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“Got Water?” The Effects of Globalized Agribusiness on Consumers’ Access to Water Sources

Abstract

This paper conceptually examines the consequences of globalized industrial agriculture on consumers’ access to clean water sources. It identifies the historical conditioners that allowed contemporary agribusiness corporations to gain the influence they currently hold over global water consumption, and it discusses the struggles that consumers face without access to clean water. The paper makes an original contribution by shifting the focus from the fact that vulnerable consumers do not have access to clean water to the reasons why they do not have access. It is suggested that water conservation strategies should not only be implemented at the consumer level, but should involve the agriculture industry if efficient solutions are to be found for future water crises.

Keywords

water scarcity, industrialized agriculture, agribusiness, water crisis

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Sources

Discussing water scarcity in a planet made 70% out of water may seem paradoxical, however, environmentalists have for decades been reminding the world that clean, drinking water is, in fact, a finite and indispensable resource. Popular media has also presented us with distant dystopian futures where access to water is so rare that civilizations devolve and resort to war to control water reserves (e.g., ‘Mad Max’ movie). Although access to clean water has always been an issue in developing countries and rural areas, the apocalyptic scenarios painted have hardly been a concern for urbanized regions where clean, drinkable water runs freely through taps, and bottled water is available at every convenience store. It is, in fact, quite ironic that the same population that has access to water of the best quality (for free) resorts to buying commercialized water brands (Fishman 2011).

Recently, however, Cape Town – the second most populous city in South Africa – was predicted to become the world’s first urbanized region to hit Day Zero within months, as lengthy droughts and unsustainable water consumption almost ran Cape Town’s water reserves dry; policy makers implemented strict regulations on daily water consumption in order to delay Day Zero, but the gloomy forecast remained unavoidable (The Economist 2018). Similarly, the State of California and Washington, D.C., have imposed water usage restrictions due to extreme droughts that required citizens to cut showers short and prohibited the watering of lawns, among other measures (Fritz 2017). Hence, an issue that seemed to be reserved for future generations and third world countries is now becoming an eerie and quickly approaching reality to many consumers in developed parts of our world. A Goldman Sachs report has predicted that as soon as 2025, a third of the global population will be unable to access potable water (Goldman Sachs Global Investment Research 2008). Given the magnitude of this issue, much research has been done regarding water conservation, sustainable practices, and the privatization of water in the disciplines of public policy (Kibel 2007; Cowan 1997), environmental science (Olmstead 2010; Lall 2011), and political science (Bakker 2007, 2010; Goldman 2005; Bernstein 2001). Apart from Patsiaouras, Saren, and Fitchett (2014), the marketing discipline, however, remains relatively silent regarding the water crisis conversation.

Indeed, Patsiaouras et. al. (2014) urge marketing scholars to delve into the exploration of commercialization and management of water

resources because of the tremendous implications that it has on vulnerable consumers' consumption choices (let alone their livelihood), and because the exchange of water resources among nations, private actors, and consumers is very much a marketplace issue. For example, although access to clean water has been declared a basic human right by the UN, the increasing privatization of water around the globe has unleashed a series of issues where unfair distribution among stake-holders is only but one of them. The laissez-faire fashion in which these free water markets are managed has clearly produced winners and losers, where the most vulnerable and least likely to afford being players in these private markets are affected the most (Budds and McGranahan 2003).

Moreover, 80% of water consumption in California is done by big agribusinesses who grow water-intensive crops driven by market demand, leaving surrounding counties with little to no access to drinking water (Guo, 2015). Indeed, Hoekstra and Mekonnen (2012) find that even globally, industrialized agriculture is accountable for 92% of water consumption. The issue has been predicted to increase, as population rises and the global demand for food takes its toll on the supply chain (Kirby 2000). Indeed, western industrial farming has been identified as one of the industries with the largest virtual water footprint (Sojamo, Keulertz, Warner, and Allan 2012; Wender 2011). Not only does industrial farming intensively consume water for irrigation and livestock production, but it also pollutes nearby water reserves with pesticides, fertilizers, and animal waste negatively impacting local consumers and displacing small family farms (Wender 2011). While agriculture has always been an influential industry, it was not until the 1990s that agro-industrialization experienced a rapid expansion due to globalization (Reardon and Barrett 2000), allowing corporations like Monsanto to enter developing markets such as India and Brazil.

Scholars in various disciplines have analyzed the political, economic, and technological conditions that allowed agribusinesses to flourish (Reardon and Barret 2000; Sojamo et. al. 2012; Sojamo and Larson 2012), yet the literature lacks an integrative framework linking these trends to consumer research. This paper aims to shed light on the various impacts that industrialized farming has on vulnerable consumers and their access to clean water. To this end, an overview of the factors driving globalization of agribusiness will be discussed. Next, affected domains of consumers' lives will be examined. Finally, recommendations and potential future research will be discussed. Linking these two research streams can provide marketers with an elemental lens with which to view and tackle water conservation and sustainable management in a systemic manner.

Globalizing Agribusiness

Industrialized agriculture refers to agriculture produced *en masse* with the use of pesticides, fertilizers, genetically modified seeds, etc. It extends also to so called “factory farms” that have drastically increased production of livestock by adopting an assembly line approach and implementing growth hormones and bulk-feeding to their livestock. Reardon and Barrett (2000) argue that industrial agriculture as a globalized phenomenon emerges from three integrated changes: “1) the growth of agro-processing, distribution, and farm-input provision activities off-farm, undertaken by what we shall call “agro-industrial firms” which are called agribusiness firms in the agribusiness literature, 2) institutional and organizational change in the relation between agro-industrial firms and farms, such as increasing vertical coordination, and 3) concomitant changes in the farming sector, such as changes in product composition, technology, and sectoral and market structures.” (Reardon and Barret 2000, p. 196).

Many more factors contributed to the globalization of industrial agriculture, among them has been the tendency to concentrate capital ownership in the form of land. Liberalization of land and natural resource markets were major contributors to global ‘land grabs’ by transnational corporations and foreign governments in the 1990s. As more and more countries welcomed foreign investments for the sake of development, rich nations engaged in massive land acquisition for agricultural purposes. Consequently, small farmers who found it difficult to generate returns were forced to sell or lease land to their more efficient corporate counterparts (Zoomers 2010).

Indeed, technological advancements in agronomy implemented to achieve economies of scale, and changes in the distribution chain such as vertical integration with local farms gave way to agriculture industrialization. However, the driving forces behind these changes were liberalization of agricultural regulations in developing countries (e.g., Brazil) and the embrace of a market-oriented economy which opened new markets and increased demand for agricultural products. Agribusiness corporations were able to export their products to countries who could not produce them. Patsiaouras et. al. (2015) specifically mention regions such as the Middle East and North Africa that prefer to import water-intensive produce as growing their crops is unfeasible due to water shortages, lack of fertile ground and, more importantly, agricultural technology – and to enter developing economies to expand production.

As discussed by Reardon and Barret (2000), global meta-trends such as urbanization and neoliberal ideologies served as critical conditioners for industrial agriculture. As global agricultural trade occurred,

the industry underwent organizational changes to accommodate the differences arising in transnational quality and safety standards. This only served as a further facilitator of vertical integration between agribusiness corporations and local farms, where the latter began entering into contractual agreements with the former stating compliance with quality regulations and thus ensuring their competitiveness in the industry (Reardon and Barrett 2000). Access to fast-developing bio-technologies also gave agribusiness corporations the upper hand in competitiveness against local farms in developing nations where many had to pay companies like Monsanto and Cargill property rights for expensive seeds. This has resulted in huge debts for local farmers and even suicides in countries like India (Shiva 2011). Bio-technological advances furthered the gap between industrialized agriculture and local farming by making production costs cheaper for those who could afford it.

The current gap seems to be not only between local farmers and agribusiness corporations. In their analysis of the current state of agribusiness, Sojamo and Larson (2012) recognize an even wider gap between Western and Eastern agriculture stakeholders. In the last decades, global water governance has been under Western hegemony, where big names like Nestle and Cargill have heavily controlled global virtual water trade (Clapp 2009). The U.S. alone exports the largest amount of water intensive products to regions such as China and Europe (Hoekstra 2012). This power asymmetry becomes even more poignant when one considers the corporate influence in a political context. For example, Clapp and Fuchs (2009) classify the various types of corporate power in global agribusiness. Corporations have the power to sway policies and regulations through lobbying and financing (instrumental power), they can also leverage competitive positions in value chains that impact political agendas through their own material structures (structural power), and they have the resources and media power to frame discourses in a way that may benefit them most (discursive power). Varman and Belk (2009) present examples for this corporate instrumental power particularly relevant in India, where Coca-Cola has been accused by local farmers of buying out politicians to continue virtual water consumption. This reveals that the exercising of the various types of corporate power become easier or problematic depending on the cultural context that the corporation finds itself in. Though Coca-Cola is not in agribusiness, it still consumes 2.5 million liters of water for production practices, further worsening the water crisis experienced by the locals (Varman and Belk 2009). Where Reardon and Barrett (2000) provide us with a much more positive account of agribusiness and its impact in overall global development, Sojamo and Larson (2012) critically examine

Western agribusiness corporations' agency in water governance and consumption. As the most profit-driven stake-holders in water distribution systems, agribusiness firms hold significant bargaining power over political entities and local farms.

One last factor that has contributed to the globalization of agribusiness has been the commodification of staple foods such as wheat, corn, and sugar in the U.S. (Wilkinson 2000). The past decades have seen a global shift in nutrition where animal protein consumption has largely increased, driving corporations to invest in bulk feeding. Instead of grass-fed cows and chickens, factory farms began raising their livestock by feeding them a more cost-effective corn-based diet. Moreover, the rising demand for fast and processed food has also led to an increase demand for corn-syrup. Wilkinson (2000) attributes this shift partly to big box retailers such as Walmart and Carrefour in regions of Latin America, further urbanizing the populations and effectively exposing locals to convenience foods, potentially changing local lifestyle and food consumption habits.

Effects of Agribusiness on Consumers

Despite having been credited to contribute to the development and urbanization of developing economies (Reardon and Barrett 2000), agribusiness corporations have come under heavy fire due to their negative impact on vulnerable consumers' access to quality water, predatory behaviors towards local farms, and massive harmful environmental impacts (Pingali 2001). In the U.S., heavily agricultural states such as Iowa and California have been struggling with water pollution due to chemicals employed for corn and soy production. Farmers who employ fertilizers to grow their crops allow rain to wash off the chemical nutrients from their land to local water resources, polluting them and making them unsafe to drink (Royte 2017). Consumers in rural Iowa have had to avoid tap water several times a year due to "Do Not Drink" warnings issued by the Environmental Protection Agency. In 2011, the U.S. spent \$4.8 billion of tax payers' money to remove excess nitrates from public water resources generated by crops, however, despite such an impact on governmental resources the Clean Water Act exempts agriculture as source of pollution (Royte 2017).

Nonetheless, the U.S., has the resources to invest in such purification process whereas consumers in developing nations and poorer parts of the world are not as fortunate. Egypt has been ranked as one of the highest countries in deaths related to water pollution, where the Nile accounts of more than 90% of the country's water supply and yet it is the main outlet of agricultural and textile waste (BBC 2018). Similarly, high death rates have been reported in New Delhi due to agricultural pollution in

the Yamuna River (Agrawal, Pandey, and Sharma 2010). This major river serves as a unique water source for the impoverished population of New Delhi, yet it is reported to be the end location of 515,000 kiloliters of waste daily. The consequences for consumers who are exposed to this polluted water are decreased life expectancy and lower quality of life compared to their affluent counterparts who can afford to access safer sources of water. Indeed, these consumers face economic difficulties daily to ensure their subsistence and that of their families, drinking polluted water further exposes them to illnesses which may render them unable to work, making their subsistence even harder. Moreover, Agrawal et. al. (2010) report that even bottled water collected from the river and had supposedly undergone purification measures has been recorded as not safe to drink by governmental agencies, hinting at the extensive environmental impact of water pollution in the urbanized regions of the country as well.

Accounts of consumers suffering from water pollution resulting from corporate waste have also been recorded in the marketing literature. In their examination of anti-consumption movements in India, Varman and Belk (2009) present cases where consumers develop sores in their feet after walking through polluted water and suffered from Malaria outbreaks due to sharp rises in mosquito populations. The effects of water pollution go beyond individual consumption among the poor but impact the production capacity of local farmers who depend upon local irrigation systems to produce their crops. This becomes even more problematic when these same farmers who are unable to produce due to polluted irrigation, have become indebted to agribusiness corporations for the purchase of genetically modified seeds (preferred to the normal seeds due to their accelerated growth time). The state has also played a role in the decline of local farming in India, as it reduced rural development budget by almost half between 1991 and 2002. According to Jha and Negre (2007), the economic hardships resulting from this cycle has pushed more than 100,000 of Indian farmers to commit suicide further displacing families into poverty.

In addition to water pollution, consumers are sometimes unable to access water at all. The unfair distribution of water that favors corporate entities has resulted in less water available for local farmers and consumption use (Varman and Belk 2009). Residents in East Porterville, California have also been deprived of water access for years, having to depend on neighboring counties to drop off bottled and take showers (Harkinson 2016). Though some more fortunate residents take it as an opportunity to capitalize on their access to running water and have started charging other to use their showers, others have taken it upon themselves to distribute water daily to those who cannot travel outside of the county

(Laurie 2015). Though these severe conditions are attributed to natural droughts, popular media has been keen to notice the increase in pistachio production that Paramount Farming has experienced despite droughts due to their access to underground water banks (Gumbel 2015). In these instances, water consumption has been so monopolized by agribusiness corporations that virtually no water is left for domestic consumption.

Indeed, popular media has recorded several cases across the U.S. in which impoverished consumers subsist without access to water, sewage, paved roads, and even electricity. These marginalized populations are called *colonias* in South Texas, where residents are mainly Hispanic but not undocumented immigrants. Thousands of residents in *colonias* have been waiting decades for land developers to bring basic services, but developers are reluctant to invest in areas that will not generate much profit (Esquinca and Jaramillo 2017). Residents in *colonias* are often undereducated and older generations who only speak Spanish, furthering their vulnerable state as they cannot access the information needed to improve their condition. Younger generations have voiced their discontent as they find it unfair that being citizens who pay taxes, they are still denied basic services by the state (Esquinca and Jaramillo 2017).

The lack of in-home water access pushes consumers to find other water resources (as in the Case of Californians travelling to neighboring counties). In regions of Africa where water is so scarce even in urbanized areas, more than two-thirds of the population must travel long distances to fetch water for daily consumption and domestic use (Pickering and Davis 2012). Research on water fetching has tied the practice to severe health implications such as diarrhea and cholera, while more recent research has uncovered the long-term physical implications on the water carrier (usually women and children). Geere et. al. (2018) find that, in the long-term, women and children who fetch water daily tend to develop musculoskeletal disorders associated with bearing the weight of the water for long periods of time. Water fetching may very well be physically disabling consumers rendering them unable to work in the future. If this is the case, water fetching further divides the poverty gap and may place vulnerable groups (such as women) in even worse conditions if they are unable to work or travel to obtain an education due to physical limitations.

Discussion

This paper aimed to understand the role that agribusiness plays in consumers' access to clean water. To this end, it has examined the factors that have facilitated the rise of industrial agriculture and its influence on global water governance, and it has explored the implications that

agribusiness' water pollution and intensive water consumption have on consumers lives. Globalization and liberalization of markets was critical for the growth and vertical integration of agribusiness corporations, as demand for food supply increased and at the same time developing economies welcomed foreign investment for agricultural development (Reardon and Barrett 2000). However, the implications for vulnerable consumers have not been very positive. The entrance of corporate entities into small-scale agricultural production networks have resulted in pollution, exploitation of local water sources, displacement of local farmers unable to compete, and an even wider poverty gap by driving local farmers into debt in order to remain competitive (Sojamo and Larson 2012; Agrawal et. al. 2010).

Given the huge influence that agriculture has in water consumption, the water crisis faced by many is not likely to be ameliorated by implementing water conservation strategies at the domestic level such as those taken by Californians in times of drought (Fritz 2017). As Sojamo et. al. (2012) argue, Western agribusiness corporations' hegemony over global consumption must be critically examined. Sojamo et. al. (2012) further argue that solving the water crisis rests upon industrial agriculture's ability to develop and implement sustainable water consumption practices that consider the well-being of vulnerable stakeholders. Though big names have aggressively engaged in CSR to counter the negative effects of their operations, Sojamo et. al. (2012) find these activities to be of a promotional nature and not truly adequate to solve irresponsible water consumption; he proposed that the solution is increased transparent communication between stakeholders to develop best practices for water consumption. The issue, however, remains in the asymmetrical power held by industrial agriculture.

The account of consumer implications remains purely descriptive in this paper. More field work should be done to understand how lack of water truly impacts consumption practices. For example, extant research on poverty alleviation and subsistence marketplaces has emphasized the need to explore the challenges that consumers and entrepreneurs in conditions of extreme poverty face (Viswanathan and Sreekumar 2017). Previous work in this research stream has explored literacy, stating that transactional choices made by illiterate consumers and producers are significantly different than their literate counterparts (Viswanathan, Rosa, and Ruth 2010; Viswanathan, Rosa, and Harris, 2005). Particularly, Viswanathan et. al. (2005) argue that illiterate consumers and entrepreneurs are substantially constrained by their inability to read, which results not only in economic burdens due to not being able to make informed purchasing decisions, but also in emotional stress because of low self-esteem and deep feelings of uncertainty. It is this very uncertainty that dictates much of the

consumer behavior in subsistence marketplaces. Illiteracy is but one of the many issues that vulnerable consumers face; the uncertainty of being able to access clean, drinking water must also have a toll in vulnerable consumers' consumption habits and should be further explored by marketers to develop better frameworks, products, and services for this population.

Lastly, Patsiaouras et. al. (2015) have emphasized the importance of virtual water consumption and global trade. Virtual water refers to the water expended in production of something that is not seen in the end-product (e.g., Coca-Cola's use of water to produce its soft-drink and bottles, Varman and Belk 2009). It is easy to be unaware of the effects of virtual water consumption, simply because it is not communicated to the end-consumer. Calling for more responsible consumption choices will require that consumers are aware of the amount of virtual water they are consuming through products. This may mean a change in policy requiring corporations to be transparent with their water consumption and disclose how much water is needed to produce a unit for consumers to have more information with which to base their choices. Practitioners could benefit from this strategy if they have adopted responsible water consumption strategies, by using this as a differentiator from other more wasteful brands. Though transparency does not entirely solve the issue, making consumers aware of such matters may spark action. Clearly a solution is not simple, but to reach one, we must first understand the complexity of the issue from the stem. The focus should not be on the fact that vulnerable consumers do not have access to water, the focus should be on the reasons why they do not have access to water. By examining the role of agribusiness corporations in this issue, we are better able to understand the problem.

From a marketing standpoint, future research should continue to examine water market systems and their governance. Though industrial agriculture is the most influential industry, there exist many more entities and stakeholders. Websites such as WaterBank.com serve as marketplace facilitators between water sellers and buyers, claiming to have the most comprehensive database of water sources in the world (WaterBank, 2018). Conceptualization of such marketplaces will require a contextualized legal and political understanding of water rights but will allow marketers to better understand our role in water governance issues if solutions are to be found.

Conclusion

Scholars around the world have conducted research on how to alleviate industrial agriculture's water footprint. Although vast amount of work has focused on the development of more efficient irrigation practices (for recent

examples see Jägermeyr et. al. 2015; Pi et. al. 2017; Chai et. al. 2016; Davis et. al. 2017; Nouri et. al. 2019), more drastic efforts have fixated on the creation of meat alternatives (e.g., cultured or synthetic beef, see Post 2013, 2014). With 70% of agricultural land dedicated to meat production and increasing demand for animal produce in fast developing nations like India and China (Post 2013), such water-friendly surrogates to meat consumption are presented as safe and promising alternatives in the marketplace. Given the recency of the technology, consumer acceptance remains uncertain and a future challenge for marketers.

Despite predicted demand for agricultural products, much of the existing produce is wasted at the consumer and firm-level. Scholars have estimated that almost half of grown produce is dumped through the process of reaching consumers, and even after it's been bought (Lundqvist et. al. 2008). Paradoxically, post-consumer food waste is seen the most in affluent economies where food demand has grown exponentially (Parfitt, Barthel, and Macnaughton 2010), while hunger-stricken nations continue to struggle with scarce food supplies. Food wastage has become such an issue in developed nations that in 2016 the French government introduced a legislation fining supermarkets that wasted food. Retailers are now obligated to donate food that may have otherwise been dumped or risk being fined by authorities (Beardsley 2018). Such regulations have forced retailers to better manage their stock to avoid waste and improved big-box purchasing practices, their impact on agricultural production remains to be seen.

On a more positive note, Cape Town was able to push Day Zero indefinitely, but it took a tremendous amount of coordinated efforts from policy makers, citizens/consumers, and corporations that included reducing agriculture by 60%, building of emergency desalination centers, and drastic caps on household water usage (Flynn 2018). Regardless of this short-term success, drought is a global issue which we will be battling with for the foreseeable future. Although, undeniably, responsible and mindful water consumption at the individual level is essential in preventing future water crises, the responsibility cannot be completely undertaken by consumers. Given that almost 90% of the global water consumption is related to agriculture (Hoekstra et. al. 2012), if industrial agriculture corporations are allowed by policy makers to continue irresponsible water consumption practices, water conservation efforts at the consumer level will prove to be ineffective.

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