

The marketplace of life? An exploratory study on the commercialization of water resources through the lens of macromarketing.

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Considering that marketing research has paid limited attention to water markets and water consumption, we examine the interrelationships between the ongoing crisis in water resources management and macromarketing theory and practice. Contrary to the dominant ideology for unlimited growth and increased global water markets, we discuss some of the consequences of commercial water trading indicating that the area of water marketing can be a useful and fertile context in which to further emphasise the importance of the macromarketing agenda. Employing the lens of macromarketing, we approach and examine the economic, technological and political dimensions emerging from the commodification and marketization of water resources. We conclude that the consideration of a water marketing system can have a positive effect on economic and social development by elaborating on the implementation of public policies for the

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sustainable consumption of water, commercializing environmental awareness and communicating consumers' responsibilities towards the use of water.

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Introduction

As the global population continues to grow and many parts of the world are expected to become more economically developed and affluent, one of the serious challenges for marketing will be how to manage markets for goods and commodities once considered abundant and, effectively, 'infinite', but are increasingly viewed as scarce and diminishing. Demand for many categories of basic commodities and necessities will almost certainly increase dramatically whereas natural resource constraints will limit available supply. Obvious examples of categories that illustrate this dilemma include markets for energy, oil, and lately water (Fishman 2011).

Over the last thirty years the implications of water scarcity on individuals and the ecosystem which sustains us have been approached, examined and discussed by environmental and resource economists (Cowan 1997; Olmstead 2010), management theorists (Berry 1977; Molden 2007), public policy makers and legislators (Sax 2006; Kibel 2007), political scientists (Barnaby 2009; Zeitoun 2011) and a plethora of chemical and environmental engineers (Brooks et al 2010; Lall 2011) amongst other academic experts, businessmen and non-governmental organizations. Although it has been argued that the term 'water crisis' has been overstated and dramatized (Rogers, Llamas, and Martinez-Cortina 2006), numerous scientific reports and increased international recognition (UNDP 2006) highlight that rise in population, river pollution, climate change, inefficient/wasteful irrigation, lack of legislation and water mismanagement from a governmental, community and individual perspective constitute the main factors which have been strengthening the growing water shortage in several parts of the world.

With over one billion people lacking adequate access to clean drinking water, almost 40 developing and developed countries declaring a water drought status and 22 percent of world's GDP to be produced in water short areas (Postel 2003), efficient water supply is more than likely to emerge as the most urgent resource issue for the 21st century according to the World Resources Institute.

Although the term sustainability is an extremely complex concept (Dobson 1996; Dolan 2002), in the following sections we argue that both ecological and human crises derive from the unsustainable and inappropriate management and consumption of water resources.

Consequently, we can suggest that the sustainable use of water “would require the development and maintenance of a required flow of benefits to a particular group or place, undiminished over time” (Gleick 1998, p. 573) without reducing benefits to other groups or ecosystems. Inevitably, this simplistic definition does not encapsulate the complexity arising from different forms or sectors of resources use – such as agricultural, industrial, ecosystem, individual etc. – together with the presence of enormous divergence regarding political, cultural, economic, legislative and cultural differences in water use and demand. Our macroconcerns for this paper focus primarily on the anthropogenic factors that contribute to unsustainable use of water resources through its commercialization.

In the following pages, we remind and elaborate on the fact that the commercialization of the most vital substance on the planet is also driven by increased private sector involvement which is often characterized by the lack of a sustainable ethos. Following Hunt's (1981, p. 8) definition, we argue that macromarketing is a multidimensional construct which refers to the study of the impact of marketing systems on society and the impact of society on marketing systems. Therefore, our paper aims to examine the commodification and marketization of water

resources through the structure and activities of interconnected private water markets in order to highlight the consequences of commercial water trading for sustainable practices and consumption. Taking into account scientific marketing's predominant focus with the firm on the one hand and individual customers on the other (Arndt 1981; Meade and Nason 1991; Schultz 2007; Wilkie 2005) our key research objective is to suggest that macromarketing theory can constitute the vehicle in through which to explore the wider implications of the commercialization of water resources, with one aim being to highlight marketing's responsibility to encourage sustainable public policies and social practices.

Secondly, we focus and examine private water markets which synthesize and constitute a complex system (Mittelstaedt 2006, Phipps and Brace-Govan 2011) of interrelated entities whose main role is to behave responsibly and efficiently for the provision of the most important commodity: clean water for consumption. Consequently, we suggest that the policy makers of water marketing systems are responsible in undertaking the organization for the proficient flow of consumable freshwater to citizens together with the supervision of marketing channels which offer adequate sanitation for domestic consumption. The fact that unlike any other economic good, water remains without substitute attributes a special and controversial status to issues around competition, economic development and efficient channel structure (Olsen and Grazin 1990) of private water markets. This paper aims to draw some attention to the growing necessity to develop ethical and sustainable marketing systems so as to cultivate an overarching tenet of fair water distribution, primarily for vulnerable and less affluent consumers.

From a macromarketing perspective, many of the key issues and challenges facing water consumption are essentially marketing problems and consumption issues. As well contributing in the fertile area of policy development, this context also explicitly highlights the value and

importance of the macromarketing approach more generally to the overall development of marketing theory, as well as emphasising the importance of examining issues of sustainability and marketing in common terms. In terms of the water markets, consumer education around sustainable water use and consumption, raising awareness around critical sustainability issues such as use and water treatment (for example, see Bradshaw 2010), and the consequences of the development of institutional structures in the water market (i.e. international development issues, global water privatisation, water rights etc.) are but the most obvious examples of where macromarketing, sustainability and marketing theory development issues collide.

Water, Public Good versus Private Commodity

The dilemma whether water resources should be considered as a common good or commodity has a long and controversial history closely related with urbanization, modernization, industrialization processes and agricultural growth (Bakker 2003). Supporters of private sector participation in the provision of water and sanitation argue that multinational water corporations will improve efficiency and service quality overcoming the limitations of expensive and dysfunctional public services (Segerfeldt 2005; Sitaraman 2008). On the other hand, opponents of private water markets direct their criticism towards the commodification and exploitation of water resources via the increase of water rates, rising operating profits (Barlow 2001) and the upset of ecological balance and environmental pollution (Burke 2000) amongst others. Perhaps, the only common view shared by exponents and critics of water privatization is the false assumption of continuing water security. Overall, the number of emerging private water markets is on the increase (Fishman 2011). Actually, such phenomena occurs in several countries in Asia, Africa and Latin America which do not necessarily follow and adopt the economic philosophies and orthodoxies of free trade, deregulation and enhanced privatization of natural resources

(Bakker, 2010; Budds and McGranahan, 2003). Apart from the striking examples of full privatization in Chile (Bauer 1998), England and Wales (Cave 2009), almost 300 million individuals in China, 60 million in the United States, 40 millions in France, 60 millions in Brazil get access to water from private owned, investor-owned or privately managed but publicly owned - under concessions - water companies (Pinsent Masons 2012). In cases of full privatization companies retain and are responsible for the whole water supply network including collection of tariffs, maintenance and continuous improvement through investments (Clarke and McDonald 2003).

In the following sections of the paper we offer examples from heterogeneous forms of water supply which can assist us to perceive the difficulty in conceptualizing and implementing long-term, cross-national and sustainable water policies. Such diversity and heterogeneity around water policies and provision stem not only from geographical or institutional variables but also from a historical perspective. During the late nineteenth century in most European cities potable water was mass produced as a public good provided via the universal access of networks that ensured the protection of public health. In cities like London, New York and Paris private companies provided water to affluent neighbourhoods and as result in deprived areas consumers used to rely on public taps, rivers even theft of water so as to protect themselves from epidemics such as cholera and typhoid (McDonald and Ruiters 2005). Overall, in the industrialized Western world the underlying economic assumption and philosophy for governments has been that water should be considered as 'basic need' (Bakker 2007) essential for the health of competent and industrious citizens. Leaving aside institutional arrangements for water resource management, and adopting a macromarketing perspective, we notice that issues related to the balance between demand and supply, sustainable market development, ecologically responsible marketing

practices and exchange of water resources have been superficially examined by economists and social theorists (Hanemann in Rogers, Llamas and Martinez-Cortina 2006).

As a Goldman Sachs report suggests, water will be the “petroleum for the next century”, adding that, “by 2025 one third of the global population will not have access to adequate drinking water” (Goldman Sachs Global Investment Research 2008). Although it has been argued (SciVal 2011) that over the last five years multidisciplinary research on the growing water crisis has attracted the interest of economic and management theorists, the private marketplace of water never came under the scrutiny of marketing and consumer behaviour. Apart from a study on the implementation of public policies for the sustainable consumption of water in Melbourne (Phipps and Brace-Govan 2011), there is negligible marketing research in the area. Taking into account that macromarketing research in this area is relatively embryonic, we present an exploratory and introductory analysis of the economic, technological and political dimensions (Kilbourne, McDonagh, and Prothero 1997; Kilbourne 2005) and implications stemming from the function of private water markets. In spite of presenting and discussing the three dimensions in separate sections and in line with Kilbourne, McDonagh, and Prothero (1997), our macromarketing approach towards the commercialization of water resources considers these dimensions to be inseparable and deeply interconnected. As Phipps and Brace-Govan (2011) have proposed the structure, flow and commercial exchanges of water marketing systems are under the influence of complex cultural, philosophical and legislative forces.

This discussion draws principally on an analysis of the rich interdisciplinary secondary data in this area, including a large number of governmental, inter-governmental and non-governmental reports, Google trends, environmental databases, academic studies and media reports related to the function of water markets, water stress and consumption. Thereupon, this

paper seeks to examine and discuss the process and practice of commercializing water resources through the lens of macromarketing theory so as to enhance marketers' understanding and awareness regarding the development of a sustainable marketing framework and consumption ethos towards planet's most vital component for survival.

The Economic Dimension of Water Marketing

Macromarketing research around the economic conception of water as a product - or in other words how marketers perceive and think about water - becomes conspicuous only by its absence. The mainstream managerial marketing approach has reduced the relational transactions of water to a focus on the exchanges between bottled water companies, water brands and consumers (Goldsmith et al 2010). From the advertising triumph of Perrier during the Edwardian period, launched as the first water brand (Dibb 2000), to the scandal of Coca Cola's Dasani, the bottled water industry has become one of the biggest success stories in the modern food and beverage sector (King 2007). Bottled water brands seek to compete and attract consumers by differentiating the *same necessity* in terms of supposed taste, style, price, packaging, convenience, environmental concerns and well-being. Ionized, alkalized, energy-enhanced and special oxygenated water represent some of the health and performance competitive advantages of water brands (Gleick 2010). The industry quadrupled in terms of sales and profits up to 60 billion dollars over the last twenty years (Forsyth 2010) and as Fishman (2011) has recently argued the bottled water industry seems to symbolize the overindulgence and inequality of modern consumer societies, whilst almost one billion people having no access to clean water. As one would expect the highest sales of bottled water are observed in Western European countries where both the availability and quality of cheap tap water can be found in high levels (Danamonitor 2009). This counter-rational absurdity serves to starkly expose some of the

irrational and unjust realities of global markets. While these ‘anomalies’ of the market are by no means restricted to the market for water there is something especially poignant and significant about global inequalities associated with water markets which further emphasize the need for macromarketing attention. In response to growing criticisms concerning unethical business practices - such as waste and environmental pollution -, the marketing and advertising strategies of the biggest global brands of water have begun to enthusiastically embrace and adopt a CSR discourse. This discourse is derived from the idea that purchasing bottled water contributes to the provision of clean drinking water to less affluent consumers (Brei and Bohm 2011). However, it is equally important to retain a degree of perspective in the discussion around the politics of water. While high profile, culturally significant and to a certain extent ‘transparent’, the total amount of water resources utilized by this consumer industry constitutes only a negligible part from the planet’s reservoir.

Water Transfer and Water Banking

The inherent and physical water scarcity in Middle-East renders water resources, together with oil, as the key factor for economic growth and prosperity. Water shortage increases demand for the limited resources constituting water as a source of revenue and a powerful means of diplomacy and political economic power (Hillel 1994; Waterbury 2002). In 2005, Israel signed a groundbreaking agreement to import 50 million cubic feet of water - annually and for 20 years - from Turkey, creating an international channel of freshwater distribution (Pamukcu 2003). In sharp contrast to a tangible good - for example a bottle of mineral water - or an intangible service, such as a swimming pool in a luxurious hotel, the transaction and completion of the exchange between the two parties involved the transfer of tons of freshwater from the South-Eastern Mediterranean to Israeli ports. Although water transfer is not an easy or economically

viable process, water security in Middle East is dependent upon the co-operation and exchange of trans-boundary water resources (Shelby 2005). In 2008 and during severe drought the city of Barcelona imported freshwater from France, cross-national transfers of water occur in the Caribbean and ecologically harmful mega-engineering plans are being considered to allow the transfer of water from Siberia to Central Asia (Hoekstra 2010). We observe that growing water scarcity brings forward the formation of innovative water marketing systems whose boundaries, flows, location, economic outcomes and above all environmental impacts and sustainability can be examined in-depth via the lens marcomarketing theory.

Apart from water exchanges between countries, increased privatization and the application of commercial principles to water supply has led to the emergence of ‘water banking’ (MacDonnell 1995). A popular phenomenon in the ‘dry’ Western States of America, a water bank has been defined as “an institutional mechanism that facilitates the legal transfer and market exchange of various types of surface, groundwater, and storage water” (Clifford, Landry, and Larsen-Hayden 2004, p. 3). Existing water banks act as intermediaries or brokers to facilitate the contact between water suppliers and clients through contracts, regulation, assessment of costs and price setting amongst others. In general and due to the complex structure of the marketplace, water banking can be classified in three broad categories including a) institutional water banking for the exchange of water rights and various entitlements, b) surface storage banking functioning as a reservoir or warehouse for physically stored water and c) groundwater banking which provides the means for exchanging water rights from aquifers, especially used during dry years (Clifford, Landry, and Larsen-Hayden 2004). Online companies like ‘WaterBank’ declare to have created “the world's first and most comprehensive website dedicated to creating a broad marketplace for buying, selling, and trading” of water resources, established in 1994. The

website displays online listings with available water ‘products’ on the marketplace including: water rights, bulk water, irrigation district water, geothermal water, spring water, bottled-water businesses and disaster relief and emergency water supplies amongst others. The company informs potential investors that acting as a ‘water-rights’ broker and consulting specialist, they can rely upon their extensive database around marketable and exchangeable water assets and their expertise in real property law, ground-water hydrology and water-related transactions. Noticeably, the company displays separate listings for each product including a reference number, location - such as Nevada or Arizona -, water source, for example wells or reservoirs, and of course the respective price.

One of the most striking features of the catalogues is the formation of a truly transnational market for available water resources which can be found in several forms. For example, apart from the provision of bulk water to more than 300 bottling companies, WaterBank[®] advertises its ability to locate and coordinate the transfer of emergency and disaster relief water supplies so as to face natural catastrophes like flooding in Mozambique, earthquakes in Turkey, hurricane injuries in Central America or even to cover urgent humanitarian needs in refugee camps caused by military action in Middle-East or Africa. It is evident that the services of the WaterBank company indicate the formation of a marketing system (Layton 1985; Layton 2007) comprised of an intriguing and diverse network of several members. Hydrologists, marketing-managers, legal experts, landowners, buyers, sellers, industries, tanker companies, local communities, non-profit organizations, military organizations are directly or indirectly involved so as to facilitate the economic exchange of water and satisfy existing or prospective customer demand. We can identify some similarities with Applbaum’s (2010) study elaborating on how pharmaceutical industries aim to influence and define exchange environments from a

macro-perspective – such as global distribution channels, legislation, treatment guidelines and public policies – so as to increase the profitability of their products and services. Additionally, the formation of cross-national market systems for water resources could be compared with aspects of global food marketing systems and their market penetration in developing countries (Witkowski 2008). More research can be conducted on the impact of global water marketing systems upon local and traditional water use and consumption together with their positive and negative consequences on nutrition, health and family life.

On a planet where available freshwater constitutes an aggregate for less than 0.5% of all water (Barlow 2001), a systematic shift towards the logic of uncontrolled trade liberalization of supply chains and free marketplace networks both challenges and jeopardizes the possibilities for sustainable water use and the fair distribution of water resources (Ferrell and Ferrell 2008). Considering that to ‘halve the proportion of global population without access to safe drinking water and basic sanitation by 2015’ represents one of the main Millennium Development Goals, it becomes extremely important to take into account the implications of both government mismanagement of water resources and unfettered water markets on consumption and individuals’ well-being. As Martens (2005) argued one of main aims of the MDG Report was to exhort governments and international corporations to acknowledge the fact that the present world trade system and global market channels favour the interests of few privileged and affluent countries. Consequently, future United Nations targets should not focus on the superficial alleviation of the symptoms of “extreme” poverty or water scarcity but their aim should be to improve the food and water distribution channels of developing countries from an environmentally sustainable and socially just perspective. Consequently, the study of water

marketing channels in these contexts presents us with macromarketing issues which can be further explored in the future.

Despite the popular perception that water can be traded as a consumer good only via the form of several water bottled brands, we notice the diversity, range and complexity of several types of water ‘products’ promoted and sold in different marketplaces and contexts.

Transportable bulk water resources render water a fungible global commodity like oil or gas; water rights turn rivers, lakes and sources of groundwater into exchangeable and marketable private property; gigantic Jacuzzis and swimming pools, water parks and inconsiderate crop irrigation represent the conspicuous display, use and consumption of water resources. Finally the continuous debate on which institutions - private or public - should provide water services reminds us that water had always been approached as the most valuable consumer asset in the history of mankind.

The Financialization of Water Resources

The structure, efficiency and performance of marketing systems and flows are heavily influenced not only by regulatory and legal frameworks but also by the communication and promotion of fundamental beliefs and set of traditions such as the principles of economic liberalism, possessive individualism and an overall laissez-faire doctrine of free-market competition (Kilbourne, McDonagh, and Prothero 1997; Mitteldstaedt, Kilbourne, and Mittelstaedt 2006).

Water privatization in local and national level, water tariff reforms, private sector finance and the readjustment of the financial architecture of water supplies have been some of the main themes in the agenda of the World Bank and International Monetary Fund (IMF) regarding the approval of structural adjustments, water and sanitation loans primarily towards developing countries facing economic difficulties and seeking macroeconomic stability. As Phipps and Brace-Govan

(2011) argue wider aggregate marketing systems and the development of a water-efficient culture are heavily defined by the introduction of philosophical antecedents such as the organizing principles and ideological perceptions of the marketplace and we observe that the abovementioned institutions heavily favour market liberalisation and water privatization policies. After several meetings during 2001-2003, the World Panel on Financing Water Infrastructure - comprised of prominent and influential individuals primarily in the fields of governance and international finance - composed and well publicized the 'Financing Water for All' report (Hofwegen 2006). Also known as the 'Camdessus report', named after its chairman Michel Camdessus who had been Managing Director of IMF from 1987 to 2000, the memorandum constitutes an institutional and international call for increased private sector participation in water provision, infrastructure and delivery (Financing Water for All Report 2003).

As Eckhardt, Dholakia, and Varman (2013) recently argued the triumph of neoliberal ideologies since the 1980s gradually transmuted marketing ideology and discourse into soft and pleasing imperatives of marketing-oriented and consumer-centric practices which conceal the harsh financial reality of laissez-faire policies and doctrines. Kilbourne (2004) has already highlighted that the influence of transnational institutions such as the IMF and World Bank contributes to the globalization of finance capital on the expense of weakening and marginalizing the consequences of the alleged economic development on social and political variables which macromarketers have been struggling to examine. Following Nason (1994, 2008) the rush in structuring and enhancing cross-national marketing systems of products and services has favoured the assessment and measurement of trade flows - as indicators of a successful marketing system - leaving aside the impact of such system on society, environment and individuals' well-being. World Panel's on Financing Water statement that "water has been

underemphasized and neglected in the past, compared to other sectors”, and the call for doubling the annual funds, globally, for water infrastructure assumes the existence of a transnational, economic and cultural homogeneity amongst water markets, neglecting the varying conditions and needs from nation to nation (Stiglitz 2000).

Bretton Woods Institutions correctly highlight the partial failure of public utilities, primarily in countries of the Southern hemisphere, to provide universal access to freshwater and sanitation (Hall and Lobina 2006; Hall and Lobina 2007; Spronk 2010). However, their suggestion of economic reformation based on the involvement of powerful multinational corporations does not provide a viable plan for 2.4 billion people who lack sanitation worldwide. Additionally, a *laissez-faire* ‘water as commodity’ model denotes and exhorts an economic environment which is completely antithetical and hostile towards diachronic and long-standing traditions, spiritual beliefs and cultural values of diverse communities (Shiva 2002, see note) which have been viewing and valuing water as a sacred and essential element of sustaining life on the planet (Blackstock 2001). In the past Belk (2006) emphasized the responsibility of multinational corporations and governments to address and compact the catastrophic processes stemming from cultural insensitivity, environmental destruction and homogenization. Although macromarketing and consumer behaviour studies have already paid attention to the consequences from the activities of multinational pharmaceutical companies (Flanagan and Whiteman 2007), global luxury brands (Wong and Ahuvia 1998) and global fast food chains (Witkowski 2007) for example, studies on the impact of corporate water marketing channels towards local communities remain under-examined. The impact of private water markets on the sustainable development and cultural cohesion of local communities could also be examined in the future by macromarketing theory.

Advocates and promoters of privatization suggest that the ‘true value’ of water will be reflected only after proper pricing (Bakker 2003; Economist, 2006; Rees 1998; Sjölander 2005; Turner 2004), aiming to instigate and encourage the preservation of a valuable and scarce resource and simultaneously to stimulate and produce increased financing for the formation of efficient private water networks. Formal water marketplace antecedents (Phipps and Brace-Govan 2011) such as government regulations, cross-national trading regulations and international commercial laws shape the flow of tradable water resources and gradually influence behavioural change. As it has been noted the economic codes of a dominant social paradigm (Kilbourne, McDonagh, and Prothero 1997; Kilbourne 1998) reinforce the continuous growth of capital and the capacity to consumer and economic growth via the commercialization of natural resources for the creation of new markets. For low income families in these markets, in the case of non-payment, access to a life-giving scarce resource without substitute is banned and such outcome can have a disastrous impact for deprived water users which can be found primarily in the Southern hemisphere (Hall and Lobina 2008; Swyngedouw 2004).

The commodification of nature in general and water in particular calls for both marketing academics and policy makers to elaborate on how the increased scarcity of water resources stimulates and instigates the unlimited growth of private water marketing systems against environmental protection, natural resource depletion and consumers’ interests. The economic dimension in managing water resources should be viewed as a crucial element of understanding sustainability as an emerging business megatrend - similar to the IT revolution, electrification, globalization and the quality movement in the past. Consequently water management is directly related (Fuller 1999; Peattie 1995; Prothero and Fitchett 2000; Roberts 1996) to environmental policy issues (Press and Arnould 2009) and ‘sustainable consumption’

(Cohen 2001; Dolan 2002; Heath and Chatzidakis 2012; Kilbourne 2004; Phipps and Brace-Govan 2011).

The Technological Dimension of Water Marketing

Large-scale desalination has been adopted and implemented as a technological-orientated initiative and response - together with recycled wastewater - to water stress and the scarcity.

Industrial scale desalination plants can be found today in Australia, China, Israel, Abu Dhabi and the USA amongst several other water-stressed countries and areas and it constitutes a rather hyper-specialized, energy dependent and expensive method compared to utilizing groundwater or freshwater from rivers and lakes (Fischetti 2007). While desalination might constitute an attractive solution for coastal cities in developed countries, the cost of creating and providing desalted water to consumers in the interior continent is similar to the costs associated with buying, transferring or importing bulk water (Zhou and Tol 2005). On the other hand, desalination plants provide an effective alternative during periods of drought by continuing to supply high quality drinking water to individuals. Despite the fact that the market for water desalination has been growing recently - 50% of the market share can be found in Middle East - the intake and exploitation of ocean water has considerable negative knock on effects to marine life, generates gas emission and pollutes the nearest residential environment (Younos 2005).

Contrary to customers' increasing awareness of whether the production of industrial and consumer goods stems from environmentally responsible and conscious organizations (Assadourian 2010; Bhate 2002; Carlson et al 1996; Connolly and Prothero 2003), consumers in Western countries seem to take for granted the continuous provision of water without elaborating on the social and environmental consequences from the efforts of public/private enterprises to identify, extract, process and promote freshwater.

Considering desalted freshwater to emerge as an increasingly important and competitive substitute in the global marketplace of water resources, helps to explain the technological race for innovative, cheap and sustainable methods of desalination of seawater and brackish waters around the world. Following the Arabic Peninsular, Mediterranean basin and the USA, China's remarkable growth and influx of immigration towards urban areas and coastal cities (Shanghai, Shenzhen and Guangzhou) necessitates the development of an already super-ambitious and growing desalination market, which is expected to cost almost 95 billion dollars by 2015, so as to bridge the needs of human resources demand with natural resource supply (China Seawater Desalination Industry Report 2011). Desalination water businesses are also expanding throughout the vast coastlines of Asia and Latin America and with more than 7000 desalination plants worldwide (Conway 2008) serious concerns arise regarding the environmental impact related to marine ecosystems, carbon dioxide emissions, waste and increased demand for coal (Elimelech and Phillip 2011). Apart from the sustainable use and consumption of existing freshwater, the rise of desalination as an emerging business megatrend in the 21st century reminds that technological and scientific advances might increase the flow of expensive consumable water by defining how the international trade of water resources (Kilbourne, McDonagh, and Prothero 1997; Postman 1993) will affect a sustainable environment.

Virtual Water and the Global Supply Chain

The social and environmental consequences deriving from economic externalities and unlimited technological innovation so as to increase material standard of living have been central themes to the macromarketing research agenda over the last twenty-five years (Kilbourne, McDonagh, and Prothero 1997; Mitteldstaedt, Kilbourne, and Mittelstaedt 2006). Apart from the commercialization of water in the form of several water 'products' and derivatives - mineral

water or trading of water rights for example - the significance of the interrelationships between globalization, international trade and sustainable water management have been relatively marginal in sustainable (macro)marketing research. As Kirby (2000) argues 70% of water supplies are used in agriculture and the global supply chain of food will be affected by 2020 because of the need for at least 20% more water to meet demands for the production of food. Gradually, water scarcity is expected to have a huge impact on the growth of food, production of raw materials, technological goods along with the manufacturing of clothes amongst several other commodities. This represents a rising threat for the global supply chain of goods and services (Alexandratos 2009; Fishman 2011; Fresco 2009).

Following the widely used and well-known ecological footprint method (Ewing et al 2010; Wackernagel and Rees 1996) of measuring and visualizing human demand for natural capital compared with planet's capacity to be ecologically sustained and simultaneously satisfy our increased needs and consumption practices, the human impact on freshwater (Postel, Daily, and Ehrlich 1996) - based on freshwater use for consumption and production - comes under scrutiny. Similar to carbon footprint - the calculation of greenhouse gas emissions caused by an individual, product, event or company - the Water Footprint Network has been researching and assessing the ecological impact from both the direct and indirect use of water by consumers, producers, communities, businesses or even nations; which is known as 'water footprint.' In terms of individual consumers, on average, the largest water footprint in the world is estimated in the United States of America with $2480\text{m}^3/\text{yr}$. – increased consumption of water-intensive meat food constitutes the main reason – while China is represented by an average of $700\text{m}^3/\text{yr}$. and the world's average is $1240\text{m}^3/\text{yr}$. (Hoekstra and Hung 2005; Hoekstra and Chapagain 2008). As Hoekstra (2012) argues freshwater scarcity should not be understood and associated exclusively

with individual consumer demand and needs related to thirst, sanitation and dental/personal hygiene but also with the ‘consumption’ of water from various economic institutions which galvanize and revitalize the global supply chain of food and products. Focusing on water facts and figures related to food security and consumption, it takes 15 tonnes of water to produce a kilo of beef, 100 tonnes for 1 kilo of wheat, almost 2 tonnes to make a laptop, about 6 tonnes for a pair of jeans and 13 and 25 litres of water to grow one tomato and one potato respectively (Mekonnen and Hoekstra 2010). As technological competition amongst nations for water conservation through production and manufacturing activities increases, the national assessment of water-footprint or in other words the economic evaluation of water-intensive imported and exported commodities structures and schematizes a global map of tradable virtual water.

The virtual water form of a commodity is equal with the volume of water required for its production and it is estimated at the country where it was produced (see note 2). For example, both Australia and the USA export huge amounts of water intensive agricultural and industrial commodities to ‘importers’ such as Europe, China and Brazil which save their own water resources for domestic use (Hoekstra in Ritzer 2012). Countries facing actual and severe water scarcity, mainly in Middle East and Northern Africa, heavily prefer the import of virtual water via imported commodities not only in terms of existing water shortage but also due to the inability of growing certain crops, lack of knowledge, land, labour and above all technology. Future macromarketing research can shed some light on the international scope, informal rules, connectivity, structure and environmental outcomes of these emerging water marketing systems. With growing global demand for water-intensive products and international trade flow, the inclusion and assessment of externalities and economic costs (Mundt 1993) - such as water depletion and pollution - has been emerging as a central theme in manufacturing, production

processes, sustainable management standards and the overall ambitions in developing a greener supply chain for water-intensive food and products (Beamon 1999; Winston 2008). In line with Dholakia (2012) a detailed and critical analysis upon the structures, flows, influences and linkages of similar marketing systems necessitates the consideration and application of macro-level perspectives aiming to intertwine and synthesize politico-economic and sociological insights with multi-level analysis around the function of institutions, nations and groups. From a macromarketing perspective, future research can focus and examine how water use efficiency and sustainability in the global virtual water market can increase if nations coordinate the imports, exports and balance of water trade so as to promote increased consumer awareness together with public policies related to water-saving techniques in farming, industrial activities and household consumption.

Water Scarcity and the Transparency of Water Data

As Lopez-Gunn and Llamas (2008) have remarked, the extensive use of remote sensing and geographic information systems (GIS) and Internet have contributed greatly to the collection and processing of accurate, accountable and transparent water data, monitoring of efficient water management and cheap dissemination of water-related information for local authorities, governments, NGOs and the general public. Funded and supported by leading financial giants and companies such as General Electric, Goldman Sachs, Dow, Coca Cola and Bloomberg, the World Resources Institute (WRI 2012) has already produced “The Water Risk Atlas”, a highly sophisticated digital map which meticulously depicts, visualizes and navigates its users throughout the complexity and seriousness of existing water risk in every part of the world. The global map includes scenarios for current and future water scarcity and represents a geographical, data-driven and region-specific water risk business environment where companies,

their investors and shareholders will be able to examine, measure and evaluate their financial exposure to water risk in terms of scarcity, access to economically significant basins and existing water quality. Technology becomes the vehicle for communicating previously complicated data so as to encourage and invigorate fruitful and productive dialogue together with increased public participation (Bulkeley and Mol 2003) regarding the most sustainable forms of management and equal provision of water resources in local, national or international contexts. As Hill and Dhana (2004) have argued the globalization of markets and technological development such as telecommunication industries and the World Wide Web have transformed over the last decades the means of diffusing useful knowledge; previously accessible only by affluent consumers in the wealthiest countries of the world. In a similar manner, increasing ‘virtual water trade’, large-scale desalination and technologically advanced methods of monitoring water resources available both to suppliers and water users comprise some of the most notable processes which underline the importance of technological and scientific innovations. These innovations might have a huge impact on the future of public/private water supply, global supply chain of food and commodities and sharing of visual, digital and spatial information for collective pro-poor governance and sustainable water use.

The Political Dimension of Water Marketing

In 1995 Ismail Serageldin, the Chairman of the World Commission for Water, warned that “if the wars of this century were fought over oil, the wars of the next century will be fought over water” (Shelby 2003). Scholars from international relations, global public policy, law and political studies have shown that the emerging water crisis will bring latent transnational conflicts amongst nations which claim authority over the same river, lake, basin, dam or water barriers (Dombrowsky 2007; de Villiers 2001). Long-lasting water conflicts in Middle East and

North Africa, water problems in the Iberian Peninsula between Portugal and Spain, controversy for the La Plata Basin between Brazil and Paraguay, China's tensions with downstream users of Mekong River such as Laos and Vietnam and the fact that more than 260 river basins are shared by two or more nations (World Water Council 2012) support the growing concern that access over shared water resources might turn into a factor for militarized armed conflicts (Kahl 2006). Additionally, water conflicts and regional 'civil wars' have been recorded between a) local communities, the state and private companies, such as the Cochabamba Water War in Bolivia, b) farmers against industrial companies over access to water resources in Mexico and c) between farmers and city consumers in India (Briscoe and Malik 2006) amongst several other parts of the world (UNESCO 2006). The structure, complexity, dynamism and adaptability of marketing systems – which act as social networks that facilitate the exchange of goods and services (Layton 2007) – could possibly facilitate macromarketing theorists to examine the distribution of water resources within these turbulent economic environments. As Fisk (1967) argued marketing systems grow and develop “in response to *the need for peaceful exchange* of commodities”, thereupon the phenomenon of economic 'water wars' and conflicts in terms of the channel structure and supply of this valuable substance can be discussed via the prism of marketing systems theory.

Either from a transboundary, national or regional angle water 'wars' and disputes stem from opposing and conflicting interests between individual, household, agricultural and industrial water users whose intentions, beliefs and actions have been structured and oscillated, since the 1980s, by those who promote water privatization and others supporting public sector water management solutions. The efficiency and cooperation of global, national or regional water markets heavily depends on institutional frameworks and public policies which embrace,

protect and cultivate an ethos of fair distribution of water resources through ethical and sustainable marketing systems (Ferrell and Ferrell 2008; Laczniaik and Santos 2011).

Macromarketing research can lay more emphasis on “bottom-of-the-pyramid consumers” who experience the worst material circumstances due to extreme poverty and they do not have access to the most vital necessities of life in order to survive (Hill 2005; Hill, Felice and Ainscough 2007). Thereupon, more research can be conducted on the ‘consumption adequacy’ of water resources for individuals’ whose main everyday goal is short-term focus on survival and continued existence (Martin and Hill 2012). In line with Laczniaik and Murphy (2006) the adoption and implementation of moral/social codes and evaluations can contribute firstly to the development of sustainable and ethical water marketing systems which will be to the service of people – especially the vulnerable – and secondly to rethink and redefine from an ethical perspective existing legislation related to water.

‘Water as a Commons’

Over the last twenty years the water industry has been transformed in many economies from a public to a private enterprise. It is beyond the scope of this paper to review and holistically examine - either from a global or local perspective - the increasing popularity and influence of free-market ideologies on the distribution of water resources. Nonetheless, we are interested to observe and discuss, to some extent, the impact of these structural and ongoing changes in water provision, its unsustainable use by networks of water consumers and water marketing systems. Although it has been assessed that globally approximately 85% of the finance and 87% of operation of water systems stems from the public sector (Hall, Lobina, and Motte 2005), conflicting reports estimate that private water companies serve from 300 up to 900 million water consumers, in approximately 60 developed and developing countries (Marin 2009). As expected,

the controversial but growing process of water privatization in various parts of the world has attracted both fanatic support and fierce opposition.

The fierce debate around the privatization of natural resources has brought forward the discussion on terms such as “neoliberalization of nature” (Baker 2007; Mansfield 2004; McCarthy and Prudham 2004), “green neoliberalism” (Goldman 2005) or “liberal environmentalism” (Bernstein 2001) as a set of norms which seek to employ markets as means of facing environmental problems. The water sector remains high on the political and legislative agenda. First and foremost the question as to whether water constitutes a human right or not has been raised. Since the 1992 International Conference on Water and the Environment, known as the “Dublin Principles”, many international and bilateral institutions together with multinational water companies have adopted the main principle which states that “water has an economic value in all its competing uses and should be recognized as an economic good.” Over the last fifteen years, a popular and well-funded international campaign known as “Human Right to Water” has been supported by high-profile NGOs - such as the United Nations Development Programme, WHO and the Amnesty International - and constituted part of the wider anti-water privatization campaign (Gleick 1998). Although the ‘water as human right’ campaign has effectively promoted the establishment and maintenance of a public ‘safety net’ provision of water to *all* citizens, eventually its holistic and all-encompassing agenda overshadowed and oversimplified the complexity around human rights, property rights and provision delivery models, to the degree that think tank institutions and proponents of private water participation have been arguing that their policies constitute the best tools to fulfil the human right to water (Seegerfeldt 2005).

Although forceful in terms of analysis, broad and all inclusive terms such as ‘neoliberalism’ (Bakker 2007; Castree 2005; Sparke 2006) can fail to encapsulate and summarize

the numerous water resource management policies, heterogeneous jurisdictions and strategies implemented in various parts of the world. By enhancing the debate and discussion of binary and antithetical terms and views on water resource management, such as public/private ownership, state/market control, regulation/deregulation and equality versus efficiency debates around water provision, local water management emerges as a third alternative towards several market and state failures. As Shiva (2002) argues the 'water as a commons' view moves away from an anthropocentric, individualistic, private/public-centric conceptualization of water supply. By emphasizing not only the cultural dimensions of water but also how place-based and community-driven governance of water resources contribute to ecological and public health, a collectivist, sharing and gift-giving ethic of solidarity against wasteful water consumption can be developed. As Cornwell and Drennan (2004) have suggested the globalization of consumption lifestyles could easily lead an individual or community to adopt unsustainable consumption practices responsible for carb emissions, river and ocean pollution or overuse of natural resources like water, wood and fossil fuels. Future macromarketing research could synthesize micro and macro-perspectives, for example the impact of national, regional and corporate water policies on the sustainable management and consumption of water resources within urban environments or local communities.

Although the majority of governments around the world have chosen hybrid water supply delivery models, the role and importance of sharing culture (Belk, 2010) and community in sustainable market development (Penalosa 2008; 2010) has remained under-examined. Perhaps, we should place more emphasis on how a synthesis and composition of informal - cultural and ethnic variables - and formal - legal and regulatory structure - antecedents (Phipps and Brace Govan 2011) can provide the background for effective water policies and responsible

consumption. It seems that the state, private and cooperative models render the water consumer as a *citizen*, *customer* and *community member* respectively and each role brings forward different individual responsibilities, collective actions and supply infrastructures. Despite the complexity which permeates the management and supply of water resources, it has been convincingly suggested that the cooperative alternative can constitute a viable solution for the global South, where both state and private sector delivery systems have favoured the consumer needs of wealthy citizens and affluent neighbourhoods (Swyngedouw 2004). The dilemma of ‘thinking globally acting locally’ in terms of improving our environmental condition should capture both macro-concepts and micro-practices of sustainability and perhaps invigorate a more synergistic relationship between active government and community intervention together with proactive marketing campaigns for responsible water consumption, distributive justice, equality in resource allocation and protection of our ecosystem.

Conclusions

As Shultz and Holbrook (1999) argued the management of shared resources and environmentalism will emerge as one of the biggest challenges during the twentieth-first century. Although the interplay between marketing, society and the natural environment has been studied by several macromarketing scholars, this paper suggests that there is negligible research in the area of global/local water marketplaces and water marketing systems. Similar to the commercialization of several domains of everyday life such as health, education, genetic codes, culture and of course nature, we have employed the lens of macromarketing so as to approach and examine the economic, technological and political dimensions emerging from the commodification and marketization of water resources. In a world where 900 million people lack access to safe water supplies, the challenges of sustainable water use, responsible consumption

and distributive justice systems of water resources become increasingly important. By recognizing and highlighting the essential and sacred place of water in the ecosystem, we argue that macromarketeers can contribute in examining, discussing and creating awareness regarding water conservation, the establishment of strong regulatory frameworks, social responsibility and greater regional self-sufficiency amongst others for the establishment of a water-secure and water-sustainable future. Challenging the values of unlimited growth and increased global water markets we have discussed some of the consequences of commercial water trading indicating that the area of water marketing can be a useful and fertile context in which to further emphasise and re-state the significance of the macromarketing agenda. Simultaneously, this paper highlights the multi-community and interdisciplinary basis of macromarketing, by illustrating opportunities for a range of different approaches ranging from the critical/theoretical to practical and policy directed research. Coordinated and transnational efforts amongst regulators, consumers, companies and macromarketing researchers can contribute in offering viable and sustainable solutions for more democratic and fair distribution of water resources.

Notes:

1. In her book *Water Wars: Privatization, Pollution and Profit*, Shiva (2002) provided a comprehensive review of several cultural contexts where water was considered and treated as sacred. Also, Bord and Bord (1985) have reviewed 200 folklore stories of ancient and holy wells and rivers in Britain and Ireland.
2. The term virtual highlights that most of the water used in the production process is not included within the commodity, for example a standard cup of tea requires 120 equal-sized cups of water and the international average water footprint for 1 kilo of cotton requires 10,000 litres of water (Water footprint, 2012).

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