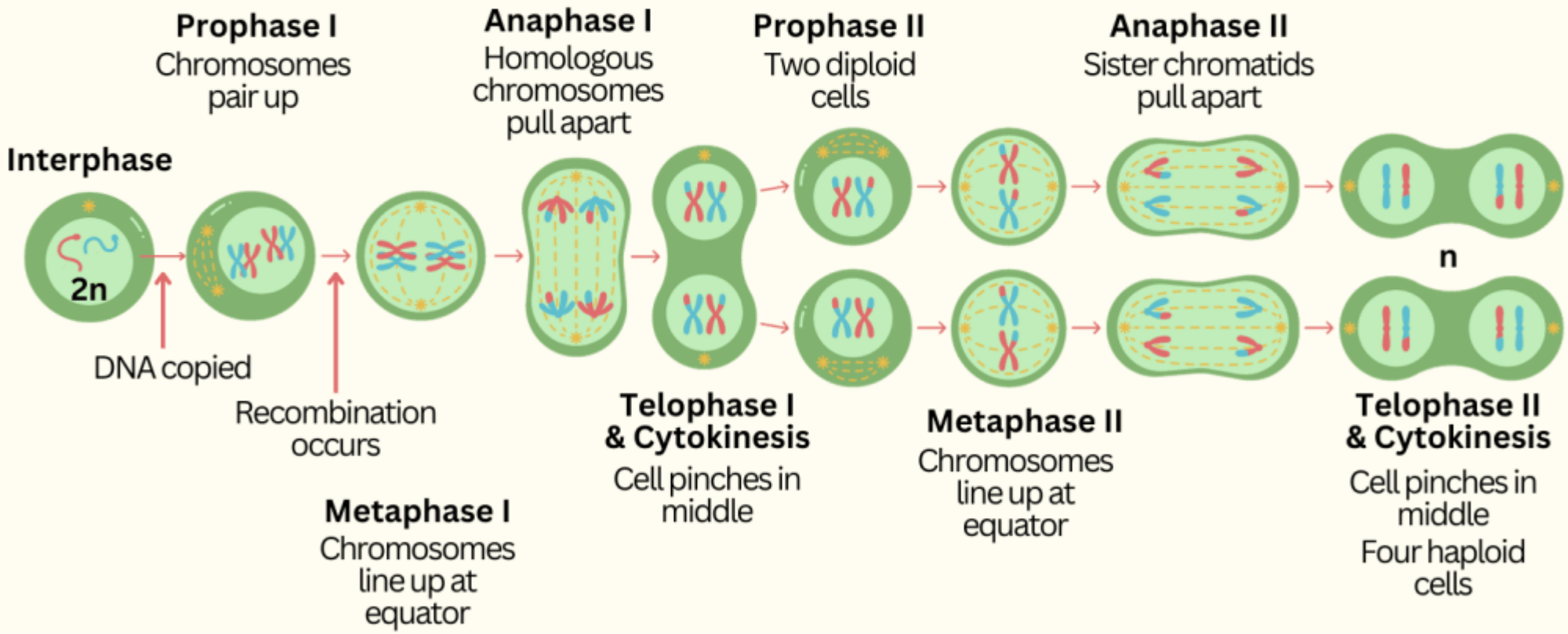
मीयोसिस एक विशेष प्रकार का कोशिका विभाजन है, जो जनन कोशिकाओं (गैमीट्स, जैसे कि स्पर्म और एग) में होता है। मीयोसिस के दौरान, एक माता-पिता कोशिका चार पुत्री कोशिकाओं में विभाजित होती है, और प्रत्येक पुत्री कोशिका में माता-पिता कोशिका की आधी क्रोमोसोम संख्या होती है।

प्रक्रिया: मीयोसिस दो चरणों में होता है—मीयोसिस I और मीयोसिस II।

इसमें क्रोमोसोम्स की संख्या आधी हो जाती है, जिससे नई पुत्री कोशिकाएं हाप्लॉयड (haploid) होती हैं। यानि, अगर माता-पिता कोशिका में 46 क्रोमोसोम थे, तो प्रत्येक पुत्री कोशिका में 23 क्रोमोसोम होंगे। मीयोसिस प्रजनन के दौरान युग्मकों के निर्माण में महत्वपूर्ण है और यह आनुवंशिक विविधता में योगदान देता है।

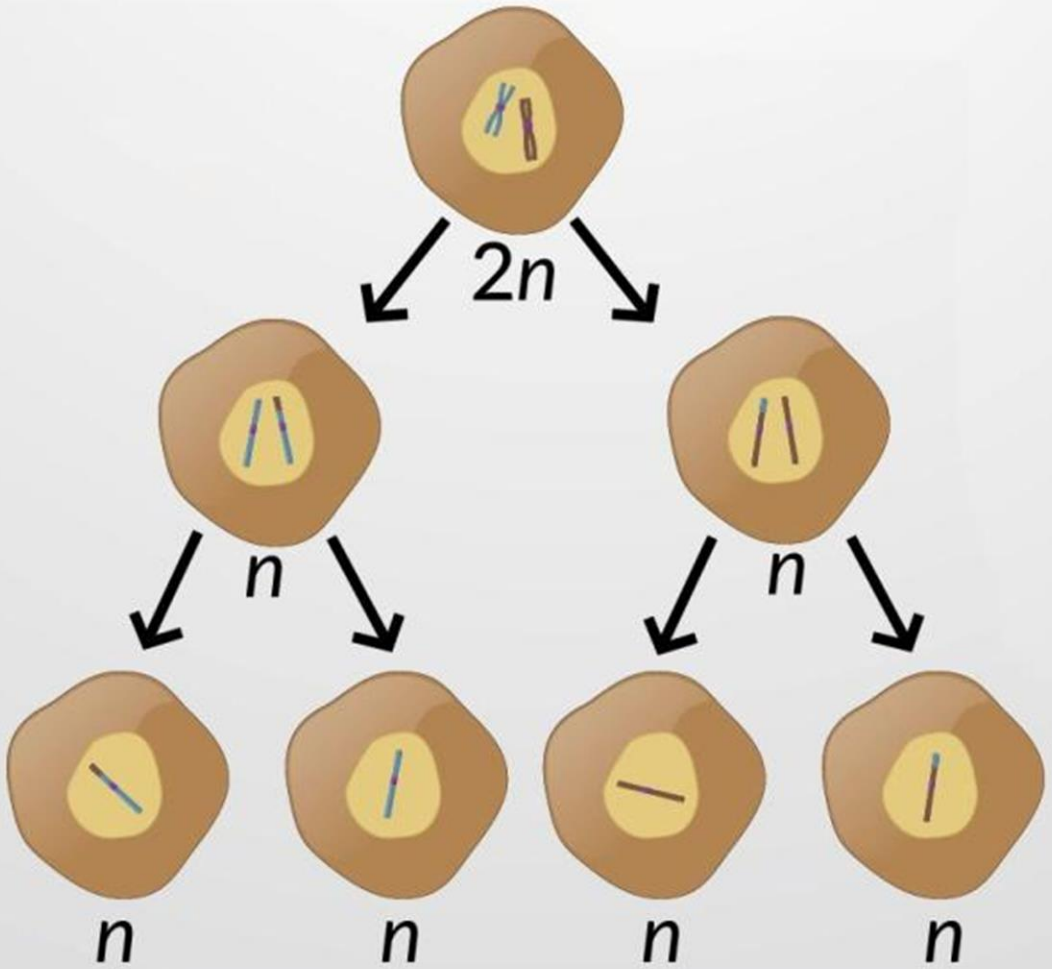
MEIOSIS

Meiosis is the process where a cell divides twice, forming four cells that each contain half the genetic information (2n→n).



Meiosis forms sperm and egg (sex cells or gametes).

मीयोसिस



क्र.	समसूत्री विभाजन (Mitosis)	अर्द्धसूत्री विभाजन (Meiosis)
	सामान्य	
1.	यह विभाजन कायिक कोशिकाओं में होता है।	यह विभाजन जनन कोशिकाओं में होता है।
2.	इसके द्वारा दो सन्तति कोशिकाएँ बनती हैं।	चार कोशिकाएँ बनती हैं।
3.	इस विभाजन में कम समय लगता है और एक ही बार में पूरा हो जाता है।	इसमें अधिक समय लगता है और यह दो चरणों में पूरा होता है।
	प्रोफेज	
4.	यह थोड़े समय तक होता है।	यह लम्बे समय तक होता है।
5.	इसमें जीन विनिमय नहीं होता।	इसमें जीन विनिमय होता है।
6.	इसमें उप-अवस्थाएँ नहीं होतीं।	इसमें 5 उप-अवस्थाएँ पायी जाती हैं।
	मेटाफेज	
7.	इसमें सेण्ट्रोमियर विभाजित होता है।	इसकी प्रथम अवस्था में सेण्ट्रोमियर विभाजित नहीं होता।
8.	सेण्ट्रोमियर मध्य रेखा की ओर तथा भुजाएँ ध्रुवों की ओर झुकी रहती हैं।	सेण्ट्रोमियर ध्रुवों की ओर तथा भुजाएँ मध्य रेखा की ओर झुकी होती हैं।
	ऐनाफेज	
9.	एक गुणसूत्र का एक अर्द्ध-गुणसूत्र एक ध्रुव की ओर तथा दूसरा, दूसरे ध्रुव की ओर चला जाता है।	ऐनाफेज-I में पूरा गुणसूत्र ध्रुवों की ओर जाता है, जबकि ऐनाफेज-II गति समसूत्री ऐनाफेज के समान होती हैं।
	टीलोफेज	
10.	सन्तति कोशिका में गुणसूत्रों की संख्या समान जनक के होती है।	सन्तति कोशिका में गुणसूत्रों की संख्या जनकों की आधी होती है।

कोशिका चक्र के चरण

कोशिका चक्र के दो प्राथमिक चरण होते हैं:

- **अंतरावस्था:** यह चरण आगामी कोशिका विभाजनों के बीच विश्राम अवस्था का प्रतिनिधित्व करता माना जाता था, लेकिन नए शोध से पता चला है कि यह एक बहुत ही सक्रिय अवस्था है।
- **एम चरण (माइटोसिस चरण):** यह वह चरण है जहाँ वास्तविक कोशिका विभाजन होता है। इस चरण में दो प्रमुख चरण होते हैं, साइटोकाइनेसिस और कैरियोकिनेसिस।

इंटरफ़ेस में आगे तीन चरण शामिल हैं:

- **G0 चरण (विश्राम चरण):** कोशिका न तो विभाजित होती है और न ही विभाजन के लिए स्वयं को तैयार करती है।
- **G1 चरण (अंतराल 1):** कोशिका चयापचय रूप से सक्रिय होती है और इस चरण के दौरान बढ़ती रहती है।
- **एस चरण (संश्लेषण):** डीएनए प्रतिकृति या संश्लेषण इस चरण के दौरान होता है।
- **G2 चरण (अंतराल 2):** इस चरण में प्रोटीन संश्लेषण होता है।
- **निष्क्रिय अवस्था (G0):** वे कोशिकाएँ जो आगे विभाजन से नहीं गुजरती हैं, G1 चरण से बाहर निकल जाती हैं और निष्क्रिय अवस्था में प्रवेश करती हैं। इस चरण को कोशिका चक्र का निष्क्रिय चरण (G0) कहा जाता है।

The Cell Cycle

Interphase

The cell grows and copies its DNA

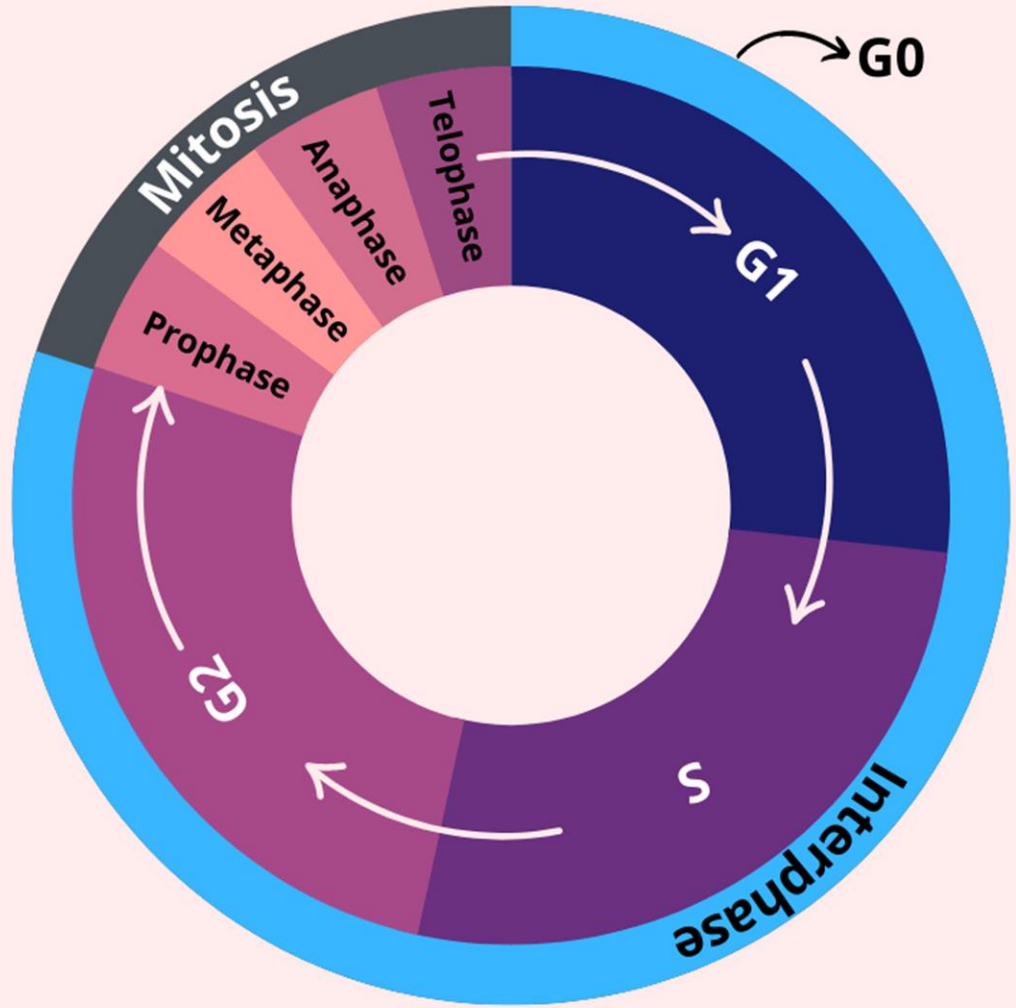
- **G_1**: Cell growth
- **S** : DNA synthesis
- **G_2:** More growth, preparation for mitosis

Mitosis

The cell divides its DNA and cytoplasm, forming two new cells

- **Prophase**
- **Metaphase**
- **Anaphase**
- **Telophase**

G_0: Resting state where the cell performs its functions and is not preparing to divide



Significance of Cell Division

Cell division plays an important role in all living organisms, as it is essential for growth, repair and reproduction.

This process helps in:

1. Renewing of damaged cells.
2. Production of new cells from older ones.
3. Maintains the total number of chromosomes.
4. Provides more cells for growth and development.
5. Repairs and controls the damage caused to the cells.
6. Also helps in the survival and growth of living organisms.
7. It is responsible for the definite shape, size and proper growth and development of an individual.
8. In plants, mitosis helps in the formation of new parts and in repairing damaged parts.

The Hayflick limit states that organisms, including humans, have a built-in cellular clock that sets a maximum lifespan.

For humans this limit is estimated to be around 125 years, after which no external factors or genetic modifications can extend lifespan further.

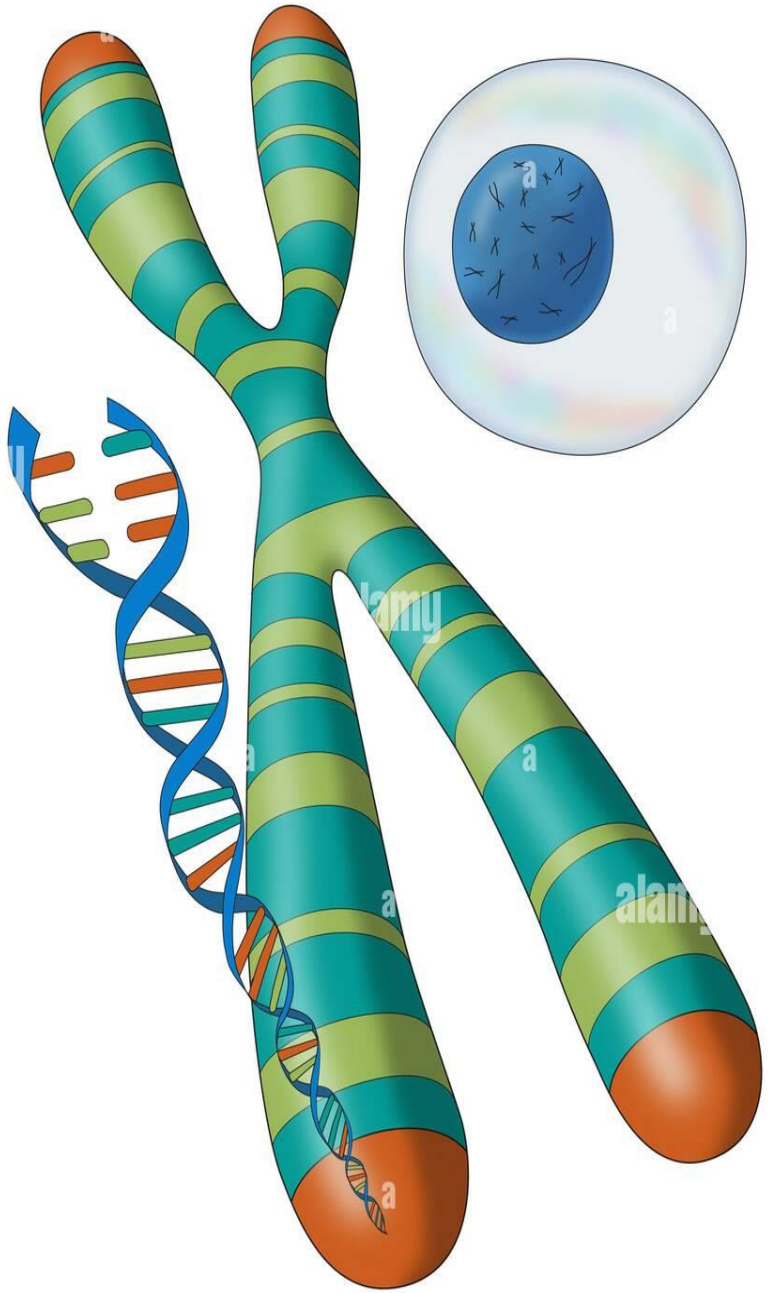
Hayflick's discovery has been applied to cells from various animals, revealing different Hayflick limits based on species' lifespans.

Ex. Galapagos turtles, have cells that can divide approximately 110 times, whereas laboratory mice have a much lower limit of around 15 divisions.

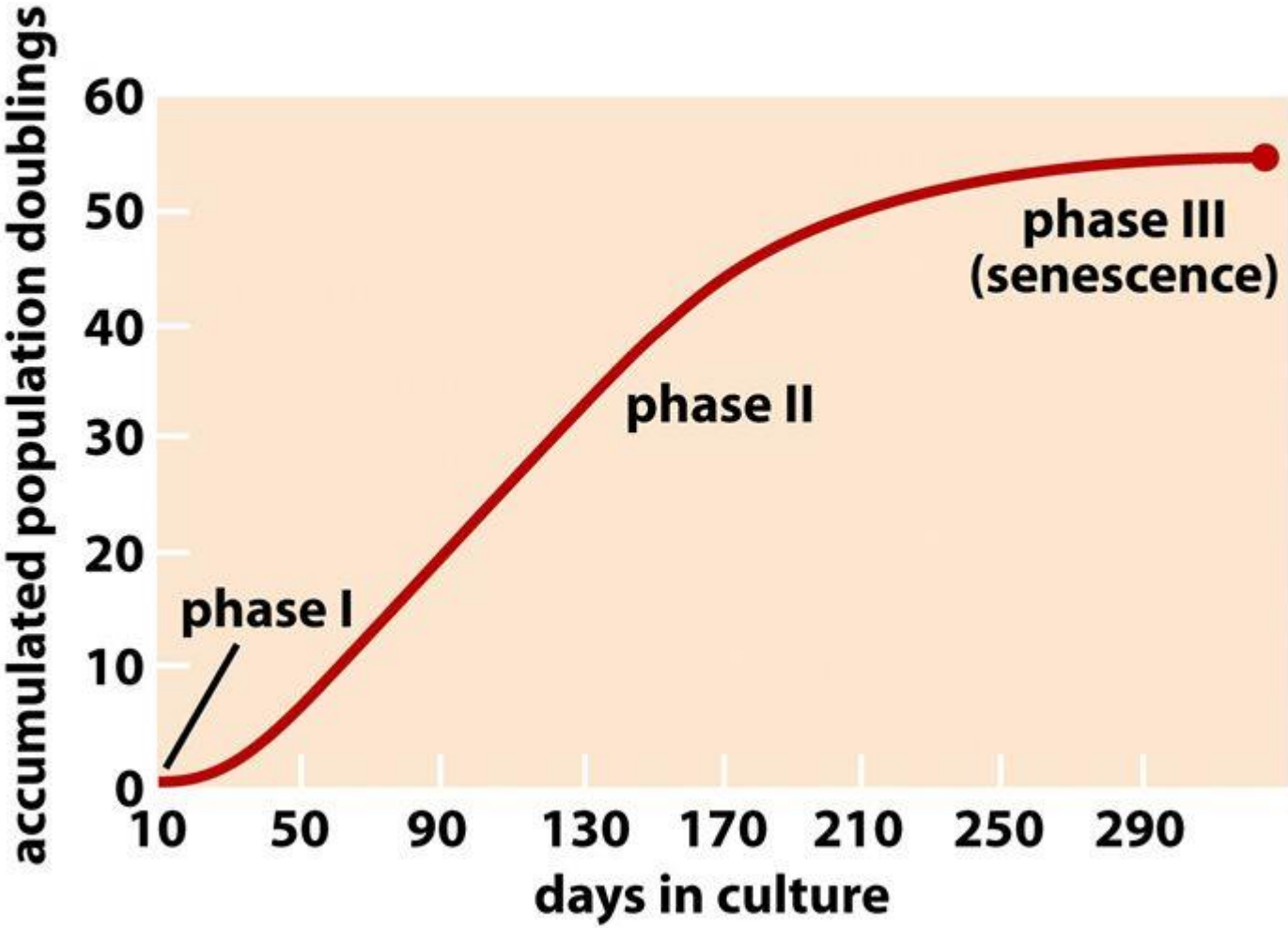
- Hayflick found that cells go **through three phases.**
  - The first is **rapid, healthy cell division**.
  - In the second phase, mitosis slows. In the third stage, senescence, cells stop dividing entirely.
  - They remain alive for a time after they stop dividing, but sometime after cellular division ends, cells do a particularly disturbing thing: Essentially, they commit suicide.
  - Once a cell reaches the end of its life span, it undergoes a programmed cellular death **called apoptosis.**

Biological Basis

- The primary reason behind the Hayflick Limit lies in the structure of chromosomes.
- At the ends of chromosomes are repetitive nucleotide sequences called telomeres.
- Each time a cell divides, its telomeres shorten. Eventually, they become too short to protect the chromosome, leading to cellular aging and cessation of division.
- This phenomenon ensures that cells with potential DNA damage do not keep dividing, which could lead to diseases like cancer.



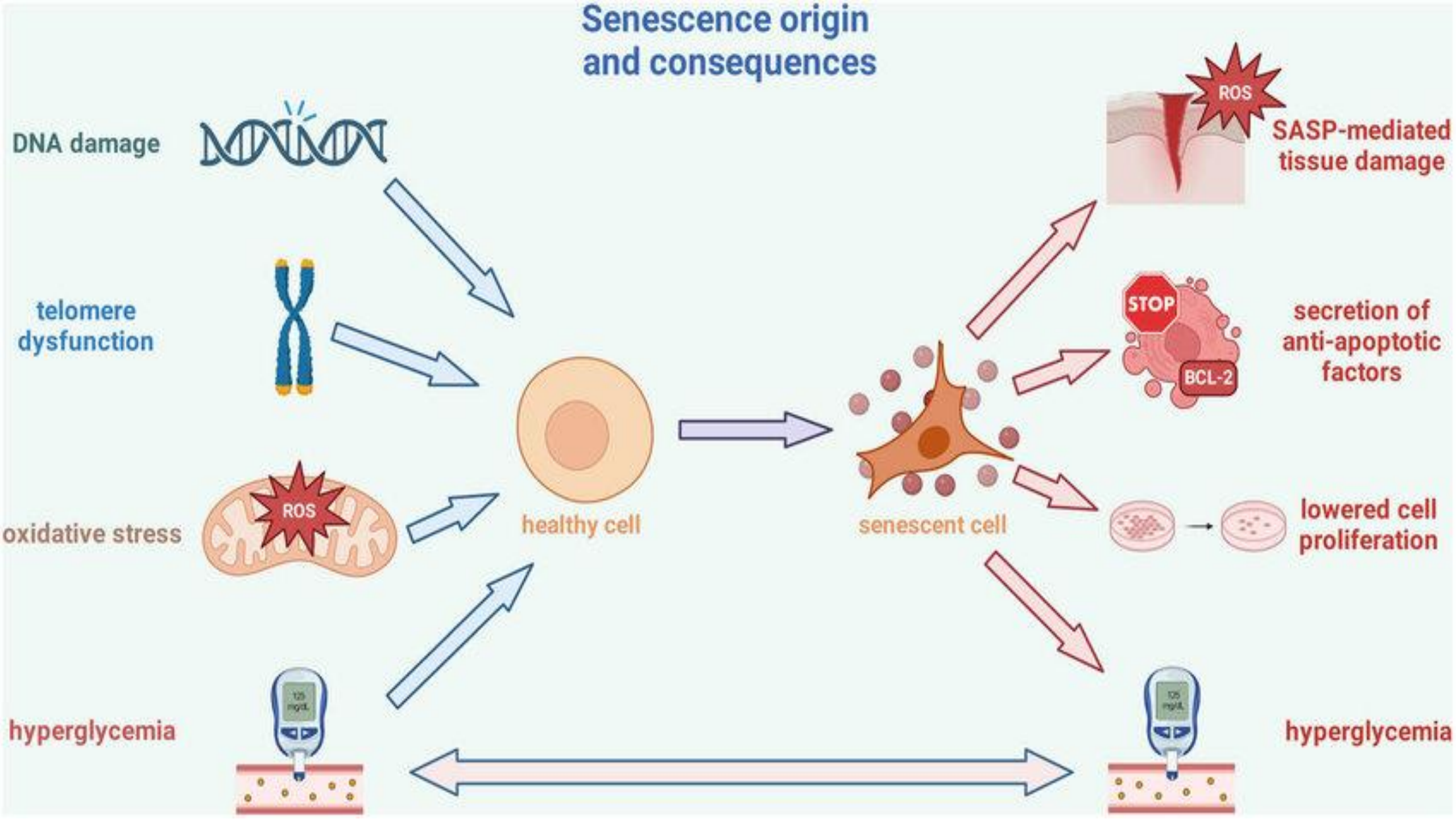
“Hayflick limit” of fibroblasts in the culture



SENESCENCE

Senescence refers to the biological process of aging, characterized by a progressive decline in physiological function and an increased susceptibility to disease and death. It can occur at the level of cells, where it is known as cellular senescence, or at the organismal level, which involves the aging of the whole organism. Cellular senescence involves irreversible cell cycle arrest, while organismal senescence is marked by changes such as reduced fertility and increased mortality with age.

Senescence origin and consequences



What causes senescence?:

Cellular senescence is caused by several factors, often related to stress, damage, or reaching the Hayflick Limit. The key causes of senescence include:

1. Telomere Shortening: Each time a cell divides, the telomeres (protective caps at the ends of chromosomes) shorten. Eventually, telomeres become too short to protect the chromosomes, triggering a DNA damage response that halts cell division and leads to senescence. This process is closely related to the Hayflick Limit.

2. DNA Damage: Cells can enter senescence if their DNA is damaged beyond repair. This damage can be caused by factors like oxidative stress, radiation, chemicals, or errors during DNA replication. Persistent DNA damage activates the cell's DNA damage response, leading to a permanent arrest in the cell cycle.

3. Oncogene Activation: Oncogenes are mutated or overexpressed genes that can drive uncontrolled cell proliferation and lead to cancer. However, the activation of certain oncogenes can paradoxically induce senescence as a protective mechanism against cancer. This process, known as oncogene-induced senescence, helps to prevent the propagation of potentially cancerous cells.

4. Epigenetic Changes: Alterations in the regulation of gene expression, such as changes in DNA methylation or histone modification, can also drive cells into senescence. These changes can disrupt normal cellular functions and lead to the activation of senescence pathways.

5. Oxidative Stress: Reactive oxygen species (ROS) generated during normal cellular metabolism or in response to environmental stress can damage cellular components, including DNA, proteins, and lipids. Chronic oxidative stress contributes to the accumulation of damage and can push cells into senescence.

6. Mitochondrial Dysfunction: Mitochondria, the cell's energy-producing organelles, can become less efficient and more prone to generating ROS as cells age. **Mitochondrial dysfunction can lead to energy deficits and increased oxidative stress, contributing to the onset of senescence.**

Senescent cells remain metabolically active but stop dividing and often acquire a pro-inflammatory phenotype known as the senescence-associated secretory phenotype (SASP). While senescence serves as a protective mechanism to prevent damaged or stressed cells from proliferating, the accumulation of senescent cells over time contributes to aging and age-related diseases.

Can senescence be reversed?:

Reversing cellular senescence is a topic of significant interest in aging research, and while *complete reversal is challenging*, some progress has been made in manipulating the senescence process. The key approaches that have been explored include:

1. Senolytics: Senolytics are drugs that selectively target and eliminate senescent cells. By clearing these cells from tissues, researchers aim to reduce the negative effects associated with the accumulation of senescent cells, such as inflammation and tissue dysfunction. Studies in animal models have shown that senolytics can improve healthspan and reduce the incidence of age-related diseases. However, this approach does not reverse senescence in individual cells but rather removes the senescent cells from the body.

2. Telomerase Activation: Telomerase is an enzyme that extends telomeres, potentially allowing cells to divide beyond their typical limit. In certain experimental settings, activating telomerase has been shown to extend the lifespan of cells and, in some cases, delay the onset of senescence. However, widespread activation of telomerase is risky, as it can also promote uncontrolled cell growth and increase the risk of cancer.

3. Reprogramming to Induced Pluripotent Stem Cells (iPSCs): Cellular reprogramming involves turning differentiated (specialized) cells into induced pluripotent stem cells (iPSCs), which have the potential to divide indefinitely and differentiate into any cell type. This process effectively "resets" the cells, erasing signs of aging, including senescence. However, reprogramming cells to iPSCs is not practical for therapeutic use in vivo (within the body) due to the risk of tumor formation and other complications.

4. Epigenetic Modifications: Epigenetic changes, such as DNA methylation and histone modification, play a role in the onset of senescence. Modifying these epigenetic marks can, in some cases, reverse senescence. Certain compounds and interventions, like the use of Yamanaka factors (a set of genes used in reprogramming), have shown potential in partially resetting the epigenetic clock of cells, reducing signs of senescence and aging. However, this approach is still experimental and requires careful control to avoid adverse effects.

5. Metabolic and Mitochondrial Interventions: Improving mitochondrial function or reducing oxidative stress can sometimes delay or even partially reverse aspects of senescence. Compounds like NAD+ precursors (e.g., nicotinamide riboside) and antioxidants are being studied for their potential to restore cellular energy levels and reduce the impact of oxidative stress, thereby mitigating some effects of senescence.

6. Gene Editing and RNA Interference: Advanced gene-editing tools like CRISPR/Cas9 and RNA interference (RNAi) can potentially be used to modify or silence genes involved in the senescence process. For instance, targeting the p16INK4a or p21 pathways, which are often upregulated in senescent cells, could delay or reverse senescence. However, this approach is in its early stages and poses significant technical and safety challenges.

Implications for Cancer:

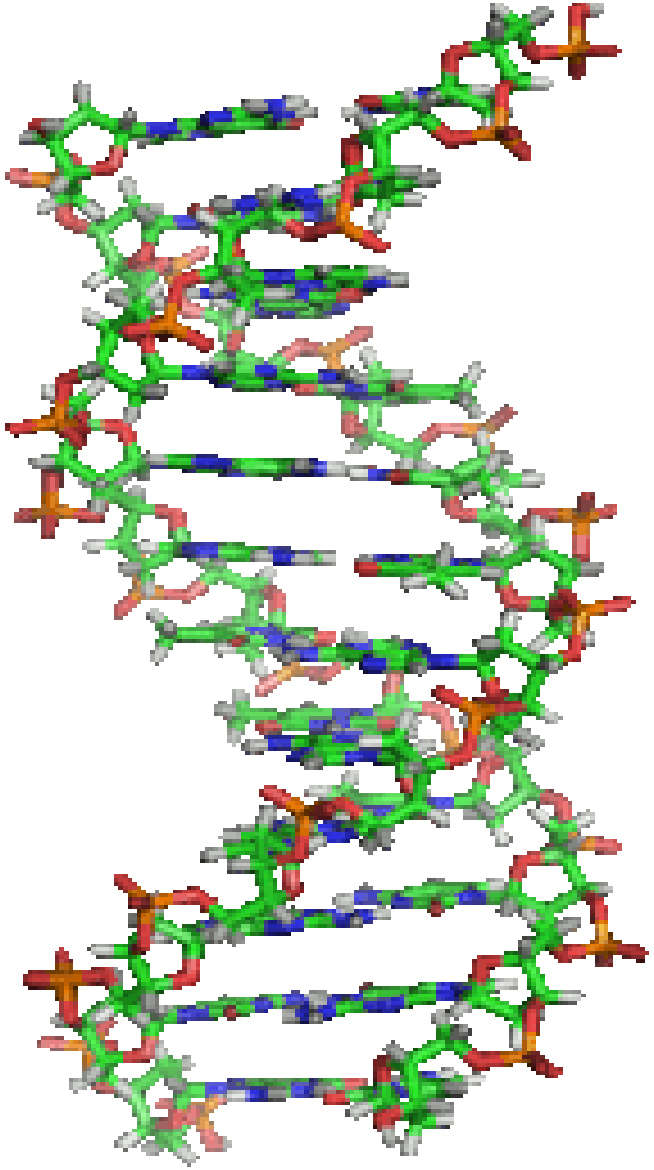
- Cancer cells circumvent the Hayflick Limit by **activating an enzyme called telomerase**, which rebuilds the telomeres, allowing these cells to divide indefinitely.

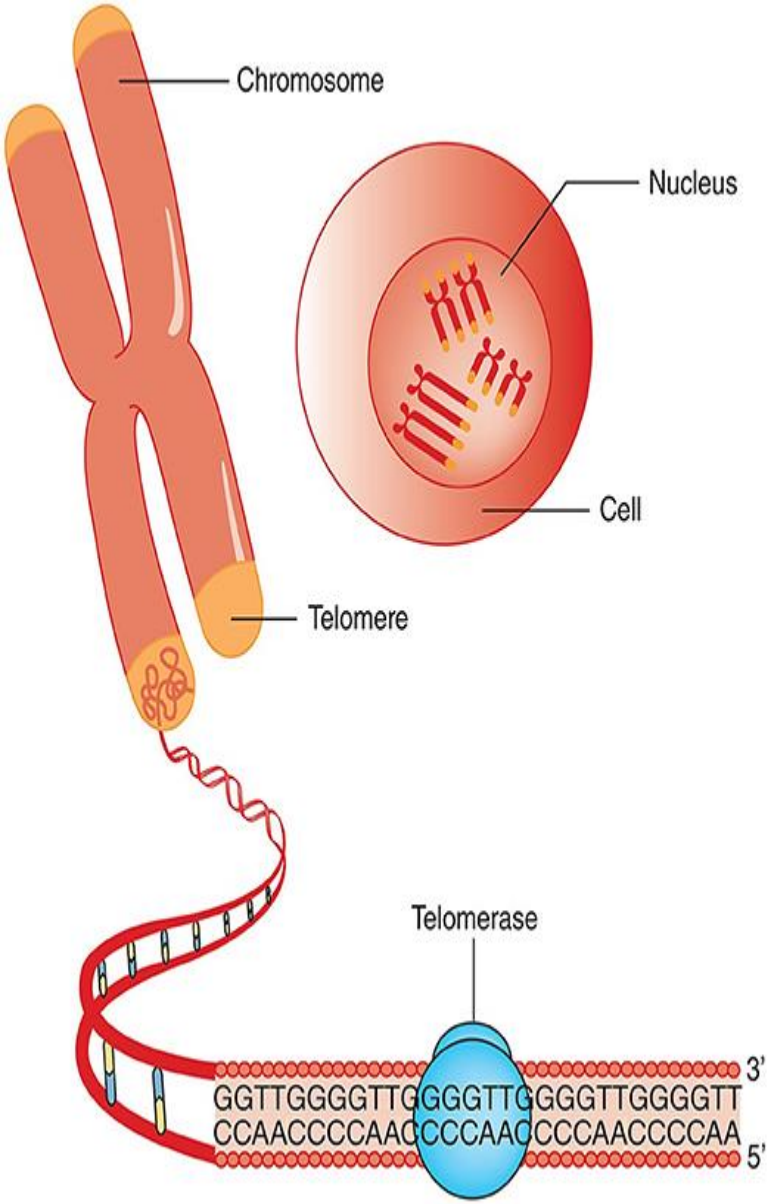
- This **unregulated division is a hallmark of cancer**, making the understanding of telomere biology crucial for developing anti-cancer therapies.

Research and Future Directions:

- **Current research focuses on understanding telomere biology and developing interventions that can safely extend cell lifespan.**

- Innovations in gene editing, **telomerase activation**, and **senolytics (drugs that clear senescent cells)** are promising but are still in experimental stages.




Chromosome
Nucleus
Cell
Telomere
Telomerase
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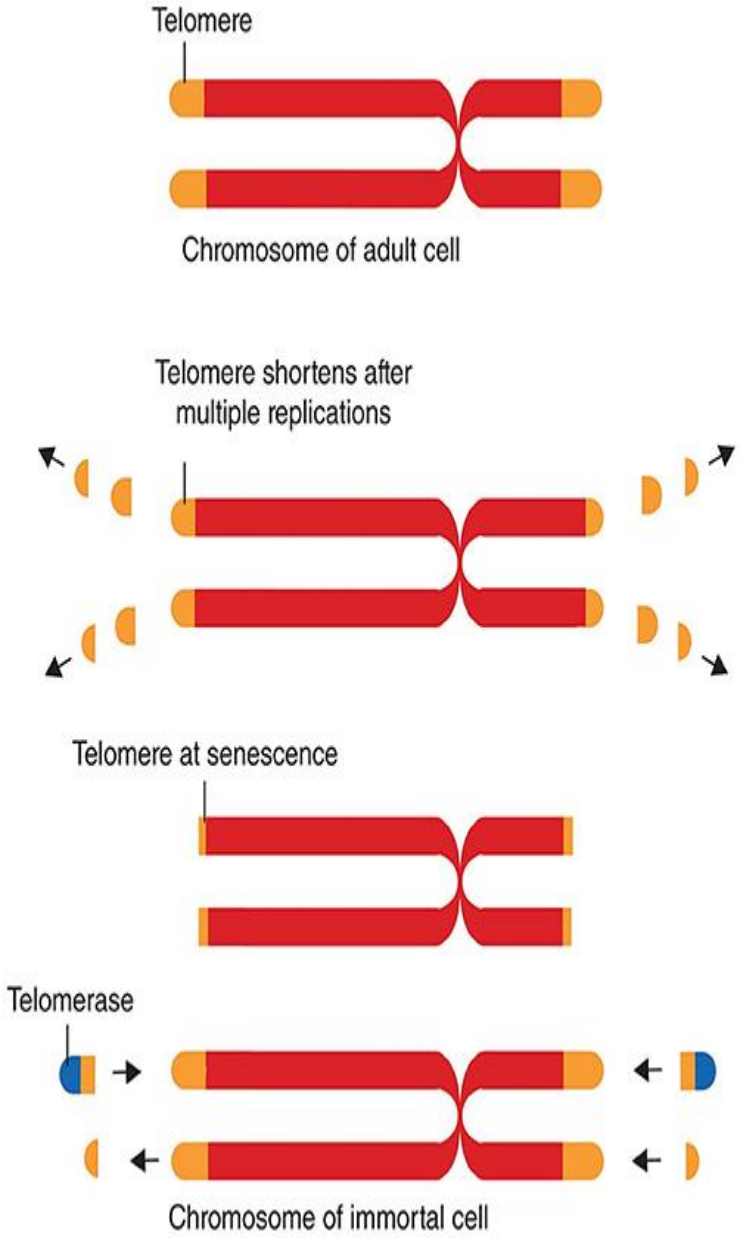
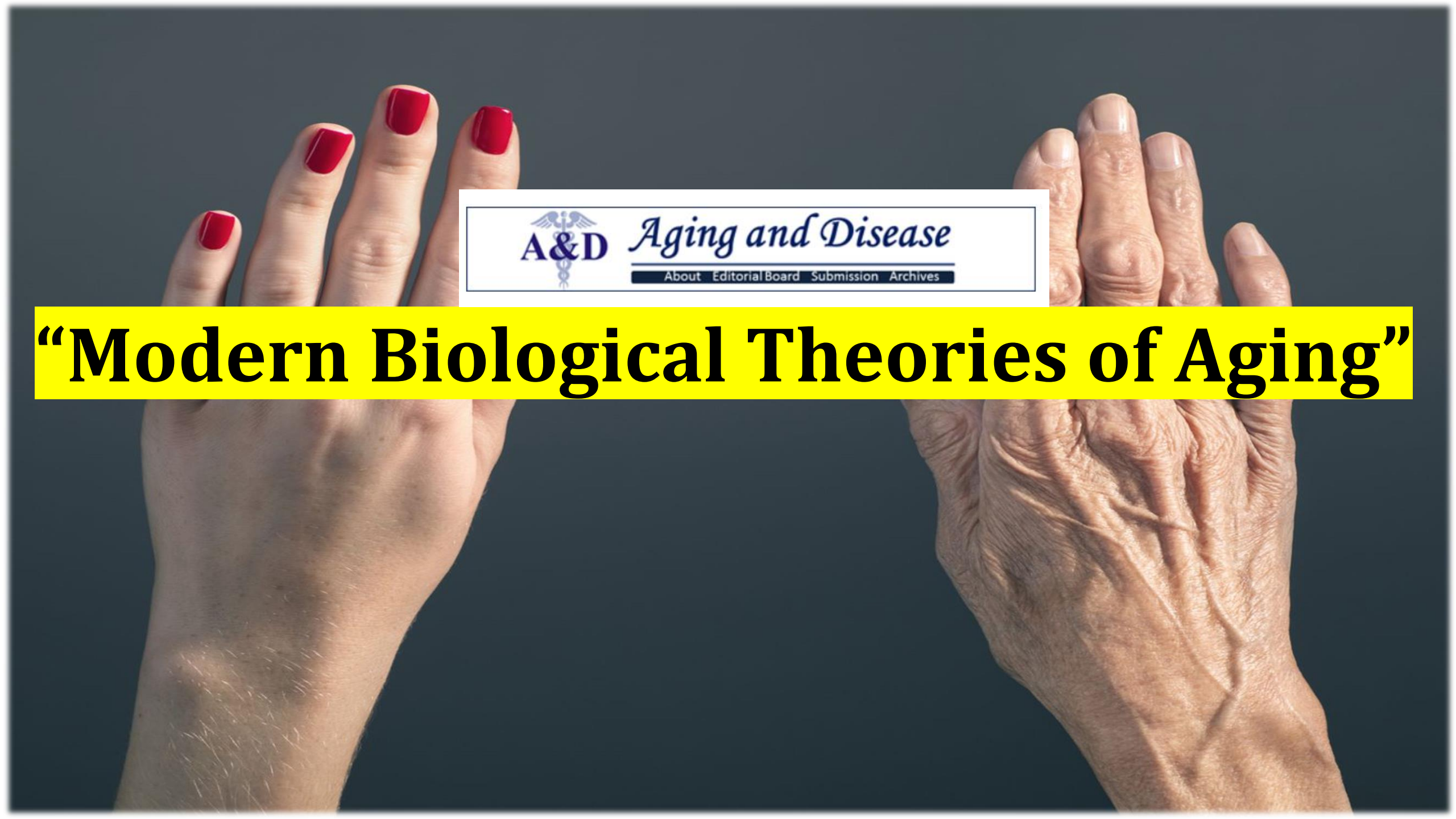
CCAACCCCAACCCCAACCCCAACCCCAA
3'
5'


Telomere
Chromosome of adult cell
Telomere shortens after multiple replications
Telomere at senescence
Telomerase
Chromosome of immortal cell



“Modern Biological Theories of Aging”

Are there any other theories related to the Hayflick limit?

1. Telomere Shortening Theory:

Relation to Hayflick Limit: **This theory is directly connected to the Hayflick limit. It suggests that telomeres, the protective caps at the ends of chromosomes, shorten with each cell division. When they become too short, the cell can no longer divide, leading to senescence (cell aging).**

Key Point: **Telomere shortening is considered a major cause of the Hayflick limit, as it signals the cell to stop dividing when critical length is reached.**

2. DNA Damage Theory:

Description**: Over time, cells accumulate damage to their DNA due to environmental factors, oxidative stress, and errors during replication. This damage can lead to mutations, loss of function, and eventually, cell death.**

Relation to Hayflick Limit: **The accumulation of DNA damage may contribute to the onset of senescence once the damage becomes too extensive for the cell's repair mechanisms to handle.**

3. Mitochondrial Theory of Aging:

Description: **This theory focuses on the role of mitochondria, the energy-producing organelles in cells. Mitochondria generate reactive oxygen species (ROS) as a byproduct of energy production, which can damage cellular components, including DNA, proteins, and lipids.**

Relation to Hayflick Limit: **The damage caused by ROS can impair mitochondrial function, leading to cellular energy deficits and contributing to the aging process, which may limit the number of divisions a cell can undergo.**

4. Epigenetic Theory:

Description**: Epigenetics involves changes in gene expression without altering the underlying DNA sequence. Over time, epigenetic modifications, such as DNA methylation and histone modification, can accumulate, leading to changes in cellular function and aging.**

Relation to Hayflick Limit: **Epigenetic changes can influence the expression of genes involved in cell division and senescence, potentially playing a role in enforcing the Hayflick limit.**

5. Free Radical Theory:

Description: **This theory suggests that free radicals, unstable molecules with unpaired electrons, cause cumulative damage to cells over time. This damage can affect DNA, proteins, and cell membranes, leading to aging and the eventual cessation of cell division.**

Relation to Hayflick Limit: **The oxidative damage caused by free radicals may contribute to cellular aging and the eventual onset of senescence.**

6. Immunological Theory of Aging:

Description: **This theory suggests that the immune system weakens with age, leading to a reduced ability to fight infections and clear damaged cells. This decline in immune function contributes to aging and increased vulnerability to diseases.**

Relation to Hayflick Limit: **The weakening of the immune system can accelerate the aging process in cells, potentially contributing to the Hayflick limit by allowing damaged cells to accumulate.**

7. Wear and Tear Theory:

Description: **This theory posits that cells and tissues accumulate damage over time from various sources, including environmental stress, physical strain, and chemical exposure. This damage eventually leads to the breakdown of cellular functions.**

Relation to Hayflick Limit: **The accumulated damage may limit a cell's ability to divide, contributing to the Hayflick limit and cellular aging.**

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→ सिन्धु नदी का उद्गम कैलाश पर्वतीय क्षेत्र में बोखर चू हिमनद से होता है।
→ तिब्बत में इस नदी को सिंगी खंबान कहते है।
→ यह पमचोक नामक स्थान से भारत में प्रवेश करती है।
→ यह नदी भारत में लद्दाख तथा जास्कर श्रेणी के बीच बहती है।
→ पाकिस्तान में यह अटक (Attock) नामक स्थानों पर मैदानों में प्रवेश करती है।
→ पाकिस्तान में कराँची के पास डेल्टा बनाते हुए यह अरब सागर में गिरती है।
→ सिंधु नदी की दायें हाथ की प्रमुख सहायक नदियाँ :- श्योक, नुब्रा, हुनजा, गिलगिट, स्वात, काबुल तथा गोमल
→ इसकी प्रमुख बायें हाथ की सहायक नदियाँ झेलम, चिनाब रावी, व्यास, सतलज, ट्रांस तथा जास्कर
पंचनद ←

→ सिंधु में पंचनद पाक में मिठानकोट नामक स्थान पर मिलती है।
→ 'लेह' सिंधु नदी के किनारे स्थित है।

पंचनद

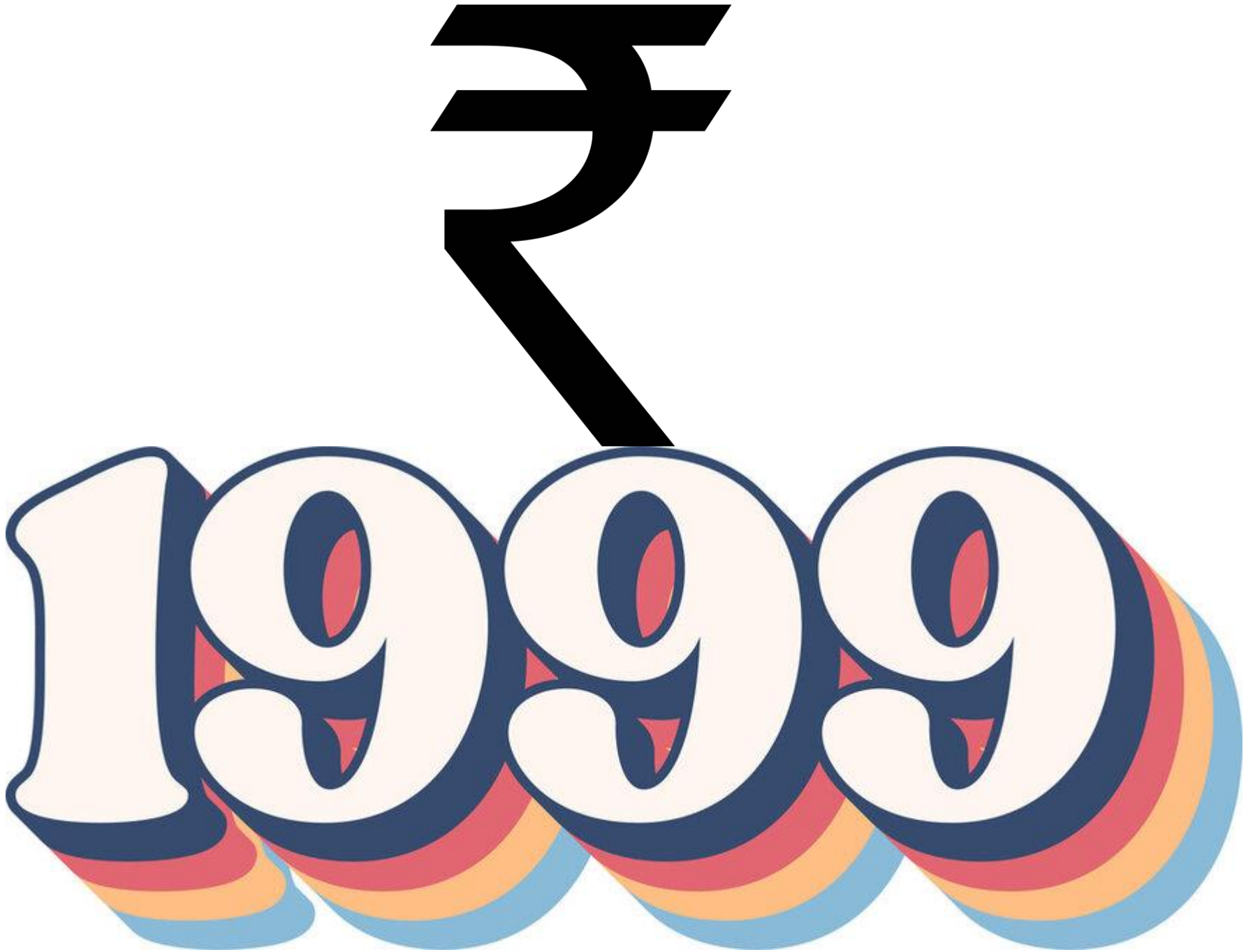
i) झेलम :- इस नदी का उद्गम जम्मू कश्मीर में

Title: _____ Date: __/__/____

वेरिनाग झील से होता है।
* यह नदी वूलर झील का निर्माण करती है जो भारत की सबसे बड़ी मीठे पानी की झील है।
→ इस नदी के किनारे श्रीनगर स्थित है।
→ किशनगंगा इसकी दायें हाथ की प्रमुख सहायक नदी है।
→ इस नदी पर तुलबुल परियोजना प्रस्तावित है। यह एक नौवहन परियोजना है।
→ यह नदी भारत तथा पाकिस्तान के बीच अन्तर्राष्ट्रीय सीमा का निर्माण करती है।

ii) चिनाब :- चिनाब नदी का उद्गम हिमाचल प्रदेश में बारालच्चा दर्रे के पास चन्द्र तथा भागा नदियों के मिलने (Confluence) से होता है।
→ J&K में इस नदी पर जल विद्युत उत्पादन परियोजनाएँ स्थित है।
उदाहरण :- दुलहस्ती, सलाल, बगलिहार
→ यह सिंधु नदी की सबसे बड़ी सहायक नदी है।

iii) रावी :- रावी नदी का उद्गम शैहतांग दर्रे के पास से हिमाचल प्रदेश में होता है।
→ हिमाचल प्रदेश में इस नदी पर चमेरा बाँध स्थित है।
→ पंजाब में इस नदी पर थीन परियोजना स्थित है।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