

**Living in a changing environment**

**Trans-boundary Issues: Uncertainty Water Resources & Pollution**

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Triet, 2002

**Story-1. at LAO PDR: "Last year I tried every 10 minute. But now I have waiting for more than 20 minutes!"**



**He did not know! May be by lack of water, pollution, over-exploitation, hydro-power dams....or what else?**

**Story-2. at Cambodia: These children spend whole day to empty a pond. "Last year we got 10Kg fish in this pond, but now it is lesser than 2Kg!"**



**They did not know: The water was not overflows the river band, therefore fish can not come in or other impacts?**

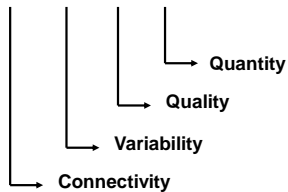
**Story-3 at Vietnam:**




In 2015-2016, drought & salinity damaged 500,000ha irrigated rice, loss 200,000 ton rice and about 50 Mil. USD (source: Kinh Te Journal)

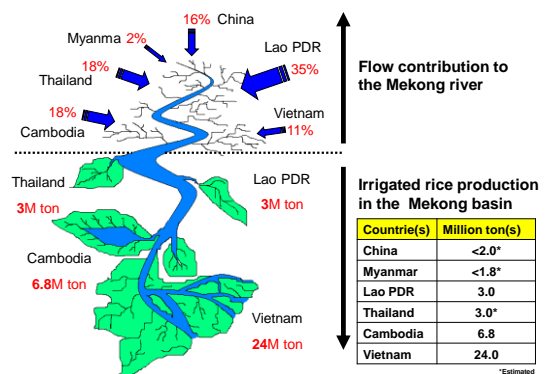
Riverband erosion 2015 Ni, 2000

**Water source is changing!**

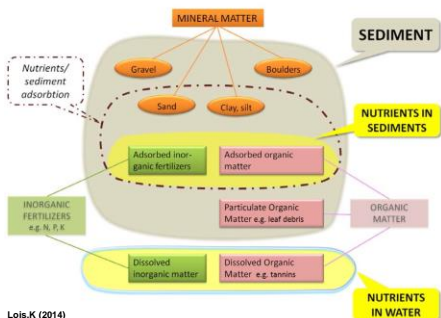


Whatever factors that made water sources changing, but the countries in the basin has the same impacts: Loss! (human life, money, biodiversity, environment) **NOT** in this generation **BUT** to many generation to come!

**Quantity: Flow contribution and rice production of the Mekong basin**

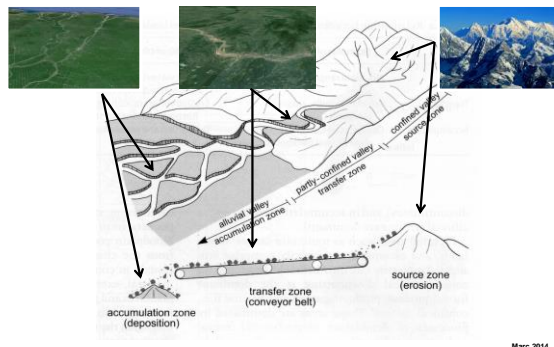


Quality: Main components of river sediment



Lois.K (2014)

Rivers Transport Sediments



Marc 2014

Three sizes of sediment

- Coarse sediment** – shape the fish habitats and spawning sites
- Sand and fine sediment** – may be beeded sediments or suspended depending on velocity of flow
- Silt and clay** – suspended or deposited in mud beds

Lois.K (2014)

Organic matter on sediments

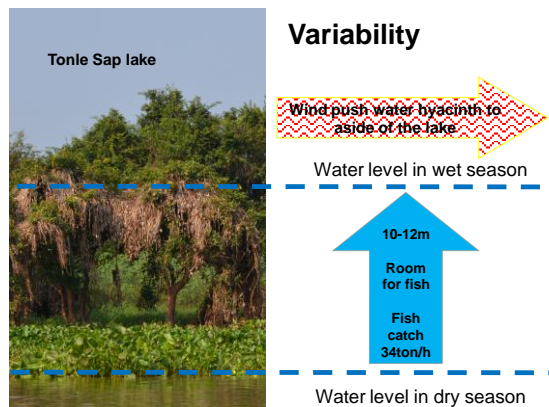
- Sediment loads include an organic component of great importance to biological productivity of the river
- Adsorbed onto sediment particles
- 6-8% of the total sediment load – this is a large percentage and contributes significantly to productivity of the river

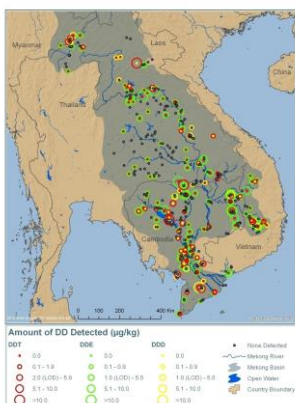
Lois.K (2014)

Inorganic components

- River sediments act as major carrier and storage for inorganic nutrients – Phosphorus, nitrate and potassium
- Most important as the very small sized sediments – fine clay and colloids
- Especially important for the fertility of the floodplain and delta
- 31-42% of the bioavailable phosphorus** in floodplain is transported with the sediments

Lois.K (2014)





## Connectivity

Research on 531 wetlands entire Mekong basin discovered many Persistence Organic Pollutant (POP), especially DDTs in the soils of Lao PDR, Cambodia and Vietnam!  
<http://dx.doi.org/10.3133/sir20135196>

**What happen if these POPs were trapped to the soils?**

## Conclusions

- Mekong basin is a **living body**, where Tonle Sap lake is it's heart and rivers is it's blood channels. It does not need a bigger heart, it need a **beating heart!** It does not need more blood, it need **blood flows!**
- Any development in the Mekong basin should concern about the **change of water resources** (quantity, quality, variability, connectivity) rather than only the quantity!
- Impact of hydropower dams on **sediment** (quality) is more important than water volume (quantity)!