Wine to Water

A Senior Project

By

Jennifer Stangland

Advised by Benjamin Timms

SOCS 461 and 462
Senior Project
Social Sciences Department
College of Liberal Arts

CALIFORNIA POLYTECHNIC STATE UNIVERSITY
Winter 2013
Wine to Water

Jennifer Stangland

2013
# Table of Contents

Research Proposal and Introduction ........................................... i

Annotated Bibliography ........................................................... iv

Outline ....................................................................................... ix

Chapter 1: The Global Need for Water ........................................ 1

Chapter 2: Currently Existing and Developing Solutions ............ 25

Chapter 3: The Central Coast Wine Industry .............................. 33

Chapter 4: Next Steps and Structure .......................................... 36

Chapter 5: Conclusion ............................................................... 40

Works Cited .............................................................................. 42
Research Proposal and Introduction

Nearly one billion people in the world today do not have access to clean water (Siegfried, 2008). This is a crisis that society has faced for decades, and is not a problem that (to our knowledge) will be miraculously alleviated anytime in the near future. The implications of this resource deficit run deep for many people outside of America. But sadly, the affected places and people are not often visible to or noticed by the American society as a whole. The purpose of my research and analysis through this project is to change that. I desire to see a community come together to seek knowledge and awareness that leads to sacrificial yet practical action.

The purpose of researching this topic is not merely to gain knowledge, but to launch an endeavor with the knowledge that is gained. The specific endeavor that I desire to see become a reality as a result of this research is VINE:i0, a nonprofit venture in which “wine is turned into water” for the world. The original idea is based upon the historical first miracle of Jesus Christ, turning water into wine at a wedding in first century Cana. This endeavor would seek use profits from the sale of wine to assist people in third-world situations that don’t have access to clean water. My goal would be to work with and through local wineries that are interested in giving charitable donations of wine to the project out of overflow in production, labeling the wine as VINE:i0, and eventually have the newly labeled wine on shelves and available for purchase. All of the proceeds from sold wine would go to an organization such as Lifewater International, a nonprofit organization that works to build fresh water wells and create other solutions for the places in the world that are in need of water.

I am entering into this project with several core values and goals, all of which are independent even of this specific proposal. The first of these is to partner with a non-profit
organization to work for the betterment of human life through meeting physical, (and/or) spiritual, educational, and emotional needs. Along with this, I personally desire to gain experience in the world of non-profit organizations and have a glimpse into what working in a that setting would be like. A second goal that I have is to raise awareness, specifically on the Central Coast, of needs that the world faces and provide information on how we can make a difference. Thirdly, I want to provide an avenue for the public to create practical and lasting change.

I do realize that this sort of project does not come without certain challenges, as with any sort of entrepreneurial venture. There is no guarantee that this research will amount to anything aside from a paper containing vast amounts of information. But that is the way anything new must begin, and the process of gaining knowledge is worth the unsure outcome. It is a chance to do something real, something practical that could have a lasting affect on the lives of people who may need it the most.

That being the purpose behind this project, all of the research performed is centered around that. The main topics that have been researched and will be discussed and analyzed in this paper are as follows. First, information regarding the current global water crisis is necessary to understanding the need for this type of venture. The “why” behind Vine2O is the fact that millions across the globe suffer daily from lack of clean or accessible water. Secondly, this paper includes research done on the currently existing solutions and recent development in the water crisis. It is crucial to be aware of what has worked, what has not worked, what needs are already being met, and what needs are not. The third aspect of this paper is on the California wine industry. In order to attempt the startup of a non-profit that will rely heavily on this industry, it is necessary to have prior knowledge of how the wine industry works and on common practices
regarding charitable giving. The last section of research is based off of practical next steps: what are the strategies needed to start a non-profit organization? What does the structure of that organization look like? Where does funding come from? What are the first steps that need to be taken in order to see progress? All of the questions will be answered at the close of this paper.

Analyzation of these individual sectors must first begin with thorough research, which has been attained through multiple methods and sources. Again, beginning with the problem of the world facing a water crisis, I have performed extensive research, taking facts, theories, and statistics from organizations and individuals with previous knowledge of this subject. The main sources for this research have been the United Nations Water Department, The World Health Organization, along with various scholarly journals and articles. In moving towards currently existing solutions, my research was centered upon the UN Water Solutions Department, various non-profit efforts, and scholarly journals and articles. This aspect of research was especially tedious, being that different organizations and individuals have varying opinions and theories regarding the best solutions to solving the global water crisis. Within that, I have attempted to provide as thorough and wide range of opinions and solutions as possible. In the last two sections, which both cover the actual non-profit proposal, I have done research on the California wine industry through various web pages and personal interviews with winery owners in the great San Luis Obispo area. I have also gathered information of legal requirements and other essentials for the start-up of a non-profit organization. I have done this through various avenues, such as the National Council of Non-profits. This section of research also includes subjects such as funding, investments, local vendors and everything else involved in the start-up of a local venture.

Siegfried, alongside co-authors, argues that there is a global water crisis consisting of three major aspects. He argues that lack of access to drinking water, pollution, and scarcity of water as a resource all contribute to a global water crisis looming on the horizon. This crisis has already had a huge affect regionally, but the compilation of local crises has and will continue to flow into a global problem. This article will be instrumental in my research of the lack of clean water worldwide, and what solutions are feasible in overcoming that, specifically in terms of access and supply.


Cain writes a short synopsis of the basic facts regarding worldwide water shortages. This article provides numbers and statistics pertaining to water-related deaths, water economics, and spending. There is also a comparison of goals such as the UN’s millennium development goals and reality. This will be helpful to be in the acquisition of basic numbers, statistics, and to be able to compare what the water crisis looked like seven years ago to what it looks like now.

This article by Magsig concentrates on the international relations and security aspect of the water crisis. He explores the proposal that water is one of the largest factors in international security. He argues that a strong foundation in international water law is imperative to the effort in providing clean water to the world. I believe that this resource will expand the horizons of my research by not only looking at the current crisis, but to explore what has been done and what is being done about it. I agree that water is a huge factor in international security, and will have a definite effect on international relations, specifically in places of shortage.


Jackson’s contribution to the global water discussion provides a review of the ecological side of the crisis. He looks at climate, ecosystems, and supply of water, along with world population and the effects of ecology on humanity. Although it is a resource from 2001, I believe that many of the ecological processes of water still stand, and think that this will be a valuable basic resource for understanding the process of global water crisis.


This article by Wallace from *Physical Transaction: Biological Sciences* focuses on the sharing of water as a resource between humans and nature. He provides information on water shortages and gives his view on the importance of resource sharing. He states that the current use of water is determined largely by economic values rather than the value of human life and well
being. He proposes change to this way of thinking and structural adjustment to promote more effective use of water. I think this is a valuable resource for me as I look into how we as a global community can stretch the resources we have and how to prioritize human needs and the value of life.


This article is a study of the water relations in the Middle East and the way that it plays into the peace process. The author seeks to show how water, as a limited resource, has been and still is a cause of conflict. He seeks ways to investigate the wise use of limited resources between nations, and how to address the shortage. I am very interested in the political side of the water shortage, and how it affect neighboring nations. I believe this specific example will provide needed concrete research on how the water crisis affects not only human health, but political health as well.


This article by Giordano focuses on conflicts that have arisen over water disputes. She concentrates on the geographical and spatial elements of water resources and how it can lead to international issues. Three case studies are included; the Middle East, Southern Africa, and South Asia. She shares the importance of considering water when observing world conflict and international relations. This is of interest to me because in seeking to find solutions to the global
water crisis, I must know what problems it is causing first. Political conflict is among the mainstream issues (access, sanitation, supply) that cause lack of water for individuals, and is therefore a topic that is worthy of research.


Rockström addresses the challenge of clean water in food production across the developing world. He looks at 92 developing countries and what water supply looks like for them in terms of agriculture. In his research he take into account the 2015 hunger target in the United Nations Millennium Development Goals and how those can be accomplished. This resource will broaden the scope of my research into how water affects food and hunger. I would like to incorporate this into my project, alongside of drinking water, sanitation, and disease.


The authors of this article in *Human Ecology* are examining rural Nigeria and water use in semi-arid areas. The specific study is on the contrast of water supply during dry and rainy seasons, and the shortages that are associated. Poor water quality during the dry season is the source of poor sanitation leading to high rates of diarrhea in the villages. I value having specific examples of what water shortage and unclean water will do to particular populations. This will provide not only credibility to my research, but also a breadth of real life experience for people
who actually deal with this crisis on a daily basis.


This article focuses on the inequalities around the world in terms of water access. It includes an examination of global systems and history on inequality, such as neo-liberalist agendas. It also examines water as a human right, and the ways that the UN plays a part in that policy. There are sections of focus on water and womens’ rights, and water in health. Economic views and consequences are included as well. I think that this is a very valuable and broad resource that will link the water crisis to history and varying world systems.
The basic layout of this project and materials covered within it will proceed as follows:

Chapter 1: The Global Need for Water
  - Statistics
  - Global Trends
  - Specified Issues
  - Who is Most Affected?
  - Water Related Conflict
  - Future Predictions

Chapter 2: Currently Existing and Developing Solutions
  - Strategies
  - Successes vs. Failures

Chapter 3: The Central Coast Wine Industry
  - Why Wine?
  - Market in California
  - Charitable Donations

Chapter 4: Next Steps and Structure
  - What Does a Non-Profit Look Like?
  - Who to Contact?
  - Funding

Chapter 5: Conclusion
Chapter 1: The Global Need for Water

The first sentence that you read in this paper told you that approximately one billion people in the world today live without sufficient access to clean water. But what does that actually mean? What does it mean to be “without access”? Is the water problem actually one of shortage or just of improper distribution? Who are the people that are most affected? How does the shortage play a role in world security? The list of these types of questions could take up this entire page. They are questions that must be asked if a solution is ever to be realized. So therefore, the focus of this chapter is to ask and answer those questions; to bring clarity to what the water problem actually consists of and who it affects.

That number – one billion people - is something that humans often have a difficult time wrapping their minds around. In an effort to make it slightly more tangible, the amount of people that suffer from this shortage can be described in several different ways. The World Health Organization has stated that one in three people on every continent are affected by water scarcity. This map from the UN Development Report shows statistics from 2007 on freshwater availability (U.N., 2012 (B)).

FIGURE 4.8
Freshwater availability (m³ per person per year, 2007)
This century, according to the International Journal of Affairs, one-third of the world is expected to face severe water shortages (Siegfried, 2008). That is the same proportion of the world’s population that has access to Internet (Aljezeera, 2012)! Imagine – everyone that you know that has access to the Internet is representative of someone in the world who has insufficient access to clean water. Besides a mere lack of water, there are other parts of the crisis that must be identified. One aspect of water shortage is contaminated water. Each year, five million people die due to a contaminated water source or a water-related disease, a problem that this chapter will soon unpack in greater depth (Wallace, 2003). On top of statistically representing aspects of the problem such as scarcity and contamination, statistics should be given in regard to the solution (or lack thereof) as well. First, think about these numbers; according to the Center for Economic Policy and Research, “In 2008, federal, state, and local governments spent about $75 billion on corrections, the large majority of which was spent on incarceration” (Schmidt, 2010). Small Business Development Center reports that, “There were about 20,000 coffee shop businesses in the U.S. with combined revenues of $10 billion in 2011, according to First Research” (SBDC, 2012). Compare these numbers to the total amount (historically) spent on improved water supply and sanitation for the world – only 3 billions dollars annually. Along with that, there are 22 nations that have agreed to give 0.7% of their GNI to overseas development (water being only a portion of that), and only five countries have met that goal (Cain, 2005, pg.80).

So what does it mean to say that the world is experiencing a “global water crisis”? We can begin with what it does NOT mean – a global water crisis does not refer to a collection of discrete, local crisis around the world (Siegfried, 2008). Rather, it refers to a collective,
worldwide crisis that is due to global patterns of climate, consumption, economy, and a handful of other factors. In other words, it is a global problem that is affected by world-wide issues. A lack of clean water in sub-Saharan Africa is not purely the fault of that specific location or population. It is a result of global patterns. A large part of the globalization of this crisis is due to the global economy. One example is this: 30% of all consumed food is irrigated with water that is from outside the food consumer’s country of residence (Siegfried, 2008). As a whole, the world’s population does not merely survive off of local resources. Rather, production and consumption of commodities spans the globe many times over. This is intricately intertwined with the global water crisis, making it one that is shaped by the world system as a whole.

The crisis is also not a one-dimensional issue. In fact, it is far from it. Saying that a person suffers from the water crisis does not simply mean that they have no water to drink - it is not an issue that is easily defined or broken down into neat categories. Water affects all aspects of a human life – from sanitation, to thirst, to agriculture, to occupation, and beyond. And therefore, because water is something that affects so many areas of a human’s life, the causes (or dimensions of the crisis) that lead to those affects are numerous. Siegfried, in the 2008 International Journal of Affairs, breaks down those dimensions into three categories: water access, water pollution, and water scarcity.

The first dimension, access to water, describes a situation in which water may be present, but is not available to a population for a number of reasons. In his article, Siegfried states that, “A vast body of literature points to the technical, institutional and financial challenges involved in developing the infrastructure and systems needed for water storage, supply and treatment” (Siegfried, 2008). Access is related not as much to supply, but to the availability of supply. Examples of different means of access would be reservoirs, delivery systems, storage and
treatment facilities, and all of the underlying pieces of infrastructure within a nation that allows those pieces of the system to be present and run smoothly. There are a multitude of reasons as to why a nation would not have the ability to supply that kind of infrastructure. These reasons range from poor governance to conflict to, very importantly, a lack of capital; “Poor countries may not have access to sufficient capital to build large-scale infrastructure like reservoirs, water treatment plants or delivery systems” (Siegfried, 2008). According to the World Health Organization, 25% of the world lives in a country that lacks access to water due to poor infrastructure. Not only does this take a toll on countries as a whole in terms of development, security, health, industry and agriculture, but on individuals as well. One example of this is the common practice of “water fetching”. In an article in the 2011 Social Science and Medicine Journal, Susan B. Sorenson relays findings of her study on gender-biased water fetching in recent years. She says that, “When on-site water supply is not of sufficient quality and quantity or when the price of water delivery by merchants is too high, one or more members of a household or community must take time and energy to obtain it” (Sorenson, 2011). The graph below from the WHO/UNICEF water report shows the gender bias of water fetching.

![Gender Bias in Water Fetching](image)
While her study primarily focuses on the gender bias that causes women to be primary water-fetchers, we can observe general affects that a lack of water access has on individuals and a community. The first measure of the negative consequences of water fetching is the time that it takes. Times vary greatly across regions, but in many places, hours will be spent daily on merely retrieving enough water to survive. The article states that, “in Mauritania, Somalia and Yemen, at the high end, where fewer than half of the households have an improved water source on premises, the average trip takes over an hour” (Sorenson, 2011). What does a trip to obtain sufficient water even mean? If the average human used as much water as the average American (150 gallons!), they would have no time for anything but fetching water. “According to JMP [Joint Monitoring Program], to provide for the minimal daily needs of one person, the water fetcher would carry a container for 0.62 miles, obtain about 5 gallons of water, and walk back 0.62 miles bearing roughly 44 pounds of water” (Sorenson, 2011). This time commitment carries great implications. We must think of what could be done in that time if water was readily available. Women in many developing countries could go to school or work. Agricultural and other economic production would be more efficient and likely to happen because more time is allowed for work. And beyond the time factor, water fetching includes health risks such as back and neck injury, the risk of assault and attack, and even the pure caloric expenditure that is used on the journey.

We have taken time to delve deeply into one small example of the consequences of poor access to water, but we must not forget that water fetching is just one of the problematic outcomes of lack of infrastructure and access. There are consequences on an individual level all the way up to a worldwide level – some of which are visible to the researcher and some that are
not. Not only that, but lack of sufficient access is only one of the three issues that compose the water crisis as a whole – water pollution and water scarcity are still to be discussed.

Water pollution is rampant throughout developing countries. That is a recognized fact, and is an issue that individual nations and United Nations are working to address. The UN has included this statement in their Millennium Development Goals; “From their first formulation, the MDGs included a target for access to safe drinking-water. After several revisions, this target, designated Target 7c, is now to reduce by half, between 1990 and 2015, ‘the proportion of the population without sustainable access to safe drinking-water and basic sanitation’” (Bartram, 2012). This section within the MDG statement addresses water scarcity as a whole, but clearly includes pollution in the crisis. “For those 1.1 billion individuals who lack access to safe drinking water, "safe" is often the key word” (Siegfried, 2008). Even if a nation’s population has access to water through basic infrastructure and delivery systems, that water is not guaranteed to be safe.

Water, especially in developing countries, is often polluted with chemicals or waste that render it unsafe to drink or use. Waste can come from a variety of sources, including humans, agriculture, and industry. As Siegfried further elaborates, pollution can come from either “point-sources” or “non-point sources”. Pollution from a point-source is something such as pollution in the water supply coming directly from a factory, other sorts of industry, or sewage. These sources of pollution are easier to detect and have been greatly lessened with advancement in technology and tightening of regulations on safety and industry. The other source of pollution – non-point sources – are more difficult to detect. They are described as “diffuse sources, such as farms, or is caused by atmospheric deposition from industrial polluters” (Siegfried, 2008). Pollution from these sources is often the result of slow and nearly un-detectable buildup of
harmful agents, and if not undetectable, then easily ignored. The harmful consequences of this type of pollution often do not show up for years or decades, but when they do it can be fatal to a community or economic system. Most often, surrounding ecosystems are damaged from this type of pollution, and then any sort of economic system that relies on a resource within that ecosystem is damaged. Like previously stated, these sources of pollution are much more difficult to control, and to do so take great amounts of effort and regulation that a region is often not able to or willing to give.

One example of water pollution and its effects can be seen in the “cancer villages” of China (Carmichael, 2007). In the two towns of Shangba and Liangqiao, cancer is rampant due to water contamination. In Liangqiao, rice is grown with contaminated water. The Newsweek article that covered the story of these villages includes an interview with a local, in which he says, “We have to use polluted water to irrigate the fields, since we have no other choices. We don’t have the money to start a water project. We know very well that we are being poisoned by eating the grain. What more can we do? We can’t just wait to starve to death” (Carmichael, 2007). Since the 1990’s, two thirds of the deaths in that village are due to cancer from this rice. In the other village of 3,000 people, Shangba, the river that runs through the city was found to have levels of heavy metal far exceeding government limits. This metal was present because of the nearby activities of a state-owned mine that is believed to has been dumping the chemicals into the river. These are only two of many examples in China that point to harm and even death due to polluted water sources. A full one-third of the country – 400 million Chinese – do not have access to water that is clean enough for use (Carmichael, 2007).

If these stories are disturbing, think about this – China is a step ahead of many countries in Africa and South Asia. In the map below we can see the world-wide disparities in sanitation,
and it is easy to notice that China is not the worst off. In Sub-Saharan Africa, India, and surrounding countries, access to sanitation is at or below 50 percent.

Beyond cancer, there is a laundry list of other consequences that occur as a result of either drinking unsafe water or using it for agriculture. Polluted or contaminated water can lead to diseases such as cholera, typhoid fever, and dysentery (W.H.O., 2010). And disease does not just occur through drinking poor-quality water, as we can see in the examples above; it can come from food that has been watered with unsafe water as well. This is a hazard for more than ten percent of the world. Health problems can also arise from stale water. In many areas, families store water in their homes for long periods of time because they know that water is scarce. This
water then becomes a breeding ground for mosquitoes, which carry diseases, such as malaria, that kill large amounts of people in areas without proper medical treatment (W.H.O., 2012).

One of the major players in the pollution dimension of the water crisis is urbanization. The rate at which the population is moving to cities is astounding, and beyond that, hard to keep up with. It is no easy task to create an urban environment that is fit to provide clean water and sanitation, especially at the rate that cities around the world are growing. In their 2012 Development Report, the UN stated that,

Between 2009 and 2050, the world population is expected to increase by 2.3 billion, from 6.8 to 9.1 billion (UNDESA, 2009). At the same time, urban populations are projected to increase by 2.9 billion, from 3.4 billion in 2009 to 6.3 billion total in 2050. Thus, the urban areas of the world are expected to absorb all of the population growth over the next four decades, while also drawing in some of the rural population (U.N., 2012 (B)).

Clearly, the growth of cities is no small matter. And in addition to those statistics, most of the growth that is predicted to happen is going to take place in developing or less developed regions (U.N., 2012 (B)). These locations obviously have less ability to solve sanitation and water issues than does a more developed region.

Not only are both the overall and urban populations rising; the more problematic issue is that sanitation and water management in urban areas are falling significantly behind in keeping up with the growth. Between 2000 and 2008 there has been a reported “deterioration in both water and sanitation coverage in urban areas” (U.N., 2012 (C)). The report states that,

Over those eight years, in cities and towns of all sizes, the number of people without access to tap water at home or in the immediate vicinity increased by 114 million, and the number of people without access to private sanitary toilets (basic sanitation) increased by 134 million (U.N., 2012 (C)).
These numbers are quite concerning, especially considering that the statistics amount to an increase of twenty percent in the number of people who lack access to basic water and sanitation provisions. If the numbers have already increased at this rate, what will happen as population growth continues, and even higher percentages of people move into the cities? The UN reports that, “At present, the urban population is increasing faster than the speed of improvement in WSS services” (U.N., 2012 (B)). Without a drastic change, this rate will not see any significant improvement, and neither will other problems that arise in the cities, such as slum-dwellings and wastewater.

Slums are not much better than they sound – especially in the realm of water. Slums are areas on the outskirts of a large city composed of a population that cannot afford to live within the actual city. Slums are usually void of much formal city planning, and are consequently quite crowded and poorly laid out. This overcrowding and lack of infrastructure poses a big problem to the population and its water supply and sanitation. If water in these areas is polluted, then there is most likely an epidemic of the illness that follows suit. The UN states that, “extending basic drinking water and sanitation services to peri-urban and slum areas to reach the poorest people is of the utmost importance to prevent outbreaks of cholera and other water-related diseases in these often overcrowded places” (U.N., 2012 (B)). As opposed to areas of the city with better infrastructure and more individual living space, these diseases are more likely to be avoided, or if not, solved. Below is a graph showing past and predicted measures of slum population across varying regions from 1990 to 2020.
Wastewater is another aspect of pollution that poses a huge threat to human health. As previously stated, between 2000 and 2008, the number of people without access to basic sanitation services has INCREASED by 134 million. The development report states that, “In many fast-growing cities (small and medium-sized cities with populations of less than 500,000), wastewater infrastructure is non-existent, inadequate or outdated” (U.N., 2012 (B)). This push towards urbanization is leaving millions without efficient ways to dispose or treat wastewater, leading to poor health and disease. In addition, wastewater is cities can be combined with industrial waste, making it even more threatening to the health of an urban population (U.N., 2012 (B)). The problem of wastewater mismanagement is far more prevalent in less developed countries (LDCs) than it is in more developed countries (MDCs). In one example, the city of Jakarta is compared with Sydney. Jakarta is located in Indonesia, and is considered a less
developed region. The UN reports that, “with a population of 9 million, generates 1.3 million m³ of sewage daily, of which less than 3% is treated” (U.N., 2012 (B)). Comparatively, Sydney has the infrastructure to treat nearly all of its wastewater – approximately 1.2 million m³ per day (U.N., 2012 (B)). Wastewater, though mainly concerning for its affect on human health, can also negatively impact the environment and surrounding ecosystems. After doing a comparison across ten locations, the United Nations determined that there is a much higher ratio of untreated sewage making its way into surrounding oceans in less developed countries than in developed. This disparity between MDCs and LDCs is telling, not only for this specific issue regarding pollution and the environment, but also for most other issues within the water crisis.

The final issue in Siegfried’s tri-fold analysis of the global water crisis is scarcity. Put simply, the supply of water does not meet demand. This demand is not purely for drinking water either, but rather includes water that is needed for sanitation, agriculture, and other sorts of production. In basic terms, when the amount of water in the world is “inadequate in relation to the water demand for basic human and ecological necessities,” we encounter scarcity (Siegfried, 2008). How has scarcity come to be? One could easily wonder how on earth there is not enough water in the world to supply human, ecological and agricultural needs. We see water around us everyday. There are two errors in that statement – the first being the word “we”. As an AMERICAN, living in a privileged area, I see water everyday- water coming out of my faucet, water in lakes, and water in the ocean. The second error lies in the assumption that the water that we see can be used to meet our needs. The world may be covered in water, but only three percent of water is fresh enough for human or agricultural use. More than two-thirds of that water is locked in glaciers. Less than 0.01 percent of it is in lakes. On top of all of that, about 99% of all of the world’s liquid freshwater is in underground aquifers (Jackson, 2001). These are the sources
that provide one quarter of the world’s population with water. Underground aquifers contain “groundwater”, of which only one-fourth is considered renewable (Jackson, 2001). And the problem with that is that the renewing process is not a short one; “This ground water typically turns over more slowly than most other water pools, often in hundreds to tens of thousands of years, although the range in turnover rates is large” (Jackson, 2001). The map below shows the data from 2009 regarding the total amount of renewable water resources per capita by individual countries.

*Figure 3.2: Per capita total annual renewable water resources (TARWR) by country – population data from 2009*

In summary, what do all of these statistics reveal? They simply tell us that although water may seem abundant, in reality, it is not. Rather, it is far from abundant, and for more than one billion people, it is incredibly hard to come by.

According to the World Health Organization, 1.2 billion people live in an area that is categorized as experiencing “water scarcity” (W.H.O., 2012). So which factors besides the
statistics shown above cause scarcity in a specific location? Besides the natural geographic characteristics of a region, such as climate and natural resources, factors such as growth in population, an increase in food demand, urbanization, and industrialization all contribute to water scarcity. When we think about population growth, we cannot only think of an increased demand for drinking water, although that is clearly an important factor. Population growth also means more mouths to feed, which means more water that is needed for agriculture. According to the United Nation’s World Water Development Report, “The world population is predicted to grow from 6.9 billion in 2010 to 8.3 billion in 2030 and 9.1 billion in 2050 (UNDESA, 2009). By 2030, food demand is predicted to increase by 50% (70% by 2050) (Bruinsma, 2009)…” (U.N., 2012 (B)). Looking even further into the future, the UN reports that “Global population growth projections of 2 to 3 billion people over the next 40 years, combined with changing diets, result in a predicted increase in food demand of 70% by 2050” (U.N., 2012 (B)). On average, seventy percent of all water is used for agricultural purposes, and in arid areas, up to ninety percent (Siegfried, 2008)! If food demand is to rise by 50% in 2030 and 70% by 2050, what will then happen to water demand for agriculture? It will rise exponentially. But let’s not get too ahead of ourselves – even if population does not grow at all, we still have a problem on our hands. Current needs are not even being met, and water resources are stretched (if not non-existent) for many parts of the world, specifically in regards to agriculture. The UN states, however, in many countries, not just in the least developed countries (LDCs), water availability for agriculture is already limited and uncertain, and this is set to worsen. Agricultural water withdrawal accounts for 44% of total water withdrawal in OECD countries, but this rises to more than 60% within the eight OECD countries that rely heavily on irrigated agriculture. In the BRIC countries (Brazil, Russian Federation, India and China), agriculture accounts for 74% of water withdrawals, but this ranges from a low 20% in the Russian Federation to 87% in India. In LDC’s the figure is more than 90% (U.N., 2012 (B)).
“Limited” and “uncertain” are not the two adjectives that anyone wants to hear in reference to a resource as vital as water. But those descriptive mechanisms are proven true by the state of the relationship between water and agriculture in much of the world today. As discussed in the previous pages regarding pollution, agriculture cannot rely on unclean sources of water without the serious risk of death and disease. The World Health Organization reports that, currently, ten percent of the world eats food that was watered with wastewater: ten percent is 650,000,000 people. Freshwater must be used for food production if society is to survive rather than starve.

We have seen that there is already a clear scarcity in water used for agriculture; so what about freshwater for drinking and domestic purposes? Scarcity proves true here as well. We have just discussed the issue of groundwater shortage in terms of allocation to agriculture, but it applies to domestic uses of water as well:

Groundwater is crucial for the livelihoods and food security of 1.2 to 1.5 billion rural households in the poorer regions of Africa and Asia, and for domestic supplies of a large part of the population elsewhere in the world. Withdrawals in many basins are exceeding the rate of recharge and are unsustainable (U.N., 2012 (B)).

Unsustainable groundwater withdrawal is affecting more than the world’s agriculture. Along with other supply scarcities, it affects individuals and families and children in Africa that are living off of less than five gallons of water each day and walking an average of four miles to carry forty-four pounds of water back to their homes. Scarcity affects access, which in turn is affecting wages and livelihoods. The World Health Organization reports that, “Over 40 billion work hours are lost each year in Africa to the need to fetch drinking water.” And sadly, despite many efforts and improvements made towards providing sufficient amounts of water for the world’s poor, scarcity is still a harsh reality. The World Health Organization’s 2012 GLAAS (Global Analysis and Assessment of Sanitation and Drinking Water) Report states this;
Even if the rate of progress cited in the JMP report (UNicef/Who, 2012) were to continue until the end of the MDG period, universal water and sanitation coverage would still be far off—in 2015, 605 million people would remain without access to an improved drinking-water source, and 2.4 billion people would be without access to improved sanitation facilities. Given this scenario, billions will remain at risk of WASH-related diseases such as diarrhea, which in 2011 killed 2 million people and caused 4 billion episodes of illness (U.N., 2012 (A)).

This is a startling reality— that even our rates of current progress and our goals would not be enough to provide the basic necessities of water to the world.

To conclude the discussion exploring the issue of scarcity, it would do us well to look at several examples. A rather surprising case happens to be in our own backyard— the Southwest United States. Just because America has infrastructure and resources that are far more bountiful and developed that most of the world does not mean that this country is exempt from the crisis. The southwest region that is fed by the Colorado River recently experienced drought and increasing water demand – a recipe for scarcity. In his article, Siegfried states that, “The main reservoirs in this area--Lake Mead and Lake Powell--dropped from being nearly full in 1999 to half-full in 2007” (Siegfried, 2008). The infrastructure is there, but the water is not. This shortage could result in several different outcomes, including rising prices for water as a commodity or even migration.

A second example can be found in India, one of the most highly populated countries in the world. India is a country of 1.1 billion people (roughly one sixth of the world’s entire population!), and two thirds of the nations population lacks clean water (Carmichael, 2007). This problem, unlike that of the American Southwest, CAN in fact be traced back to poor planning, infrastructure, and allocation. Most of India’s water is delegated to agriculture – up to ninety percent in many areas. On top of that, the government has never put infrastructure in place to carry water out to the country-sides, leaving rural families and farmers with little or no water.
The water that is not used for agriculture is often used up by large industries, and even foreign companies such as Coca-Cola (Carmichael, 2007). These industries use up exorbitant amounts of groundwater, again, leaving villagers with very little. What is the result of these sorts of actions? In India, we can see the damage quantitatively – the water table (groundwater level) drops six to ten feet every year! This amount of loss is devastating, especially to those who do not have the power or financial means to access water any other way.

Water scarcity can be found almost anywhere - in a place as near as Arizona, or on the other side of the world. It is the result of a wide variety of issues, ranging from increased population to poor governance and planning to urbanization. And be reminded, scarcity is only one third of the problem that we have discussed – pollution and access still remain as threats to many without water. This three-fold description of the water crisis explains much – but definitely not all – of the predicament that the world faces today.

A question remains to be asked is this – who exactly is most affected by the water crisis? Previous pages have alluded to the fact that less developed nations or regions are worse off than more developed areas, but what exactly does that look like, and why is that so? To begin broadly, the UN has highlighted two areas of the world that are most strongly experiencing the water crisis – Sub-Saharan Africa and Southeast Asia. Both of these regions contain a large number of developing or less developed countries. In the map below, it is clear that those are the regions that are facing most of the challenges (and suffering the most deaths) from water and sanitation problems.
As far as specific numbers go, the World Health Organization and UNICEF published a 2012 update, “Progress on Drinking Water and Sanitation” that states,

Coverage in the developing world overall stands at 86 per cent, but it is only 63 per cent in countries designated as ‘least developed’. Similar disparities are found within countries – between the rich and poor and between those living in rural and urban areas (U.N., 2012 (C)).

The “developing world” that this report is referring to is made up of many countries in Latin America, Northern Africa, and East Asia. The “least developed” regions are found in Sub-Saharan Africa and Southeast Asia. Specifically in regards to Africa, the report says, “While coverage of improved water supply sources is 90 per cent or more in Latin America and the Caribbean, Northern Africa and large parts of Asia, it is only 61 per cent in sub-Saharan Africa” (U.N., 2012 (C)). So not only is Sub-Saharan Africa a region that lacks water, but it is also the area that lacks improvement in water sources. Nearly every one of the countries that have less
than 50 percent water coverage is found in Sub-Saharan Africa. You may be asking, “why Africa?” There are a multitude of reasons as to why this area of the world experiences such hardship with water. To name a few, many countries in Sub-Saharan Africa deal with poor governance and policy, dry climates, seasonal rain, high evaporation rates, poverty and desertification. The graph on the following page shows the different amounts of growth of improved water sources that have been implemented around the world between 1990 and 2010 alongside the coverage of unimproved sources. Notice that Africa is at the back of the line in terms of having improved sources of water, followed closely by Oceania and Southern Asia.

Although Southeastern Asia, according to the graph below, is seeing rapid improvement, the large population sizes still create a sizeable amount of people without water. The World Health Organization and UNICEF report that, “China and India combined are still home to 216 million people without access to improved water supplies. This represents 28 per cent of the global population that remains unserved” (U.N., 2012 (C)).
Yet another factor that creates problems with water access, pollution and supply is population growth. Although this has already been stated in previous pages, what has not been said is that nearly all population growth occurs in developing or less developed countries. Over the next 20 years, these regions will be adding between 60 and 80 million people to the world (Rockstrom, 2007). This creates regional disparities in water supply, while also contributing to the overall global crisis.

The next topic under the umbrella of water scarcity can be thought of as one thinks of a child’s toy. More specifically, think of one child’s toy amidst multiple children. When the toys are scarce, the bickering begins. That is exactly what happens with the resource of water. Conflict within and across regions occurs almost constantly as a result of this scarce and valuable resource. The conflict is first born when a lack of sufficient water undercuts economic growth in a region or country. This then causes tension and conflict within or between countries, which in turn affects global security. In their development report, the UN writes that,

Although conflicts may appear localized, they present challenges to the broader context of peace and security. The multifaceted effects of conflict, such as displacement, mass migration, disruption to livelihoods, social breakdown, violence, health risks and human casualties, all have ripple effects that are felt throughout the global context. Conflict over water resources can also turn into, or fuel, ethnic conflicts (U.N., 2012 (B)).

Conflict over water varies in terms of severity and consequence. A conflict could mean something as casual as political tension, or something as detrimental as physical violence and death. The following examples provide a closer look at what water conflict has looked like in the past, and even what it looks like in the present.
Israel is one of the driest areas on earth. And as such, it must rely heavily on irrigated agriculture, rather than on natural precipitation. This water has historically been obtained from the Jordan River, its tributaries, and groundwater. But herein lies the problem; according to Meredith Giordano in *The Geographic Journal,*

> Israel’s water supplies...depend not only on conditions within its borders. The Jordan river is shared with four other political units – Lebanon, Syria, Jordan, and the Palestinian Authority – and the hydrologic interdependency of these countries and territory has become increasingly apparent as utilization rates within the Jordan Basin increase” (Giordano, 2002).

Israel’s population has increased by six times the amount of people that were present in 1949, and along with people, the country’s irrigated area has increased by the same amount. Because of this, Israel has proposed multiple water development projects that its neighbors have not been particularly fond of. In the 1950’s and 60’s there were two “armed disputes” between Israel and Syria over water development projects. Arab-Israeli conflict is clearly linked to water as well; the fight for control over the water of the Jordan was one of the main tensions leading to the War of 1967. The Six Day War in Jordan was also a result of water tensions (Giordano, 2002).

In more recent years, the West Bank has been a hotspot for regional conflict. While territory is a major player in much of the violence and tension, access to water has made a large contribution. Both the Palestinians and Israelis want and claim access to multiple water sources in the region. The water naturally flows towards Israel, and the Palestinians claim that the Israelis are over-using the resource. Palestine also argues that the water they do get is at an inflated price. These tensions only add to the territorial issues within the region, and can even create new conflict in and of themselves (Carmichael, 2007).
A second example of water conflict is seen in Darfur, a region in Sudan (map on right). The African-Arab conflict began in the 1970’s, and has most commonly been viewed as an ethnic or religious dispute. But in her article, *No Water, No Peace*, Hannah Hussey de-bunks those reason for the conflict:

“Usually, the situation is attributed to ethnic tension between Sudan's Arab government and African villagers and rebels. While this is certainly a part of the problem, race can't account for it completely; decades of intermarriage have turned "Arab" and "African" into ambiguous titles that are chosen primarily by the bearers…Nor can the fighting be traced to religious differences, since both sides of the conflict are Muslim. The true roots of *Darfur* lie in a different arena, in the relationship between farmers, traditionally labeled African, and nomadic herders, usually described as Arab” (Hussey, 2009).

So what IS the reason for the conflict between the farmers and the nomads? In the 1970’s, this region in Sudan began experiencing severe drought. Desertification quickly began to take place, and Arab nomadic herders from the north began to move farther south to find grazing lands and water. These groups often used race as an excuse to hoard and take land from the native African farmers. This is where the tensions began, and since have only gotten worse. These tensions “developed into a tragic series of African-Arab, farmer-pastoralist conflicts in
1987, leaving three thousand dead and hundreds of villages burned” (Hussey). The fighting continued into the 1990’s, and began to involve the Sudanese government when the African farmers attacked military outposts in response to government actions that were, in their eyes, favoring the Arabs. Since then, hundreds of thousands have died as a result of the conflict, and millions forced to leave their homes. There are currently approximately one million people in Internationally Displaced Person’s Camps, settlements which are often short on water themselves. The conflict continues today in Darfur, and the root cause of water scarcity remains the same.

Books could be written on all of the ways and about the various situations in which water (or lack thereof) has played a deadly role in regional and global conflict. Regions of the world
that we were not elaborated upon in this paper include (but are not limited to) India, South Africa, and Pakistan.

The global need for water could hardly be clearer than it is today. The decade that we are living in is characterized by shortage of a precious resource, and if one takes the time to look, the effects are easily seen. Between lack of access, pollution, and scarcity, the globe is caught up in a three-fold crisis that goes beyond isolated regions. Inequality is evident in the regional and economic disparities that create shortage for some and plenty for others. And shortages of water not only cause death through dehydration, starvation and disease, but also through water-related conflict and war. The crisis is great, and the time in which the world has to solve it is alarmingly short.
Chapter 2: Currently Existing and Developing Solutions

When America’s sixteenth president saw the oppression of slavery on his fellow men, he started a war to end it. When the allied nations became aware that thousands of Jews were being murdered, they started a war to end it. And in the same way, when we see millions of people suffering from want, death and disease, should anything less than a war be enough? Thankfully, (while most likely not defined as a war) great efforts are being made towards ending the global water crisis. The worldwide community is growing in awareness and initiative as time passes, and action is being taken to save lives and to save nations. This widespread effort is happening primarily in two ways: first, through large, international organizations such as the United Nations, the World Health Organization, UNICEF, and the International Monetary Fund, and secondly, through non-profit and non-governmental organizations. The double-fronted effort by these two sectors is making progress – not perfect progress, but progress all the same. In looking at the strategies of both sectors and then at the successes and failures of those efforts, we can better determine where to go from here.

The United Nations has been a vital player in the war against water scarcity, most specifically within the last 23 years. The UN created the Millennium Development Goals in 1990, and gives this definition of what exactly the goals are:

The Millennium Development Goals (MDGs) are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions-income poverty, hunger, disease, lack of adequate shelter, and exclusion-while promoting gender equality, education, and environmental sustainability. They are also basic human rights-the rights of each person on the planet to health, education, shelter, and security (UN Millennium Page).
Goal 7c of the MDGs is to reduce by half the amount of people without access to safe drinking water by the year 2015. This goal includes access to sanitation as well, as shown by the two indicators of progress that the UN has defined – proportions of the population with access to an improved water source and access to improved sanitation. This goal has been the foundation from which many of the international organizations form their policies and strategies on how to fight against the water crisis. So what exactly are those strategies?

The UN publishes reports every two to three years on the state of the world’s water crisis and steps being taken to solve it. These reports, such as the Development Report, the GLASS (Global Analysis and Assessment of Sanitation and Drinking-Water) Report, and the Progress on Drinking Water and Sanitation Report put out by WHO and UNICEF are all packed with seemingly endless amounts of data and strategies that are being implemented. While there is no way that this paper can cover them all, we can focus on what seem to be the most dominant and prevalent strategies. Throughout the research process, the strategies that stand out are these: policy creation and change, steps toward good governance, updating and creating water infrastructure, enhancing water productivity in agriculture, and growth in the use of information technology to make informed decisions. Organizations such as the UN have the global reach and international connectedness to work towards over-arching change, so they tend to put their efforts there, rather than towards smaller local projects. The specific strategies within this movement towards over-arching change have been placed into two categories; the “hard-path approach” and the “soft-path approach” (U.N., 2012 (B)).

In the earlier years of water management, the hard-path approach was essentially the only approach. The UN Development Report gives us this definition of the hard-path approach:
The hard approach to water management typically focuses on the construction of water storage, transport, treatment, flood protection, and other regulation and delivery (distribution and collection) systems; hydropower plants; and groundwater wells and pumps, consistent with the goal of seeking additional water supplies (U.N., 2012 (B)).

This aspect of the approach is a necessary one, but not completely sufficient. It is necessary because, without these things, we could not manage water as a finite resource. There are many nations that are severely lacking in basic physical infrastructure that would allow them to provide water to their populations. The development that the UN, WHO, the IMF and UNICEF in regards to infrastructure varies between regions;

“Some countries are busy constructing such infrastructure to make use of their often-scarce water resources, such as for irrigation, domestic and industrial uses, and sometimes for environmental purposes. Other countries are devoting considerable attention to the protection of their growing populations from flooding, while others remove or modify some of their hard infrastructure (U.N., 2012 (B)).

No nation will have exactly the same set of problems, and therefore will not need the same set of solutions. But although these approaches are necessary, they are not completely sufficient. Hard infrastructure cannot completely solve the crisis because water is a limited resource, making many of the “hard” project unsustainable. The UN reports that, “For example, in the Netherlands, it was realized that continual heightening of dykes was ultimately unsustainable…” (U.N., 2012 (B)). The physical projects that increased their water supply were taking and depending on water from a limited source that would eventually run out. “This has led to a new approach that foregrounds respect for natural hydrological conditions and acknowledges the limitations to the benefit of hard infrastructure” (U.N., 2012 (B)). So what happen when hard infrastructure is not enough? That is where the twenty-first century move towards the “soft-approach” has come into play.
First, it must be remembered that the newer “soft-approach” is not meant to replace hard approaches. Rather, it is meant to solve the problems that the hard approaches cannot, and to broaden the way that the world sees water as a resource and how we seek to use it. So what exactly is the “soft- approach”? The UN gives this description:

Emerging twenty-first century water management can be thought of as increasingly focused on soft infrastructure, most notably associated with the management of trade-offs, and increasingly dependent on institutions, policy, legislation and dialogue between competing users (U.N., 2012 (B)).

Newer approaches are increasingly focused on policy, on how individual countries and the collective global community can make decisions that will allow for the best possible management of this resource. And not only does this approach focus on how this can be done on a large scale, but also on an individual scale. The soft-approach seeks to change how individuals interact with and use water as well, which would include training and education to the general population. The soft-approach is complex – it is not nearly as cut-and-dry or straightforward as what we have historically pictured water management to be. Changes in ideology and perspective are not quick and easy changes to make, but in the end, are absolutely crucial.

We have by no means covered the full extent of what is being done by international organizations to solve the water crisis. On the contrary, we have barely skimmed the surface. But this broad overview is enough to have a basic understanding of what the world is doing, through these specific organizations, to help. On top of the strategies just described, solutions are being implemented by another sector – non-profits and non-governmental organizations – that are having an impressive impact on the front lines.
In a recent interview, Julie Smith, a project manager from Lifewater International, told a story about a recently completed fresh water well that had been constructed in Zambia. One of the village women, Janet Amongi, said this about life before the new well, “My children used to walk for a very far distance to fetch water before school, and teachers would beat them because they are late” (Lifewater, 2013). But the teachers no longer beat Janet’s children, because they are no longer late – thanks to the well that provides them with the fresh water that they need right in their village.

Lifewater International is a non-profit organization that was founded in 1977 and is based in San Luis Obispo, California. They are a faith-based organization with a mission statement of; “Partner with the poor to bring safe water, health and wholeness in Jesus’ name” (Lifewater, 2013). The organization is currently in the midst of projects in seven different countries, primarily in Africa with one partner in South Asia. Their primary work lies within the WASH (water, sanitation and hygiene) sector, and the strategy is simple, yet incredibly effective. The organization puts together teams of people from the U.S. that are then trained in sanitation and hygiene education, how to build a freshwater well, and a number of other projects. But the catch is, this team does not implement the projects – rather, they travel to the country and community that has asked for the assistance of Lifewater, and they train local community members in these methods. The locals then implement either the projects or the trainings. This has created an incredible sense of ownership, effectiveness and sustainability. One partnership in Uganda recently came to completion after three years, and every one of the well projects that had been implemented there still had a committee in charge of maintenance and up-keep of the well. Lifewater is constantly growing and seeking new places to implement its strategies, and their
current goals are, one, to increase monitoring and evaluations of past projects, and two, to use more information based technology for choosing future locations to partner with.

Lifewater is only one of thousands of non-profits around the world that are seeking to end the global water crisis. In general, the efforts of non-profits look quite different than those of the UN of the WHO, but are working towards the same goal. Non-profit and NGO efforts often deal with smaller-scale, community based solutions. While international, the projects are more localized and often more direct in nature. Several of the prominent organizations working towards water provision are Charity Water, Water for People, and WATER.org. Their methods include, but are not limited to: hand-dug wells, bio-sand filters, drilled wells, rainwater catchments, spring protection, sanitation education, entrepreneurial sanitation methods, water extension systems, and waste-water management. These are often implemented either directly by the organization themselves, or by locals that the non-profit works alongside.

Like anything else, there are positives and negatives to non-profits and NGOs. The positives are that their work is often localized, which can increase ownership in the projects and customization to what the community actually needs. They provide a way for the common citizen to be involved with aid, either through volunteer work or financial donation. On the flip side, there are limitations to non-profit work. They often do not have the financial freedom to accomplish incredibly large-scale projects. Non-profits can also, if they are not careful, do more harm to a community than good by disrupting a local economic system or by not asking the local community what it is that they actually need. A western and modernized mindset can keep these types of organizations from being as effective as they could be if they took the time and effort to glean wisdom from the community that they are working in. But overall, non-profits and NGO’s
have accomplished things that many other institutions have not been able to, and can be a great asset to the efforts against the water crisis.

So how have these efforts actually fared over the last several decades? Has there been any improvement made or any substantial change? Absolutely. The first line of the World Health Organization and UNICEF’s Progress on Drinking Water and Sanitation Report reads,

The MDG drinking water target has been reached: Over 2 billion people gained access to improved water sources from 1990 to 2010, and the proportion of the global population still using unimproved sources is estimated at only 11 percent (U.N., 2012 (C)).

This is an indicator of incredible steps made towards reducing the number of people in the world without access to clean water or sanitation. While access to drinking water was given to two billion people, sanitation was also made available to 1.8 billion people. Those figures come to a total of 89% of the world now drinking form an improved water source, and 63% now using improved sanitation (U.N., 2012 (B)). And the target was met early – five years early to be exact.

Sadly, despite all of these gains, the situation is still far from rosy. Even in seeing the completion of one aspect of the millennium goals, it is predicted that 34-76 million people may still die due to contaminated water (Cain, 2005). And to be more specific, the UN GLAAS Report states that, “In 2015, 605 million people would remain without access to an improved drinking-water source, and 2.4 billion people would be without access to improved sanitation facilities” (U.N., 2012 (A)). Furthermore, the WHO/UNICEF report states the following;

More than 780 million people remain unserved. Although the MDG drinking water target has been met, it only calls for halving the proportion of people without safe drinking water. More than one tenth of the global population still relied on unimproved drinking water sources in 2010 (U.N., 2012 (B)).

Beyond the basic numbers, there are great consequences for the disparities that continue on despite steps toward success. National economies continue to be affected by water scarcity.
Global security is another concern that arises in the face of continued shortages, and gender
inequalities and lack of women’s education are prevalent as well. Needless to say, while progress
has been made, the crisis is far from over, and with ever increasing populations and decreasing
water supply, the foreseeable consequences could be more dire than ever before.
Chapter 3: The Central Coast Wine Industry

Let us take a few steps backward to the beginning of this proposal and be reminded of the purpose of the previous chapters. The reason for all of the statistics and research is to be able to create a basic framework of the issue to be solved. This framework was created as the foundation for the proposed solution of VINEzO, a venture to turn “wine into water” for the people of the world. If this is to become a feasible reality, there is yet another block of the foundation yet to be laid- an understanding of the wine industry, specifically within the Central Coast of California. This chapter will answer questions and provide information on topics such as why wine is the industry of choice, what the market sales are for the industry, what the typical consumer is like, and what the nature is of the charitable donations that wineries give.

Why wine? As history has almost flawlessly proven, wine is timeless and in demand. Nearly every region in the world consumes wine and has for decades or centuries, and California is no exception. Because wine is timeless, it is a stable industry. Even beyond stable, it is a profitable and growing industry (Wine Institute, 2011). The United States is the world’s largest wine market, with 347 million cases consumed in 2011. This is a 5.3% jump from 2010, proving that the industry is not only popular, but growing. The entire industry has an estimated retail value of 32.5 billion dollars (Wine Institute, 2011). In looking for a sector to support an effort as large as the fight against global water scarcity, stability, profitability, and growth are non-negotiable factors.

California specifically is a hot spot for wine production and sales. In 2011, 211.9 million cases of California wine were sold to U.S. consumers (a total of a 61% share of the U.S. wine market), and a total of 256.6 million cases were sold worldwide, making California the provider
of 90% of America’s exported wine. The wine industry in California is also remarkably stable, even in times of economic regression. Robert Smiley, an emeritus professor and former dean of the Graduate School of Management at U.C. Davis says that, “Industry leaders agree that while the somewhat giddy wine-buying days of 2006 and 2007 are not likely to return in the near future, there remains a strong and growing consumer base for California wines” (UC Davis, 2012). On top of being a strong industry, California wines are desirable and inventive. The Wine Institute President says, “California’s vintners grew the wine market with creative, innovative offerings at all price points,” and, “Our wineries are in sync with consumer tastes and California wines have increasingly become a preferred lifestyle choice” (Wine Institute, 2011). Frankly, there is not much to dislike about breaking into the wine industry for a partnership in ending the water crisis.

As far as production goes, California also leads in the U.S., and is fourth in the world to only France, Italy and Spain. The industry provides 820,000 job nation-wide, with 3,540 bonded wineries within the state. Nearly all of these are family owned companies. The wineries compiled total to 543,000 acres of producing wine-grapes. There are also several characteristics of California’s consumers that make the industry a desirable place to try something new. Consumers are known as being exploratory; “Wine consumers are adventuresome by nature so Muscat/Moscato became a popular new flavor to try, experiencing the largest varietal volume gain of the year,” commented Danny Brager, vice president of client services for beverage alcohol at The Nielsen Company (Wine Institute, 2011). Industry professionals also say that, “In the past two years, there has been a new emphasis among wine consumers on value, new varietals, new tastes and ‘affordable luxury’” (U.C.Davis, 2012). This desire to try new varieties,
blends and tastes is exactly what a venture such as VINE2O needs. Being an exploratory venture and new to the consumer, the idea needs an open-minded market-base.

Lastly, it is important to note that California’s wine industry makes charitable donations. If VINE2O were to survive, it would be doing so off of donations from wineries, specifically donations of wine. The Wine Institute reports that California’s wineries give 101.5 million dollars each year in charitable donations to various organizations (Wine Institute, 2011). This is an important piece of the knowledge base needed in launching this project, and will need to be added to in terms of learning what regulations and norms are for who these wineries actually make donations towards.

On all fronts, the wine industry is a promising place to start a movement for change. It is a growing, changing, and open industry that invites consumers to actively take part in the product. The possibilities are seemingly endless in stepping into this industry, and bringing a tangible need to such a large audience and market-base would be an incredible outcome of success.
Chapter 4: Next Steps and Structure

Up until this point, the focus of this report has been research – research on the global water crisis, on the various facets and pieces of the crisis, research on the efforts being made to provide water for people, on the successes and failures of those efforts, and research on the wine industry. The research is necessary and incredibly beneficial to this project, but at some point, the research ends and action must begin. That is what this chapter is about – action. If VINE2O is to become a reality, there must be specific action steps taken to accomplish that goal. This chapter will present a series of steps to be taken, further questions to be asked, and strategies that will hopefully move the concept of VINE2O into the realm of reality.

The original conceptualization of VINE2O is that it would be an independent non-profit that served as a sort of “middle man” between the wine industry and the non-profit/NGO sector that works again water scarcity. VINE2O would be the organization that receives charitable donations of bottled wine, re-labels that wine, and then sells it to local vendors for purchase by the consumers. Then, all profits that VINE2O creates would go directly to a water-solutions non-profit, such as Lifewater International. In light of that, the first step that needs to be taken is finding out exactly what it looks like to create a new non-profit.

According to the organization Learning How to Give, the definition of a non-profit is this:

A nonprofit organization is formed for the purpose of serving a public or mutual benefit other than the pursuit or accumulation of profits for owners or investors… The nonprofit sector is a collection of entities that are organizations; private as opposed to governmental; non-profit distributing; self-governing; voluntary; and of public benefit (Learning to Give, 2011).
We already know that VINEzO fits this description and falls into this sector. So what does it look like to actually create a new non-profit? The National Council of Non-Profits gives a lengthy list of steps and advice that I have outlined more concisely into the information below:

- Do Research
- Ask Questions
  - Is there a need for this non-profit?
  - Are there already other versions of this venture?
  - Are we looking into the realities?
  - Who will help fine tune our business plan?
- State Forms
  - Reserve/ Register Intended Name
  - File Articles of Incorporation
    - Certificate of Disclosure
    - Proof of Corporate Name
    - Filing Fees
- Federal Filings
  - Form SS-4 Federal Employer Identification Number
  - IRS Form 1023: Application for Recognition
  - Instructions Package 102
  - Publication 557
  - IRS Form 2848: Power of Attorney
  - IRS Form 5768: Election to Make Expenditures to Influence Legislation
- State and Local Government Filings
- Internal and Structural Planning

There is clearly much work to be done behind the scenes, a majority of which is legal legwork. The first two sections of the above outline have been, for the most part, completed. This entire paper is the research behind the venture, and within it we have seen why there IS a need for more efforts toward ending global water scarcity, which automatically implies a need for funds – therefore, creating a need for this non-profit.

The next step in the process contacting the various “links in the chain” that would be necessary to complete this venture. First, the non-profits that VINEzO would give profits to must
be contacted. The idea must be presented and the organization then must be asked if this is something that they would desire to partner with and receive financial assistance from. And actually, this step has already been done. In my interview with Lifewater here in San Luis Obispo, I was able to take this idea to the head of finances and fundraising for the organization, Jamie Brown. She immediately told me that Lifewater would absolutely want to partner with this idea. As of now, Jamie and I have made plans to begin to pursue this idea on a small scale in April, to see where it can go and how it can effectively assist Lifewater International.

The next link in the chain to contact are the wineries. We must know what kind of donations the wineries are willing to make, the financial value of those donations, and the feasibility of a winery making donations of already bottled wine. We must conduct interviews and take advantage of personal networking within the industry to find out the practical details of how to partner with this sector. Lastly, once the first two links are in place, markets for the wine must be determined and selling locales chosen. There are a variety of different places that the wine could be sold, especially in a city such as San Luis Obispo that has a sizable number of vendors that sell local products. This list is made of, but by no means limited to, grocery stores (Trader Joes, New Frontiers, the Natural Foods Co-op, etc…), restaurants, café’s, events such as Flavor of SLO and other wine festivals, and various other locally owned businesses. These are all places that have a consumer base for wine and would be open to selling a locally-generated product.

The last piece of the puzzle is funding – the daunting word that nobody is incredibly fond of. There must be thought given to start-up costs, operational funding including labeling and transportation of the wine, marketing, and every other expense that happens between the wine leaving the winery and arriving on the shelves of a store. The most likely solution to the
predicament of where to obtain funds would be investors. Fundraising is also a possibility, but ideally having people that believe in the idea to invest in the start-up would be the desired option. There is a laundry list of other questions that could be asked and other problems that will arise down the line, but an idea must start somewhere and eventually take a step into the unknown to see if the idea can become a reality.
Chapter 5: Conclusion

Exactly what sort of a future are we as a global community walking into? After reading the last forty-five pages, it would be easy to think that we are walking into an era of incredible risk, uncertainty, and resource depletion. The coming decades could very possible be a time period in which many more die from the global water shortage. It could be a time where we as a global community see the consequences of inequality, poor governance, and a lack of sacrifice or effort on the part of those who DO have plenty. Let us not ignore the possibility for tragedy that water holds within its grasp.

And at this point, tragedy is not merely a possibility. It is a reality. Tragedy is occurring on all fronts of the water crisis – in water access, in water pollution and in water scarcity. For people that do not have the precious resource of water, their lives are so often controlled by that deficit. Whether a woman spends hours fetching water for her family, or a parent watches a child suffer from a water-related disease, or a farmer waits for his thirsty crop to whither – each of them are in some way powerless against this formidable enemy. And beyond individual suffering, it is clear that the world and world-system as a whole suffers from water shortage as well. Conflict, regional and global economics, politics and international relations are drastically affected by the scramble for water. The list of misfortunes is a mile long, and could easily leave us feeling overwhelmed and even helpless in our response to this crisis.

But there is an alternative option. There is the option to recognize hope in possible solutions and run towards it with full force. There is the option to educate ourselves and take the time to decrease our own ignorance to the benefit of those who cannot help themselves. We can clearly see the damaging results of scarcity, lack of access and pollution of water around the
world. We know about the detrimental effects of rapid population growth and urbanization, about water conflict and about regional disparities. It is evident that work is being done to bring improvement in the midst of this crisis, but it is also evident that those efforts are not enough. We have the option to create MORE change, out of a recognition of the incredible effects that change can in fact bring.

This is what VINE2O is striving for. Will this be the solution that ends the global water crisis? Of course not. But it very well could be a slice of the pie, one piece of the puzzle. As I move forward in the next several months with this project, I am hopeful for the small, yet meaningful, dent that this endeavor has the potential to place in the huge task of providing water for the world. Besides merely being a means to raise funds, VINE2O is a way to bring this community to a great awareness to the crisis that is taking place around them. And when even a small group of people see a great need and understand that they themselves can be a part of a solution, the possibilities for change are endless.

This venture will not be perfect, and success is by no means guaranteed. VINE2O will be a risk, an experiment, and possibly even a failure. But the question that continues to come to mind is this – if you were one of the 1.2 billion people without water to drink today, would you not want and plead for someone to take a risk for you?
Works Cited


