

# Upstream-downstream linkages in the context of local water use master plans

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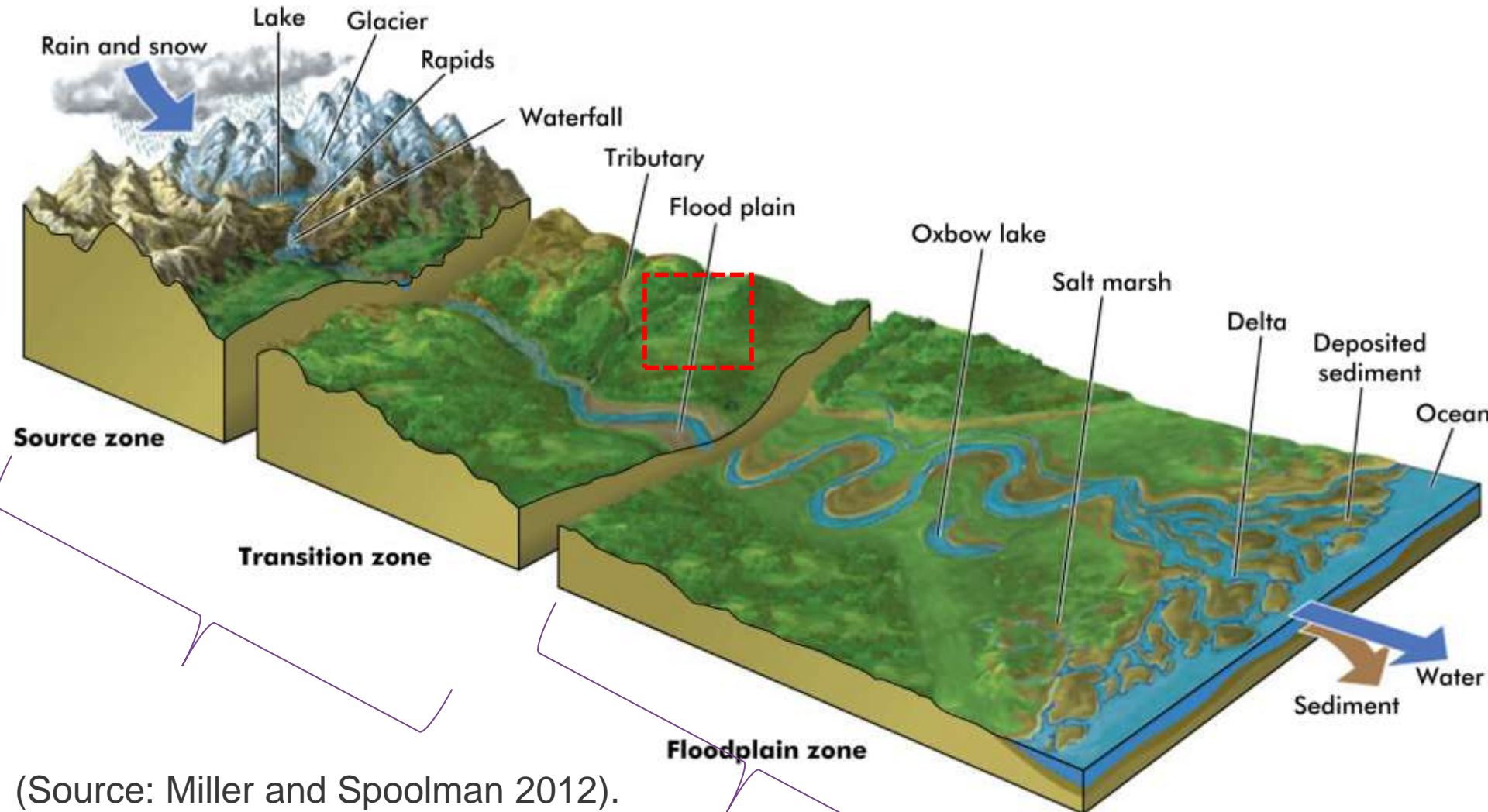
International Centre for Integrated Mountain Development

Kathmandu, Nepal

# Upstream downstream linkages

- Any activities and processes which occur in upstream areas affect downstream
  - *Deforestation in upstream areas*
  - *Release of pollutants from urban rivers*
  - *Upstream watershed conservation*
- UD linkages include environmental, socio-economic and cultural factors
- Events in one country effect another (trasnboundary: floods, irrigation water)

# UD linkages at a river basin



(Source: Miller and Spoolman 2012).

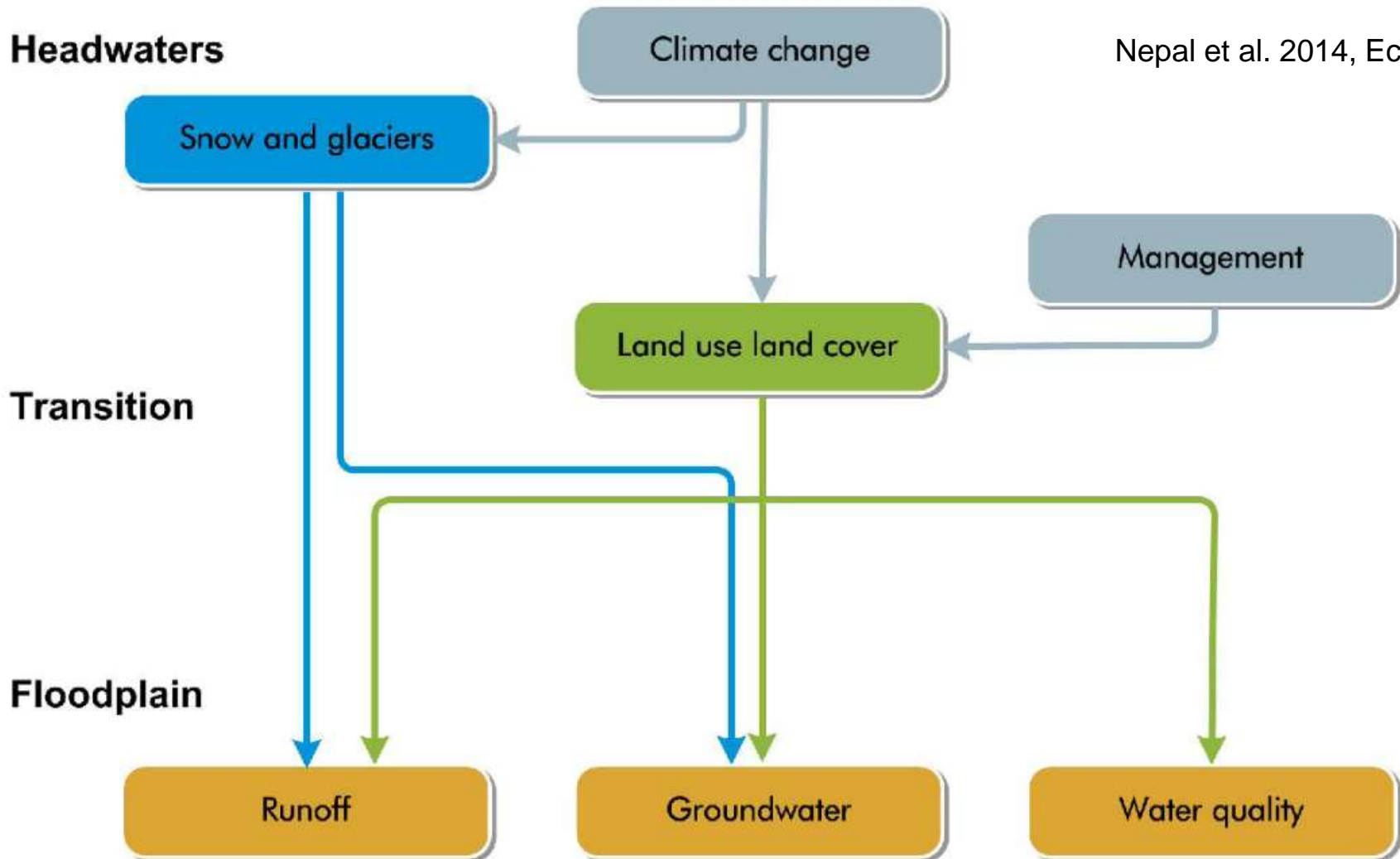
# UD linkages at a catchment scale



Upstream and downstream relationships occur at different scales. The magnitude and nature of problems and related effects differs between the local micro catchment scale and the regional macro river basin scale

# Interacting components of upstream-downstream linkages

Nepal et al. 2014, Eco. Process.



# Water Use Master Plan

- Process through which local authorities and communities interact, exchange knowledge, acquire and obtain ownership over the water management plan

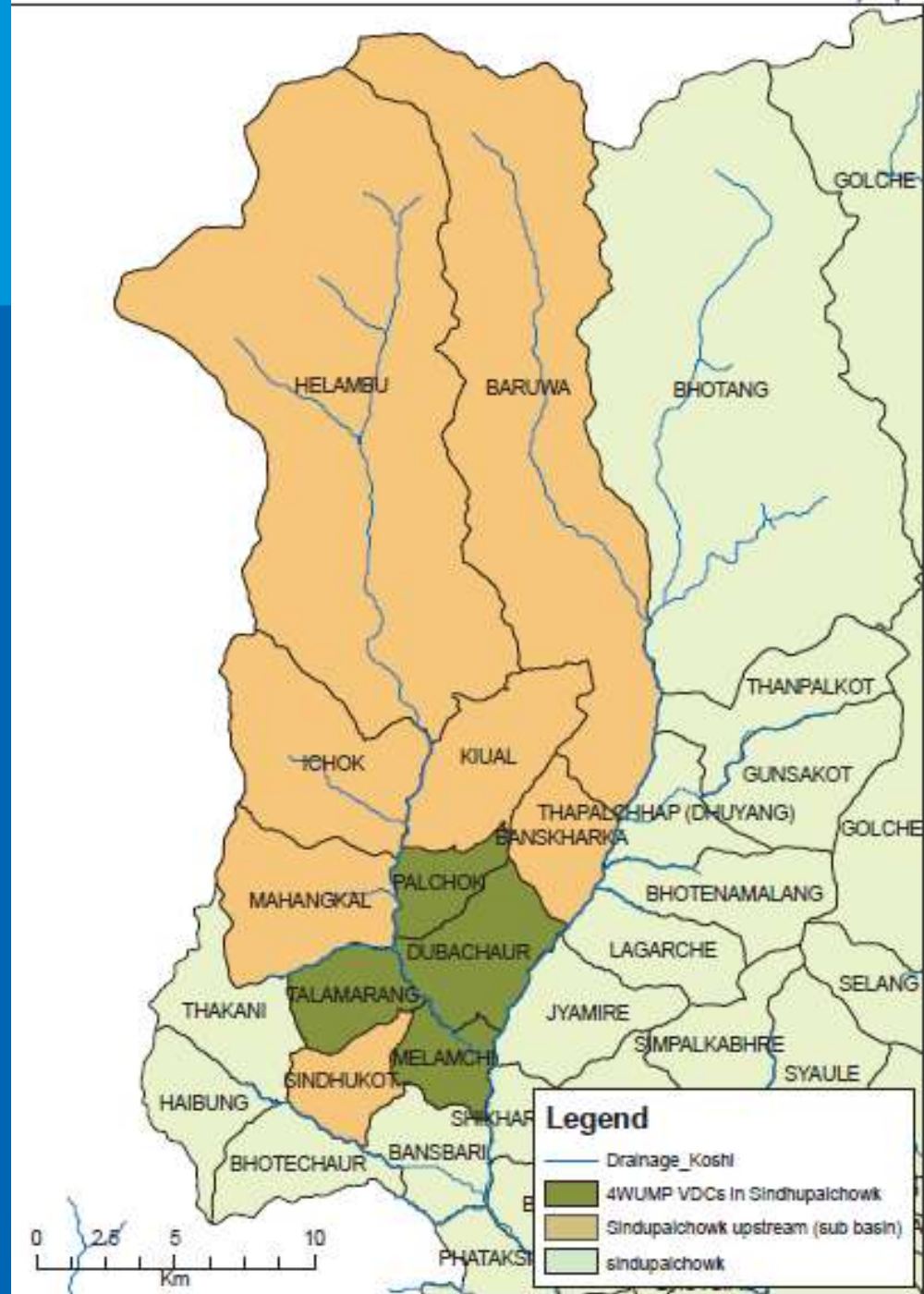
At VDC Level



# Local water issues

- Water scarcity increasing
- Water originates in upstream VDCs
- Different/new demands
- Water availability is limited

Need of WUMP  
beyond VDC!



# Downstream water Infrastructure

Springs dried out after the Earthquake

Upstream ponds dried up completely!

How much is upstream water demand?

How much water we have?



Photo 2: A s



# Andheri Khola catchment in Sindhuli

Agri land: 193 ha  
Springs: 28



Agri land: 134 ha  
Springs: 83



Both communities willing to cooperate

# Need of catchment level planning

- Inventory of resources
- Sensitization of stakeholders
- Need of informal institutions at catchment level
- Nodal agency from Governments
- Enabling environmental conditions
- Pragmatic benefit sharing mechanism
- Opportunity cost!

# Thank you

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