**Sydvatten Group Project: Management of Water Resources in Los Angeles**

1. **Introduction**

Water management requires balancing multiple uses and competing demands. In water-scarce urban areas such as Los Angeles, CA, this can be a challenging process. California is currently experiencing the worst drought since official record-keeping began in the late 1800s. According to the California Department of Water Resources, 2013 was one of California’s driest years on record. Some experts are saying that if the upcoming winters don’t have higher than average precipitation that California only has 12-18 months of water left (Famiglietti, 2014*)*. The data collected by the National Drought Mitigation Center shows that all of California is registered as “severe drought” and that 82% is registered as “extreme drought”, including Los Angeles, the largest city in the state (NDMC, 2014).

1. **Water situation**

Los Angeles depends on water coming from the snowmelt in the Sierra Nevada, the Colorado River basin and local groundwater mainly on the coast. The water is transported by the Los Angeles Aqueduct and the Metropolitan Water District, a wholesale entity that takes water from the Colorado River and the State Water Project and sells it to its member cities (WEF, 2014). The Colorado River Basin is “the most over-allocated river system in the world” according to a study published in Geophysical Research Letters (AGU, 2014). Data used from NASA’s Gravity Recovery and Climate Experiment has shown that the Colorado Basin has lost nearly 65 cubic kilometers of freshwater over the last 9 years, with three-quarters of the loss coming from groundwater (AGU, 2014).

The Governor of California, Edmund G. Brown, declared a drought state of emergency on January 17, 2014 and called for a 20% voluntary reduction of water use for the state (State of California, 2014). In Los Angeles the average per capita water use is 152 gallons/person/day and has shown a 1%-4% increase in use since the state of emergency (Famiglietti, 2014). However, a new report has shown that overall California has reduced its water consumption by 11.5% overall for the month of August, with cities adopting strict conservation measures (State of California, 2014). Climate change has been linked to the current drought by a recent Stanford study which stated that higher temperatures caused by greenhouse gases are pushing storms and precipitation northward, but the evidence is inconclusive.

1. **Competing demands**

As with anywhere, the Los Angeles region experiences a number of competing demands on its water supply. These demands are affected by weather, demographics, behavior of users, and conservation plans (LADWP, 2010). The Los Angeles Department of Water and Power groups users into the following categories: single-family, multi-family, commercial, industrial, government, and non-revenue, which accounts for the “difference between total water use and billed water use, includes water for fire fighting, reservoir evaporation, mainline flushing, leakage from pipelines, meter error, and theft” (LADWP, 2010). Single-family households consume the roughly 36% of the region’s water, followed by multifamily (29%), commercial (18%), non-revenue (7%), government (6%), and industrial (4%) (LADWP, 2010).

Though these percentages have remained fairly constant, weather variability can cause overall water use to fluctuate around 5% above or below average for a given year (LADWP, 2010). Aside from these slight variations, conservation measures have kept consumption levels relatively stable over the last few decades despite the fact that population in the area has been growing by 1.3% annually since 1980 (LADWP, 2010).[[1]](#footnote-1)

1. **Decision-making process**

According to the Business Dictionary (2014), a stakeholder is “a person, group or organization that has interest or concern in an organization”. Furthermore, a stakeholder can influence or be influenced by the organizations “action, objectives and policies” (Business Dictionary, 2014). In the case of the severe drought in California, stakeholders include basically everyone who has an interest in the allocation of water resources. This includes, for example, inhabitants, communities and municipalities, agriculture, industry, hydropower facilities and many more (DWR, 2014). In events of severe water shortage, particularly in cases, where the water supply has been significantly reduced over a longer period of time, the allocation of water resources is difficult. In California, a complex framework of federal, state and common law principles, juridical decisions, as well as agreements and contracts governs the use and supply of water, overall aiming at balancing public and private interests (CWP, 2005). The State Water Resource Control Board (SWRCB), which is a part of the California Environmental Protection Agency, is responsible for allocating water resources to the stakeholders. In addition to this, the SWRCB is authorized to impose regulations on the general public, prohibiting actions like washing cars or supplying “decorative water features” with clean drinking water in order to reduce the overall water consumption (DWR, 2014).

1. **Water as a right**

California declared a human right to water in 2012 by signing the AB 685 into law, which intended to guide various stakeholders in taking into account the use of water for human consumption, cooking and sanitary purposes while tackling with the water-related challenges (IHRLC, 2013). In general, AB 685 sees the water as a basic need and right of general public regardless of their social, economic and ethnic/racial backgrounds. Thus, as mentioned by Human Rights Institute in Columbia Law School, everybody should have an access to clean and affordable water that is adequate for basic human needs (2012). However, disadvantaged communities in California, especially impoverished unincorporated communities, are still facing significant water challenges such as contamination, inadequate infrastructures, financial costs and barriers to access the water in public areas (IHRLC, 2013, p.4). "In part because of decades of structural neglect and non-investment, these communities experience overwhelming infrastructure deficits. Among those deficits, lack of access to water and sanitation drives instability and lack of certainty in long-term viability" (Pannu, 2012, p.234). To solve this problem, AB 685 stresses that state agencies have to identify and prioritize vulnerable communities while providing water to citizens and assure clean and affordable water for all (IHRLC, 2013, p.4).

The concept of 'human right to water' underlines the quality, quantity, accessibility and affordability of the water. These four factors "emphasize improving access to safe drinking water for underserved communities through non-discrimination, public participation, and accountability" (IHRLC, 2013, p.6). At this point, non-discrimination and equality should be emphasized to achieve meaningful public participation of all citizens, which necessitates the transparency and accountability of the governance bodies (IHRLC, 2013, pp.8-9). By this way, various stakeholders can better contact with the citizens who suffer from water challenges.

1. **Conclusion**

Los Angeles is an example of a metropolis where water availability is an ongoing problem.

This challenge is complex and multidimensional, involving many competing water demands and a variety of stakeholders. Therefore, the management of water resources should take a holistic view and should follow a participatory process. Recognizing that California has declared water a human right, water management and allocation processes should acknowledge the needs of all community members and should not prioritize one group’s interests over another. A role-play exercise could facilitate an understanding of the various aspects of water-related decision-making in times of scarcity.

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**Interactive activity: role play**

Students should read the background information about water issues in Los Angeles before the role play exercise. This role play will simulate a decision-making process that involves stakeholders representing various interests. At the beginning of the exercise, each student will be assigned a stakeholder and will receive a document containing a summary of his/her viewpoint.

During the exercise, a moderator should guide the discussion. The moderator should keep track of time and make sure all participants have the opportunity to speak. In addition, the moderator should facilitate discussion and make sure that no one dominates the discussion and that ideas and rebuttals are given in a civil and polite manner. The objective will be to reach an agreement about how to best manage LA’s scarce water resources given competing demands. Suggestion: Divide class in small groups with exactly enough members to cover all characters.

After the exercise, students should reflect on the challenges of water management in a water-scarce urban context. Some reflection questions include:

* Was this discussion realistic?
* Which stakeholders may have been left out of this discussion? For example, certain marginalized communities likely do not have a say
* Compare outcomes/ reflections of the individual groups

Stakeholder summaries:

* *Governor Brown:* Proclaims a state of emergency regarding water supplies; wants to reduce bureaucracy (“red-tape”) in order to get water to farmers more quickly, ensure that people have enough drinking water, protect vulnerable wildlife species, and prepare for an extreme fire season. Orders a “conservation campaign” to raise residents’ awareness and encourage people to reduce water usage
* *Member of the Drought Task Force:* Is convinced that a joint effort of all state agencies is required to fight drought. Provides coordinated assessment of the water scarcity and provides recommendations to future state actions. Produces weekly summary to spread information about state agency actions, current drought impacts and general information to the public.
* *Renewable energy company representative:* Solar energy is becoming increasingly popular in Los Angeles, an encouraging sign for those who are concerned with fossil fuel emissions. Works for a solar energy provider that offers residential and commercial solar systems, as well as maintaining a solar-driven power plant. Is not too concerned about water shortages or conservation measures, as solar power is not particularly water-intensive and California is trying to support renewable energy in light of its environmental targets.
* *Conventional energy company representative:* Works for coal-fired power plant that requires large amounts of water for cooling and turbine generation. Concerned about reductions in the amount of water available for the power plant. Argues that it is important to have affordable energy, and water use can be cut elsewhere instead.
* *Industry representative:* Works for a prominent oil refinery in Los Angeles that uses a disproportionately large amount of freshwater. Is concerned about potential governmental regulation of freshwater use as it has the potential to raise gas prices. Is looking into new gray water recycling techniques. Has a considerable amount of power and influence in the form of a strong lobby on State policy. Does not want restrictions placed on water use, thinks responsibility falls on residential and family use.
* *Agriculture representative*: Concerned because less water means that fewer crops can be cultivated and farmers’ long-term investments are put at risk. Recently Governor Edmund Brown passed historic legislation limiting groundwater extraction, which poses a problem for California’s agriculture industry which supplies 11% of the nations fruits and vegetables (DWR, 2014).
* *Ecosystem expert:* Concerned that animals and plants that rely on California’s rivers, including many species in danger of extinction, will be threatened by water shortages; risk of wildfires across the state is generally increased.
* *High income community member:* Relatively wealthy, big house, cars, swimming pool, does not see the need to reduce water consumption. Prefers to maintain current lifestyle.
* *Low income community member:* Heavily dependent on agricultural employment, so any water-related agricultural losses will lead to heightened unemployment and economic hardship. Sees importance of reducing water consumption, considers water shortage as a severe threat. Is not particularly wealthy, and could not afford to pay increased prices for drinking water.
1. “Average water demands in the last five years from FY 2004/05 to 2009/10 are about the same as they were in FY1980/81 despite the fact that over 1.1 million additional people now live in Los Angeles” (LADWP, 2010). [↑](#footnote-ref-1)