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WASHINGTON UNIVERSITY

International Affairs

University College

**Water Resources in Sub-Saharan Africa:**

**The Case of Mali**

by

Ria Elise O'Brien

A thesis presented to the  
Graduate School of Arts and Sciences  
of Washington University in  
partial fulfillment of the  
requirements for the  
degree of Master of Arts

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## **List of Abbreviations**

ADEMA	Democratic Alliance of Mali
AEEM	Students Association of Mali
APRM	African Peer Review Mechanism
BWIs	Bretton Woods Institutions (World Bank, IMF, GATT/WTO)
BWR	Basic water requirements
CFA	Currency unit used in Mali (franc)
CMA	Common Monetary Area
CMDT	Malian Textile Fibers (Cotton) Development Company
CMH	Commission on Macroeconomics and Health (World Health Organization)
CMLN	Military Committee for National Liberation
CNID	National Committee for Democratic Revival
CTSP	Transition Committee for the Well-Being of the People
DNHE	Malian National Directorate for Hydrology and Energy
DRA	Demand-Responsive Approach (to development)
ECOWAS	Economic Community of West African States
EDM	Bamako City Water Agency
GWP	Global Water Partnership
HIPC	Heavily Indebted Poor Country
IDWSSD	International Drinking Water Supply and Sanitation Decade
IEG	Independent Evaluation Group
ILO	International Labor Organization

IMF	International Monetary Fund
I-PRSP	Interim Poverty Reduction Strategy Paper
MDGs	Millennium Development Goals
NEPAD	New Partnership for African Development
OAU	Organization of African Unity
OED	Operation Evaluation Department (World Bank)
PFP	Policy Framework Paper
PMI	Malian government-run maternal/child health centers
PRGF	Poverty Reduction and Growth Facility
PRSP	Poverty Reduction Strategy Paper
RWS	Rural Water Supply
UDHR	Universal Declaration of Human Rights
UDPM	Malian People's Democratic Union
UN	United Nations
UNICEF	United Nations Childrens Fund
WHO	World Health Organization
WSSCC	Water Supply and Sanitation Collaborative Council
WTO	World Trade Organization
WWC	World Water Council
WSP	Water and Sanitation Program

## 1. Introduction

Mali is a landlocked country covering 1,204,000 km<sup>2</sup> (roughly twice the size of Texas), of which 60 percent is desert, and is situated in the heart of West Africa.<sup>1</sup> Mali is the third poorest country in the world; as of 2006, Mali is ranked as 175 out of 177 countries in the Human Development Index<sup>2</sup> (a shift from the 2005 listing of 174/177).<sup>3</sup> The Malian national government rests in the urban national capital, Bamako, located in the central region of Koulikoro, which is the home of a stable and democratic government since 1992.<sup>4</sup> Mali is an arid country within which water scarcity is becoming a growing concern.

Globally, water scarcity is being equated with a “water crisis” and it is having adverse effects on the environments that are experiencing the highest water scarcity problems. Water is a necessity that all humans must have in order to sustain life. As water becomes more scarce to a community, serious health risks will begin to arrest the population. Ecosystems also suffer from a lack of water; as temperatures rise, soil dries, then plant life cannot be sustained either. Farmers who depend each year on their crops to feed themselves and their families are affected by this occurrence the most.

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<sup>1</sup> World Bank country brief. Mali shares borders with Mauritania, Algeria, Burkina Faso, Côte d'Ivoire, Guinea, Niger, and Senegal. Website available at: <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/MALIEXTN/0,,menuPK:362193~pagePK:141132~piPK:141107~theSitePK:362183,00.html>

<sup>2</sup> See Watkins, Kevin. “Human Development Report 2006. Beyond Scarcity: Power, Poverty, and the Global Water Crisis.” Published for the United Nations Development Programme (UNDP), New York: Palgrave Macmillan, 2006, p. 286.

<sup>3</sup> See U.S. Department of State, Bureau of African affairs website, available at: <http://www.state.gov/r/pa/ei/bgn/2828.htm>

<sup>4</sup> U.S. Department of State, Consular Information sheet, available at: [http://travel.state.gov/travel/cis\\_pa\\_tw/cis/cis\\_962.html](http://travel.state.gov/travel/cis_pa_tw/cis/cis_962.html)

The reasons for the world's water crisis are many: over-pumping of groundwater, rising atmospheric temperatures due to pollution, rising population, and environment degradation. This water crisis will greatly affect both first and third world countries adversely. First world countries will be better prepared to innovate and implement new technologies to curb this phenomenon and all that would require is social and political motivation. On the other hand, third world countries lack the funds and the infrastructure to accomplish such tasks. Additionally, there exist great disparities between the poor and the non-poor in terms of access to water and sanitation. In rural areas of Mali, access to water is usually through the use of handpumps. In urban areas, access to water is usually categorized by connections to piped water supplies.

The majority of Malians are poor and live in rural areas where approximately 50% of the population have no improved access to water<sup>5</sup>. Many communities experience problems with existing handpumps that are malfunctioning which impairs their ability to tap clean water sources. What is even more disturbing is that rural water equipment is reaching the end of its design life and the number of rural access points that cease to function will progressively increase over time<sup>6</sup>.

The urban poor living in Bamako, have a completely different set of problems facing them. According to a recent study of the urban poor, water supplied by water vendors and Bamako's piped water supplies are the two main options from which residents may choose to fulfill their water needs.<sup>7</sup> Those who are able to afford to pay for

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<sup>5</sup> World Health Organization "Global Water Supply and Sanitation Assessment 2000 Report".

<sup>6</sup> OED (2000) (World Bank Operations Evaluation Department), "Rural Water Projects: Lessons from OED Evaluations" OED Working Paper Series No. 3, March 2000, p. 38.

<sup>7</sup> See Kjellén, Marianne and McGranahan, Gordon. "Informal Water Vendors and the Urban Poor", Human Settlements Discussion Paper Series, Theme: Water-3, International Institute for Environment and Development, September 2004, p. 14.



the connection choose to use the city's piped water supply. Poor residents and migrants must find other sources of water; vendors usually cater to this segment of the population.

This paper suggests that investing in the development of water and sanitation for those who do not have access is the best solution for improving the quality of life for Malians. Policy makers and development organizations making decisions for development in Mali are acting negligently by applying insufficient and disproportionate development funds to improvements in water and sanitation.

## **2. Introduction to Mali**

### **2.1 Historical Perspectives – From Colony to Democracy**

Far inland of the lush coasts of West Africa there were great empires nestled around the fertile plains along the Niger River in the area that is known today as “Mali”. Those empires of the past were rich and powerful even though the Mali of today is one of the poorest nations in the world<sup>8</sup>. Historically, three distinct empires existed: Empire of Ghana, Empire of Mali, and Empire of Songhai.<sup>9</sup> It was the rumor of the wealth in gold of these Empires that sparked Muslim and European interest in the region. “Little wonder that such covetous attention was turned upon what was presumed to be the source of perhaps two-thirds of the entire world production of gold in the early fourteenth century.”<sup>10</sup> Although the empires' wealth became well-known, the exact location of the

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<sup>8</sup> Drisdelle, Rhéal. Mali: A Prospect of Peace? An Oxfam Country Profile, Oxford: Oxfam (UK and Ireland), 1997, p. 15.

<sup>9</sup> Frequent debates continue on the dates of these empires and exactly how long they existed, especially that of the Empires of Mali and Ghana. Levtzion gives a detailed account of the succession of kings during the Malian Empire (Levtzion, N. “The thirteenth and fourteenth century kings of Mali” in: *Journal of African History*, 4.3, 1963). What is widely known and agreed upon of these early empires is that there was a great trade in gold from this region, both through the Sahara and to other southern regions.

<sup>10</sup> McIntosh, Roderick James. The Peoples of the Middle Niger. Malden: Blackwell Publishers Inc, 1998, p. 269.

source of its wealth was closely guarded and in uncharted territory. Little detail is written about the history of the territory from the time of these empires and the introduction of colonial rule in the 1800's. What little is known is due to the descriptions of Timbuktu by Leo Africanus, Ibn Battuta and Shabeni<sup>11</sup>. There are sporadic accounts of small teams of European explorers setting out to seek the rumored empires' wealth. The African Association and the Société de Géographie are two organizations who were formed particularly to find the city of Timbuktu and chart the course of the Niger<sup>12</sup>. After many centuries of unsuccessful exploration, it was through violence that these territories eventually fell under colonial rule.

French rule began in the 1890s and a large share of West Africa, including the area known today as Mali, became known as "Soudan Français".<sup>13</sup> Independence from France was gained in the year 1958 and the area became known as *Republique Soudanaise*.<sup>14</sup> The next year, *Republique Soudanaise* joined Senegal to form the Mali Federation, but this federation quickly splintered. Even though there was a threat of conflict between them, two nation-states emerged peacefully from the Mali Federation: the current countries of Senegal and the Republic of Mali.<sup>15</sup> The Republic of Mali

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<sup>11</sup> See Brians, Paul; Gallwey, Mary; Hughes, Douglas; Hussain, Azfar; Law, Richard; Myers, Michael; Neville, Michel; Schlesinger, Roger; Spitzer, Alice; and Swan, Susan. *Reading About the World, Volume 2*. Fort Worth: Harcourt Brace Custom Publishers, 1999.

<sup>12</sup> See Kryza, Frank T. *The Race for Timbuktu: In Search of Africa's City of Gold* New York: Harper Collins, 2006.

<sup>13</sup> Clark, Andrew F. "From Military Dictatorship to Democracy: The Democratization Process in Mali" in *Democracy and Development in Mali*, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 255.

<sup>14</sup> U.S. Department of State, Bureau of African Affairs, available at: <http://www.state.gov/r/pa/ei/bgn/2828.htm>

<sup>15</sup> Clark, p. 255.

officially became a nation-state on September 22, 1960<sup>16</sup> and became a member of the United Nations on September 28, 1960.<sup>17</sup>

The early years of Mali's independence was wrought with problems, partially due to residual effects of French colonial rule. Rhéal Drisdelle cites four main effects of colonialism after independence: destruction of traditions, forced service in two World Wars, the French language being absorbed into the official language (which only the educated minority normally speak), and the destabilization of the nomadic Touaregs in the north of Mali.<sup>18</sup>

The first President of Mali, Modibo Keita, "proclaimed a policy of state socialism, established a centralized economy, and instituted a one-party state" (Clark, p. 256). Keita sought ties with communist countries and even received loans and aid from some of them.<sup>19</sup> The Keita regime made a lot of decisions in the beginning that had disastrous effects on the fledgling Malian economy. The Malian centralized economy was run inefficiently which lead to a large black market, the currency was worthless outside of Mali where other former French colonies had signed on to the CFA (African Financial Community) franc, and Keita himself became a dictator.<sup>20</sup> "Modibo Keita's single-party Union Soudanaise-Rassemblement Démocratique Africain (US-RDA)

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<sup>16</sup> Bureau of African Affairs, available at: <http://www.state.gov/r/pa/ei/bgn/2828.htm>

<sup>17</sup> United Nations, member overview, available at: <http://www.un.org/Overview/unmember.html>

<sup>18</sup> Drisdelle, p. 19.

<sup>19</sup> Clark, p. 256.

<sup>20</sup> Ibid, p. 256.

regime pursued a relatively coherent developmental vision, but its socialist ideology became excessively rigid and over-centralized.”<sup>21</sup>

By November 1968, the Keita regime fell to General Moussa Traoré’s coup d’état marking the beginning of the CMLN (Military Committee for National Liberation) and later, the sole political party in Mali: Malian People’s Democratic Union (UDPM).<sup>22</sup> Through the CMLN, Traoré sought to change Mali’s economy for the better by fixing some of Keita’s bad policies. Under the CMLN, Mali joined the CFA franc zone and improved relations with neighbors and the West.<sup>23</sup> Unfortunately, Traoré’s regime refused to allow multiple parties even after increasing public demands and the efforts of CMLN did not improve Mali’s economic prospects.

The people of Mali began to realize that Traoré’s military government was growing increasingly more corrupt as the general population lived in poverty while Traoré’s friends, relatives, and associates continued to grow richer.<sup>24</sup> “Traoré held on to power through his control of the military, as head of the one official party, and through the repression of all dissent.”<sup>25</sup> The situation in Mali deteriorated over the course of the next two decades as the civilian population sought ways to demonstrate their unhappiness with the military dictatorship. Even though political parties other than Traoré’s UDPM were not allowed, political organizations started to develop in mid-1990 fueled by the

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<sup>21</sup> Davis, John Uniack. “The Educational Prospects of Malian Civil Society” in Democracy and Development in Mali, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 294.

<sup>22</sup> Clark, p. 256.

<sup>23</sup> Ibid, p. 256.

<sup>24</sup> Ibid, p. 256.

<sup>25</sup> Ibid, p. 256.

desperate situation of the Malian population: CNID (National Committee for Democratic Revival), AEEM (Students Association of Mali), ADEMA (Democratic Alliance of Mali) as well as the cultural cooperative called “Jamana”.<sup>26</sup> These organizations used “cultural” meetings and other events to slowly organize efforts against Traoré’s government. Unfortunately, Traoré’s control of the military ensured his position of power. The situation came to a head by March of 1991 when riots, insurrections, and demonstrations lead to the injury and death of over 100 civilians.<sup>27</sup>

Ultimately, it was the military that turned its back on Traoré and led Mali toward democracy. Led by Lt.-Colonel Amadou Toumani Touré, the military arrested President Traoré and formed a National Reconciliation Council. “The new leadership issued a proclamation, citing the number of people killed in demonstrations, the Traoré regime’s corruption, and the country’s desperate economic situation as justification for their overthrow of the Traoré government.”<sup>28</sup>

At this point, Mali could have easily slipped back into another military dictatorship. Fortunately, this was not the case. A transitional government was formed with the leader of ADEMA, Dr. Alpha Oumar Konaré, and the Transition Committee for the Well-Being of the People (CTSP) playing the leading roles in the formation of a new regime<sup>29</sup>. “Unlike most other nations, Mali held a national conference, wrote a constitution, and held elections after deposing a repressive military regime.”<sup>30</sup> The

<sup>26</sup> Ibid, p. 257.

<sup>27</sup> Ibid, p. 257.

<sup>28</sup> Ibid, p. 259.

<sup>29</sup> Ibid, p. 259.

<sup>30</sup> Ibid, p. 251.

elections were a success and Dr. Konaré, a scholar and well-respected Malian figure in the search for democracy, was elected president of the third Malian Republic in June of 1992.<sup>31</sup>

During the transition to democracy, there was another group that threatened the outcome of the transition. The nomadic Touaregs of the north Saharan desert areas of Mali had revolted against Traoré's regime as well.<sup>32</sup> The Touareg rebel leaders were given seats in the national conference in order to ensure the voices of the north would also be heard. The resulting *Pacte Nationale* and the *Flame de la Paix* ceremonies of March 1996 ended the Touareg revolt and allowed a peaceful transition to multi-party democracy for all groups in Mali.<sup>33</sup> The *Pacte*, albeit a document with some flaws, also served as one of the primary documents of the movement to decentralization of power that continues to this day.<sup>34</sup>

## **2.2 Decentralization**

Although Mali has been a peaceful nation and successful democracy since the early 1990s, decentralization of the government has been a major issue in Malian politics. Decentralization of power puts more local issues back into the hands of local authority and lessens the extent to which the capital, Bamako, dictates local regulations. “[The process of decentralization is] to reform the culture of governance at the center so that the

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<sup>31</sup> Clark, p. 261 and Drisdelle, p. 23.

<sup>32</sup> Drisdelle, p. 22.

<sup>33</sup> Drisdelle, p. 23 and also Rawson, David. “Dimensions of Decentralization in Mali” in Democracy and Development in Mali, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 276.

<sup>34</sup> Ibid, p. 23 and Ibid, p. 276.

national administration sees itself as a complement to, not a supervisor of, local government.”<sup>35</sup> Even the Constitution of 1991 shows concern for the rural poor and “establishes a High Council for Collectivities to press regional and local development at the national level”.<sup>36</sup> The process of decentralization, however, has not gone along as intended:

Central government staff is resistant to the reconfiguration of public management and the restructuring of the public sector. As a result, decentralization has involved less reform of public agencies than measures to circumvent central structures (such as public sector unions) by the establishment of parallel systems at the community level. This process of decentralization has, in the short term, resulted in the emergence of new bottlenecks. There has been little de-concentration of public services and local governments that lack the technical support of such services remain extremely weak relative to the functions they are expected to carry out.<sup>37</sup>

Conflicting ideas on policy differences, the electoral process, and equal access to the media have been documented.<sup>38</sup> The bottom line is that the ruling class wants to hold on to power and decentralization challenges their authority.<sup>39</sup>

A new mechanism has been introduced by a mandate of the Organization of African Unity (OAU) to African governance called NEPAD (New Partnership for African Development). “Under NEPAD, 15 African countries have agreed to submit themselves to the African Peer Review Mechanism (APRM) in order to promote the

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<sup>35</sup> Bingen, R. James. “Overview-The Malian Path to Democracy and Development” in Democracy and Development in Mali, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 249.

<sup>36</sup> Rawson, p. 275.

<sup>37</sup> OED (March 2005), “An Independent Review of World Bank Support to Capacity Building in Africa: The Case of Mali”, Corporate Evaluation and Methods, World Bank, March 14, 2005, p. 3.

<sup>38</sup> Rawson, p. 280.

<sup>39</sup> Drisdelle, p. 29.

implementation of policies and standards that will lead to political stability, economic growth, development, and integration on a regional and continent-wide level.”<sup>40</sup> Although this system has been introduced to help combat corruption in African governance, there are issues of sovereignty to be weighed against this. “‘Peer review’ misses the whole point of democracy, which is government accountability to its own citizens-not to some other government.”<sup>41</sup> Despite Mali’s difficulties with the decentralization process, Mali has been listed by Transparency International as having a corruption rank of 99.<sup>42</sup> Mali has also been given a ‘free’ rating by Freedom House for 2006.<sup>43</sup> Mali’s participation in NEPAD, as well as all participating governments, is a step in the right direction; however, there are questions as to the effectiveness of NEPAD on solving the problems it has set out to address. One of the major criticisms regarding NEPAD is the primarily government involvement and the exclusion of the African people. Civil society is largely excluded from NEPAD’s creation and processes. Furthermore, some have argued that NEPAD was created solely for the purpose of creating aid donor confidence in African countries.<sup>44</sup> If this is indeed the case, it is a

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<sup>40</sup> Masson, Paul R. and Milkiewicz, Heather. “Africa’s Economic Morass – Will a Common Currency Help?” The Brookings Institution, July 2003, available at: <http://www.brookings.edu/comm/policybriefs/pb121.htm>

<sup>41</sup> Easterly, William (2), The White Man’s Burden: Why the West’s Efforts to Aid the Rest Have Done so Much Ill and so Little Good. New York: Penguin Press, 2006, p. 147.

<sup>42</sup> At the top of the list, Norway ranks 1, the U.S. ranks 20, and Haiti is at the bottom of the list at 163. For more information, see table available from Transparency International, Corruption surveys, available at: [http://www.transparency.org/policy\\_research/surveys\\_indices/cpi/2006](http://www.transparency.org/policy_research/surveys_indices/cpi/2006)

<sup>43</sup> Mali is one of four in West Africa who share this “free” rating. The others are: Benin, Ghana, and Senegal. Togo, Côte d’Ivoire, Guinea (and neighbor Algeria to the north) are rated “Not Free”. All others (Mauritania, Burkina Faso, The Gambia, Guinea Bissau, Niger, Sierra Leone, and Liberia) are listed as “Partly Free”. See Freedom House, available at: <http://www.freedomhouse.org/template.cfm?page=22&year=2006>

<sup>44</sup> Easterly (2), p. 147.



hypocritical request that African nations subject themselves to breaches in sovereignty in return for aid donor confidence when Western governments would not likely do the same thing (foreign aid will be discussed in greater detail in the *Foreign Aid to Mali* section on page 76).

Now that Mali is consolidating its democracy, working toward progress in decentralization, and enjoying a “Free” Freedom House rating, the current Malian regime can be considered stable. As long as peace and reconciliation continue among the people of Mali, democracy and decentralization of government persist, and sustainable development of infrastructure is sought, it is possible that Mali may emerge as one of the few success stories on the African continent. It is up to the people of Mali to work further to achieve this end. For the purposes of this paper, it is proposed that stable countries, such as Mali, are good candidates for development work to succeed; therefore, more development aid should be channeled in to projects to improve living standards of the poor.

### **2.3 Population and Demographics**

A great variety in the composition of Malian ethnic groups exists in Modern Malian society. Katherine Dettwyler sums up Mali’s rich population of ethnic groups succinctly:

Mali...was a hodgepodge of environments and ethnic groups, artificially thrown together into one nation by European colonizers at the end of the nineteenth century. [The people of Mali are] an amalgam of people speaking hundreds of distinct languages, with diverse cultural adaptations, facing vastly different problems in different regions of the country.<sup>45</sup>

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<sup>45</sup> Dettwyler, Katherine A. *Dancing Skeletons: Life and Death in West Africa*, Prospect Heights: Waveland Press, Inc, 1994, p. 148.

The people that live near lakes or rivers and are traditionally known for their skills in fishing are called the Bozo ethnic group.<sup>46</sup> “(Mali’s) numerous ethnic groups [include] the numerically dominant Bamana (often called the Bambara), the Mande (or Mandinka), the Fulbe (or Fulani), the Tuareg [or Touareg], and the Songhay [or Songhai].”<sup>47</sup> The great majority of the Malian people are of the Bamana ethnic group, are farmers, speak the Bambara language, and subscribe to Islam as the official religion.<sup>48</sup> Although there also exist pockets of Christian followers, and the “animist” traditions are still very much alive.<sup>49</sup> In fact, traditional healers and herbalists are still used frequently by much of rural Malians as a primary choice for medicinal and spiritual purposes.<sup>50</sup> It is debatable as to whether this is for lack of other choices or because it is the preferred method of the rural population.<sup>51</sup>

The Malian people generally value family life and their community ties. “Traditionally, the social organization of the Bamana consists of extended families living in large compounds, polygamous marriages (more than one wife allowed), patrilineal descent (last name, ethnic identity, and property inherited from father to children), and patrilocal residence (wives leave their parents to go live with their husband, his parents,

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<sup>46</sup> Ibid, pp. 145-146.

<sup>47</sup> Clark, p. 254.

<sup>48</sup> Ibid, p. 254.

<sup>49</sup> Dettwyler, p. 22.

<sup>50</sup> Ibid, p. 23.

<sup>51</sup> Ibid, p. 23 and OED (Spring 1999), Précis, “Health Care in Mali: Building on Community Involvement”, Number 188, Spring 1999, p. 2.

and his brothers and their families).”<sup>52</sup> Children are valued to families as they are expected to take care of their parents when the parents are too old to take care of themselves anymore.<sup>53</sup> “The more children there are in a family, the more workers, and thus the greater the family income.”<sup>54</sup> Such observations are reflected in the fertility rate of Mali which was listed at 6.9 births per woman in 2000, whereas the rate in the United States is 2.0 in that same year.<sup>55</sup>

Malian people have rich cultures that have shaped interesting traditions and helped to stabilize relations between different ethnic groups. This factor has also helped keep Mali a generally peaceful state with ethnic groups living side-by-side with cultural practices to keep the peace or resolve conflicts. One example in particular is a rather unique form of socialization that helps to resolve conflicts. This social practice is called *cousinage*, or “joking cousins”<sup>56</sup>. Individuals who have certain last names are associated with a cultural grouping and are assigned, as joking cousins, those with last names that were once associated with a different cultural grouping. In *cousinage*, these cultural groups are obligated to mildly insult one another for a brief period, which releases pressure, and then laugh about it afterwards.<sup>57</sup> “Joking cousins who can say everything and tolerate everything of each other [is] a kind of Malian, indeed African, non-

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<sup>52</sup> Dettwyler, p. 22.

<sup>53</sup> Ibid, pp. 77-78.

<sup>54</sup> Ibid, p. 78.

<sup>55</sup> Watkins, p. 300 (Mali) and p. 297 (United States), respectively.

<sup>56</sup> Drisdelle, pp. 9-10 and Dettwyler, p. 60.

<sup>57</sup> Ibid. pp. 9-10 and Ibid. p. 60

aggression pact.”<sup>58</sup> Even in times where there is no conflict, *cousinage* can help to break the ice at meetings, presentations, and other social, business, or political events.

Adame Ba Konaré (wife of former Malian President Alpha Oumar Konaré) calls modern Malian cultural virtues as “bravery, fearlessness, modesty, righteousness, (and) generosity”.<sup>59</sup> Nevertheless, when Malians recount the history of their country, they are quick to skew reality in favor of idealistic virtues. Colonialism sent the historians into shock that materialized into an “excessive rehabilitation of (Malian) heroes”.<sup>60</sup> This historical bias has largely left out the weaknesses of and blemishes to the qualities of pre-colonial Malian leaders. “We can say that the relation of Malians with history is both active and emotional.”<sup>61</sup> The negative effects of colonial rule and past dictatorships had led the people of Mali to view the pre-colonial historical figures as almost godly. Skewed perceptions of history and historical leaders leaves little objectivity in historical accounts. As Malians revere their historical figures so highly, it also serves as a model of behavior to be sought by the general populace. This leads to a heightened sense of unity among people and may serve as another means to a stable and peaceful society held up by these historical virtues.

As many countries across Africa, Malians share a rich history, rich culture, and diverse heritages. Cultural aspects of the people, such as *cousinage*, do assist in attempts to develop the country, although skewed historical perspectives may disrupt the country’s

<sup>58</sup> Konaré, Adame Ba. “Perspectives on History and Culture: The Case of Mali” in Democracy and Development in Mali, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 22.

<sup>59</sup> Ibid, p. 18.

<sup>60</sup> Ibid, p. 18.

<sup>61</sup> Ibid, p. 21.

ability to move forward. “What (Mali) needs is a veritable social project, innovative, rigorously oriented toward the values that belong to (the) present and point toward (the) future...instead of fulminating and ruminating about the past.”<sup>62</sup> Should Malian people pool their collective resources together to encourage development, their successful transition to a multi-party democracy is evidence that success will come of it.

As a strict patriarchal society, definite differences in the roles of Malian women and men are the cultural and traditional norm. Women are generally responsible for household duties such as childrearing, fetching water, cooking, and cleaning.<sup>63</sup> Men are traditionally the providers of food, or money for food, and tend to lead decisions regarding the family.<sup>64</sup> How money is spent generally rests in the authority of men.

As mentioned above, families usually try to have many children. It becomes difficult to pay for the education of so many children. This is reflected in the 2004 combined gross enrollment ratio for primary, secondary and tertiary schools in Mali: 35%<sup>65</sup>. Out of this staggeringly low percentage of school children, families choose to send their boys to school instead of girls. “Only 35% of primary schools’ pupils are girls and the proportion diminishes with every year of schooling [and] only 22% of girls reach a 5<sup>th</sup> year of education.”<sup>66</sup> For example, a poor family with six children - three boys and three girls - must make the decision about which children they are able to afford to send

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<sup>62</sup> Ibid, p. 22.

<sup>63</sup> Grosz-Ngaté, Maria. “Labor Migration, Gender, and Social Transformation in Rural Mali” in Democracy and Development in Mali, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 89.

<sup>64</sup> Ibid, p. 89.

<sup>65</sup> Watkins, p. 286.

<sup>66</sup> Drisdelle, p. 47.

to school. If there is only enough money to pay for the school fees of two children, it is likely that none of the girls in this poor family will attend school.

Families often argue that the boys will grow to be men that will have to provide for a family of their own. So, why is it important to educate women just as much as men? Evidence suggests that this trend is only perpetuating poverty and the stagnant economy:

Research shows that for every ten percent increase in female literacy, a country's economy can grow by 0.3 percent. Educated girls are more likely to raise healthy, well-nourished, educated children, to protect themselves from exploitation and AIDS, and to develop skills to contribute to their societies.<sup>67</sup>

Furthermore, the less educated women are, the less they will know of their rights. "Democratization in the absence of a literate population may be possible, but shallow."<sup>68</sup> Perhaps women's voices are not being heard on political and gender inequality issues because they know of no other existence or set of lifestyle possibilities.

Certain legal rights for Malian women may exist; however, most often, traditional family and social pressures outweigh the legal strength of women's rights in Mali. "After independence from France, the first Malian government introduced some of the most progressive legislation in Africa concerning women's rights to inherit property, and their status within the family, [but] traditional ways of life continue to define women's place in Malian society."<sup>69</sup> It remains to be seen if this is due to a lack of information on women's rights being disseminated to women in rural areas or if traditional values are simply

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<sup>67</sup> WSP (Water and Sanitation Program), "The Case for Water and Sanitation: Better Water and Sanitation Make Good Fiscal and Economic Sense, and Should be Prominent in PRSPs and Budget Allocations", Sector Finance Working Papers: No. 11, November 2004, p. 5.

<sup>68</sup> Bingen, p. 248.

<sup>69</sup> Drisdelle, p. 46.

holding sway. “Women suffer disproportionately from the effects of poverty, famine, and human rights abuses through impaired access to employment, education, and reproductive and other basic health services; salary inequities; political and legal marginalization; divorce restrictions; and direct violence.”<sup>70</sup>

Bamako, the capital city of Mali, is the most densely populated city in all of Mali. The majority of urban and peri-urban centers in Mali are crowded, but most of the population in Mali are dispersed throughout the rural areas of the southern regions. Mali is subdivided into 8 regions: Kayes, Koulikoro, Sikasso, Segou, Mopti, Tombouctou, Gao, and Kidal. In Table 2.1 below, the darkly shaded regions contain the highest population numbers. Furthermore, the red and green bars signify the rural and urban (respectively) population differences in each of the regions. The regions of Tombouctou, Kidal, and Gao sit in the north of Mali reaching deep into the Sahara desert and are very sparsely populated with nomadic tribes and salt mine caravan route oasis villages. As illustrated in that same table, the regions of Kayes, Koulikoro, Ségou, Mopti, and Sikasso cover only about 34% of the surface area of Mali and are the most heavily populated regions in Mali. Mali has counted approximately 10,000 villages of which 90% are located in those five most populated regions.<sup>71</sup> The sedentary population of Mali is 99% and only 1% is made up of nomads in the north (Sahara desert nomads).<sup>72</sup>

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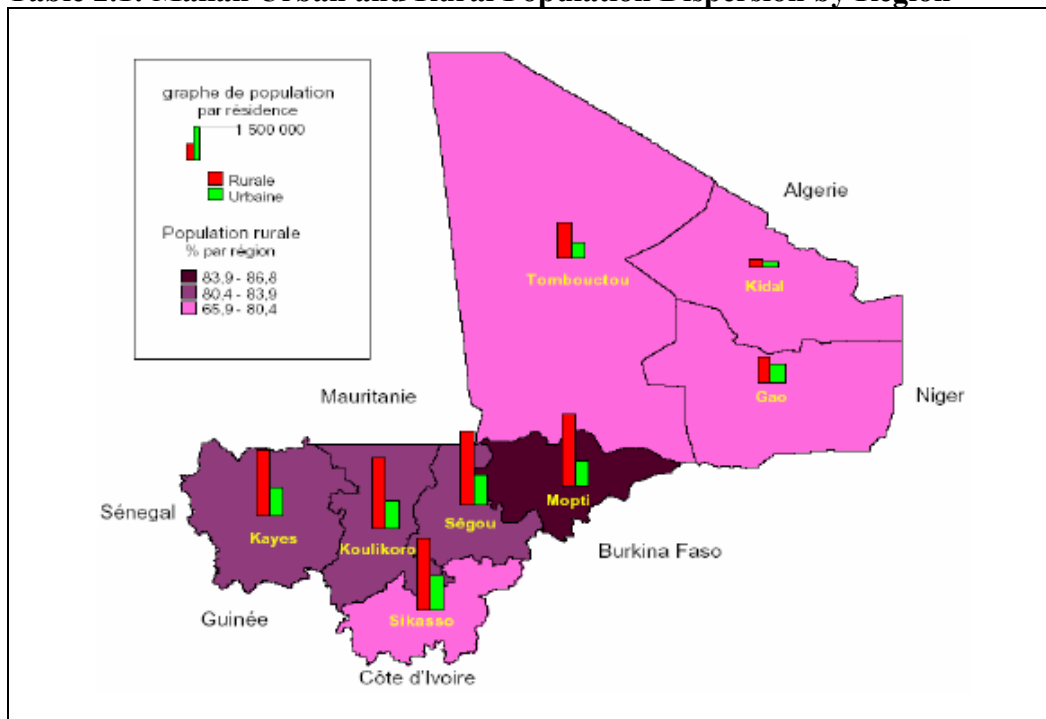
<sup>70</sup> Donohoe, Martin. “Causes and Health Consequences of Environmental Degradation and Social Injustice.” in: *Social Science & Medicine*, 56, 2003, p. 580.

<sup>71</sup> Ministère des Mines, de l’Energie et de l’Eau; Direction Nationale de l’Hydraulique (Mali national ministries), “Rapport national sur la mise en valeur des ressources en eau: Mali” (“National report on the development of water resources: Mali”), January 2006, p. 6.

<sup>72</sup>

Ibid, p. 6.

**Table 2.1: Malian Urban and Rural Population Dispersion by Region**



Source : Cellule de Planification et de Statistique du Ministère chargé du Développement Rural au Mali found in "Rapport national sur la mise en valeur des ressources en eau: Mali"

The urban population accounts for only 26.8% whereas the rural population is 73.2% as shown in detail in Table 2.2 below. The density of population in certain regions as opposed to others is primarily due to climate conditions and water availability. Arable land is another major factor in the concentration of large populations in those areas.

**Table 2.2: Partition of Malian Population by Sex and Region, 1998**

Region	Men			Women			Total
	Urban	Rural	Subtotal	Urban	Rural	Subtotal	
Kayes	123,618	548,060	671,678	128,285	574,353	702,638	1,374,316
Koulikoro	125,701	652,631	778,332	127,564	664,611	792,175	1,570,507
Sikasso	190,771	689,337	880,108	185,303	716,764	902,049	1,782,157
Ségou	149,390	681,996	831,386	148,208	695,764	843,972	1,675,358
Mopti	97,576	633,195	730,771	98,911	648,823	747,734	1,478,505
Tombouctou	45,278	187,700	232,978	48,260	195,555	243,815	476,793
Gao	64,821	128,696	193,517	69,462	131,615	201,077	394,594
Kidal	7,166	15,119	22,285	6,764	13,337	20,101	42,386
Bamako	514,967	0	514,967	501,329	0	501,329	1,016,296
<b>Totals</b>	<b>1,319,288</b>	<b>3,536,734</b>	<b>4,856,022</b>	<b>1,314,086</b>	<b>3,640,804</b>	<b>4,954,890</b>	<b>9,810,912</b>



*Source: Direction Nationale de la Statistique et de l'Informatique (Bureau of National Statistics and Information of Mali) found in "Rapport national sur la mise en valeur des ressources en eau: Mali"*

The most important thing to remember about the demographics of Mali is that the poor exist in both urban and rural settings. In the next section, the differing economic issues facing Malians will be discussed.

## **2.4 Economy**

Most of the economy in Mali revolves around agriculture and herding which takes place in the more densely populated rural areas. "Because of its geographic location and climate, Mali's export earnings are almost totally reliant on agriculture and livestock herding."<sup>73</sup> Subsistence farming and small-scale farming comprise the vast majority of agricultural techniques practiced in Mali with the most productive farms being located along the banks of the two main rivers.<sup>74</sup> "Agricultural activities occupy 70% of Mali's labor force and provide 36% of the GDP [while] cotton, gold, and livestock made up 80%-90% of total export earnings in Mali in 2003."<sup>75</sup> Millet, sorghum, and maize are main cereals produced in subsistence farming.<sup>76</sup> The major agricultural export commodity in the Malian economy is cotton. "Mali is dangerously dependent for foreign exchange on the production and export of one main commodity: cotton."<sup>77</sup> The reliance on cotton leaves the Malian economy susceptible to fluctuations in the world market and

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<sup>73</sup> Drisdelle, p. 37.

<sup>74</sup> U.S. Department of State, Bureau of African Affairs

<sup>75</sup> Ibid

<sup>76</sup> Drisdelle, p. 40.

<sup>77</sup> Ibid, p. 38.

can make or break export earnings in a given year. Since cotton is so valued by Malians, it is sometimes refer to as “white gold”.<sup>78</sup> Mali’s economy could add value to its cotton if it could process it instead of selling only raw cotton.<sup>79</sup> The other large-scale agricultural crop is rice: Mali is almost self-sufficient in its rice production.<sup>80</sup> Complex irrigation channels were created in the middle Niger (Mopti region) by the French and are controlled by the *Office du Niger*.<sup>81</sup>

Services account for 15% of the labor force with the remaining 15% consisting of industry and commerce.<sup>82</sup> “The industrial and manufacturing sector is virtually confined to Bamako.”<sup>83</sup> Industry in Bamako equals only ~15% of GDP.<sup>84</sup> The average annual income in Mali has been documented at about \$250 while skilled workers’ salaries average \$1,560 per year.<sup>85</sup>

Mali, as a struggling democratic nation of the Third World, has a number of issues working against its progress in economic growth:

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<sup>78</sup> Ibid, p. 38.

<sup>79</sup> Ibid, p. 38.

<sup>80</sup> Ibid, p. 38.

<sup>81</sup> McIntosh, pp. 1-5.

<sup>82</sup> U.S. Department of State, Bureau of African Affairs

<sup>83</sup> Drisdelle, p. 37.

<sup>84</sup> Ibid, p. 37.

<sup>85</sup> U.S. Department of State, Bureau of African Affairs

1. Geographic location - no coastlines make it harder to trade with other nations and harder to attract foreign investment
2. Low educated workforce - 19% adult literacy rate (ages 15+), 0.24 education index<sup>86</sup>
3. Lack of infrastructure -
  - a. Bad roads make it difficult to transport livestock and goods<sup>87</sup>
  - b. There are only 6 telephone mainlines per 1,000 people, compared to 606/1,000 people in the United States<sup>88</sup> which makes the process of communication between businesses more difficult
4. Lack of start up capital for small business ventures - GDP per capita was \$998 PPP in 2004, compared to \$39,676 in the United States<sup>89</sup>

Positive aspects of Mali's economy:

1. Relatively high annual growth rate - 2.5% (Mali), compared to -0.7%(Niger), and 1.9% (U.S.)in 1990-2004<sup>90</sup>

The issues working against economic growth reflect a bleak outlook for Mali's ability to increase its economic growth and income; however, Mali has still managed to gain a 2.5% annual growth rate between 1990 and 2004. This number is impressive when compared to the negative growth rate of Niger and the slightly lower growth rate of the U.S. listed above. Even with the cards stacked against this disadvantaged nation, there is hope that further economic progress can be made.

The mining sector in Mali holds promise if it is used to its potential. "Nobody can put a value on the potential contribution that could be made by minerals and precious metals to the economy of Mali".<sup>91</sup> Mali is known for its historic connection to gold

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<sup>86</sup> Watkins, p. 286. The Education index is based on the adult literacy rate and the combined gross enrolment ratio for primary, secondary and tertiary schools (Watkins, p. 405). Comparatively, the Education index in Norway is 0.99 (Watkins, p.283).

<sup>87</sup> Drisdelle, p. 39.

<sup>88</sup> Watkins, pp. 327-330.

<sup>89</sup> Ibid, pp. 331-334.

<sup>90</sup> Ibid, pp. 331-334.

<sup>91</sup> Drisdelle, p. 37.

production, but there are other minerals that could be used to enhance the mining sector. “Gold, diamonds, bauxite, manganese, zinc, copper, and lithium are waiting as potential mining exploits.”<sup>92</sup> There could be a downfall to the production of gold and diamonds in Mali: the “curse of natural resources”.<sup>93</sup> The curse is said to play a large part in initiating and prolonging civil conflict between rebel groups and governments in the fight to control the resources for financial gain. Olsson determines that the curse is more likely to transpire in countries where institutional organization is weak rather than in those where institutions are strong.<sup>94</sup> The curse is especially prevalent in the case of diamonds. By the same weight, diamonds are worth 40 times that of gold and diamonds are more easily transported than other natural resources.<sup>95</sup> Civil conflict between rebel groups and government over diamonds have occurred in both Sierre Leone and Liberia: two close neighbors of Mali. Even with Mali’s recent stability, there is no guarantee that Mali’s institutions are strong enough to withstand an outbreak of conflict over large deposits of diamonds. One can hope that the terrible effects of diamond conflicts in neighboring countries will serve as an example to Malians who will avoid the same fate. In fact, the greater the communication between West African nations, the better the chances are for conflict to be avoided, as will be discussed in the next section.

In a regional perspective, fifteen West African states, including Mali, joined forces under the name ECOWAS (Economic Community of West African States) in

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<sup>92</sup> Ibid, p. 38.

<sup>93</sup> Olsson, Ola. “Conflict Diamonds” in: *Journal of Development Economics*, June 8, 2004, pp. 1-2.

<sup>94</sup> Ibid, p. 2.

<sup>95</sup> Ibid, p. 13.

order to improve economic integration and development among themselves.<sup>96</sup> The ECOWAS treaty was signed on May 28, 1975.<sup>97</sup> It was hoped that membership in ECOWAS would assist in improving communication, commerce, transportation, and integration between member states. Competition with other developing countries around the world have made progress difficult for the underdeveloped markets participating in ECOWAS. “[In a 14year period,] Africa's share of manufactured exports...halved and, in terms of gross domestic product (GDP) per capita, exports from South East Asia were 100 times those of [Sub-Saharan Africa].”<sup>98</sup> Most all of the ECOWAS members’ main exports fall into three categories: agriculture, livestock, and minerals/metals. How will Africa compete with markets like that in South East Asia? “As Africa is so richly blessed with natural resources, it should develop capabilities in high-tech, value-added manufacturing activities to fully participate in world trade.”<sup>99</sup> The ECOWAS countries are starting to become aware of their need to branch into new trades.

The francophone members of the ECOWAS planned to develop a common mining code that would extend into the rest of the Community within time.<sup>100</sup> In theory, such a code, if enforced and shared by the Community, would make that sector’s

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<sup>96</sup> Articles of Association for the establishment of an Economic Community of West Africa, Accra, May 4, 1967. UN Treaty Series, vol. 595, p.287. The ECOWAS members are Benin, Burkina Faso, Cape Verde (joined 1976), Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo (Mauritania withdrew in 2002).

<sup>97</sup> Ibid, p.287.

<sup>98</sup> Siddiqi, Moin (2003). “Trade: Manufacturing an advantage.” African Review of Business and Technology. May 15, 2003, p. 242.

<sup>99</sup> Ibid.

<sup>100</sup> Ruffini, Antonio. “The Francophone Countries of West Africa are Working Together to Strengthen their Economic Union” in: *Africa Today*, January 8, 1999.

production more efficient, leading to development of the market, and the ability to compete with other markets. The code would also have another effect on the Community:

The vision is that they will use...a common mining code to progress over the long term towards a unification system similar to the European Union. This will strengthen their hand as an economic block, and...fits in naturally with the activities of business people in the region who tend to focus on trade within the area as opposed to targeting specific countries. A regional stock exchange has begun operations recently. Should agreement be reached between finance ministers the next stage could be the establishment of customs agreements within the union.<sup>101</sup>

The success of this venture depends upon the dedication and commitment to cooperation in the true spirit of the ECOWAS' original purpose. If it is a success, the prospects for economic growth would increase, but stability in the region's governments largely dictate the outcome as well. The more opportunities they have to make the ECOWAS work, the more benefits that can be realized for its members.<sup>102</sup> Individually, these countries have little influence in the global market, but, together, the organization has a much greater chance to survive. "Only collectively can these countries attain the status of an observable developing country on the world economic map."<sup>103</sup> Time will tell if the ECOWAS succeed collectively or if Mali will benefit from it. Being a landlocked country, the formation of a customs union with freedom of movement for goods and services would greatly reduce the cost of importing goods to Mali and increase benefits of commerce within its borders.

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<sup>101</sup> Ibid.

<sup>102</sup> Adedeji, Adebayo. History and Prospects for Regional Integration in Africa. Speech at The Third Meeting of the African Development Forum. Addis Ababa, 5 March 2002, available at: [http://www.uneca.org/eca\\_resources/Speeches/2002\\_speeches/030502adebayo.htm](http://www.uneca.org/eca_resources/Speeches/2002_speeches/030502adebayo.htm).

<sup>103</sup> Ruffini.

Common currencies also help economic activity in Africa. “Africa always has two functioning monetary unions: the CFA franc zone (composed mainly of former French colonies, with the currency linked to the Euro) and the Common Monetary Area, (CMA, centered on South Africa’s Rand).”<sup>104</sup> ECOWAS had planned to create its own currency that follows in the European Union’s footsteps with the creation of the Euro. “The West African Monetary Zone is to be created in July 2005 and is to lead in 2006 to a merger with the West African part of the CFA franc zone to produce a single currency for the ECOWAS (Economic Community of West African States).”<sup>105</sup>

A common currency is by no means the one solution to all of West Africa’s problems. “Monetary Union should not be seen as a panacea or to be driven by a grandiose political vision that hopes to find a symbol of unity and stability when the reality is quite different.”<sup>106</sup> Some members of ECOWAS are not considered to be as stable as others. The instability of certain countries will lead to economic problems down the road if their currencies are all linked to one another. Furthermore, there needs to be a certain level of trade amongst the partners in the common currency in order for a real benefit to be realized. “An important motivation for monetary union in Europe was to reduce the cost of changing money associated with trade and tourism.”<sup>107</sup> Trade between African countries is quite small, so a common currency will not produce the same effect

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<sup>104</sup> Masson and Milkiewicz.

<sup>105</sup> Ibid.

<sup>106</sup> Ibid.

<sup>107</sup> Ibid.

from lower transaction costs that it has in European countries that participate in the Euro.<sup>108</sup> It could, however, lead to the growth of industries that could foster trade ties between African countries and thus economic growth would result.

Labor migration is a phenomenon that occurs in many communities where opportunities for jobs are scarce. Men or women leave the community to search for work that will allow that individual to accrue capital to use for various needs. The breakdown of rural community ties and the increase of urban sprawl are two symptoms of labor migration in Mali. Labor migration is attributed to the need to receive cash income for specific purposes, the lure of city life, and problems in agricultural production.

Male migration dates from the 20<sup>th</sup> Century when French colonial rule required taxes to be paid in cash, not in kind.<sup>109</sup> For a subsistence farmer, the ability to pay taxes in cash is limited when crops are produced for the annual consumption of the family and not for sale in the market. Migrating to an area for seasonal work offers the chance to remedy the situation. “Agriculture (in Mali) is not self-sustaining and the reproduction of social life is predicated on a combination of agriculture and seasonal labor migration.”<sup>110</sup> Migration was a necessity rather than a choice because the money for taxes, marriage expenses, and agricultural equipment could not be generated through agricultural production alone.<sup>111</sup> Villages with a good agricultural association have less out migration than those with a weak association.<sup>112</sup> These associations help to pool resources - such as

<sup>108</sup> Ibid and also Masson, Paul and Pattillo, Catherine. “A Single Currency for Africa?” in: *Finance and Development*, December 2004.

<sup>109</sup> Grosz-Ngaté, p. 90.

<sup>110</sup> Ibid, p. 88.

<sup>111</sup> Ibid, p. 91.

<sup>112</sup> Ibid, p. 92.



equipment, fields, techniques, and money – in order to decrease failing aspects of production or to assist less fortunate members in times of need.

Differences between colonial migration and contemporary migration have been observed in recent years. With the rise of migration, traditional community and family structures have begun to change. The ability to migrate to urban areas has become easier with modern forms of transportation and more Malian youths are taking part in it. Furthermore, many young Malians get used to the big city atmosphere and, consequently, experience a sense of loss upon return to their rural communities. Grosz-Ngaté reports that many returned young migrants complain of “missing Bamako” and all the animation and excitement during the time spent there.<sup>113</sup>

For those migrants that stay away for unnecessarily long periods of time, family members back in the community often experience great problems. It is the duty of the migrant to send home money for the survival of the family. Wages earned by the migrant can become a “shameful matter” if the individual retained earnings are visibly put above those sent home for the “common good”.<sup>114</sup>

Labor migration is not just an activity reserved solely for men. Women migrants (usually unmarried girls) are typically sent to Bamako to be domestic servants. The goal is to save enough money to help their mothers prepare “wedding goods” for the young

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<sup>113</sup> Ibid, p. 91-92.

<sup>114</sup> Ibid, p. 93.

woman.<sup>115</sup> Some families and communities shame this process for young women for fear that they may be corrupted by too much independence and too little supervision.<sup>116</sup>

Whatever the reasons for labor migration, urban areas in Mali are affected by the phenomenon as well. Some industries rely on seasonal labor migration for production of their goods. Migrants add to the great problem of over-crowding, the spread of poor slum areas, and increased crime in cities. As urban sprawl intensifies, it becomes more difficult to keep up with social services to the growing population and one result is an increase in health-related issues due to overcrowding.

## **2.5 Health Issues**

Disease stands as one of the greatest threats to the people of Mali. Women in Mali have a one-in-seven chance of dying in childbirth or from unsafe abortion.<sup>117</sup> Goiters, associated with iodine deficiency, are very common in Mali.<sup>118</sup> “Measles, malaria, upper respiratory, and diarrhea are the major illnesses of young children.”<sup>119</sup> Schistosomiasis, tapeworms, ascariis, and hookworm are common parasitic infections in Malian children.<sup>120</sup> Diarrhea is one of the most common illnesses found in Mali. Diarrheal diseases result in weight loss, growth stunting, and vitamin deficiencies.<sup>121</sup>

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<sup>115</sup> Ibid, p. 94.

<sup>116</sup> Ibid, p. 95.

<sup>117</sup> Drisdelle, p. 47.

<sup>118</sup> Dettwyler p. 108.

<sup>119</sup> Ibid, p. 24.

<sup>120</sup> Ibid, pp. 43-45.

<sup>121</sup> Watkins, p. 45.

“From the time [Malian children] begin to crawl, and eat solid foods, they get bombarded with bacteria. If it doesn’t kill them, they eventually get used to it.”<sup>122</sup>

Diseases affect Malians so much that it often leads to a completely different perception on childhood, death, and living. “People [in Mali] don’t think about what will happen when their kids grow up...because we never know how long the child will live.”<sup>123</sup> Disease creates social disruptions, interrupts the education of school children, sometimes leads to long-term debilitation, or results in death.<sup>124</sup> “Every person has experienced the death of numerous relatives, friends, and neighbors.”<sup>125</sup> In Mali, death is very much a part of life.

For children in poor rural areas, malnutrition is very common. “[Children] die from malnutrition, or from diseases such as measles that wouldn’t kill a well-nourished child.”<sup>126</sup> “Kwashiorkor” is a type of malnutrition found in Mali that results from a diet that is severely deficient in protein, while at the same time rich in calories.<sup>127</sup> Another common type of malnutrition is marasmus. Marasmus is caused by diets deficient in protein *and* calories. Kwashiorkor is a much more dangerous form of malnutrition that can lead to death, whereas protein-calorie malnutrition (marasmus) is much less likely to kill.<sup>128</sup> In areas that are awash with children suffering from malnutrition, a standard for

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<sup>122</sup> Dettwyler, p. 107.

<sup>123</sup> Ibid, p. 157.

<sup>124</sup> Gleik, Peter H. “The Human Right to Water”, Water Policy 1, 1998, p. 499.

<sup>125</sup> Dettwyler, p. 157.

<sup>126</sup> Ibid, p. 95.

<sup>127</sup> Ibid, p. 71.

<sup>128</sup> Ibid, p. 71.

children is set and the community will often not realize that the children are sick. “One problem plaguing nutrition education programs in communities with widespread malnutrition is that people simply get used to the way children look.”<sup>129</sup> Even if such problems become known, it is hard for poor parents to do much to change the situation. Vegetables, meat, and vitamins are simply too expensive for a poor family to provide all the time.

Malaria poses one of the biggest problems for Malians of all ages, but especially children and the elderly. When measles struck Mali in the 1980s, a vaccine was introduced that has improved the chances of child survival in Mali, but the malaria problem cannot be tackled so easily. “There is no vaccine for malaria which is caused by a protozoan parasite that reproduces in the red blood cells.”<sup>130</sup> Measures can be taken to avoid malaria such as using bug repellent, sleeping within a mosquito net, and burning mosquito coils. If these measures do not succeed, a choice must be made about whether to seek treatment for the disease or wait it out. Trying to wait out malaria is like playing a game of Russian roulette. Treatment is the smart choice, but there is little choice for a poor family that cannot afford medicine. “Malaria is utterly treatable, yet incredibly, it still claims up to three million lives per year, mostly young children, about 90% of whom live in Africa.”<sup>131</sup>

Currently, two health care alternatives are available to Malians. “Health services...are provided primarily by traditional herbalists who sell leaves in the market

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<sup>129</sup> Ibid, p. 104.

<sup>130</sup> Ibid, p. 24.

<sup>131</sup> Sachs, Jeffrey. The End of Poverty: Economic Possibilities for Our Time. New York: Penguin Press, 2005, p. 196.

and by a government-run maternal/child health center (PMI).<sup>132</sup> Officially, Malians have access to free medical care, but the traditional healers are more often used. “Although PMI visits are free, the numerous medicines that are usually prescribed are very expensive, and sick children are often taken to a traditional healer first.”<sup>133</sup> Furthermore, for health care workers or the ill in urban areas, there is another major concern that impedes swift and qualitative medical services: the Malian Ministry of Health. One cultural anthropologist studying nutrition in Mali complains about “the difficulties of accomplishing anything through the official bureaucratic maze of the Malian Ministry of Health”.<sup>134</sup>

Water-related diseases are one of the biggest killers of Malians as well. “An estimated fourteen [to] thirty thousand [African] people, mostly young children and the elderly, die every day from water-related diseases.”<sup>135</sup> Malaria also falls into this category as mosquitos breed in pools of stagnant water. Guinea worm, which health workers in Mali are still working to eradicate is another such disease. Schistosomiasis is another water-related disease that affects people that come into contact with river water and fields irrigated with river water. Aemoebas and giardia are the two main diarrhea diseases prevalent in Mali and are caused by drinking unsafe water, but cholera and bacillary dysentery outbreaks are also known to Malians. Water-related diseases are a very serious matter in the health issues of Malians today. “At any given moment,

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<sup>132</sup> Dettwyler, p. 23.

<sup>133</sup> Ibid, p. 23.

<sup>134</sup> Ibid, p. 136.

<sup>135</sup> Gleik, (1998), p. 488.

approximately one-half of the people in the developing world suffer from disease caused by drinking contaminated water or eating contaminated food.”<sup>136</sup>

The costs of water-related diseases can be as difficult to measure as malnutrition. “One early estimate was that water-related diseases cost society on the order of US \$125 billion per year...just in direct medical expenses and lost time.”<sup>137</sup> Outside of medical costs, there are also the societal, educational, and long-term personal costs associated with lost time at work/school and other such costs. Consequently, evidence suggests that providing clean water infrastructure would actually be cheaper than paying for the medical costs of continually treating for these diseases. “[The] cost of providing new infrastructure needs for all urban water sectors has been estimated at around US \$25 – US \$50 billion per year.”<sup>138</sup> This solves the problem in urban areas, but what about the rural poor that have less access to safe drinking water?<sup>139</sup>

If one takes this logic further, another way to service the rural poor in a more efficient way with the dollars spent on development presents itself. “The WSSCC (Water Supply and Sanitation Collaborative Council)...estimates that 35,000 rural people could be provided with basic sanitation services for the same cost of providing one thousand urban residents with a centralized sewerage system.”<sup>140</sup> The application of funds to rural areas is actually less expensive than the application to urban areas. In spite of this fact,

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<sup>136</sup> Ibid, p. 488.

<sup>137</sup> Ibid, p. 499.

<sup>138</sup> Ibid, p. 499.

<sup>139</sup> Evidence regarding rural and urban access to clean drinking water in Mali will be discussed in the *Water Supplies* section of this paper on page 50.

<sup>140</sup> Gleik (1998), p. 499.

most development and other funds go to increasing or maintaining urban water infrastructure. Rural areas are subject to a greater threat of exposure to water-related diseases as unsafe drinking water is most commonly found there. Putting more money into urban areas leaves rural areas destitute and leads more people to leave rural areas to seek help, work, or a better quality of life in urban areas, thus exacerbating urban sprawl and further decreasing the quality of life in urban areas.

The economic costs of an unhealthy population must also be taken into consideration. “Societies with a heavy burden of disease tend to experience severe impediments to economic progress.”<sup>141</sup> Often, a correlation between fertility rates and economic performance stands as a signifier to disease rates and the tendency to replace population losses through the birth of more children. “Societies with high rates of infant and child mortality have higher rates of fertility, and large numbers of children reduce the ability of poor families to invest in health and education, resulting in an under-trained, under-productive workforce.”<sup>142</sup> Healthier workers need less time off, are able to function better than ill workers, and may be able to earn higher wages.<sup>143</sup> The more healthy workers a given population has, the more productive the entire group will have toward economic activity in the country. The World Health Organization (WHO) Commission report states that each 10 percent improvement in life expectancy is associated with a rise in economic growth of at least 0.3 to 0.4 percentage points per year.<sup>144</sup>

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<sup>141</sup> WSP, p. 2.

<sup>142</sup> Ibid, p. 2.

<sup>143</sup> Ibid, p. 3.

<sup>144</sup> Ibid, p. 3.

The economy also benefits from having a healthy and educated workforce. If children in Mali are healthy enough to attend school more often, they are less likely to fall behind and more likely to do well in school. The WHO has estimated that fewer incidents of diarrhea in African school children would result in the gain of 99 million school days if the Millennium Development Goals (MDG) are met.<sup>145</sup> “Not only do healthy children attend school more, and get more out of it, but schools that have water and sanitation facilities attract and retain more students, particularly girls.”<sup>146</sup> Children who are often sick may also experience delays in their cognitive abilities that will greatly affect their ability to succeed in school. “Health and nutritional status are important predictors of cognitive and educational achievement test results.”<sup>147</sup>

The health of individuals is directly related to access to safe drinking water and sanitation. “The health sector alone cannot produce good health; other sectors too, including the water and sanitation sector, have a vital role to play.”<sup>148</sup> The Water and Sanitation Program has estimated that US\$116 million a year in productive days can be gained from preventing illnesses due to a lack of clean water and US\$168 million can be gained with access to sanitation.<sup>149</sup> “The averted costs of health sector treatment were

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<sup>145</sup> Watkins, p. 42. According to the Human Development Report 2006, achieving the Millennium Development Goal target of halving the proportion of people without access to water and sanitation would cost about \$10 billion per year. This money would cover technologies that are low-cost and sustainable. If the development community were to achieve universal access to water, this figure would increase to \$20 - \$30 billion, depending on the technology that is used.

<sup>146</sup> WSP, p. 4.

<sup>147</sup> Ibid, p. 4.

<sup>148</sup> Ibid, p. 3.

<sup>149</sup> Ibid, p. 4.



estimated as US\$ 1.695 billion per year if the MDG's were met, and US \$2.410 billion if everyone had basic access [to clean water and sanitation]."<sup>150</sup> These figures distinctly support the need for an improvement in health care, but, more specifically, that greater access to safe drinking water in Mali will ultimately improve the quality of life for the entire population. The quality of life of Malians will reflect greater economic growth from a decrease in illness, a general sense of well-being, and a greater confidence in the chance of children to survive.

### **3. Water Resources**

#### **3.1 Rights and Benefits**

It is clear that there is a fundamental need for water in order to sustain life. This need is so great that there have been many attempts to address a human right to water starting as early as 1948.<sup>151</sup> Peter Gleik makes a strong case for a right of individuals to water in order to fulfill the Universal Declaration of Human Rights (UDHR) approved by the United Nations General Assembly in 1948 as water is a precondition to achieving human rights.<sup>152</sup> More specifically, the debate on the right to water can be traced to the United Nations Conference on Human Environment in 1972, held in Mar del Plata, Argentina.<sup>153</sup> At this conference, it was decided to dedicate an entire decade to the commitment of government to provide substantial developments in the water and

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<sup>150</sup> Ibid, p. 4.

<sup>151</sup> See Gleik (1998), pp. 488-490, and also Salman, Salman M.A. and McInerney-Lankford, Siobhán. The Human Right to Water: Legal and Policy Dimensions. Published by the World Bank, Washington, 2004, pp. 7-16.

<sup>152</sup> See also Salman and McInerney-Lankford, pp. 15-22.

<sup>153</sup> Ibid, pp. 7-8.

sanitation sector.<sup>154</sup> The International Drinking Water Supply and Sanitation Decade (IDWSSD), as it was officially named, was started in order to address these concerns from 1981-1990.<sup>155</sup>

In 1992, the International Conference on Water and the Environment, held in Dublin, Ireland, defined the right to water in a different manner. At this conference, water was redefined as an economic good. It went on to proclaim that human beings should have access to clean water and sanitation at an affordable price. To this end, the right to water no longer falls under the category of a free natural resource and the conference leaves no definition of what *affordable* water should cost. Later that year, the right to water in balance with ecosystems was the focal point of the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992.<sup>156</sup> This conference agreed with the previous definitions of the human right to water, but put emphasis on the conservation of the environment and protecting ecosystems while working toward the development of water supply technologies.

In response to these calls for the right of water, there has been a wealth of activity in the world community regarding this issue. The World Water Council (WWC) and the Global Water Partnership (GWP) are two organizations that were created to promote these ideals.<sup>157</sup> Several World Water Forums have followed in the years 1997-2003 thanks to efforts of the WWC and the GWP. The United Nations has instituted a number

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<sup>154</sup> Ibid, p. 8.

<sup>155</sup> Ibid, p. 8.

<sup>156</sup> Ibid, p. 10.

<sup>157</sup> Ibid, p. 10. The WWC acts as a think tank on water resource issues and the GWP acts as a forum for the integration of water resource management partnerships between countries.

of resolutions dedicated to water resources leading up to the Millennium Development Goals and even the establishment of an annual “World Water Day” which commenced on March 22, 2005.<sup>158</sup> That water has been discussed and agreed upon as such an important aspect of human rights, it must be necessary for water to be supplied to those in need; but how much water must be given in order to fulfill the human right to water?

Peter Gleik has worked to find an answer to this question. Gleik recommends that a standard be adopted for the basic water requirements (BWR) of every person in order to meet human health needs. Gleik suggests that 5 liters of clean water per person per day (lpcd) for drinking water, 20 lpcd for sanitation and hygiene, 15 lpcd for bathing, and 10 lpcd for cooking: for a grand total of 50 lpcd.<sup>159</sup> Mali is listed as having a total estimated 6 lpcd in 2000<sup>160</sup> and population growth can affect these numbers in the future if potable water availability is not improved. At 6 lpcd, Mali meets the recommended allocation of clean water lpcd for drinking purposes, however there is only one liter of water left to stretch for cooking, washing, etc. Furthermore, Gleik argues that countries having access to only 3-5 liters of clean water per day are only meeting the minimum requirement for human survival<sup>161</sup> which implies that the quality of life in this range is very poor indeed. Gleik believes that the BWR minimum should be instituted with precedence over other concerns, including economic ones.<sup>162</sup> In the next section, I will show that the benefits

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<sup>158</sup> Ibid, pp. 14-15.

<sup>159</sup> Gleik (1998), p. 496.

<sup>160</sup> Ibid, p. 497.

<sup>161</sup> Ibid, p. 496.

<sup>162</sup> Ibid, p. 499.

from having access to proper water and sanitation result in specific health gains that translate into economic gains down the road.

Malians are afflicted with many diseases related to poor sanitation and limited access to water. Benefits of providing access to basic water and sanitation include:

- The health impact of water and sanitation related diseases other than diarrhea (worm infections, skin diseases, etc.);
- The cost of household water treatment avoided (boiling, for instance);
- The costs avoided due to reduced reliance on commercial water sources (bottled water, or water sold at high prices by kiosks and vendors, for instance);
- The availability of water for small industry or gardening;
- Capacity-building at local level which occurs when communities come together to install and manage better water supply facilities; and
- Providing people with dignity, privacy, convenience and a sense of social status (WSP, p. 7-8).

It is already clear that diarrheal diseases will decrease when clean drinking water is available. It is also apparent that having access to clean water for bathing will help to maintain an adequate level of hygiene. Schistosomiasis is a common disease acquired from those exposed to river water. Women who must use river water to wash clothes and people who must use the river to bathe are at risk of infection of this dreadful disease among others. If there is an alternative to using river water available to these groups, the cases of schistosomiasis would decrease dramatically. Furthermore, skin diseases such as ringworm may also be avoided.

Growing concern about the AIDS crisis in Africa has taken precedence in health sectors and development. Although Mali is not located in what is known as the “AIDS corridor”,<sup>163</sup> there are documented cases of HIV/AIDS in Mali<sup>164</sup> and AIDS is spreading

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<sup>163</sup> Easterly (2), p. 239.

<sup>164</sup> Ibid, p. 239. AIDS prevalence in Mali is estimated at ~3% by Malian health services. In southern and eastern countries in Africa, AIDS prevalence is between 10% and 25%.

across African continents at an alarming rate.<sup>165</sup> For those individuals who are suffering from AIDS, access to a clean water supply and sanitation may mean the difference between a few years or just a few months of life. “The [AIDS] epidemic has reached a point in its cycle when those who are HIV positive are starting to fall sick, and are vulnerable to opportunistic infections, including diarrheal diseases and skin diseases.”<sup>166</sup> AIDS, of course, must also be fought through prevention methods, education about transmission, and treatment of the disease with drugs. Clean drinking water, however, does prolong life for those suffering from the disease.

Personal financial savings is another benefit of improved water and sanitation in a community. “In the absence of good and reliable water supply, many families are forced to incur direct out-of-pocket costs in order to purchase water from vendors, store water in their houses, or disinfect dirty water by boiling or chemically treating it.”<sup>167</sup> Although these costs may seem small, the added burden to the poor population is proportionally high. Water vending and its costs will be discussed in greater detail later in this chapter (see *Water Vending* section of this paper, p. 61).

Getting water is often a long and arduous task that takes up a lot of time. With the time saved from having improved access to water, time may be spent in other productive enterprises. For example, a woman who once spent an average of 4 hours fetching water in a day could use her saved time for tending a small garden that will supplement the diet of her family and perhaps yield some excess to sell in a market for

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<sup>165</sup> Ibid, pp. 238-263.

<sup>166</sup> WSP, p. 6.

<sup>167</sup> Ibid, p. 5.

income. The added income could help to send her child to school or allow her to include more meat in her family's diet.

The addition of a valued clean water source to a community can reap many benefits for improving the solidarity among its users. First, if there are trained members of the community that are available to operate or maintain the water source, its durability is increased. Secondly, if there is a community group assigned to manage the water source effectively, this group will help to infuse a sense of ownership in the community's water source. Finally, the enhanced quality of life in the community will encourage youth to remain in the community instead of leaving to other areas.

It is also possible to look at the benefits in numerical terms. The Water and Sanitation Program (WSP) has calculated benefit-cost ratio of investments in water and sanitation to prove that there is a high rate of return. For Africa, WSP has calculated that the benefit cost ratio is 11.<sup>168</sup> In other words, for every US \$1 invested in water and sanitation, US \$11 of benefits is realized. Table 3.1 below shows in detail what the benefits would be if either the Millennium Development Goals are reached or if universal access to clean water were afforded to the people in Africa:

**Table 3.1: Summary of the Benefits and Costs of Improved Access to Water Supply and Sanitation in Africa**

	Meeting MDGs	Providing Universal Access
<b>Impact of Improved Access to Water Supply and Sanitation</b>		
Case of diarrhea avoided annually	173 million cases	245 million cases
Productive days gained annually	456 million days	647 million days
Value of productive days gained annually	US\$116 million	US\$168 million
Health sector treatment costs averted annually	US\$1,695 million	US\$2,410 million
Value of time saved	US\$15,877 million	US\$33,972 million
Schooldays gained annually	99 million schooldays	140 million schooldays
<b>Economic Benefit Cost Analysis</b>		
Cost of interventions per year	US\$2,020 million	US\$4,040 million

<sup>168</sup> Ibid, p. 7.

Total Economic Benefits per year	US\$22,910 million	US\$44,040 million
Benefit Cost Ratio	11	11

*Source for Table 2.1: Water and Sanitation Program (WSP), "The Case for Water and Sanitation" 2004, p. 8.*

If these figures are accurate, it seems clear that water and sanitation investments are the key to greater progress in African development. "The overall economic and social benefits of meeting basic water needs far outweigh any reasonable assessment of the costs of providing for these needs."<sup>169</sup> It has already been shown that there is a human right to water and that providing improved access to water has a high rate of return, therefore the priority of development in countries such as Mali should be given to the water and sanitation sector.

If Water and Sanitation were to become the priority in the development of Mali, the section of the population that will benefit the most would be women. Water in Africa is often a gender issue since it is women who must find a way to collect water for the entire family. Consequently, not enough female voices are being heard in their arduous search for safe water for their needs. Finding water in Mali is a difficult task as water sources may be at a great distance, sometimes many kilometers away, or the water table may be very low making the process of drawing buckets from wells quite exhausting. The following account of a visitor to Mali puts this task into perspective:

The compounds in Magnambougou have neither running water nor electricity. Water comes from a deep well, laboriously hauled up arm over arm in a rubber bucket.<sup>170</sup>

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<sup>169</sup> Gleik (1998), p. 499.

<sup>170</sup> Dettwyler, p. 22.

Once the water is taken from the well, it must be carried back to the home, filtered, boiled or chemically treated, and then stored in a clean container for usage. This process must be repeated until enough water has been gathered for the entire family. If there is a family of 10 people and each has access to 6 lpcd, this means that 60 liters must be acquired and the average bucket can hold between 10-15 liters. After 5 or 6 trips to the well (if she is careful not to trip or spill any water), she is able to fulfill the minimum amount of water necessary for her family to survive.

Since fetching water is such a difficult and lengthy task, many women enlist the help of their daughters to speed up the process. “Where water facilities are unreliable, girl children are frequently kept out of school to ensure that the household water needs are met.”<sup>171</sup> Gulyani’s study also supports literature suggesting that children (more often, girls) are kept from school in order to help households collect water.<sup>172</sup> Therefore, school-age girls will also benefit from water and sanitation improvements by freeing up their time to go to school instead of fetching water.

### **3.2 The World’s Water Crisis**

Water is one of the most precious resources that exist in this world and it is in great risk of running dry or being heavily contaminated by industrial and other wastes.

“Water is a critical and essential resource.”<sup>173</sup> Even though much of the globe is covered

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<sup>171</sup> Kjellén, Marianne and McGranahan, Gordon, p. 14.

<sup>172</sup> Gulyani, Sumila; Talukdar, Debabrata; and Kariuki, R. Mukami. “Water for the Urban Poor: Water Markets, Household Demand, and Service Preferences in Kenya.” Water Supply and Sanitation Sector Board Discussion Papers (The World Bank Group, and Water Supply & Sanitation Sector Board), Paper No. 5, January 2005, p. 22.

<sup>173</sup> Gleik, Peter H. (with Burns, William C.G.; Chalecki, Elizabeth L.; Cohen, Michael; Cushing, Katherine Kao; Mann, Amar; Reyes, Rachel; Wolff, Gary H.; and Wong, Arlene K.), The World’s Water 2002-2003: The Biennial Report on Freshwater Resources. Washington: Island Press, 2002, p. 2.



in water, only a fraction of that water is suitable for drinking. “The earth’s fresh water is finite and small, representing less than one half of 1 percent of the world’s total water stock.”<sup>174</sup> This small fraction of water left for human consumption is slowly beginning to dry up.<sup>175</sup> Sandra Postel notes that there are signs of water stress in every corner of the world: much of Africa and even in parts of western North America.<sup>176</sup>

These signs of water stress will only be worsened without adequate measures to educate the public on the human impact on water resources. In “The World’s Water Crisis”, Howard discusses how the water crisis is going to lead to increasing conflict as time goes on. Howard shows that there is very little clean water left for public consumption, contamination from industry and agriculture is exacerbating the problem, population growth is straining supplies, and deforestation is increasing run off and slowing infiltration of groundwater.

If water continues to grow scarce, it could become the next major cause of tension between states that share water resources. “Already, the social, political and economic impacts of water scarcity are rapidly becoming a destabilizing force, with water-related conflicts springing up around the globe.”<sup>177</sup> Mali’s rivers are shared with its neighbors Senegal, Guinea, and Niger. Should these river systems’ waters reach drastic lows, there is a greater risk that conflict will develop between these nations.

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<sup>174</sup> Barlow, Maude and Clark, Tony. “Who Owns Water?” The Nation, September 2, 2002.

<sup>175</sup> Postel, Sandra. Last Oasis: Facing Water Scarcity. New York: W.W. Norton & Company, 1992. p.19. See also Glennon’s case of Santa Cruz River in Arizona that dried up because of groundwater pumping. Glennon, Robert. Water Follies: Groundwater Pumping and the Fate of America’s Fresh Waters. Washington: Island Press, 2002, p.35.

<sup>176</sup> Postel, p. 19.

<sup>177</sup> Barlow and Clark.

Population growth has been equated to causing a “water bomb” to tick,<sup>178</sup> especially in regions experiencing extremely high rates of population growth. “Population growth throughout the developing world is increasing pressure on limited water supplies.”<sup>179</sup>

Global warming may also be having an effect on the Earth’s freshwater supplies. “In different regions of the world, climate change will affect where, when, how much, and how water will fall; increase the vulnerability of water supplies; and increase the severity of droughts and flooding events.”<sup>180</sup> Roughly half of Mali is an arid savannah and the other half is made up of a significant piece of the Sahara desert’s western corner. Mali has suffered through two major droughts on record in the recent past: the droughts of 1974-75 and 1984-85.<sup>181</sup> Should global warming continue at its pace it is possible that Mali could experience further, and more extreme, droughts.

A grave issue confronting the Malian ecosystem rests in the renewable water resources<sup>182</sup>. “One of the most important causes of Mali’s serious environmental problems has been over-exploitation and indiscriminate destruction of its forest resources.”<sup>183</sup> Deforestation can disrupt the natural system of recharge in groundwater

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<sup>178</sup> Steinberg, Ted. “Big is Ugly: Corporate Enclosure and the Global Water Supply.” in: *Technology and Culture*, Vol. 45, July 2004, p. 619.

<sup>179</sup> Gleik et al, p. 2.

<sup>180</sup> Palaniappan, Meena; Cooley, Heather; Gleik, Peter; Wolff, Gary. “Assessing the long-term outlook for current business models in the construction and provision of water infrastructure and services.” *Global Forum on Sustainable Development, OECD, ENV/EPOC/GF/SD (2006) 3*, 29-30 November 2006, p. 7.

<sup>181</sup> Dettwyler, p. 146.

<sup>182</sup> Renewable water resources in this instance are characterized by a recharge system made available by the hydrologic cycle coupled with the atmospheric and terrestrial systems.

<sup>183</sup> OED (June 2003), “Project Performance Assessment Report, Mali: Household Energy”, (TF 28304-ML), World Bank Report No. 26242, June 23, 2003, p. ix.

causing water tables to fall. “Human actions to modify watersheds, such as cutting forests or paving land, can affect the overall hydrologic balance, reducing recharge or flow characteristics and altering timing, availability, and renewability of water [and in] extreme cases, this can exhaust a formerly renewable resource.”<sup>184</sup>

Another issue affecting renewable water resources results from the over-pumping of groundwater. “People living in North America use about 160 gallons of water per day...Europeans use 80 gallons...[but] in parts of Africa, per capita water use is less than 5 gallons a day.”<sup>185</sup> Considering the low quantities of water usage in most of Africa, this is not yet a great threat, however this concept is no stranger to the developed nations that consume mass quantities of water on a daily basis. It would be wise to take water conservation and environmental concerns to heart when planning water extraction technologies in Mali in order to avoid doing great damage to the Malian ecosystem.

### **3.3 Water Supplies**

The World Health Organization, in its “Global Water Supply and Sanitation Assessment 2000 Report”, defines the two major categories of water supplies as follows: “improved” and “not improved”. The World Health Organization lists “improved” water supplies as these:

- Household connection
- Public standpipe
- Borehole
- Protected dug well
- Protected spring
- Rainwater collection

“Not improved” water supplies are defined by the World Health Organization as:

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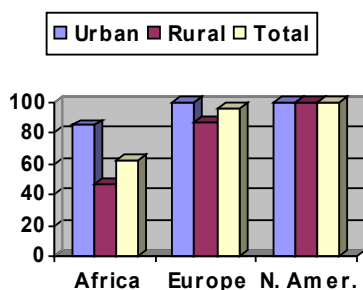
<sup>184</sup> Gleik et al, p. 39.

<sup>185</sup> Steinberg, p. 619.

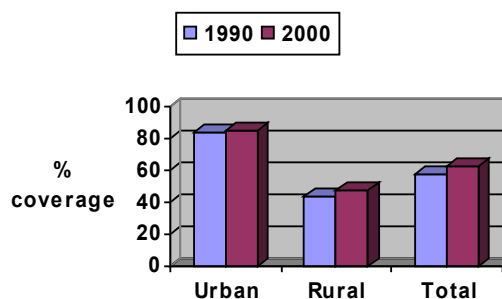
- Unprotected well
- Unprotected spring
- Vendor-provided water
- Bottled water<sup>186</sup>
- Tanker truck-provided water

Great disparities exist between developed countries and African countries when it comes to access to water supplies (see tables 3.2 and 3.3 below).

**Table 3.2: Water Supply Coverage by World Regions, 2000**



**Table 3.3: African Water Supply Coverage, 1990 and 2000**



*Sources for Tables 3.2 and 3.3: World Health Organization “Global Water Supply and Sanitation Assessment 2000 Report”*

Table 3.2 clearly shows that both Europeans and North Americans have far greater access to water supplies than Africans. Nevertheless, the urban and rural areas in Africa experience great differences in water access. In figure 3.3, African water supply coverage is examined comparatively from the years 1990 to 2000. In that decade, very little change in the percentage of coverage in both urban and rural water supplies occurred. When the data is examined closely, even more significant differences between the access to water in rural and urban areas in Africa can be noted. Table 3.4 below shows in detail the differences between urban and rural water supply between the world, Africa, and two western worlds:

<sup>186</sup> Per WHO’s standards, bottled water is considered “not improved” because of concerns about the quantity of supplied water, not because of concerns over the water quality.

**Table 3.4 Access to Water Supply by Region, 1990 and 2000**

Region	1990 Population (millions)				2000 Population (millions)			
	Total Population	Population Served	Population Unserved	Percent Served	Total Population	Population Served	Population Unserved	Percent Served
<b>Global</b>								
<i>Urban</i>	2,292	2,178	114	95%	2,845	2,671	174	94%
<i>Rural</i>	2,974	1,961	1,013	66%	3,210	2,284	926	71%
<i>Total</i>	5,266	4,139	1,127	79%	6,055	4,955	1,100	82%
<b>Africa</b>								
<i>Urban</i>	197	166	31	84%	297	253	44	85%
<i>Rural</i>	418	183	235	44%	487	231	256	47%
<i>Total</i>	615	349	266	57%	784	484	300	62%
<b>Europe</b>								
<i>Urban</i>	522	522	0	100%	545	542	3	99%
<i>Rural</i>	200	199	1	100%	184	161	23	88%
<i>Total</i>	722	721	1	100%	729	703	26	96%
<b>North America</b>								
<i>Urban</i>	213	213	0	100%	239	239	0	100%
<i>Rural</i>	69	69	0	100%	71	71	0	100%
<i>Total</i>	282	282	0	100%	310	310	0	100%

*Source: World Health Organization "Global Water Supply and Sanitation Assessment 2000 Report"*

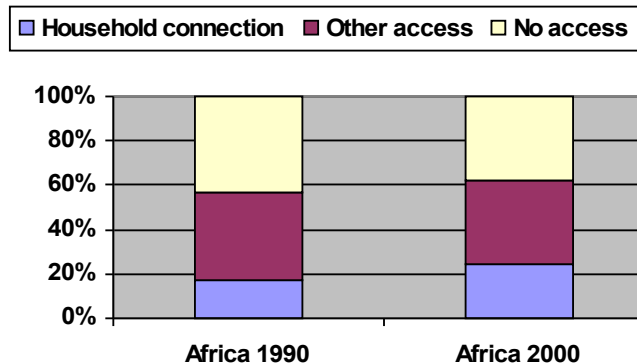
At first glance, the water supply coverage for Africa doesn't look too discouraging. For a continent full of some of the poorest countries in the world, 62% coverage is at least more than half of the population and it is even better than the 57% coverage of 1990. It is still much less than that of North America and Europe, and doesn't even meet the world average. Why is it that after some USD\$15 billion of development funds invested per year throughout the 1990s<sup>187</sup> only resulted in a five percentage point increase in water supply coverage in Africa? One answer could be in population increase. As Table 3.4 illustrates, there was an increase 615 to 784 million people (an increase of 169 million) in Africa in that one decade alone. Europe's population increased by only 7 million and North America by 18 million. Another reason

<sup>187</sup> Johannesburg Summit 2002, "Global Challenge Global Opportunity: Trends in Sustainable Development". Published by the United Nations Department of Economic and Social Affairs for the World Summit on Sustainable Development, Johannesburg, August 26 – September 4, 2002, available at: [www.johannesburgsummit.org](http://www.johannesburgsummit.org), p. 18.

for this stagnation in improved access is likely due to inefficient development. The World Bank Operation Evaluation Department rated the Bank’s rural water projects for performance and found that “only 43% were seen to have substantially improved institutional development and...rated likely to achieve sustainable benefits”.<sup>188</sup>

To understand how Africans are getting serviced by water infrastructure, it is necessary to look at the type of water supplies that are provided to populations in Africa. In Table 3.5 below, we see the change in what part of the population had access to which type of water supply after a period of ten years:

**Table 3.5: Water Supply Coverage in Africa by Category of Service, 1990, 2000**



*Source: World Health Organization “Global Water Supply and Sanitation Assessment 2000 Report”*

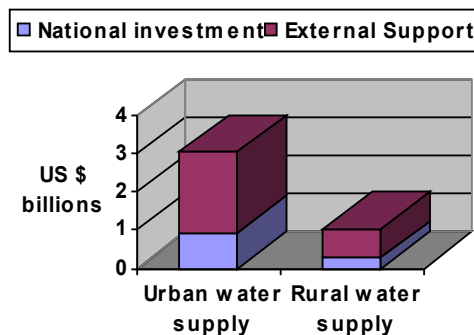
The portion of the population with *no access* to water refers to those that are in areas that are either at a great distance from an improved water source or are using unimproved water sources. Those with no access have decreased somewhat while the portion of the population with access to a household connection has increased approximately the same amount. Relatively little change has transpired for the population that has “other access” to water. It is safe to say that only urban areas in Africa are allowed access to household

<sup>188</sup> OED (Winter 2002), Précis, “Rural Water Projects: Lessons Learned”, Number 215, Winter 2002, p. 2.

connections to water supply infrastructure whereas rural areas rely on a variety of “other access” water sources to provide their water needs. If this is true, this graph leads us to conclude that there has really only been significant changes in urban areas and less change in rural areas. In order to support this conclusion and explain this divergence in access, it is necessary to look at what has happened in order to bring about this change.

Investment in improved access to water is one area that can clarify the changes that have occurred in the last 10 years. In Table 3.6 below, investment in water supplies is divided by that from national investment and external support from international development aid and the amount invested in urban and rural water supplies is also clearly shown:

**Table 3.6: Annual investment in Urban and Rural Water Supply in Africa in US\$ billions, 1990-2000**



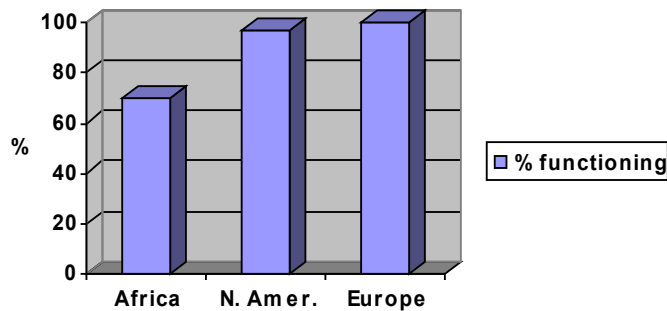
*Source: World Health Organization “Global Water Supply and Sanitation Assessment 2000 Report”*

It is clear from Figure 3.6 that the majority of money invested in improved water supplies goes to urban areas instead of rural areas: in fact, approximately two times as much money is invested in urban areas. This explains the relatively unchanged “other access” portion in Table 3.4. As more money is poured into urban areas, the rural water supply remains largely static. “Some of the world’s poorest households are seeing their efforts

to mobilize resources for nutrition, health, education and – critically – production undermined by inadequate investment in water and sanitation provision.”<sup>189</sup> Nevertheless, there was just over 1 billion US dollars invested into rural areas annually over the course of 10 years. If that amount of money is invested in rural areas, why has the “other access” not also increased like that of “household access”?

Most rural water supplies in Africa consist of manual pumps, wells, and rivers. Properly maintained pumps can provide a significant amount of clean drinking water. Water from improved wells can also provide clean drinking water when properly maintained. Unimproved wells, however, should not be used for drinking, instead they may be used for other water needs (bathing water, washing water, etc). Improperly maintained water sources can lead to increases in health problems and the transmission of diseases. Malfunctioning equipment also affects the health of a community. Table 3.7 illustrates the percentage of available rural water supplies that are functioning:

**Table 3.7: Median Percentage of Rural Water Supplies Which are Functioning, 1990-2000.**



*Source: World Health Organization “Global Water Supply and Sanitation Assessment 2000 Report”*

<sup>189</sup> Watkins, p. 42.



The proportion of rural areas with access to improved water sources is quite small and the amount of malfunctioning equipment in existence in Africa's rural areas compounds this issue. In developed countries of the western world, the funds and services necessary to maintain pumps are greater and more reliable than that of the developing world. The infrastructure exists to remedy malfunctions and improve service. Rural Africans, however, are left with little hope if their water supplies begin to malfunction or cease to function altogether.

The situation in urban African areas is quite different. Those who have access to household connections are hooked into systems that are established to answer to the community's needs. "The wealthier segments of urban populations in developing countries often enjoy service levels similar to those in wealthy countries, or in any case substantially better than those available to their poorer co-inhabitants."<sup>190</sup> This shows a marked disregard to the poor who often are in greater need of clean water than their urban counterparts.

Until now, water supply data in this paper have illustrated the *African* access to water on a larger or average scale. In Mali particularly, data on access to drinking water in rural and urban areas has been collected. Table 3.8 below illustrates the differences found in urban and rural areas in Mali:

**Table 3.8 Access to Water in Mali, 1970 to 2000**

Fraction of Malian Population With Access to Drinking Water													
Urban							Rural						
1970	1975	1980	1985	1990	1994	2000	1970	1975	1980	1985	1990	1994	2000
29		37	46	41	36	74				10	4	38	61

<sup>190</sup> Kjellén and McGranahan, p. 2.

*Source: Years 1970-1985 are from UNEP 1989, WRI 1988; Year 1990 is from UNEP 1993; Year 1994 is from WHO 1996; and Year 2000 is from WHO 2000.*

*Note: Notice that reporting in the rural areas did not start until 1985; therefore totals reflect only the years where rural and urban areas could be averaged.*

These numbers show strange trends especially between 1985 and 1990 in rural access to safe drinking water. This is partly due to the large differences in classifications, such as “safe drinking water” and “improved water supplies” between different organizations over time. Therefore, the most applicable data found here is between year 1994 and 2000 as these numbers were drawn from the WHO which standardized the classifications of “improved” and “not improved” water supplies in 2000. That standardization of water supply classification can account for the doubling of access to water supplies in just 6 short years (1994, 2000). Subsequently, many water supplies were not considered “safe” or “improved” until the distinction between protected and unprotected sources had been made. Reporting methods have become uniform and standard as a part of the 2000 millennium goals,<sup>191</sup> while there has also been dramatic progress in urban water access as mentioned above; these facts help account for the significant changes found in total Malian access (65%) to safe drinking water. The total Malian access to safe drinking water remains consistent with that shown for average *African* access to safe drinking water shown in Figure 3.3 earlier (just over 60%). In a survey of its own water supplies, the Malian National Water Ministry estimated in March 2000 that 52% of the Malian population in rural and urban areas had satisfactory access to water (based on 20-45 liters/per capita/day).<sup>192</sup> Another source states that “50% of Malians do not have access

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<sup>191</sup> United Nations, Millennium Development Goals website, available at: <http://www.un.org/millenniumgoals/#>. Additionally, for information on assessment of the program, see the report on progress from the summit available at: <http://www.un.org/summit2005/documents.html>

<sup>192</sup> Ministère des Mines, de l’Energie et de l’Eau; Direction Nationale de l’Hydraulique (Mali national ministries), “Summary Relative to Progress Realized in Mali, Following to Ministerial Conference of

to drinking water”.<sup>193</sup> While the exact number of people left without access to drinking water is debatable, the range still leaves much to be desired.

The total renewable freshwater supply in Mali as of 2001 is estimated to be 100 km<sup>3</sup>/yr.<sup>194</sup> Total estimated 2000 per capita withdrawal of water (m<sup>3</sup>/p/yr) is 108 km<sup>3</sup>/yr.<sup>195</sup> About 1 m<sup>3</sup>/p/yr is used for industrial purposes (1%), a mere 2 m<sup>3</sup>/p/yr is used for domestic purposes (2%), and a whopping 105 m<sup>3</sup>/p/yr is used for agricultural purposes (97%).<sup>196</sup> From these figures, it is important to note that Malians are surpassing its renewable freshwater supply by 8 km<sup>3</sup>/yr. The vast majority of the freshwater supply in Mali is going to agricultural purposes that seem to be exhausting the renewability of the supply (more information regarding agricultural practices will be discussed in the *Agro-water Issues* section on page 65). If agricultural irrigation practices were to be improved, there would be ample room for improvement in water withdrawal for domestic purposes (i.e. improved access to drinking water). If major industries were to move to Mali, there would have to be great concern for the amount of water withdrawn for industry and also concern for waste treatment to avoid water supply contamination.

Demand for water in Mali is greater than its current usage rates of 6 lpcd. The average Malian will deal with extreme heat and dry conditions on a daily basis where the need for safe drinking water will mean the difference between life and death. Furthermore, as 70% of the population is made up of farmers, the majority of Malians

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Second World Water Forum” La Haye (The Hague), March 2000, p. 1.

<sup>193</sup> Bingen, p. 248.

<sup>194</sup> AQUASTAT, UN FAO, available at: [www.fao.org](http://www.fao.org).

<sup>195</sup> Ibid.

<sup>196</sup> Ibid.

will spend much of their time in the fields under full exposure of the sun which exacerbates their need for water to replace that which is perspired in order to remain cool and healthy.

The next great risk to the health and well-being of rural Malians is the threat of losing the improved water sources that are currently there. The Human Development Report 2006 states that research done in Mali shows that a third or more rural water pumps are out of order.<sup>197</sup> The question of whether this is due to abuse or to malfunction is answered in a recent World Bank survey of Mali's rural water sources:

In Mali, where relatively inexpensive handpumps were used almost universally, the pumps were nearing the end of their design life. Not one of the villages visited indicated that it could meet the full costs of a complete pump rebuild while simultaneously replacing the tubing. Even with the piston handpump systems used in Mali..., the current cost of an improved India Mark II is about \$1,200 not counting installation, and larger villages can have 10 or more units. This means that all the gains of two decades of lending in the subsector are at risk.<sup>198</sup>

Many rural Malians are using handpumps (boreholes) that are decades old and were designed for a life span of about 10 years while also being designed to service the original population in its location. Considering the increase in population over the years, it is surprising that the handpumps have lasted as long as they have. It is entirely possible that faltering handpumps will be the next factor to dramatically decrease access to safe drinking water in rural areas and lead the Malian rural communities in to a greater water crisis than it is experiencing at present.

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<sup>197</sup> Watkins, p. 41.

<sup>198</sup> OED (2000) (World Bank Operations Evaluation Department), "Rural Water Projects: Lessons from OED Evaluations" OED Working Paper Series No. 3, March 2000, p. 38.

### 3.4 Water Vending

The urban poor are also facing difficult choices on water issues. The Gulyani study shows that only 36% of people in Bamako have access to piped water supplies. That same study concludes that the water supply in three major Kenyan cities (Nairobi, Mombasa, and Kakamega) is “dismal” as the three-city piped water supply access averages coverage of 59% of the population.<sup>199</sup> Both the Gulyani study and another study by Kjellén show that those without access to piped water must find their water somehow and water vending is increasingly an option for these people. “A rapidly emerging business is that of bottled or pre-packaged water [which] ranges from industrially produced (and internationally traded) spring or mineral waters to home-produced (presumably boiled) water sold in plastic bags on the street.”<sup>200</sup> Other methods of water vending are by water carters that transport water in special containers to customers, vendors that refill bottled water containers for resale in markets or at roadsides, and kiosk/standpipe operators that sell from a stationary point. The major problems with vended water are the inequality in service and costs, difficulties in water usage estimates, assurance of quality, environmental impact, and debate on whether vended water is the solution to or the perpetuation of urban poverty groups.

Research shows that vended water leads to inequality in service and costs between the “haves” and “have nots”. Those who are able to afford household connections to piped water supplies do not need to buy vended water for home use. Most likely, those people will buy vended water while away from the home or during a journey from roadside vendors on occasion, but they do not rely on the service for their daily water

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<sup>199</sup> Gulyani et. al., p. 8, see table 3.

<sup>200</sup> Kjellén and McGranahan, p. 3.

needs. Therefore, poor people that cannot afford to be connected to piped networks are those that tend to buy from vendors for their daily water needs. “With very few free sources being available in urban areas, the urban poor are quite likely the major users of water sold from reselling households [and] public standpipes and kiosks.”<sup>201</sup> It is the difference in price from these two sources that is creating inequality in water services to these two groups. “Poor people are much more likely to pay high prices for water from vendors – often many times the prices paid by the non-poor.”<sup>202</sup> The following illustrates the difference in payment experienced in Bamako:

The unit price of the sold water ranges from CFAF 55 charged by EDM, and CFAF 400 charged by standpipe operators, to CFAF 2,500 charged by carters. Thus, although most of the water is supplied by EDM, its share of the total water sales value in Bamako is estimated at 54 per cent. Standpipe operators account for 26 per cent, and carters 16 per cent.<sup>203</sup>

The difference in pricing noted above leaves little question that such pricing does not favor the poor. Howard argues that the poor are bearing most of the burden, both financially and physically, of paying high prices from water vendors whereas the upper and middle-classes of the developing world are serviced by municipal water systems at lower fees. “There is a geographical overlap between urban poverty [in developing countries] and water vending.”<sup>204</sup> Kjellén notes that water vendors or resellers may sell water from their household connections. This means that the minority that can afford piped water access can profit off of the majority through water vending, thus increasing

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<sup>201</sup> Ibid, p. 17.

<sup>202</sup> WSP, p. 5.

<sup>203</sup> Kjellén and McGranahan, p. 5.

<sup>204</sup> Ibid, p. 16.

the income gap between the two groups. Furthermore, this advantage of the minority to profit off of the rest leaves little incentive for elites to improve and expand infrastructure to service those who have no access because this would put one of their methods of income in jeopardy.

Vended water also disrupts estimates on water consumption for utilities and other organizations that attempt to survey water usage in urban areas. Vendor sales are often left out of statistics on water access in urban areas, even when the purchase of vended water is wide-spread.<sup>205</sup> “When collecting international statistics on access to water, those who buy their water from a vendor are classified as not having reasonable access to an improved water supply, along with people who get their water from unimproved wells or surface-water sources.”<sup>206</sup> Another problem found in water vending is the theft of water to resell at a profit by tapping into piped systems illegally which, in turn, cannot be metered or tracked for statistical data. “Large quantities [of water] are estimated to be lost through leaking pipes and theft of water.”<sup>207</sup> Whether the water from the piped system was legitimately taken or stolen, it may be affecting the quality of the service for other users. Proper functioning of or pressure within the piped system may be undermined by taking large quantities from a standpipe that was designed to work for a normal family’s daily consumption. To put this into perspective, the following recounts vendor water sales in Bamako:

Some 32.4 million m<sup>3</sup> of water are sold per year, and the city water agency (EDM) supplies some 93 per cent of this. Some 6 per cent is sold through

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<sup>205</sup> Ibid, p. 3.

<sup>206</sup> Ibid, p. 1.

<sup>207</sup> Ibid, p. 5.

standpipe operators and a mere 1 per cent through water carters. (Beyond the water quantities that are sold each year, some 45 per cent of households also rely on wells, the water from which is not traded).<sup>208</sup>

Unless standards for vended water are made and observers are able to accurately measure vended water consumption, the full impact of vended water on an area cannot be revealed.

When vendor water is purchased, there is no assurance of the quality of the water which can compromise the health of those who purchase it. Since vendors may not be held accountable for quality standards, the risk of buying contaminated water increases. Vended water can come from many different sources. “Water vendors sell water from a shallow well, a borehole, a commercial water connection, or a household connection to the piped network.”<sup>209</sup> Customers who buy from a vendor cannot be sure of the source without some sort of standard or guarantee. Even if the vended water is coming from a clean source, there is still a risk of buying contaminated water. “It is quite likely that all the pouring from one vessel to another (which is not necessary in a piped supply) exacerbates the risk of contamination.”<sup>210</sup> If procedures for water vendors are standardized by EDM, for example, and EDM then assured water quality with a guarantee, the great cost at which vended water is purchased might be more acceptable, as it is, those who are buying vended water are getting the short end of the stick.

The environmental impact of vended water sales is hard to estimate. A way to completely and accurately measure how much water is being withdrawn for vending is

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<sup>208</sup> Ibid, p. 5.

<sup>209</sup> Ibid, p. 2.

<sup>210</sup> Ibid, p. 12.



currently not available to statisticians. Even the amount of groundwater that is pumped for piped water systems may be greater than what is estimated. As noted in an earlier section, recharge rates of groundwater that are disrupted can have drastic effects on water tables. Furthermore, the increase of bottled water sales in developing countries can have an effect in terms of litter. Not only is bottled water expensive, but the discarded bottles pose serious environmental litter threats where recycling is non-existent.<sup>211</sup>

Scholarly debate surrounding the issue of water vending and its effects on urban poverty covers many perspectives. Vended water may be the solution to or the perpetuation of urban poverty in poor African countries. Kjellén and McGranahan posit that water vending in the informal market generates employment as the number of water sector workers in Bamako account for nearly 4,000 people (per Collignon and Vézina), the majority of which are water carters.<sup>212</sup> Water vending helps to give employment:

With regard to numbers of people employed in these businesses, EDM is estimated to account for 32 per cent of employment in the water sector, standpipes for 28 per cent and the carriers engaging as many as 40 per cent of the water-sector workers.<sup>213</sup>

“[Water carters and carriers] are typically male, and use some form of equipment in order to carry the heavy load of water.”<sup>214</sup> The work can be difficult, but is it the exploitation of a fundamental need? “Even after taking into account that kiosk owners have to incur initial costs for installation of kiosks, as well as some recurrent overhead costs (including

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<sup>211</sup> Howard, Brian. “The World’s Water Crisis” in: *E/The Environmental Magazine*, Jan-Mar 2004, p. 77.

<sup>212</sup> Kjellén and McGranahan, p. 6.

<sup>213</sup> *Ibid*, p. 5.

<sup>214</sup> *Ibid*, p. 11.

illegal payments), the difference between the price paid to the utility and the price charged (18 times higher) is large.”<sup>215</sup> Vendors may be taking advantage of the poor by charging too much for their services, but they are also supplying a service that is greatly needed by the majority of the urban population. “Water vendors have been praised for their entrepreneurship, as well as their ability to reach the poor and areas that are difficult to develop with conventional infrastructure.”<sup>216</sup> Some even argue that to stop water vending will leave those who rely on the service in a troublesome state. “By suppressing water vending, there is a danger that authorities are making it still more difficult for deprived residents to obtain water.”<sup>217</sup> As it is, water vending leaves quite a dilemma for both those who are forced to use it and those who wish to remedy the situation in order to help the poor.

### **3.5 Agro-Water Issues**

Mali’s southern regions were at one time a fertile savanna with pockets of dense forests, but it has become a dry and dusty land. The droughts of 1973-74 and 1984-85 worsened this trend, and the Niger river no longer floods its banks.<sup>218</sup> The situation has become so dire for some parts of the country that the livelihoods of ethnic groups such as the Bozo<sup>219</sup> are at stake:

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<sup>215</sup> Gulyani et. al., p. 13.

<sup>216</sup> Kjellén and McGranahan, p. 1.

<sup>217</sup> Ibid, p. 1.

<sup>218</sup> Drisdelle, p. 21. This is in part due to the construction of a hydroelectric dam upstream and also due to extensive irrigation in the areas of Niono to Macina.

<sup>219</sup> The people of the Bozo ethnic group in Mali are often referred to as the “people of the water” because they are traditionally fisherman. Bozo villages are always located next to a body of water and fish sold in markets are usually sold by the wives of the Bozo fisherman. If this occupation is taken away from a Bozo, it is as if they lose their place among their ethnic group as well.

In the Bozo villages they only wanted to talk about how their lakes had dried up and there were no more fish. One woman said her four-year-old son saw a fish in the big weekly market in Macina and asked her if it was a mouse. She cried because her son didn't know what a fish looked like. How could he be a true Bozo without any fish? And the Bozo detest being millet farmers. They're not very good at it, and they consider it beneath them. And no matter what subject we try to explore, within five minutes people were talking about the droughts and the dam, and how there used to be so many more trees, and so much more food to eat. This part of the country is a mess.<sup>220</sup>

The fate of the people like the Bozo and Mali's farmers rests in the ability of the fragile environment to support their traditional occupations. Mali's agricultural crops consist of rice, cotton, sorghum, millet, maize (corn), yams, cassava, beans, and groundnuts (peanuts). "Mali's agricultural sector is characterized by a low level of diversity and a high degree of production variability that often leads to food deficits."<sup>221</sup> Part of the cause of the variability in food production is the agricultural sector's reliance on rainfall for cereal crops, yams, cassava, beans, and groundnuts.<sup>222</sup> On the other hand, rice production is dependent on a complex irrigation scheme fed by the waters of the Niger river. Deforestation, desertification, and the lack of eco-friendly agricultural techniques are escalating the water scarcity problem in Mali which will further deteriorate agricultural production if eco-friendly solutions are not explored. This trend will mean great consequences for nearly 70% of the Malian economy and the majority of the population who rely on agriculture to support their families.

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<sup>220</sup> Dettwyler, p. 146.

<sup>221</sup> Dimithé, Georges. "Small-Scale Inland Valley Swamp Rice Production: A Viable Enterprise in the Grain-Cotton Farming System of Southern Mali" in *Democracy and Development in Mali*, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 190.

<sup>222</sup> OED (June 2003), p. 1.

Irrigation in the middle Niger is a long-established method of producing rice. The irrigation infrastructure for rice, run by *Office du Niger*, dates back to French colonial times where \$80 million was spent on irrigation infrastructure between 1928 and 1959.<sup>223</sup> The French had hoped to use the irrigated fields to produce cotton to compete with American cotton production. When the French failed with the cotton, it was decided to switch to rice which succeeded.<sup>224</sup> Thus began the long tradition of rice production in the middle Niger. The irrigated rice fields from Niono to Macina measure 55,000 km<sup>2</sup> with 5,000 hectares of land utilized for rice.<sup>225</sup> Evidence suggests that there is undeveloped potential for further rice production in the Mali-Sud “Bas-fond” swamps.<sup>226</sup> This area’s swamps are fed by what used to be permanent rivers that dried up as a result of declining rainfall.<sup>227</sup> Research has shown that out of over 40,000 hectares in the bas-fond land, only 5 percent would need some type of structured water control to produce rice during the rainy season.<sup>228</sup> If land tenure and gender issues in this proposed project are reconciled, this area could become a very valuable segment of the Malian agricultural sector.<sup>229</sup>

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<sup>223</sup> Diarra, Salifou Bakary; Staatz, John M.; and Dembélé, Niama Nango. “The Reform of Rice Milling and Marketing in the *Office du Niger*” in *Democracy and Development in Mali*, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 170.

<sup>224</sup> Dimithé, p. 170.

<sup>225</sup> Diarra et. al., p. 168.

<sup>226</sup> Dimithé, p. 192.

<sup>227</sup> *Ibid*, p. 192.

<sup>228</sup> *Ibid*, p. 192.

<sup>229</sup> *Ibid*, p. 192.

Mali is Sub-Saharan Africa's leading cotton producer, which contributed about 35 percent of export revenue in 2004.<sup>230</sup> Cotton production in Mali has not always been so profitable and the production of this crop is risky business. "In the early 1990s, low world prices, an overvalued CFA franc and low productivity growth created a crisis situation that, in retrospect, was averted only by the January 1994 50 percent devaluation of the CFA franc and the subsequent doubling of world market prices for cotton."<sup>231</sup> The *Compagnie Malienne pour le Développement des Fibres Textiles* (CMDT) was created in order to handle production issues and marketing of cotton in Mali. "A credit system managed by the CMDT facilitates the purchase of equipment and supplies, and an extensive network of CMDT field agents closely monitor all phases of production."<sup>232</sup> What the CMDT must become more concerned with is the environmental impact of the growth of cotton production and cotton production techniques. "The large expansion in the area under cultivation, the decreased use of fallow periods between cropping cycles, and the absence of sufficient organic and inorganic fertilization suggest that environmental degradation and soil fertility problems may constrain both cotton and cereals production over the long term."<sup>233</sup> Even though cotton crops are largely produced with annual rainfall, the techniques used in cotton production complicate the balance between the terrestrial system and the hydrological cycle. The implications of these

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<sup>230</sup> IEG (Independent Evaluation Group) (1), "Mali: Country Assistance Evaluation Approach Paper", World Bank, April 25, 2006, p. 1.

<sup>231</sup> Tefft, James. "Cotton in Mali: The 'White Revolution' and Development" in Democracy and Development in Mali, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 213.

<sup>232</sup> *Ibid*, p. 215.

<sup>233</sup> *Ibid*, p. 213.

issues further demonstrate the need for eco-friendly agricultural techniques that will repair, or at least preserve, the water supply-agriculture relationship.

As shown in the *Water Supplies* section of this paper, water withdrawn for agriculture is the prominent feature of water resource depletion (97%). Ways to improve agricultural techniques so that water can be used in smaller quantities to achieve the same result are valuable tools to drought-prone agricultural zones in Mali. “The potential for water efficiency improvements from techniques such as furrow dyking, land leveling, direct seeding, drip irrigation, micro-sprinklers, and water accounting is large.”<sup>234</sup> Techniques such as these can greatly reduce the overall withdrawal of water and help curb water supply depletion in Mali. The CMDT estimates that only 28% of farms currently use anti-erosion techniques.<sup>235</sup> Establishing some form of organization in the agricultural sector in Mali to address these concerns and increase the use of low-cost and efficient water saving techniques is a step in the right direction for the sake of preserving the ecosystem.

### **3.6 Role of Malian Government**

The Government in Mali must take action on ensuring appropriate measures to remedy the growing concerns regarding the state of water supply access, water resource conservation, and improved agricultural techniques aimed at environmental conservation.

Access to clean water supplies for Malian people is in the interest of and the duty of the Malian government. “Insuring that the public receives an adequate supply of social goods requires some level of government action, since completely-free-markets

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<sup>234</sup> Gleik et. al., p. 4.

<sup>235</sup> Tefft, p. 233.

often do not find it profitable to provide social goods.”<sup>236</sup> A better quality of life is possible when greater access to clean water supplies is made possible and sanitation problems are remedied. “Many development economists and theorists urge widespread provision of at least some social goods as a prerequisite for the transformation of poorer economies into highly productive, modern economies.”<sup>237</sup> The more these concerns are ignored by the government, the greater the threat to the future of the Malian people’s way of life. “Less [national government] attention has been paid to the economic costs of the crises in water and sanitation and to the implications of these costs for poverty and prosperity.”<sup>238</sup> The sooner that the Malian government takes a leading role in coordinating efforts to improve the state of water and sanitation in Mali, the greater the benefits of return will be realized.

Water resource conservation will be a difficult task to undertake in Mali, but it must be done. Malians are already withdrawing more water than the renewable resources are able to replenish in normal cycles. If this continues to be ignored, water tables will continue to drop, the Niger will eventually dry up, and millions of Malians will be without work, water, and food. Certain parts of the country are already experiencing this problem and, without action, the trend will spread to other parts of the country with time. As it spreads, more people will be forced to leave their homes or villages which will more than likely exacerbate urban sprawl in many cities across Mali. One way the government could make a difference is to educate the population on the effects of run-off and deforestation. This could be through an addition to the national education curriculum

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<sup>236</sup> Gleik et. al., p. 36.

<sup>237</sup> Ibid, p. 36.

<sup>238</sup> Watkins, p. 42.

or the promotion of 4H-style organizations to encourage simple and affordable methods of combating these issues. By nationalizing holidays such as World Water Day or by creating a Malian equivalent that could encourage tree-planting, water conservation techniques, simple sanitation principles, etc, the Malian government could help to change citizen perception of the environment.

Similarly, the fate of Mali's fragile environment is a growing concern that needs to be addressed by the government. Has cotton become such a booming market in Mali that its growth in production will ultimately lead to the destruction of arable lands already under cultivation? The short-term gain in export earnings from cotton sales is a poor trade for the loss of the single most important occupation in Mali: agriculture. It is also a poor trade for the destruction of an ecosystem that supports a myriad of wildlife, the Malian population itself, and a land with such a rich cultural heritage. Without governmental pressures on the CMDT to incorporate better agricultural techniques and to encourage more eco-friendly methods of production, there is no incentive for the Malian population to take an interest in their affects on the environment. By educating farming communities on better methods, enforcing fines for deviation from eco-friendly solutions, and encouraging the diversification of production, the chances for preservation of the environment will increase.

Why is the Malian government lagging behind on these issues? Is it poor governance, lack of funds, or other pressures that are taking precedence over these issues? "Poor governance is an increasingly popular explanation for bad water management [and] rapid urban growth exacerbates the problem."<sup>239</sup> Mali's government,

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<sup>239</sup> Kjellén and McGranahan, p. 2.



however stable it may have been over the last decade, may simply be overlooking these measures; however, this is unlikely. The Malian National Water Ministry's estimate in March 2000, that 48% of Malians lack satisfactory access to water shows awareness of the problem.<sup>240</sup> It is more likely that the government simply lacks the funds to institute these measures. Foreign aid to developing countries like Mali often comes with strings attached or is given only on conditions that may not reflect all of these interests. Paired with this is the preoccupation of development agencies to focus on economic growth (more specific information on development trends from foreign aid in Mali will be discussed in the *Foreign Aid to Mali* section beginning on page 76).

Another way to view the government's strategy on prioritization of development objectives is to browse their Poverty Reduction Strategy Papers (PRSPs):

Adoption of the PRSP framework signaled an intended shift by the Bretton Woods Institutions (BWIs) in the ownership of development strategies and the policies needed to achieve poverty reduction. A second objective of the new framework is for PRSPs to become the principle instrument for managing a country's relations with the donor community.<sup>241</sup>

As of April, 2007, Mali has completed only an Interim PRSP (I-PRSP) stating its objectives for various sectors of development. Mali's I-PRSP addresses much of what is discussed in this paper, plus some other issues of development not linked to water resources in their "8 axes" of sectoral strategies:

1. Improve the economic, political, legal, social, and cultural environment to benefit the poor;
2. Promote income-generating activities and self-employment for the poor;
3. Improve the access of the poor to financial services and other factors of production;

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<sup>240</sup> Ministère des Mines (2000).

<sup>241</sup> OED (Feb 2003), "OED Review of the Poverty Reduction Strategy Paper (PRSP) Process", Corporate Evaluation and Methods Group, World Bank, February 28, 2003, p. 1.

4. Promote the development and improve the performance of the food sectors in which the poor are concentrated;
5. Improve the access of the poor to education and training;
6. Promote the access of the poor to basic health care, nutrition, drinking water, and sanitation;
7. Improve housing conditions for the poor;
8. Ensure effective coordination of the poverty reduction strategy<sup>242</sup>.

Although these axes seem like the ideal method to end poverty in Mali, there is little evidence in the I-PRSP that their strategies are going to be implemented effectively. There is no timetable for goals to be reached, there is no breakdown of priorities by region or village size, and there are very few “new ideas” in the I-PRSP. The paper refers repetitively to *previous programs* as their method to achieve a development objective. For instance, in the section regarding “health, drinking water, and sanitation”, a reference is made to a *previous* national policy measure “to be implemented”, as if it had not already been implemented before.<sup>243</sup>

The difficulty of implementing policies in a country like Mali is often blamed on its status as a heavily indebted poor country (HIPC) that must pay back money from past

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<sup>242</sup> Ibid, p. 1.

<sup>243</sup> I-PRSP (Interim Poverty Reduction Strategy Paper): Mali, IMF website, available at: <http://www.imf.org/external/NP/prsp/2000/mli/01/index.HTM>, pp. 21-22. The 1998-2002 health and social development program is the first phase of the 1998-2007 ten-year program by the same name. The program aims to increase the number of fully vaccinated children from 40 to 80 percent; reduce deaths from malaria, acute respiratory diseases, and diarrheal diseases among children aged 0-5 years by 50 percent; and lower AIDS sero-prevalence from 3 to 2 percent. Under this same section, another national strategy geared specifically to drinking water and sanitation that was adopted on March 22, 2000 aims to satisfy by quantitative and qualitative needs in rural and semi-urban areas. The participating actors in the national water and sanitation policy are listed as the central government, local governments, and users in investment for drinking water infrastructure. What is most interesting regarding the I-PRSP is that of the many represented groups used in the preparation of the I-PRSP (Ministry of Economy and Finance; Ministry of Social Development, Solidarity, and the Aged; Office of the Prime Minister; National Directorate of Statistics and Computer Services; National Planning Directorate; and Sustainable Human Development and Poverty Reduction Observatory), the Ministry of Mines, Industry, and Water and also the Malian National Directorate for Hydrology and Energy were not included. Furthermore, the HIPC initiative stipulates that there must be civil society participation in the preparation of the paper (see IEG (2), p. 37), there were no local organizations represented in this preparation of the I-PRSP.

loans<sup>244</sup> that could otherwise be used for expanding social programs. HIPC status is one barrier, but it is not the sole cause of inaction. A lack of initiative on the part of the government to show real progress in social indicators is another likely cause. The I-PRSP reads more like hastily drafted lip-service to donors in order to receive debt relief instead of a carefully prepared plan of action. If this is the case, there are dire consequences for a government that is unwilling to act in the benefit of those that need it most when they are the largest segment of the population. “The imperatives to meet basic human water need are more than just moral: they are rooted in justice and law and the responsibilities of governments.”<sup>245</sup> So is the government of Mali stuck between a rock (aid donors) and a hard place (alleviating Malian poverty)? To gain better perspective on this complex relationship between national government and donor agencies, we must also look at the role of the international community and foreign aid in development.

## **4. Foreign Aid in Mali**

### **4.1 Role of the International Community**

The International Community is teeming with organizations, conventions, commissions, conferences, agreements, resolutions, blueprints, programs, and projects aimed at the developing world and improving the quality of life for those less fortunate. Billions of dollars have been invested from the International Community just to meet the single goal of ‘universal service’ of drinking water, not to mention the multitude of other goals such as health services, macroeconomic stability, economic growth, education, etc.

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<sup>244</sup> IEG (2), “Debt Relief for the Poorest: An Evaluation Update of the HIPC Initiative”, World Bank, Washington, 2006, p. 4.

<sup>245</sup> Gleik (1998), p. 501.

Each sector has been given substantial funding and in countries throughout the developing world. Why have these funds fallen far short of their intended purpose and what are the major obstacles standing in the way of progress in the water and sanitation sector? First, we will take a look at the major development institutions in the international community and their participation in Mali. Second, the differences in development philosophies and what the type used in Malian water and sanitation projects will be explored. Third, the changeable nature of development (development schizophrenia) will be examined with particular emphasis on its affects in the development of Mali. Fourth, a look at the HIPC initiative and Mali's participation in it will be discussed. Next, the debate over privatization<sup>246</sup> and commodification<sup>247</sup> of water will be reviewed and what it may mean for Mali's water issues. Lastly, my suggestions for international community involvement in development work will be outlined.

The major development institutions in the international community that have participated in Mali's development are numerous. The International Monetary Fund (IMF) and World Bank participation in Mali can be traced back to the 1980's. "In the 1980's, with the support of the World Bank and the International Monetary Fund (IMF), the government embarked on a structural reform program to reduce the state's role in the economy, correct macroeconomic imbalances, and liberalize prices."<sup>248</sup> The World Bank has a sizable annual budget (US\$20 billion) used primarily in to reduce poverty through

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<sup>246</sup> According to Gleik et. al. (p. 35), "privatization in the water sector involves transferring some or all of the assets or services of public water systems into private hands. It is separate from globalization, but it is also related to globalization in matters such as the bottled water industry".

<sup>247</sup> According to Gleik et. al. (p. 35), "commodification is the process of converting a good or service formerly subject to nonmarket social rules into one subject to market rules".

<sup>248</sup> IEG (1), p. 1.

development credits,<sup>249</sup> whereas the IMF operates on a much larger budget<sup>250</sup> and is generally involved in giving loans for macroeconomic stabilization. Mali had borrowed enough money to bring it to the HIPC status and eligible for debt relief under the HIPC initiative. The UN also runs programs in Mali. For instance, UNICEF (United Nations Children Fund) runs a variety of programs aimed at improving the quality of life for children.<sup>251</sup>

Aid agencies are made up of different sponsors that contribute to funds used in the agency's development programs. These aid agencies are held accountable to their sponsors, not their customers (i.e. poor people in countries receiving aid). Often times, this leads to a scenario where donors give what they *think* the receiving country needs, not what the people receiving the aid funds *actually* need. Furthermore, those receiving aid find it hard to complain about the way aid is distributed because they have little other alternatives to what is being given. William Easterly asserts that the state of development institutions today resembles a "cartel":

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<sup>249</sup> Attaran, Amir; Barnes, Karen I; Bate, Roger; Binka, Fred; d'Alessandro, Umberto; Fanello, Caterina I.; Garrett, Laurie; Mutabingwa, Theonest K.; Roberts, Donald; Sibley, Carol Hopkins; Talisuna, Ambrose; Van geertruyden, Jean-Pierre; and Watkins, William M. "The World Bank: False Financial and Statistical Accounts and Medical Malpractice in Malaria Treatment" in: *The Lancet*, Vol. 368, 2006, p. 247.

<sup>250</sup> The IMF's administrative budget for the financial year that ended April 30, 2006 (FY2006) authorized total gross expenditures of \$937 million (\$876.1 million net of receipts). The FY2006 capital budget made provision for expenditures of \$52.5 million over three years on new projects commencing in FY2006, of which \$28.5 million was provided for building facilities and \$24 million for information technology (IT) projects (Annual Report of the Executive Board for the Financial Year Ended April 30, 2006, Chapter 9: Governance and Management of the IMF, p. 112), available at: <http://www.imf.org/external/pubs/ft/ar/2006/eng/index.htm>

<sup>251</sup> UNICEF operates programs geared toward almost all development sectors. The following are principle examples: for nutrition, they are concentrating efforts on areas hit by the locust swarms in 2005 with food aid; for health, they are seeking to reduce guinea worm infections and educate youth on HIV/AIDS; for education, UNICEF is promoting education for youth through radio broadcasts; and for child protection, they are educating the public about dangers associated with female genital mutilation. See [http://www.unicef.org/infobycountry/mali\\_2388.html](http://www.unicef.org/infobycountry/mali_2388.html) 4/13/07.

The typical aid agency forces governments seeking its money to work exclusively with that agency's own bureaucracy - its project appraisal and selection apparatus, its economic and social analysts, its procurement procedures, and its own interests and objectives. Each aid agency constitutes a mini-monopoly, and the collection of all such monopolies forms a cartel. The foreign aid community also resembles a cartel in that the IMF, World Bank, regional development banks, European Union, United Nations, and bilateral aid agencies all agree to 'coordinate' their efforts. The customers therefore have even less opportunity to find alternative aid suppliers. And the entry of new suppliers into the foreign assistance business is difficult because large aid agencies must be sponsored either by an individual government... or by an international agreement. Most NGOs are too small to make much of a difference.<sup>252</sup>

Even though the aid agencies in this "cartel" agree to coordinate their efforts, there is often a problem with duplication of projects.<sup>253</sup> Some might argue that more projects would be better than none, but this is not the best way to achieve consistent and effective objectives. If the efforts of two small projects in one sector were to be well coordinated, the project budget would double, the project would reach more recipients, the strategy would be consistent, and bureaucratic obstacles would be lessened.

Aid recipient countries are also finding that aid comes with a bureaucratic headache. Aid recipient governments get bogged down with preparing an alphabet soup of papers, reviews, appraisals, analyses, surveys, frameworks, strategies, and targets just to get the attention of aid agencies. How can a country have an effective government working for the people when they are expending all of their energy on these aid agency bureaucratic standards? Take Tanzania<sup>254</sup> as an example: 2,400 reports must be made

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<sup>252</sup> Easterly, William (1), "The Cartel of Good Intentions" in: *Foreign Policy*, Vol. 131, (Jul-Aug, 2002), pp. 42-43.

<sup>253</sup> Ibid, p. 43. Easterly points out a specific example where both the US Agency for International Development and British analysts produced reports on corruption in Uganda within six months of one another while both being unaware of the duplication of their efforts.

<sup>254</sup> Ibid, p. 43, also see Sachs, p. 277.

annually and submitted to donors who work on approximately 1,000 projects each year. Moreover, over the course of the 1990's there were 15 different health-sector projects being conducted in Tanzania, each by a different aid agency. National governments of aid recipient countries seem to be working more for development organizations than they are for their own citizens; however, some aid funds are going out to countries in Africa without strings attached.

China has developed a keen interest in Africa and has begun aid work and trade with many countries there. Unlike BWI aid, China's money often comes without strings attached. China has established relations with Mali by creating an investment and development trade center.<sup>255</sup> Growing concern is mounting regarding China's reluctance to address human rights violations in some of the countries to which it donates. This illustrates gross ethical abuse.<sup>256</sup> Is this a reaction of western aid agencies that would rather keep control over development in places like Africa, or are inherent ideological or philosophical differences at play? The result is that China is causing many groups to think strategically about its growing power and influence in the world which is reflected in the reorganization of International Institutions. "Global institutions cease to be

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<sup>255</sup> China has permeated many markets in Africa through joint ventures with African countries. This includes cocoa production in Côte d'Ivoire, manufacturing of plate glass in Kenya, and even Iron and Steel in Zimbabwe. For more information on the beginnings of Chinese-African trade relations. See Payne, Richard J. and Veney, Cassandra R. "China's Post-Cold War African Policy" in: *Asian Survey*, 38.9, (Sept. 1998), pp. 867-879.

<sup>256</sup> China is gradually building influence on the African continent (has diplomatic relations with 48 nations) and trade between China and Africa has grown ten-fold from 1995 to 2005. China, as the second largest consumer of oil, has been in a scramble to secure rights to African oil-producing resources along with a wealth of other resources. There could be other negative outcomes of this scenario: China's demand for raw materials from Africa will not help diversification of industry, China's cheap products often flood markets of its partners, and labor disputes over low-wage Chinese production industries. For more information, see "The Slogan 'Peace, Friendship, Co-operation and Development' underscores Beijing's pledge not to intervene" in: *Africa Research Bulletin*, 43.10, Oct 16-Nov 15, 2006, pp. 17135-17137.

appropriate when the allocation of decision-making authority within them no longer corresponds to the distribution of power.”<sup>257</sup> For this reason, the former Bush administration was trying to increase China’s stake in organizations such as the IMF.<sup>258</sup> “At a meeting in Singapore in the fall of 2006, the IMF’s International Monetary and Financial Committee agreed to reallocate quotas to reflect shifts in the balance of economic power.”<sup>259</sup> Since then, China’s voting quota has been marginally increased from 2.98 to 3.72 percent.

Differing approaches to development are supported by various groups: scholars, economists, charities, and religious charity missions. Which one is right? Which one will do the most good with the smallest price tag? Which one will be sustainable? Who makes the decision on which one to implement?

One philosophy is that increases of aid will do the trick. A simple injection of more capital will be the answer to the development woes of the past few decades. This has been a recurrent theme in development aid from the large donors. One observation of this theme likens it to a broken record playing the same tune: “Foreign aid must be doubled”.<sup>260</sup> Some quests to increase aid follow a more detailed analysis than the “doubling aid” phenomenon. Take for example when Jeffrey Sachs began work with the WHO Commission on Macroeconomics and Health (CMH), the commission found that investment in health in poor countries must be increased from \$6 billion to \$27 billion

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<sup>257</sup> Drezner, Daniel W. “The New New World Order” in: *Foreign Affairs*, 86.2, March/April 2007, p. 39.

<sup>258</sup> *Ibid*, p. 43.

<sup>259</sup> *Ibid*, pp. 42-43.

<sup>260</sup> Easterly (2), p. 182.



per year in order to avert eight million deaths per year.<sup>261</sup> Is increasing aid just an easy escape for frustrated aid workers who are too stuck in a rut to seriously evaluate the entire system of development aid to poor countries?

Some voices rising from the scholarly world propose a revolutionary new approach<sup>262</sup> to aid. Part of this new approach challenges the “cartel” of aid agencies to be held accountable for their failures, to begin specializing in areas to avoid duplication of projects, focus more on piecemeal solutions,<sup>263</sup> and to do projects that are requested by the aid recipients.

In simpler terms, top-down approaches of development are categorized as a process in which the donor dictates what a community needs. The major drawback with top-down approaches is that the community receiving aid does not feel ownership in the project because they either don’t need/want it or they are not involved in the planning of it. Without local ownership of the project, the responsibility of the community to keep the project going is nil. For instance, a handpump for water is installed in a community, but no one is given the tools to fix it, no one is told where to go to buy replacement parts, and ownership of the handpump is not established. When the handpump breaks down,

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<sup>261</sup> Sachs, pp. 203-205.

<sup>262</sup> This new approach is based on William Easterly’s theory of Planners vs. Searchers.

<sup>263</sup> Proctor & Gamble, P&G News website, 4/1/07, available at: <http://www.pginvestor.com/phoenix.zhtml?c=104574&p=irol-newsArticleMain&ID=907975&highlight=>. An example of a poor piecemeal solution: “Proctor and Gamble has developed sachets of powder to purify 10 liters of even heavily contaminated water at a time. Mixing, straining, and a short wait produce visibly clear water that meets WHO standards for pathogens, sediment, and heavy metals. Tests show that the powder, marketed as ‘PuR’, reduces the incidence of diarrhea by up to 50%; it also removes arsenic from naturally-contaminated well water. Not operating in Mali, but is in other countries in Sub-Saharan Africa.” Treatments such as these deflect attention away from the lack of investment in infrastructure to supply water services to those without safe drinking water. This does not make lasting change, unless its purchase is subsidized, and just removes more funds from the poor without access to clean water supplies.

the community is faced with a large problem as they have not been given the knowledge and ability to solve this problem themselves. The donors are long gone at this point and have moved on to an area that hasn't been checked off the map. What's more, if the community has the ability to tell their government that the donated pump needs servicing, the government will have to spend another year filling out the alphabet soup of paperwork in order to get the pump fixed. Once the papers are submitted, it may turn out that those donors no longer run water and sanitation programs. Instead, this year they are focusing on the growing HIV/AIDS crisis, so the development funds that will be disbursed next will not end up fixing the community's hand pump anyway.

The Top-Down Approach was often used in past World Bank development projects. This approach was characterized by heavy government involvement: water committees were not formed locally, the maintenance of equipment was under government responsibility as were spare parts distribution, technicians were selected by the government for repairs, and all the decisions were centralized in the government. This approach is no longer being endorsed by the World Bank and other approaches that involve communities more have become more popular.

When there is community involvement in projects, there is more incentive for the community to have ownership in development schemes. Furthermore, as donors consult with communities on their needs and wants, the dialogue brings up valuable questions that assist the community's projections on their own involvement in the future. I propose that the sustainability of projects rests on these principles:

1. Is the project viewed as a necessity in the community?
2. Is there some other problem in the community that they feel takes precedence over this?

3. Is the community being invited to join in the planning of the project in order to instill a sense of ownership so that the success or failure of the project will also reflect their level of commitment?
4. Is there a clear and precise dialogue that explains responsibility of the project once donor assistance has gone (i.e. is the community aware that responsibility for the project ultimately rests with the community, not the donor or the national government unless otherwise specified)?
5. Are new structures of organization in the community being made that may disrupt traditional or respected lines of authority that could cause conflict in the future and destabilize the success or the sustainability of the project?
6. Are members in the community receiving the tools they need to keep the project functioning?
7. Is the longevity of equipment used in the project being forecast so that communities can prepare financial solutions to repair or replace equipment when it reaches the end of its design life?
8. Is the community being given a contact person in case unforeseen problems arise?

The questions listed above are logical ways to assess the future of project implementation, so why haven't these questions been asked more frequently in development programs? Does the development community harbor a lack of trust in the ability of communities to take responsibility for projects? The World Bank has recently recognized the need for answering community demands and increasing community involvement, so it has developed the "Demand-Responsive Approach" (DRA)<sup>264</sup> in rural water projects. This new approach includes much of what is listed above, but it also requires that communities pay a certain percent of money or dedicate a certain percentage of labor time to the project in order to assure their ownership in the project.

In an evaluation of World Bank rural water projects in Mali, what was called the "Community-Based Approach" was used:

The project was designed to encourage self-reliance by the villagers and to reduce the financial burden on the central government (in terms of [operation and maintenance] of their handpumps) by holding the villages responsible for part of

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<sup>264</sup> OED (2000), pp. 23-25.

the cost of the hand pumps and all of their ongoing care. Project staff required that the villages establish a water committee, participate in training, and contribute cash toward pump costs. Drilling the well was subsidized. The implementing agency, Direction National de l'Hydraulique et de Energie (DNHE), limited its community organization efforts to selling the program to the villagers – that is, establishing the water committee, getting the water committee members to raise the counterpart funds, and having them sign the maintenance agreement. In effect, the villages were visited only until they did what the project documents said they ought to do; little thought was given to how capable the local organization would be of managing the tasks required of it over the longer term.<sup>265</sup>

These projects largely failed in Mali because a “Top-Down Approach” was applied to a “Community-Based Approach” project initiative. A government organ, the DNHE, was the implementing authority. The DNHE formed inadequate water committees that were not aligned with traditional authority figures in the community, so the committees were ineffective and dissolved. Furthermore, of the communities that still had functioning pumps, there were still many people that were still using unsafe water sources instead of the clean water supplies given by the pumps. Part of the duty of the water committee was to transfer their training on the effects of drinking impure water to the community and because the committees had not received this training and had dissolved, there was no hope that this knowledge transfer could take place. “The study shows unequivocally that there are no shortcuts – time and effort must be spent supporting the local group until it can perform all of its functions without further assistance.”<sup>266</sup>

As of September, 2006, there were some 13 projects in execution in Mali from the World Bank. Only around ~33 million dollars were committed to rural water development and only ~12 million of these funds had been distributed by September,

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<sup>265</sup> Ibid, p. 21.

<sup>266</sup> Ibid, p. 27.

2006 (see table 4.1 below). In the Status of Projects in Execution report, these funds were vaguely attributed to improving access to water and sanitation.<sup>267</sup>

**Table 4.1 World Bank Projects in Execution in Mali, FY06**

Amount USD Millions	Undispersed USD Millions	World Bank Projects as of September 19, 2006
\$12.12	\$9.70	1) Finance sector Development Project
50.27	4.64	2) Agricultural Services and Producer Organizations Project
127.45	37.81	3) National Rural Infrastructure Project (24% of these funds allocated to “general water, sanitation and flood protection, equals ~ \$ 30.59 USD millions).
5.68	4.92	4) Gourma Biodiversity Conservation Project
61.66	3.79	5) Education Sector Expenditure Program
42.36	3.17	6) Health Sector Development Program
59.39	56.33	7) Rural Community Development Project (5% of these funds allocated to “General Water Sanitation and Flood Protection”= ~ \$2.97USD millions”.
37.04	29.23	8) Household Energy and Universal Access Project
58.51	26.47	9) Transport Corridors Improvement Project
52.33	47.87	10) Growth Support Project “Industry Finance and Trade”
46.04	42.32	11) Agricultural Competitiveness and Diversification Project
2.50	1.89	12) Mali Development Learning Center Project
25.87	20.07	13) Multi-Sectoral HIV/AIDS Project
		Total formally revised = \$ 581.22
		Total undispersed = \$ 288.20

The three main differences between the Demand-Responsive and Community-Based Approaches relate to the degree of community participation. First is the *local* decision of what they demand and what they can afford to maintain over the long run. Second is that water is treated as an economic good. Finally, the community is responsible for all service operation and maintenance.<sup>268</sup> The World Bank currently promotes the Demand-Responsive Approach, but the evaluation by OED (2000) shows

<sup>267</sup> SOPE-FY06, Status of Projects in Execution, Region of Africa, Country: Mali, Operations Policy and Country Services, World Bank, September 19, 2006, p. 5. Reportedly, 525 additional safe drinking water supplies were provided to service 200,000 people in the National Rural Infrastructure Project, P041723. Another project, the Rural Community Development Project, P040653, shows no improvement as it is a new project, but only 5% of the funds in this project are dedicated to “General water, sanitation and flood protection” (SOPE-FY06, p. 13). It is unclear how many people will benefit from these funds, in what areas, and for how long.

<sup>268</sup> OED (2000), pp. 20-23.

distrust in their implementation of it. “Although many Bank projects claim that they follow DRA in project documents, the term is somewhat overused and vague.”<sup>269</sup>

The DRA is not a perfect method as some problems have been observed in its institution. First, DRA requires a capital investment by the community and some communities may find it hard to collect the money from some people. This could lead to later disputes over who has access which might result in only certain pockets of the community reaping the benefits of the project instead of the community as a whole. Second, it is hard to determine if the local community is really deciding for themselves what is demanded or if they are demanding what they *think they are expected* to demand. Furthermore, the demand of the community may outweigh what they are able to afford. “[The World Bank] has expanded its work with RWS, but it has done so overoptimistically, often estimating unrealistically high willingness-to-pay and predicting unattainable levels of cost recovery.”<sup>270</sup> Finally, communities may agree to cover operation and maintenance costs knowing that they will not be able to afford it. One cause of this is the fear that if they do not accept responsibility, they will not get approval for the project. Moreover, they might have good intentions in the acceptance of responsibility, but lack full understanding of what this responsibility will entail.

Altogether, the World Bank lended \$334.5 million dollars to rural water projects in the 1980s. “From 1990 through the end of calendar 1998, lending for free-standing rural water projects totaled \$1,090 million, more than \$120 million per year.”<sup>271</sup> Projects

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<sup>269</sup> Ibid, p. 23.

<sup>270</sup> Ibid, p. ix.

<sup>271</sup> Ibid, p. 49.

that received those funds were only 43% effective in achieving substantial institutional development impact. “As the sustainability of benefits correlates strongly with substantial institutional development, it is not surprising that the same percentage of the projects were rated likely to sustain their benefits.”<sup>272</sup> What is also a growing concern is that the funding of projects in the water and sanitation sector by the World Bank has been slowly decreasing since 1996 (from ~16% of Bank total to ~8% of Bank total in 1999).<sup>273</sup> Furthermore, lending from the World Bank in this sector has largely been concentrated in a few select countries (in order of most to least assistance): China, India, Indonesia, Mexico, Brazil, Pakistan, Turkey, Vietnam, Peru, and Bangladesh.<sup>274</sup> Out of this list, not one African country is mentioned. The countries in this list do require help in water and sanitation, but the proportion of lending is questionable.

Development work in Mali, and throughout the developing world, has shifted its focus so often that a psychological professional might give it the diagnosis of “schizophrenia”.<sup>275</sup> The development symptoms most prevalent and displayed in the development community are: disorganized speech and behavior, delusions, and hallucinations. As a system, they seek to “coordinate” efforts as is evidenced by many speeches from leaders of development organizations over time, but this is often a wish,

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<sup>272</sup> Ibid, p. ix.

<sup>273</sup> Pitman, George Keith. “Bridging Troubled Waters: Assessing the World Bank Water Resources Strategy”, World Bank Operations Evaluation Department, 2002, p. 11. These figures are based on World Bank Commitments. The amount for projects ranges from 15% in 1996, to 18% in 1998, and to 9% in 1999.

<sup>274</sup> Ibid, p. 11. All but three of these countries saw an increase in lending after the 1993 World Bank Water Resources Strategy was created.

<sup>275</sup> Random House Webster’s College Dictionary, New York: Random House Inc., 1991, p. 1200. The Random House dictionary defines schizophrenia as “a severe mental disorder associated with brain abnormalities and typically evidenced by disorganized speech and behavior, delusions, and hallucinations.”

not a reality. The behavior of development organizations does not reflect what their speeches assert. Goals and objectives for development also reflect a delusional view of what is needed, what can be done, and what is being done. All this leads one to assume that the development world is seeing a completely different picture than the rest of the world. These hallucinations of the development community amount to “development schizophrenia”, but what is the affect on the countries that are subjected to it? I will provide examples below.

Of the first symptom, development organizations and donors often make lofty speeches, but display behavior that is not conducive to their goals. Development organizations lose credibility when they ask recipient countries to buck up and improve governance when so much development money continues to be handed over to very corrupt and poorly governed nations. The rhetoric coming out of development agencies often cite that money will not go to corrupt governments or governments without sound policies,<sup>276</sup> but the behavior of development organizations do not parallel their speeches. Corrupt governments often receive just as much development money as less corrupt governments, and in some cases, more money.<sup>277</sup> “Not only are corrupt governments not discriminated against in the flow of international assistance, but, in fact, foreign aid fosters corruption by increasing the size of resources fought over by interest groups and factions.”<sup>278</sup> What is the incentive for a government to improve governance when they’ll

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<sup>276</sup> Alisina, Alberto and Weder, Beatrice. “Do Corrupt Governments Receive Less Foreign Aid?” in: *The American Economic Review*, 92.4, Sept. 2002, p. 1126.

<sup>277</sup> Ibid, p. 1126. In the study by Alisin and Weder, they found that the United States often ends up giving more aid to corrupt countries than less-corrupt ones, although the U.S. favors democracies over other regime types. They assert, however, that this is not on purpose, more likely, the U.S. does not use corruption as a gauge on whether or not to assist a country with foreign aid.

<sup>278</sup> Ibid, p. 1126.



receive foreign aid regardless of whether they are poorly governed or not? The answer is that there is no incentive to improve. The affect on the people for whom aid is supposed to help - the poor, powerless, and disadvantaged of society - is that their badly governed states are always going to be bolstered by external aid, the money will continue to go into the pockets of a few, and the masses will continue to live in poverty.

As for the other symptom, the delusional perception of the international community about the developing world is the other factor contributing to development schizophrenia. It is good to make goals that will help alleviate poverty, but the goals must be realistic, projects must be coordinated in an efficient and sound manner, and money to achieve the goals must be forthcoming. The MDGs are a very ambitious set of goals that will be very hard to accomplish. These goals set out to do what development hasn't been able to do in over two decades of development thus far. How many times will the poor have their hopes lifted by lofty goals just to find that there has been little done? The lack of coordination in development exacerbates the problem and confuses the aid recipients, as well. If aid agencies specialized in certain aspects of development and then kept enough transparency so that there would be no duplication of projects and no clash of projects on issues, the results would be far better than in the past. With accurate measures on what is needed to be done and the majority of money going to governments that actually do stand out from the others with good governance, more money would be available at a given time to meet specific goals. The U.S. often pledges large increases in foreign aid each year, but the amount that it actually puts out is often

well below what that pledge has promised.<sup>279</sup> This whole dysfunctional system works against progress and leads to failures in development.

Development schizophrenia is something that can be solved. With a strong commitment on the part of all donors to improve the system, it is possible to make dollars stretch further, get results that are more successful, and indulge fewer regimes with corrupt governments. Poor people cannot do it for themselves and the donor community has set the poor as the priority, so why aren't better measures being taken to reform the system of the international community, aid organizations, and donors to achieve better results? This decade will stand as an expensive test that will decidedly show whether the system of development as it stands is really improving and working to meet development goals. The HIPC initiative will give some select countries a 'fresh start' or 'clean slate' by giving certain amounts of debt relief so that money in the economy can be used for things other than paying off old debt to institutions like the IMF.

## **4.2 The HIPC Initiative**

Heavily Indebted Poor Countries (HIPC) have been struggling for some time for economic growth, but this has proved a very difficult task with the burden of debt. The HIPC initiative was announced by the World Bank and the IMF in September 1996.<sup>280</sup> The aim of the initiative was to cancel all or part of the debt of an HIPC with good policies. This would not be the first time that debt relief had been given to HIPCs, but it

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<sup>279</sup> Morgenthau, Hans. "A Political Theory of Foreign Aid" in: *The American Political Science Review*, 56.2, (June 1962), p. 301. According to Donohoe (p. 579), the U.S. is one of the richest countries in the world, but it ranks 21<sup>st</sup> in foreign aid as a percentage of GNP and sends 0.15% of it's GNP abroad each year.

<sup>280</sup> Easterly, William (3), *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*, Cambridge: MIT Press, 2002, p. 126.

was the first time that the process became formalized by lenders. Part of the formal process is the drafting of PRSPs<sup>281</sup> by the country seeking debt relief. “Adoption of the PRSP (Poverty Reduction Strategy Papers) framework signaled an intended shift by the Bretton Woods Institutions (BWIs) in the ownership of development strategies and the policies needed to achieve poverty reduction [and] second objective of the new framework is for PRSPs to become the principal instrument for managing a country’s relations with the donor community.”<sup>282</sup> The PRSPs are in the spirit of DRA where countries define their needs, decide what they can afford to maintain, and take ownership. “The PRSP approach was conceived as a country-driven process, based on the application of these principles, to develop strategies tailored to individual country circumstances rather than a blueprint for the ‘ideal’ poverty reduction strategy.”<sup>283</sup>

Even though PRSPs are supposed to follow the trend of demand- and country-specific approaches, there is little doubt that there will be failures in this concept. “The PRSP process also enables countries to move from a series of fragmented projects to a country and sector-wide approach under government leadership with a clear focus, pooled funding and sectoral budget support.”<sup>284</sup> With government involvement comes top-down development schemes which could lead to ineffective projects. One aspect of the PRSP that might be beneficial is the avoidance of duplication. If debt is relieved in a country, then the money that would ordinarily go toward debt payments is to be used

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<sup>281</sup> OED (Feb 2003), pp. 3-4. According to the OED, PRSPs replaced the PFPs as the foundation for BWI support.

<sup>282</sup> *Ibid*, p.1.

<sup>283</sup> *Ibid*, p.1.

<sup>284</sup> WSP, p. 9.

according to the strategies outlined in the PRSP. The governments, therefore, will have their “to do” list and any projects that will be proposed in that country from donors will not duplicate their projects. In fact, if pure aid money is given, that money can go directly into expanding their projects in the list. Another worrying factor in the PRSP process shows a push of accountability from the development community to the HIPC. If the funds resulting from debt relief are not used in the manner specified, then the donor community can start to point fingers, throw up their hands in exasperation, and declare that the country is hopeless.

Like many other HIPC in the world,<sup>285</sup> Mali’s debt has been a real problem for economic progress. “Since the mid –1980’s, foreign aid has represented 27% of Mali’s budgetary revenues [and] since 1993, donors have financed 80% of Mali’s annual special investment budget.”<sup>286</sup> Mali was eligible for debt relief with only an I-PRSP instead of the full PRSP report that was required of some countries.<sup>287</sup> It is unclear whether this reflects a sense of trust in Mali’s ability to do well with the extra funds or if the need for debt relief was so great that if it wasn’t rushed through a crisis might have ensued. “In March 2003 Mali reached the completion point under the enhanced Highly Indebted Poor Country Initiative and, in December 2005, it was granted 100 percent debt relief by the IMF under the Multilateral Debt Relief Initiative.”<sup>288</sup> In the evaluation of the HIPC

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<sup>285</sup> According to Donohoe (p. 579), debt has been estimated at 100% and 200% of the GDP throughout much of Sub-Saharan Africa and these countries often spend more money on their debt payments than on health care and education. Some countries are forced to deplete their national resources in order to meet their debt payments.

<sup>286</sup> Tefft, p. 234.

<sup>287</sup> OED (Feb 2003), p.9.

<sup>288</sup> IEG (1), p. 2.

initiative, there were some countries that had their debt ratios deteriorate substantially after debt relief. Mali, however, has maintained its debt ratio and their new borrowing was lower than what was anticipated (11%). Also noted was Mali's strong export performance since debt relief.

Criticisms of the HIPC initiative are probably due to the complexity of the process: some donors stopped other aid flows to HIPCs in the relief process because they thought the relief was not an additional payment<sup>289</sup> and the objectives toward poverty alleviation are indirect and cannot be achieved through this type of intervention alone. "HIPC governments would need to have sound policy frameworks and balanced development strategies, and the international community would need to assist countries to enhance their exports and build needed institutional capacities, while ensuring that HIPC debt relief is truly additional to other aid flows."<sup>290</sup> Furthermore, this PRSP process makes it harder for national governments to answer their country's development demands. Each country that is preparing a PRSP has obviously been dealing with the development community for many years; each country knows what the development community wants to hear. An unspoken truth is that a country's lack of focus on particular development "hot topics" is likely to lead to setbacks in the distribution of money from lenders. Such unspoken truths are part of the invisible strings attached to development funds and another symptom of development schizophrenia. Another string

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<sup>289</sup> IEG (2), pp. 8-13. Some of the creditors that agreed to the HIPC debt relief process have just refused to pay, still others have filed suit to reclaim payments lost during the HIPC process stating that they did not fully understand the terms of the initiative. Most of the lenders refusing payment belong to the non-Paris Club or the commercial creditors.

<sup>290</sup> Ibid, p. 3.

more frequently attached to foreign aid has to do with privatization of water supplies and is the subject of the next section.

### **4.3 Privatization and Commodification of Water**

Pressure from the international community is growing to push national governments to privatize their water supplies. This phenomenon can be traced back to 1992 when two conferences recognized water as an economic good.<sup>291</sup> “Among the most powerful and controversial new approaches to water policy is the idea that water should be considered an ‘economic good’, increasingly subject to the rules and power of markets, prices, and international trading regimes.”<sup>292</sup> As seen in the water vending section of this paper, those who receive their water as a social good (the non-poor) are paying less for their water, whereas the poor who are forced to buy vended water pay much more for their water. “[Privatization of water resources will lead to] the emergence of a water elite that will determine the world’s water future in its own interest [and] in such a scenario, water will go to those who can afford it and not to those who need it.”<sup>293</sup> A “water elite” has already begun to take over many water supplies and this creates a problem for poor countries in the developing world that are seeking funds for projects.<sup>294</sup> “A handful of transnational corporations, backed by the World Bank and the International

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<sup>291</sup> Gleik et al, p. 37. “The United Nations Conference on Environment and Development (held in Rio in 1992) and the International Conference on Water and Environment, held in Dublin, Ireland, in January 1992 both concluded that water should be recognized as an economic good.

<sup>292</sup> Ibid, p. 33.

<sup>293</sup> Barlow and Clark.

<sup>294</sup> Barlow and Clark show that this water elite, or Water Lords as they have called them, are using the World Bank and the IMF to exert influence over countries that are seeking debt relief. They argue that privatization of their public water systems is being considered criteria in the process of gaining eligibility for debt relief.

Monetary Fund, are aggressively taking over the management of public water services in countries around the world, dramatically raising the prices of water to the local residents and profiting especially from the Third World's desperate search for solutions to its water crisis."<sup>295</sup> Two large French water firms already have control of around 70% of the global market for water: Vivendi and Suez.<sup>296</sup>

The rise in trade of bottled waters is another trend in the privatization of water. "Commercial trade in bottled water has boomed."<sup>297</sup> It is estimated that the industry is expanding at an annual rate of 20%.<sup>298</sup> The Pacific Institute for Studies in Development, Environment and Security estimates consumers pay about \$100 billion a year for bottled water and have been growing in worldwide sales by about 10 percent per year. The WHO has made note of the increase in bottled water sales and the worrisome trend of increases of sales in poor countries.<sup>299</sup> Most sales of bottled water are concentrated in areas that are experiencing direct effects from the water crisis. Markets have realized that they can service communities with water problems, but this hides the bigger picture. One positive aspect of bottled water is that it is generally safer than vended water. Studies of bottled waters in South Africa (Ehlers study) and in Europe (Lamothe study) have shown

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<sup>295</sup> Ibid.

<sup>296</sup> Steinberg, p. 621.

<sup>297</sup> Robinson, David. "'French Africans'-Faidherbe, Archinard, and Coppolani: The 'Creators' of Senegal, Soudan, and Mauritania" in *Democracy and Development in Mali*, edited by R. James Bingen, David Robinson, and John M. Staatz. East Lansing: Michigan State University Press, 2000, p. 33.

<sup>298</sup> Barlow and Clark.

<sup>299</sup> Gleik et. al., p. 45 and also Obasi, G.O.P. "Challenges for Safe Drinking Water Technologies in the 21<sup>st</sup> Century", A keynote address at the first-ever G77 South-South high-level conference on Science and Technology, Dubai, United Arab Emirates, October 29, 2002, p. 9.

that most bottled waters passed tests for multiple water quality standards.<sup>300</sup> Bottled water and privatized water systems, however, are not the answer to Mali's water needs.

#### **4.4 My Suggestions for Effective Foreign Aid**

Various parties will continue to debate over why international community involvement, or more specifically development and foreign aid, has not made a lasting difference in the developing world. Jeffrey Sachs, a Harvard economist, has argued that more money needs to be given in order to reach development goals. William Easterly, a former research economist at the World Bank, argues that "big plans" like those suggested by Sachs will not work; instead he posits that development will only be successful with smaller interventions that are chosen by, and geared toward, the people who will benefit from it and can be monitored easily.<sup>301</sup> Easterly also argues that the "cartel" in development needs to be held accountable for their failures on an individual basis. "Yet the going along with collective responsibility is an optimal strategy for individual aid agencies to protect themselves from the hostile political environment facing foreign aid."<sup>302</sup> This is the problem: foreign aid is too greatly tied to politics. Short of reforming or restructuring the entire foreign aid and development funds system, there is little to be done about irresponsible lending, unsuccessful project outcomes, and overlapping development projects.

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<sup>300</sup> Ehlers, Marthie M; vanZyl, Walda B; Pavlov, Dobromir N.; and Müller, Etienne E. "Random Survey of the Microbial Quality of Bottled Water in South Africa." *Water SA*, 30.2, April 2004. See also Lamothe, Gilbert Thierry; Putallaz, Thierry; Joosten, Han; and Marugg, Joey D. "Reverse Transcription-PCR Analysis of Bottled and Natural Mineral Waters for the Presence of Noroviruses." in: *Applied and Environmental Microbiology*, 69.11, November 2003, pp. 6541-6549.

In the Ehlers study, there were some bottled water samples that grew bacteria when left for prolonged periods in storage and could be harmful to health. There was not, however, proof that the bottled waters were contaminated with any fecal bacteria that could cause severe illness.

<sup>301</sup> Easterly (2), p. 172.

<sup>302</sup> *Ibid*, p. 172.



As was shown, DRA is a good idea in that it involves the community that will be receiving funds or equipment, but there is little evidence that this is being implemented as designed. The DRA requires time and commitment on the part of all the participants. Development too often places a large focus on inputs (doubling aid), less time on significant definitions of output (halving problems, but who is the lucky half?), and not enough time on working through the project so that there are sustainable successes. Are innovations in development, such as the DRA, paying lip-service to development outcome critics while development projects remain stuck in the rut of old development behavior? I suggest that implementation strategies like the DRA, however imperfect, can be more effective if they are methodically and correctly conducted. There must be consistency, focus, responsibility, and accountability on both sides of the coin (community recipients – aid organizations) in order for the system to do any good. Words on paper will not do it. Commitment, time, and patience are the key to making a lasting impact.

It is highly unlikely that the international community will step forward and volunteer to restructure their organizations to be more efficient and specialized as Easterly would have them do. Even though this would solve the principle-agent problem in the relationship between the development community and the recipients, this is an unlikely solution. Furthermore, the elites of aid recipient countries lack incentive to change the system to which they have grown accustomed. “Political elites have little incentive to change a situation in which large amounts of aid provide exceptional resources for patronage and many fringe benefits (vehicles, study tours, salary increments, etc.) that would not otherwise be available to officials in low-income

countries.”<sup>303</sup> The development community will always need local experts to help guide efforts and projects in recipient countries and the salaries offered to these people greatly distort wage ranges and income gaps in the recipient country. These jobs are coveted and workers will not react well to challenges on the system that affords them their comfort.

The recent formation of the Bill and Melinda Gates Foundation, specializing in improving health for the poor, may be indirectly pushing this theory into practice. In an interview<sup>304</sup> with the then head of the World Bank, Paul Wolfowitz, there was an implied plan to move the focus of the BWIs back to economic concerns while the Gates Foundation continues to focus on Health. What will this new symptom of development schizophrenia mean for the most cost effective sector in development (water and sanitation)?

Water and sanitation has already been shown to have an excellent cost-benefit ratio that directly results in the conditions necessary for a healthy and productive workforce. It is clear that this sector is in desperate need of funding and attention from the development community. If the BWIs do shift their focus back to mainly economic sectors and the Gates Foundation continues to focus on immunizations and treatment, progress in the water and sanitation sector will stagnate. The most important aspect of international development today is the water and sanitation problems that exist rampantly through most of Sub-Saharan Africa and this sector must not be allowed to fall by the wayside. Ample literature discusses the world’s water crisis, so why is this issue not being addressed at this point? The moment to act on this problem is now. In each day

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<sup>303</sup> Knack, Stephen and Bräutigam, Deborah A. “Foreign Aid, Institutions, and Governance in Sub-Saharan Africa” (Partnership of the World Bank and the University of Chicago) in: *Journal of Economic and Development Change*, 52.2, 2004, p. 263.

<sup>304</sup> Guha, Krishna. “World Bank Chief Seeks Refocus”, in *Financial Times*, April 6, 2007.

that passes, withdrawal of water is exceeding water renewal rates only marginally above its threshold, but with further ignorance on this issue it will be harder to (and more expensive) to improve the situation. Indeed, good results in this sector will be more difficult to achieve the longer the sector lies idle.

To combat the potential distraction from water and sanitation issues, I suggest that an institution be dedicated to improving these growing concerns. Money from BWI's can be channeled into this particular institution and directly affect the problems faced by countries that are particularly susceptible to the water crisis. The institution can work on data collected from existent organizations that already work on the ground. Clinics, health centers, and local NGO's will likely have important input into the individual community concerns in their areas. Countries in the semi-arid tropics, such as Mali, will be able to see a more clear strategy for their own water and sanitation concerns when they are able to go to an already recognizable local center to find information on potential funded or partially-funded projects (from the BWIs and other recognized and effective aid organizations or NGOs). These potential projects may be kept there in the form of paper lists, pictorial leaflets, or videos (visuals provided for those that may be illiterate). Local leaders and administrators may go to view and find information on these projects, disseminate the information back to the community, and then choose a project that is more appropriate for their needs and their ability to maintain any products of the project.

## **5. Conclusion**

Plenty of evidence supports the existence of a global water crisis and the implications that it has for future generations. The developing world is especially vulnerable to the climate changes and effects of drought; Mali is no exception. The

agricultural sector in Mali is the most important aspect of its current economic base and will continue to be so in the future. Even with developments in the mining sector, the majority of Malians will continue to work in the fields to produce their own food for sustenance and a little extra for meager income. With the historical affects of drought looming over Mali's fragile economy, there must be increased concern over the environmental impact of farming techniques on Mali's scarce water supplies. Furthermore, the basic needs of Malians for increased access to water and sanitation must be duly addressed for the health benefits that can be realized through work in that sector.

Mali has already shown - through actions, policies, results in the HIPC initiative, and stability – that it is a country that can act responsibly with funds that it receives from development assistance. Poor countries have a great need for immediate action to increase clean water access to those without, to work with the agricultural sector to improve technologies and conserve water resources, and to educate the population on water-related diseases. With Mali's recent debt relief scheme, there is the possibility that more money will go toward the health sector, but this will not be enough to bridge the gap in the water access problem. Treatment of diseases is an excellent step in the right direction, but the prevention of disease through water and sanitation improvements can end up cutting costs in the health sector and make those funds stretch further. The cost-benefit ratio of improvements in water and sanitation stand as testament to the development community that this can be the most effective low-cost solution to suffering for the vast majority of the poor.

If the past indications of development schizophrenia continue and the focus of development continues to prove to be erratic, the poor people of Mali (and many other

Sub-Saharan countries) will pay the price through their suffering. The case has been made for water and sanitation and its benefits as most literature supports this sector as a basic human need; some have even proclaimed it a human right. There must also be responses to other aspects of poverty, to be sure; however, improvements in the water and sanitation sector provide the foundation for other sectors to grow in success.

Mali is in the perfect position now for action to be taken that will produce the most good. The longer the development community waits to increase spending in projects from 5% or 24% (as in two of the projects currently in execution in Mali, see table 3.1) to 100%, the more difficult it will be for the projects in this sector to succeed. Is it so difficult to have an institution solely contributing to the improvement of water and sanitation access? Those benefiting from improved access to water and sanitation have been clearly stated: school-aged children, those suffering from HIV/AIDS, the elderly, and workers. The development community must act appropriately to address the needs of the poor and the water and sanitation sector is the way to start this process. The poor cannot be heard and it is up to the development community to amplify their voices.

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