

**Air quality as an integral part of resiliency:
Building Resilient Hindu Kush Himalayan communities
Through sustainable transport solutions**

ICIMOD



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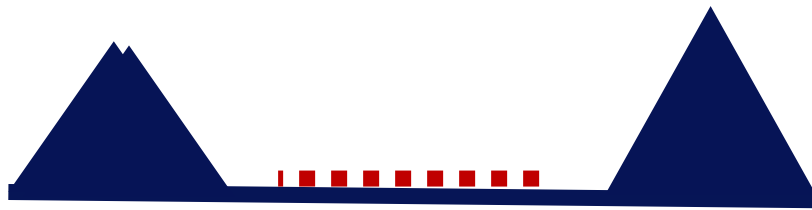
Kathmandu, Nepal

9th EST Forum

Hyatt Regency, Kathmandu, Nepal

18 November 2015

FOR MOUNTAINS AND PEOPLE



Cities surrounded by or next to mountains face particular challenges to manage their air quality.

Thimphu, Bhutan



Photo © Panday, ICIMOD

Kathmandu, Nepal

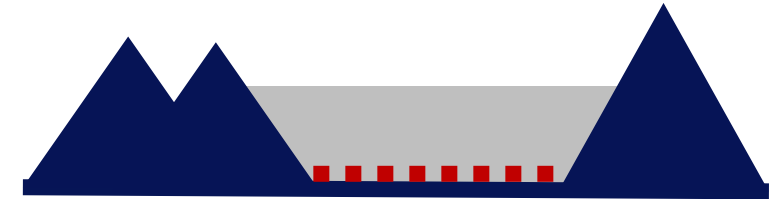
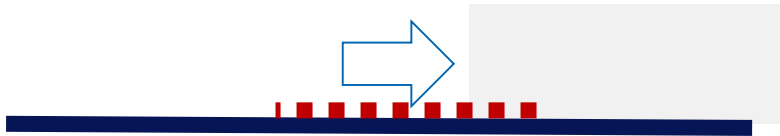
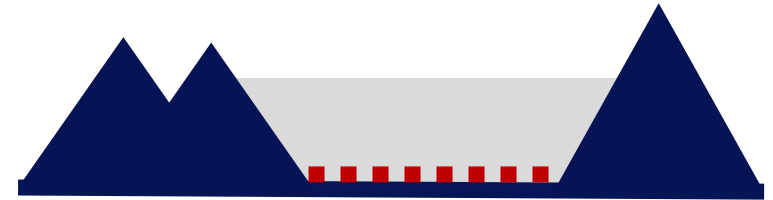
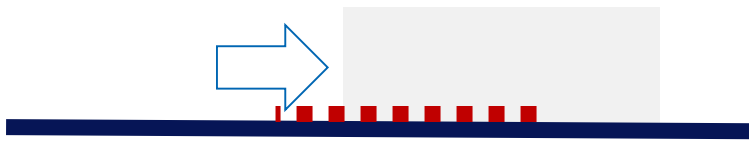
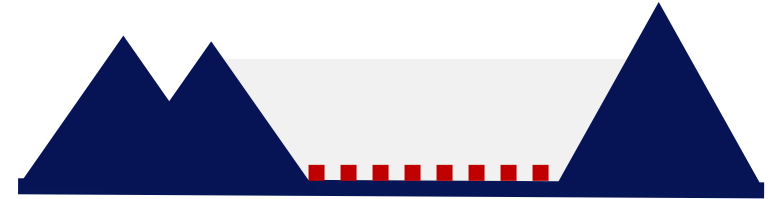
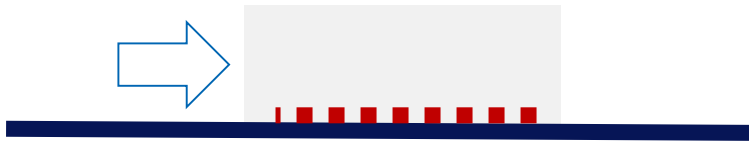


Photo © Panday, ICIMOD

Lanzhou, China



<http://cn.uncyclopedia.wikia.com/wiki/File:Dnu-lanzhou-2009.jpg>



Less ventilation

⇒ Longer residence times

⇒ Higher pollutant concentrations

Air pollution in the Kathmandu Valley is unhealthy



A clean air filter



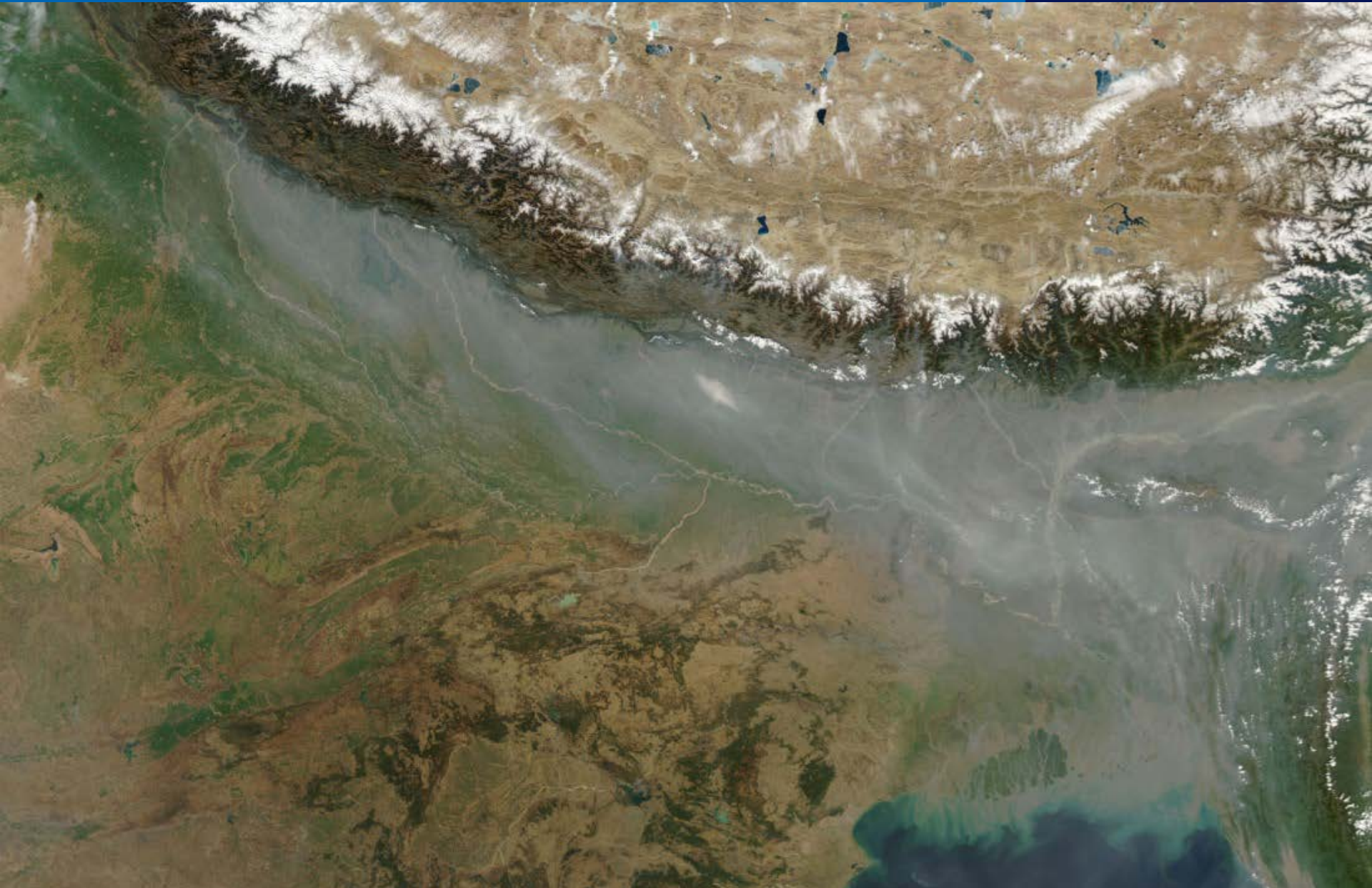
The same filter, after 24 hours of sampling Kathmandu Valley air



This is what Kathmandu residents normally breathe!

During the dry season much of the Indo-Gangetic Plains are covered in haze

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New Delhi, 13 Nov. 2014



Photo © Arnico Panday, ICIMOD

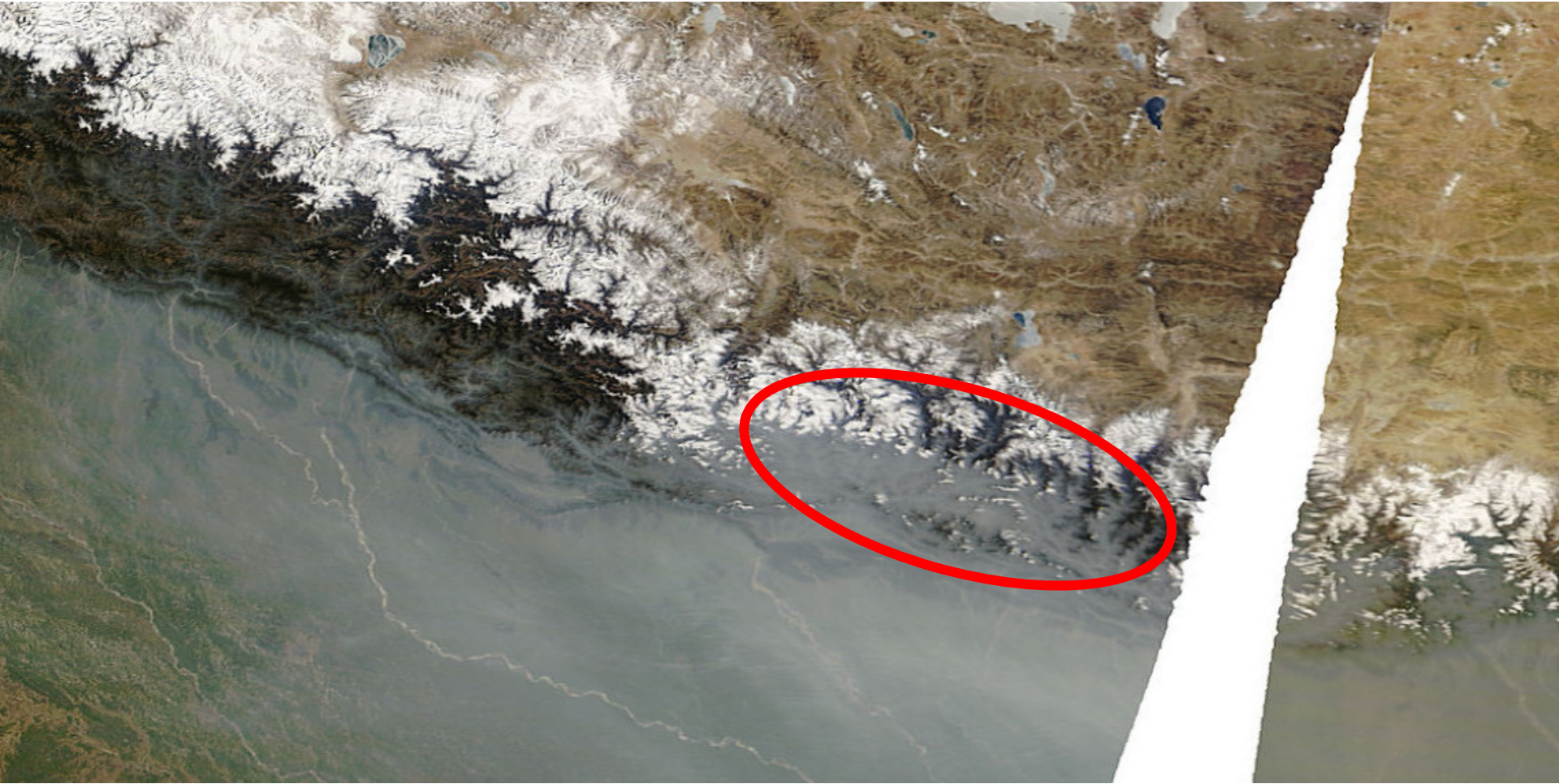


Photos © Arnico, ICIMOD



Not only urban emissions, but also from activities that supply cities

IGP haze often penetrates deep into Himalayan valleys



IGP haze arriving at Himalayan foothills

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Photo © Arnico Panday, ICIMOD

Can reach the high Himalaya...

Mt Everest



1973



Photo: Fritz Berger
(ICIMOD archive)

2011



Photo: A. Panday

Melting not only because of greenhouse gas induced global warming, but also:

- Black carbon warming the air.
- Black carbon deposition onto white surfaces.

Reduced visibility because of air pollution has a big economic impact on tourism



View from Hattiban Resort, Nepal, on 28 February 2013 (L) and 2 March 2013 (R)

Transport is not the only source of air pollution reaching the HKH, but a big contributor.

Clean air in the HKH region requires sustainable transport within the HKH region:

- Vehicles that emit less pollution.
- From yesterday's panel discussion: Important to emphasize public transport, non-motorized transport, efficient use of vehicles.
- Make use of hydroelectricity available in the mountains rather than imported fossil fuels.

But also needs less trans-boundary pollution arriving from the plains, from transport and other sources.

What does resilient mean in this context?

- Transport systems that can be quickly restored after natural disasters:
 - Bulldozers available to clear landslides.
 - Quick reconstruction of damaged infrastructure after earthquake damage.
- Transport network that have redundancies
 - Alternative routes and modes to reach remote places.

Managing air pollution in the mountain communities in the HKH region requires **data**:

- To inform the public when air quality is unhealthy.
- To inform governments when they need to shut down pollution sources.
- To provide feedback on measures to reduce pollution.
- To track of the arrival of trans-boundary air pollution from far away.



Pollutants arriving in the Kathmandu Valley from the south



- Not unique in history:
 - Nepal 1969, Nepal 1989, Bhutan 2011
- Teaches the vulnerability of small mountain countries.
- Emphasizes the importance of developing domestic energy sources (clean hydropower), and reducing reliance on imported fossil fuels that also pollute the air.
- The blockade has temporarily reduced emissions from vehicles (and industries, making trans-boundary pollution all the more visible.

FUEL AND MEDICINE HAVE BEEN STOPPED AT THE BORDER, BUT POLLUTANTS COME THROUGH

Extreme haze over the KTM valley 2 days ago, even though local sources are close to zero

Clean air in HKH communities needs more than sustainable transport solutions within the HKH communities, but needs concerted action to reduce emissions in the regions that export pollution to the HKH communities



THANK YOU!

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