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ENHANCING WATER ACCESS IN NEPAL'S TARAI-MADHESH

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AGRARIAN STRESS AND IRRIGATION IN *MADHESH*

The *Tarai-Madhesh* remains a region of Nepal with the outstanding agricultural potential – yet while there are pockets such as Chitwan which have seen widespread mechanization and increased productivity, in other parts of the region, cropping intensity remains below potential, yields are low, and the levels of growth fall far short of what was envisaged in ambitious documents such as Nepal's 1996-2016 Agriculture Perspective Plan (APP), and the later Agricultural Development Strategy (ADS).

The challenges facing agriculture in the region are manifold, including the pressures of climate change, loss of productive land due to speculative plotting and urbanization, intensifying inequalities, and out-migration. This opinion piece focuses on the challenges posed by access to water. Agricultural development in *Madhesh* is dependent upon reliable year-round irrigation. However, access to irrigation is in the most part, intricately connected to social structures rooted in the relations of production at the grassroots.

Irrigation in the *Madhesh* has evolved considerably over the centuries. The earliest forms of irrigation included large storage tanks or *pokharis* built by *jimidars* during the Rana era and earlier (Palanisami, 2012). Such ponds required the mobilization of significant amounts of labour which was

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only possible under a centralized feudal system. Canal irrigation was relatively underdeveloped, although there were exceptions such as the network established amongst the *Tharu* settlers on Rajapur island in the 1900s (Gill, 2016). Under the late Rana period, some of the earliest state funded canal networks were built in the *Tarai*, including the *Chandra Nahar* in Saptari in the 1920s and the *Juddha Nahar* in Rautahat (Dahal, 1997). In the post Rana era, a number of large canal systems were built, most notably the extensive Morang-Sunsari irrigation system. However, since the 1990s, canal irrigation has been beset with high costs and maintenance challenges. Canals also have suffered from levels of siltation and a breakdown in the management committees, particularly in the context of out-migration.

Set against these challenges, governments across Asia have over the last two decades moved the focus away from large scale canal investments towards expanding the extraction of groundwater, at least in the context of lowland and floodplain agro-ecological systems. While over-extraction of groundwater and declining volumes of aquifers remain a challenge across the Indo-Gangetic Plains, there are still areas where groundwater availability remains high and the potential has been underutilized, including the lowlands of Nepal. Hydrological analyses have suggested that in the Eastern Gangetic Plains, which includes eastern *Madhesh*, there is sufficient groundwater to allow up to 300% cropping intensity (three back to back cultivation seasons including two fully irrigated dry season crops), even if one accounts for current rates of groundwater withdrawal and recharge (Rajmohan and Prathapar, 2013). It has long been shown however that actual use of groundwater is far below potential, inspite of its importance in the government policy (Bhandari and Pandey, 2006). Cropping intensity in large portions of the *Madhesh*, alongside adjacent parts of Bihar, is very limited in the winter and pre-monsoon (Sugden, 2014; Sugden et al., 2014).

The primary challenge in accessing groundwater is not the availability of water, but *access* to water. Unlike canal irrigation, which is in effect a public resource, groundwater irrigation through shallow tube wells require *private* investment by the farmer. A person's capacity to irrigate with groundwater is intricately connected to their ability to invest in pumping equipment and the boring of wells. This is particularly significant given the deeply entrenched inequalities in landownership in the region. The relationship between the *Tarai*'s agrarian structure and irrigation was documented through a series of studies by the International Water Management Institute between 2012 and 2018 (Sugden, 2014; Sugden, 2017; Sugden et al., 2014).

THE AGRARIAN STRUCTURE OF EASTERN *MADHESH*

The *Tarai-Madhesh* is home to deeply inequitable agrarian structure, and this is all the more apparent in the eastern *Madhesh* between Parsa and Jhapa. In the region east of the Koshi, absentee landlordism is a significant challenge (see Sugden, 2013). During the Rana era, the *jimidari* system created a distinct landlord and tenant class. This was aggravated as vast estates were given out as *birta* to the hill nobility. While land reforms took place during the 1960s, this primarily affected the *Tharu* functionary class whose political role for the state became redundant with the collapse of the Rana era tax collection system. The more powerful landlords of hill descent were able to retain control over their holdings, yet they increasingly tended to look after them from the cities through a *kaamtiya* rather than live locally. Land inequality was aggravated by the purchase of land by people from Biratnagar for speculative purposes. Today the distribution of land remains deeply unequal. A farm survey including 3 villages in Morang found that a substantial 84% of land was under tenancy, while in two villages of neighbouring Sunsari it was 57% (Sugden, 2017). Much of this land was found to belong to absentee landlords from Kathmandu, Biratnagar and other urban centres – a handful of whom were the direct descendants of Rana era *birtawalas* or functionaries, with many holding considerable political power within the state apparatus. Most tenants were found to be *Tharu, Madheshi Dalits,* as well as marginalized *Tarai Adivasi* groups such as *Rajbanshi, Bantar* and *Santhal* – although it also included migrants from the hills driven by destitution.

In the Mithila belt, the agrarian formation was found to be even more complex (Sugden, 2017). There is some landlordism in regions such as the Koshi floodplains of Saptari. However, in large parts of Milthila, the 'traditional' upper caste Maithili landlord class is less powerful than it was in previous generations, due to both division of estates amongst sons and the selling off of land perceived to have limited financial value in the more peripheral districts of Mithila (in contrast to the Morang-Sunsari region which is in proximity to state power and large urban centres). Nevertheless, our research suggests it is in fact the medium sized farmers who have benefited from the break-up of landlord estates, rather than the tenant and marginal farmer majority. The analysis found that while tenancy was less prevalent than east of the Koshi, population pressure is acute, and many farmers own less than 0.5ha, and landlessness is growing.

AGRARIAN STRUCTURE AND GROUNDWATER ACCESS

Set against this inequitable agrarian formation, the constraints in accessing groundwater are acute. For tenant farmers in particular, they have limited incentive to invest in tube wells due to insecure tenure.

Tenants understandably are unlikely to invest in fixed irrigation infrastructure on land which doesn't belong to them. The crippling rent burden also constrains their capacity to cover the costs of groundwater irrigation. Even for smallholders with their own plots, investments in groundwater is expensive, with pump sets and the digging of a well representing a considerable expense. This is a particular constraint in regions such as Dhanusha-Mahottari where water tables are deep. In both regions, our research suggested that pump sets and irrigation equipment mostly belong to a small group of medium land-owning farmers (who is owning more than 1ha of land) – a group which mostly comprises well below a quarter of the farming population.

A final option for marginal and tenant farmers is to rent tube wells or pumps. However, the costs are high due to monopolistic pump rental markets and high diesel prices – a challenge also identified in Bhandari and Pandey (2006) in the western *Madhesh*. While the contribution from landlords could increase incentives for investment, our research found that in most cases landlords were indifferent – particularly those who were absentee. Furthermore, water is not always available when required, and water buyers generally only receive water after the owner of the water source has irrigated their own land. Access to groundwater is also aggravated by out-migration and feminization of agriculture – itself a product of persisting inequalities and agrarian stress. Women headed households have been shown to face specific gendered constraints in accessing water markets, with limited social networks and bargaining power (Karn et al., 2016).

CONCLUDING THOUGHTS

Effective groundwater irrigation has the potential to revolutionise agriculture in the *Madhesh*, but what this opinion piece aims to highlight is that an *integrated* approach is crucial – one which both addresses fundamental historical structural inequalities as well as the technical tasks of providing access to efficient and low-cost pumping technology. In the long term, radical land reforms are the only solution which can potentially facilitate sustained groundwater-led growth in agricultural productivity in regions such as Morang-Sunsari and other pockets of landlordism. This include a strict regulation of ceilings and control of absentee landlordism. However, any redistributive reform appears extremely unlikely in the current political climate. Not only has land reform all but dropped from the political agenda of post-conflict governments, landed interests are themselves deeply embedded within Nepal's political and bureaucratic apparatus (Alden-Wily et al., 2008).

In such regions where there is a no significant landlord class such as large parts of Mithila, the challenges to access groundwater remain the same. This includes the distribution of tube wells and pumping

equipment through farmer groups. This practice has already been pursued through some government programmes, yet the paperwork needs to be streamlined and the awareness of the opportunities must be expanded, particularly amongst the most marginal farmers. Furthermore, there is still a strong case for continued investments in public irrigation systems – which benefit all farmers, regardless of their socio-economic status.

Across the region, radical integrated approaches to sustainable, productive yet equitable agriculture require further exploration – these include developing farmer collectives, whereby groups of farmers can pool land labour and capital (Agarwal, 2010). This has been shown to offer promising opportunities for marginal farmers to pool resources, including irrigation equipment, and overcome scale and tenurial constraints to irrigation led intensification.

REFERENCES

Agrawal, B., 2010. Rethinking agricultural production collectivities. *Economic and Political Weekly***,** pp.64-78.

Alden-Wily, L., Chapgain, D. & Sharma, S., 2008. *Land reform in Nepal: where is it coming from and where is it going?* Kathmandu, DFID.

Bhandari, H. & Pandey, S., 2006. Economics of groundwater irrigation in Nepal: some farm-level evidences. *Journal of Agricultural and Applied Economics,* 38**,** pp.185-199.

Dahal, N., 1997. A review of Nepal's first conference on agriculture. *Water Nepal,* 5**,** pp.149-164.

Gill, P., 2016. The water bringers. *The Wire,* April 2017.

Karn, S., Sugden, F., Clement, F., Sah, K., Maharjan, J. & Sah, T.N., 2016. *Poverty squares and gender circles: unravelling agricultural gaps, challenges and opportunities in the Eastern Gangetic Plains of Nepal: Research Report.* International Water Management Institute and Nepal Madhesh Foundation.

Palanisami, K., 2012. *Scoping study to assess constraints and opportunities for sustaining the tank irrigationeEcosystems and smallholder livelihoods in East India and Nepal*, Unpublished scoping report, ACIAR.

Rajmohan, N. & Prathapar, S., 2013. *Hydrogeology of the eastern Ganges Basin: an overview*, IWMI.

Sugden, F., 2013. Pre-capitalist reproduction on the Nepal *Tarai*: semi-feudal agriculture in an era of globalisation. *Journal of Contemporary Asia,* 43**,** pp.519-545.

Sugden, F., 2014. *Landlordism, tenants and the groundwater sector: lessons from the Tarai-Madhesh, Nepal,* Colombo, IWMI Research Report 162.

Sugden, F., 2017. A mode of production flux: the transformation and reproduction of rural class relations in lowland Nepal and North Bihar. *Dialectical Anthropology,* 41**,** pp.129–161.

Sugden, F., Maskey, N., Clement, F., Ramesh, V., Philip, A. & Rai, A., 2014. Agrarian stress and climate change in the Eastern Gangetic Plains: gendered vulnerability in a stratified social formation. *Global Environmental Change,* 29**,** pp.258-269.