Why do some behaviours change more easily than others? Water-use behaviour interventions in rural Nepal

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Water-sector development is inevitably based on changes in people's behaviour. We analyse why some types of domestic water-use behaviours change more easily than others. Our case study is a water supply and sanitation intervention in remote and rural Nepal. We found that collective opportunities, degree of individual freedom, and individual incentives influenced the ease of the promoted behaviour changes. The enhanced individual opportunities, incentives, and collective tolerance enabled behaviour changes that were regarded as beneficial by the people themselves, whereas the existing social traditions in our case-study context often restricted those changes. Often, the individual agency and the collective traditions confronted one another. We suggest that this study can provide a design for predicting possible opportunities and challenges regarding behaviour changes in field operations, and for enhancing joint operation of individual and collective capabilities at local levels in the development intervention context.

Keywords: behaviour change, capability approach, capabilities, gender equality, Nepal, water-use intervention

Introduction

The Greek philosopher Aristotle remarked over two thousand years ago that man is by nature a social animal. This idea, presented in the first book of a work called *Politics*, demonstrated how human behaviour must be, in several interconnected ways, socially constructed. Today, we know that family customs and mutual traditions as well as cultural influences have enabled and created most variable sets of behaviours and customs throughout human history. However, behaviour can be seen as not only collectively constructed but also as an individual act, steered primarily by personal priorities and agency.

Changes in people's individual and collective behaviour patterns are the foremost way to direct change towards desired outcomes in the context of development collaboration in the water sector. Simply providing technologies, such as taps, toilets,

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or new cultivation methods, cannot be assumed to result in uptake and positive outcomes unless appropriate steps are taken to change people's behaviours. These changes often require the adoption of new customs that replace the old ones. In that sense, the art of managing such external development interventions is in many ways based on preferred changes in people's behaviours at both individual and collective levels. Our study utilizes the capability approach (e.g. Sen, 1980, 1999, 2005) to ponder the nature of the challenges encountered by actors whose aim is to change water use-related behaviours at the local level in a development collaboration context. Our case study considers a water project that improves institutional water resources management and use, supervises scheme construction, and promotes various water use-related behaviour changes in rural Far West Nepal, affecting both collective and individual spheres of water-related behaviours. Our research question is simply: 'Why do some types of behaviour change more easily than others?'

We look for the answer from the twofold framing between individual and collective behaviours. The variety of different behaviours and traditions regarding domestic water use in the case-study locality allowed us to conduct a precise analysis on the individual and collective opportunities, freedoms, incentives, and barriers of the promoted behaviour changes. In the study, we compare domestic water-use behaviours involving drinking-water supply, sanitation and hygiene, and small-scale irrigation for home gardening, with human urine use as fertilizer in home gardening, and with the influence of a religious tradition called *chhaupadi* that shapes the lives and water-use behaviours of women in our case-study locality.

Another question that emerges from this is whether the behaviour change interventions are justifiable as processes in the first place as they interfere with the local cultural and behavioural settings. Policies and projects are not neutral and this is the risk of all development aid interventions. We address this tension further in the discussion.

Case-study context

Rural village water resources management project

Our case study regards the impacts of the operation of a water project, namely the Rural Village Water Resources Management Project (RVWRMP), on domestic water use and sanitation behaviours. The project operates in the Far and Mid West Development Regions of Nepal, among the most remote, food-insecure and water-scarce villages in the country, including our case-study district Achham (see Figure 1). The scope of RVWRMP is broadly defined as water resources development. This includes water, sanitation and hygiene (WASH), micro-hydropower, and community-managed irrigation systems, combined with livelihoods development and micro-financing (RVWRMP, 2011; Rautanen et al., 2014.). The operating principles of RVWRMP emphasize working within local governance, transparency, accountability, community management and participation, a human rights-based approach, and gender equality and social inclusion (see RVWRMP, 2015). The overall objective of RVWRMP is 'institutionalised capacity at local and regional levels to sustain and
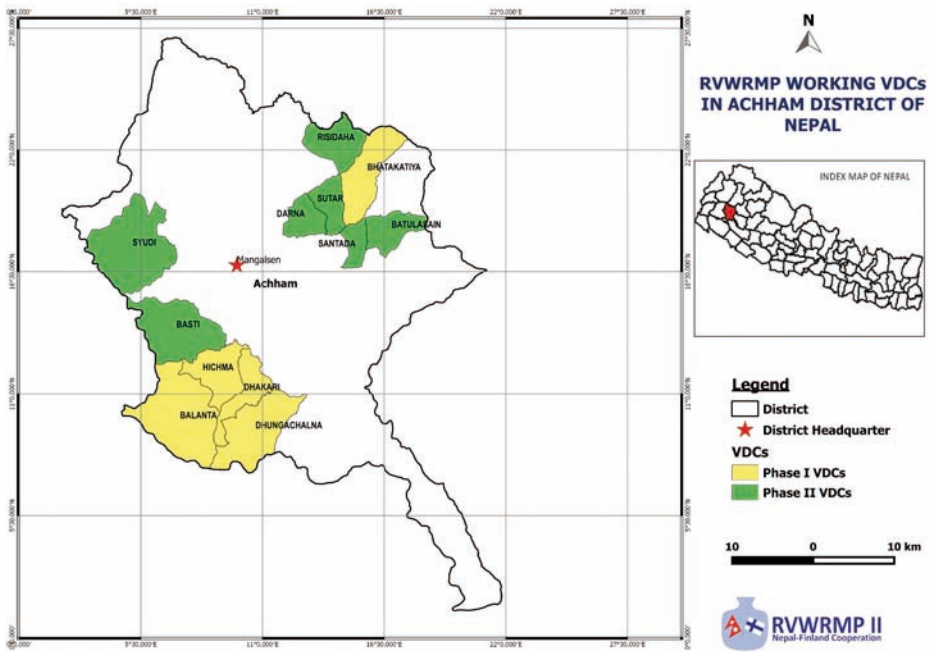
Figure 1 Map of the case-study district Achham
Source: provided with permission of RVWRMP II.

continuously improve enhanced quality of life, better environmental conditions and increased opportunities in rural livelihoods in the Project area' (RVWRMP, 2011: 27). The purpose of the ongoing Phase II of RVWRMP is 'to achieve improved well-being and reduced poverty in Project VDCs [Village Development Committees]' (RVWRMP, 2011: 28).

Over the last decade Nepal has put in place a range of national policies, strategies, and campaigns within the WASH sector, many of which include behaviour and cultural change elements. The National Water Plan (2002–17) sets the target for providing access to water supply and sanitation for 100 per cent of the population by 2017. The Rural Water Supply and Sanitation Sector Policy (2004) stipulates that all water projects must aim for universal sanitation access. The National Sanitation and Hygiene Master Plan (2011) guides WASH projects on appropriate means to introduce 100 per cent sanitation coverage via the Open Defecation Free campaign. The Joint Sector Review in 2014 proposed a harmonized approach by all partners (government, donors, non-government organizations, etc.) for a One WASH plan. In addition, the United Nations passed a resolution on the human right to safe drinking water and sanitation in 2010 (and various subsequent resolutions), and this was ratified by Nepal in 2010 (MoUD, 2014; RVWRMP, 2015). These policies and plans set the stage for behaviour change on a grand scale.

Suitability of Achham District as our case-study locality

We considered Achham most suitable for our case-study location for two reasons. Firstly, Achham District is located in the most water-scarce, poorest, and most remote region of the country. Hence, no organized water-supply infrastructure and sanitation facilities had been built in many localities until the recent water-sector interventions. This highlights the prominence of the water use-related changes in the area and sharpens the contrast between the behaviour intervention and the existing customs and traditions.

Secondly, RVWRMP served as a good target for our study as it has operated in Achham since 2006. The project has supported water-supply schemes, hygiene and sanitation, home gardening, micro-hydropower development, irrigation, agricultural development, rural livelihoods development, multiple-use water services, and local institutional capacity building in cooperation with the local administration. Regarding behaviour change promotion in Achham, RVWRMP has organized trainings, workshops, awareness-raising campaigns, interaction programmes, rallies, capacity-building programmes, exposure visits, door-to-door visits, and video shows in cooperation with different government and non-government organizations and stakeholders. One of the most visible results of these activities was the declaration of the district as open defecation free on 8 May 2013. Therefore, the project has clearly promoted and achieved many changes in local behaviours that we have been able to study closer.

Background for the analysis: chhaupadi tradition and human urine use as fertilizer

A religious, cultural tradition called *chhaupadi* gives a special character to the water use-related behaviours in Achham (though this tradition is also present in other districts in the Far West). As per the tradition, women are considered impure during their menstruation (*chhau*) and hence they are prohibited from several types of water use and from participating in family activities, such as entering the house, cooking, touching other people, eating nutritious foods and dairy products, using water taps, using the toilet, and maintaining personal sanitation (RVWRMP, 2008). Usually, women are kept outside their homes in meagre, unfurnished huts or livestock stables for around six days during their menstruation or up to 11 days during and after childbirth (RVWRMP, 2008). One national-level directive, which has not been as well implemented as the WASH-related policies, is the *Chhaupadi* Directive 2064 B.S. (2007), which supports eradication of menstruation-linked discrimination and practices.

RVWRMP has campaigned to eradicate the most serious manifestations of *chhaupadi* tradition (RVWRMP, 2015). In Achham, the villages of Dhakari, Balata, Hichma, Dhundachalna, Sutar, and Bhatakatya were declared *chhau*-hut-free during May and June 2014. However, the *chhaupadi* behaviours continue in many of the villages despite all the activities and declarations. What especially connects *chhaupadi* with water use are the prohibitions on use of drinking water, using the toilet, and cooking, and the restrictions regarding the maintenance of personal

hygiene and health. Moreover, the practice strongly controverts the principles of the human rights-based approach and gender equality and social inclusion guide-lines of the project (see RVWRMP, 2015). We could rightly ask whether the *chhaupadi* localities are really open defecation free on the basis that a significant percentage of inhabitants lack access to toilets and basic hygiene during their menstruation.

It is interesting that earlier caste discrimination, which was also considered to be ordained by the gods, has considerably decreased (though not entirely) nowadays, seemingly through a combination of legal and societal pressures, and increased mixing of castes (and to some extent project-led behaviour change). Yet, *chhaupadi* practices prove more difficult to change, perhaps as they are tied to more profound taboos and gender roles, and have most negative impacts on women (RVWRMP, 2008, 2015; Crawford et al., 2014).

Another water use-related behaviour that we studied and which requires some background information is the use of human urine as a fertilizer in the communities, promoted by the livelihoods component of the project. Commercial fertilizer is rarely available in these remote hill areas, leading to limitations in agricultural production from the poor soils. On the other hand, human urine is free, easily available and has considerable benefits for production (Richert et al., 2010). Cow's urine has traditionally been used in Hindu culture as a purification substance. Human urine has been considered unclean, however, and some taboos regarding urine use exist in the area, restricting urine use in some cases. On the other hand, the use of urine has substantially increased in the area since the needed education and adequate technology was provided (Chand and White, 2015).

Methodology

Analytical framework

We apply the capability approach (Sen 1980, 1999, 2004a,b, 2005) as the framework for our analysis by considering changes in people's *capabilities* due to the behaviour change intervention (for clarity, the approach was not utilized by the water project as such, but rather by the researchers as a means of analysing the project work). In general, the approach sees individual capabilities as freedoms and opportunities that one has reason to value. Capabilities can be considered as both the means and ends of 'development' in the sense that capabilities are both opportunities that have value for people *per se,* but they are also instrumental processes that enable opportunities (Sen, 1999). Capabilities are conceived as well-being freedoms, whereas well-being achieve-ments are comprehended within the approach as well-being functionings (Robeyns, 2011). The approach has provided the foundations of the human development paradigm (Fukuda-Parr, 2003; Robeyns, 2003; Fukuda-Parr and Kumar, 2009). It partially builds upon and partially opposes the earlier related concepts about 'primary goods' (Rawls, 1971, 2001) and 'resources' (Dworkin, 1981, 2000), for instance.

Regarding development project contexts, the approach has been used by an increasing number of scholars (see Frediani et al., 2014; Ibrahim and Tiwari, 2014). In the community development context, the approach has recently been applied

to time use analysis (Walker et al., 2014), opportunities evaluation (Biggeri and Ferrannini, 2014), and collective capability and agency-oriented studies (Ibrahim and Tiwari, 2014; Tiwari, 2014), for instance. Many scholars have also addressed and discussed capabilities in the context of collective settings and social behaviours (Stewart, 2005; Ibrahim, 2006; Smith and Seward, 2009).

We, too, apply the approach to community settings, involving individual, collective, and relational spheres of capabilities and agency. Individual agency is defined as 'what a person is free to do and to achieve in pursuit of whatever goals or values she regards important' (Sen, 1985: 206). Furthermore, Tiwari (2014) sees agency as the ability to steer the use of individual or collective capabilities towards valued directions. He understands the collective agency as 'the ability of the community to act on behalf of what the community values and has reason to value' (Tiwari, 2014: 42). As such, the collective agency is seen as a social extension of individual agency. Additionally, Tiwari acknowledges the existence of 'relational agency', which is 'the opportunity and resource structure that can be accessed by the individuals and the community' (Tiwari, 2014: 42).

The three agencies are all represented in our case, too. Relational agency is naturally represented by the water project as the behaviour-change intervener, whereas collective agency is represented by local traditions and customs. In our framework, however, we contrast Tiwari's ideas by emphasizing separate but interlinked individual, collective, and relational agencies, instead of embedded spheres of agencies (Figure 2).

Data collection

Our field survey comprised eight group interactions with community people and several other meetings with local people and project personnel. They formed the main basis for the analysis (for more information about the data collection, see Table A in the Appendix). The background experience for the study comes from long-term involvement within the Nepalese water-sector development by the researchers and project personnel. The data collection for this study was executed in a few villages (which are administrative divisions of a district) of Achham District: Dhakari, Hichma, Dhungachalna, and Bhatakatya. The main discussion topics, presented in Table 1, were addressed in irregular order according to the trajectory of the session. We used triangulation to check the reliability and validity standpoints of the methodology and data collection, further discussed in the Appendix.

Results and interpretations

We demonstrate in this section that success in the implementation of the desired water-use behaviour changes largely depended on three features:

1. presence of individual choice about participation in collective behaviours;
2. degree of *personal incentive* to change behaviours; and
3. degree of congruence of promoted behaviour changes within the existing collective behaviours (*social fit*).
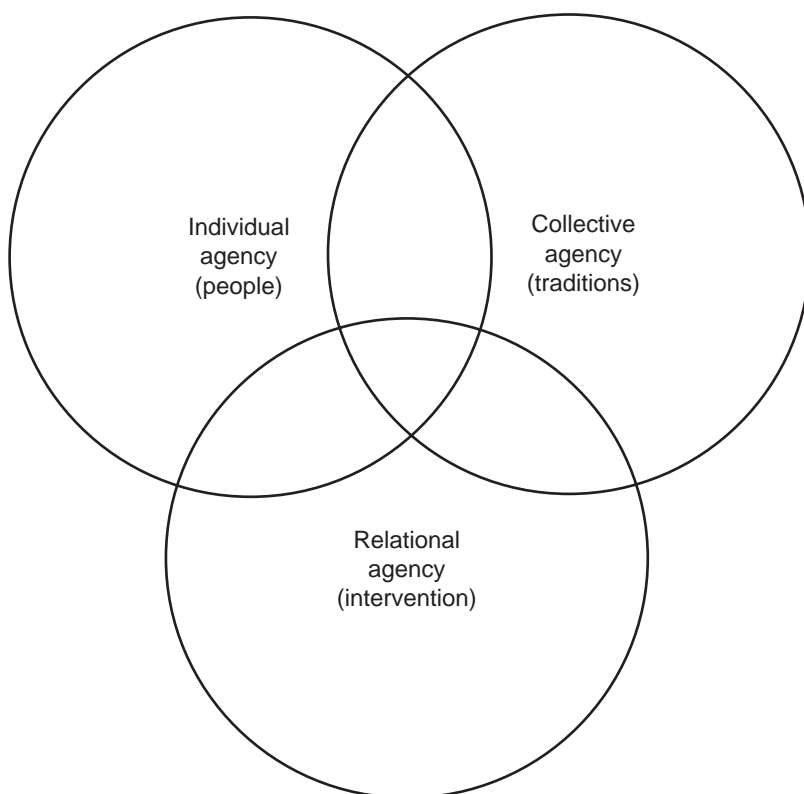
Figure 2 Analytical framework of the three agencies

Table 1 Main discussion topics of interactions and meetings

Domestic water-use behaviour (and related home-gardening practices)	Status of drinking water supply
	Handwashing behaviour patterns and knowledge
	Possibility for the maintenance of personal hygiene
	Cleanliness of toilets
	Possibility to do home gardening
	Availability of new plants for cultivation and knowledge of cultivation methods
	Availability of healthy and nutritious food
	Dietary improvements
	Use of human urine as a fertilizer in home gardening
Chhaupadi *behaviour*	Existence and features of *chhau* huts
	Possibility to stay inside own home during menstruation
	Possibility to use tap and toilet, and maintain personal hygiene during menstruation
	Possibility to cook in the kitchen during menstruation
	Access to healthy and nutritious food during menstruation

Table 2 Observed status of behaviour changes in the surveyed communities of Achham

Locations of interactions with locals	Domestic water-use behaviour	Chhaupadi behaviour
Galbal, Dhungachalna-7	Improved	Significant decrease
Nandapur, Dhakari-4	Improved	Significant decrease
Daaddanda, Dhakari-5	Improved	No decrease
Cheutekhale, Hichma-9	Improved	Significant decrease
Sain Bazaar, Dhakari-3	Improved	Significant decrease
Dhangneta Chowk, Hichma-6	Improved	Modest decrease
Sain Bazaar, Dhakari-3	Improved	Modest decrease
Bai Pudu Danda, Bhatakatya-5	Improved	Almost abandoned

Note: location includes the name of the locality, name of the village, and ward number

We begin with a glimpse of the situation regarding the behaviour interventions in Achham. Table 2 summarizes the impacts of the behaviour-change efforts and serves as a background for the other results and interpretations. The main focus of the research remains on examining how and why behaviour changes take place rather than to what extent.

From the table, we see that the basic domestic water-use behaviour changes were successfully achieved throughout the district, whereas the status of *chhaupadi* behaviour change varied from almost total to almost non-existent change. This is probably explained by the fact that the water project has the expertise and experience in promoting the basic water use-related behaviour changes and participatory activities in the field so that the most basic changes come to be successful. However, we analysed the reasons for the differences more closely by classifying them into easy, semi-challenging, and challenging types of change.

Easy changes: provision of capabilities that accumulated over the existing customs

As mentioned, the observed water- and sanitation-related behaviour changes were quite successful and similar throughout the district as the project had long experience of implementing such routine behaviour changes and technology in rural localities. The changes covered handwashing, sanitation, the adoption of new home-gardening and farming practices, and the maintenance of toilets, sanitation, and hygiene. We classified them as easy changes.

Regarding individual choice (feature 1), the locals clearly had a significant degree of freedom in choosing whether to contribute to the establishment of local water institutions and be involved, though the benefits would accrue to the participants. Concerning the second feature, we also observed a strong incentive for participation as the locals willingly got involved in the activities, adopted the new capabilities, and turned them into new water-related behaviours. The changes also had a good social fit (feature 3) because the received new capabilities accumulated over the existing collective customs without modifying the existing traditions significantly.

It is notable that these benefits accrued to both men and women, increasing the ease of behaviour changes throughout the community.

For instance, in Galbal (Dhungachalna-7), Nandapur (Dhakari-4), Cheutekhale (Hichma-9), and Bai Pudu Danda (Bhatakatya-5), the water-supply schemes, constructed by the locals and largely funded by the water project, enabled improved access to water for drinking, sanitation, and home gardening. Toilets (funded by the householders themselves) provided facilities for maintaining hygiene. The received education enabled enhanced hygiene and sanitation practices, and new farming methods. These changes were adopted freely without difficulty as the people saw the benefits and the changes were socially a close fit.

In Bhatakatya, for instance, the project successfully guided the locals on handwashing using soap or ash, stopping open defecation altogether, and how to use the toilet instead. Education on farming enabled vegetable farming (which was rare in many localities before interventions) and irrigation with the improved water supply and waste-water facilities in the home gardens. This allowed improved diets and better nourishment for the locals, as well as profits from vegetable selling.

Semi-challenging changes: provision of capabilities that required changing singular taboos

We encountered one interesting discussion theme that resided between the easy and challenging types of behaviour change and hence we addressed it separately; that is, human urine as a fertilizer in the communities, promoted by the livelihoods component of the project. We knew from earlier experiences and from the discussions with project personnel that taboos regarding urine use existed in the area which restricted urine use in some cases. On the other hand, we observed that the use of urine had substantially increased in the area after the needed education and adequate technology had been provided.

It is again important to note that in this case people had a significant degree of freedom to choose their behaviour about urine use (feature 1) as participation in trainings and buying the equipment was totally voluntary. The people also had a production incentive to choose the new way of using urine (feature 2) although the impact of taboos clearly decreased its potential utilization as it had not spread through the community. Related to that, the congruence with local customs varied a lot. New behaviours sometimes challenged existing traditional beliefs (dominant collective agency) and led to the adoption of this new behaviour (feature 3), but often we heard that the people had not adopted new behaviours and some presented explanations for that. Again, the behaviour change benefited men and women equally, obviously making the adoption of the new behaviour easier throughout the community.

Challenging change: provision of capabilities that required changing existing customs

The *chhaupadi* behaviour changes were much more complex than the changes described above. Still, RVWRMP promoted the behaviour change for reasons of safety, health,

gender equality and human rights, and legal reasons. The *chhaupadi*-related behaviour changes produced resistance in the communities (feature 3) as they truly challenged the existing traditional institutions (reflecting the prevalent collective agency in the community). The women had individual incentive (feature 2) to stop following the tradition as its eradication clearly enhanced individual safety, bodily health, and social status for those women who were able to stop, but this incentive was sometimes overridden by the fear of punishment. The following examples also demonstrate that women did not have much real freedom of choice regarding the *chhaupadi* practices as it represented the dominant collective agency (feature 1) in some communities.

Regarding the social fit (feature 3), the key to the *chhaupadi* eradication was increasing social support to the new collective agency (against *chhaupadi*) replacing the old one. It was particularly evident in Bhatakatya, where we observed that the locals had almost entirely abandoned the practice – which was not the case in the other localities. In Bhatakatya, the men fully supported the women to attain and maintain the changes in the village, which was undoubtedly crucial in the male-dominated culture. Furthermore, community members and institutions, such as schools and health posts, organized many interaction programmes, rallies, workshops, and meetings on *chhaupadi*. The locals reported the particular difficulties of convincing community authorities, such as elders, traditional healers, and religious leaders, at the beginning.

Concerning the personal incentive (feature 2), we observed that where the social support for behaviour changes remained weak, community pressure or random accidents were able to prevent the change occurring despite similar government- and project-supported behaviour-change activities. For instance, the participants of the interaction in Dhangneta Chowk (Hichma-6) told how the women who still carried out *chhaupadi* practices were now even worse off than before, because the *chhau*-hut demolition campaigns had resulted in the use of plastic tents as a replacement. The locals also said the situation was more difficult in the neighbouring ward (Hichma-8), where the local religious leaders had resisted the behaviour change.

As for the opportunities for individual choice (feature 1), in Daaddanda (Dhakari-5), for instance, a local woman shared a story of how she lost consciousness when she stayed inside her home for the first time during her menstruation – the god *Mate* had apparently become angry due to the behaviour change, she said. Rumours about this spread among the community people in the ward, and other local women did not dare to change their behaviour after the incident. In this case, the women themselves decided to continue the traditional behaviour. This can be explained by the conventional social environment, as well as women's fear that abandoning *chhaupadi* would in fact reduce their own (and their family's) capabilities, as the gods would punish them.

Discussion

Reflections on main findings

We demonstrated that success in the implementation of the desired water-use behaviour changes depended on three features: 1) presence of individual choice to

participate in collective behaviours; 2) the degree of personal incentive to change behaviours; and 3) the degree of congruence of the promoted behaviour changes with the existing collective behaviours. Additionally, we noted that it was more likely that the new capabilities would be accepted if they accrued to both men and women, uplifting gender equality and equity as the cross-cutting theme of the analysis.

On the other hand, we observed that the ease of behaviour change varied a lot according to type: domestic water-use behaviours were the easiest to change, urine use was semi-difficult, and *chhaupadi*-related behaviour changes were the most difficult to achieve. We can locate the results and the reasons for the observed differences in a matrix configuration (see Figure 3). The matrix merges the main findings by illustrating the observed changes according to their difficulty and the three explanatory features.

Difficulty of change \ Explanatory feature	1.Individual agency on choosing about participation	2.Individual incentive to behavior change	3.Social fit of behavior change
Easy changes	Domestic water use behaviours Human urine use as a fertilizer	Domestic water use behaviours Human urine use as a fertilizer	Domestic water use behaviours
Semi-challenging or variable changes		*Chhaupadi*	Human urine use as a fertilizer
Challenging changes	*Chhaupadi*		*Chhaupadi*

Figure 3 Behaviour change – explanatory feature matrix

We suggest that this study and the matrix can provide a design for predicting the possible opportunities and challenges regarding behaviour changes in the field, as well as being a tool for evaluating the impacts and pondering the reasons behind the changes. The reckoning of features similar to the observed ones, located within the explanatory feature matrix, would offer a suitable framework for such analysis. The explanatory features may and should change according to the context, though we believe that the features we found are universal rather than context specific. Nevertheless, analysing the reasons why some behaviours change more easily than others and locating them within the matrix allows more comprehensive understanding of the underlying problems, their reasons, and ways forward.

Interestingly, the results revealed differences between the individual and social aspects of capabilities. Tiwari (2014) demonstrated in his case study how collective agency empowered women's groups in rural India. Our study utilized a similar analytical framework, and demonstrated that such collective agency enables some but also prevents other individual capabilities, as collective agency may also restrict individual agency. The study revealed how *chhaupadi* was clearly collectively sustained and fostered communal affiliation in the sense of being able to engage in communal traditions, but denied women individual choice. On the other hand, the tradition also reduced and restricted some other basic capabilities, especially related to women's bodily health and integrity, and control over one's environment, and was linked to social inequality and gender discrimination.

Hence, the study did not support the idea that collective agency would automatically increase and support individual agency and capabilities. The collective sphere can support individual agency but it may also restrict it. Following our approach, we argue that this inevitable preference of some capabilities over others should be primarily expressed on the basis of what each person has reason to value. Sen argues that the way for individuals to impact collective capabilities and agency is through 'collective reasoning', which postulates that one should have the capability to affect collective agency and one's role within that:

> If traditional way of life has to be sacrificed to escape grinding poverty or minuscule longevity, then it is the people directly involved who must have the opportunity to participate in deciding what should be chosen. The real conflict is between 1) the basic value that the people must be allowed to decide freely what traditions they wish to follow; and 2) the insistence that established traditions be followed, or, alternatively, people must obey the decisions by religious or secular authorities who enforce traditions – real or imagined. [...] An attempt to choke off participatory freedom on grounds of traditional values simply misses the issue of legitimacy and the need for the people affected to participate in deciding what they want and have reason to accept. (Sen, 1999: 31–2)

In that regard, real individual freedom of choice about participation in collective traditions, and the capability to affect collective agency through public reasoning become the most important principles that should steer behaviour-change

interventions. We believe that similar logic may be utilized in the context of the justifiability of interventions in general, as we discuss further.

Capability approach and intervention justifiability

One question that naturally emerges from our research themes is whether behaviour-change interventions are justifiable as processes in the first place, as they interfere with the local cultural and behavioural settings. It could be argued that the project is acting in a neocolonialist fashion, imposing Nordic ideals of gender relations and social inclusion on a totally different society. Policies and projects are not (and cannot be) neutral and this is the risk of all development aid interventions. The alternative option might be to do nothing, allow the status quo to continue, or to promote cultural preservation.

All these alternatives, however, are not neutral, as refraining from doing something that one would be capable of doing is actually a value-laden, active choice rather than a neutral consequence. In that sense, the capability 'to do' and 'to be' is crucial, whether utilized or not. This links justifiability with the capability approach. This compares with, for instance, Lukes' (2005) view of power as a feature of an agent that is independent of the actual choice to actively use it. (For Lukes, having the power to influence matters, regardless of the activity or passivity of the holder).

Sen (2005) argues that the capability approach provides a means for assessing real individual capabilities by considering simultaneously both personal opportunities and valuations. But he also stresses that the approach does not offer means to assess the process of how the capabilities should be improved (Sen, 2005). Hence, a tension on whether and how to intervene in behaviours remains. As long as we lack a clearly objective basis for justification, we must admit that the values and views of the change agents are never by any means neutral, but that they are natural and inevitable characteristics of powerful agents. We argue that one should be glad if such power-holders actively (rather than passively) aim to work for the good of the beneficiaries (rather than for some other more selfish objective).

The capabilities approach gives still another perspective to the debate. (First, we need to acknowledge that the following arguments are based on the general assumptions of the liberal and individualistic tradition in social philosophy.) In our case-study context, we naturally focused on the most basic human capabilities. Many scholars have listed such basic capabilities (see Alkire and Black, 1997; Nussbaum, 1997, 2000, 2003; Robeyns, 2003). We present here Martha Nussbaum's list of 'central human capabilities', for example: 1) life; 2) bodily health; 3) bodily integrity; 4) senses, imagination, and thought; 5) emotions; 6) practical reason; 7) affiliation (social inclusion and status); 8) (interconnection with nature and) other species; 9) play; and 10) control over one's (political and material) environment (Nussbaum, 2003).

What is significant in the arguments on the basic capabilities is the awareness that we are in many ways fundamentally similar as human beings, hence we share the need for certain basic capabilities and freedoms, regardless of our socio-cultural

backgrounds, aims, or personal intentions. Within the approach, poverty is regarded as the deprivation of such basic freedoms and opportunities (Nussbaum, 2003; Robeyns, 2003; Sen, 2004a). An intervention as a means to reduce poverty therefore is a strong argument for the justifiability of such interventions that aim to enhance those individual freedoms and capabilities.

In this case, the intervention clearly aimed to enhance the most basic individual capabilities and freedoms of choice for the community people, especially for women, which they lacked within conventional social settings. Behaviour-change intervention can be therefore justified as the project operated to improve individual freedom of choice over people's own lives. In the long run, access to toilets for menstruating women also improves overall sanitation, which is beneficial for the whole community. However, as the question of how we should intervene in other cultural settings remains, we call for further discussion on how to enhance the capability-building modalities and to promote individual freedoms and opportunities.

Remarks on why addressing behaviour change is critical for water experts

Successful behaviour change, of whatever kind, is critical for the uptake of the new technologies offered by development projects. As mentioned, simply providing the technologies cannot be assumed to result in uptake and positive outcomes unless appropriate steps are taken to change behaviours of users. These steps are not always possible to implement without prompting.

The authors acknowledge that water programmes cannot (and should not) choose desired behaviours for further promotion according to how easy they are to implement. Well-justified foundations, such as the capability approach or the human rights-based approach, define that some capabilities and rights are common to all. Governments and donor projects such as RVWRMP should strive to provide access to basic levels of water and sanitation to all, irrespective of the level of difficulty.

Additionally, in our case, the arguments for behaviour interventions are not purely the attitudes of the donor and advisers, as the actions of the project are in line with Nepalese government policy. It is the traditional practice of local government staff and community that is sometimes out of step with national policy (in fact, they are often quite unaware of government policies and laws). By facilitating any sort of questioning of norms in the community, change is provoked.

Conclusions

We scrutinized why some types of domestic water-use behaviour change more easily than others through a case study of a water-use intervention in rural communities in Nepal. The individual and collective factors that influenced the ease of behaviour changes were much easier to implement when individual freedom of choice was not restricted by social conventions and when the users had clear incentives to change their behaviour. The provision of new capabilities that simply emerged besides the

existing customs was much easier to implement than capabilities that required changes in existing customs.

Furthermore, we observed that individual and collective agencies confronted each other in some cases and the existing collective agency, represented by traditions, often restricted individual freedom in many ways. We also noted as a cross-cutting issue that it was more likely that the new capabilities would be accepted if they were relevant to both men and women.

We suggest that this study could provide a design for predicting the possible opportunities and challenges regarding behaviour changes in the field. The analysis of similar features (individual choice, individual incentive and social fit) would offer a suitable frame for analysis in other settings. The question remains of how we should intervene in other cultural settings, and we call for further discussion on how to enhance capability-building modalities to promote people's freedoms and opportunities

Acknowledgement

Appendix: reliability and validity standpoints

The interactive sessions were semi-structured, with only the main agenda and themes specified in advance. The length of the sessions varied from an hour to several hours. All the interactions and meetings were held in Nepalese, with interpretation by project personnel. Two team members wrote notes on all the sessions and five group sessions were audio-recorded and later translated for us. The group interactions are listed in Table A.

We used triangulation to check the reliability and validity of the outcomes from the interactions. First, we organized door-to-door monitoring, usually right after the interactions, to inspect the current situation in reality. The other triangulation methods involved constant discussions with the field staff and project specialists during the intensive field survey. Furthermore, we asked local teachers and administrative institution members to assess the state and trend of the current behaviour and behaviour changes in their villages.

Potential inaccuracies in data collection related mostly to the measurement of monitored changes, which were not at the core of the study. The estimations unavoidably depended on the sincerity of the respondents and the local institutions' ability to make reliable estimations about their neighbourhoods. Door-to-door monitoring could be carried out only in a limited number of residences in the scattered rural villages.

Chhaupadi is obviously a sensitive subject. We were aware of the possibility of getting dishonest or incomplete answers, and arranged the interactions in a way that enabled us to cross-check the answers from other local participants. These notes emphasize the importance of using triangulation for reliability checks.

Table A Group interactions and key-informant meetings for this case study

Type of communication	Location	Date (2014)	Participants
Meeting with the Achham LDO	District Office, Mangalsen	28 November	LDO
Interaction with locals	Galbal, Dhungachalna-7	29 November	9 women, 3 men
Interaction with locals	Nandapur, Dhakari-4	29 November	9 women, 19 men
Interaction with locals	Daaddanda, Dhakari-5	30 November	15 women, 9 men
Interaction with locals	Cheutekhale, Hichma-9	30 November	6 women, 7 men
Interaction with locals	Sain Bazaar, Dhakari-3	30 November	30 women, 10 men
Meeting with school teachers	school yard, Hichma-4	1 December	6 teachers
Interaction with locals	Dhangneta Chowk, Hichma-6	1 December	30 women, 31 men
Meeting with V-WASH-CC	Sain Bazaar, Dhakari-3	2 December	V-WASH-CC
Interaction with locals	Sain Bazaar, Dhakari-3	2 December	7 women, 37 men
Interaction with locals	Bai Pudu Danda, Bhatakatya-5	4 December	18 women, 27 men
Meeting with a school principal	Mastamandu, Bhatakatya-5	5 December	Principal

Note: location includes the name of the locality, name of the village, and ward number.

V-WASH-CC: Village-WASH-Coordination Committee; LDO: local development officer (head official of a district).

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