



Trade-off rules for irrigation water re-allocation: Global issues and case study insights for the Angat River Basin (Philippines).

Sameer H. Shah

Corresponding Author:

sshah089@gmail.com

University of British Columbia

July 2017

This Policy Brief emerges from a MSc. thesis (Shah, S.H. (2015). *Water variability, livelihoods, and adaptation: A case from the Angat River Basin*. University of British Columbia, Vancouver, B.C.) and an article published by Taylor & Francis in *Water International* on July 11, 2017 available online:

<http://www.tandfonline.com/doi/abs/10.1080/02508060.2017.1342073> [Article DOI: 10.1080/02508060.2017.1342073].

The work was supported by the Social Sciences and Humanities Research Council of Canada (Partnership Grant #890-2011-0100; CGS Grant #766-2013-0104), C.A.R.E. Society of Asia, and the University of British Columbia. Please cite this Policy Brief as: Shah S.H. (2017). Trade-off rules for irrigation water re-allocation: Global issues and case study insights for the Angat River Basin (Philippines). *Policy Brief for the Program on Water Governance*. Vancouver, British Columbia.

TABLE OF CONTENTS

1. Introduction	3
2. Water Re-Allocation in the Angat River Basin (Bulacan, Philippines)	3
3. Recommendations for Policy-Makers	5
4. Conclusions	6
5. References	7

1. INTRODUCTION

Many countries, including India, China, and those in sub-Saharan Africa are re-allocating water away from irrigation and deprioritizing water's use in farming (see cases by Wagle et al., 2012; Birkenholtz, 2016; Wang et al., 2015; Komakech et al., 2012). These are not isolated cases; large shares of irrigation water rights are being transferred, in some cases permanently, to domestic and industrial users around the world (Molle & Berkoff, 2006 provide an overview). Population growth, urban expansion, and industrial investment are all claims that support re-allocation (ibid). These claims are further justified when agriculture is blamed as inefficient and wasteful, and when countries emphasize, including through the use of the Human Right to Water, that re-allocations for drinking water is an essential and required shift (ibid, Goff & Crow, 2014). From this perspective, inter-basin water transfers are seen as a logical response whereas efforts to improve local capture, management, and inefficient distribution for non-agricultural water users is often given less attention (Molle & Berkoff, 2006). This *Policy Brief* summarizes research undertaken in the Philippines as one illustrative example of such shifts. It acknowledges that because irrigators have existing water rights does not mean that these should be permanently fixed against a backdrop of climatic, population, and demand changes. Instead, it is important to reconsider and assess allocation trade-offs in light of shifting biophysical realities and changing socio-ecological priorities. With this recognition, the *Brief* argues that transparent and accountable processes must safeguard users from the costs and trade-offs associated with changes in how water is allocated. In particular, trade-off rules, notably around reparations, can ease the inevitable and sometimes-enormous risk placed on agriculturalists when re-allocation occurs.

2. WATER RE-ALLOCATION IN THE ANGAT RIVER BASIN (BULACAN, PHILIPPINES)

Policy shifts of the type described above can be found in the Angat River Basin (Bulacan, Central Luzon, Philippines). The roughly 30,000 hectares of farmland, most of which is rice (*palay*), rely on precipitation and surface-fed irrigation from the Angat Reservoir and downstream Bustos Dam (Angat Afterbay Regulator Dam) (Fresco & Angeles, 2012). Rice is important for livelihood, ways of life, and crucially for food security because it insulates farmers from volatile consumer prices.



The Bustos Dam (left) sits downstream the Angat Reservoir and feeds the National Irrigation System's Angat-Maasim River Irrigation System (AMRIS), serving rice-farmers in the Angat River Basin (right). Photographs by Sameer Shah.

From about the mid-1970s, water from the Angat Reservoir has increasingly been re-allocated to serve domestic use for residents of Metro Manila (World Bank, 2012). When the reservoir became operational in 1968, the Metro Manila Waterworks and Sewerage System (MWSSⁱ) received a water right of 9.5 m³/s and irrigators received a right of 40 m³/s. Three decades later—from 2001-2013—irrigators received an average allocation of 27.81 m³/s while MWSS receives an average allocation of 43.18 m³/sⁱⁱ. These average values account for considerable variation in actual allocations. For example, during the same time period NIA could receive anywhere from 87 m³/s in a given month to zero allocation. Today, MWSS serves a combined 14.3 million people in the Greater Metro Manila Area (Torio, 2016). **Box 1** highlights the major landmark events, including water privatization and the rule curve instrument, that enabled the MWSS to secure the “lion’s share” of reservoir’s water rights and have this amount protected during climate-induced shortfalls in reservoir volume. To gain stronger clarity on shifts in irrigation access change for major crops, namely rice – a regional staple crucial for household food security—we surveyed 124 rice-farming household in the irrigation-fed Municipality of Bustos. Households self-reported changes in arrival (75% of respondents), duration (57%) and amount (65%) of irrigation. Of households reporting changes, the majority documented negative experiences. Importantly, households elaborated water rights change was one important factor in current lived experiences with water security, with others being local infrastructure failure, water hoarding, inability to service irrigation fees, and increasing land urbanization. These three data sources—concerning water rights, actual allocations, and lived experiences—reveal a larger picture: Large permanent changes in fixed rights combined with temporary re-allocations during dry periods pose challenges to future rice cultivation in the Angat River Basin.

More recently, the ₱24.44bn (USD 494.5M) Bulacan Bulk Water Project—a response to declining groundwater levels in Bulacan used for local domestic consumption—was finalized with the goal of treating 230 million litres of water/day (2.66 m³/s) from the Angat Reservoir for 21 municipalities and three cities in Bulacan (Bedore, 2011; MWSS, 2017a; 2017b). This is an additional stressor on the existing allocation for regional irrigation.

Box 1: Long-term changes in reservoir water rights.

- **1968:** Irrigators held the largest water right (40 m³/s). Manila held a fraction (9.5 m³/s) (World Bank, 2012).
- **1988:** National Water Resources Board allowed Manila to appropriate an additional 15 m³/s from irrigators if their water was unused (Pascua, 2007).
- **1998:** The Umiray-Angat Transbasin Project allowed Manila to increase its legal right to 31 m³/s.
- **1998:** Manila Water Corporation Inc. and Maynilad Water Services Inc. were private awarded contracts that treated the 31 m³/s allocated for Manila and the conditional 15 m³/s that could be taken from NIA as a fixed right of 46 m³/s (Brown et al., 2009).
- **1998:** The reservoir “rule curve” instrument prioritized Manila’s now dominant water right during periods of inflow shortage and uncertainty.

3. RECOMMENDATIONS FOR POLICY-MAKERS

Despite these major changes witnessed in the Angat River Basin, water re-allocation and associated systemic transformations, should not be seen as inherently negative, nor leading to inherently to undesirable outcomes. For example, water’s allocation to the urban poor can help protect against water-borne diseases, can lower dependence on higher-cost informal venders, and can provide relief knowing basic water needs will be met. However, consideration must be given to alleviating the risks that are inevitably created with re-allocation. This is a goal that should be seen as very important to achieve in the Angat region, where reallocation impinges on water security, as well as household food security, livelihoods, and other related goals of welfare. As well, compensation and recognition of losses is also required legally.

The Philippine Water Code (1976, Article 30) requires, “a water permittee who suffers thereby shall be duly compensated by the entity or person in whose favor the cancellation was made”. This legal provision enables water permittees (e.g., irrigators) to be compensated if their water right to used to serve a greater beneficial use. However, when water is re-directed for domestic use in Metro Manila because of El Niño events in the past, irrigators have not been

compensated by the MWSS (i.e. the appropriator) (Pascau, 2007). This is because the MWSS has evoked Article 27: “Water users shall bear the diminution of any water supply due to natural causes or *force majeure*”. By claiming El Niño and climate variation events are unforeseeable circumstances (i.e., a *force majeure*), MWSS argues that irrigators must bear the costs of water supply reductions (World Bank, 2012). The Code has faced significant challenges with respect to how different clauses are interpreted to release permittees of liability, in this case MWSS. In our fieldwork, farmers reported their only means to recourse were securing insurance packages from formal lenders, most of which require large sums of collateral and often package, to the dismay of farmers, loans with insurance packages (also Bedore, 2011). Households often reported the minimum coverage for crop loss paid through government avenues was often not enough to cover investment costs in the first place. The result is that farmers have not been compensated for the now permanent re-allocations, nor are for temporary, seasonal shifts in response to low water periods (also Pascau, 2007). In May 2015, NIA did receive compensation, which was used to rehabilitate the Bustos dam. Last April, MWSS agreed that its concessionaires will pay NIA ₱52 million (USD 1M) for using 15 m³/s of NIA’s original water rights during El Niño periods from 2000 to 2010 (MWSS, 2016). It remains unclear as to how future climatic events and corresponding reparations will be negotiated. Going forward, clear and accountable trade-off measures can protect users who have had their rights appropriated, and thus support broader goals around regional justice, equity, food security, and livelihood sufficiency for farmers. In other parts of the world, these have included means that extend outside of financial compensation, such as development of trade-able water rights, alternative livelihoods, or state-developed insurance systems.

4. CONCLUSIONS

In conclusion, irrigation allocation intended for agriculture is increasingly being re-allocated to urban centres for domestic use, both in the context of the Angat Basin as well as in other regions of the Global South. Our research shows that politically powerful actors—Manila’s two private water concessionaires, the conditions and terms of their contracts (which gave them the lion’s share of water)—and legislative leeway open to judicial challenging and appeal processes over long periods of time have historically allowed trade-off reparations to be stunted. Policy-makers should dedicate more resources towards exploring and understanding how to most appropriately protect agriculturalists vulnerable to water rights reformation in the future. This can help avoid justice and equity concerns associated with lost income and concerns over food

insecurity as well as improve accountability of water governance. In sum, this brief provides three recommendations to policy-planners in the Angat region (and, more broadly):

- Centre and promote social justice and equity as principles when clarifying and enforcing the trade-off provisions outlined in the Philippine Water Code.
- Improve groundwater management (e.g., data collection, tracking, use) in Bulacan to reduce further demand on the Angat Reservoir and mitigate risks of relying on single, variable water source.
- Commit to providing permittees fair compensation when future water re-allocation occurs, even in the case of a *force majeure*.

5. REFERENCES

- Bedore, J. L. (2011, April 20). *Revisiting irrigation management transfer: A case study of a Philippine municipality's experience in transferring irrigation management to farmer associations* (Master's thesis). The University of British Columbia, Vancouver, British Columbia, Canada. Available from UBC Library's Open Collections.
- Birkenholtz, T. (2016). Dispossessing irrigators: Water grabbing, supply-side growth and farmer resistance in India. *Geoforum*, 69(C), 94–105.
<http://doi.org/10.1016/j.geoforum.2015.12.014>
- Brown, C., Conrad, E., Sankarasubramanian, A., & Elazegui, D. D. (2009). The use of seasonal climate forecasts within a shared reservoir system: The case of Angat reservoir, the Philippines. In F. Ludwig, P. Kabat, H. van Shaik, & M. van der Valk (Eds.), *Climate change adaptation in the water sector* (pp. 249–264). London, U.K.: Earthscan.
- Fresco, T. A., & Angeles, L. (2012). *Integrated river management models: implications for collaborative governance and management of the Angat River Basin, Philippines* (pp. 1–160).
- Goff, M., & Crow, B. (2014). What is water equity? The unfortunate consequences of a global focus on 'drinking water'. *Water International*, 39(2), 159-171.
- Komakech, H. C., van der Zaag, P., & van Koppen, B. (2012). The Last Will Be First: Water Transfers from Agriculture to Cities in the Pangani River Basin, Tanzania. *Water Alternatives*, 5(3), 700–720.
- Molle, F., & Berkoff, J. (2006). *Cities versus Agriculture: Revisiting Intersectoral Water Transfers, Potential Gains and Conflicts* (pp. 1–80). Colombo, Sri Lanka: Comprehensive Assessment Secretariat.

- MWSS. (2016). MWSS signs addendum to the MOA on NIA's water rights payment with concessionaires: WSL 6. Retrieved from: <http://mwss.gov.ph/addendum-to-the-moa-between-mwss-and-the-concessionaires/>
- MWSS. (2017a). MWSS' Bulacan Water Project Gets Nomination to 2017 Global Water Awards. Retrieved from: <http://mwss.gov.ph/mwss-bulacan-water-project-gets-nomination-to-2017-global-water-awards/>
- MWSS. (2017b). Bulacan Bulk Water Supply Project. Retrieved from: <http://mwss.gov.ph/projects/bulacan-bulk-water-supply-project/>
- National Water Code (1976). Water Code of the Philippines. Retrieved from: http://www.lawphil.net/statutes/presdecs/pd1976/pd_1067_1976.html
- Pascua, D. D. (2007). Water Allocation Between Irrigation and Municipal Use (pp. 1–12). Presented at the 4th INWEPF Steering Meeting and Symposium. Retrieved from http://web.rid.go.th/ffd/papers/Paper-Session%201/p1-01%20Water_Allocation_Between_Irrigation_and_Municipal_Use.pdf
- Torio, P. C. (2016). *Water Privatization in Metro Manila: Assessing the State of Equitable Water Provision* (Doctoral dissertation). The University of British Columbia, Vancouver, British Columbia, Canada. Available from UBC Library's Open Collections.
- Wagle, S., Warghade, S., & Sathe, M. (2012). Exploiting Policy Obscurity for Legalising Water Grabbing in the Era of Economic Reform: The Case of Maharashtra, India. *Water Alternatives*, 5(2), 412–430.
- Wang, X., Yang, H., Shi, M., Zhou, D., & Zhang, Z. (2015). Managing stakeholders' conflicts for water reallocation from agriculture to industry in the Heihe River Basin in Northwest China. *Science of the Total Environment*, 505, 823–832.
<http://doi.org/10.1016/j.scitotenv.2014.10.063>
- World Bank. (2012). *Metro Manila Water Security Study: Final Report* (pp. 1–174). CIT Engineering International Co. Ltd. and Woodfields Consultants, Inc.

ⁱ The MWSS, per Republic Act No. 6234, is charged with the "The proper operation and maintenance of waterworks system to insure an uninterrupted and adequate supply and distribution of potable water for domestic and other purposes...".

ⁱⁱ These figures were generated using monthly intervals. Considerable variation per month exists given allocations depend on the reservoir level and the required storage to protect Metro Manila from climatic variation shocks, including El Niño (warm) events.