BKNIX Peering Forum, 22 May 2025

Shaken and (dis)connected? Lessons on Internet Resilience from the Myanmar-Thailand Earthquake

Dr. Amreesh Phokeer
phokeer@isoc.org

Myanmar-Thailand Earthquake

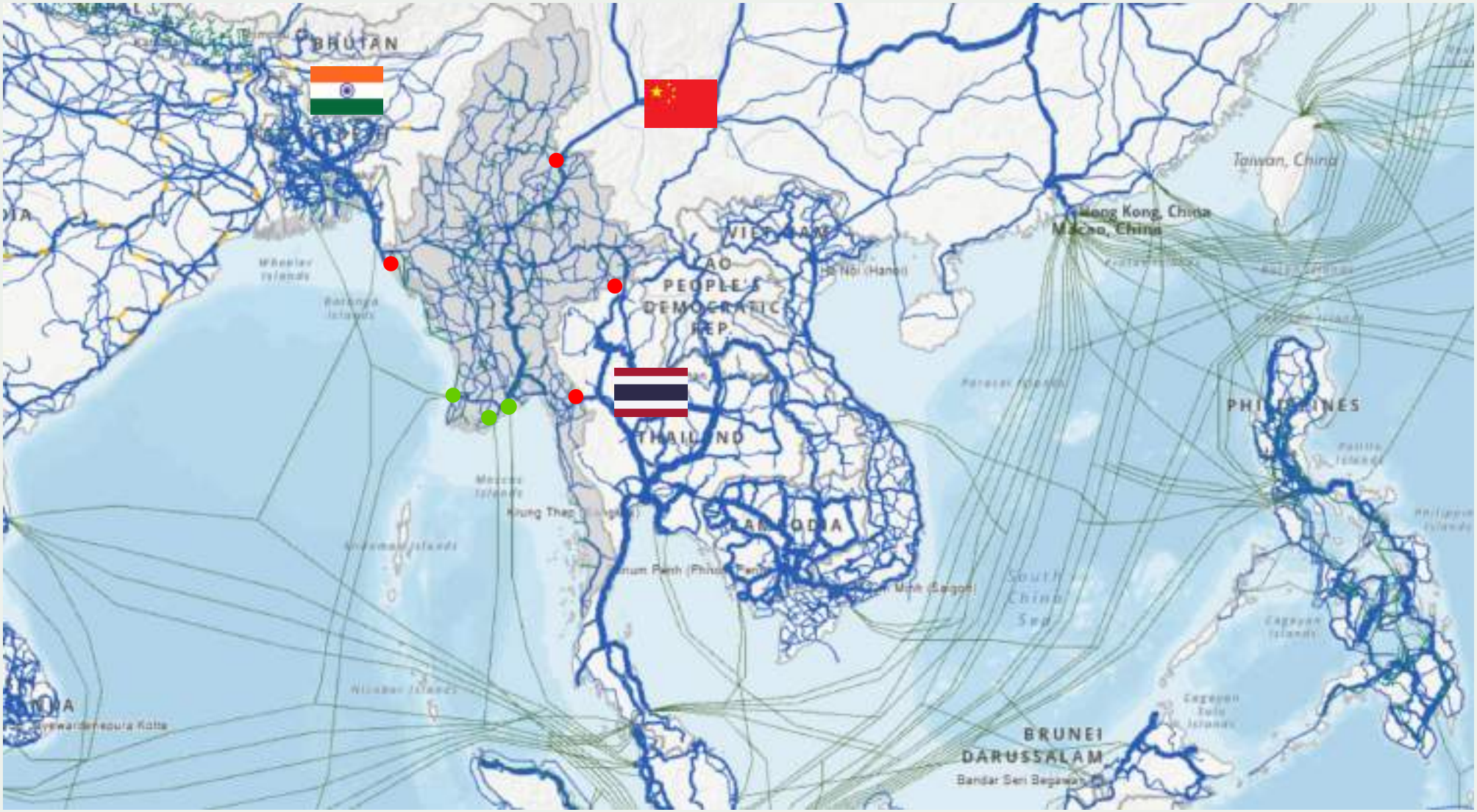
March 28th 2025

https://restofworld.org/2025/myanmar-earthquake-internet-shutdown/

Communication Network Collapse: A Crisis Multiplier

- Critical Infrastructure Destroyed (Myanmar power grid collapse)
- Telecom Towers: 60% of towers in Sagaing and 45% in Mandalay were toppled, severing mobile connectivity for 2.3 million people.
- Fiber Optic Cables: Key routes along the Yangon-Mandalay highway—a lifeline for 70% of Myanmar's Internet traffic—were buried under landslides.

Source: Baudcom

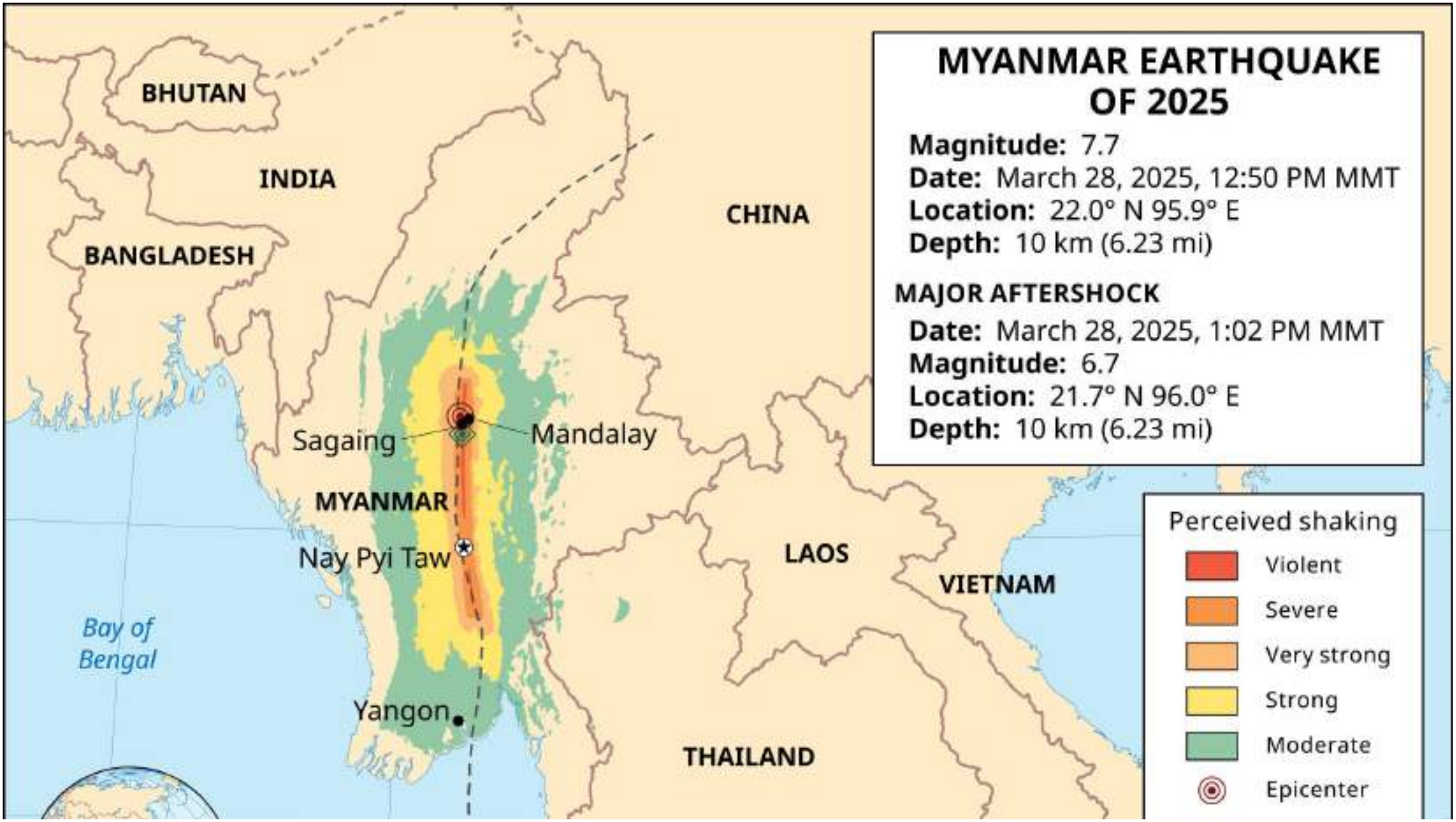


https://bbmaps.itu.int/bbmaps/

Did you know?

The Myanmar earthquake also marks the first time a large magnitude earthquake was detected using an array of telecommunication submarine cable networks turned into more than 100 seismic sensors, Mikael Mazur of Nokia Bell Labs.

Seismological Society of America 2025


MYANMAR EARTHQUAKE OF 2025
Magnitude: 7.7
Date: March 28, 2025, 12:50 PM MMT
Location: 22.0° N 95.9° E
Depth: 10 km (6.23 mi)
MAJOR AFTERSHOCK
Date: March 28, 2025, 1:02 PM MMT
Magnitude: 6.7
Location: 21.7° N 96.0° E
Depth: 10 km (6.23 mi)
BHUTAN
INDIA
BANGLADESH
CHINA
Sagaing
Mandalay
MYANMAR
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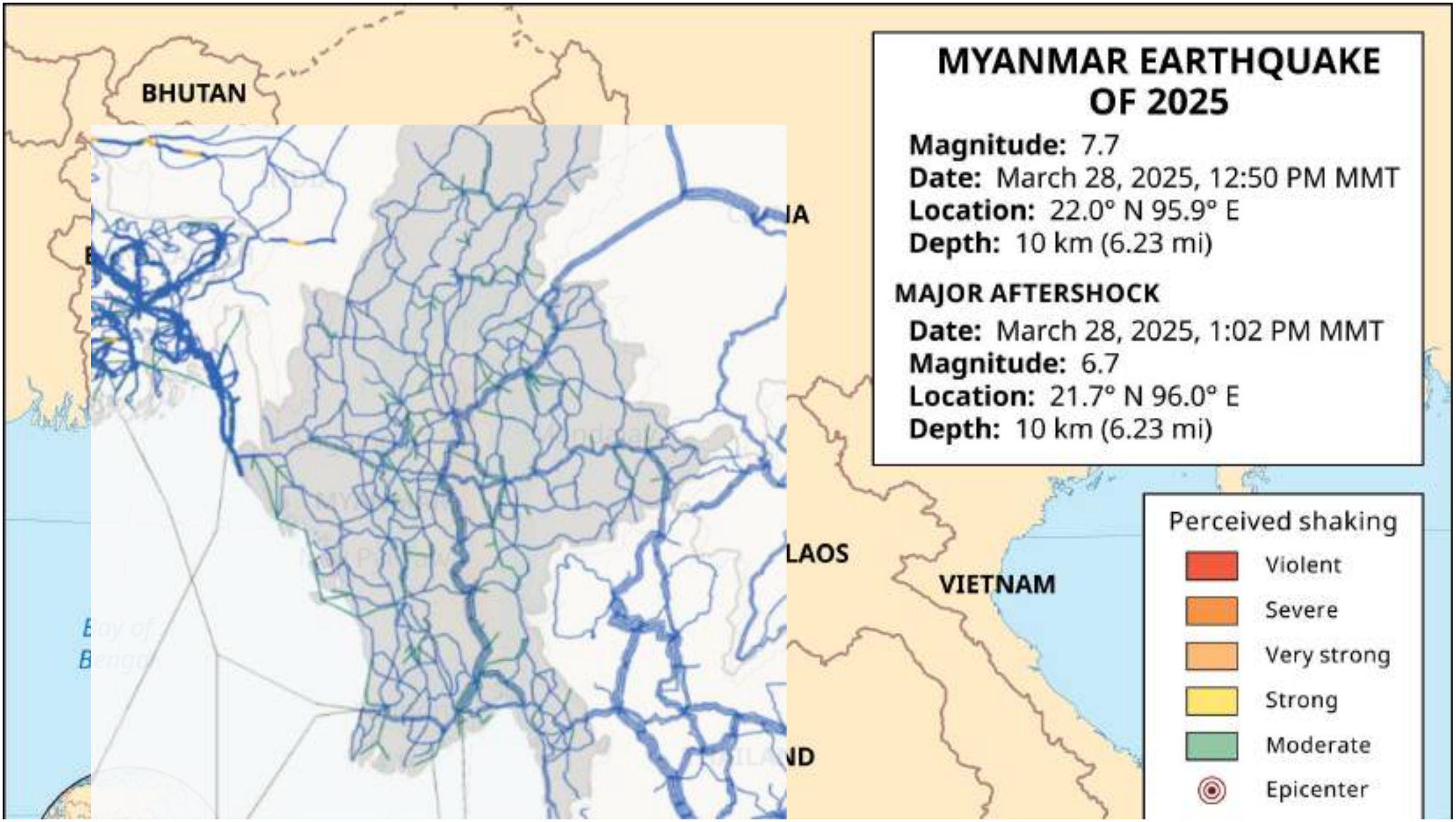
LAOS
VIETNAM
Bay of Bengal
Yangon
THAILAND
Perceived shaking
Violent
Severe
Very strong
Strong
Moderate
Epicenter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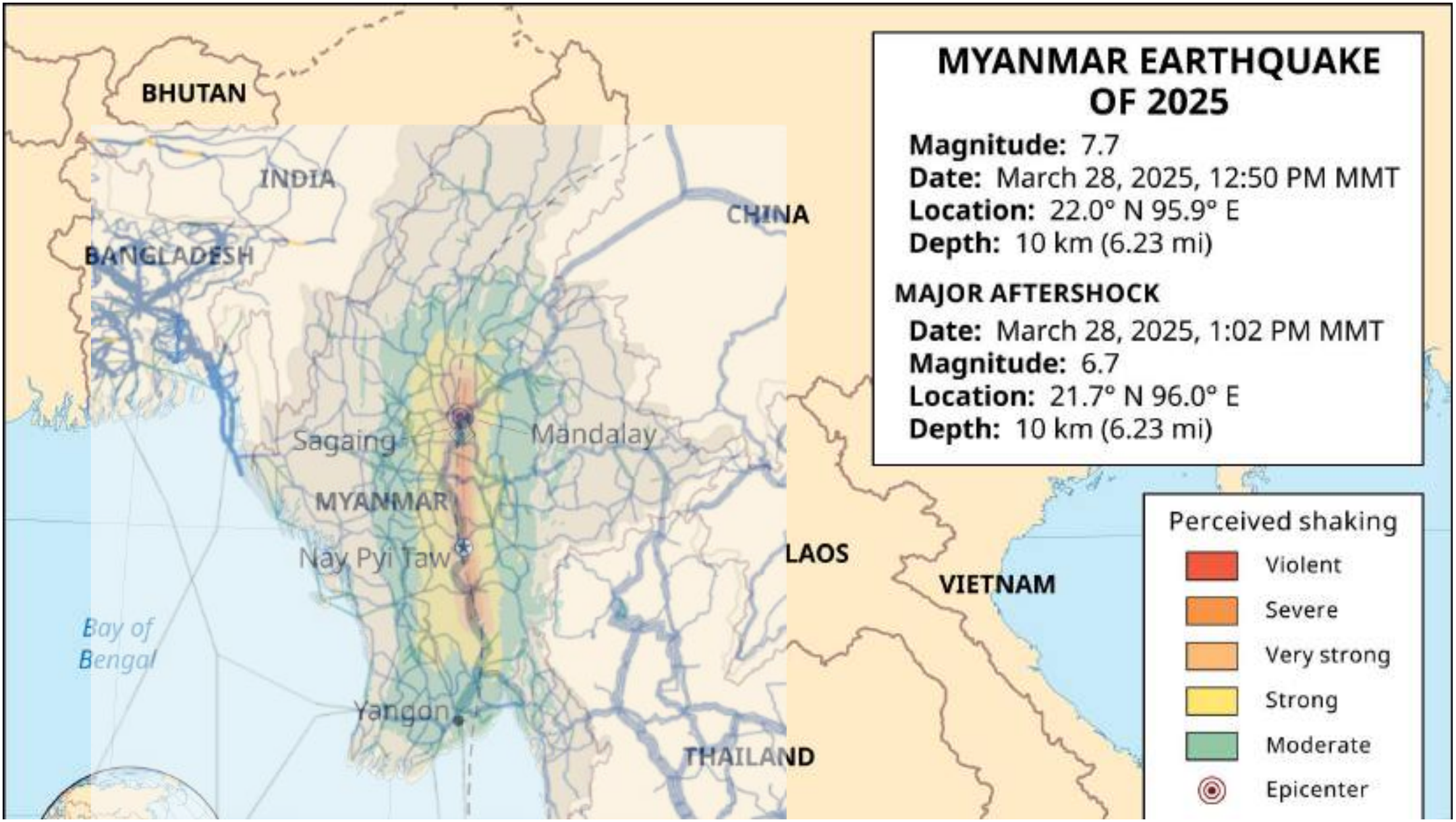
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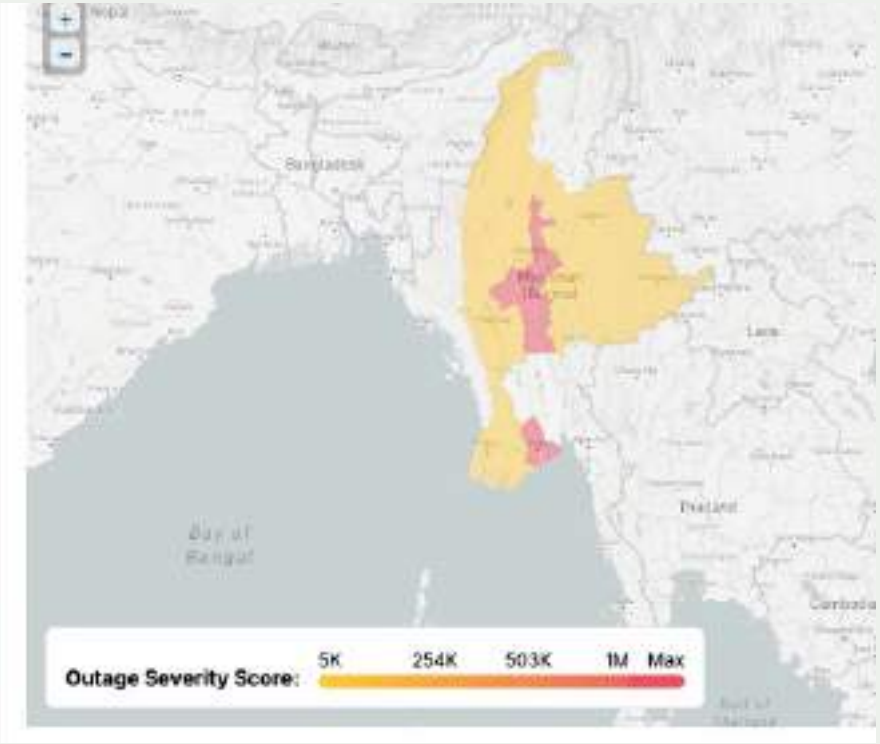
Yangon
THAILAND

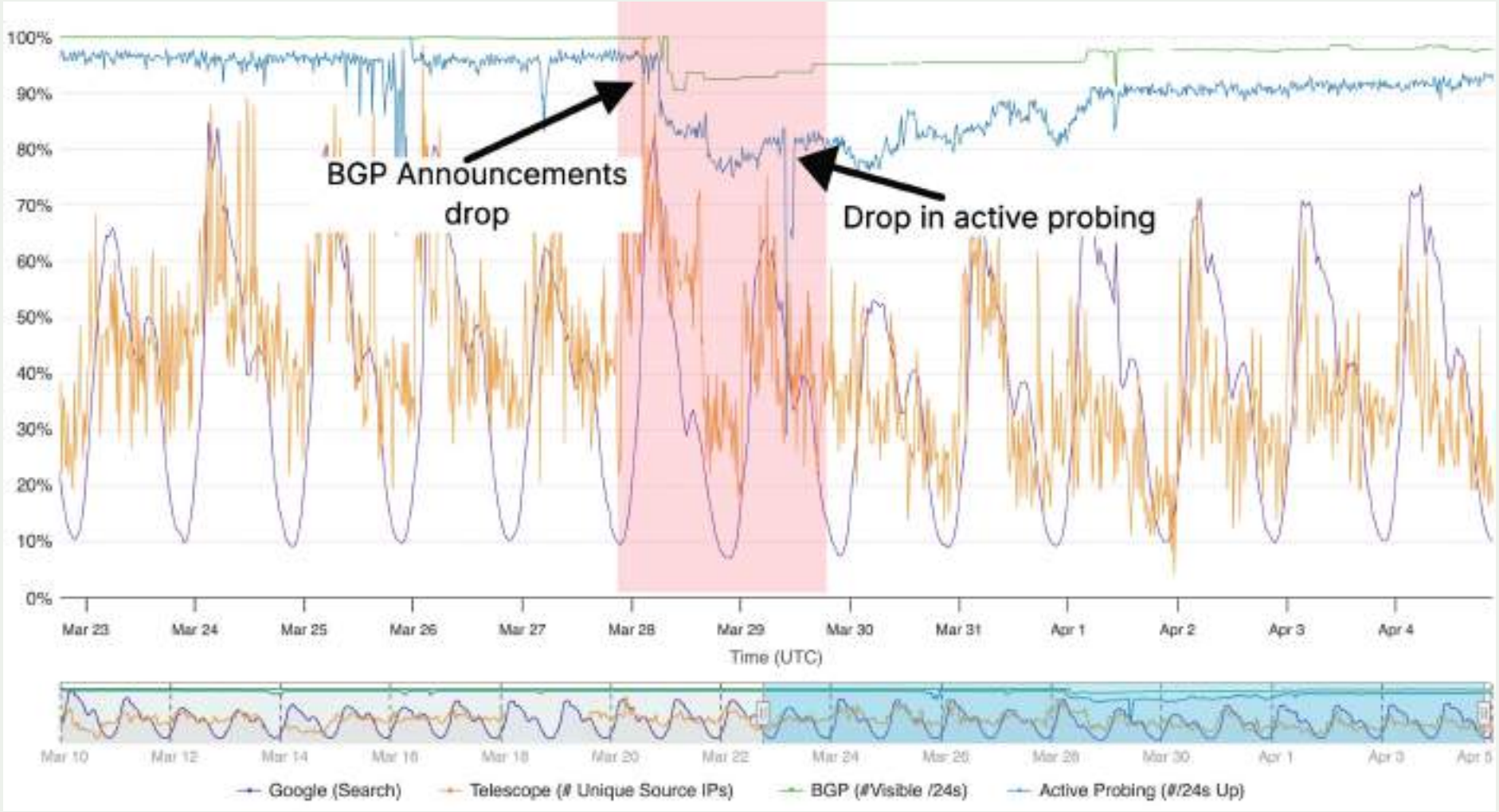
Regional outages in Myanmar (IODA)



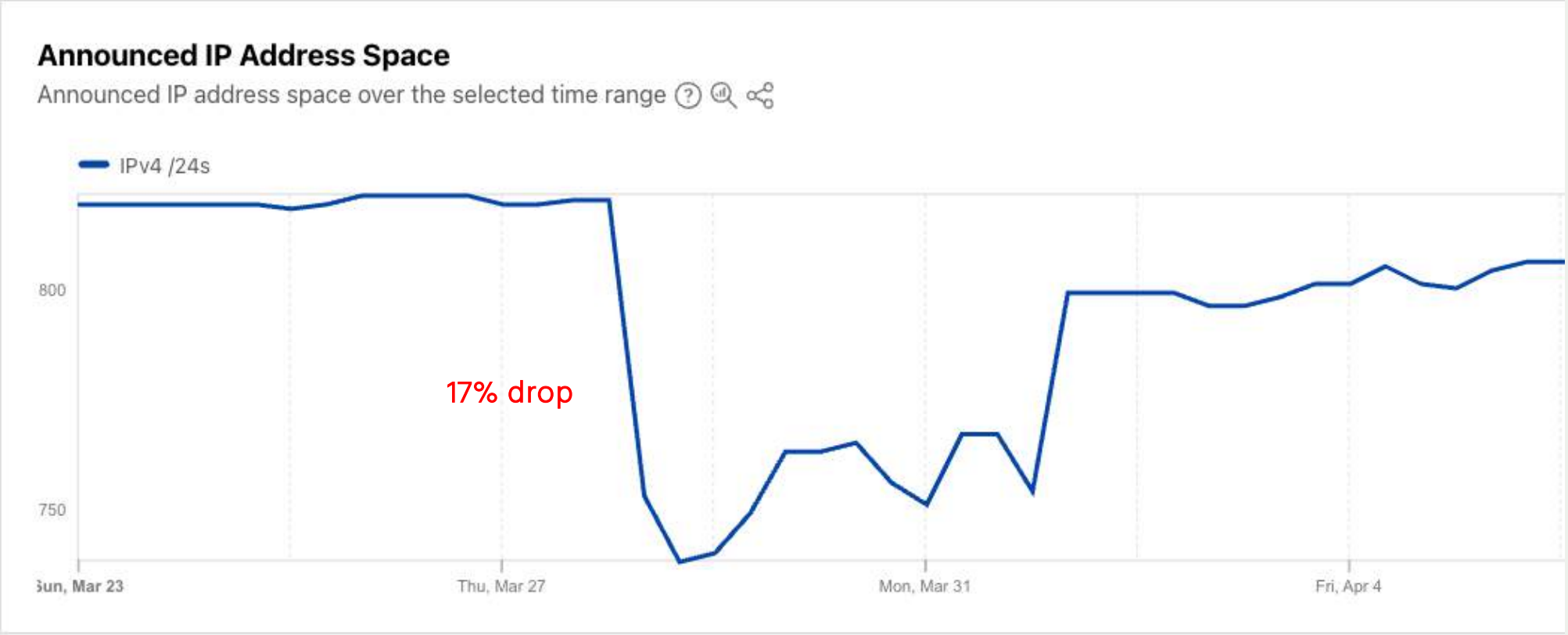
Name	Score
YTCL-AS-AP | Myanmar	920k
GTCL-AS-AP | Myanmar	110k
MPT-AP | Myanmar	70k
YTCL-AS-AP | Myanmar	63k
TIMCL-AS-AP | Myanmar	19k
ATOMMYANMAR-AS-AP | Myanmar	5.8k

https://ioda.inetintel.cc.gatech.edu/country/MM?from=1742689308&until=1743812508

IODA: Internet Connectivity

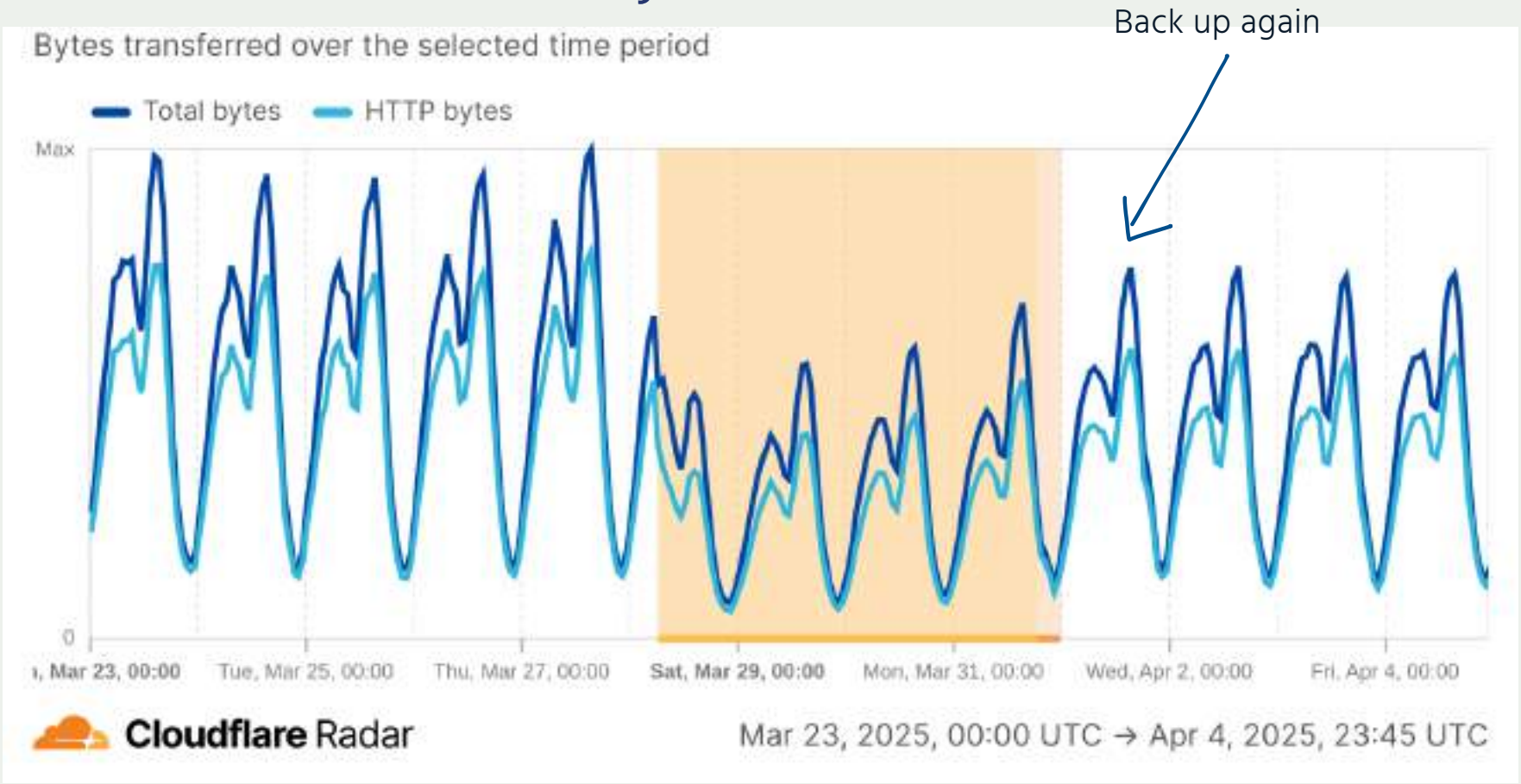


Cloudflare: Announce IP space



https://radar.cloudflare.com/routing/mm?dateStart=2025-03-23&dateEnd=2025-04-22

Cloudflare: Traffic trends in Myanmar



Sat, March 29 60% drop of traffic

Cloudflare: Traffic at network level (Myanmar)

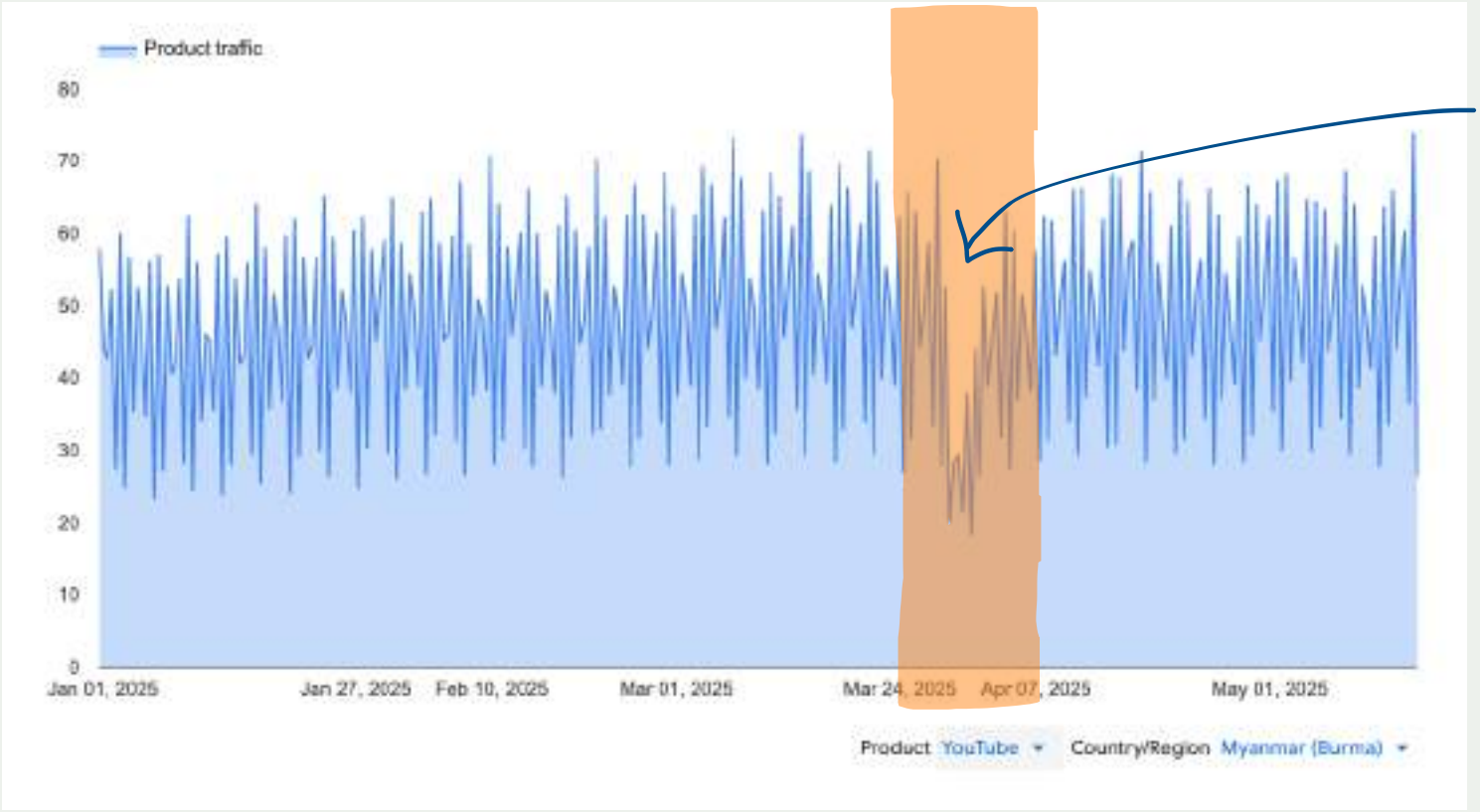
AS136255 (10% market share)

AS134840 (9% market share)

AS9988 (6.8% market share)

AS136442 (6.3% market share)

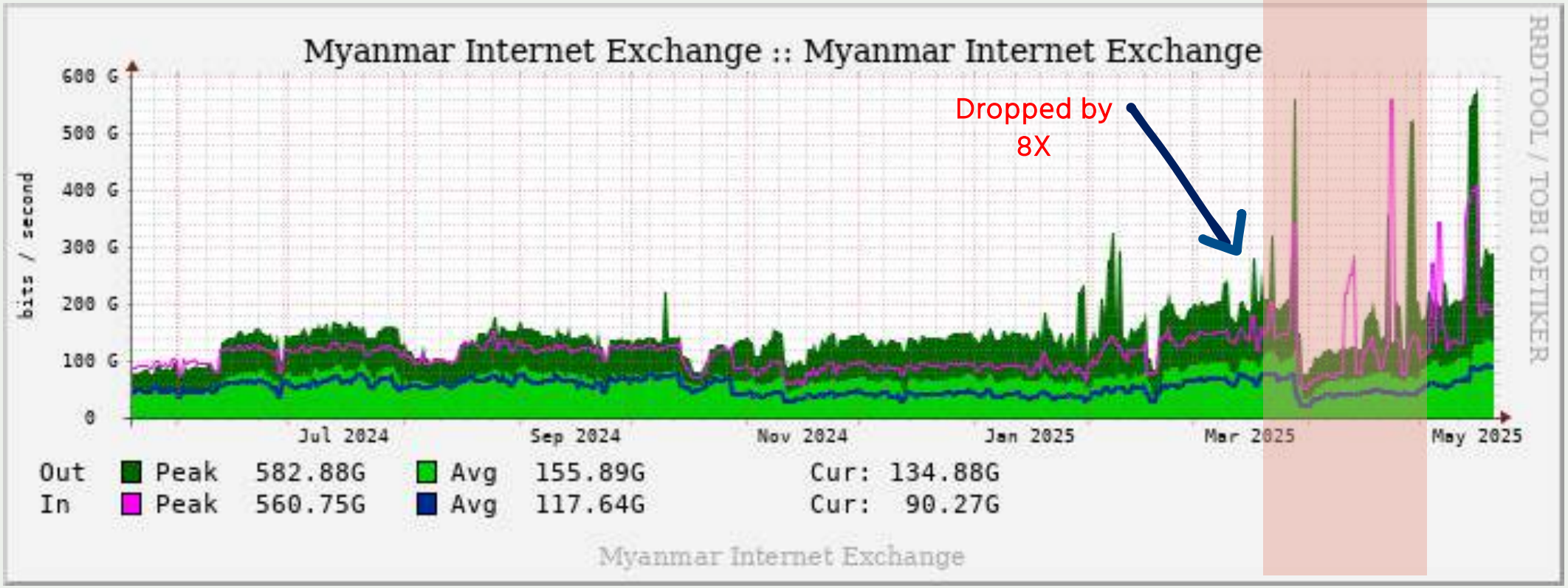
Google Transparency Report: YouTube Traffic



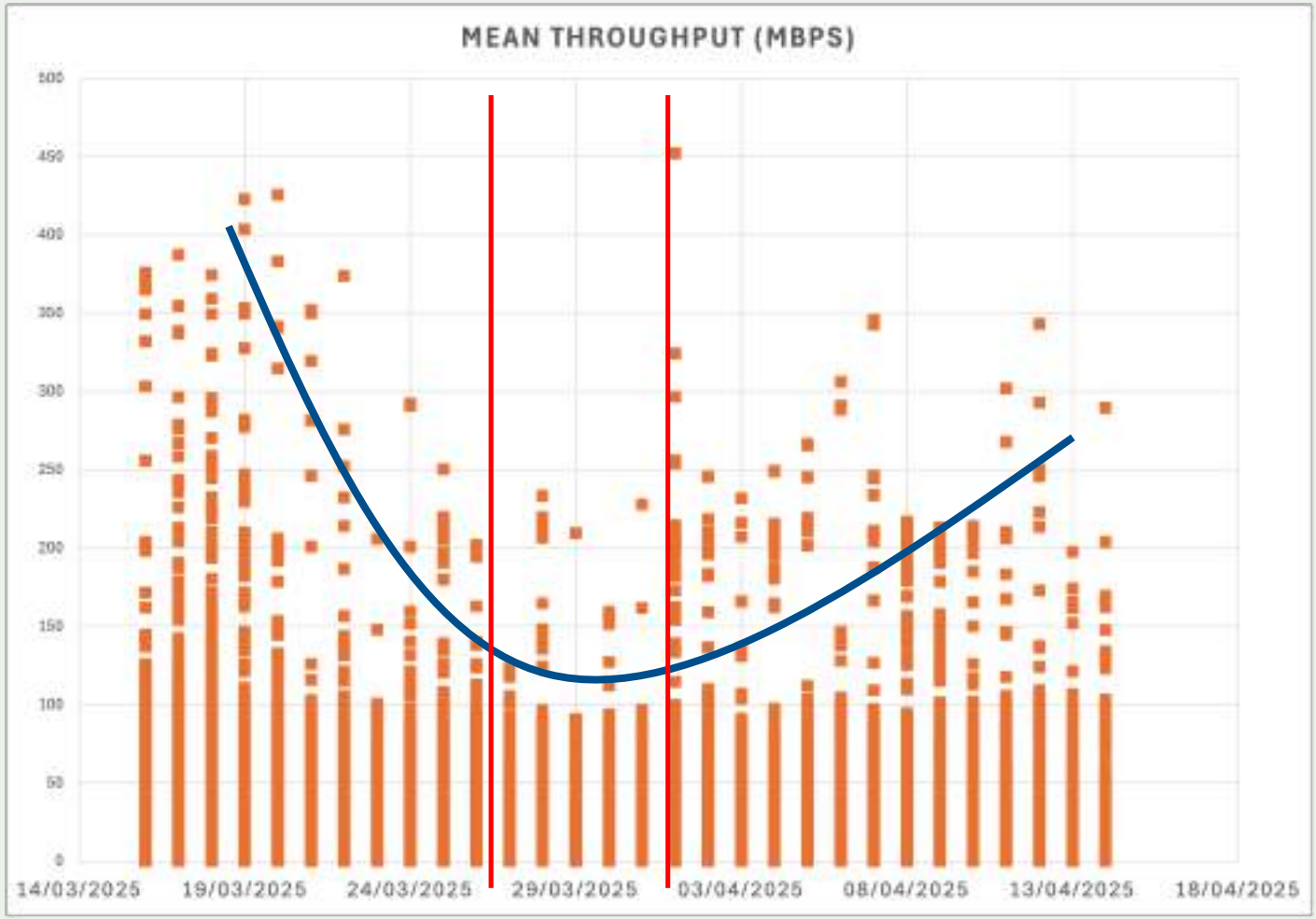
30% drop in traffic

https://transparencyreport.google.com/traffic/overview?fraction_traffic=start:1735603200000;end:1747353599999;product:21;region:MM&lu=fraction_traffic&hl=en

Myanmar IXP – MMIX (~40 members)



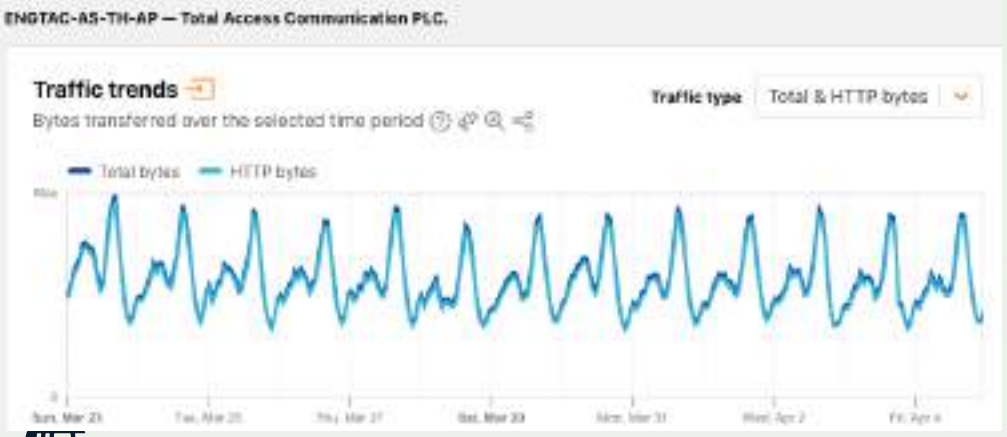
M-Lab Mean Throughput (Mbps)



Cloudflare: Traffic at network level (Thailand)

AS17552 (16% market share)

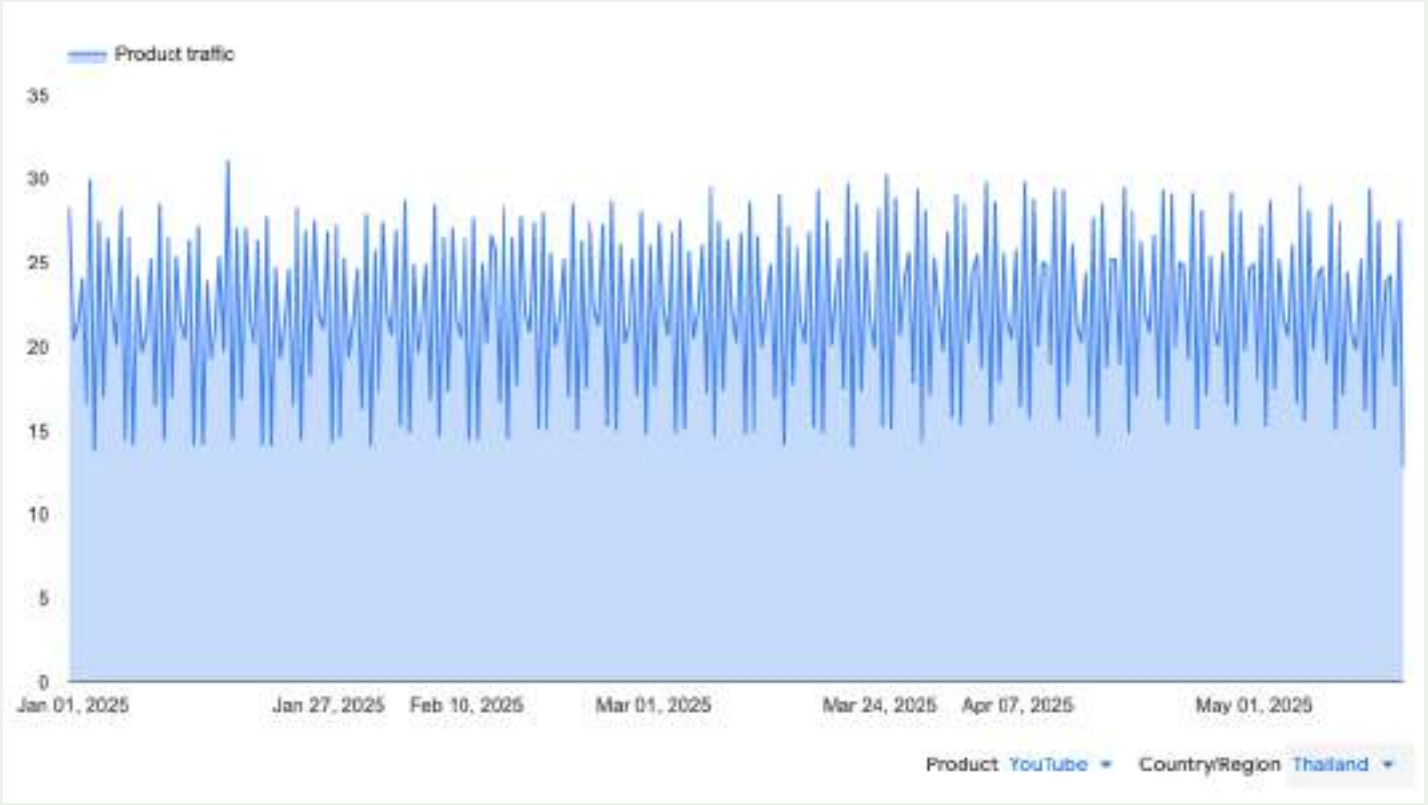
AS131445 (21% market share)



AS24378 (9% market share)

AS45758 (% market share)

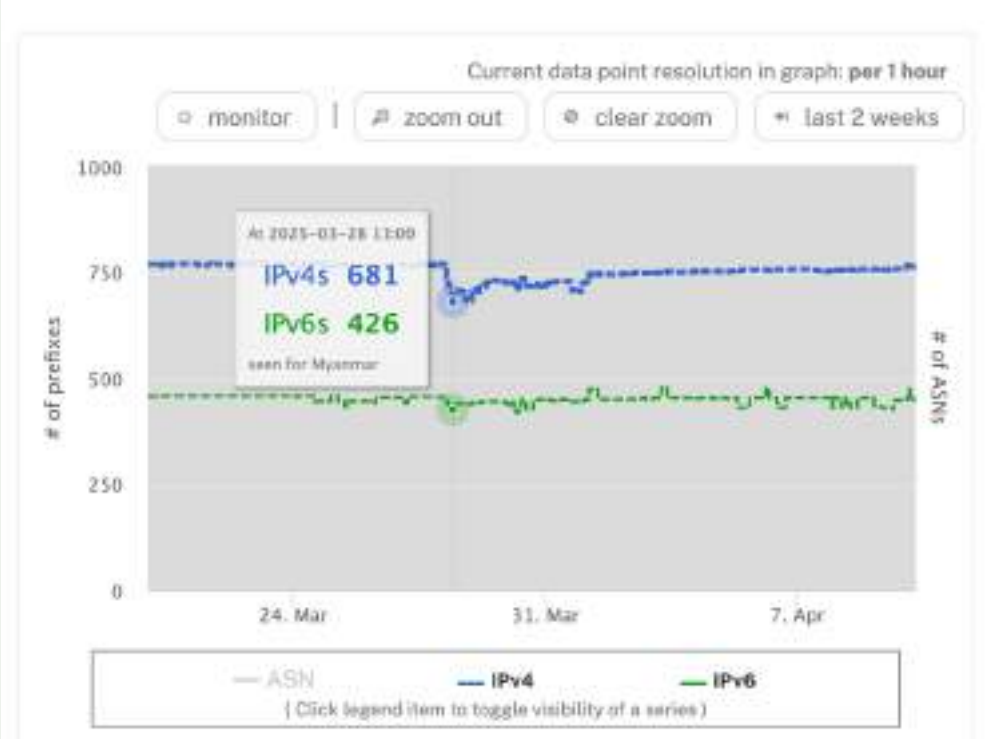
Google Transparency Report: YouTube Traffic



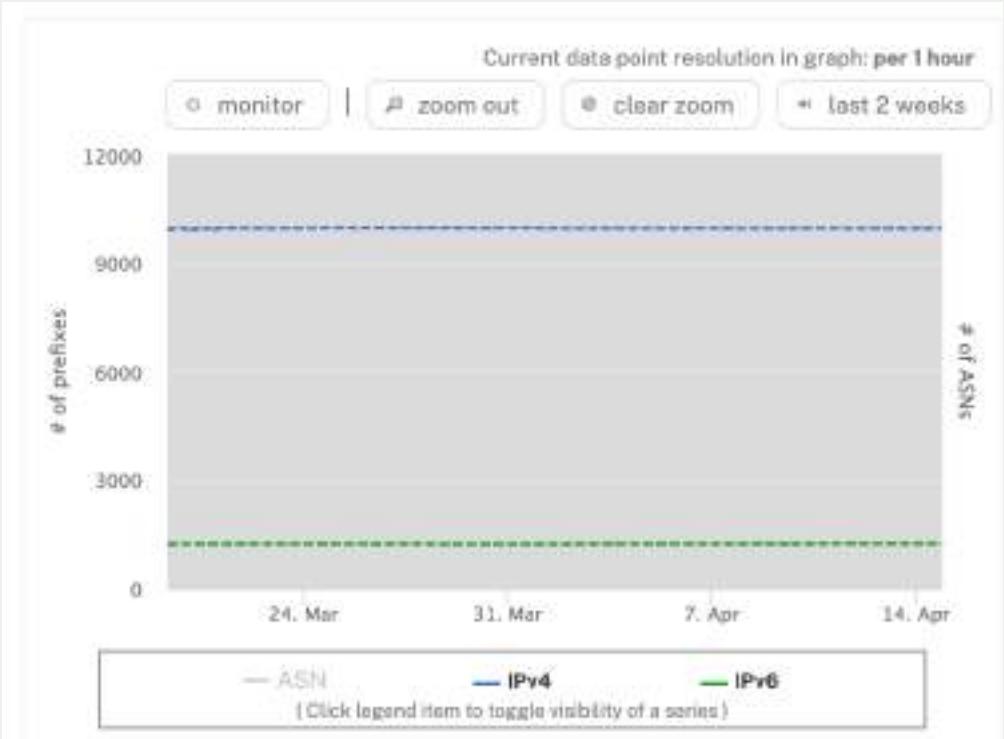
Business as usual

https://transparencyreport.google.com/traffic/overview?fraction_traffic=start:1735603200000;end:1747353599999;product:21;region:MM&lu=fraction_traffic&hl=en

Routing (RIPE RIS)



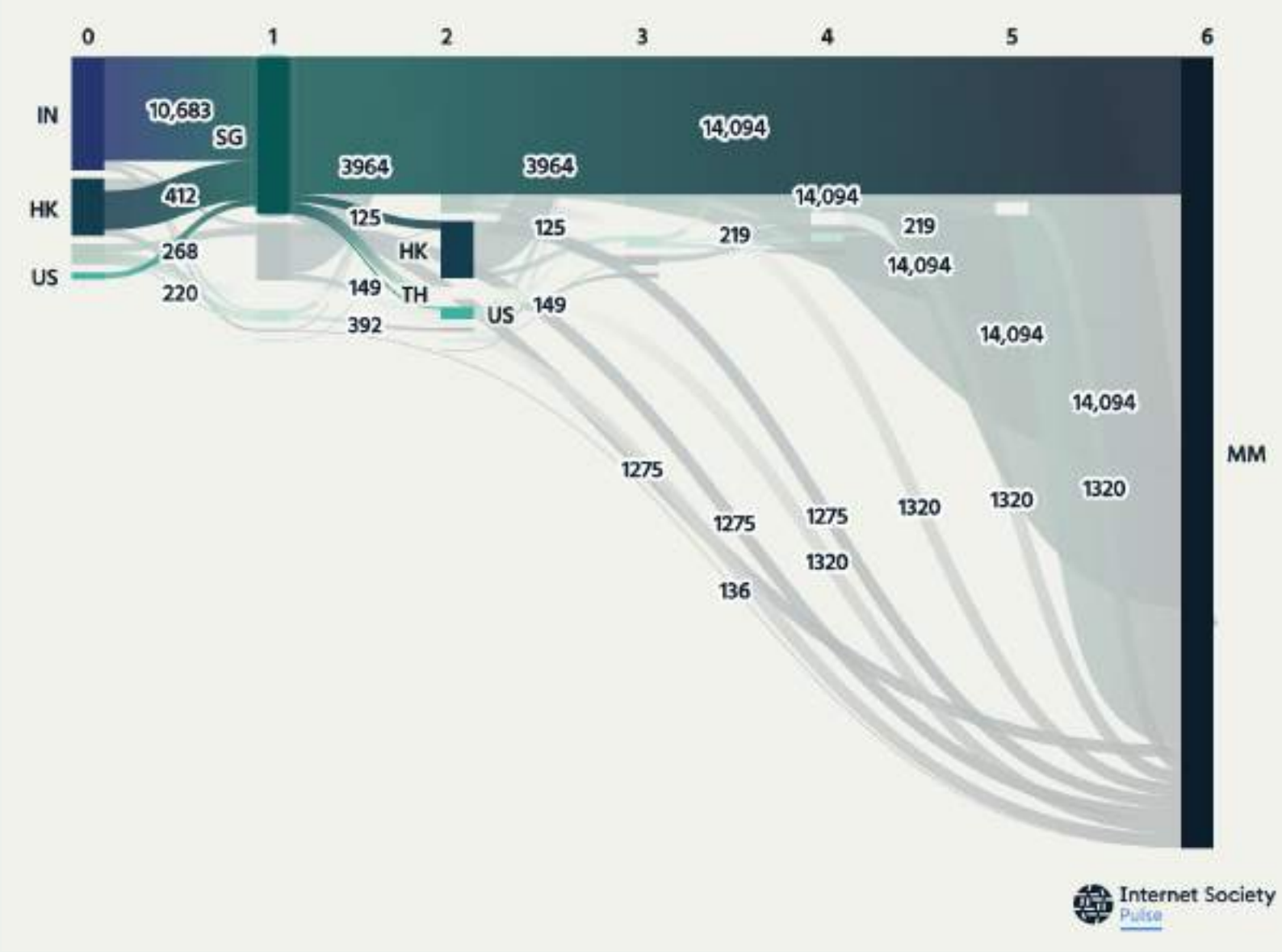
Myanmar



Thailand

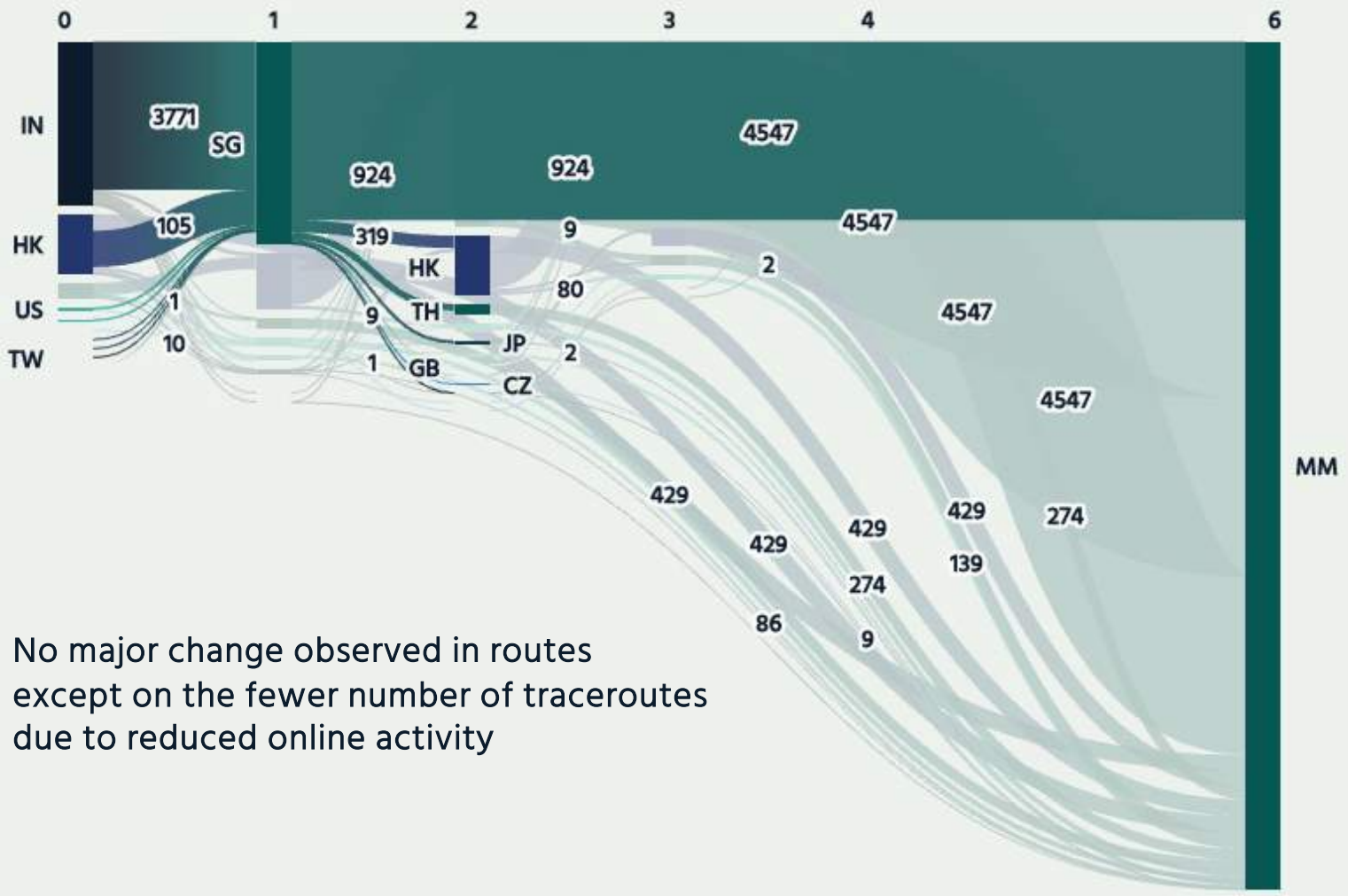
Traceroute from India to Myanmar

Before March 28, 2025



Traceroute from India to Myanmar

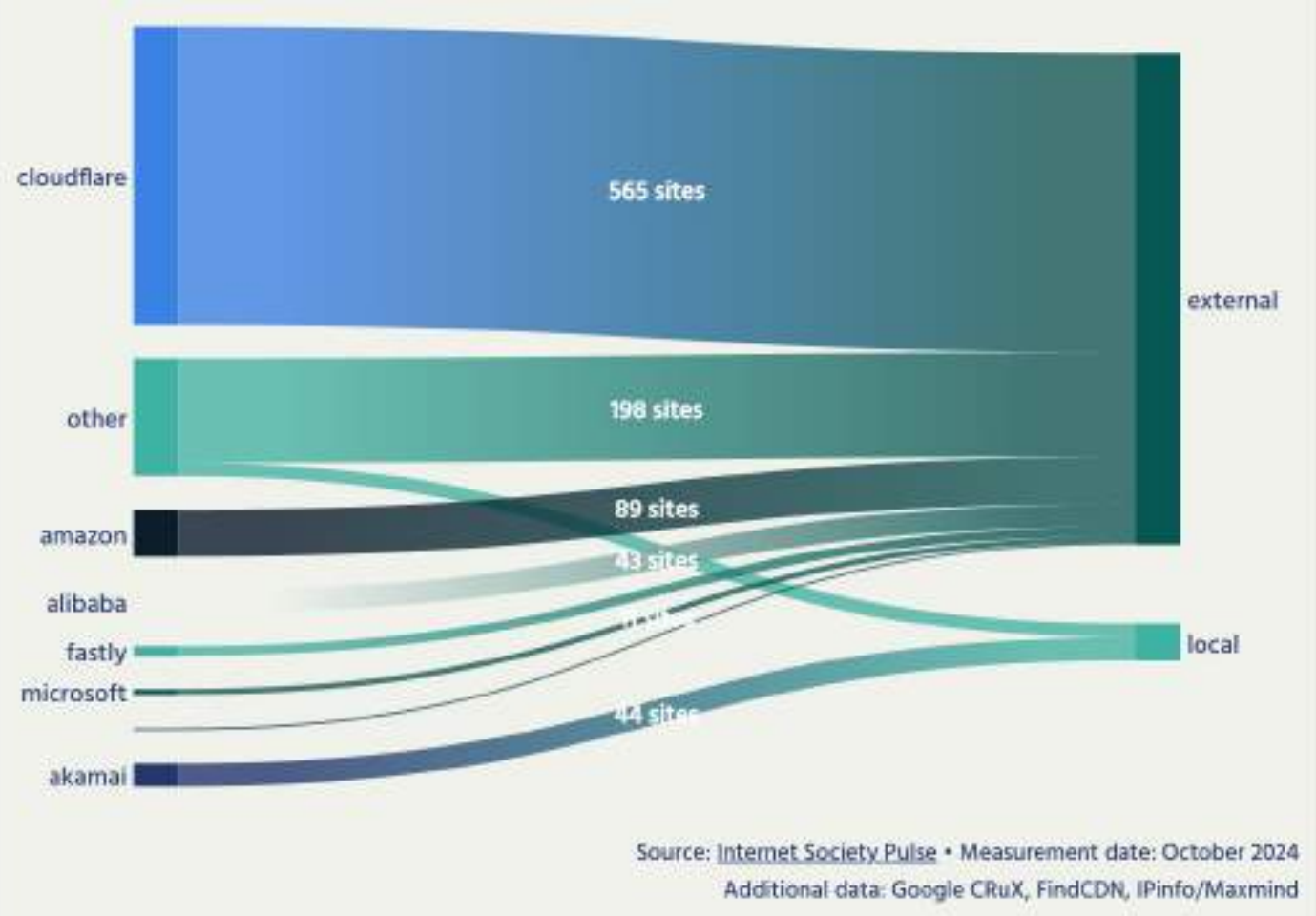
After March 28, 2025



No major change observed in routes except on the fewer number of traceroutes due to reduced online activity

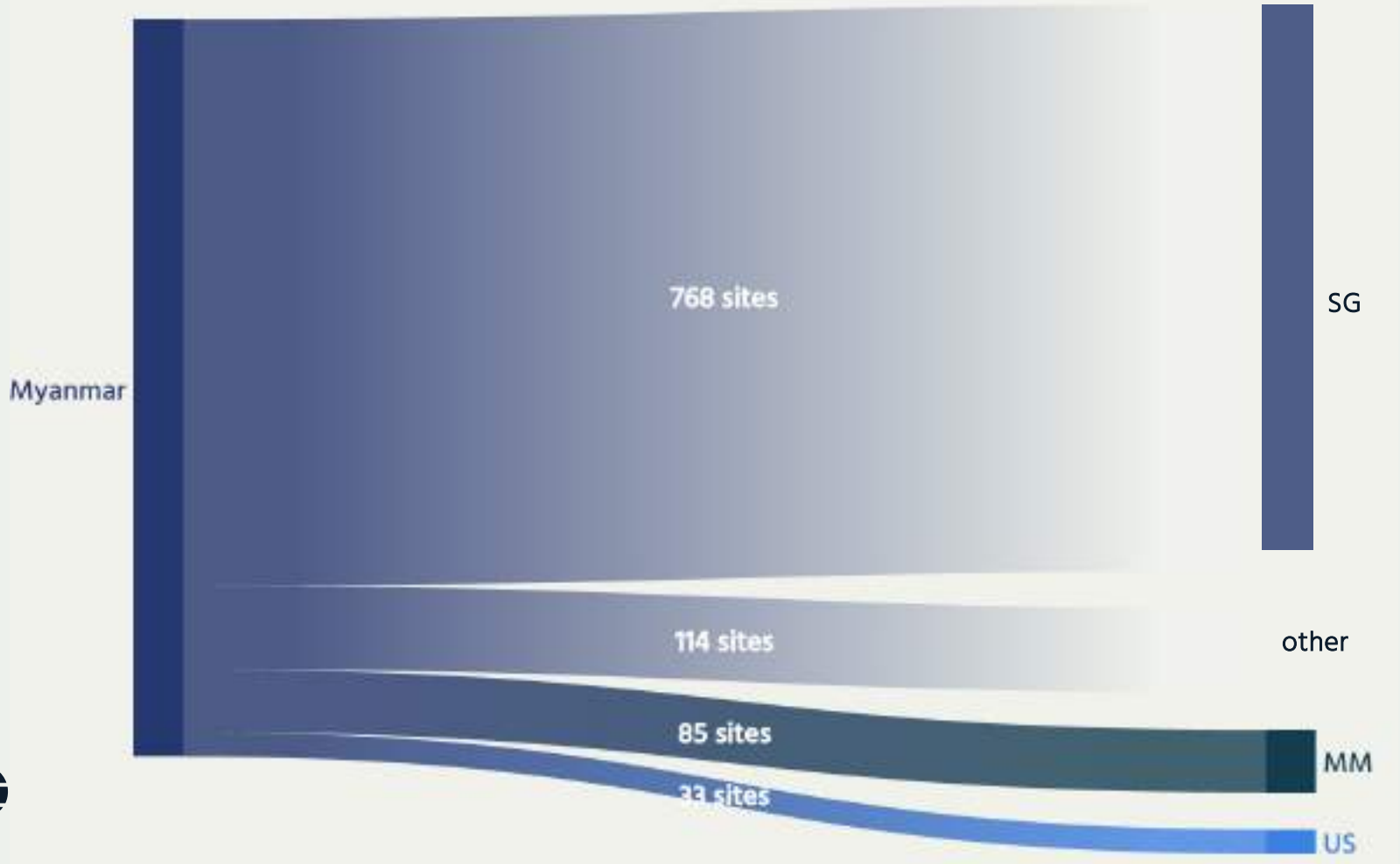
Internet Society Pulse

Content locality - Myanmar

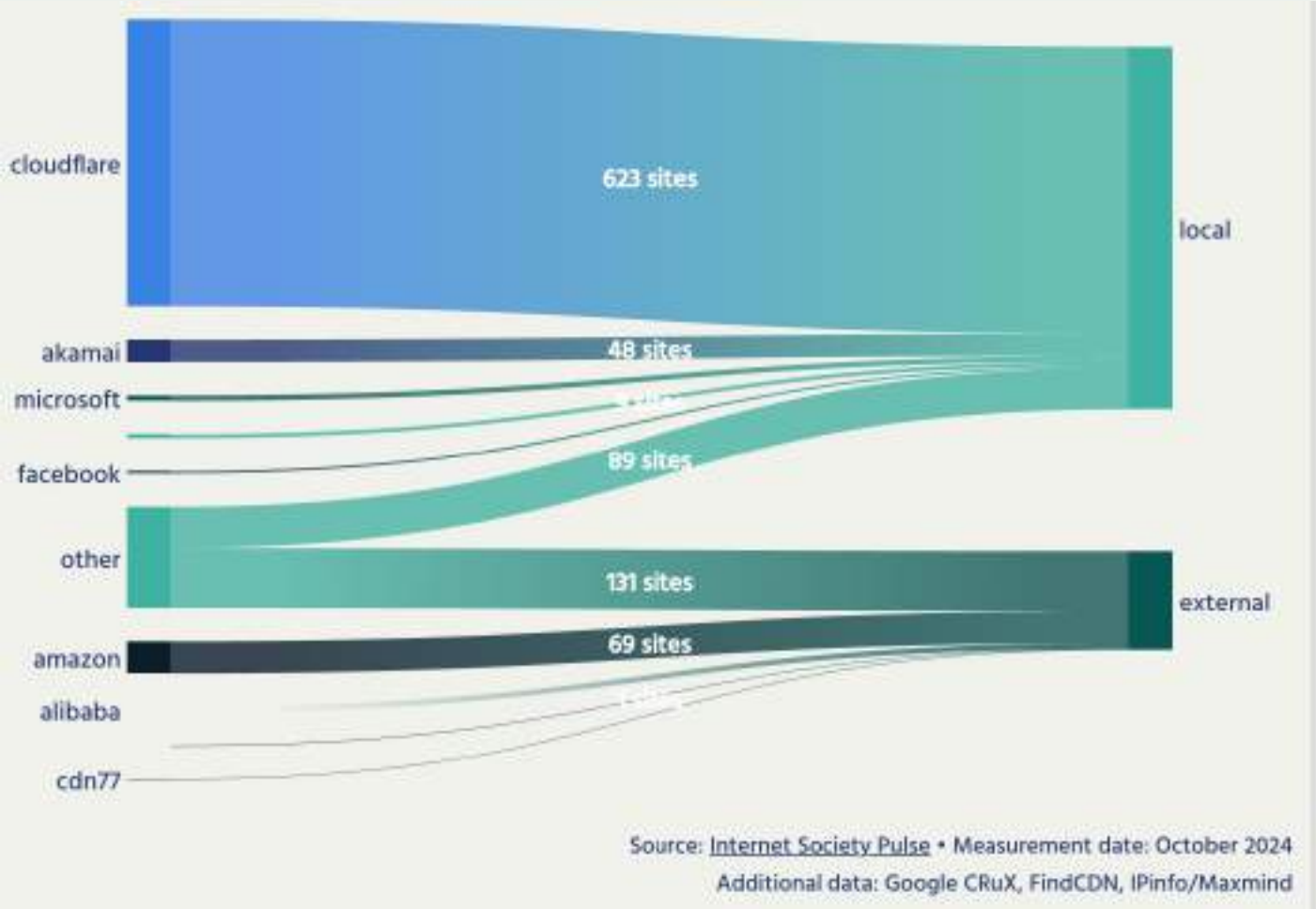


Source: Internet Society Pulse • Measurement date: October 2024
Additional data: Google CRuX, FindCDN, IPinfo/Maxmind

Content locality - Myanmar



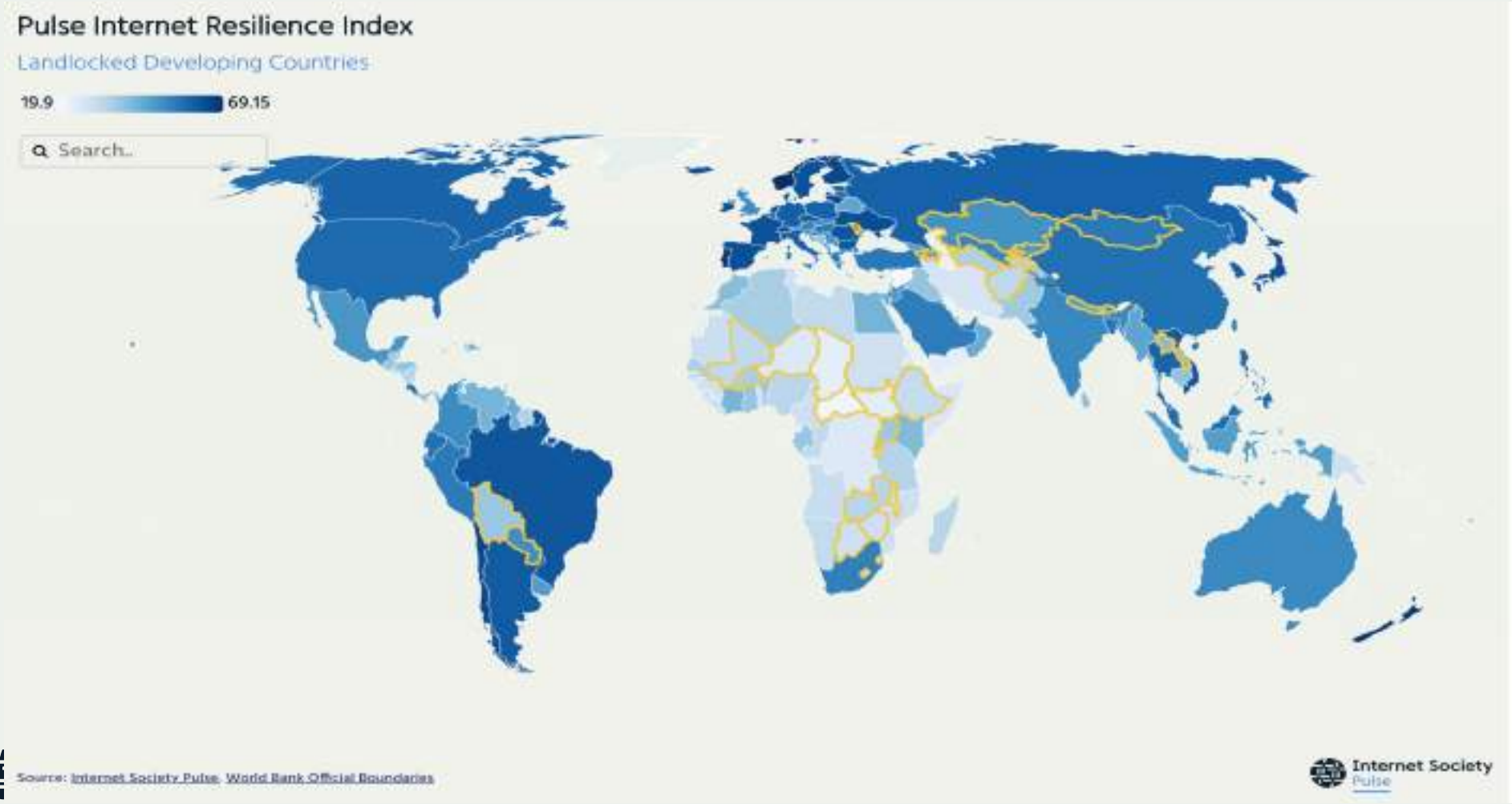
Content Locality - Thailand



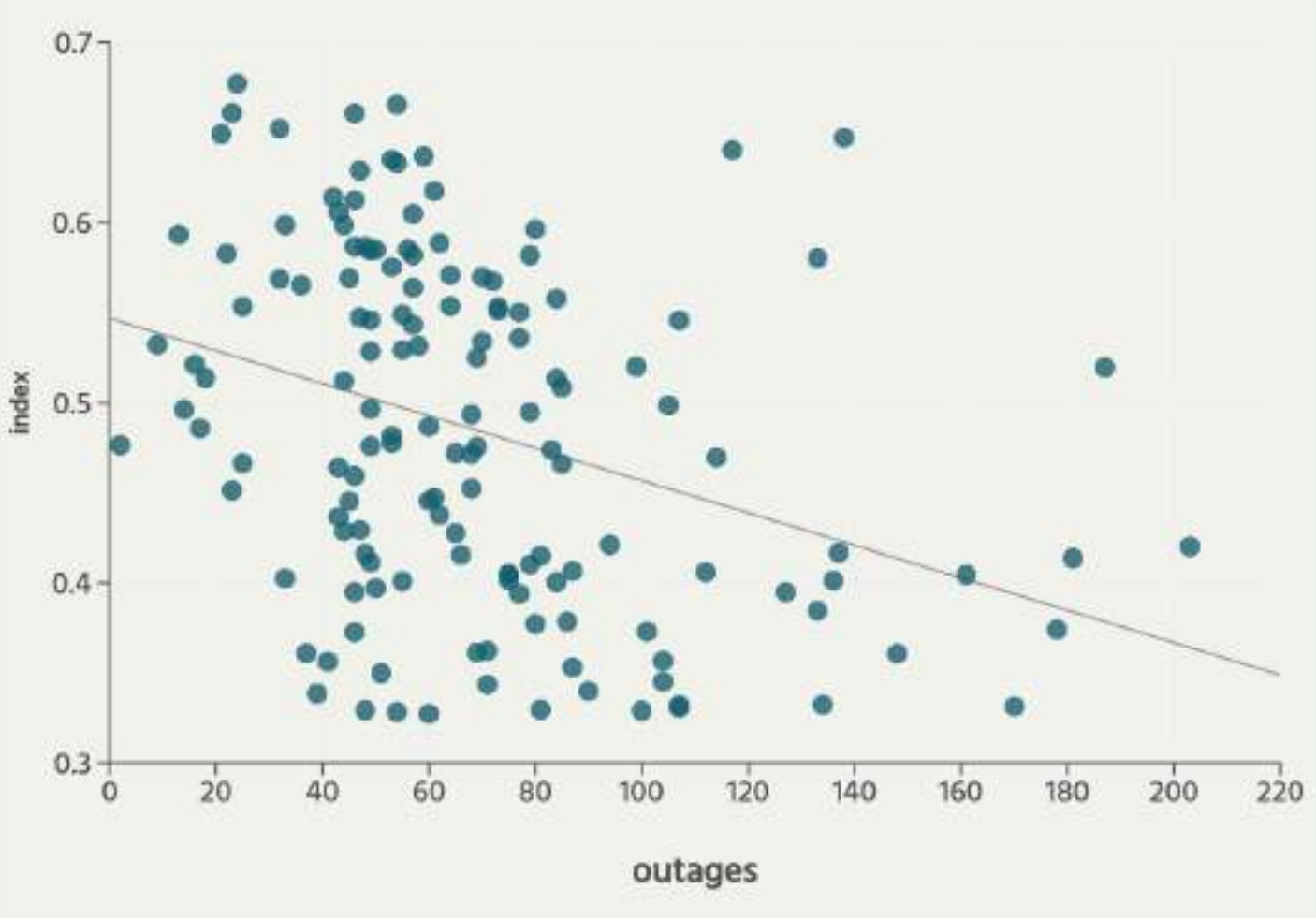
How resilient countries are against outages?

Internet Resilience Index architecture

Internet Resilience Globally

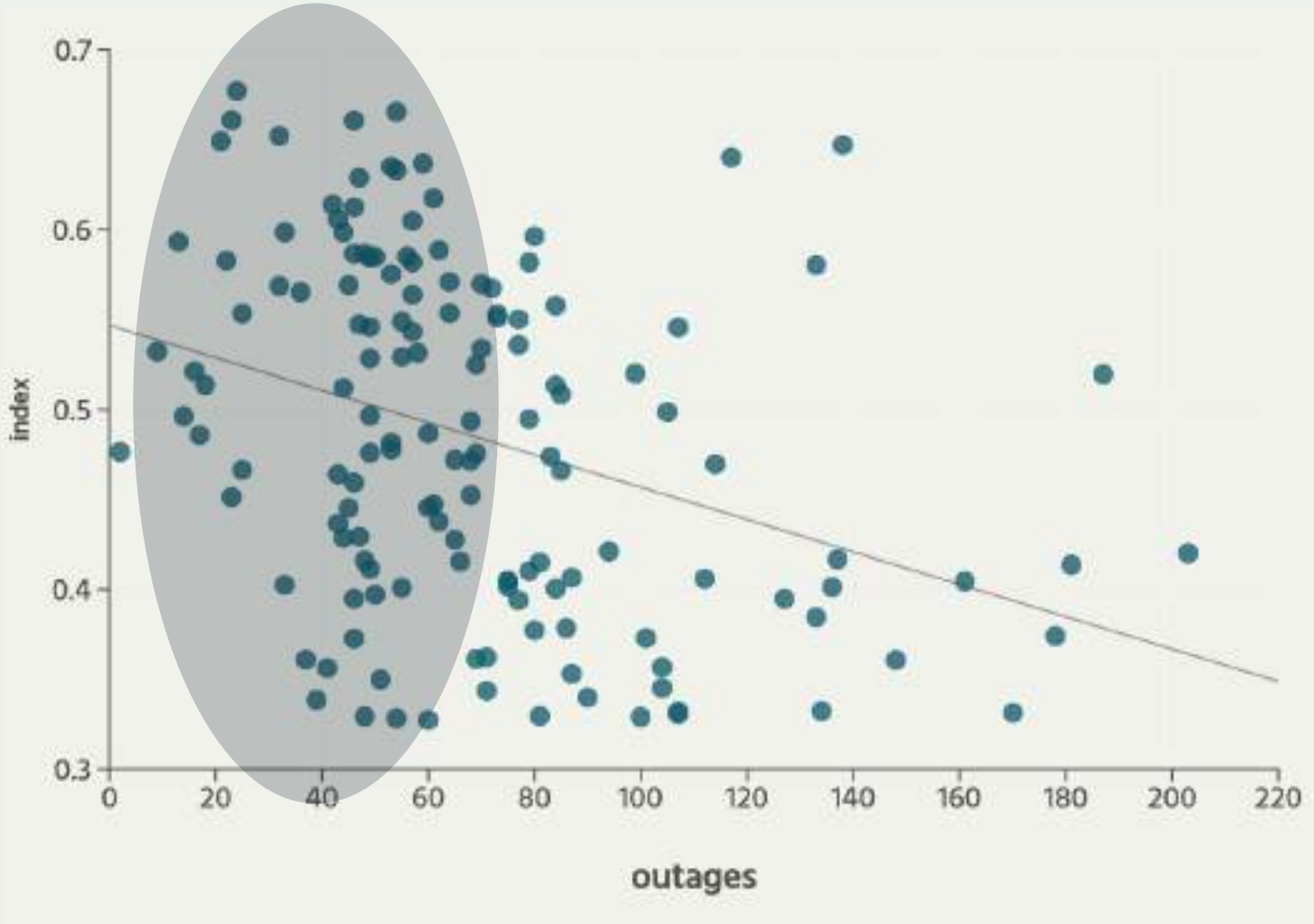


Internet outages vs Index (2023)



Source of outages:
Cloudflare
IODA

Internet outages vs Index



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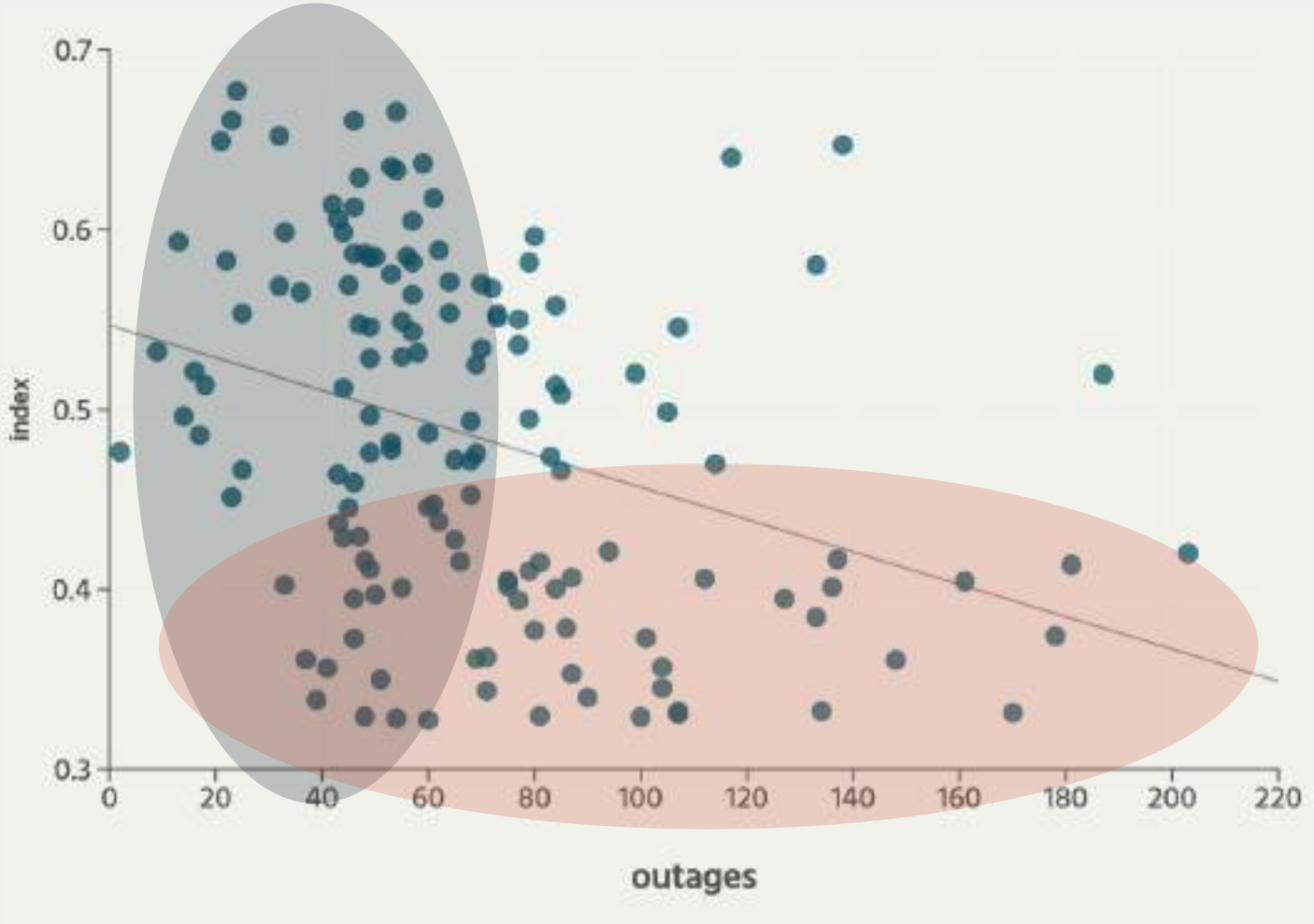
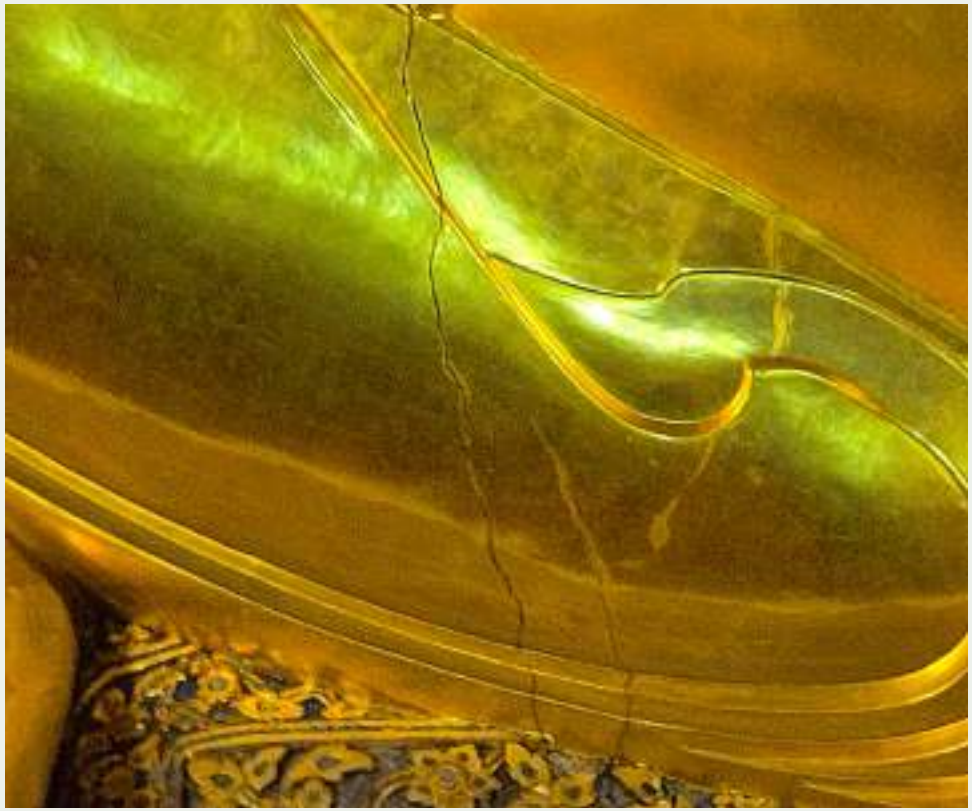


Source of outages:
Cloudflare
IODA

Recommendations

Build Earthquake-Resilient Infrastructure

- Enforce seismic-resistant design standards for all telecom infrastructure (e.g., towers, data centers, central offices).
- Elevated and shock-absorbing mounts for critical equipment in flood- or quake-prone areas.
- Seismic risk assessments of all existing telecom infrastructure.
- Mandate periodic resilience audits and public disclosure of telecom companies' disaster recovery plans.



Diversify Network Routes

- Create redundant fiber paths through multiple geographic routes (terrestrial and submarine) to avoid single points of failure.

- Cross-border peering and transit agreements with neighboring countries (e.g., Thailand, India, China, Bangladesh) to ensure failover capacity.

Redundancy of key infrastructure

- Distribute IXPs and critical DNS infrastructure to multiple regions so that damage in one region doesn’t isolate the entire country.

- Ensure data centers and IXPs are built in geologically safer zones with backup power, cooling, and connectivity.

Establish Emergency Communication Systems

- Deploy satellite-based communication systems (e.g., VSAT, Starlink, OneWeb) as a backup when terrestrial infrastructure fails.
- Equip emergency responders and government offices with portable mesh networks and satellite phones.
- Implement a national emergency alert system over multiple channels: SMS, radio, social media, and public sirens.

Redundancy is important

- Countries that were significantly impacted by the outages had lower Internet Resilience scores than those that were able to remain operational
- IXPs played a critical role in keeping local traffic flowing when submarine cables were offline.
- Having local content and services like DNS, Email and E-Government services would improve availability of services in the event of outages
- Low Earth Orbit Satellites (LEOs) also help however their coverage is currently low

Human network is very important

- Knowing the right people to call when there are problems is important
- This facilitates faster resolution of issues and therefore return to operation of services
- Building the human network is just as important as building infrastructure. Events like AIS, Peering Forums, NOG meetings and other technical community gatherings are essential to building the human network
- Building the right skills will also ensure that the next generation of engineers will be able to design and maintain the networks

.

Take aways

- Natural disasters do not just break buildings—they also fracture connectivity.
- They expose the fragility—and resilience—of our digital infrastructure.
- This is a call to rethink physical route diversity, regional redundancy, and real-time monitoring in vulnerable geographies.

Myanmar Internet Project (MIP)

"The military's ongoing internet shutdowns have exacerbated the crisis. For years, the junta has cut off internet access and refuses to restore connectivity even during life-threatening emergencies.

The lack of internet access has severe implications for emergency services, hindering disaster response efforts, obstructing aid coordination, and leaving affected populations unable to reach out for help. "

Source: https://progressivevoicemyanmar.org/

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Source: https://progre

1 April 2025

Myanmar Earthquake: A Crisis Within a Crisis

Amreesh Phokeer
Internet Resilience Insights, Internet Society

Categories: Resilience, Shutdown

Internet access should not be weaponized or restricted during emergencies—it should be a relief, coordination, and rebuilding tool.

pulse.internetsociety.org

Your Data Dashboard

- Launched December 2020.
- We curate Internet measurement data from trusted sources to help everyone gain deeper, data-driven insight into the Internet.

Trusted data from multiple sources:

- **Benefit**: Helps to assess whether efforts to ensure that the Internet remains open, globally connected, secure, and trustworthy are working.
- **Benefit:** Allows policymakers, researchers, journalists, network operators, civil society groups, and others to better understand the health, availability, and evolution of the Internet.

https://internetsociety.org

Thank You

phokeer@isoc.org

Internet Society