

***WATER INSECURITY:
EMERGING PATTERNS OF
CONFLICT AND
COOPERATION DUE TO
WEAK WATER GOVERNANCE
IN PERI-URBAN AREAS OF
KATHMANDU VALLEY, NEPAL***



Adaptation
Futures:
Rotterdam -
May 2016

Otto Hoffmann

CONTENT

1. Background
2. Current Problems
3. Emerging Patterns of Conflict and Cooperation
 - Water Tanker Business
 - Major Water Footprint Entities
4. Conclusion

1. BACKGROUND

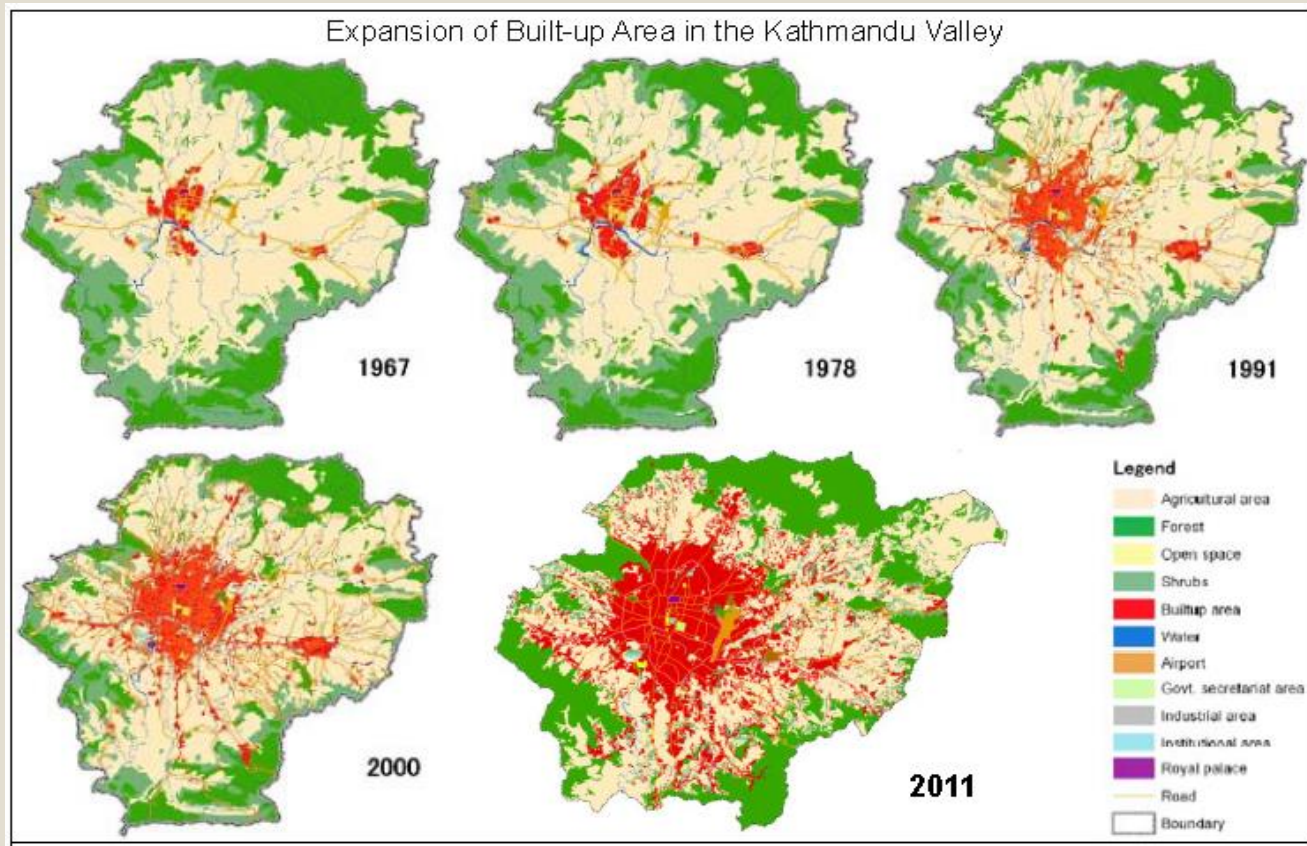
- Central region of Nepal
- Consists of three historical cities – Kathmandu, Lalitpur & Bhaktapur
- Population: Over 2.5 million (CBS 2011)
- Fastest growing metropolitan cities in south Asia (pant, 2012)
- Average population growth rate of 4.7% per year
- Projected Population in 2025: 5 million



2. CURRENT PROBLEMS

- Rapid urbanization
 - 5 municipalities – before 2014
 - Now, 21 municipalities
- Peri-urban areas increasingly experience water insecurity
→ rapid urbanization and climate uncertainty
- Problems resulting from the dynamics of urbanization
 - Conversion of agricultural lands into urban uses
 - Extraction of water and other natural resources

KATHMANDU VALLEY: SETTLEMENT TREND

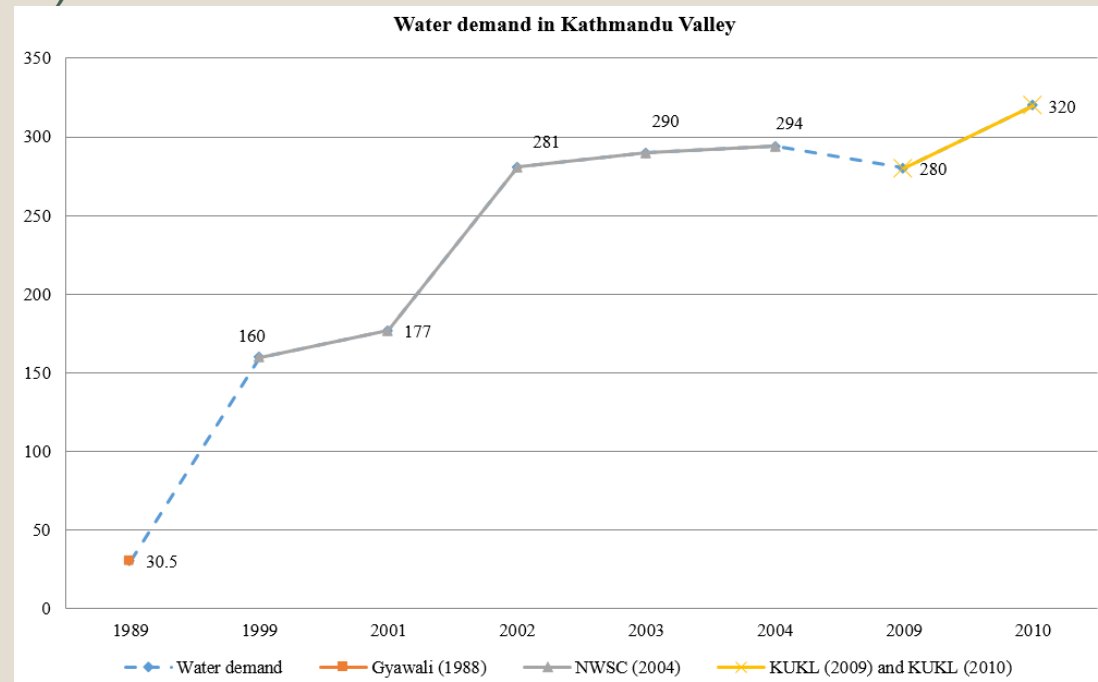


CURRENT PROBLEMS (CONT.)

- Severe water insecurity – quantity and quality
- Groundwater depletion
 - 1-4 m/year in average in deep tube wells
 - 2.5 m/year in shallow wells
- Diminishing surface water resources due to deforestation
- Water increasingly diverted from agricultural activities & peri-urban domestic needs → meet urban people, industries & recreational activities
- Emerging opportunities of Groundwater Markets contributing to over-exploitation of groundwater resources in peri-urban areas
- Pressure on water resources is exacerbated by climate change
- Temperature projected to increase by 1 to 2 °C by 2050 (and up to 3.8 °C) and between 3 to 9.7 °C by 2100

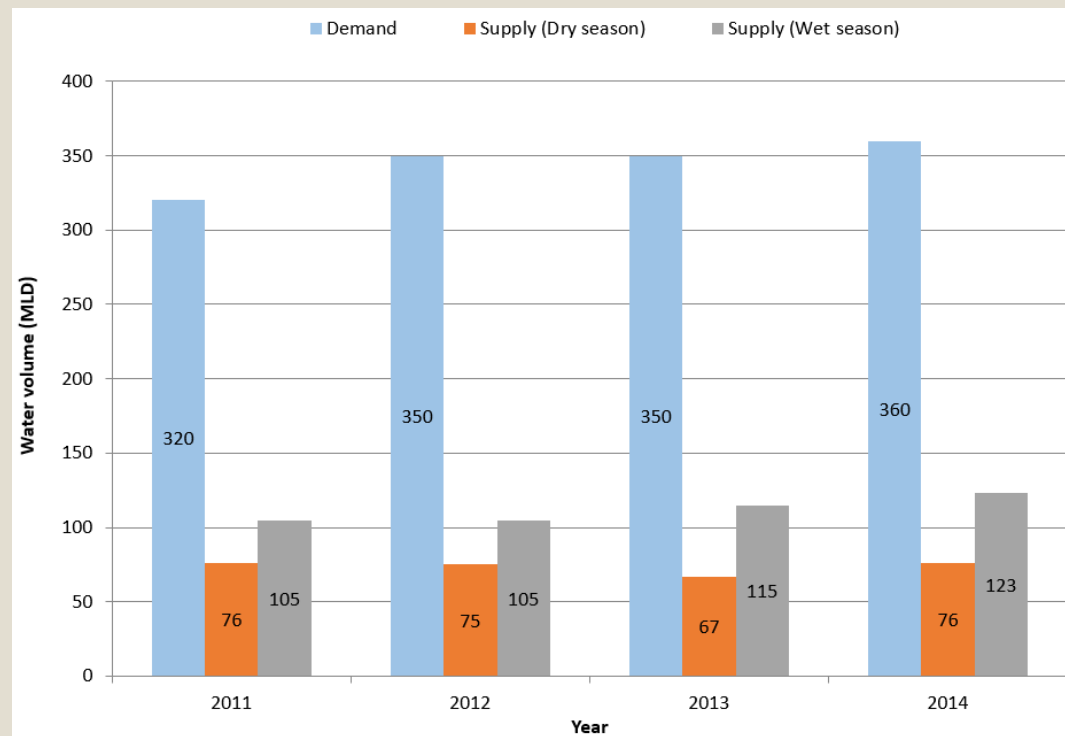
WATER DEMAND: KATHMANDU VALLEY (1)

- Drinking water demand trend in Kathmandu valley
- Supplying capacity of Kathmandu valley water supply company (KUKL) in 2012



WATER DEMAND: KATHMANDU VALLEY (2)

- 23% of total demand in dry season
- 38% of total demand in monsoon season



3. EMERGING PATTERNS OF CONFLICT AND COOPERATION

- Emerging patterns of conflict and cooperation shaping water insecurity in peri-urban areas is attributed to multiple factors:
 - Rapid urbanization
 - Emerging industries in peri-urban areas
 - Groundwater and surface water depletion
 - Environmental degradation
 - Climate change

CASE (1): CONFLICT AND COOPERATION

- Water Vendors Business
- Water Tankers
- Communities – relying on boreholes
- (Local) government



CASE (2): CONFLICT AND NO COOPERATION

- Major Water Footprint Entities:
 1. Water Tankers
 2. Commercial Water Bottling Industries
 3. Real Estate Development Agents
 4. Brick Kilns
- Unregulated extraction of natural resources
- Environmental impacts (lack of groundwater recharge)
- Weak implementation of policies/acts/rules/regulations resulting to weak water rights, policies and institutions



Local Water Bottling Company



Sand mining in Lalitpur, Kathmandu Valley



CLIMATE CHANGE: WHAT NEXT?

- May not lead to conflicts over resources **directly**, it can **aggravate** already looming resource security issues and existing conflicts
- Detrimental effects on lack of water availability downstream in the Kathmandu valley
- Farmers using wastewater for irrigation
- Climatic changes in combination with urbanization could worsen the overall water insecurity

4. CONCLUSION

- Risk assessments, water insecurity and climate action plans are not co-generated by a full range of stakeholders, scientists and the public
- **Lack of government attention** about identification of peri-urban spaces
- **Lack of implementing existing laws/policies** and monitoring bodies (institutions) → helping to worsen the water insecurity problem
- Nevertheless, increasing awareness – more unity established

THANK YOU

