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The Paradox of Social Resilience: Explaining Delays in Water Infrastructure Provision in Kathmandu

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ABSTRACT: One of the enduring puzzles within the management of water and other environmental resources is the sustained under-investment despite their critical importance. This paper brings together two emerging lines of research in answering this puzzle: first, that the blame-averse nature of governments leads them to avoid tackling issues which are perceived to have low payoff, and second, that the paradox of social resilience by which acts of coping with natural disasters and adverse events have led to a self-perception of resilience. While the motivations behind blame aversion are well researched, how the paradox of social resilience contributes to and interacts with such bureaucratic motivations remains little understood. Using a quantitative investigation of narratives of a more than 10-year delay to the Melamchi Water Supply Project in Kathmandu, Nepal, this paper reveals the dynamics of this interaction; it finds that a self-perception of resilience leads to narratives of low emotional intensity or 'valence', which in turn feed the perception of low payoffs for governments. This accentuates motivations of blame aversion, thus creating a vicious cycle of inaction. In Kathmandu, the self-perception of resilience is partly due to the coping mechanisms provided by a large, informal water-vending market. This paper suggests that one way of breaking the cycle is to increase the emotional intensity of the narratives by focusing on the true cost of coping with the delay in water supply. Our study further predicts that this vicious cycle is generally extant in policies with low negative valence – that is, in most environmental policies.

KEYWORDS: Water policies, public perceptions, social resilience, Q methodology, Kathmandu

INTRODUCTION

Inaction is a peculiar subject for policy theorists; why nothing happens is not, at first glance, an especially urgent question. Yet, in the case of policy issues that are *prima facie* salient, a disproportionately low reaction becomes an interesting phenomenon. In sustainability studies, this can be seen in the lack of real policy efforts to address issues of climate change and impending ecological disasters.

In the policy sciences, such inaction is explained by the blame-averse nature of governments. While blame avoidance is well studied across all policies (Table 1), it appears to be particularly endemic in climate change and sustainability issues. This argument holds across a wide range of cases – from the paucity of policies to curb the consumption of beef despite its harmful effects on the environment (McAlpine et al., 2009) to the proliferation of policies continuing to favour agricultural expansion at the expense of forests (Webb et al., 2014).

Howlett (2014) argues persuasively that such under-reaction is not just the result of blame aversion but also the low intensity of public concern. With this coupling, governments can choose strategies of denial and to attack opponents instead of making substantial efforts to address problems (Gerlak and Mukhtarov, 2015; Lejano and Leong, 2012).

The link between the emotional signatures of policies to their supply has been recently made in the policy sciences in the concept of 'valence' by Cox and Béland (2013), who define valence as "the

emotional quality of an idea", which can be high or low in intensity and negative or positive in character. Emotions and values influence not only our policy goals but also how we achieve them. They argue that: "Ideas with a negative valence are repulsive and are likely to generate opposition to the policy proposal associated with them" (Cox and Béland, 2013: 62).

While the blame-averse nature of governments can be traditionally attributed to the bureaucratic need for self-preservation, why do members of the public keep their emotions in check on important issues? That is to say, why and when do people react unemotionally to highly salient issues? In climate change issues, researchers argue that the relatively low salience of the issue is due to factors such as a lack of direct experience with the effects of climate change (Vasileiadou and Botzen, 2014), a lack of knowledge (Leiserowitz, 2005, 2006; Weber, 2006; Reynolds et al., 2010) or a simple lack of certainty about the nature of the problem due to its complexity (Swim et al., 2011b).

One intriguing and increasingly well-established possibility, however, is that of the "paradox of social resilience" (Shaw et al., 2014), where the act of coping gives people what the writers call a "delusion of resilience". This happens when coping mechanisms, such as accepting change and self-organisation, lead individuals to believe or act as if they are more resilient than they really are.

Shaw's study on the response of elderly people to coastal flood risk found that self-perception influenced self-reliance in two ways; first, people tend to underestimate risk and overestimate their ability to cope. Second, those who were 'hardened preparers', or people who go to considerable lengths to be resilient (such as incurring high coping costs), tend to perceive themselves to be self-reliant (thus exposing themselves to greater risk). The paradox lies in the fact that the act of coping itself may create a (false) sense of resilience.

This phenomenon has been observed in older research which postulated that 'helping' strategies may actually create perverse incentives with regard to resilience. For instance, Berkes and Jolly's (2002) study of Inuit communities showed that government provision of resources decreased their resilience, while Whittle et al. (2010) similarly showed that identifying vulnerabilities increased it.

We extend this research in a hypothesis that such acts of coping can affect the intensity and even the nature of emotions – that is, that the intensity of negative emotions could be low when people perceive themselves to be resilient and 'coping' with the difficult situation at hand.

In most cases, it would be difficult to test this hypothesis as the other factors that are similarly hypothesised to contribute to low salience (for example, a lack of direct experience or a lack of knowledge) are difficult to exclude.

The case of Kathmandu's urban water supply, however, offers a natural experiment that allows us to investigate this hypothesis without such muddiness. The Melamchi Water Supply Project, to supply river water to Nepal's capital city of Kathmandu, was supposed to have been completed by 2006 but has been repeatedly delayed.

The experience of poor water supply is direct and personal, including the economic and social coping costs, as well as the experience of ecological changes that have been taking place, such as the drying up of river beds and century-old water spouts.

The first contribution of this paper is to reveal the dynamics between blame avoidance, low public reaction and social resilience. It views policy under-reactions as a function of the emotional qualities of the policy, public narratives, and motivation of governments. While blame aversion and the salience of policies may differ depending on whether a country has democratic or authoritarian norms, research has shown that blame aversion is a general trait; that is to say, while democratically-elected officials may be more risk averse (Skogstad, 2007; Walsh, 2006; Harris, 2014), blame-avoiding behaviour is a manifestation of a more general human trait of 'negativity bias' (Hood, 2010a; Weaver, 1986) which leads to losses being valued more highly than gains of an equivalent amount (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991, 1992; Kahneman et al., 1986).

The paper's second contribution is to provide an empirical example of policy making under a 'static non-design space'. While the new 'policy design orientation' has attracted much research (Howlett, 2014, *inter alia*), the concept of non-design spaces – policy black holes which occur where governments have neither a strong intention to design policies nor the ability to significantly alter the status quo – are still relatively underexplored. Such spaces are especially prevalent in environmental planning, where there is much inaction despite large-scale climatic change. The potentially devastating consequences of such under-reaction require us to understand this under-researched area.

This paper advances two arguments: first, that non-design spaces can exist despite great need for policy in the area (that is, a space where policies are under-supplied) and, second, that this is due to the valence or emotional qualities of the issues at hand. The latter has been hypothesised by Cox and Béland (2013) and this research provides an empirical test of their ideas.

Table 1. Blame avoidance and policy inaction.

Author/Year/Journal	Variables/Unit of analysis	Method	Findings
Howlett (2014) Global Environmental Change	Develops a model of policy (in)action based on the concept of blame avoidance in government	Case studies	Low intensity of public concern and low intentionality of governments to design policies to deal with climate change allow blame-averse governments to select strategies of denial and attack instead of substantial efforts to address the issue. Governments react to the low visibility of climate change problems by (a) downplaying their effects, (b) emphasising their unpredictability and inevitability (c) taking periodic or short-term action
Hood (2007) Public Management Review	Examines the tension between transparency and blame avoidance in public management	Literature review	Bureaucratic efforts at transparency measures are likely to be futile (nil effect), result in jeopardy (side effects) or perversity (reverse effects) if there are powerful incentives for blame-avoidance.
Weimer (2006) Public Administration Review	Private rulemaking as an allocative institution of governance	Case studies	Private rulemaking becomes an attractive model to allocate valuable goods (e.g. transplant organs) under rapidly changing conditions. Rulemaking authority for applications with a greater potential for blame is likely to be delegated to nongovernmental organisations so as to avoid it.
Weaver (1986) Journal of Public Policy	Shows that blame-avoiding motivations of politicians and policy makers can influence policy decisions.	Case studies	There are three main motivations behind policy decisions: credit claiming, good policy and blame avoidance. However, blame avoidance is a key strategy of elected politicians in the United States due to the negative bias of the electorate.

Our findings show that the public perception of the urban water supply in Kathmandu is composed of three main themes: a view of public-sector capacity, an ability to cope with current poor services and a general pessimism that the current reality can be sustained over the long term. We argue that the scholarship of blame avoidance provides a useful framework in understanding these themes, given the high risk and low payoffs in attempting to address the problem. This intersects with work on the paradox of social resilience, which argues that payoffs are low due to the low negative valence, which in turn is due to a perceived ability to cope.

POLICY INACTION

Policy design within the traditional policy sciences has a purposeful character, by which policies are made to address certain goals. Howlett et al. (2015: 4) outline this as: "policy design as a specific kind of policy-making in which knowledge of the impact of specific policy tools was combined with the practical capacity of governments to identify and implement the most suitable technical means in the effort to achieve a specific policy aim". An essentially teleological conception of policy design, this tradition sees policy makers as formulating a goal and then marshalling the tools and resources to achieve said goal (Tribe, 1972; Majone, 1975). This, we call Model 1.

Evolving from this tradition is a second model, under which the notion of context is highly significant – for example, in relating how history and institutions matter to the practice of design (Clemens and Cook, 1999). Policy 'design', although still purposeful, is also highly contingent, as technical, rational considerations are countered by implementation considerations, including the interests and ideas of actors (Lindblom, 1959; Kingdon, 1984, Howlett et al., 2015). This second model may be empirically more faithful in providing a role for context but risks an idiosyncratic idea of the design process (deLeon, 1988).

In recent years there has been recognition of a distinct new orientation called 'new policy design'. While retaining the purposive character of design thinking (that is, the instrumental logic of policy design as a means of achieving a particular public goal), it has a more complex conception of tools. Rather than taking tools singly, policy planning is seen as a mix of multiple goals and instruments (Chapman, 2003; Givoni and Banister, 2012). It also pays greater attention to the path dependencies (Howlett et al., 2015), recognising that patching and packaging – sub-optimal planning and design activities – do occur.

Table 2. Model 3: New design orientation (modified from Howlett et al., 2015).

		<i>Government's ability to alter the status quo</i>	
<i>Government's intention to design</i>		<i>High</i>	<i>Low</i>
<i>High</i>	<i>High</i>	Optimal design space Design via packaging *(Q1) **(M1)	Incremental design space Design via patching (Q2) (M2)
	<i>Low</i>	Muddling through non-design space Formulation through incremental adaptation (pottering) (Q3) (M2)	Static non-design space (paralysis) (Q4) (M3)

*Q1,2,3,4: Quadrant 1, 2, 3, 4 **M1,2,3: Model 1, 2, 3

Seen through a lens of institutional change, Q1 represents a region of revolutionary change, or punctuated equilibrium, whereas Q2 and Q3 represent incremental, path-dependent change. The less than optimal pace of change in Q2 can be attributed to a lack of capacity despite high intention, while in Q3 this is due to a lack of intention (no political will or overly complex political forces) despite having the capacity. The matrix also captures the review of design literature and the different models of policy formulation, with M1 and M2 appearing in three quadrants (Table 2).

This paper argues that there is a third model of policy-making: M3 – policy under-reaction or paralysis. This logic is quite clear in three of the four quadrants. Q1 has been the traditional domain of architect plans and ideal archetypes. Q2 and Q3 have both seen a flourishing of scholarship (Doremus, 2003; Bleischwitz and Hennicke, 2004; Béland and Wadden, 2012).

Q4, however, has been relatively under-researched, although two main threads to 'non-design', as it has been termed by Howlett and Mukherjee (2014), can be deciphered. First, it stands in contrast to the rational, technical and experience-based paradigm of policy-making, unlike the political, bargaining or other forms of satisficing behaviour which characterise alternative generation (Sidney, 2002; Bendor et al., 2009). Second, it is the result of satisficing – a less than optimal equilibrium created by a non-rational (not irrational) formulating process. This stands in contrast to the Lasswellian-Platonic form of design in Q1, where there is both high intention to create policies and high government capacity. In this space "only poorly informed non-design is possible" (Howlett et al., 2015 p.62)

Conceptually, therefore, it is clear that a 'non-design' space exists; but it is less clear what it actually comprises. It is differentiated from models 1 and 2, being neither an ideal-type like M1 nor one defined by fixes and incremental change like M2. As Howlett and Mukherjee (2014) have pointed out, such incremental 'layering' is not non-design.

Non-design suffers from a lack of the instrumental logic that informs the rest of the policy quadrants. Howlett and Mukherjee (2014: 65) consider this as a form of "irrationality of a non-design type". Rather than trying to achieve specific goals, the space is filled with policies that are poorly-informed and contain dynamics of the type engendered by self-interest (such as venality, corruption, political gain and blame avoidance) rather than those of public value and service and based on an understanding of the importance of the public good (Holmberg and Rothstein, 2012; Rotberg, 2014) (Table 3).

While the M3 model of policy-making may be tied more strongly to emotional elements than the other quadrants, this paper argues it is may not be an irrational model of decision-making. Rather, M3 has a particular logic informed by the context of Q4 – a space of both low intentionality and low capacity.

Within this space M3 takes into consideration two variables – the role of blame aversion and the low valence of policies, which feed into the low intentionality of the government; together they create a vicious cycle of inaction. We do not in this paper, theorise on the link between intentionality and capacity – that is, whether the low intention then leads to weaker motivations to garner resources and hence lowers capacity. The links between intentionality could certainly be a rich field for future research.

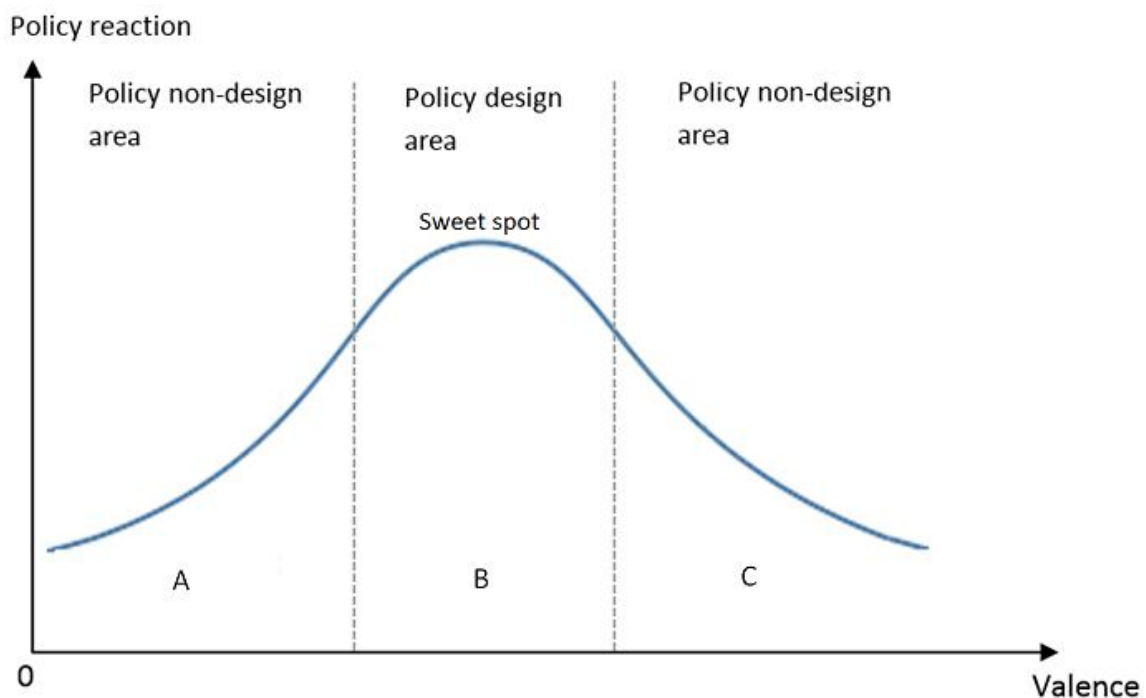
For the purposes of this paper, the assumption so far in both M1 and M2 is that policy design is tied to some public value or towards satisfying some social need – a broadly teleological conception. Under M3, this teleological aspect appears to be eroded. This paper argues that, instead of a purposive model of policy design, a Model 3 version of policy design works on a narrative logic of inaction, which we shall outline in subsequent sections.

As can be seen from Figure 1, the area for active policy-making (B) appears to be where valence is moderate, with both the expected payoff and the blame upon failure commensurate with one another. We label this the 'sweet spot'.

Table 3. Conceptual clarifications of policy non-design.

Policy	Outcomes	Processes	Inputs
Design	Instrumental package	Lasswellian formulation	Experience knowledge
Non-design	Static n-d space	Bargaining, trade-offs, log-rolling, venal, corrupt behaviour	Expectations of political gain, blame avoidance, inaction

Figure 1. Motivations for inaction.



By focusing on the second, less-explored area (A), this paper reveals that under-reaction could also be due to the fact that people perceive themselves to be 'coping'. Such costs, including opportunity costs, may be determined objectively to be very high (Pattanayak et al., 2005) and disguise the true cost of inaction.

Last, this conception of policy design and reaction addresses the methodological difficulties that can arise from the use of the word 'optimal' in describing the level of policy-making. Whether or not we can determine the 'optimal' amount of policy this paper aims for the more modest but equally interesting conclusion that policy activity decreases at both ends of the spectrum. This has practical implications for sustainability issues, which often suffer from policy under-reaction. Understanding that low negative valence is a contributing factor can help policymakers and environmental advocates reframe the current public discourse.

CASE: WATER INFRASTRUCTURE DELAYS IN THE KATHMANDU VALLEY

The Kathmandu Valley in Nepal is located upstream of the Bagmati River Basin, which is among the most stressed river basins in the country (Pandey et al., 2012). Rapid population growth coupled with

changing lifestyle preferences (i.e. fully flushing toilet facilities) and increasing industrialisation has led to an acute shortage of water in Kathmandu (Pandey et al., 2012; Udmale et al., 2016a).

Additionally, climate shifts, sand mining and natural disasters have threatened water security in Kathmandu (Jha and Shrestha, 2013; Shrestha et al., 2013; Thapa et al., 2016). The 2015 Gorkha Earthquake had caused significant damage to the water infrastructure as well as water contamination, with a 40% reduction in water supply (Thapa et al., 2016).

In 2011 the average availability of water in the Kathmandu Valley was approximately 110 million litres per day (mld) against a demand of roughly 330 mld (Parmeshwar et al., 2016; Asian Development Bank, 2015). In 2015, the actual quantities of water supplied by Kathmandu Upatyaka Khanepani Limited (KUKL), the authorised potable water supply agency, was 115 and 69 MLD during the wet and dry seasons respectively while demand is at 370 MLD (KUKL, 2015). The situation will become more severe as demand is expected to increase to 482 MLD by 2021 (Udmale et al., 2016a).

At the same time, investments in the municipal water supply infrastructure over the last decade have remained low (Gurung et al., 2017). While 70% of the population is connected to piped water, most households receive water for only a few hours a day. For the rest of the time, they cope by collecting water from public taps, investing in tube-wells and purchasing water from vendors and neighbours (Pattanayak et al., 2005). Meanwhile, the remaining 30% not on the piped network use private tube-wells, ancient stone water spouts and supplies from tankers (Bhattarai et al., 2005).

As a result, coping costs are very high – around US\$12 a month according to one recent estimate, having doubled over 16 years and increasing from 2% to 3% as a proportion of household income (Gurung et al., 2017).

Yet this water shortage was not unexpected. As early as 1973 the Melamchi River was identified as a potential water source for the Kathmandu Valley (Pant and Samad, 2006). By the 1980s various organisations had conducted feasibility studies on the Melamchi Project, including a study on alternative raw water sources in 1988 (Binnie and Partners, 1988) and another conducted between 1990 to 1992 by Snowy Mountain Engineering Consultants (Snowy Mountain Engineering Consultants, 1992), funded by the UNDP and executed by the World Bank (Whittington et al., 2004).

One of the main features of the project is the Melamchi diversion scheme – a transfer of water from the Melamchi River to Kathmandu through a 26.5 km-long tunnel (Domènech et al., 2013). The remaining three components involve the delivery of water to a new water treatment plant, the creation of a bulk distribution system and the rehabilitation of the water distribution network (Whittington et al., 2004).

The first stage of the project was designed to divert 170 MLD of water from Melamchi. The second and third stages proposed that a further 340 MLD of water from the Yangri and Larke rivers of the Indrawati Tributaries would be diverted towards the project. The overall implementation of the project was conducted by the Melamchi Water Supply Development Board (Pant and Samad, 2006).

In 2000, the Asian Development Bank granted a loan representing a significant proportion of the project's budget (Whittington et al., 2004; MWSB, 2000). The conditions of the loan involved a series of institutional reforms, including the appointment of a foreign private operator to manage water supply as the state-owned Nepal Water Supply Corporation (NWSC) was regarded as weak (ADB, 2000).

However, a failed bidding process resulted in the withdrawal of lenders from the project: the World Bank in 2002, the Norwegian Agency for International Cooperation (NORAD) in 2005 and the Swedish International Development Cooperation Agency (SIDA) in 2006.

Subsequently, other donors stepped in, such as the Organization of the Petroleum Exporting Countries Fund for International Development (OPEC Fund), the Nordic Development Fund (NDF) and the Japan International Cooperation Agency (JICA) (Domènech et al., 2013).

In 2006, amid much controversy, a UK-based company, Severn Trent International, was appointed to manage Kathmandu's water supply (Dhar, 2007). However, it soon came to light that the firm had been penalised in the UK for its lack of transparency and poor performance (Muspratt and Seawright, 2006), and public opinion swung in favour of the trade unions who had been actively opposing privatisation (Domènech et al., 2013). This resulted in the government's cancelling of the tendering process in 2007 (Dhar, 2007).

By February 2008, Kathmandu Upatyaka Khanepani Limited (KUKL), which operates on a public-private model, assumed responsibility for water supply operations (Bhandari, 2014).

On a broader political front, this period was also marred by instability due to the Maoist insurgency in Kathmandu, as well as local-level protests. During May 2010, general strikes driven by thousands of Maoist supporters marching on the streets of the capital caused havoc in Nepal, shutting down much of the country (Himalayan news service, 2009; Tran, 2010).

Construction of the tunnel finally began in August 2009, but progress was slow. The tunnel was still incomplete in December 2013, the end of the loan period for the Melamchi water supply project (Domènech et al., 2013). Some 20.6 km of the tunnel had been constructed by October 2016 (Report, 2016a), and it was expected to be supplying water to the population by October 2017 (Report, 2016b). However, at the time of writing, it is still delayed.

The delays have been caused by a variety of issues, including the more prosaic, such as problems with the contractors. The original contractor, China Railway 15 Bureau Group, was replaced for having failed to carry out work as scheduled. Meanwhile, Chinese construction companies accused the government of failing to pay on time, provide a project site and settle strikes.

An Italian consulting firm, Cooperativa Muratori e Cementisti (CMC), was subsequently awarded a US\$7.18 million contract to complete the remaining 20 km of the tunnel (Thapa, 2016). However, CMC was accused of delaying construction and renegeing on its contractual obligations. According to Ghanashyam Bhattarai, executive director of MWSDB, the company's political clout prevented officials from forcing it to comply with the terms of its contract through warnings or withholding of payments (Grad, 2016).

At the same time, researchers have argued that the reasons for the delays are not technical but social-political, including a lack of donor interest, protests, government apathy and mismanagement, and incompetence on the part of the Melamchi Water Supply Development Board, the agency overseeing the project (Domènech et al., 2013).

A comprehensive and insightful examination of the project by a former water resources minister (Gyawali, 2013) appeared in this journal, giving reasons for the administrative inaction.

He characterised the motivation of blame-avoidance as a "powerful antibiotic (...) that seeps through the skin and affects the entire internal workings of the organism" (Gyawali, 2013: 178). Officials in Nepal have also blamed international agencies, such as the ADB and the Japan International Cooperation Agency, for not doing enough to support the project, aside from providing funds (Xinhua, 2013).

While these factors may have complicated the implementation of the project, the exponential growth of the water-vending market in the interim may also have contributed to the government's inaction.

Over the last few years informal water markets have grown as better-off segments of the population have begun to rely on private tankers (Domènech et al., 2013). News reports have indicated that the water tanker and jar business are booming (Rai, 2011), with over half the city's water needs being fulfilled by small private water tankers and bottled water vendors (Dixit and Upadhy, 2005).

Table 4. Timeline of the Melamchi Project.

Year	Details
1973	Melamchi River identified as potential water source for Kathmandu Valley. ¹
End 1980s	Various organisations conducted feasibility studies, beginning with Binnie and Partners' study on alternative raw water sources in 1988. ²
1990 – 1992	Study conducted by Snowy Mountain Engineering Consultants, funded by UNDP and executed by World Bank. ³
2000	A loan awarded by the Asian Development Bank (ADB). The loan was conditional on bringing in a series of institutional reforms that included the appointment of a foreign private operator to manage water supply. ⁴
2002	Withdrawal of World Bank (due to failure to appoint foreign private operator to manage water supply). ⁵
2005	Withdrawal of Norwegian Agency for International Cooperation (NORAD), (due to failure to appoint foreign private operator to manage water supply). ⁶
Late 2000s	Period was marked by Maoist insurgencies and local-level protests. ⁷
2006	Withdrawal of Swedish International Development Cooperation Agency (SIDA), ⁸ (due to failure to appoint foreign private operator to manage water supply). 2006 was slated to be the initial date of completion but was pushed back to 2016. ⁹
2006	Severn Trent International appointed to manage water supply. ¹⁰
2007	Government dropped Severn Trent International as firm was penalised in UK for lack of transparency and poor performance. Public opinion joined the side of protesting trade unions of state-owned company, Nepal Water Supply Corporation, in opposing privatisation. ¹¹
February 2008	Kathmandu Upatyaka Khanepani Limited (KUKL), which operates on a public-private model, was appointed. ¹²

¹ Pant and Samad (2006)

² Whittington et al. (2004)

³ Whittington et al. (2004)

⁴ ADB (2000)

⁵ Phuyal (2017)

⁶ Phuyal (2017)

⁷ Lawoti and Pahari (2009)

⁸ Phuyal (2017)

⁹ Xinhua (2013)

¹⁰ Gyawali et al. (2016), Dhar (2007)

¹¹ Gyawali et al. (2016), Dhar (2007)

¹² Bhandari (2014)

July 2009	Local groups padlocked project office ¹³ , only unlocking it in January 2010. ¹⁴
August 2009	Construction of tunnel was initiated; however progress was slow.
December 2013	Loan expires; tunnels yet to be constructed. ¹⁵
April 2015	Earthquake in Nepal pushed back the date of completion for the project. ¹⁶
Summer 2016	Second expected date of completion pushed back to 2020. ¹⁷
June 2020	Expected date of completion (as of August 2016).
October 2016	Around 20.6 km of tunnel constructed. ¹⁸
September 2017	Third expected date of completion (not met). ¹⁹

The existence of such a market is crucial to this study since it forms a large part of the 'coping' actions and mechanisms that provide impetus for the paradox of social resilience. More pragmatically, the existence of an increasingly economically important and influential informal water-vending market is premised on the MWSP's lack of progress. Government inaction in this regard may be offset by rents provided by the vending market, which make it worthwhile to create conditions that support its continuation, including a relative lack of enforced regulations. This makes the high-cost/low-payoff nature of the bureaucratic calculus even more salient.

The low public reaction to this delay stands in contrast to the many highly volatile instances of water delays and how high emotions can run (Ashraf, 2017; Bennett, 1995: 66; Himalayan News Service, 2009; Wolf et al., 2005).

This is not to say that protests and other displays of public sentiment are alien to Nepal. 2017 marked an important year, with the country's first local elections since the promulgation of its constitution in 2015. There was a slew of protests throughout the year, starting with those against a proposal to amend the constitution in January (News Agencies, 2017) and followed by a smaller-scale air pollution protest in April (Associated Press, 2017) and a political protest in May that blocked traffic and disrupted businesses (Shrestha, 2017). July saw demonstrations by monks aimed at pushing the government to rebuild the monasteries (Ojha, 2017), and in September doctors and paramedics went on strike to protest a new law (Report, 2017).

Protests are generally held in Kathmandu as most people are able to travel to the capital to voice their concerns (Shrestha, 2017). Thus it could not be the case that Kathmandu residents are unaware of the platforms available to them to express their unhappiness with the government over critical issues such as the shortage of water. Yet no comparable protests were held in 2017 over the lack of water.

¹³ Himalayan News Service (2009)

¹⁴ Rajdhani et al. (2010)

¹⁵ Domènech et al. (2013)

¹⁶ Grad (2016)

¹⁷ Phuyal (2017), Khatri T. P. (n.d.)

¹⁸ Report, P. (2016)

¹⁹ Report, P. (2016)

Indeed, the most recent protest concerning the issue took place not in Kathmandu but 7.5 km away in the neighbouring city of Latipur in 2009 (Himalayan News Service, 2009).

METHOD

The choice of the Q methodology for this study was primarily due to its strength in the quantitative analysis of narratives. The government's blame-avoidance motivation is assumed; the puzzle lies in the community's self-perception. Q methodology allows the researcher to examine a situation from the standpoint of the individual and is particularly important in exploring attitudes and subjective opinion (Cross, 2005). It is therefore well-suited to this case, which aims to understand those communities to whom a key public good has been undersupplied.

For example, in examining the provision of public goods to the poor, researchers have argued for a need to understand the realities that poor people face and their "experiences with the state" (Narayan et al., 2000). While this paper does not concern the poor *per se*, it nonetheless seeks an understanding of the experiences of the community coping with water shortages over this extended period.

With respect to the water sector in Italy, Asquer (2014) has used Q methodology to provide evidence to local governments of opinions on the quality of water-service provision, its performance and the most appropriate form of regulation. Forouzani et al. (2013) used it to identify the perspectives of farmers and agricultural specialists in Iran on agricultural water poverty and its causes.

The first step in the process of Q methodology is developing the concourse or a set of statements that captures the main features of the phenomenon under study. The statements can be generated via preliminary interviews with potential participants, relevant literature or newspaper articles (Corr, 2001).

In this instance the statements were obtained over 20 years (1996-2016) from newspapers in both English and Nepalese. Some 250 statements were found relating to the water shortages, the delay in water utilities and experiences of coping with these shortages. These were pared down to 50 statements after eliminating those that were similar in meaning.

The Q sort was then administered to 48 urban dwellers from the Valley, including farmers, businessmen, housewives, public servants and students, as well as the unemployed. The respondents had an average age of 49 years and a median age of 52. The youngest participant was 18 years old while the oldest was 83.

The research was carried out in the city of Patan in May 2016. Participants ranked the statements using the distribution grid, which constrained the number of statements they could agree or disagree with (Asquer, 2014). One clarification of the method needs to be made in relation to the choice of interviewees.

The Q methodology does not strive for generalisability to the larger population (van Exel et al., 2015; Eijk, Steen and Verschuere, 2017) and hence precludes the need for randomised sampling. Instead, the research selects the sample on the premise of being illustrative of an assemblage of many or most viewpoints on an issue (Watts and Stenner, 2005; Lehrer and Sneegas, 2017). In this light, it is the *viewpoints* rather than the demographic background of the sample that is pertinent to the purpose of the Q methodology.

The Q methodology is, therefore, centred on providing a holistic definition of the "broad 'shape' of opinions" and ascertaining the 'substance' of these opinions on an issue (Metag et al., 2016; Beckham Hooff et al., 2017; Lehrer and Sneegas, 2017).

Respondents are generally selected through purposive sampling methods (Ormerod, 2017). This may comprise gathering respondents from the researcher's contacts through prior work in the region (Lehrer and Sneegas, 2017), 'small talk' with potential respondents in the context of study, leading to an invitation to complete the Q-sort (Beckham Hooff et al., 2017), as well as online and postal approaches

(Kelly, Moher and Clifford, 2016). In this study the respondents were selected using the first two methods.

Of the 48, four had missing data points; the remaining 44 were then analysed with statistical software (PQMethod) to reveal correlated sets of statements that create groups of viewpoints (Corr, 2001). Factors – 'worldviews' held by participants (Asquer, 2014) – are interpreted by looking for patterns and comparing the positioning of statements in each factor.

Of the 44 respondents, 5 clustered on factor 1, 3 on factor 2, 2 on factor 3, 2 on factor 4, 3 on factor 5, 5 on factor 6, 2 on factor 7 and 3 on factor 8. Factor loadings with eigenvalues greater than 1.00 were considered significant (McKeown and Thomas, 1988). A total of eight factors had eigenvalues greater than 1.00 (6.1690, 3.3016, 3.2099, 2.8823, 2.4977, 2.1820, 1.9435, & 1.8255). The full list of these factors is in Appendix 1.

ANALYSIS

In this narrative analysis we see three key themes: first, that there is a time element to the problem (that the problem is getting worse and the current situation is unsustainable). Second, despite high costs people still perceive themselves to be coping, due in significant part to the large informal water-vending market. Third, that there is a narrative thread acknowledging that the long-term (and perhaps ideal) solution lies with the government, but that it lacks the capacity to implement it.

Theme 1: Time

Factor 5: The current pattern of consumption is unsustainable

Factor 6: The problem of water supply has worsened over time

As has been outlined in the case, the Melamchi project has been delayed for decades. Given that water is essential to life, it is clear that the people would have noticed the direct increase in costs over time as well as the qualitative degradation of the water. For example, statements such as those below witness the decreasing availability of water:

These days almost all rivers of the valley, including Bagmati, are as good as dead (1).

The amount of water from the spouts (*dhunge dhara*) was greater in the past (8).

Relating to statement 8, many of these public spouts have in fact dried up, as noted by the researchers for this project during their fieldwork. While some may attribute the degradation to climatic conditions (Statement 15) there is a clear sense that groundwater extraction (Statement 28) and the use of this water by private vendors (Statement 23) are contributing to the problem.

Behaviour has also changed over time, but there is a rising sense that such coping methods are onerous and cannot be sustained over the long term.

A lot of people are taking desperate measures by spending more time each day to fetch water from far-off rivers (2).

We will soon have to walk all the way down to the river in the valley to get water (3).

These changing habits feed into the second theme of the perceived coping costs associated with the delay in the water utility project.

Theme 2: Coping costs

Factor 1: Poor water supply exacts a high economic cost

Factor 2: Both ecology and human behaviour are changing in response to water use

Factor 3: Coping with water shortages is a part of daily life

The theme of the costs of delay shows that people are aware of both the economic and ecological price. Such costs include buying water from tankers (4), paying a high price (7) and suffering economic hardship from the lack of water for agricultural activities (35). But the low valence of the emotions shows that rather than agitating for a situation where they can hold the government or the private utility responsible the public appear to be adapting to, or coping with, a bad situation.

This is facilitated in part by the creation of a large informal vending market, which supplies a reliable and readily available source of water. Since 2004 the private water vending industry has grown at an accelerated rate. The number of tankers operating in Kathmandu Valley increased from 60-70 in 2004 to 160 in 2004. Over the next four years it increased by another 500 tankers. In 2014 210 firms were engaged in water vending, together operating about 700 water tankers (Gurung et al., n.d.). Another estimation of the number of tankers is provided by Dongol (2012) With a water demand of 320 MLD an estimated 750 tankers were in operation, with the commercial system estimated to meet 8% of the peak and 4.8% of the off-peak seasonal demand

The tankers bring water from surrounding rural areas (mostly community resources) and sometimes even purchase water from farmers (from their private tube-wells) (Bhattarai et al., 2005).

Due to falling water tables in Kathmandu consumers have also begun to buy water from private suppliers, with the resultant high demand leading to an increase in water prices (Grad, 2016). The groundwater market is estimated to be worth US\$8 million per year despite being informal in nature with over two-thirds of transactions taking place in cash and without any written contracts (Pandey et al., n.d.). No legal or institutional mechanisms exist that regulate the price, quantity or quality of water being vended (Moench, 2001), an institutional vacuum which will impact the performance of the water utility when it is completed (Gurung et al., 2017; Araral, 2010).

This second theme confirms previous findings on the paradox of resilience as well as shedding light on the particular experience in Kathmandu.

Theme 3: Government lacks capacity

Factor 4: The government lacks the capacity to provide safe water

Factor 7: There are problems with the water utility company in Kathmandu

Factor 8: Kathmandu's water problems need large-scale solutions

Factors 4 and 8 illustrate why the narratives continue to be low valence. The respondents chose to 'agree strongly' with the following statements:

The people have no hope in the Melamchi project (41).

The inefficiency of wastewater treatment plants built by the government causes the mixing of sewage with river water (38).

We will soon have to walk all the way down to the river in the valley to get water (3).

It is not a luxury to think about water conservation in Kathmandu. It is now a necessity (12).

The Melamchi project is a long-term solution for the water problems in Kathmandu (31).

This is a complex narrative. While the public finds the current situation unacceptable and considers itself out of options there is also recognition that the government is unable to tackle the problem. This is seen in Factor 7 with statements such as "whatever technical knowledge we have about our water sources is not sufficient" (39), "Kathmandu Upatyaka Khanepani Limited (KUKL) has not been able to carry out any of its development activities due to the lack of money" (37) and "The real reason the

water from Melamchi has yet to come is corruption" (29). Of these only the last has a negative emotional signature relating to the government.

The interaction of three themes explains the current enduring inaction (Table 1). First, although coping costs clearly exist, and there is recognition that the problem is getting worse, there is also an acknowledgement that the government has little capacity to effect change on its own. The infusion of private sector funds and expertise does not appear to help matters. Although the people are clearly not satisfied with the status quo they appear to have little emotional reaction to it. Perhaps this is due to the fact that although the public may be dissatisfied, they are unconvinced that a new situation would be preferable given the perceived capacities of the government.

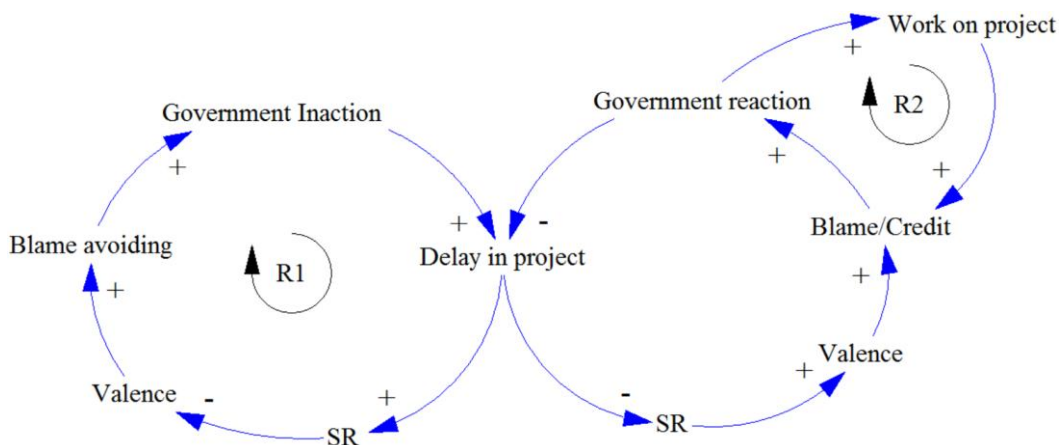
The descent into inaction (shown by the reinforcing cycle of R1 in Figure 2) is, of course, by no means certain, and the theme of urgency is one way in which this cycle could break. The narratives in Factors 5 and 6 underline that the current pattern of consumption is unsustainable and the status quo is unacceptable. However, there is low valence attached to these narratives; little blame is laid at the government's door.

The case of Kathmandu therefore reveals the dynamics behind the paradox of social resilience – that is, how a high public need can be juxtaposed against low emotional reaction. In the analysis of the narrative we find that the low negative valence is due partly to the existence of the informal water vending market and a relatively high social resilience. Objectively (i.e. economically), this presents a high coping cost for the consumer; however, it also gives a sense of 'coping' to the end user and hence the salience of the issue (R1 in Figure 2).

If the coping costs are perceived to be too high, the perceived ability to cope is likely to decrease, and the cycle on the right may begin, which could lead to more intensive government action (R2).

While the government's current inaction is defensible in terms of a lack of capacity there is also a narrative strand identifying the government utility as a key actor in changing the status quo, which has been perceived to be unsustainable in the long run. Together with the first theme this provides a way of breaking the cycle of inaction in Kathmandu (R2 in Figure 2).

Figure 2. Paradox of Social Resilience (SR).



CONCLUSION

This study is premised on the idea that public policies have "underlying patterns and logics" (Sidney, 2007: 84) rather than being mere outcomes in a political process. The purposive character of policy design that we find in Models 1 and 2 may not appear as strongly in Model 3, that is, in instances where policies are not designed, but there remains nonetheless an underlying logic to policies even when

governments have low intention to design. Further, while inaction appears at both ends of the valence spectrum (i.e. in both high and low negative valence situations) the dynamics of both are substantially different.

We present this as a Model 3 of policy design (Figure 1) – a model to explain inaction, adding to the current, dominant Models 1 and 2, which explain policy action. Current research imputes to non-design a form of 'irrationality' given that decision-making here appears less instrumental and more of a satisficing behaviour. This paper reveals the narrative logic behind non-design and how it was the outcome of the blame-averse nature of governments interacting with the self-perception of resilience, which in turn is engendered by the coping mechanisms of the community. This does not mean that the coping costs are low; indeed, as we have seen in Kathmandu, these costs can be substantial and probably unsustainable.

Nonetheless, the low valence persists. The most recent incident occurred as the current Minister for Water Supply and Sanitation announced in September 2017 that the project would be completed in December 2017 (OnlineKhabar, 2017). Less than a month later the Melamchi Water Supply Development Board told the parliamentary Development Committee that it no longer had a specific deadline but would get it completed by mid-March 2018. The disappointing news of yet another delay did not lead to public protests or large demonstrations.

In situations where there are intense negative emotions, the blame-averse motivation of governments is very high and could be sufficient to prevent action. In low negative valence situations, however, blame-aversion is likely to be coupled with the some perception of low payoffs for action. In this paper we argue that the government's perception of low payoffs is due to the low negative valence felt by the population, which in turn is due to a self-perception of being able to cope with the situation.

This paper however does not show us enough about how the chain of causation runs. What, for example, is the relationship between the low valence of the issue and the intentionality of the government – while we know they conjoin and interact, we do not know if one is more likely to precede the other. What is the relationship between resources, mechanisms, the emotional valence of issues and actual behaviour? More theorising is clearly required, although some scholars in policy design have already made a start (Howlett, 2018).

At the moment however, one clear implication of this study is that if we want to overcome inaction caused by low negative valence, we need to intensify the emotional quality of the issue. This is a clear area for future research, not least of which includes hypothesising about the intensity required for policy reaction. Current research suggests that both information dissemination and policy agents are important.

Relating to the first, Shaw et al. (2014) has argued that cognitive mistakes, such as overestimating one's ability to respond to a disaster, lead to a misperception of resilience. Such cognitive adjustments depend in part on accurate information. This is especially important for developing countries, where policy under-reaction is likely to have a more severe cost to the public and the paradox of social resilience is more likely to operate (developing countries tend to be less able to help their people, who then have to find ways to cope). The public's ability to cope feeds into the bureaucratic incentive towards inaction. As seen in the case of Melamchi, an appreciation of the true costs of coping is important.

The role of policy agents is equally important. Deborah Stone (1989) argues that politicians can construct reality in a way that is sympathetic to their interests and policy goals (what she calls the 'policy paradox', in which the same 'facts' can mean different things under different narrative lenses). Such construction of 'causal stories' resonates with the role of agents painted by Cox and Béland (2013: 309), who argue that those with 'intuitive sense' and 'skill' engage in emotional entrepreneurship to effect change. Valence therefore affects the supply of policies by affecting the construction of

narratives, which Blyth (2002: 34) argues are "cognitive devices" to weave ideas together into a plan for action.

Ideas cause change because they are closely linked to interests and represent a 'cluster' concept that includes beliefs and desires. Hence, policy agents become crucial not just in their role as constructors of causal stories but as purveyors of those stories, with varying degrees of emotional intensity. The need to understand how emotional intensity can be affected becomes even more urgent given the impending catastrophic consequences of policy under-reaction in the face of climate change.

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APPENDIX

An average of eight statements are strongly agreed with. For brevity, only five are shown.

Appendix 1: Factor Scores and raw statements

Factor Scores for Factor 1: Poor water supply exacts a high economic cost.

No.	Statement	ID of statement	1	2	3	4	5	6	7	8
4	We depend on tankers for water.	4	2	2	-1	0	0	1	0	2
6	A large number of people in Kathmandu Valley do not have access to water.	6	2	2	-1	-1	1	-1	0	2
7	I do not have any choice but to pay exorbitant rates to suppliers as I am not in a position to wait such a long time for water.	7	2	2	-1	-2	0	0	-2	1
35	Lack of water destroyed all of my crops.	35	2	1	0	1	1	2	1	-1
42	The rich people can buy water but it is difficult for the rest.	42	2	1	1	-1	-1	-1	-1	-1

Factor Scores for Factor 2: Changing ecological patterns have influenced human behaviour.

No.	Statement	ID of statement	1	2	3	4	5	6	7	8
3	We will soon have to walk all the way down to the river in the valley to get water.	3	0	2	-1	2	2	1	2	2
5	The deteriorating quality of river water has even caused frequent cases of waterborne and skin diseases.	5	0	2	-2	-1	0	1	-1	1
1	These days almost all rivers of the valley, including Bagmati, are as good as dead.	1	1	2	-2	1	2	2	0	-1
10	As drinking water pipes are very old	10	1	2	0	1	2	2	0	2

	they are prone to leaks and therefore lead to wastage of water.									
8	The amount of water from the spouts (<i>dhunge dhara</i>) was greater in the past.	8	2	2	0	0	-2	2	0	2

Factor Scores for Factor 3: Coping with water shortages is a part of daily life.

No.	Statement	ID of statement	1	2	3	4	5	6	7	8
14	The increase in population in Kathmandu has resulted in water shortage.	14	1	-2	2	-1	1	2	1	1
17	People can only store a certain amount of rainwater and the rest is unused because once the rainwater reaches the polluted river it is useless.	17	1	-2	2	0	0	0	0	1
31	The Melamchi project is a long-term solution for the water problems in Kathmandu.	31	-1	-1	2	1	-2	-1	2	2
13	Even if water comes, some households with powerful pumps will suck all the water, leaving nothing for other households.	13	0	0	2	-1	1	0	-1	1
21	The quality of drinking water in the Kathmandu Valley is becoming a serious public health issue.	21	1	0	2	1	1	-1	0	0

Factor Scores for Factor 4: The Government lacks the capacity to provide safe water.

No.	Statement	ID of statement	1	2	3	4	5	6	7	8
16	Consumers have long complained about the quality of water provided by the private tankers.	16	1	-2	-2	2	-1	-2	-1	1
41	The people have no hope in the Melamchi project.	41	0	-1	-2	2	0	-1	1	-1
38	The inefficiency of wastewater treatment plants built by the government causes the mixing of sewage with river water.	38	1	0	-1	2	-1	0	1	0
3	We will soon have to walk all the way down to the river in the valley to get water.	3	0	2	-1	2	2	1	2	2
47	The surface water is polluted by industrial and domestic waste.	47	-1	1	0	2	-2	0	-2	0
36	Hotels in Kathmandu Valley are drawing water in a very unsustainable manner.	36	0	-1	1	2	0	0	1	-1

12	It is not a luxury to think about water conservation in Kathmandu. It is now a necessity.	12	2	-1	1	2	2	2	-1	2
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Factor Scores for Factor 5: The current pattern of consumption is unsustainable.

No.	Statement	ID of statement	1	2	3	4	5	6	7	8
48	Even before the 2015 earthquake water was quite scarce.	48	-1	1	2	-1	2	0	0	-1
28	The government has to discourage groundwater extraction to save the historical water service providers (<i>dhunge dhara</i>).	28	-2	-2	0	0	2	1	-1	0
1	These days almost all rivers of the valley, including Bagmati, are as good as dead.	1	1	2	-2	1	2	2	0	-1
23	Private companies are extracting water and putting entire communities at risk.	23	-1	0	1	1	2	-1	0	0
3	We will soon have to walk all the way down to the river in the valley to get water.	3	0	2	-1	2	2	1	2	2

Factor Scores for Factor 6: The problem of water supply has worsened over time.

No	Statement	ID of statement	1	2	3	4	5	6	7	8
8	The amount of water from the spouts (<i>dhunge dhara</i>) was greater in the past.	8	2	2	0	0	-2	2	0	2
15	Erratic rainfall in recent years has resulted in water shortage.	15	-2	-2	-2	0	-1	2	-1	1
2	A lot of people are taking desperate measures by spending more time each day to fetch water from far-off rivers.	2	-2	-1	-2	-1	1	2	-1	2
14	The increase in population in Kathmandu has resulted in water shortage.	14	1	-2	2	-1	1	2	1	1
1	These days almost all rivers of the valley, including Bagmati, are as good as dead.	1	1	2	-2	1	2	2	0	-1

Factor Scores for Factor 7: There are problems with the water utility company in KMD.

No	Statement	ID of statement	1	2	3	4	5	6	7	8
30	Kathmandu Upatyaka Khanepani Limited (KUKL) is facing difficulty operating tube wells to supply safe water to households in the valley.	30	0	0	0	-1	-2	-2	2	-1
31	The Melamchi project is a long-term solution for the water problems in Kathmandu.	31	-1	-1	2	1	-2	-1	2	2
39	Whatever technical knowledge we have about our water sources is not sufficient.	39	-1	0	-2	1	-1	-1	2	-1
37	Kathmandu Upatyaka Khanepani Limited (KUKL) has not been able to carry out any of its development activities due to a lack of money.	37	-1	0	-1	-2	0	-1	2	-2
29	The real reason the water from Melamchi has yet to come is corruption.	29	-1	0	1	1	1	1	2	0

Factor Scores for Factor 8: Kathmandu's water problems need large-scale solutions.

No	Statement	ID of statement	1	2	3	4	5	6	7	8
2	A lot of people are taking desperate measures by spending more time each day to fetch water from far-off rivers.	2	-2	-1	-2	-1	1	2	-1	2
12	It is not a luxury to think about water conservation in Kathmandu. It is now a necessity.	12	2	-1	1	2	2	2	-1	2
6	A large number of people in Kathmandu Valley do not have access to water.	6	2	2	-1	-1	1	-1	0	2
10	As drinking water pipes are very old, they are prone to leaks and therefore lead to wastage of water.	10	1	2	0	1	2	2	0	2
31	The Melamchi project is a long-term solution for the water problems in Kathmandu.	31	-1	-1	2	1	-2	-1	2	2

Appendix 2: Standard Errors for Differences in Normalised Factor Scores.

Factors	1	2	3	4	5	6	7	8
1	0.343	0.368	0.368	0.412	0.368	0.326	0.412	0.326
2	0.368	0.392	0.392	0.434	0.392	0.353	0.434	0.353
3	0.368	0.392	0.392	0.434	0.392	0.353	0.434	0.353
4	0.412	0.434	0.434	0.471	0.434	0.398	0.471	0.398
5	0.368	0.392	0.392	0.434	0.392	0.353	0.434	0.353
6	0.326	0.353	0.353	0.398	0.353	0.309	0.398	0.309
7	0.412	0.434	0.434	0.471	0.434	0.398	0.471	0.398
8	0.326	0.353	0.353	0.398	0.353	0.309	0.398	0.309

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