AITAAN Webinar Series: Fourth Webinar on "Post Covid 19: Energy and Environment Security" in association with Mitra Kunj, 23rd May 2020, Saturday (10 Jestha 2077), 14.00 PM
Zoom link Meeting ID: 889 8668 6649

Normal or New Normal: What COVID-19 means to Nepal's energy and environmental security?

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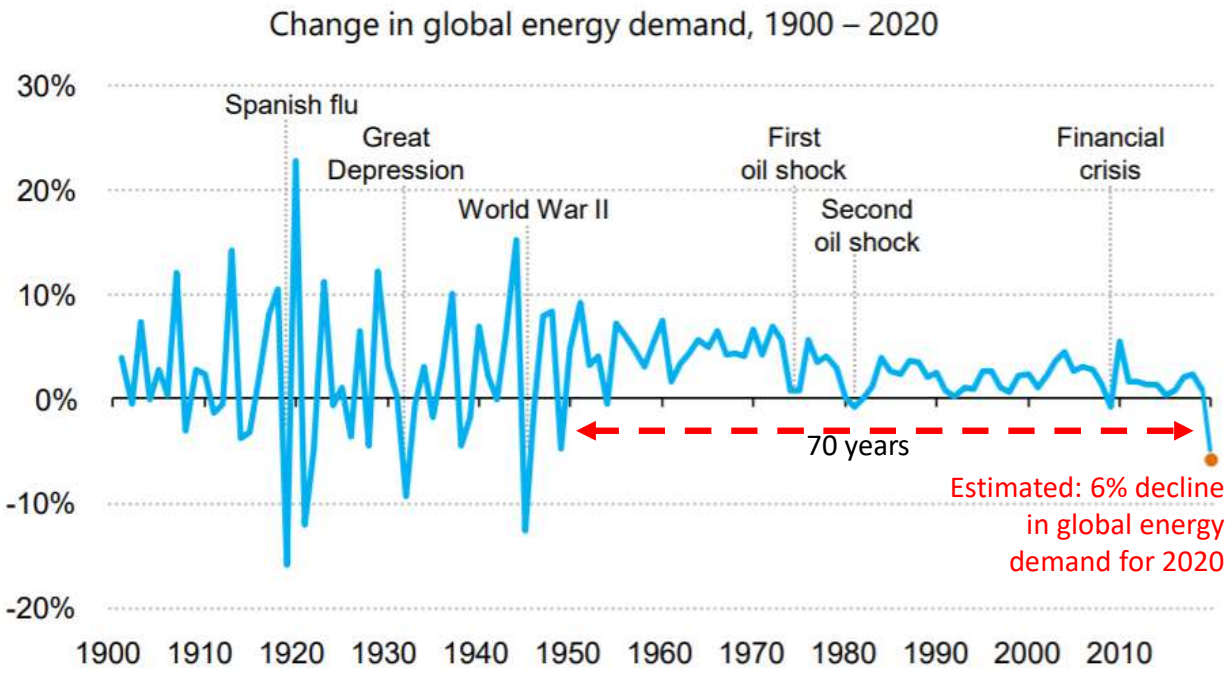
Contents

- Implications to the global energy and CO_2 emissions
- The Nepalese context: likely implications and mechanisms
- Key questions and way forward

COVID-19's Global energy implications

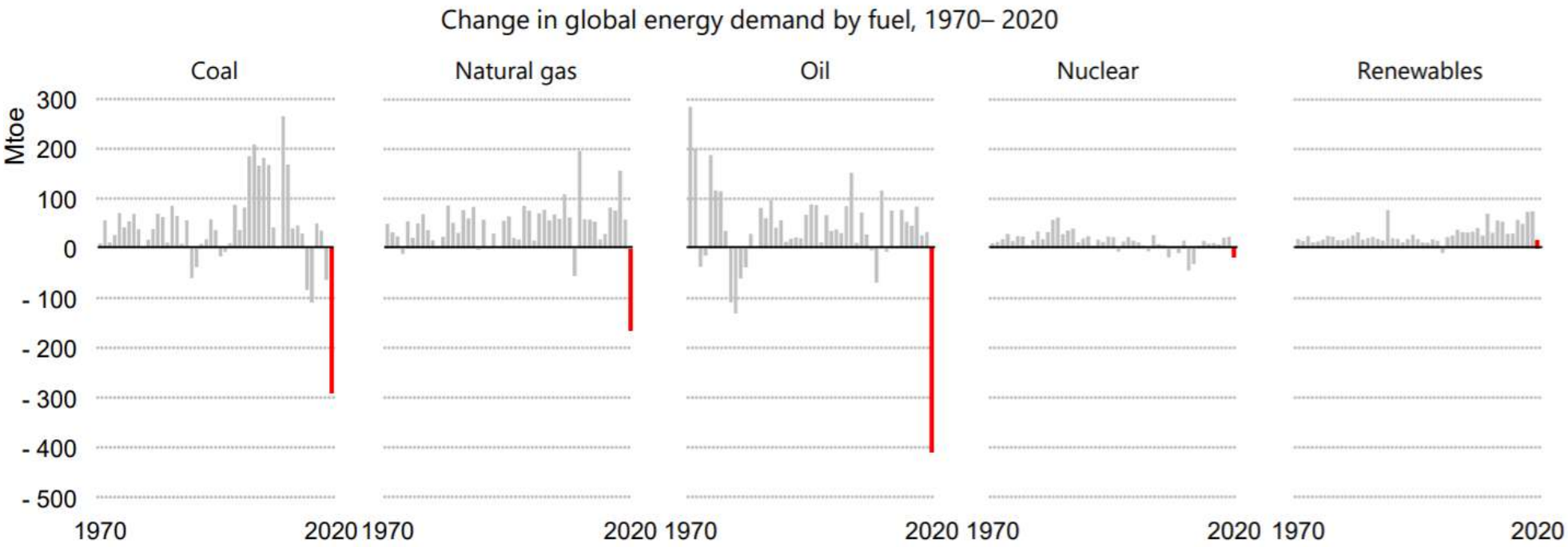
- Slowed transport, trade and economic activity across the world
- Countries in full lockdown @an average 25% decline in energy demand per week (by mid-April)
- Countries in partial lockdown @an average 18% decline (by mid-April)



IEA, 2020

COVID-19's Global energy implications

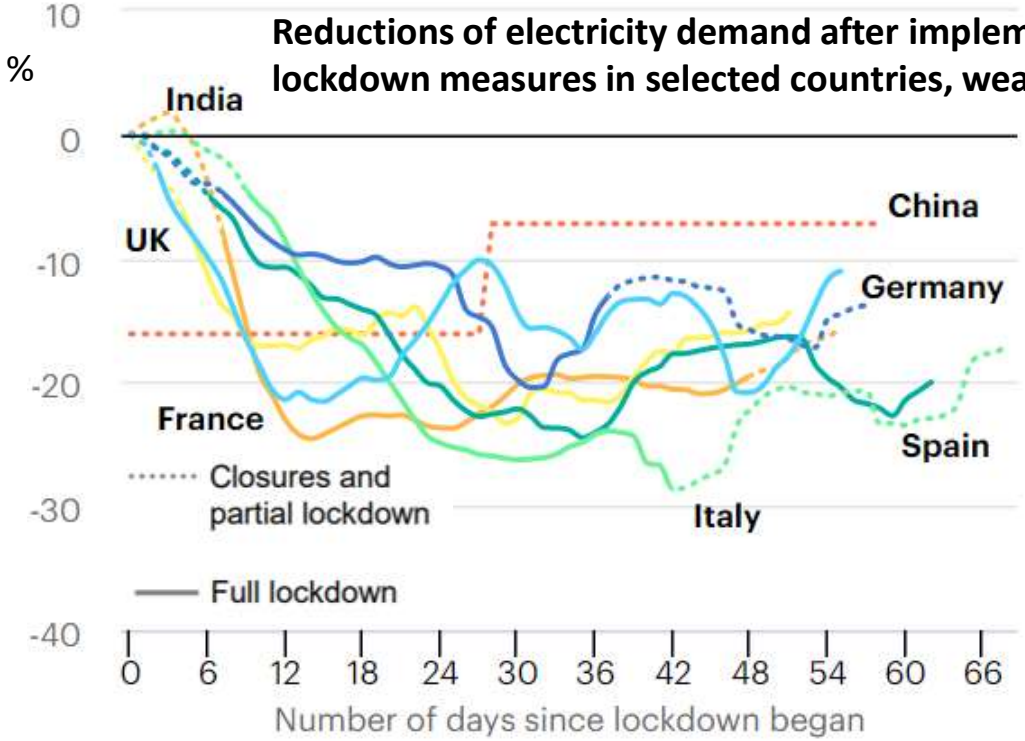
- Only renewable energy expected to rise in 2020, large decline in fossil fuels
- Renewables are more resilient

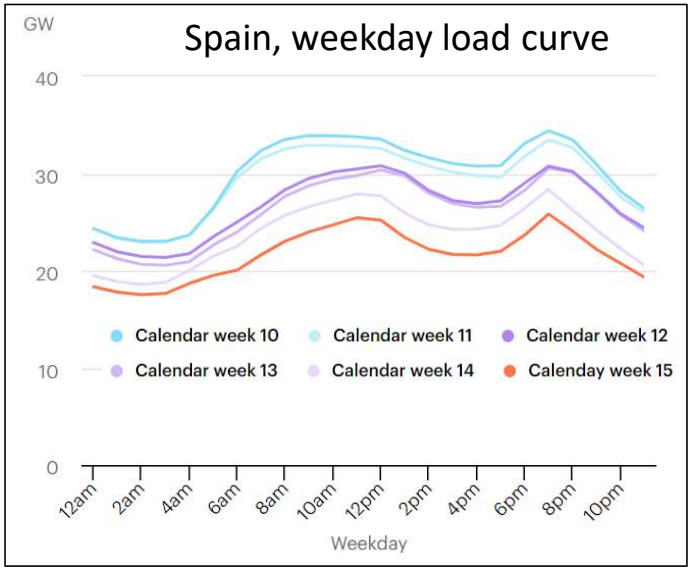


IEA, 2020

COVID-19's Global electricity implications

- Global electricity demand is expected to fall by 5% in 2020, the largest decline since the Great Depression
- Dramatic reductions in services and industry; this is only partially offset by higher residential use; service-sector dominated economies suffer the most



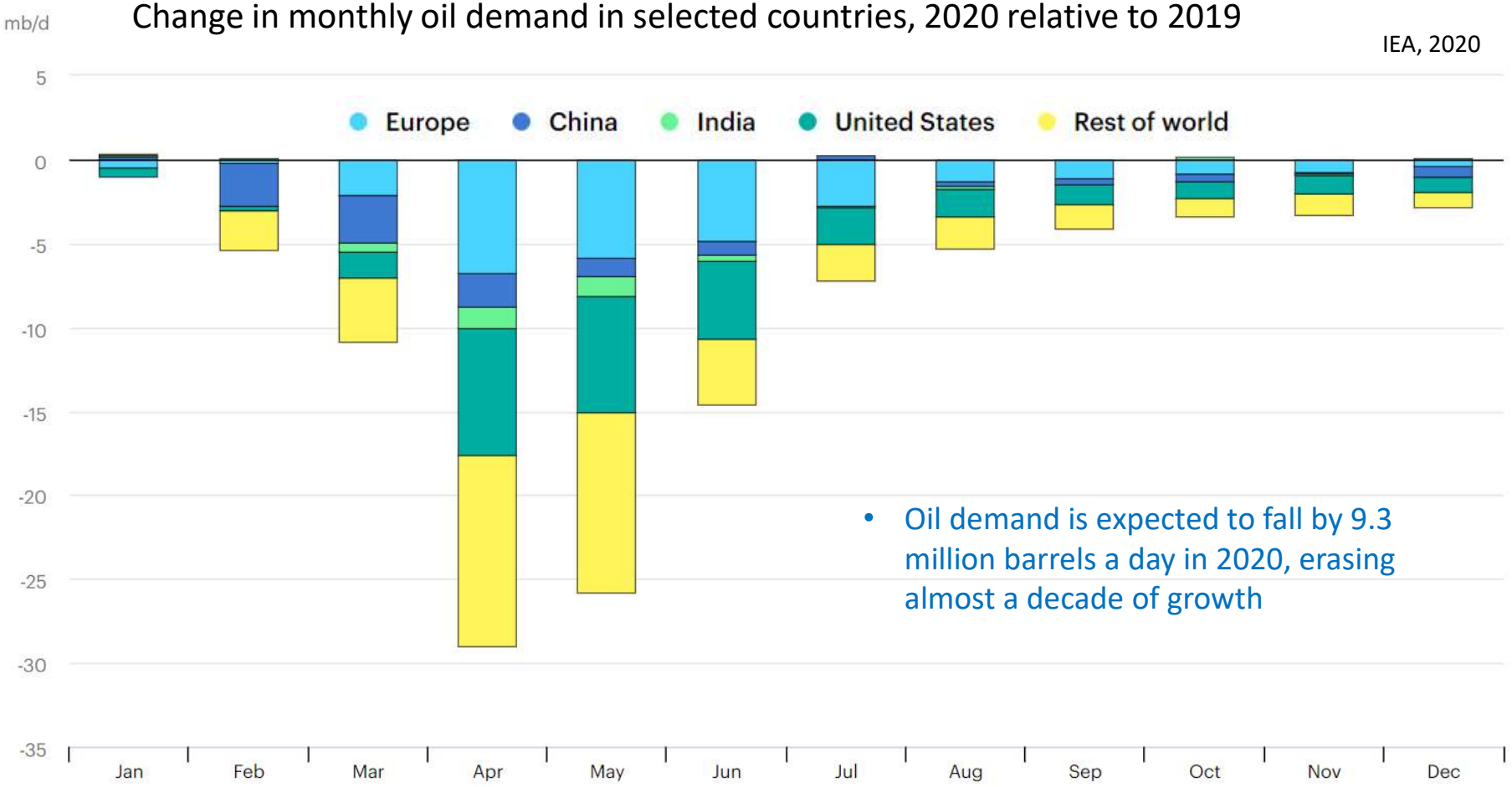


IEA, 2020

COVID-19's implications to global oil demand

Change in monthly oil demand in selected countries, 2020 relative to 2019

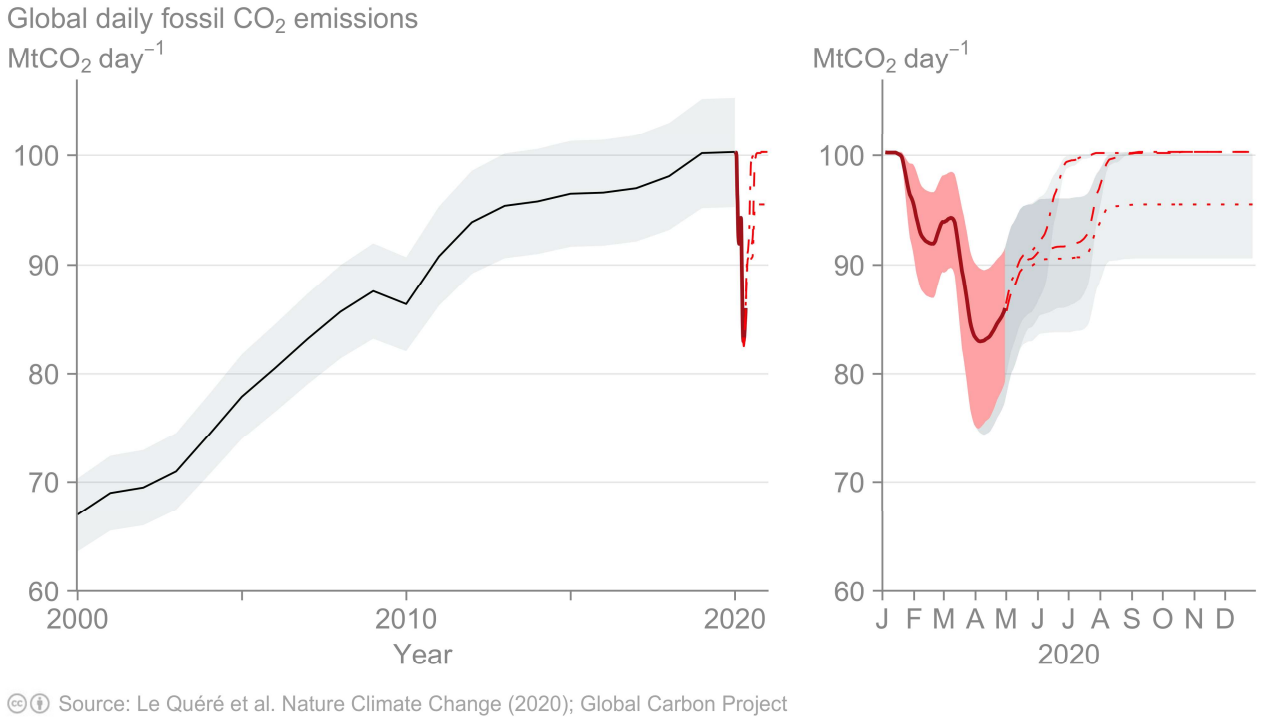
IEA, 2020



- Oil demand is expected to fall by 9.3 million barrels a day in 2020, erasing almost a decade of growth

In 2019, the world emitted around 100 million tonnes of carbon dioxide per day by burning fossil fuels and cement production. In early April 2020, this number fell to 83 million tonnes per day, a drop of 17% (range: –11% to –25%).

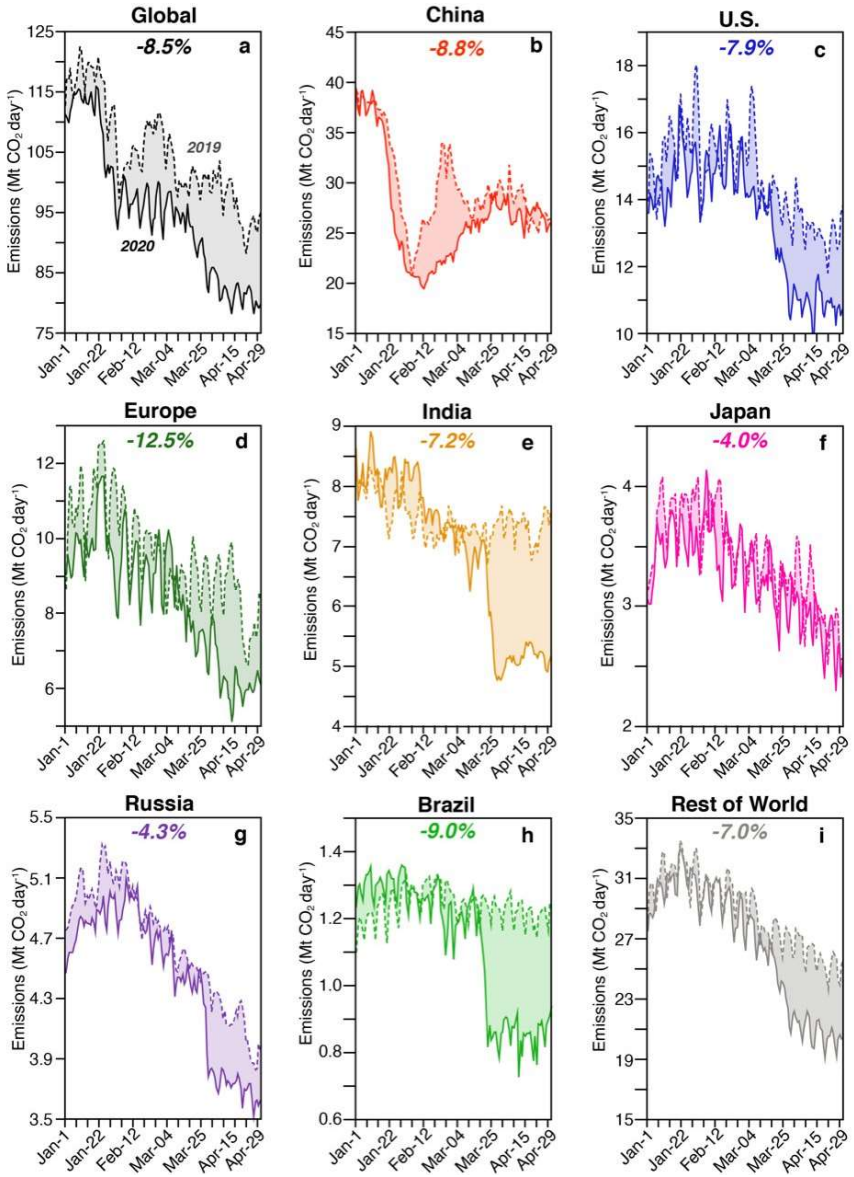
COVID-19's implications to global CO2 emissions



LeQuere et al (2020). Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement, Nature Climate Change (19 May 2020).

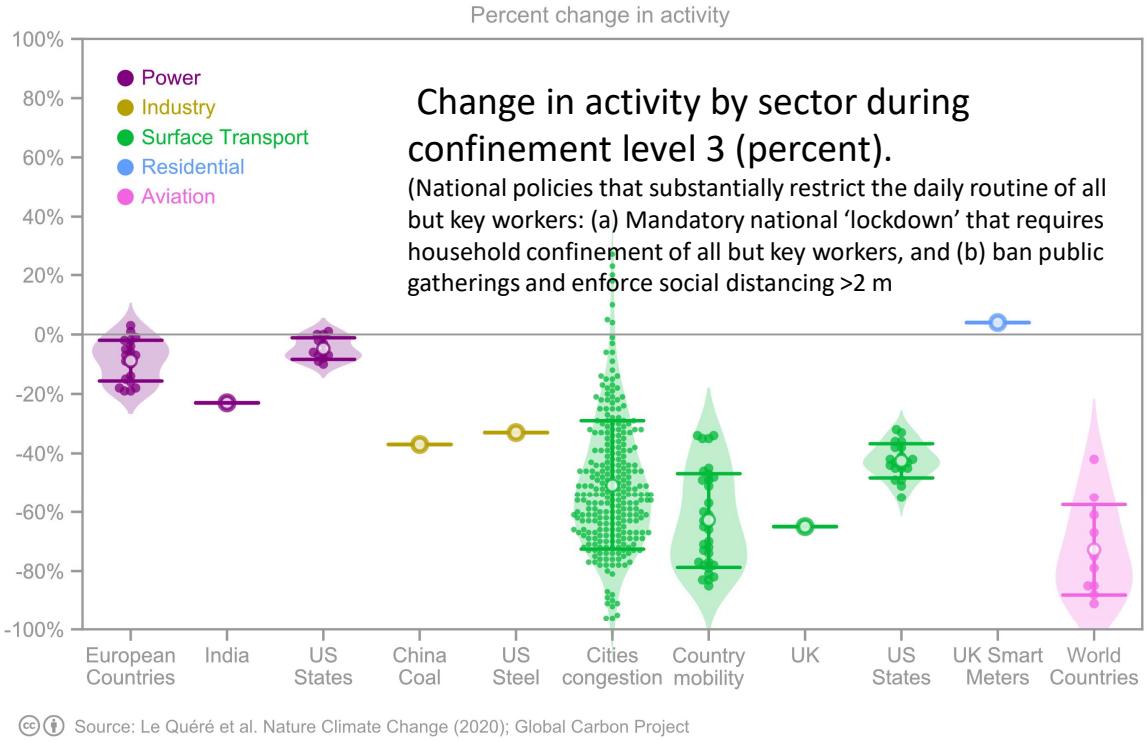
COVID-19 caused record largest decline in global CO2 emissions(-16 % in April).

The U.S. (-25%), Europe (-24%) and India (-30%) show ever largest declines.



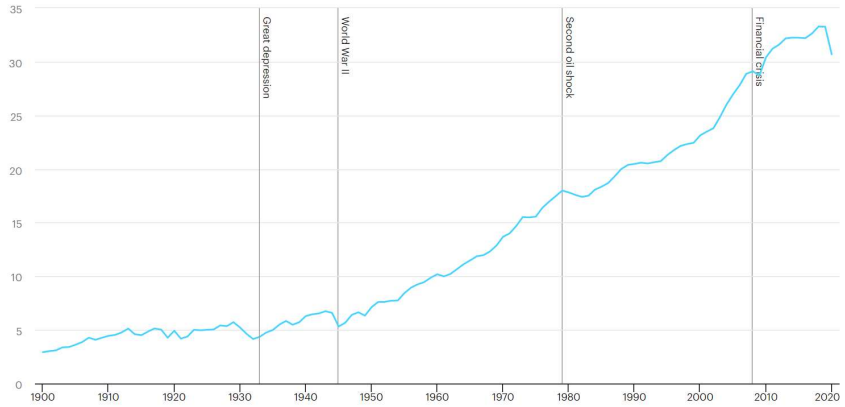
Zhu Liu et al (2020), Submitted on 28 Apr 2020 (v1), last revised 4 May 2020 (this version, v2)
https://arxiv.org/abs/2004.13614v2

If pre-pandemic conditions return by mid-June, then 2020 emissions may decline by 4% compared to 2019 (range: –2% to –7%). On the other hand, if restrictions remain worldwide throughout 2020, then emissions may drop by 7% (range: –3% to –13%).



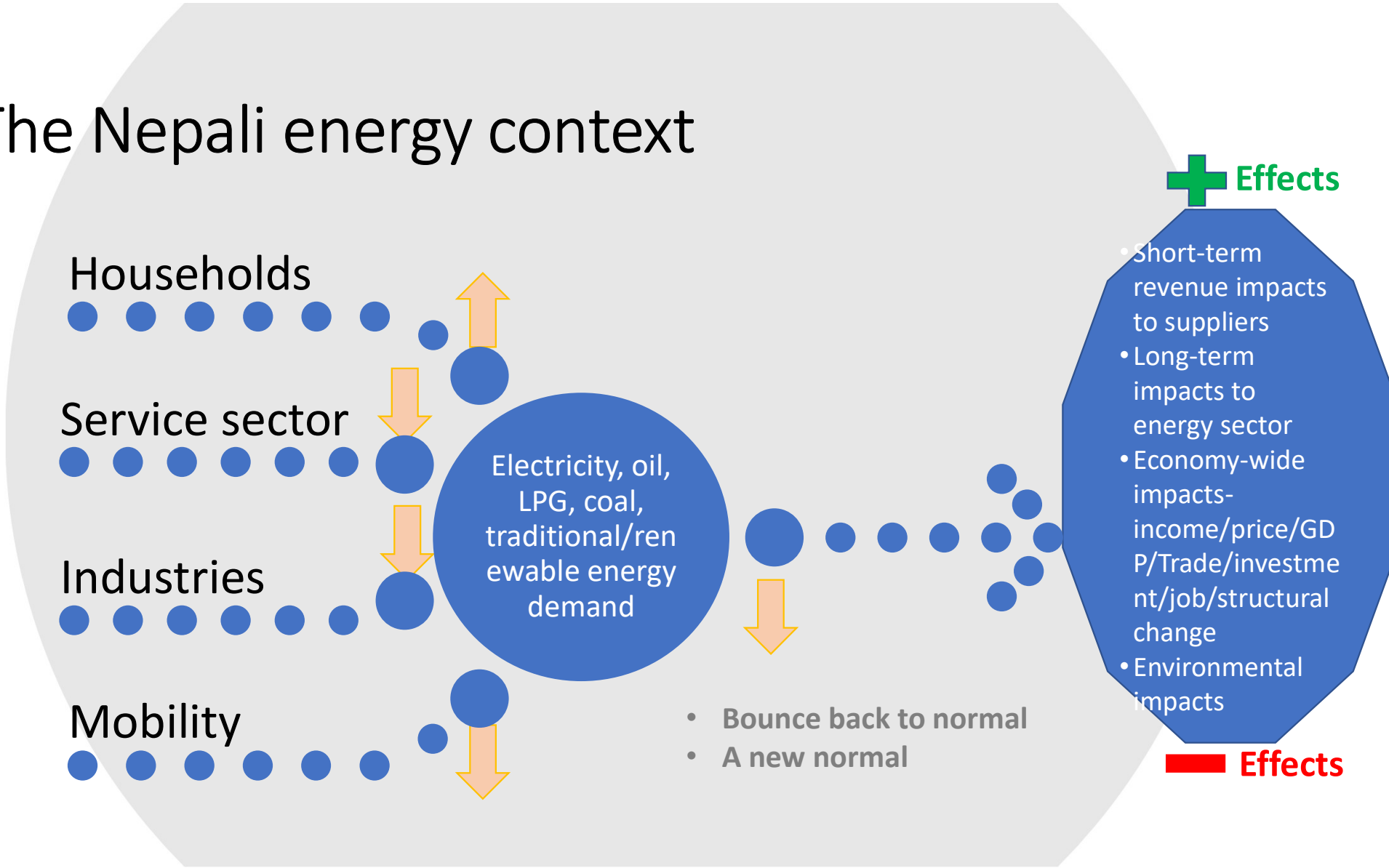
LeQuere et al (2020). Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement, Nature Climate Change (19 May 2020).

But remember, emissions have always rebounded in later years !!



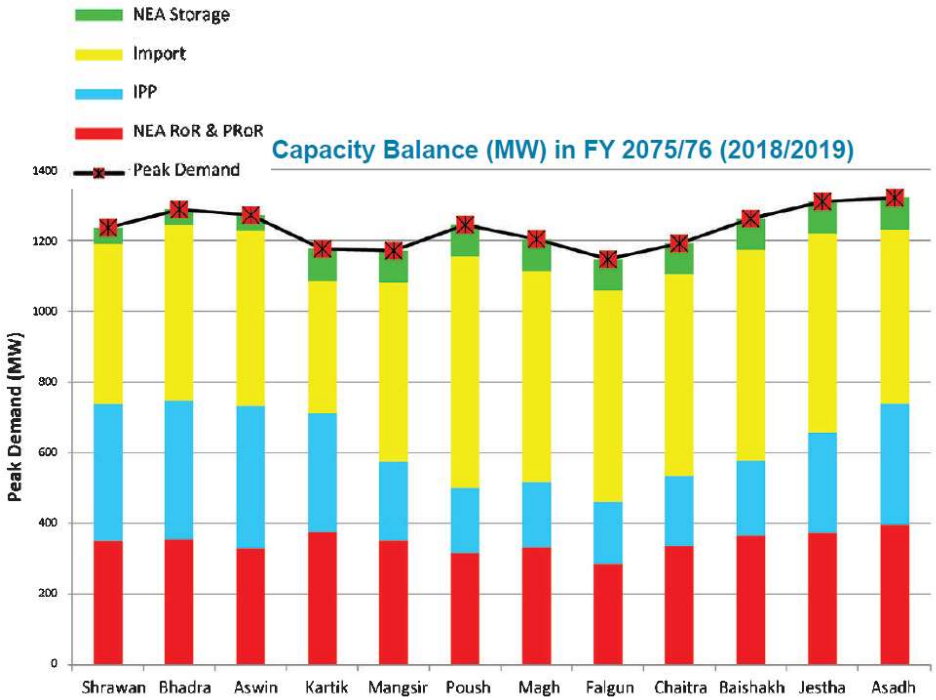
IEA (2020) estimation: Global CO2 emissions are expected to decline to reach 30.6 Gt for the 2020, almost 8% lower than in 2019.

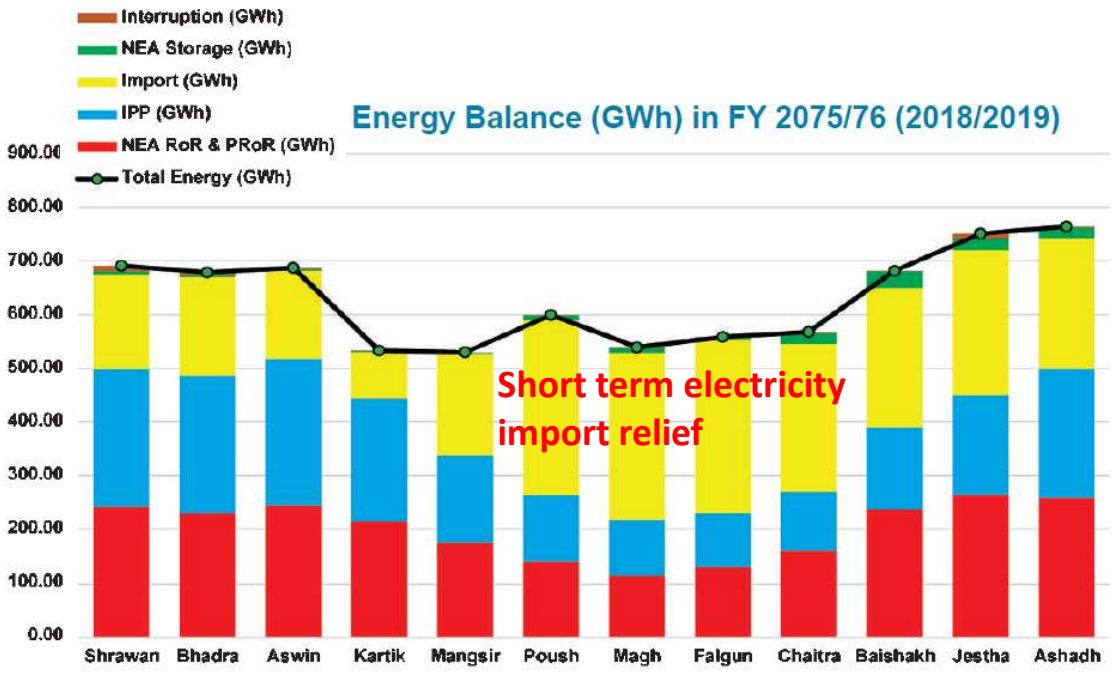
The Nepali energy context



The Nepali context –the electricity sector

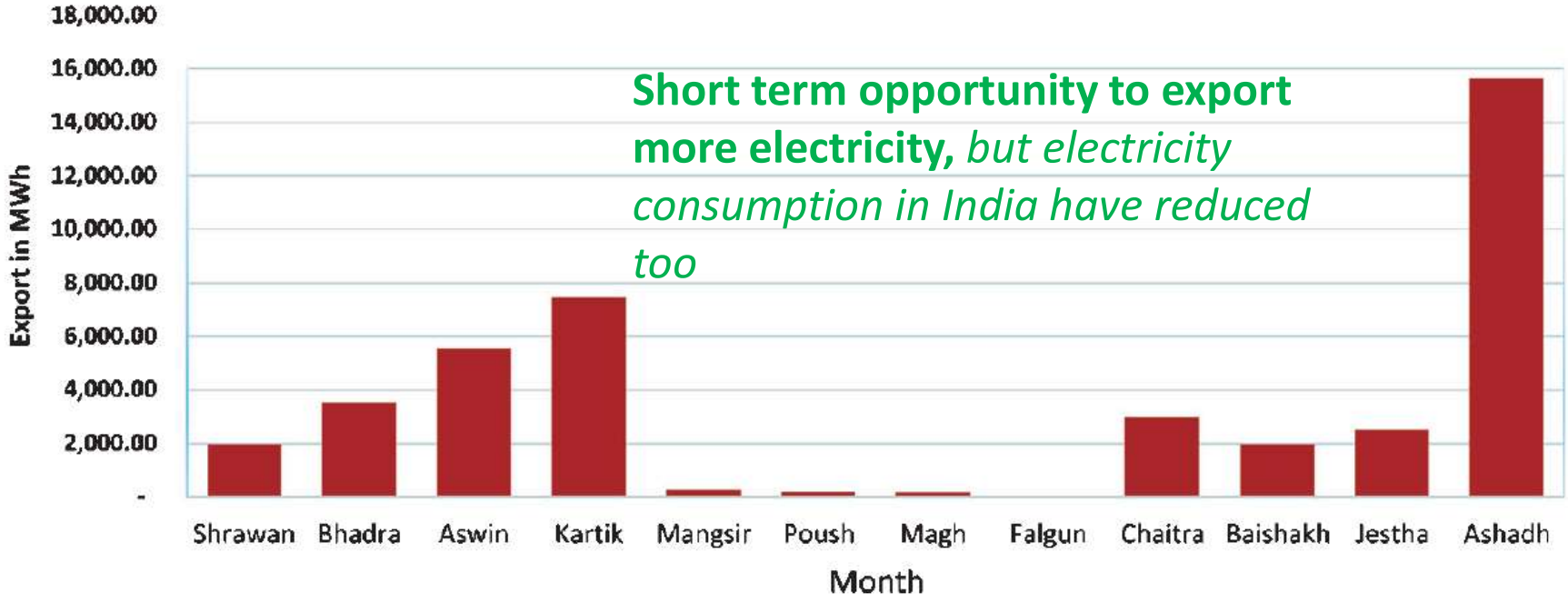
Power and energy demand reduction: Nepal went into lock-down on 24th March → Kathmandu Valley's peak power demand declined to 290 megawatts on Tuesday (March 24) evening from a normal average of 350 megawatts → On Wednesday afternoon, the peak demand was 182 megawatts. *(Nepal power glut with COVID-19 shutdown, Nepali Times, March 25, 2020)*





NEA Annual Report 2018/19

Energy Export to India (MWh) in FY 2075/76 (2018/2019)



Short term opportunity to export more electricity, *but electricity consumption in India have reduced too*

Monthly Energy Export to India (MWh) in FY 2075/76 (2018/2019

Month	Shrawan	Bhadra	Aswin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashadh
Kataiya I (MWh)	2005.92	3541	5564.16	7467.84	290.88	214.56	184.32	40.32	1164.96	852.48	601.92	8493.12
Kataiya II (MWh)	0	0	0	0	0	0	0	0	0	0	0	3050
Ramnagar (MWh)				2.4	2.4	0	0	0	1824	1149.6	1946.4	3240
Raxaul (MWh)												861.68
Total (MWh)	2,005.92	3,541.00	5,564.16	7,470.24	293.28	214.56	184.32	40.32	2,988.96	2,002.08	2,548.32	15,644.80

NEA Annual Report 2018/19

The Nepali context –the electricity sector

- **COVID-19 induced delay in new power plants likely**
  - Government aims to 15,000 MW by 2028
  - 52 power projects (from the private sector) was supposed to be grid-connected in FY 2020/2021 of about 1,315 MW
  - Expected addition by end of FY 2019/20 was 1,000 MW from 50 new projects (now dropped to about 355 MW of capacity from 30 projects)
  - 117 power projects, comprising solar and bagasse, under construction by the private sector, of installed capacity of 2,837 MW

Some of these data/info are picked from NEA Spokesperson Mr. Prabal Adhikari's article 'COVID-19 in Nepal's power sector' published in The Himalayan Times on April 07, 2020; see also http://www.reanda-international.com/News_Photo/pdf/P_i_C_N_E.pdf

The Nepali context –the electricity sector

- **Revenue loss to NEA**
  - The Domestic Consumption is likely increased whereas the industrial and commercial demand (that makes half of gross revenue) adversely affected
  - Demand reduction, about 25 per cent less from the pre-corona peak in early days of lock-down
  - NEA's hydropower plants are to spill water even after no power import from India (especially at night)
  - About 15 million units/day consumption which could have at least 21 million units under normal situation (@28%); NEA's monthly revenue reduction by about Rs 1.8 billion
  - The government decided to cut the electricity tariff by 20 percent for those households whose power consumption is up to 150 units a month

Some of these data/info are picked from NEA Spokesperson Mr. Prabal Adhikari's article 'COVID-19 in Nepal's power sector' published in The Himalayan Times on April 07, 2020; see also http://www.reanda-international.com/News_Photo/pdf/P_i_C_N_E.pdf , see also World Bank (2020) Economic Report on South Asia

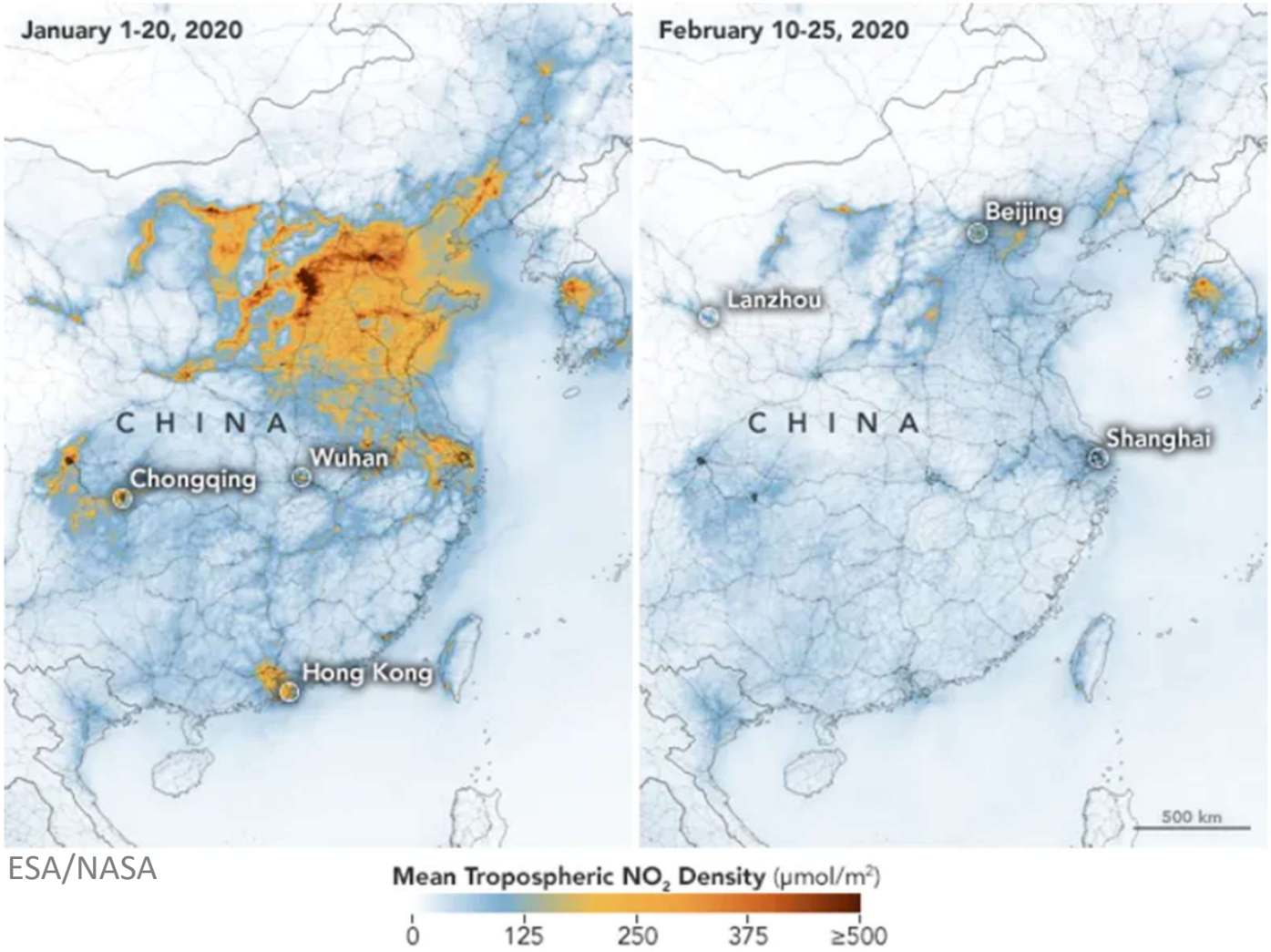
The Nepali context –the electricity sector

- **Impacts to IPPs**
  - NEA is off-taker of IPP's power. Delay against monthly invoices payment under the Force Majeure clause of the PPA lead to financial issues for the IPPs. Cash flow and financial liquidity issues.
  - Price variation in the raw material/input costs for IPPs in the short-time likely to aggravate the situation
- **Impacts to FDI in the construction of hydropower projects**
  - Post- COVID-19 year may need very clear government hedging rules that allow to reduce foreign currency exchange risks to international companies

Some of these data/info are picked from NEA Spokesperson Mr. Prabal Adhikari's article 'COVID-19 in Nepal's power sector' published in The Himalayan Times on April 07, 2020; see also http://www.reanda-international.com/News_Photo/pdf/P_i_C_N_E.pdf

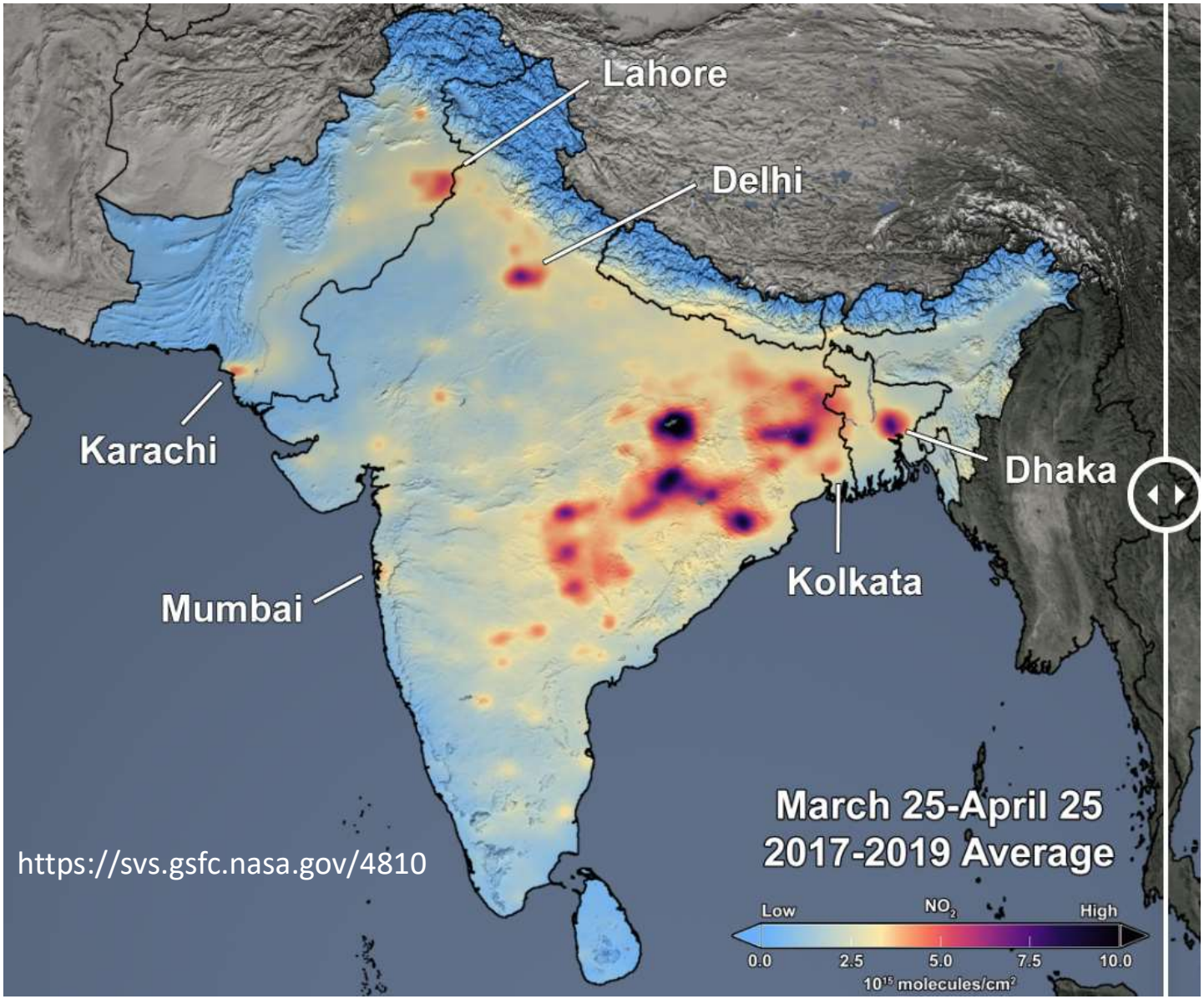
COVID-19 and air pollution

The unintentional benefits



ESA/NASA

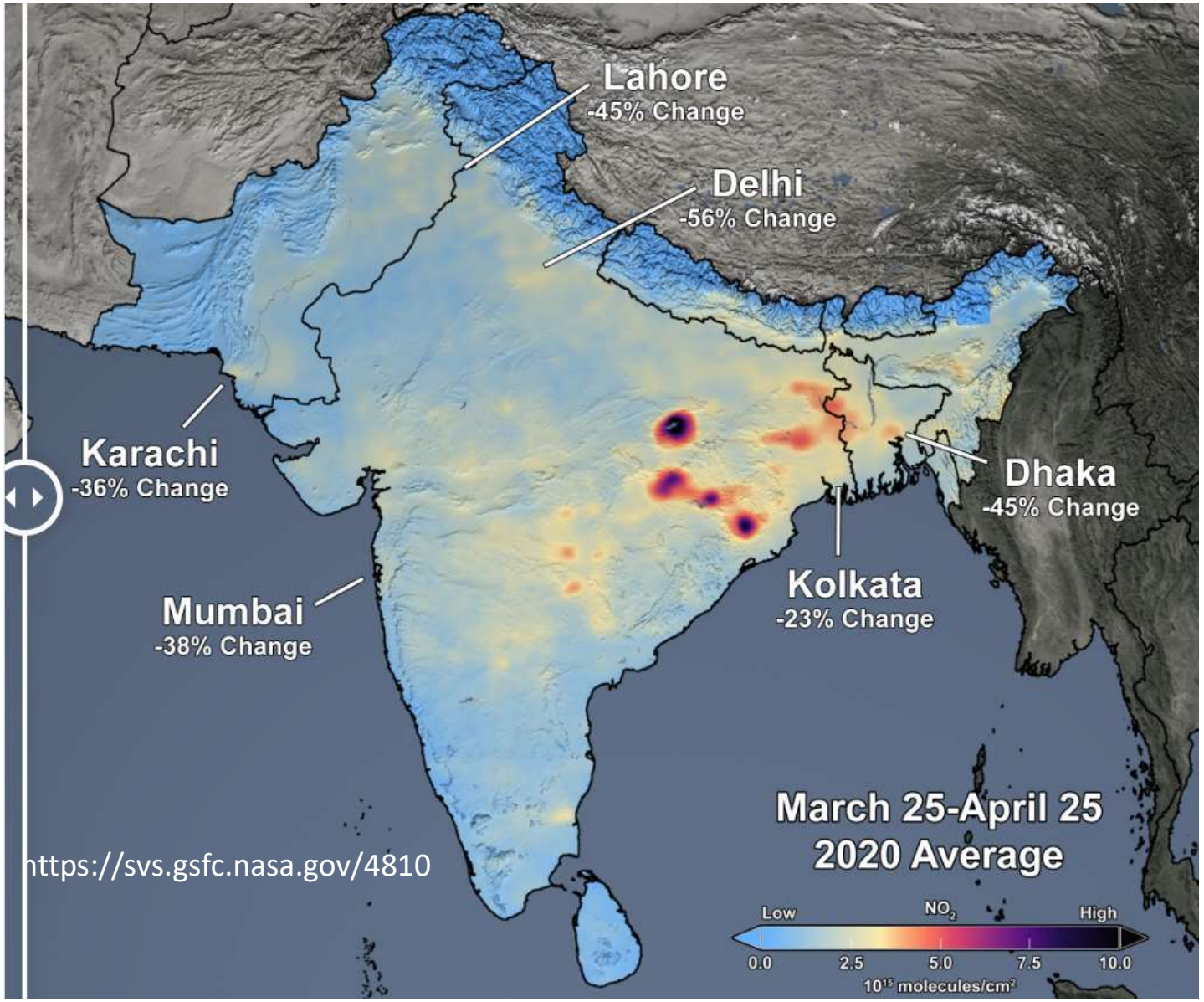
Satellite data of NO2 from the Aura Ozone Monitoring Instrument (OMI) as an average of March 25 through April 25.

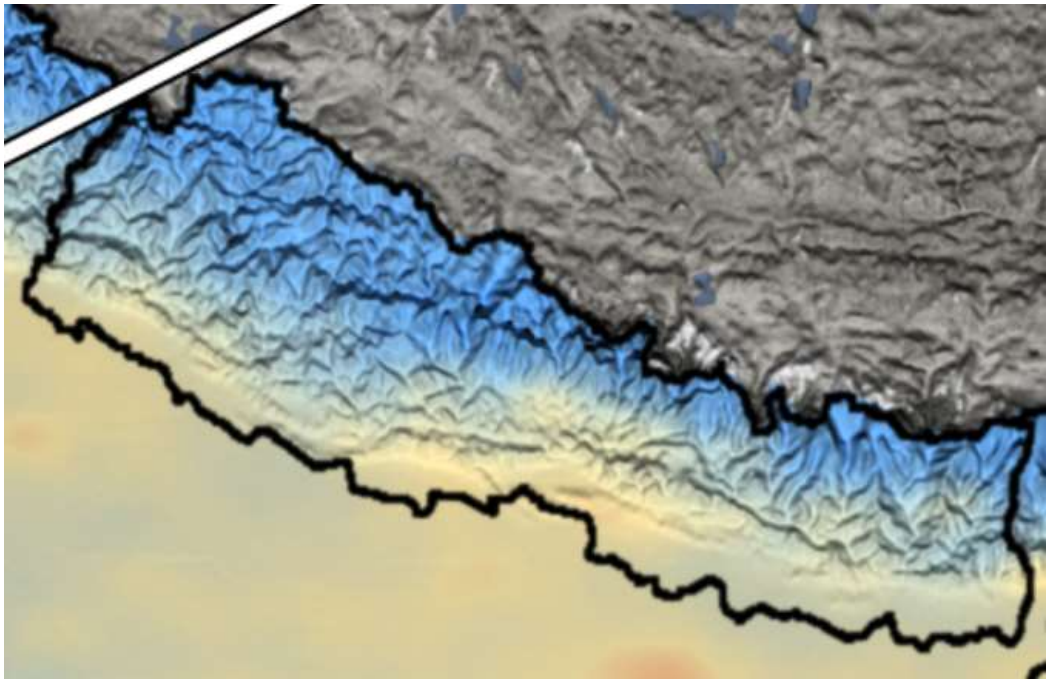


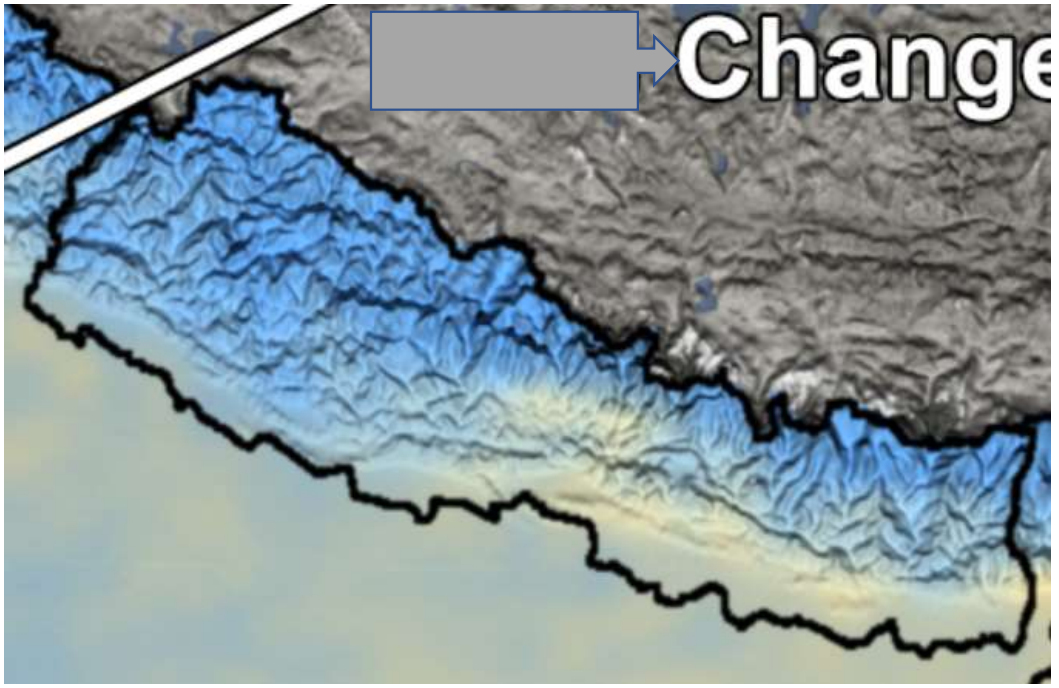
Satellite data of NO2 from the Aura Ozone Monitoring Instrument (OMI) as an average of March 25 through April 25.

NO2 levels decreased by about 45% in Lahore, Pakistan, 45% in Dhaka, and 55% in Delhi, India

The highest NO2 levels that remain in South Asia are located in eastern India and are primarily associated with electricity generation by thermal power plants



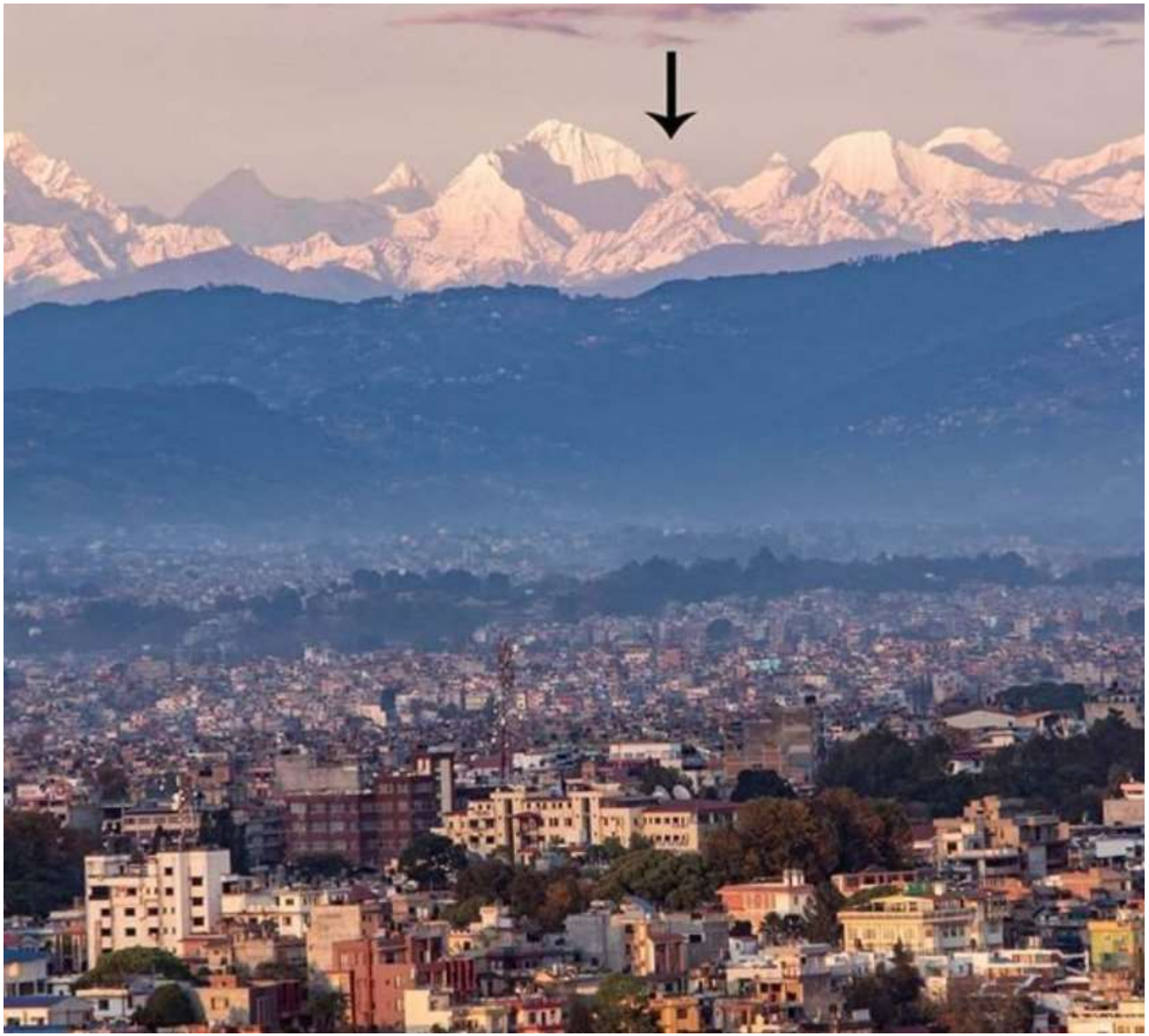




Source: https://svs.gsfc.nasa.gov/4810

Mt Everest from Kathmandu

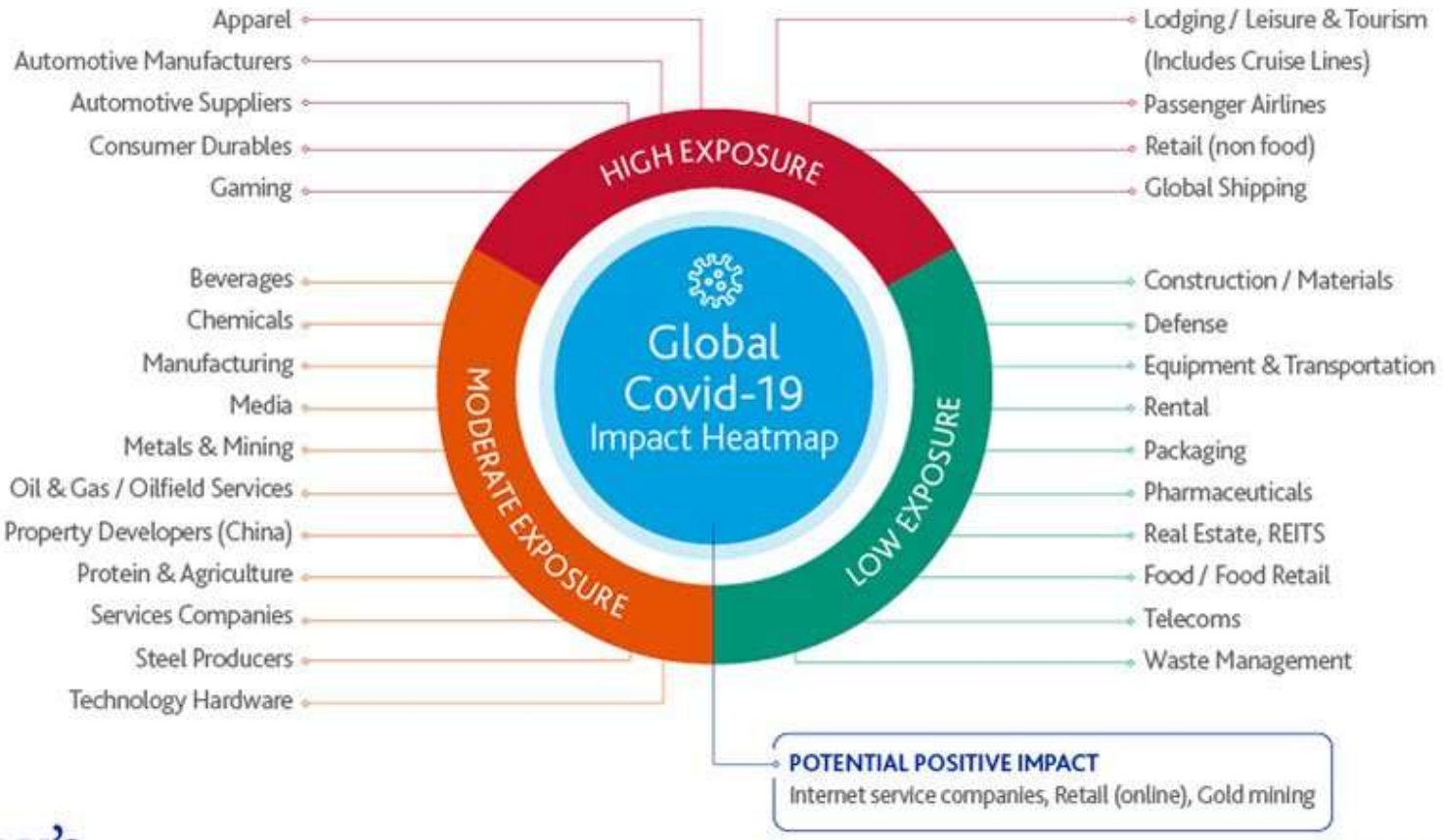
Photo Credit:
Abhusan Gautam / Nepali Times



PM2.5 and PM10 decreased from 135.4 µg/m3 to 108.3 µg/m3 and 54.6 µg/m3 to 42.2 µg/m3 respectively in Kathmandu before and after the lockdown was enforced

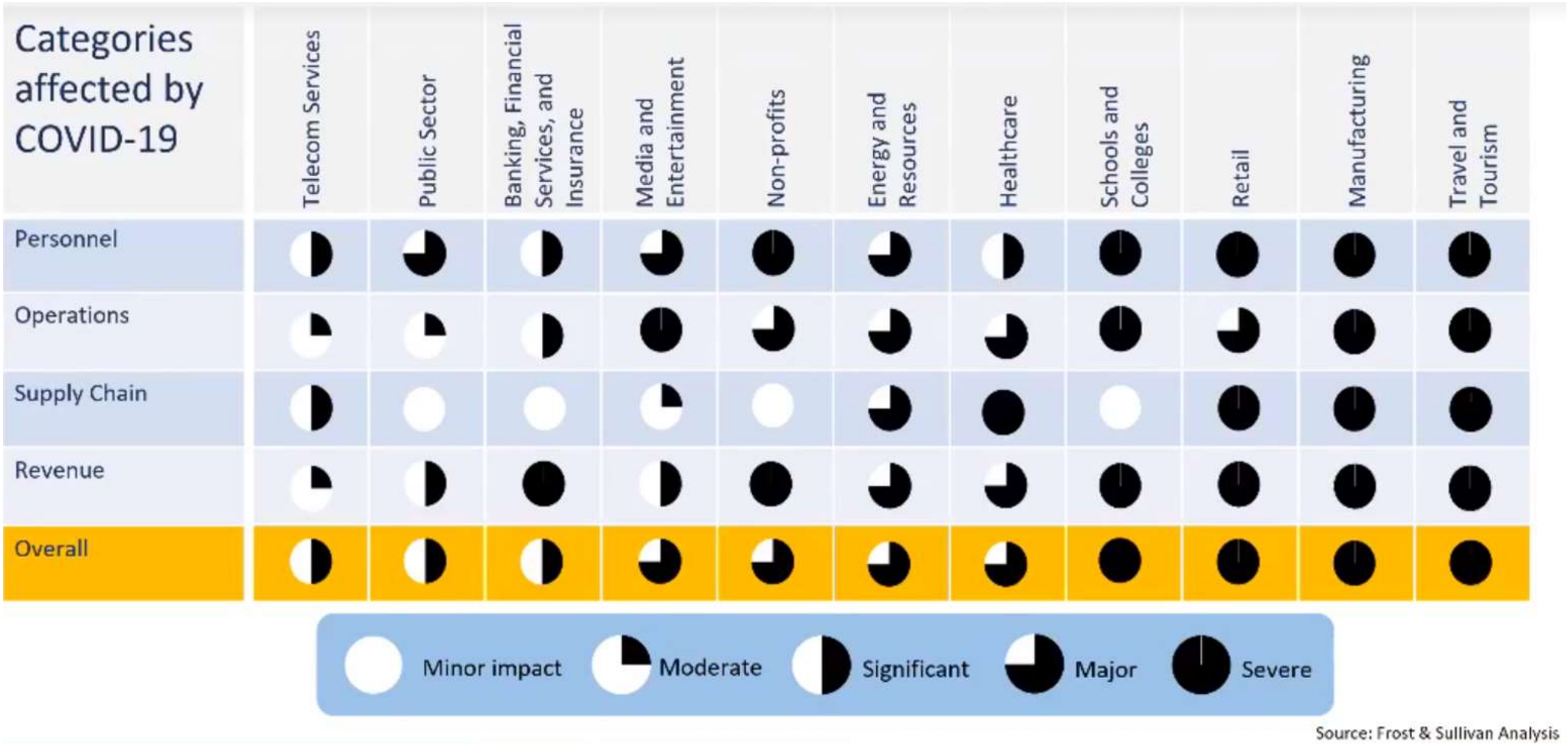
Source: https://kathmandupost.com/national/2020/05/01/air-quality-improves-in-world-s-major-cities-including-kathmandu-under-covid-19-lockdowns

COVID-19's economic impacts will be disproportionate across industries – Moody's COVID-19 Impact Heatmap



MOODY'S

moodys.com/coronavirus

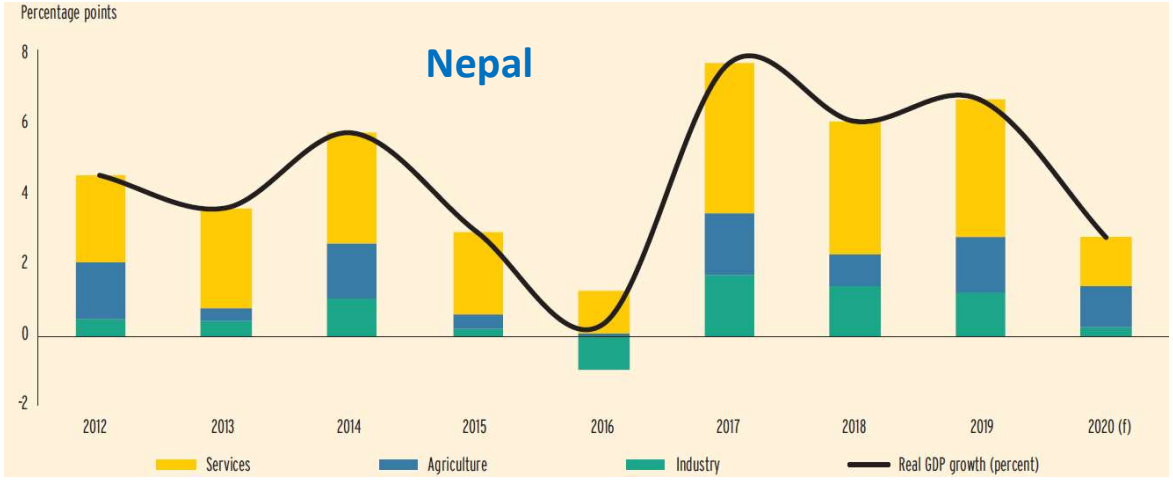


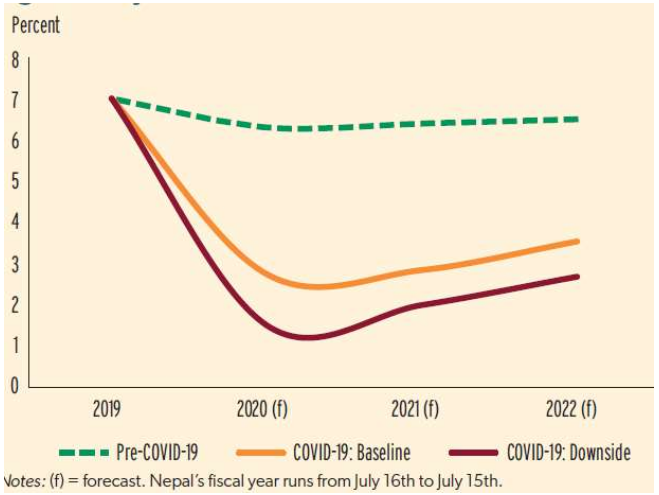
Slide credits to Mr. Anuj Agarwal, Vice president- CNI Nepal's Webinar on 18th May

Dire economic projections due to COVID-19

		Real GDP at market prices (percent)				Revision to forecasts from October 2019	
Country	Fiscal year	2019 (e)	2020 (f)	2021 (f)	2022 (f)	2020 (f)	2021 (f)
Afghanistan	December to December	2.9	-5.9 to -3.8	3.3 to 3.9	5.2 to 6.2	-8.9 to -6.8	-0.2 to 0.4
Bangladesh	July to June	8.2	2.0 to 3.0	1.2 to 2.9	2.8 to 3.9	-5.2 to -4.2	-6.1 to -4.4
Bhutan	July to June	3.9	2.2 to 2.9	2.0 to 2.5	3.1 to 3.5	-5.2 to -4.5	-3.9 to -3.4
India	April to March	6.1	4.8 to 5.0	1.5 to 2.8	4.0 to 5.0	-1.2 to -1.0	-5.4 to -4.1
Maldives	January to December	5.2	-13.0 to -8.5	6.3 to 7.3	5.0 to 5.5	-18.5 to -14.0	0.7 to 1.7
Nepal	mid-July to mid-July	7.1	1.5 to 2.8	1.4 to 2.9	2.7 to 3.6	-4.9 to -3.6	-5.1 to -3.6
Pakistan	July to June	3.3	-2.2 to -1.3	0.3 to 0.9	3.2 to 3.3	-4.6 to -3.7	-2.7 to -2.1
Sri Lanka	January to December	2.6	-3.0 to -0.5	0.2 to 1.2	2.0 to 2.5	-6.3 to -3.8	-3.5 to -2.5

The World bank (2020)





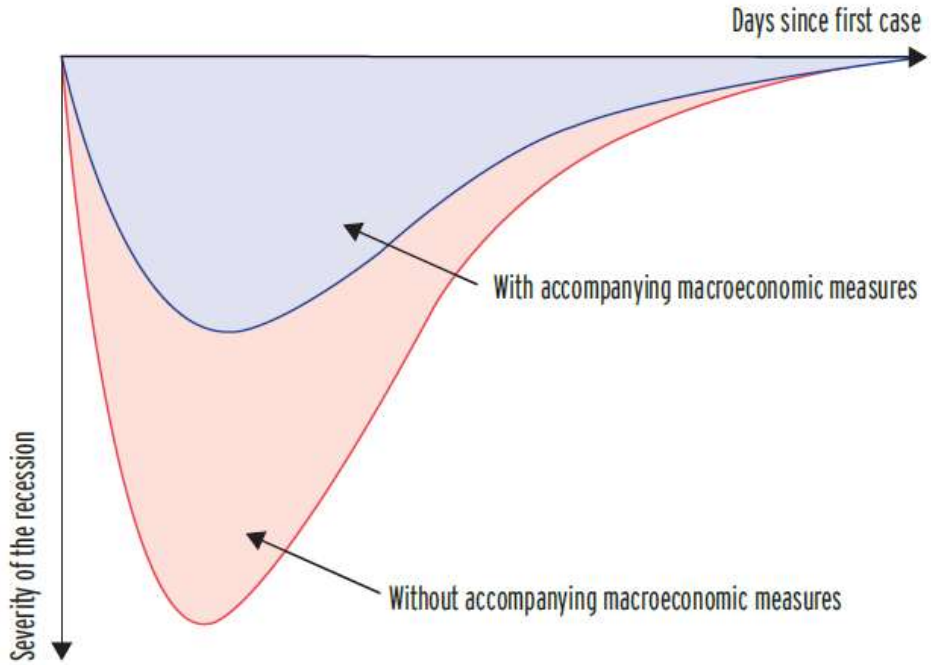
GDP contribution of few sectors in Nepal (2018)

Slide credits to Mr. Anuj Agarwal, Vice president- CNI Nepal's Webinar on 18th May

COVID-Stimulus packages in Nepal?

Selected short term measures

- Halt the collection of principal and interest on loan disbursed in sectors hit by the spread of COVID-19
- Ministry of Finance to gradually boost pending disbursements
- Allow banks to reschedule loan payments of businesses affected by COVID-19



Source: Following Gourinchas (2020).

The World bank (2020)

A far-reaching economic recovery package are expected

COVID-19 means Nepal must build a resilience energy system and environment planning

- How to negate the negative impacts of COVID-19 in short-run and learn from it?
- How to use it as an opportunity as soon as possible for the long-term energy and environmental security?

- Too early to predict if Nepal will have deep structural change
- (Owing to surplus electricity) Can households switch to electricity for cooking faster under supporting policies of replacing LPG?
- (Temporary delay in new power plants likely but) Can we be able to sell more electricity to India?
  - *Capacity addition in India may be adversity affected in short run (construction stop, global supply chain issues, payment delays, 15 bn$ loss this year to discoms, reduced revenue to hinder capacity of capital expenditure, financial liquidity)*
  - *Key reform likely delayed in India (The real-time market for electricity, scheme for the financial turnaround of discoms, planned auction of coal mines for commercial mining which allowed 100% FDI to attract foreign investors who now have less interests)*

India info from: https://www.prsindia.org/theprsblog/impact-covid-19-power-sector

COVID-19 means Nepal must build a resilience energy system and environment planning

- How to ensure that power plants in pipeline are least-affected and the support for financial liquidity of IPPs and FDI implications to be paid attentions?
- How to use this as an opportunity to encourage people to embrace non-motorized modes such as bicycles and provide pedestrian friendly settings with supporting policies? These have multiple benefits.
- While opening gradually after lock-down, can we embolden, facilitate and improve public transportation to save oil and environment?
- Can we analyze and implement the lessons learned for air quality during COVID-19 lock-down sooner?
- As we develop economic stimulus packages to address COVID-19 impacts to economy, we MUST ensure that energy and environmental security is paid due attentios than just business-as-usual economic revival?

Thank you

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