

At the sand mining edge: The Mekong

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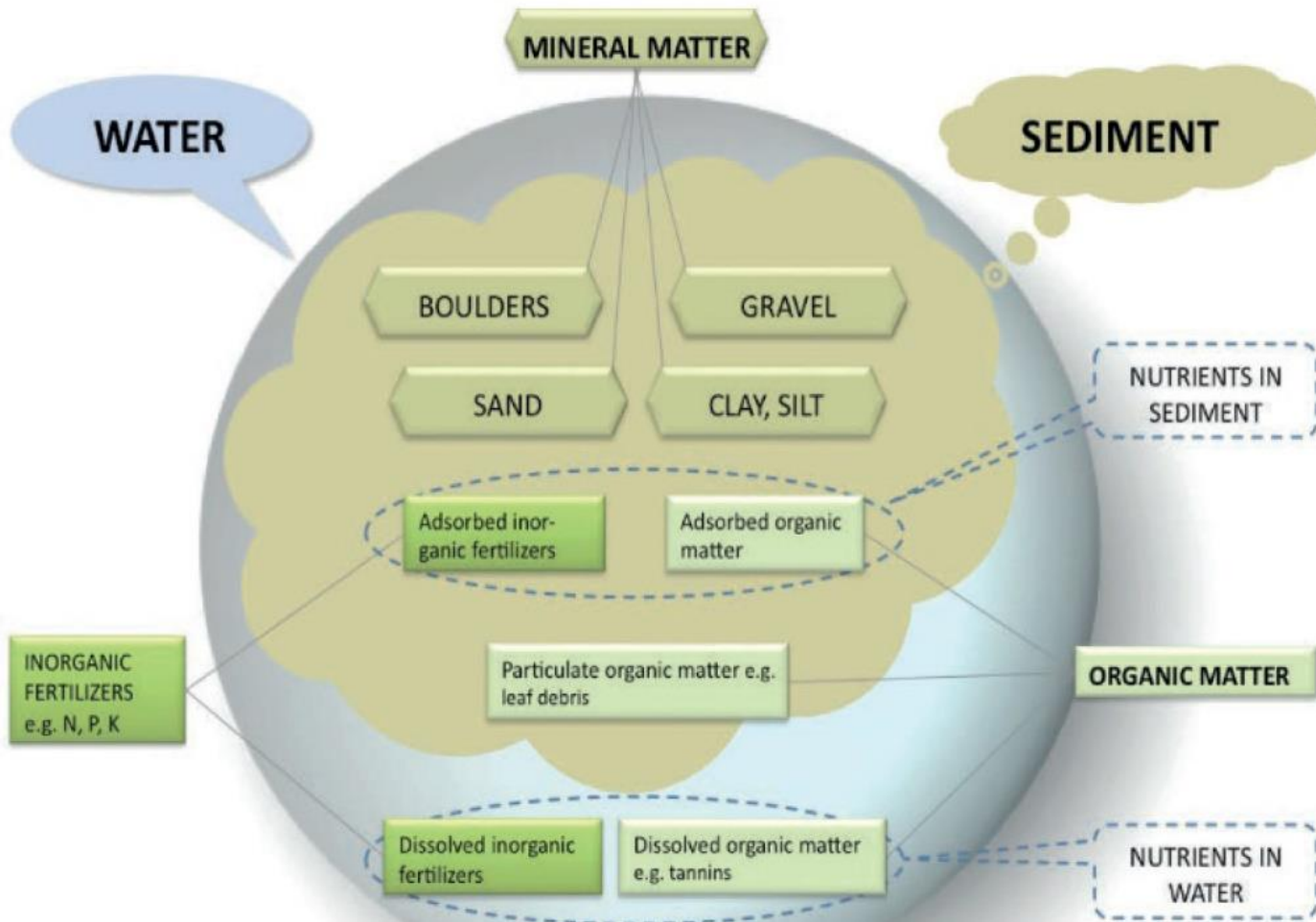
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SEI Stockholm
Environment
Institute



Mekong River
Photo credit: Piman T. / SEI Asia

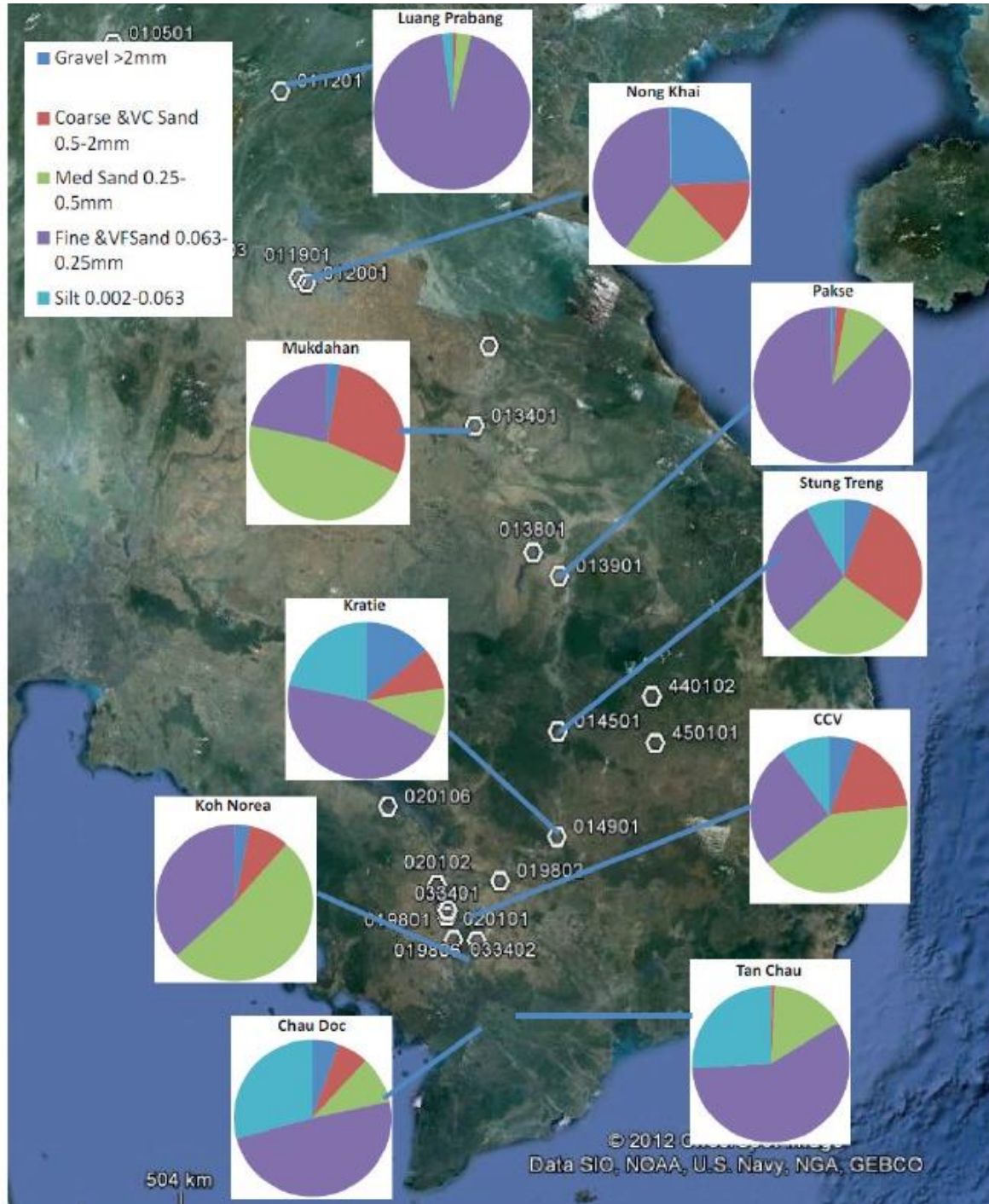
Importance of sediment in the Mekong



- Ecological health and aquatic habitats
- Nutrient for fisheries
- Fertilizer for agriculture
- River morphology and riverbank stability
- Floodplain and delta-shaping processes

Grain-size distribution

“Sediment load in the Mekong is dominated by sands and silts”

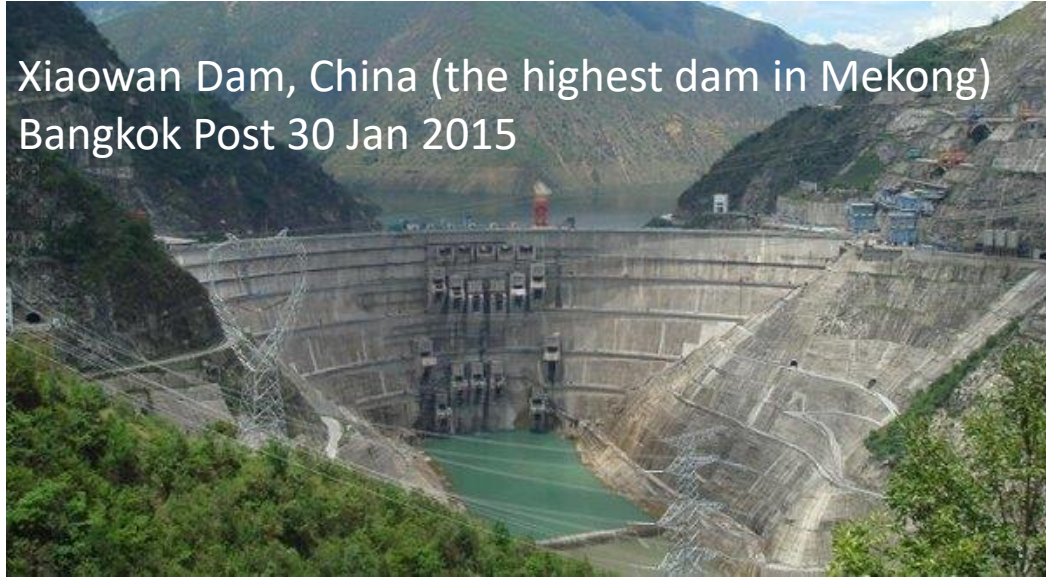


(Koehnken 2014)

Drivers of change in sediment load

- Development
 - Hydropower
 - Riverbed mining
 - Agriculture
- Land use change
- Climate change

Xiaowan Dam, China (the highest dam in Mekong)
Bangkok Post 30 Jan 2015

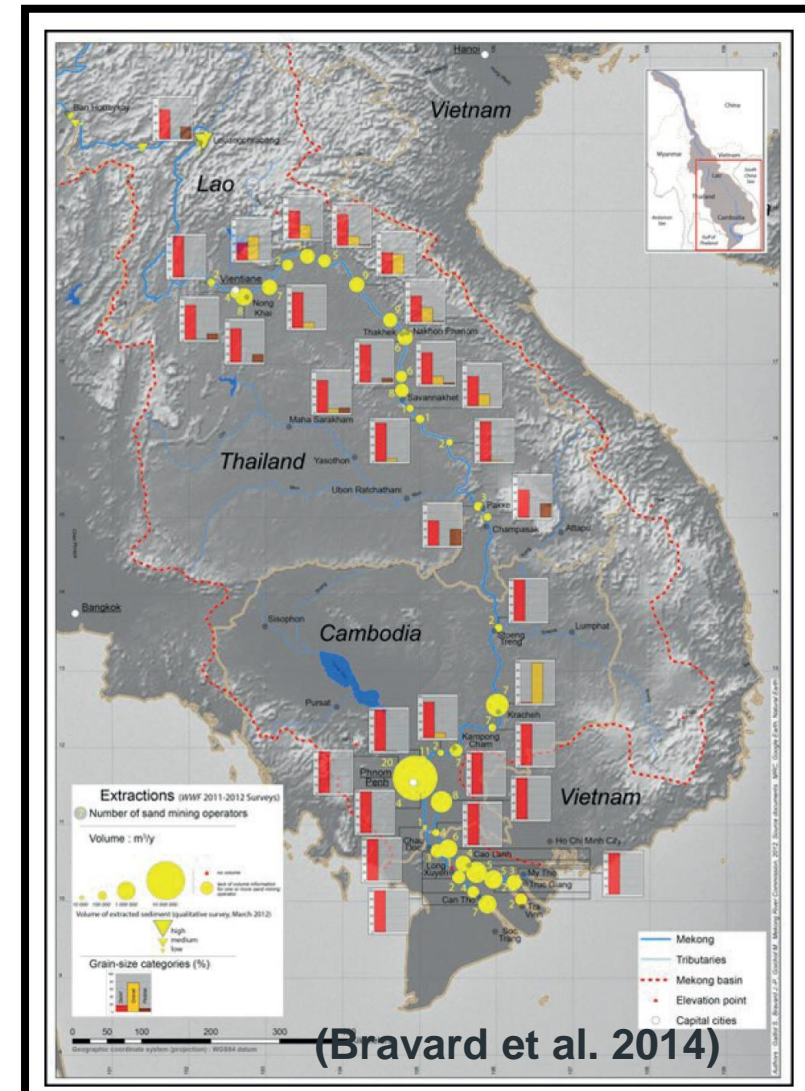
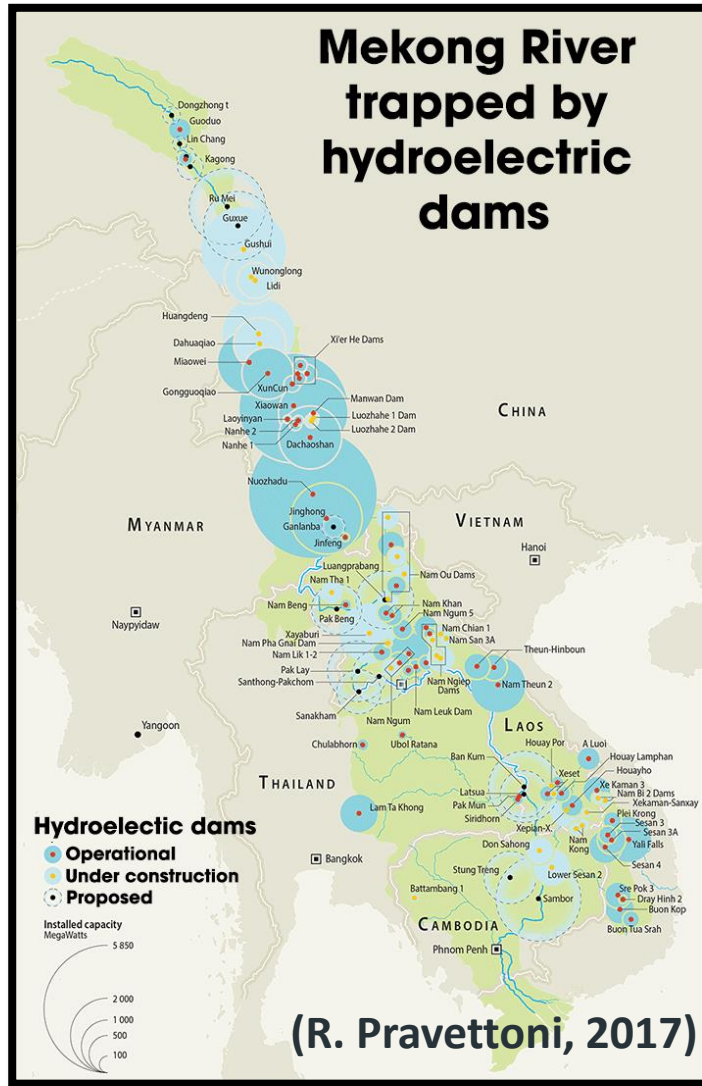


Sand mining, Cambodia
Saktheara, 2016

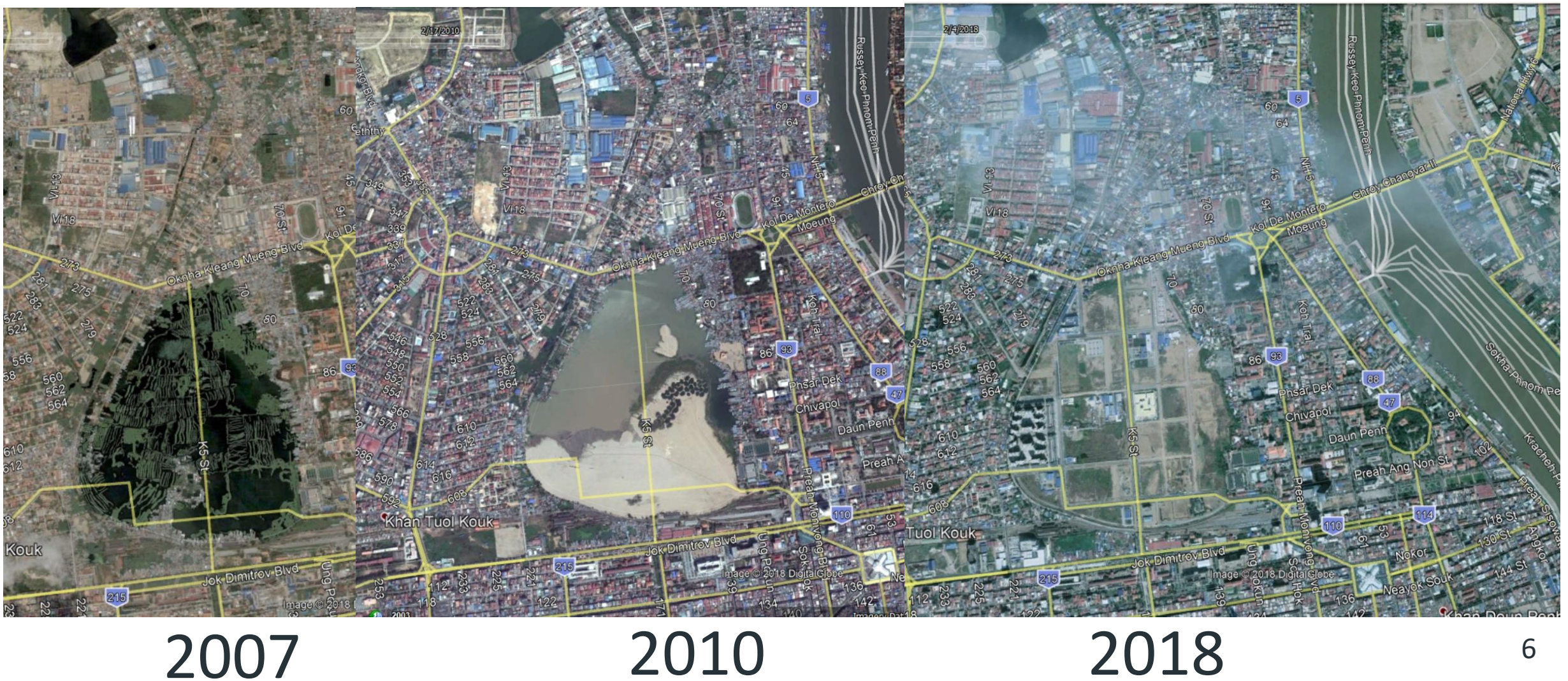


Hydropower development

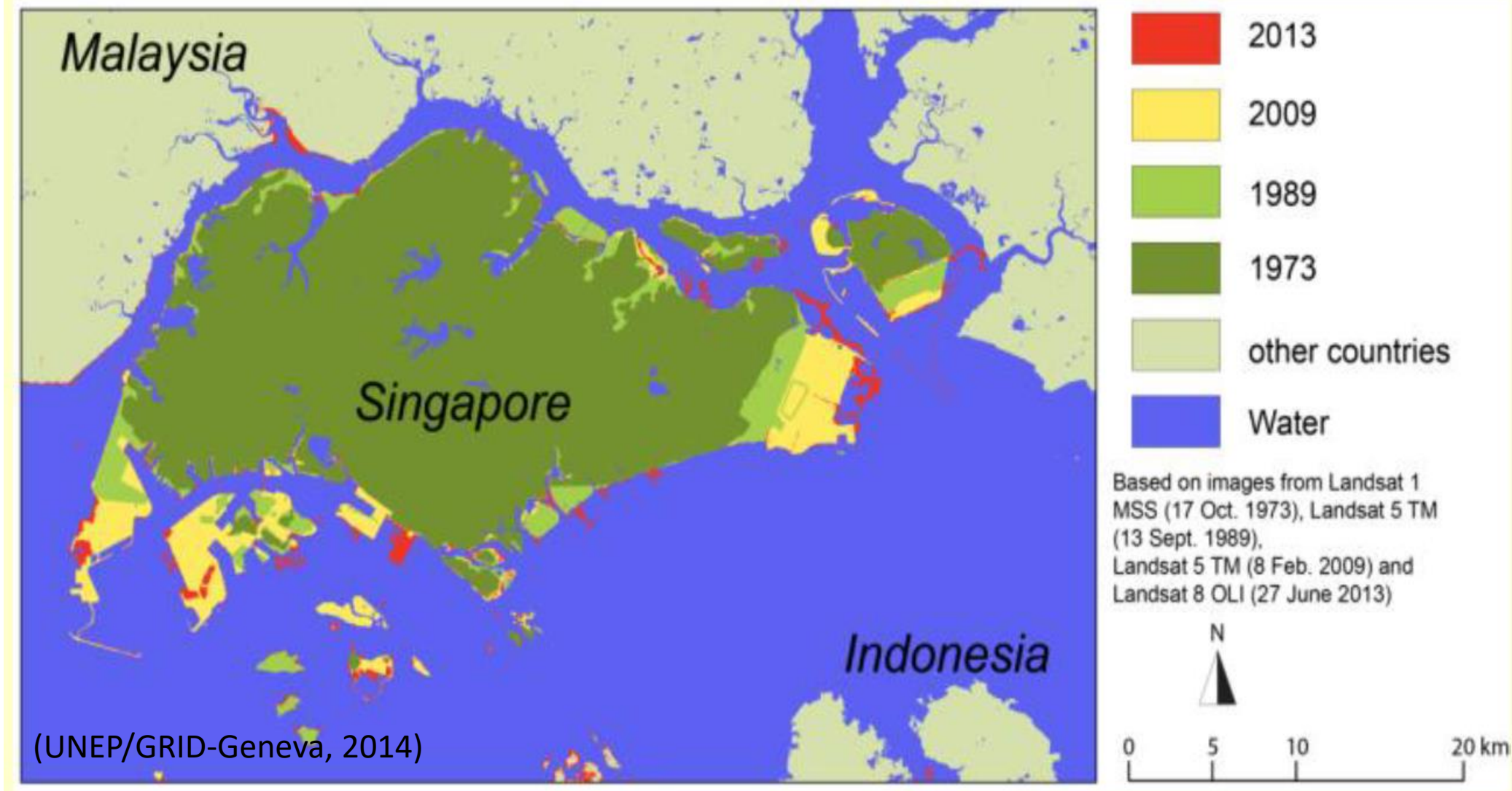
Riverbed mining



Sand mining for landfill and construction in Cambodia

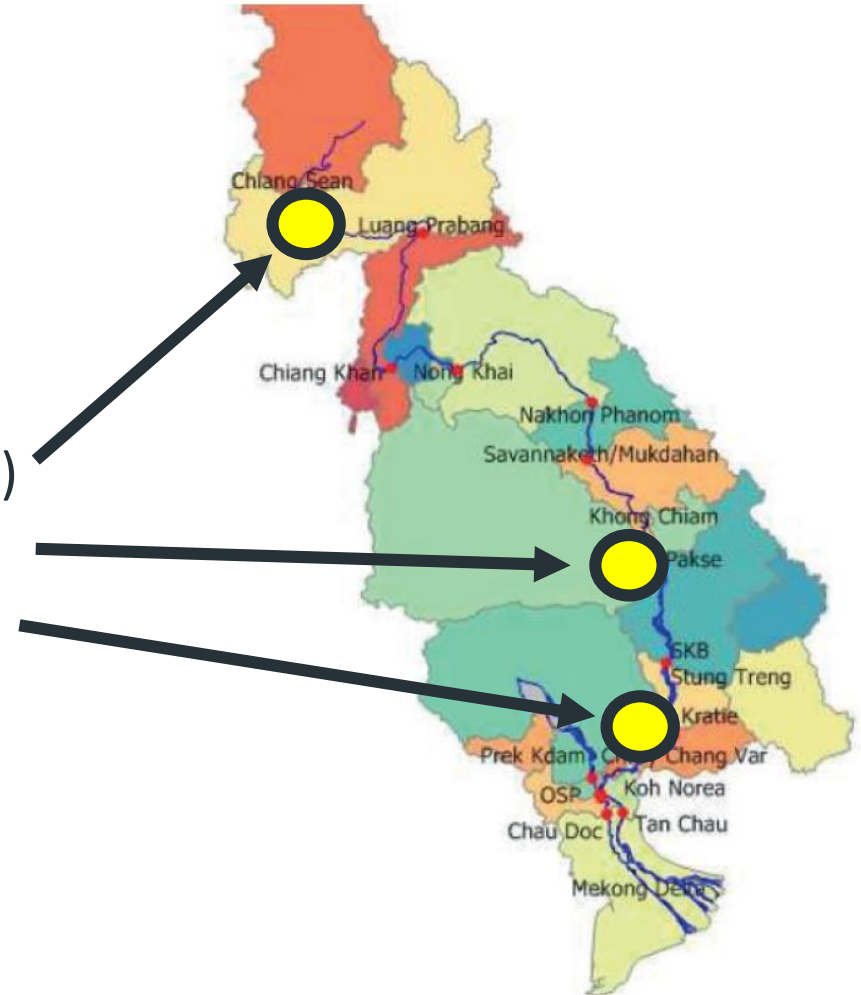


Sand export business to Singapore and Malaysia



Current state

- Evidence from monitoring results published by the Mekong River Commission (MRC) in 2013 on the situation before 2003 and after 2009 shows the **significant reduction of average suspended loads** on the Mekong mainstream.
 - **Chiang Saen** from 60 to 10 Mt (**83% reduction**)
 - **Pakse** from 120 to 60 Mt (**50% reduction**)
 - **Kratie** from 160 to 90 Mt (**43% reduction**)
- The quantities of **riverbed sand extracted** are conservatively estimated at **50 Mt/yr** (Bravard et al. 2014)



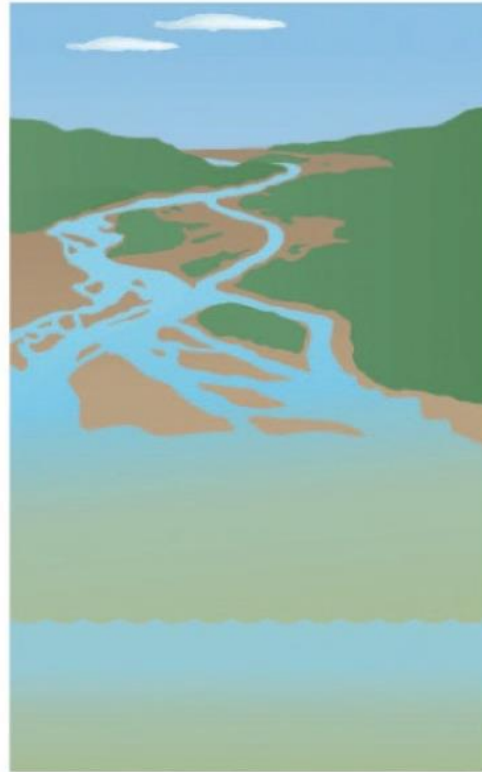
Future trends

- If all the dams proposed for the LMB are developed, including mainstream dams, it is **estimated that about 96 % of the sediment load will be trapped**. This would mean that the sediment load reaching the delta region would drop to just 4 % of current levels.
- **Land use change and extreme events** linked to climate change will exacerbate the current situation and **increase uncertainty** over sediment transport from the catchments.
- The decline in sediment transport is expected to have **a heavy impact on nutrient transport by 47-62% reduction**.
- The decline in riverbed sediment load due to mining will **cause water levels on the main channels to drop, increasing salinity intrusion in Mekong delta**.

Future trends



Brown



to



Blue

(Baran et al. 2015)

Thank you

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Stockholm Environment Institute, Project Report 2017-03



**Case study on sediment in the Mekong River Basin:
Current state and future trends**

Thanapon Piman and Manish Shrestha

