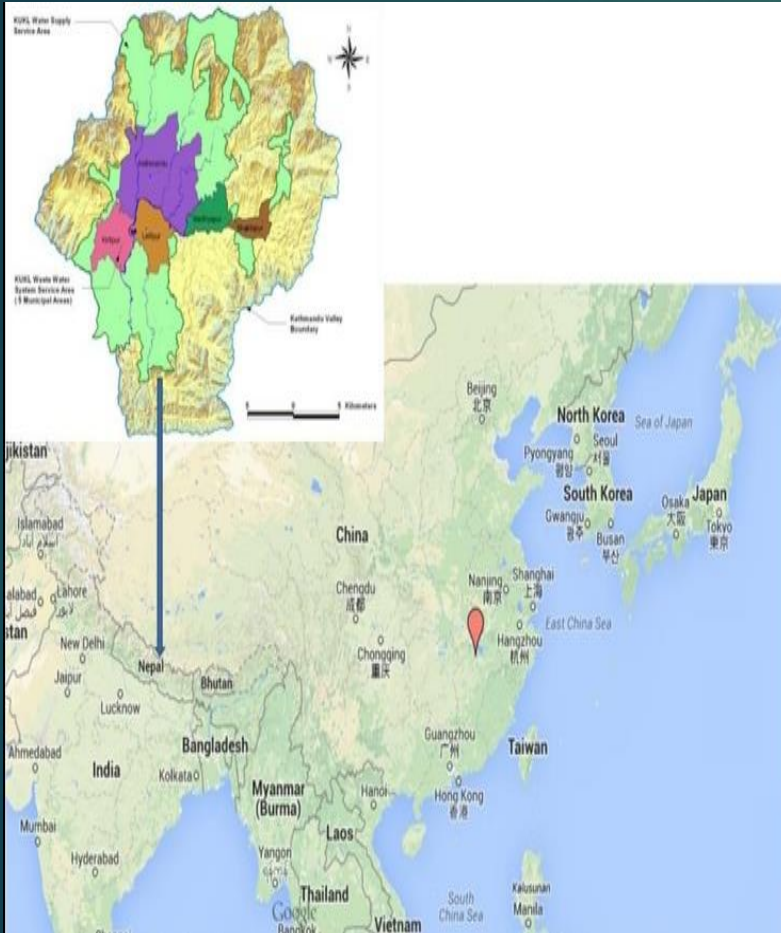
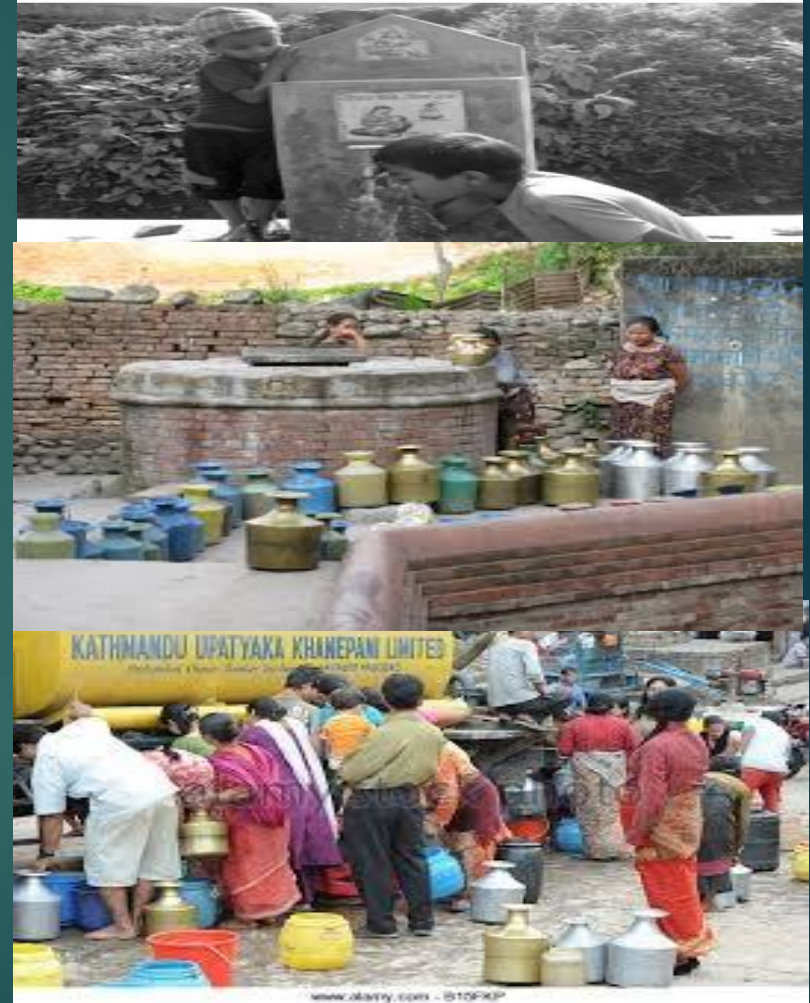


Dynamics of Financing and Governances of Melamchi Water Supply Project in Kathmandu : Lessons Learning



Paper Presenter :
Ram Kumar Phuyal
Associate professor
CEDA, Tribhuvan University,
Kathmandu

Co-author of the paper
Madhusudan Bhattarai
Economist, Kathmandu, Nepal



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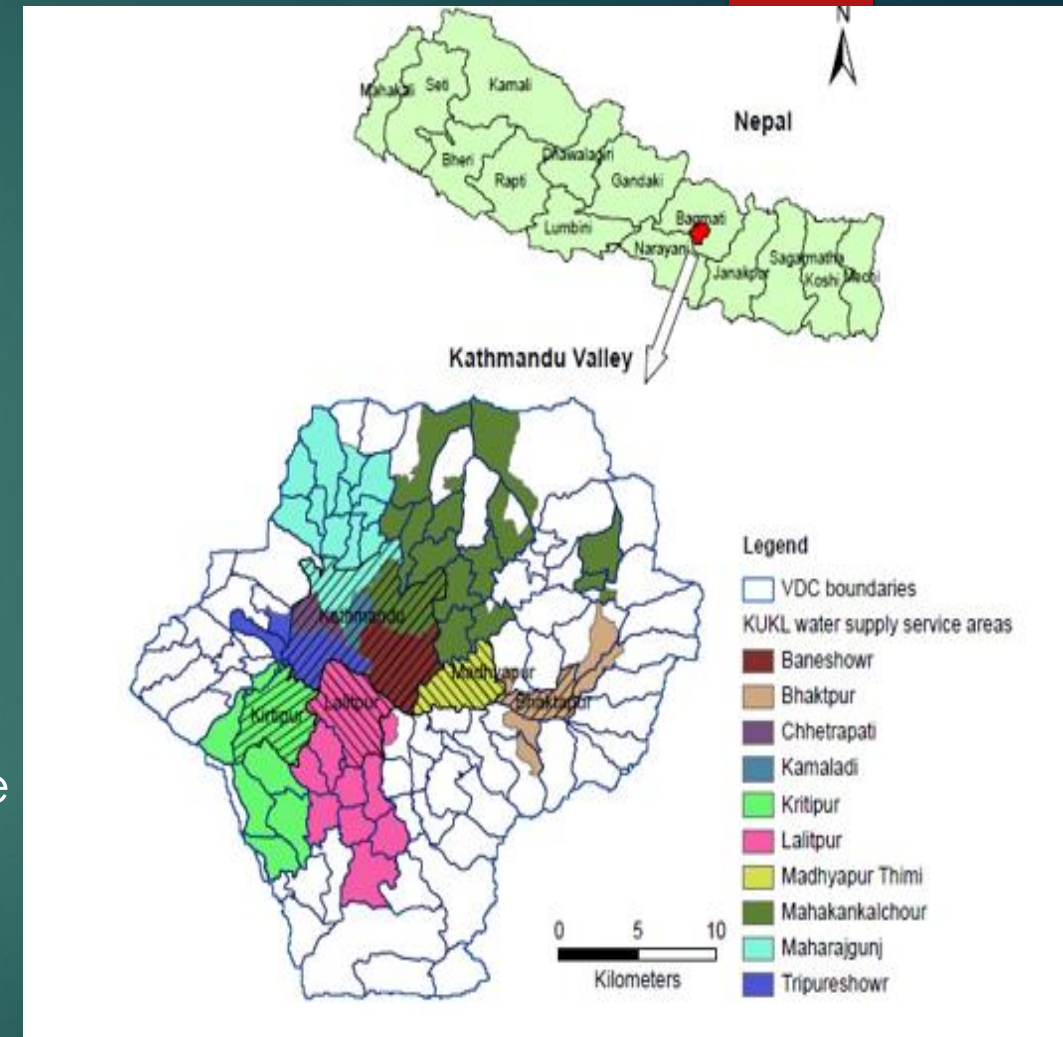
1. Background - Melamchi Water Project
2. Methodology and Data
3. Review of Previous Studies
4. Project Status, and Water Demand
5. Financing mechanisms and governance structures
6. Conclusion, and Implication



Objective of the study

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- ▶ To assess financing mechanisms of Melamchi Water Supply Project (MWSP) in Kathmandu.
- ▶ To present situation analysis on water demand water supply situation in Kathmandu city
- ▶ To assess economic analysis of the Melamchi Project based on review of previous studies on the topics.
- ▶ To assess alternate water pricing mechanism of the project, and analyze financing mechanisms of service delivery after completion of the project



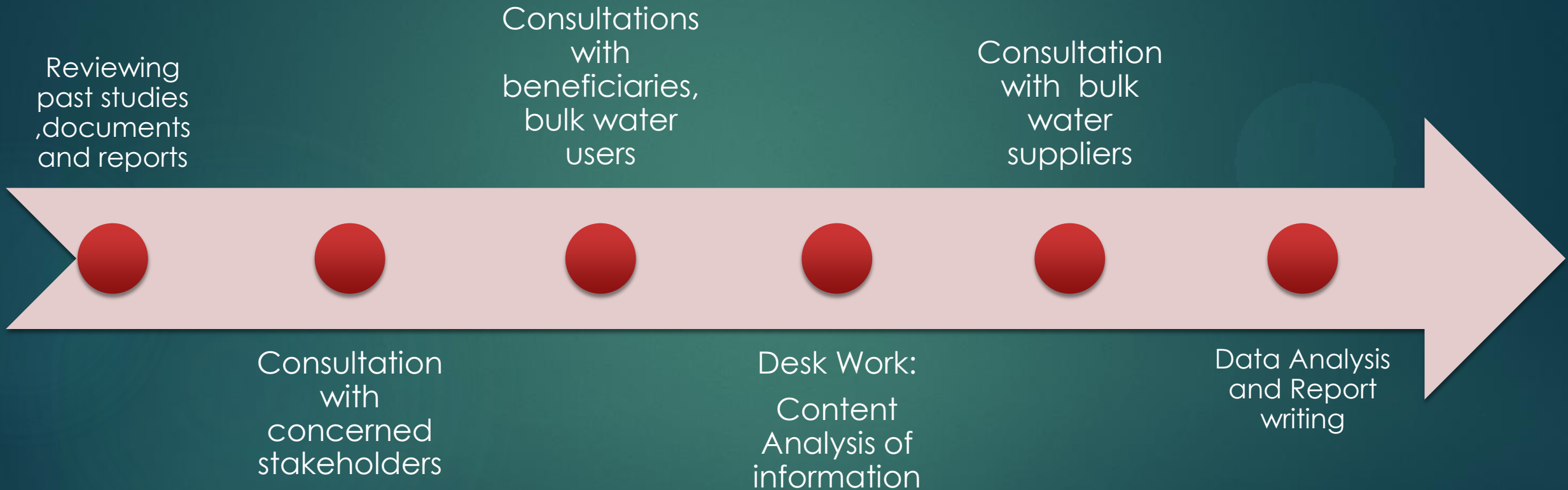
Location of the study area with Melamchi and KUKL service area.

1. Introduction-Melamchi Project

- ▶ Govt. of Nepal initiated Melamchi Water Transfer Project (MWTP) in 1997 to meet the growing demand for water in Kathmandu.
- ▶ The project got approval only in 2000
- ▶ A present, Kathmandu's city water supply systems even can supply 1/4th of the city total water demands of about 370 MLD.
- ▶ Acute scarcity of drinking water in KTM city
- ▶ MWTP is planned to meet water needs of the city for next 25 years by transferring water from river located upstream of Kathmandu (Fig).



2. Research Methodology



3. Review of Previous Studies

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S. N.	Authors	The objective of the studies were to;	Methodology and Data	Findings Related to Financing Melamchi Project
1	Bhattarai & Pant (2004	Assess the major socio-economic impacts of Melamchi water transfer project in the water exporting basin.	Review of project documents, media publications, and past studies were thoroughly done.	The study showed that traditional informal water management institutions were effective in regulating present water use practices.
2	Sills,et.al. (2004)	There is strong support for a plan that would result in improved water services and higher water tariffs.	The survey was administered to 380 households currently unconnected to the water supply network in five municipalities in Kathmandu Valley.	The study estimated discount rates and examined the impact of credit constraints and financing options on the probability of connecting to the water network, conditional on socio-economic status.
3	Bhattarai, et.al.(2005)	Assess the project compensation measures in relation to mitigate the project adverse impacts.	The methods applied in the paper were an explorative case study approach.	Paper concluded that effective participation of stakeholders and early negotiation for compensation could minimize such third party effects.
4	Pant & Samad (2006)	Determine the role of stakeholders and local governments in decision making process of MWSP	Field observations key informants interview, Focus group	The existing institutional arrangement may not be sufficient to deal with the likely negative effect that may occur in the future.

5	Pant, et.al (2008)	Evaluate some of the socioeconomic, hydrological, water management, and livelihood implications of the Project	Data collected from series of case studies and supplemented by information drawn from secondary sources.	It was found that small scale of water usage and multiple informal arrangements at the local level have made it difficult.
6.	Gartaula, et.al. (2008)	Assess major concerns, policy discourses, and local perceptions in the implementation of project.	Consultations with personnel of the Melamchi project and the city water supply agency.	The institutional capacity of implementing sectoral agencies needs to be taken into account when designing such a large-scale project.
7	Katuwal & and Bohara (2011)	Find out about what special strategies households use to cope with the unreliable and poor quality of water supplies.	Estimated the effect of wealth, education, and information about water quality on drinking water treatment behaviors.	The study showed that the major coping strategies of households are storing, and point-of-use treatment. People boil and then filter instead of boiling only and filtering only.

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8	Onyi, et.al (2012)	Carry out the cost benefit analysis of the project in a more comprehensive manner.	The study applied both cost benefit ratio and sensitivity analysis of the project.	The net profit of project is negative, however, there many direct and indirect benefits of labor market and business activities.
9	Udmale, et.al (2016)	Measure demand supply deficit after completion of the first phase of the Melamchi Water Supply Project.	The study estimated supply deficit of 102 million liters per-day (MLD) descriptive and inferential statistical approach.	The result indicated that the MWSP will make a significant contribution to the valley's Water security.
10	Gurung, Y.et.al (2017)	Determine the costs people were incurring to cope with Kathmandu's piped water supply system.	In the summer of 2014, study made an attempt to re-interview all 1500 households in the survey of the year of 2001 sample.	There is significant increase in coping costs to substantially increase water tariffs if the quantity and quality of piped services can be improved.
11	Phuyal, et.al (2017)	To assess the state of drinking water quality at sources and points of use (POU) in Bagmati River and its tributaries.	Survey conducted on 37 squatters and 5 indigenous communities consists 3693 households and gathered information through key informant interview in 2015.	The result shows that the maximum samples of the water consumed in the squatter settlements are poor in quality and unhygienic for drinking proposes which does not meet NDWQS-2006. It shows that 68% people are willing to pay higher cost for good quality water.

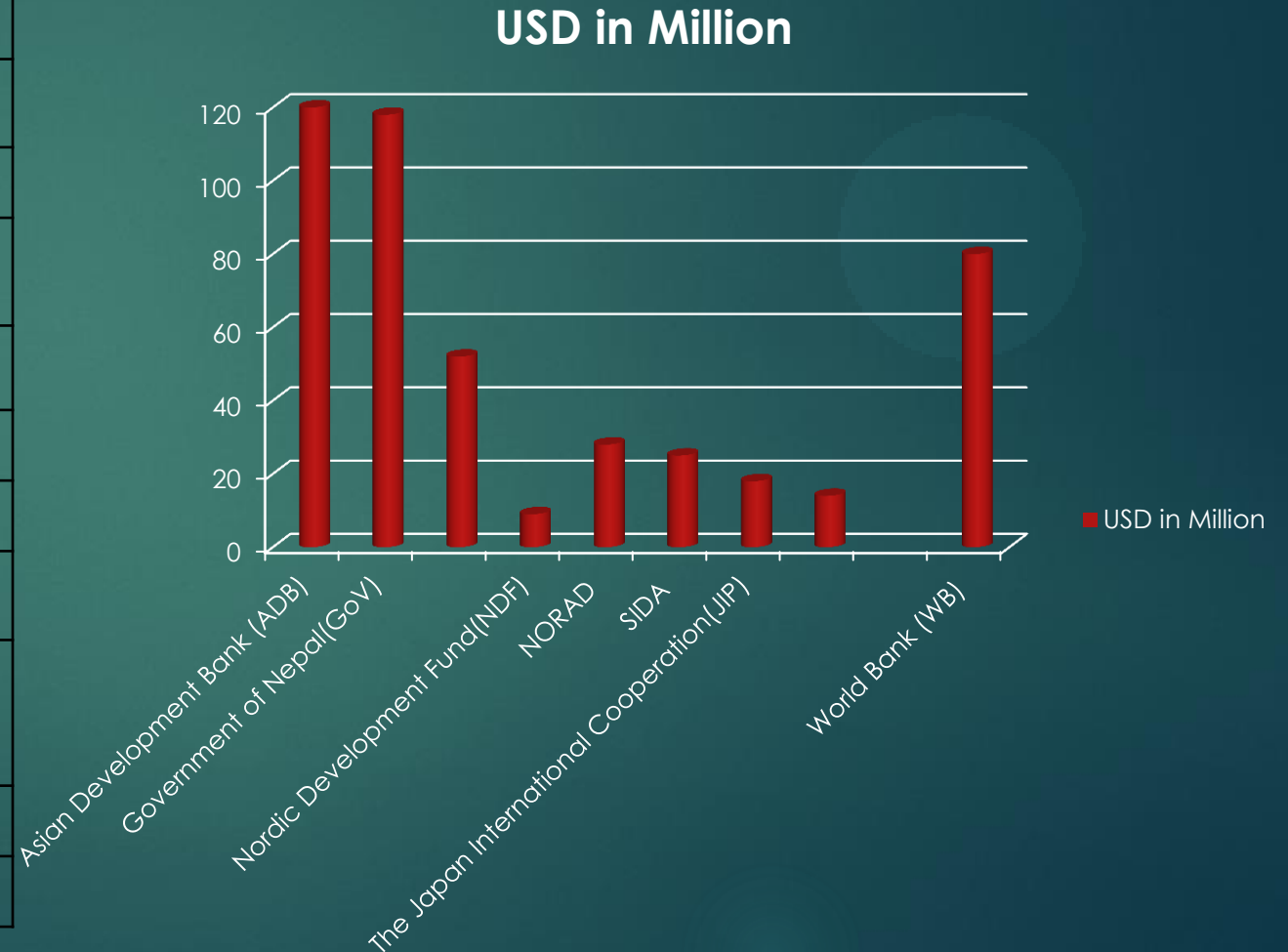
4. Financing Mechanisms and Governance Structures

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4.1 Project Financing

The MWSP was projected to cost \$464 millions in 2000 prices to complete in 7 years.

Major Sponsors	USD in Million
Asian Development Bank (ADB)	120.00
Government of Nepal(GoV)	118.00
Japan Bank of International Cooperation(JBIC)	52.00
Nordic Development Fund(NDF)	9.00
NORAD	28.00
SIDA	25.00
The Japan International Cooperation(JIP)	18.00
The Organization for Petroleum Exporting Countries (OPEC)	14.00
World Bank (WB)	80.00
Total	\$464.00



► Project time lines (A story of poor governance from all sites)

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Year	Key development
1973	First time the water transfer plan from Melamchi river was identified as an option
1980s-1990s	Several studies were carried out. Water transfer with Hydropower plant (higher dam) or only water transfer scheme was discussed among agencies, UNDP, ADB, WB. No consensus.
2000	ADB led consortium secured full funding of the project, and it was also approved by Govt. of Nepal to initiate the project with creation of MWTP.
Early 2000s	The privation of city water system attached as a pre-condition of full financing led by was become a source of contention among govt. agencies, NGOs, civil societies in Nepal, and the external donors (WB, ADB, and other partners). It was difficult for govt. to fully privatize.
	WB withdrawal from it in 2002, NORAD withdrawal in 2005, SIDA withdrawal in 2006, then the on-going insurgency and political chaos in Nepal also affected the project governances.
2007	Finally, Kathmandu Upatyaka Khanepani Limited (KUKL) was established in PPP mode to manage city water supply system (a pre-condition of the full financing).
2008	Restructuring of project cost was done. The project cost estimates were reduced to 317 million USD from 464 million USD
2009	Tunnel construction contract was awarded to CR15G on 19 February 2009 for 4.5 years with contract amount of \$66 million.

► Project time lines &Additional Financing

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Year	Key development
2008	Restructuring of project cost was done. The project cost estimates were reduced to 317 million USD from 464 million USD
2009	Tunnel construction contract was awarded to CR15G on 19 February 2009 for 4.5 years with contract amount of \$66 million. The Local groups padlocked project office, only unlocking it on January 2010.
2012	MWSDB terminated the contract with CR15G on 25 September 2012. Physical progress (i.e., tunnel excavation) was only 22% (6.3 km out of 27.5 km).
2013	New contract was awarded to an Italian company, in July 2013 with contract amount of \$98.7 million, resulting in an estimated cost overrun of \$32.7 million.
2014	Cost was again re-estimated to 355 M USD with additional financing committed by ADB.
2015	Earth quake of 8 scale further pushed back its completion to 2020
2016	City water pipe replacement work started replacement/rehabilitation (some were >50 years old pipe lines in the city water distribution system.
2017 Nov	Water treatment plant to be completed, and brought water from Melamchi (a 40 years discourse?

4.2 Water demand scenario in Kathmandu Valley

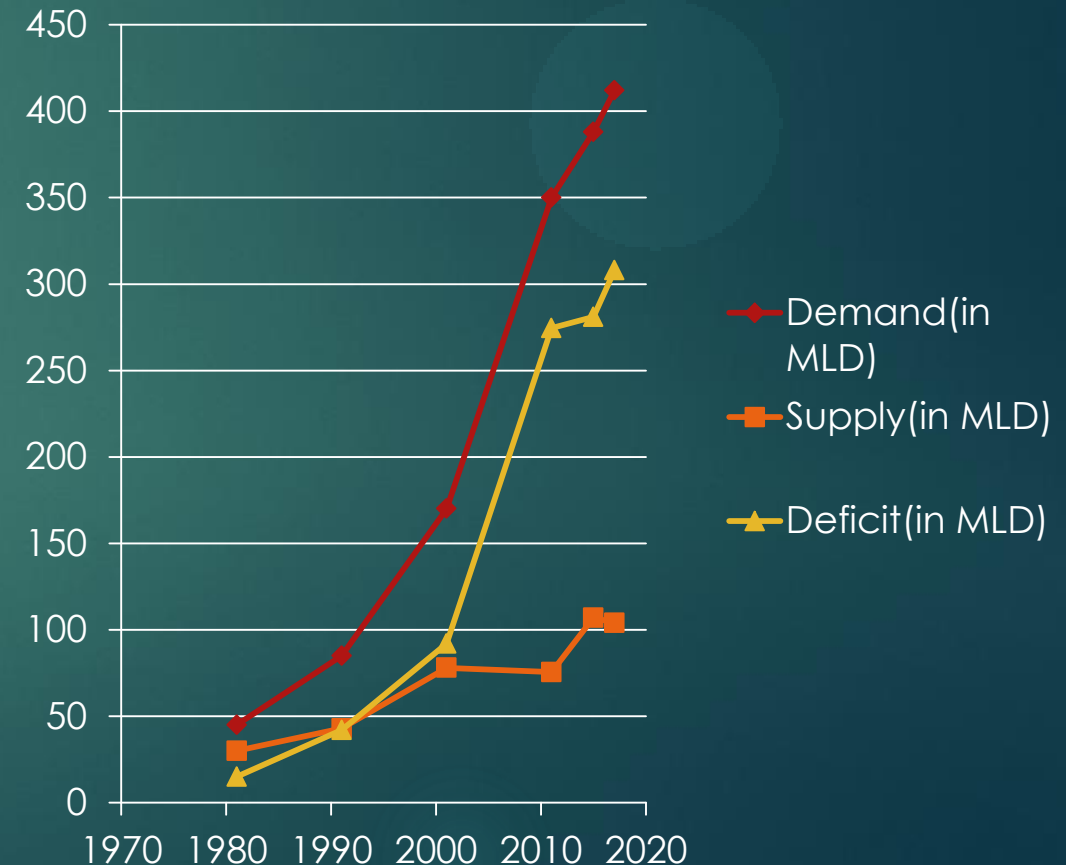
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- Out of 412 MLD of demand, less than 1/4th is met by public supply system (KUKL).
- Overtime the water scarcity situation is getting worsen.

Water Demand, Dry Season Supply and Deficit (in MLD) at Kathmandu Valley

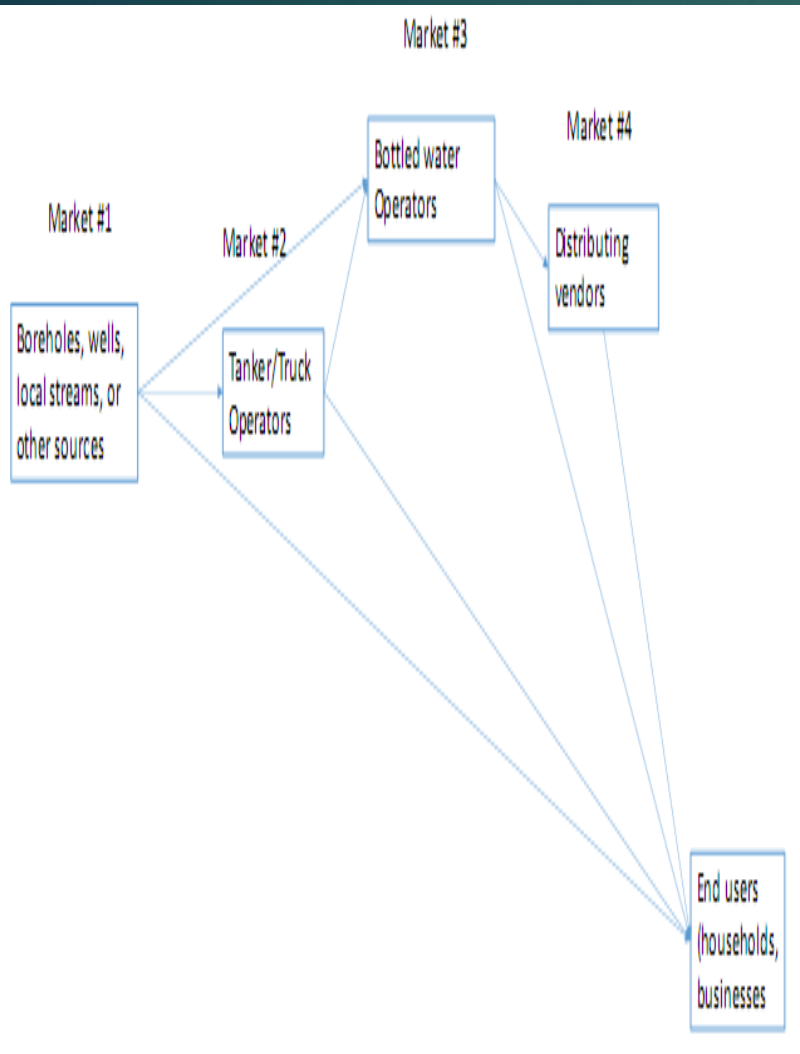
Attributes	1981	1991	2001	2011	2015	2017
Demand	45	85	170	350	388	412
Supply	30	43	78	75.5	107	104
Deficit	15	42	92	274.5	281	308

Demand Deficit Trend



At present chaotic water supply and water pricing situation

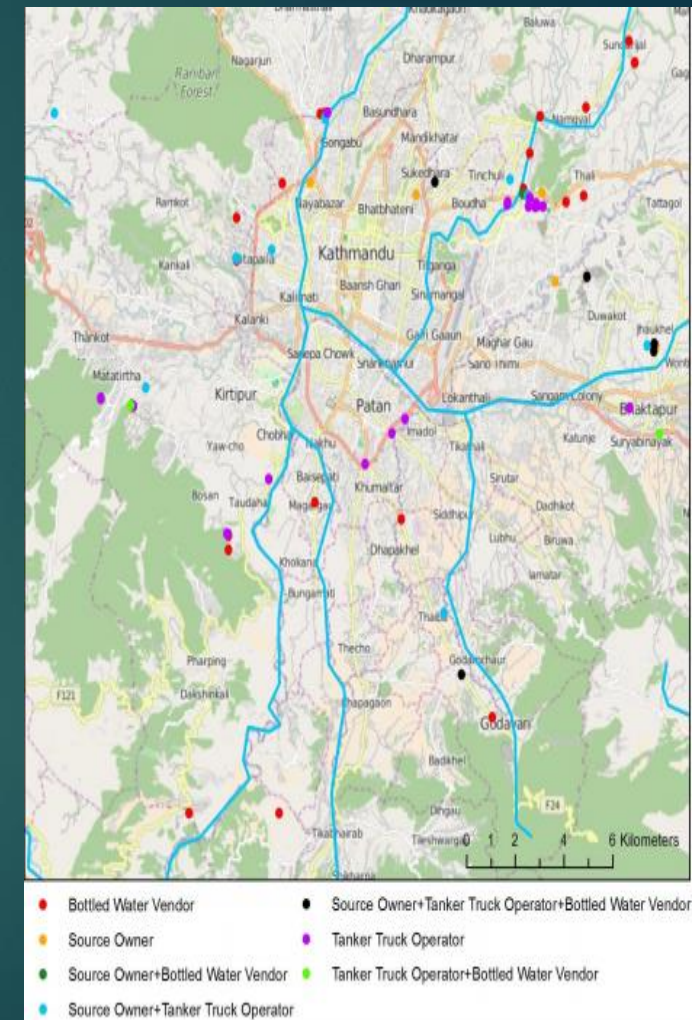
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- Currently, the demand deficit is being met primarily by the water tankers and bottled water vendors.

- Approximately 67 sources of water and 700 tankers supplying the city with water through 210 drinking water companies in Kathmandu valley.

- The vendors have formed different associations to conduct a *semi-regulated system* through numbers of businesses operating within this market.



5. Socioeconomic Analyses of the Project

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=> All technical and financial studies in the past have identified it as a most effective and efficient project, however construction got delay

A Analysis of tangible benefits

A.1 Saving on residents time and reduced drudgery

- Over 70% of the households of Kathmandu have a connection to the piped distribution network, but hardly they get 1–2 hours/day (2-3 times in a week).
- Water distribution time is not fixed => one member of the family needs to be vigilant to collect water (a huge mental torture and time costs)

Continue

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- ▶ Benefits = direct consumer surplus + positive externalities + saving of time and cost in fetching (saving on pumping cost, purchasing, storing, and treating water in HHs; and the reduced risk of health hazards).
- ▶ => If include all tangible costs, a huge beneficial project to society.
- ▶ If we assume 50 percent of the market wage rate for unskilled labor .
- ▶ The minimum wage of unskilled labor in Nepalese Currency is NRS 6200/month, which is converted USD 62 per month .
- ▶ Just saving on time related benefits of resident of 180,000 water = 11.5 million USD per year (Saving on time cost for fetching of water).

A2. Water revenue benefits

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- ▶ A previous study estimated that for those households connected to the KUKL system, the median willingness to pay (WTP) is NRs900 per month for improved services in the baseline survey in 2001.
- ▶ By follow up survey in 2014(*Whittington, 2017 reported*), a mean willingness-to-pay for improved water service was estimated to be US\$14 per month per household.
- ▶ This implies that people are likely to pay more for household connections if the availability and quality of the water is ensured, and that Kathmandu residents would be willing to pay much more once Melamchi water supply connected.
- ▶ = One 20 litter jar is sold at 0.60 USD in Kathmandu (this has become most reliable water supply for almost all households in the last 5-6 years>
- ▶ In summery, in this situation, no doubt this is a huge financially beneficial project.

A3. Electricity supply

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- The saving on electricity cost (pump = public + private) is another benefit.
- = Roughly USD 2 million electricity fees saved annually.

A 4. Access to road in Melamchi

This is huge scale of tangible and intangible benefits to upper stream basin communities (over 2 M USD/year (estimated))

A 5. Benefits in secondary market

- Created more employment opportunities in KTM city and in nearby location – more business will come in city.
- Khadka and Khanal study showed = 1,020 skilled and semiskilled workers have been working at Melamchi Diversion scheme now.
- About 1,420 jobs have already available every day during the construction.
- More business activities on site and in two valleys would create more incentives for people to move and live in these areas.
- The valuation of land and houses have been highly increased in Melamchi areas.

6. Conclusions and Implications

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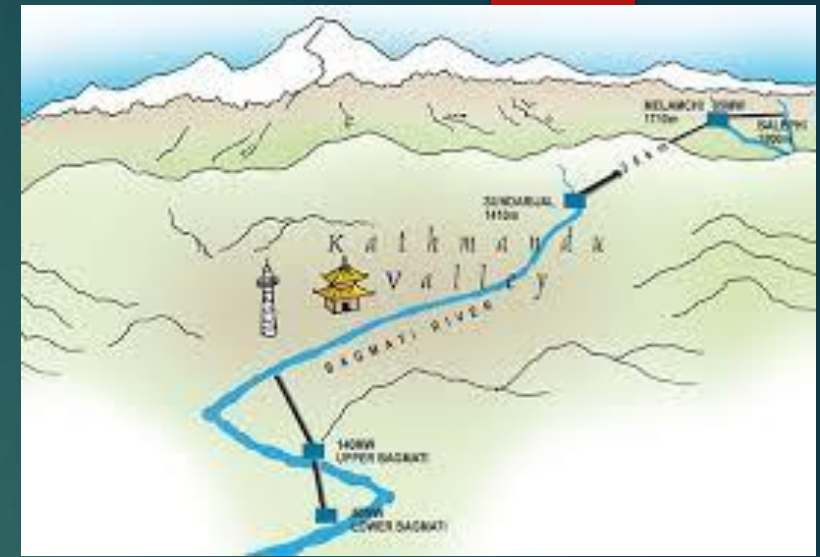
- The Melamchi project has not been completed on time though it is economically and financially viable and also nationally high priority project.
- Institutional weakness and governance factors are some of the major reasons behind that.
- The delay in project construction has huge economic opportunity cost of over 0.5 million USD per day of water revenue
- After first phase of project, there is a plan to do construction of second phase of work, and strengthening of the city water supply system.



Conclusions and Implications (continue)

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- ▶ KUKL management needs to be strengthened to recover part of the project investment cost from city water beneficiaries (it should not be a full subsidized project)
- ▶ The water leakage systems need to be closed and system improved.
- ▶ Dilemma: Households are willing pay more to get continuously supply of water but the institutions is not capable to deliver/manage the system.
- ▶ Improvement of institutional capacity of implementing agencies, project governance, management of such large scale project are critical aspects as like of economic and financial return. (lesson learning to future projects)
- ▶ City water supply system (KUKL) should recover daily operation maintenance and infrastructure improvement costs from users.
- ▶ How to keep KUKL independent and its functioning and free it from the political instability and changes on governance (is going to be reality now)
- ▶ Experience sharing across the countries (sites), and institutional capacity strengthening (improved governance) of KUKL should also be key part of the ADB and external financing scheme, in addition to securing financing to completion of the project.



*Thank you very much
for your attention*

