



# **The Ebbs and Flows of Water Governance**

*A qualitative comparative evaluation of water  
governance regimes in California and Northwest  
Florida*

**Name:** Victor Hijzen

**Student Number:** 480632

**Program:** MSc International Public Management & Policy

**University:** Erasmus University Rotterdam

**Supervisor:** prof.dr. Darren McCauley

**Second reader:** dr. Adria Albareda Sanz

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## ***Abstract:***

*By the end of the 21<sup>st</sup> century nearly half of the global population will live in extreme water scarcity. While environmental degradation and climate change exacerbate scarcity, the biggest challenge in ensuring water remains accessible for future generations is a challenge of governance. While this sentiment has been explicated time and again, a lack of in-depth, case by case understanding of which modes of governance are dominant in water governance remains. To aid in filling this gap in scientific knowledge, this inquiry set out to qualitatively determine which of the three dominant theories of governance, namely hierarchical, market-based, and network-based governance, most aptly explains the mode of water governance in California and Northwest Florida respectively. A coding scheme derived from similar qualitative categorization efforts was utilized. The evaluation found that rather than representing a single theory, or a hybrid combination of theories, the cases could only be understood as wholly singular iterations of a contextually determined synthesis of different theoretical components, consequently constructing a truly individual governance mode that cannot be empirically generalized. This implies that rather than striving for the determination of generalizable categories, which is what scholarship has hitherto attempted, efforts ought to be directed towards the establishment of an in-depth understanding of singular governance modes in individual cases and focus on establishing a methodology to qualitatively link individual governance systems to water management effectiveness. This will enable future research to comprehend how the individual contingent environment and context specific factors are essential to governance systems and consequently how water governance systems, through respecting their unique constitution, can rise to the occasion and ensure sustainable water management for future generations.*

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## **1: Introduction**

By the end of the century over 40% of the world's population will live under conditions of extreme water scarcity (Hanasaki, et al., 2013). Climate change increases water supply uncertainties. Urbanization and population growth increase demands on water systems, often in cities most affected by rising sea levels due to their proximity to salt water. It is impossible to fully address the complexities of these megatrends, but scholars and professionals globally claim that while they perpetuate existing water governance issues, they are not the cause. For decades, expert panels and leaders in the field of water have raised poor resource management as the greatest threat to future water security. Drought and dehydration are not the only disastrous outcomes within the realm of possibility. Recently, a surge in questions regarding the correlation between water and violent conflict as well as the weaponization of water can be distilled. Recent conflicts in Syria, South-Sudan, and Ethiopia indicate the importance of effective cross-border governance of water resources to reduce the incidence and intensity of conflicts. However, no clear explanatory mechanism for the role of water in causing conflict has yet been established. The relation that has consistently been argued to underpin the role of water in conflict and in society as a whole, is governance. Understanding water governance has consequently been subject of a large body of scientific inquiry. Still, academia extensively engages with water in the context of conflict. This inquiry focuses on governance, which in light of its purpose will be justified by an evaluation of how areas of both governance and conflict are academically represented.

The megatrends mentioned above are not the only reason why understanding water governance is relevant for societies all around the world. If natural scarcity is not the primary cause of shortages in water supply, then why will a large percentage of the global population experience drought and dehydration? The reason for this is widely agreed to be a pervasive inefficiency in use of water and a general overestimation of the proportion of water supplies that are directly used by individuals. Roughly 80% of freshwater is used in agriculture, which in many cases do not have access to efficient water management resources. Take for example the crop Alfalfa, which is used to feed cattle all around the world. This crop is grown in sub-Saharan Africa, in regions like Ethiopia often plagued by drought (Alemayehu, et al., 2020). Instead of applying drip-irrigation or other efficient water use technologies, the low cost of water in these areas results in farmers flooding their fields and wasting the most valuable resource for human life. This extreme example highlights the complex role of water in society, and that effective governance is required to manage it. Additionally, water scarcity is not an

issue that exclusively plagues the third world. Among the cities ‘most at risk of running out of water’ are Tokyo, Melbourne, and London (Chapman, 2019). With the risk of scarcity increasing and sufficient understanding of water governance systems lacking, inquiry into its essential components has never been more societally pressing. It is a challenge that raised concern in the scientific community. During the First Global Water Policy Dialogue of the Institute of Water Policy of the Lee Kuan Yew School of Public Policy, Singapore, and the Third World Centre for Water Management, Mexico, discussion led to several research recommendations, including the call for in depth case studies into the institutional components of effective water governance regimes (Tortajada, 2010). This conference specifically called for qualitative case studies determining governance characteristics of water governance regimes and their development over a period of 10 years. Consequently, this inquiry will analyze two cases over a 10-year period.

Two regions that experience increasingly pressing droughts and perpetual water shortages, face the demands of growing populations, function within similar legal hierarchies and cultures, but manage water resources at a different scale level. The regions are the states Florida, and California. The former has divided the management of water resources across five so-called water management districts, whereas the latter manages water resources on a statewide level. Understanding the governance approach of each of these states can therefore provide the added value of comparing two systems in similar contexts to enable a more accurate picture of the determinants of governance. This approach to a case study of water governance regimes has been taken previously by Van de Meene, Brown, & Farrelly (2011) in their evaluation of the urban water governance systems of Melbourne and Sydney. In the case of California, water resources are governed by the State Department of Water Resources (DWR) and the water management district selected to analyze the case of Florida is the Northwest Florida Water Management District (NFWMD). These cases will be described in more detail in section 4.2. This inquiry is societally relevant not only as it enhances the understanding of governance systems in two areas increasingly pressured by water scarcity, but especially as it suggests a nuanced approach to examining different cases which could aid in more effective management of water resources in those areas most in need.

This approach supports the determination of water governance effectiveness as contingent factors such as overarching governance systems and federal policy can be relatively directly compared. This thesis does not venture into concretely evaluating effectiveness as quantitative methodologies established to do so are incongruent with the qualitative methodology necessary to provide an in-depth understanding of each of the two cases. It rather

derives scientific relevance from its attempt to nuance the traditional approaches to qualitatively understanding water governance and provide a generalizable theoretical perspective. This research will draw on widely used governance frameworks, namely hierarchical governance, market-based governance, and network-based governance, to understand the regimes of the respective cases. Consequently, the research question that this inquiry will answer is: *How do components of hierarchical, market-based -and network-based governance explain the water governance structure in California, compared to Northwest Florida?*

In evaluating water governance systems, scholars often argue that network-based governance approaches lead to more effective outcomes (see for example, Pahl-Wostl 2019). Interestingly, these inquiries often run into methodological issues of correlating inherently qualitative categorizations of governance systems with quantitative effective governance indicators, implying limited support for this claim. Rather than attempting to develop a methodology to overcome this issue, this inquiry acknowledges the limitation and commits to a qualitative categorization of the water governance regimes of the two cases. However, the complex and unique nature of water governance, particularly when analyzing two contextually comparable cases, enables this inquiry to move beyond a simple categorization and into a discussion of comparative interactions between governance components representing competing approaches. While previous research focuses exclusively on categorization, this inquiry will show how simple categorizations only provide a limited and potentially inaccurate conceptual understanding of the relevance of theoretical governance approaches. Throughout this research, the traditional mode of categorization will thus be nuanced and a novel approach to applying governance theories to individual cases will be presented. Consequently, the inquiry will address three sub-questions:

- *How can the water governance regime of California's Department of Water Resources best be characterized?*
- *How can the water governance regime of the Northwest Florida Water Management District best be characterized?*
- *How do the dynamic categorizations of the two cases compare and how have they developed over time?*

The inquiry will be structured as follows. Firstly, the current state of academic knowledge on water governance and water conflict will be discussed in a literature review. This will be done

by highlighting foundational concepts used and historical approaches taken to research both streams. This will be followed by an in-depth discussion on each of the streams separately. The literature review will conclude by highlighting why for the purposes of this inquiry, a governance perspective is more suitable. The following section will elaborate on the three governance approaches mentioned above and develop a framework to analyze the cases. Each of the three approaches will be discussed separately and applied to water governance specifically. Consequently, these theoretical concepts will be operationalized in a methodology. This section will elaborate on the qualitative design chosen and provide the context necessary to understand the selected cases. After the methodology, the results, addressing the first two sub-questions, will be discussed. This section addresses substantive issues with the aim of characterizing governance regimes that arose throughout the analysis. Consequently, the cases will be compared and their development over time will be discussed, addressing the third sub-question. In conclusion, the findings of the research will be summarized and recommendations for further research will be provided.



## 2: Literature Review

### 2.1: Core concepts and historical approaches

The study of water governance in recent years has been undertaken from several competing perspectives. Research initially focused on water provision as a technological issue of regulatory and management efficiency. Throughout the last two decades of the 20<sup>th</sup> century, developments in water management were understood through a state-market dichotomy (Blatter & Ingram, 2000). Accordingly, the question driving inquiries was not how water *should* be managed, but who could manage water most efficiently (Blatter & Ingram, 2000). This becomes evident in Haughton's (1998) analysis of an extraordinary drought in West Yorkshire in 1995-1996. Haughton explained the inept regulation of water by private markets through the prism of regulatory management reform. In this paradigm, alternative inquiries focused on government fragmentation to explain efficient management (see for example Bollens, 1997). This scholarship weighed in on questions regarding which governance-level is most effective at managing water supplies. Market -and traditional government perspectives no longer hold dominance over politico-social inquiries. Still, current scholarship on water draws on models of regulatory governance developed in this period.

Recently, water management has increasingly been conceptualized as a dynamic social process. In a Special Issue on *Re-Theorizing Politics in Water Governance*, a variety of post-structural approaches are highlighted (Wilson, et al., 2019). The authors contributing to this Special Issue seek to understand the power-dynamics, historical contexts, and *the political* that underpins water governance processes. An important consideration here is that non-critical conceptualizations of “water governance can help conceal [its] political and economic interests that lie behind the institutional arrangements, social relations, material practices and scalar configurations” (Perrault, 2014, quoted in Wilson, et al., 2019, p. 2). In similar vein, hydro-social conceptions of water governance focus on the social and cultural binding power of governance systems of something as pervasive as water (for example Gerlak, Varady & Haverland, 2009; Swyngedouw, 2009, and Boelens et al., 2016). While initial interest in hydro-sociality stems from the 1990s, the discipline's focus on the inclusion of ethics and equity in water governance has gained traction throughout the first decade of the 20<sup>th</sup> century (Gerlak, Varady & Haverland, 2009). Even though ontological and epistemological foundations of research differ, their practical application appears to have remained rather stable.

Practical applications generally focus on two issue areas: water, conflict and cooperation, or the structure and efficacy of water-governance. The former was fueled by then

Secretary-General Kofi Annan's 2001 claim that "*fierce competition for fresh water may well become a source of conflict and wars in the future.*" Inequality in access, or low quality of water has been argued to be a catalyst in conflict (Carius, Dabelko, & Wolf, 2004). However, the dominant perspective on conflict and water in the early 2000s focused predominantly on the potential for addressing water scarcity to build government-capabilities (Carius, Dabelko, & Wolf, 2004). The Indus River Commission and the Mekong Committee have been cited as transboundary water management institutions that have functioned as negotiation arenas for nations stalemated on other issues. Interestingly, several authors argued for an inverse relationship between location-scope and conflict concerning water; the larger the geographic area affected, the less likely conflict is to turn violent (Carius, Dabelko, & Wolf, 2004).

Research on water governance systems is generally seen as having two dimensions; the level on which water should be managed (local vs international), and the analysis of what type of institutional structure is conducive to effective water governance (Jimenez et al., 2020; Vörösmarty et al., 2015). The level on which water governance should be addressed is subject to two simultaneous processes. Local action drastically impacts transnational concern for water (Vörösmarty et al., 2015). The best example for this is the global concern over local water sources in the Himalaya, on which over a billion people rely on for drinking water. Conversely, megatrends such as climate change and global economic developments determine local access and reliance on water (Vörösmarty et al., 2015). Concerning governance structures a variety of scholars have suggested frameworks to understand developments in transnational (or trans-boundary) water governance (see for example Jimenez et al., 2020; Franks & Cleaver, 2007; and Neto et al., 2017). These developments will be discussed in depth in section 2.2.2.

## **2.2: Diving deeper into two research focus-areas.**

### **2.2.1: Conflict**

In theorizing water-based conflict, scholars distinguish between national and international settings of conflict. Wolf (1997), for example argued that international settings are more contentious, showing that cases that did not transcend national boundaries "played out in relatively sophisticated institutional settings" (p. 348). Conversely, there were no legitimate dispute resolution mechanisms for international water conflict that could ameliorate locally institutionalized legal cultures (Wolf, 1997). Following this lack of institutional structure, Wolf hypothesizes that international water-conflict is predicated on "relative quantity/quality degradation" that builds tension, followed by a unilateral event that triggers escalation. If

power between the parties involved is balanced, Wolf expects the conflict to be resolved, whereas power-inequality is expected to perpetuate a conflict. An example of this theory can be seen in the case of the Farakka Barrage, erected by India on the river Ganges in 1975. This construction constrained the flow of fresh water into Bangladesh during the dry season (Rahman et al., 2019). This unilateral action ignited a water conflict between the two nations that lasted until the Ganges Water Sharing Treaty was signed in 1996. On the surface, the treaty indicates an effective dispute settlement mechanism, but analysis of the implementation of the promised drink water sharing shows that in 65% of the dry season, India, being more powerful than Bangladesh, withholds the promised amount of water, implying that effective international institutions are necessary for resolving transboundary water conflict (Rahman et al., 2019).

A competing perspective on the relation between water and conflict unpacks water as a component in (environmental) security frameworks (Dimitrov, 2002). Environmental or ecological problems translate to security issues as stress and deprivation have the potential to fuel social and political instabilities inducing conflict (Dimitrov, 2002). A range of academic literature has evaluated water as a causal factor in predicting violent conflict and security issues. Yet, until the early 2010s, water was commonly assumed, both by academics and policymakers, not to be a decisive factor in causing conflict, but is an underlying condition for productive regional relations (Carius, et al, 2012; Kreamer, 2012). This can be seen in the case of the decades long diplomatic conflict over access to the Nile between Ethiopia, Sudan, and Egypt. Since 2011, the construction of the ‘Grand Renaissance Dam’ by the Ethiopian government has increased tensions in the Nile-delta. The dam gives Ethiopia control over water citizens of both Sudan and Egypt rely on. Tensions peaked when Ethiopia formally opened the dam in late February 2022 (BBC, 2022). Empirical analyses and systematic reviews find difficulty in establishing a direct explicit relationship between water and violent conflict (see for example, Bernauer & Siegfried, 2012; Petersen-Perlman, Veilleux & Wolf, 2017). In his often-cited 1999 review of water wars, Wolf evaluated extensive datasets and found only seven small conflicts and not a single historical account of a large-scale war waged over water.

Conversely, water has been effectively argued to be a means of waging conflict. In a 2012 review of the *Past, Present and Future of Water Conflict and International Security*, Kreamer argues that in local and transboundary (ethnic) conflict, control over water access has historically often been weaponized. The expectation is that as water supply becomes more variable due to global warming, the power of water as a weapon will increase, implying that while direct water-conflict remains rare, the status-quo could change in coming decades (Petersen-Perlman, Veilleux & Wolf, 2017). A prolific example of water as a weapon concerns

Islamic State (IS), which has repeatedly limited water access throughout Syria by seizing control of dams in the Tigris and Euphrates basins (Von Lossow, 2016). This inquiry, however, focuses on understanding problems within the management of water access internationally, which is why the field of scholarship on the weaponization of water falls outside its scope.

Additionally, understanding water exclusively through the prism of conflict appears problematic as the role of water in conflicts does not conform to dominant characteristics of resource-related conflict (Zeitoun et al., 2020). The reason for this can be argued to lie in the role of so-called ‘virtual water’. As the most strenuous water activities concern agriculture and industry the ability to import food and produce created in other parts of the world reduces the potency of water in generating conflict (Allan, 2002). In a sense, it is therefore possible for people to access the productive capacities of water elsewhere. To illustrate this, Allen (2002) analyzed the Jordan River Basin which ran out of enough fresh water *for domestic and industrial use as well as for food production – in 1970* (p. 255). While transboundary control of water was problematic, the ability to import the most water-intensive crops and access to cheap desalination services has mitigated water-based conflict in the region for over 50 years. The consistency with which scholars have been unable to infer water-based causal mechanisms in conflict implies limited societal relevance. Instead, it appears that pertinent issues related to water concern the way in which it is managed. Consequently, this empirical inquiry focuses on the politics of water as an issue of governance.

### **2.2.2: Governance**

Debates on international water governance commenced in response to the 1977 United Nations water conference. The field has since developed from a market-driven understanding of governance to perspectives from critical theory (Woodhouse & Muller, 2017). Simultaneously, scholarly investigation of governance theories in context of water management has drastically increased over the past two decades. This has led to a dynamic theoretical landscape from which various frameworks for understanding water governance have been spun. Frameworks following competing but not mutually exclusive conceptualizations of water governance as an issue of scarcity, participation, scale, markets, and network-based governance (Woodhouse & Muller, 2017). These core concepts generally fall in one of two perspectives; water governance as a requirement for sustainable development; and socio-economic relations (and inequality) as drivers of water governance. The following section will briefly address recent developments in scholarship on each of the 5 conceptualizations.

### *Scarcity*

Literature conceptualizing water governance in a paradigm of scarcity often focuses on increasing demand for water, whilst emphasizing inequality in access to water (Batchelor, 2007). This distinction was adopted by the United Nations Development Report, leading to an emphasis on effective and efficient governance as the way forward in relieving water scarcity (Falkenmark, et al., 2007). In this paradigm, increasing water demand can be explained by inefficient water use, resource wastage, and the increase of a population (*water-crowding*). Where scarcity is caused by the former, the problem is often described in technical terms and the solution sought in managing demand by increasing process-efficiency (Falkenmark, et al., 2007). When it comes to the latter, governance approaches are not as clear cut. Interestingly, some have argued that the scarcity discourse of water governance applies primarily to nation-level water governance policy. In a case study on water scarcity discourse in Jordan and Lebanon, Hussein et al. (2020) find support for the importance of water scarcity in policymaking. However, in a case study on three water basins in and around Jordan, Hussein (2019) argues that alternative governance conceptualizations focusing on ‘*regional geopolitics, inter-sectional interests, and power asymmetries*’ (p. 269) should be evaluated in explain developments in transboundary water governance.

### *Participation*

Research on the participation paradigm of water governance appears to focus on analyses of the formal inclusion of civil society (organizations) in the policymaking process surrounding transboundary water governance. In the 21<sup>st</sup> century the role of public participation in water governance has increased due to growing awareness of water as a human right and international concern for good governance (Razzaque, 2009). There are nevertheless differences between developing and developed countries concerning the level and type of public participation. In developing countries, public participation remains informal, or included in non-binding policy assessment requirements whereas developed countries often legally integrated public participation in policymaking processes regarding water. In developing countries, institutionalization generally occurred through formal directives, as is shown by Jager et al. (2016) who argue that the introduction of the European Union Water Framework Directive led to a surge in formal civil society inclusion. Still, the national socio-political climate proved strongly influential in the level of stakeholder involvement. Academic inquiry on the role of participation in transboundary water governance almost exclusively focuses on cases in the EU

and United States (US) (see for example Jager et al, 2016; Norman & Bakker, 2009; and Rivera-Torres & Gerlak, 2021). It should be noted that inquiries into participation in non-Western case studies, such as Wong's (2009; 2016) analyses of public participation in West Africa, appear more critical of its benefits for water governance. The critical argument here comes down to formal public participation perpetuating existing power dynamics in unequal communities.

### *Scale*

Traditionally, water governance research takes river-basins as the unit of analysis. In recent years, this approach has been criticized (Woodhouse & Muller, 2017). While the intuitive approach would be to understand water governance encompassing the whole river-basin that should be managed, this ideal-type governance scale does not exist (Giordano & Shah, 2014). Policymaking and international governance in the form of treaties only in about a third of the cases addresses whole river basins, opting instead to determine case by case what the operational level of problem-solving is (Giordano & Shah, 2014). It appears therefore that scientific inquiry often opts for a unit of analysis that is seldom relevant. A different approach to scale in water governance does not view scale simply as a unit of analysis, but as a hydro-social concept of "water-scape" being "an analytical tool to articulate, more explicitly, the linkages between water, power, politics, and governance" (Norman, Bakker & Cook, 2012, p. 55). What can be concluded from this is that recent scholarship has moved from a static unit-of-analysis approach to scale to a dynamic and discursive understanding that informs water governance.

### *Markets*

Inquiry into market-based paradigms of water governance traditionally focuses on the position of water in society as either a public resource, or a private property (Woodhouse & Muller, 2017). Recent critical perspectives on water governance sought to address conflicts or problems in water provision resulting from market failures. The case for markets in water governance appears problematic as its essential role in providing safety and security to citizens enshrines it as a public good. Yet most water is consumed by private industries in producing private goods (notably agriculture, manufacturing, and power production) (Woodhouse & Muller, 2016). Water governance through the prism of markets then aims at securing market functioning for each of the allocations of a water-source. Interestingly, research on markets

and water opts to talk about water *management* rather, than *governance* in discussing policy-related issues and argues that market-based instruments increase both effectiveness and efficiency of water management (see for example Rosegrant, Schleyer, & Yadav, 1995; and Filatova, 2014). Still water governance can coexist with market-based private interests. As Baer (2014) showed in the case of Chile, strong state capacity can enable market functioning in water services. The role of the state in market-based water governance has been argued to consist of the development and implementation of mechanisms harnessing the power of the market, often referred to as ‘market-based instruments’ (Hockenstein, Stavins & Whitehead, 1997; Stavins, 2003).

### *Network-based governance*

Inquiries into network-based water governance picture water as a ‘wicked’ issue area in which interests of a variety of stakeholders are embedded in social contexts and power-structures determining policy outcomes. Network-based governance can therefore be seen as an analytical lens through which water governance can be understood (Woodhouse & Muller, 2017). Network-based governance approaches traditionally conceptualize water as a common pool resource, meaning that exclusion from access comes at high costs. Common pool resources have been argued by Ostrom (2009) to require strong regulatory frameworks to govern their polycentric institutional nature. A variety of scholarship has taken to examining how governance networks function and seek to investigate under which circumstances network-based water governance can be generalized (see for example Ansell & Torfing, 2015). In a comprehensive review of EU multilevel water governance, focusing on the Water Framework Directive, Newig, Schulz & Jager (2016) find that polycentricity, meaning multipolar and multilevel network-based decision making, is not conducive to effective water governance. Notwithstanding, support for the effective network-based water governance on limited scale has been found (see for example Van Meerkerk, Edelbos & Klijn, 2015). While no consensus on effective transfer of water management approaches across scales exists, governance networks remain important for research on water management.

### *Water Governance as a Collective Action Problem*

The traditional challenges of a network-based governance approach overlap directly with discussion on scale, while presupposing water to be a common-pool resource; the participation perspective provides a take on the role of civil society in governance which shares the sentiment of government being ill equipped to be the sole water governor with market-based approaches;

and most of these perspectives build on a conceptualization of water not necessarily as scarce, but primarily poorly managed (for example in Batchelor, 2007; and Falkenmark, 2007). Indeed, determining water scarcity accurately has proven difficult as reliable data is often lacking and popular indicators fail to capture its true nature (Rijsberman, 2006). It should be noted that the quality of data on scarcity has improved over the last decade, indicating that more reliable research is likely to be published in the near future (Mekkonen & Hoekstra, 2016). While this section briefly introduced different foundational conceptualizations and approaches to water governance research, the following section will elaborate more concretely the different conceptual models used to make sense of developments in transboundary water governance. In this it will follow recommendations summarized by Tortajada (2010) for research to focus on classifying institutional characteristics of water governance through case studies. This research will therefore follow in line with work by Van de Meene, Brown, and Farrelly (2011) who characterized water governance systems Melbourne and Sydney.



### **3: Theoretical framework**

This theoretical framework will build on the traditional threefold characterization of governance approaches; hierarchical, market-based, and network-based (Van de Meene, Brown & Farrelly, 2011). As water requires a unique type of governance, the first section of the theoretical framework will briefly discuss the indicators traditionally used to analyze water governance, their shortcomings, and the components that have since then been argued to typify water governance (Biswas & Tortajada, 2010; Jimenez, et al., 2020). Consequently, these components will be addressed in three separate sections elaborating what the design specifically of water governance would be according to each of the three governance approaches. In doing so, it seeks to synthesize a framework more specifically focused on understanding water-governance while contributing to the call for more case studies in different contexts (Tortajada, 2010).

#### **3.1: From traditional to water-specific governance**

Research on water governance has exponentially developed since the early 2010s. Initially, water was considered as an ordinary field which to apply governance theories to. As highlighted by Biswas & Tortajada (2010), governance indicators used to analyze water governance were taken from the *International Country Risk Guide*, *Freedom House*, *Transparency International*, and *World Bank Country Policy and Institutional Assessment*. The indicators provided by these organizations, however, are used to generically evaluate governance effectiveness. The uniqueness of water governance has been argued to elude these generic governance indicators and theories. Part of this stems from the inherent problem in generalizing governance capabilities instead of analyzing capabilities in individual policy arenas. Another reason for the uniqueness of water governance is that water is the only naturally regenerative, yet increasingly scarce common pool resource (Jimenez et al., 2020). In the last decade, more appropriate approaches to evaluating institutional structure and effectiveness have become increasingly important in dissecting policy developments in water governance (Tortajada, 2010).

Jimenez et al. (2020) for example, developed a water governance framework based on governance functions, attributes, and outcomes. For the purposes of categorizing governance approaches, focus here will be on the governance attributes. The attributes *multilevel governance*, *participation*, *deliberation*, *inclusiveness*, *accountability*, *transparency*, *evidence-based decision-making*, *efficiency*, *impartiality and rule of law*, and *adaptiveness* are argued to

be necessary components of water governance. The traditional threefold approach laid out by Van de Meene, Brown & Farrelly (2011) distinguishes between *actors*, *processes*, *structures*, and *influences* as elements, or components determining governance approach. They categorized urban governance systems as either traditionally hierarchical, market driven, or network based. While terminology is likely to differ across research in a multidisciplinary field like governance, the established demarcation based on actors, processes, structures, and influences was developed by Meene, Brown & Farrelly (2011) to enable reliable categorization. They find that water governance systems of Melbourne and Sydney are not accurately represented by any of the three ideal types. Rather, they found support for a hybrid form of governance. In this hybrid form, network-based governance was represented by actors united by common motivation regarding each other as partners and processes emphasizing engagement and cooperation. These interactions were found to occur in a traditional hierarchical system and policy-instruments were generally market-based. It can be argued that this represents a shift from traditional regimes which are generally seen as ineffective to more effective broadly inclusive regimes (Pahl-Wostl, 2007).

The components Van de Meene, Brown & Farrelly (2011) included cover all mentioned attributes except *evidence-based decision-making*, but more importantly *multilevel governance*. The traditional threefold framework does mention differences in number of actors involved, and levels of structural flexibility but it lacks an explicit dimension of interaction between different layers or centers of power. Structural interactions on different scales remains a contested component of water governance and should therefore be included in the traditional threefold approach (Woodhouse & Muller, 2017; Ansell & Torfing, 2015). When hierarchical, market-based, and network-based governance approaches are discussed in section 3.3 the multilevel component will be included, but first the idea of a threefold categorization of governance structures will be discussed.

### **3.2: Threefold Categorizations**

Threefold categorizations of governance structures have been widely adopted by scholars examining water governance structures broadly falling in the ideal types outlined in Tables 1, 2, and 3. However, the way in which ideal types are discussed differ (see for example models outlined by Kooiman, 2000; Lange et al., 2013; and Treib et al., 2007). Kooiman (2000) bases the categorization of ‘modes’ of governance on the responsibilities attributed to different actors focusing on the distribution of agency between governmental and non-governmental actors. Consequently, Kooiman distinguishes self-governance (market-based) and co-governance

(network-based governance) from hierarchical governance. In similar vein Treib et al. (2007) differentiate models of governance by evaluating the balance of state versus societal autonomy in three distinct arenas; politics (who is involved), polity (type of institution) and policy (content). These two approaches share a focus on providing a systemically analytical approach to typifying governance structures to which the framework this analysis follows partly belongs as well. Treib et al. (2013) argue that such concrete analytically distinct categories abridge the situated complexities of governance structures. Scholars following this logic claim that water governance ought to be evaluated according to a theoretical framework “arguing that hybrid governance styles characterized by a synergetic interplay of governance modes are needed to deal with the complex governance challenges” (Pahl-Wostl, 2019, p7). While this critique highlights a potentially significant theoretical drawback to purely analytical frameworks, it does not render the approach of a threefold categorization a non-starter. It rather enables a more robust analysis through adjusting its point of departure. Concretely, this means that rather than attempting to assess which ideal governance type best explains water governance structures in specific cases, an analysis of the dynamic interplay between structurally embedded and situated components from each of the three categories or ‘modes’ of governance is required. The following three sections will discuss each typology separately and provide theoretical expectations for governance structures that will be analyzed in the empirical section of this inquiry. These theoretical expectations will provide a framework to juxtapose, compare, and contrast the influence of each of the approaches in each case, and enable an in-depth discussion of the dynamic complexities and institutional water governance structure apparent in the selected cases.

### **3.3: The Governance Approaches framework**

The following elaborates on each governance approach, what their characteristics are following the model presented by Van de Meene, Brown & Farrelly (2011), and how the approach has been treated academically in relation to water governance specifically. Each section concludes by summarizing predictions for the water governance systems of California and Northwest Florida derived from the theory discussed.

#### **3.3.1: Hierarchical Governance Approach**

Since the introduction of governance paradigms scholars have increasingly discarded the hierarchical, or traditional public administration, approaches to governance. Multidisciplinary inquiry, however, routinely finds evidence for the importance of hierarchical governance in

governance structure (Hill & Lynn, 2004; Foss & Weber, 2012). Interestingly, Rangoni (2019), in evaluating EU policymaking in energy regulation, finds that governance types cyclically move between traditionally hierarchical and alternative. Research on water governance traditionally does not focus on hierarchical governance, but research indicates that water governance systems at least partially rely on traditional hierarchies (Van der Meene, Brown & Farrelly, 2011). This could be explained by hierarchical governance implementing some components of alternative types of governance and developing over time, rather than being replaced in full (Hill & Lynn, 2004).

### *The Components*

The components *actors*, *processes*, *structures*, and, *influences*, for the hierarchical governance approach follow a traditional bureaucratic model (Hood, 1991). *Actors* are rarely autonomous and operate in a determined environment in which their main function is to follow orders. Such structured and formalized interactions between public officials in governmental organizations were thought to have become obsolete in light of the popularity of the idea of public ‘managers’ but gained new academic traction in the mid-2000s (see for example Olsen, 2006; and Höpfl, 2006). *Processes* follow a predetermined structure and are path-dependent. Decision-making processes are based on seniority and accountability towards society exists through political elections. *Structures* are formalized and difficult to adapt to context specific requirements. The responsibilities of each actor in the governance process are demarcated. *Influences* are characterized by the top-down, centralized conceptualization of power, which is ‘exercised through coercion, administrative and legal expertise, [and] procedural correctness’ (Van der Meene, Brown & Farrelly, 2011, p. 1120). Research on multilevel hierarchical governance often focuses on how polycentricity or polyarchy deteriorates traditional hierarchies. Following the characterization of hierarchical governance in this paragraph though, one could infer that in such a system, decision-making remains formalized and maximally centralized, with different governance levels being limited to executing decisions.

### *Applied to Water Governance*

Water governance has been argued to have an institutional foundation in traditional hierarchical governance approaches (Pahl-Wostl, 2019). Interestingly, scholarship on water governance structures supposes hierarchical governance to be a has-been and opts to emphasize shifts to either hybrid or network-based governance. Yet, case studies on various scales continue to find

evidence for the importance of hierarchical governance components (Van de Meene, Brown & Farrelly, 2011; Pahl-Wostl, 2019). It appears that arguments against hierarchical water governance structures are strongly normatively embedded in the presupposition that inclusive network-based governance approaches are inherently more effective in governing water at all scales (Rogers & Hall, 2003). Conclusive empirical evidence for this belief remains scarce as the contextual and inherently qualitative nature of water governance systems has not yet effectively been quantified evidenced by the repeated calls for systemic qualitative inquiries (Tortajada, 2010). However, several case studies support the possibility of the creation of inclusive non-government led institutions over time (Rogers & Hall, 2003). These case studies often focus on the socio-legal culture and the framing of a 'right to water' rather than concrete governance reforms as an enabler of non-government led institutions.

The normative belief in network-based governance as the only way to achieve effective water governance risks ignoring the institutionally hierarchical foundations to water governance (Pahl-Wostl, 2019). The concept of institutional layering should therefore be considered in evaluating the role of hierarchical components of water governance systems. In their analysis of complexity and hybridity in public administration, Christensen & Lægreid (2011) argue that institutional reforms rarely, if ever, supersede earlier institutional contexts completely but rather add on to preexisting institutional components. This process is called sedimentation or layering of administrative reform and can has been used to explain why similar reforms lead to different institutional outcomes in different contexts. The example Christensen & Lægreid (2011) provide concerns administrative welfare reforms in Norway. They find support for sedimentation rather than replacement through reform and claim that this has over time resulted in an increasingly complex governance structure. The logic of sedimentation combined with the belief that modern water governance structures originated in traditional hierarchical governance leads to the prediction that rather than market mechanisms or network-based governance wholly superseding hierarchical governance, the latter provides the institutional foundation for components of alternative governance types to be constructed on.

Table 1 Governance Description Hierarchical governance adapted from Van de Meene, et al., 2011; and Pahl-Wostl (2019)

Regime Element	Hierarchical Governance Approach
Actors	<p><i>Problem frame:</i> Separate components that can be controlled, Government as dominant actor</p> <p><i>Purpose:</i> Clear and precisely followed objective</p> <p><i>Knowledge:</i> ensure control over actors</p> <p><i>Relationship:</i> Low autonomy, follow orders, Formal Interactions</p>
Processes	<p><i>Accountability &amp; Transparency:</i> Clearly Defined and applied</p> <p><i>Continual Improvement:</i> Top-down education/learning</p> <p><i>Leadership:</i> Decisions based on authoritative, formal adjudication</p>
Structures	<p><i>Policy Instruments:</i> Regulation, Legislation, Minimum standards</p> <p><i>Administrative Arrangements:</i> Vertical, highly formalized, Low flexibility, Clear roles and responsibilities for actors</p> <p><i>Water infrastructure:</i> Large scale centralized</p>
Influences	<p><i>Authority:</i> Government, centralized power, Exercised through coercion, administrative and legal expertise</p> <p><i>Resources:</i> secured through stable mechanisms, Collective goods are produced and distributed</p>

### 3.3.2: Market-based governance

For decades, academia has focused on implementing market-based instruments through other governance structures and on determining effectiveness of private sector governance in improving sustainability practices (Von Geibler, 2013; Hockenstein et al., 1997; Rosegrant et al., 1995). In practice, the reliance on market-based governance has been on the rise throughout Western Europe, Australia and New Zealand, and the US since the 1980s (Pollit & Bouckaert, 2017). Public governance was argued to be bloated and inefficient, leading to ineffective outcomes for the public. Overhauling governmental functions to inhere market values was seen as the solution since businesses are by necessity more efficient to return the highest possible profits. Through applying the creed of shareholder value maximization to the provision of public goods, higher quality public goods would be delivered to citizens/customers against lower costs. Since then, market-based logics of public governance has been applied to most governmental functions in one form or another, including core functionalities like healthcare (Giovannella & Stegmüller, 2014) and defense (Calaguas, 2006) but extends to public transport (Watson, 2001) and water governance as well. Water is treated along private sector logic to such an extent that in most countries in which the provision of water is constitutionalized, such

as South Africa, it is done so as a commodity governed by private sector interests. While the efficacy of market-based governance mechanisms in providing public goods and managing common pool resources is contested, the paradigm has impacted existing governance structures. It is for this reason that market-based governance ought to be included in analyses of water governance structures.

### *The Components*

The components *actors, processes, structures, and, influences*, for the market-based governance approach follow the trend of New Public Management (NPM) (Hood, 1991). Each component of (water) governance institutions should embed values of frugality, leanness and purpose. *Actors* in market-based governance are rational self-interested parties driven by material benefit and profits. The actors included in public governance are not limited to governmental actors but include civil society and most importantly private sector (Osborne & McLaughlin, 2005). *Processes* follow private sector managerial ‘best-practices’ and are designed to optimize efficiency through incentivizing competitive behavior. Governance accountability is ensured through demand for public goods provided. Within processes, measurement and performance indicators are used to determine whether the output of an institution is sufficient and therefore provide the strongest accountability mechanisms. *Structures* in market-based systems are designed to improve performance and retains flexibility for actors to exercise discretion. Through private sector style (human) resource management. *Influences* are centralized and ‘exercised through entrepreneurship’ (Van de Meene, Brown & Farrelly, 2011, p. 1120). In this perspective private goods are produced (or common pool resources are managed) as much as possible through private sector actors.

### *Applied to water governance*

The belief that water should be governed through markets or market-based mechanisms originates not only from general pressure on governments to become more efficient but also from the commodification of water as an economic right in international law. The 1992 Dublin Statement effectively introduced a right to water to international law arguing that the irreplaceable value of water should be acknowledged and managed to the best of government abilities (Gore-Dale, 1992). The authors suggested that treating water as a commodity governed by private markets could be the best approach to accomplish this, articulating governance sentiments at the time (Gore-Dale, 1992; Pollit & Bouckaert, 2016). Since then, logics of commodification have become dominant in water governance reforms particularly in Africa

(Schwartz, 2008). However, evaluations of water governance regimes in countries like Australia in which New Public Management drove market-based governance find support for this trend as well (Pollit & Bouckaert, 2016; Pahl-Wostl, 2019).

Market-oriented approaches to governance are prominently represented in mechanisms and instruments applied to a structure of either network-based or hierarchical governance (Pahl-Wostl, 2019). As governments intend to make water available to all citizens, management of water resources can in most cases not be completely left to market forces as in many contexts market forces such do not direct private interest towards equitable access. Increasing water scarcity functions only to exacerbate contradictions between access for all and profits. However, in many cases governments are unable to build and maintain inhouse expertise regarding the technical aspects of water management systems necessary to retain access to water. Therefore, governments are expected in their governance structure to emphasize the role of private sector actors. This can occur for any of the components (*actors, processes, structures, and influences*) outlined above.

Table 2: Governance Description Market-Based governance adapted from Van de Meene, et al., 2011; and Pahl-Wostl (2019)

<b>Regime Element</b>	<b>Market-Based Governance Approach</b>
Actors	<i>Problem frame</i> : based on economic considerations, Focus on material benefit/profit <i>Purpose</i> : efficiency <i>Knowledge</i> : To provide competitive advantage <i>Relationships</i> : Independent relationships, Autonomous, Public seen as customers
Processes	<i>Accountability &amp; Transparency</i> : Decisions based on consumer preferences <i>Continual Improvement</i> : Emphasis on private sector management practices <i>Leadership</i> : leadership through innovation <i>Cooperation</i> : for purpose of profit
Structures	<i>Policy Instruments</i> : Full cost of policies & incentives are used, Establish performance standards <i>Administrative arrangements</i> : Highly flexible, focused on service provision, independent regulation, Central Principal with local actors
Influences	<i>Authority</i> : Centralized power with autonomous actors, Power exercised through entrepreneurship <i>Resources</i> : Resource allocation linked to performance



### 3.3.3: Network-based governance approach

In recent (effective) governance scholarship, network-based governance is contended to be most capable to address complicated problems situated in complex and dynamic environments (Klijn & Koppenjan, 2015). Water can be seen as a perfect example of this. Network-based governance takes the interdisciplinary nature of societal issues as a starting point for its design and in doing so radically departs from traditionally top-down hierarchical and market-based governance. However, it does not exclude traditional government nor private interest from the governance arena. The argument for the necessity of a network-based approach to water originates from competing conceptualizations only limitedly acknowledged in other approaches. The first is water as a public good to be provided or a common pool resource of which overexploitation must be avoided (Schlüter & Pahl-Wostl, 2007). The second is water as a commodity through which private interests can generate wealth (Bakker, 2007). The final conceptualization presents water as a social resource with cultural value which has traditionally been neglected in political processes governing water as this value is less easily quantifiable (Wong, 2016). Network-based governance focusing on inclusion and iterative processes of deliberation has been argued to be the only approach that can synthesize competing conceptions of water and foster (societally) sustainable solutions. Still, the belief that inclusion driven networks are the most effective way to foster inclusive outcomes is normatively driven. Considering the qualitative nature of much water governance research, it remains difficult to correlate networks with governance effectiveness.

#### *The Components*

The *actors*, *processes*, *structures*, and *influences* represented in network-based governance approaches are rooted in theories of New Public Governance and Public Value Governance (Pollit & Bouckaert, 2016). Relations between *actors* are determined by interdependence and social interactions. Within a network, parties involved seek to critically engage with each other and build trust over time. In doing so, they transition from being competing actors to cooperating partners. *Processes* differ contextually but share several core components. Generally, consensus and cooperation are sought through deliberation that aligns frames of different actors. As relations in networks are built on trust, processes are informal which exposes a trade-off with strong accountability and transparency provisions. The logic is that stakeholders' increasing trust in the network over time enables increasingly informal accountability measures. In line with this, *structures* are horizontal, informal, but most

importantly determined by context. The horizontal nature of purely network-based governance structures could be problematic if different levels of government operate in the same network without a clear hierarchy as this bears the risk of rendering regulative responsibilities opaque. This risk could be mitigated by the highest level of government acting as facilitator of a local network rather than as an actor in it. Finally, *influences* are treated as complementary to solidarity and cooperation rather than driven by relative power and self-interest. All stakeholders are heard and can engage in decision-making processes. As there are no formal structures to guarantee relative equality of influence, or to determine which interests should be considered, mechanisms of trust and interdependence are believed to foster power-solidarity.

#### *Applied to Water Governance*

The dynamic nature of water requires an adaptive style of governance that according to various leading scholars can exclusively be achieved through network-based governance approaches (Pahl-Wostl, 2007, 2019; Rogers & Hall, 2003; and Garande & Dagg, 2004). The reason for this is that traditional governance systems are less conducive to change and adaptability because they are constructed from internally reinforcing components such as legal structures, operational scale, and technological infrastructure (Pahl-Wostl, 2007). Mutual reinforcement of governance systems can become adaptive through social learning; a process in which outcomes create a context that feeds back into governance processes and consequently changes outcomes (Pahl-Wostl, 2007; Medema, Wals & Adamowski, 2014). These iterative feedback processes are inherent to the interactions between actors and structures in the network-based governance approach outlined above. Social learning is by no means the only important component of network-based water governance but is exemplary for the driving mechanisms behind it.

Within networks, the role of the government is that of facilitator or *meta-governor* (Grafton et al., 2016). “Meta-governance by the state implies coordination, monitoring and steering of governance arrangements and the interplay between different governance instruments” (Pahl-Wostl, 2019, p. 9). It acknowledges a fundamental critique of ideal-type network-based governance in ensuring legitimate good governance practices and takes a high level of government with provisions for accountability, transparency, and equity as a point of departure for the functioning of a network (Theesfeld & Schleyer, 2013). In a document analysis of water governance structures in a variety of developed and developing economies, Pahl-Wostl (2019) indeed found support for the role of governments as meta-governors in networks. This perspective most explicitly displays the interconnectedness of different

approaches to water governance. Additionally, this view of a hybrid network-based governance engages actively with potential tensions between different levels of governance.

Table 3: Governance Description Network-based governance adapted from Van de Meene, et al., 2011; and Pahl-Wostl (2019)

<b>Regime Element</b>	<b>Network-based Governance Approach</b>
Actors	<p><i>Problem frame:</i> Holistic system and inclusion  <i>Purpose:</i> Working together, based on building trust  <i>Knowledge:</i> Developed through deliberation  <i>Relations:</i> Considered as partners  Identity is important in motivating actors</p>
Processes	<p><i>Accountability &amp; Transparency:</i> Context dependent, facilitated by discussion  <i>Continual improvement:</i> Emphasis on cooperation and negotiation  <i>Leadership:</i> Facilitating, Decisions based on consensus</p>
Structures	<p><i>Policy Instruments:</i> Strong horizontal focus,  <i>Administrative arrangements:</i> Moderately flexible, Context Dependent  <i>Water Infrastructure:</i> Decentralized</p>
Influences	<p><i>Authority:</i> Distributed power and resources  Power exercised through trust  <i>Resources:</i> Public goods are produced from a motive of solidarity.</p>

## **4: Research Design**

Research on water governance continues to emphasize the importance of context and a hitherto apparent inability to successfully generalize analyses of governance modes. As a result, the epistemological aim of water governance research is to describe the particularity of contextually unique systems of governance. While quantitative research has on occasion been utilized in attempts to establish generalizable principles and sets of rules and relationships in water governance, most inquiries adopt a mixed methods approach (see for example Norman & Bakker, 2009). A qualitative methodology is better equipped to thoroughly understand the dynamic nature of water governance cases (Becker, 1996). The reason for this is that the complexities inherent to governance modes is difficult to capture in reliably quantifiable variables and measurement validity is therefore often problematic. Qualitative inquiries enable more in-depth analyses of individual cases but lack the generalizability of findings. Yet, to understand which components constitute governance modes, conferences on water governance suggest the need for at least 10 in depth qualitative case-studies of water governance systems (Tortajada, 2010). Consequently, this research design departs from the assumption that governance systems are the outcome of a dynamic set of interactions between actors involved which can best be understood through a qualitative lens. The following research design will elaborate on the specific qualitative approach taken and what its theoretical benefits and limitations are. Subsequently the case selection will be justified, and data collection and analysis will be discussed. The research design will conclude by assessing the validity and reliability of the chosen methodology.

### **4.1: Research approach**

This research followed a comparative case study approach to evaluate the developments of governance modes applied to water in California and North-Florida. Comparative case studies, as argued by Bartlett & Vavrus (2017) follow two logics of comparison, “compare and contrast” and “tracing.” The former is relatively self-explanatory. Discussing two cases enables a researcher to examine at which points the cases display similar or different characteristics. The “tracing” logic implies internal comparison of the dynamics and processes on display within cases. Including this second logic enhances the case study through embedding it in process-oriented research which ‘tend[s] to see the world in terms of people, situations, events, and the processes that connect these’ (Maxwell, 2013, p.29). The comparative case study approach has been utilized in research ranging from education policy (see Carney, 2009) to

water governance (see Van de Meene, Brown & Farrelly, 2011; and Pahl-Wostl, 2019). These approaches include primary and secondary documents, as well as interviews as data-sources. Comparative qualitative research approaches are by no means uncontested. Critics argue that a focus on comparison negates the value of case studies by diverting attention from lessons learnt within individual cases (Bartlett & Vavrus, 2017). However, integrating a process-oriented approach through the logic of tracing synthesizes the benefits of basic comparative research and an individual case study design. While an individual case study could be sufficient to apply the proposed theoretical framework to, the comparative design enabled a stronger evaluation of the contextual nature of governance modes.

## **4.2: Case Selection and Background**

### **4.2.1: The California State Department of Water Resources (California DWR)**

The California DWR is responsible for the governance of all water within the United States' most populous state. Within its water governance responsibilities, the California State Water Project, commonly referred to as SWP, is of particular interest to this research. SWP is the project the California DWR erected to capture water in Northern California and redistribute it to the extended arid zones closer to the Mexican border. In this region, increased environmental extremities and global warming have caused a highly unreliable water supply, necessitating effective governance of limitedly available water. To illustrate the severity of water shortages: since 1990, the Colorado river, being the dominant source of water for California, has only reached its river mouth in Mexico close to the US border once. The SWP is the largest water governance project in the US. It is described by the California DWR as 'a multi-purpose water storage and delivery system that extends more than 705 miles – two-thirds the length of California.' The SWP being the dominant governance instrument in water management in the state of California is the reason why this research opts to analyze Californian water governance on this scale, rather than on the scale of individual river basins or catchment areas.

While the SWP has been active since the early 1960s, this inquiry will focus on the decade starting in 2008 and ending in 2017 (the most recent year for which data was available). The reason for the selection of this period is that the California DWR released an extensive revision of the State Water Plan, which is the main document outlining the future of water policy in California, in 2013. This means that the analysis will cover the six years leading up to the Water Plan Update (including 2013), and the most recent four years since its publishing. The Water Plan was revised again in 2018, but this revision is far less extensive than the 2013 update and no data for the years after 2017 was available. The primary data used for the case study was

derived from the annual report on the Management of the State Water Project, referred to by the California DWR as Bulletin-132. Bulletin-132 has been issued since 1963 and has had the same structure over the 2008-2017 period selected.

#### **4.2.2: The Northwest Florida Water Management District**

The second case selected concerns a much smaller geographic area and affects a considerably smaller number of people. The case is one of the five Water Management Districts in Florida, servicing roughly 1.3 million people, namely the Northwest Florida Water Management District (NFWFMD). Contrary to California, the Florida Department of Environmental Protection, being responsible for the governance of the state's water resources, divided the territory of the state into five districts in the 1972 Water Resources Act. These districts represent the actualization of Florida's intention to manage water on a regional level monitored by the state. Consequently, NFWFMD covers six large hydrologic basins.<sup>1</sup> An additional distinction between Florida and California concerns their respective access to water. Where California is predominantly arid and water is scarce, Florida has an abundance of water and has tasked the Water Management Districts to focus on sustainably managing water resources in the face of considerable expected population growth (EPA, 2013). While this scale seems considerably smaller, the number of river-basins that each governing body is responsible for is comparable as the state of California is responsible for ten river basins, with the SWP managing five districts.

The NFWFMD will be analyzed for the same period of ten years starting in the 2008/9 year. The choice for this period was based on macro-contextual congruence to enable more effective comparison between the two selected cases. As the state of Florida mandates annual updates of the Water Plan and long-term Water Resource Management Plans for all management districts, it is difficult to isolate an individual moment that initiated changes in governance mode in the NFWFMD case. However, the state government mandated these annual water plans from 2014 onwards, meaning that for 4 of the selected years (2014/15-2017/18), Water Management Plans are available. Additionally, each management district is required to provide a Consolidated Annual Report (CAR) which evaluates the districts' water management practices. NFW Water has provided these records in highly similar format and

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<sup>1</sup> "Perdido River and Bay System, Pensacola Bay System (Escambia, Blackwater and Yellow Rivers), Choctawhatchee River and Bay System, St. Andrew Bay System, Apalachicola River and Bay System and St. Marks River Basin (Wakulla River)" (Northwest Florida Water Management District, n.d.)

content, more so than any other management district, enabling a more reliable systematic analysis.

### **4.3: Data Selection**

The documents that will be used for this analysis, outlined above to be the Bulletin-132 documents for California and the CARs for NWF Water, are too broad in scope and substantial in size to analyze fully. Documents for both states cover everything from ‘Strategic Water Management Plan Annual Reports’ and ‘Annual Five-Year Capital Improvement Plans’ to environmental reports on annual flow levels and ‘Alternative Water Supplies.’ The combined total number of pages for all documents exceeds 7000. As the documents follow a fixed structure, it was possible to systematically analyze specific sections of the documents for each year, rather than sifting through each document and determining ad hoc what content is relevant. The sections of Bulletin-132 documents used are *Chapter 1: The State Water Project* and *Chapter 5: Local Assistance*. These chapters were selected as they address both general evaluations of the functioning of the SWP, as well as its specific projects and actors involved with the SWP. Analyzing the same chapters for each of the ten years ensures analytical coherence and increases the reliability of the research. Considering the NFWFMD, *Chapter One: Strategic Water Management Plan Annual Work Plan Report* and *Chapter Four: Water Supply* were taken from each CAR starting in 2009 and ending in 2018. This content most explicitly engaged with the active governance of the water management district and the way in which various actors interact in the projects the NFWFMD undertakes.

As these documents are drafted and published by government bodies, they carry a bias in favor of the role of government in water management. However, the documents selected provided the only set of documentation that could be systemically analyzed over a longer period. Additionally, only one document type was selected for the analysis of each case. This is customary for water governance evaluations as is shown by Pahl-Wostl’s (2019) analyses which only use a single document to evaluate a range of national water governance systems. Consequently, the choice was made to utilize the only documents steadily available throughout the ten-year period analyzed to favor reliability and analytical coherence. In total 628 pages of content, roughly evenly divided across the two cases, were thoroughly coded and included in the analysis.

#### 4.4: Data analysis

The selected text documents were exported to Atlas.ti and systemically coded. Traditionally, qualitative coding tends to be inductive rather than deductive. For the purposes of this inquiry however, a set of codes was deduced from the literature discussed in section 3.3. Using a deductive method introduces the risk of expectation-bias, implying that the researcher focuses only on those components that coincide with their expectations, rather than remaining open to alternative explorations of the analyzed data. To mitigate this risk, the data was coded according to the following strategy: first, an open coding approach was included with the coding of the documents following the predetermined code tree (see Table 4). Consequently, the researcher analyzed whether significant axial concepts code be derived from these open codes. Additionally, understanding the interoperability of theoretically mutually exclusive codes is necessary to emphasize the dynamic nature of water governance systems. This attitude to the coding process minimized the risk of expectation or categorization bias based on the theory. The results of the coding process will be discussed in chapters 5 & 6. The predetermined set of codes was based on an extensive body of public administration literature, developed since the early 1990s (see for example Hood, 1991) but refocused towards water governance in the contributions of Van de Meene, Brown & Farrelly (2011), and Pahl-Wostl (2019). The latter inquiries qualitatively analyzed the three governance modes, the former through interviews and the latter through the analysis of public management evaluations published by the relevant departments in 8 nation-level water management cases.

*Table 4. Code Scheme Taken from Van de Meene, Brown & Farrelly (2010) and Pahl-Wostl (2019)*

<b>Governance approach</b>	<b>Component</b>	<b>Sub-component</b>	<b>Description</b>	<b>Codes</b>
<i>Hierarchical governance</i>	Actors	Problem frame	System viewed as separate components which can be controlled	System management, process management, tracking progress
		Purpose	Motivated by clear and precisely followed objective	Long term planning, structured decision making, goal/target
		Knowledge/skills	To ensure control and increase ruling power	Measurement tools, security & risk management.
		Approach to relationship	Directive and formal	Government led, Impartiality, formalized relationship, pressure to perform



Process	Accountability & Transparency	Formal processes to ensure accountability and transparency	Clear processes, independent scrutiny, structured accountability
	Continual Improvement	Top-down education & learning	Formal evaluation, formalized education, structured feedback
	Risk Management	Risk is controlled and underwritten by government	High risk, failure not acceptable, responsibility to succeed
	Leadership	Strong, formal leaders	Top-down authority, consistent direction,
	Cooperation & Collaboration	Formal partnerships & structured cooperation procedures	Formalized contracts, role specification, consultation of other governmental actors
Structures	Infrastructure	Large scale, centralized infrastructure	Centralized infrastructure, water grid, dam infrastructure
	Policy Instruments	Regulation, legislation and minimum standards are used	Legislation, regulation, minimum standards
	Administrative arrangements	Responsibilities are clear and centralized. Public sector is responsible for management	Clear responsibilities, public sector management, centralized regulation
Influences	Authority	Government centralized power, enforced through top-down mechanisms	Top-down, government decision
	Resources	Funding secured through formal and stable mechanisms	Funding stability, in house capacities

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*Market based Governance*

Actors	Problem frame	Economic approaches are used to analyze the system and decide how to deliver services	Efficiency, economics, commercial, cost-effective
	Purpose	Efficient delivery of water services to customers	Emphasis on output, commercial awareness, low-cost
	Knowledge/skills	To provide competitive advantage	Key externalities, market orientation, cost-benefit
	Approach to relationship	Focus on responding to customer needs	Customer-focused, flexibility, government as deliverer of services

Process	Accountability & Transparency	Ensured by consumer choice and informed consumption	Customer protection, competitive neutrality,
	Continual Improvement	Change through market innovations and incentives	Market-led innovation, adopting private sector solutions
	Risk Management	Some risk is shared between private & public organization where appropriate	Open risk management, risk taking
	Leadership	Leadership through innovation	Private sector assertiveness in strategy
	Cooperation & Collaboration	Partnerships for specific purposes involving profit generation	Joint venture, service delivery partner, consultation of non-governmental actors
Structures	Infrastructure	Infrastructure evaluated on economic efficiency, enabling trading of water	Consumer prices, scale advantages, merit-based investment
	Policy Instruments	Full cost of policies & incentives are used	Efficient Pricing, rebates
	Administrative arrangements	Responsibilities are focused on service provision and independent regulation involving private sector	Private sector involvement, private sector evaluation, independent regulator.
Influences	Authority	Power decentralized with consumers but centralized regulation with clear separation between public/private responsibilities	Consumer choice, separation of responsibilities
	Resources	Funding secured through incentives, outsourcing expertise	Outsourcing, consultancy, third parties

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*Network based Governance*

Actors	Problem frame	System viewed holistically, including examining impacts on wider environment	Awareness of sustainability, connection to wider environment, water as a component of ecosystems
	Purpose	Taking responsibility, working together to achieve outcomes	Open access to governance, collaboration,
	Knowledge/skills	To understand links between physical and social systems; knowledge as a shared good	Interdisciplinary approach, diversity, inclusion

	Approach to relationship	Focus on genuine engagement & connection with others	Long-term engagement, trust building, respect for actors involved, government as partner in network
Process	Accountability & Transparency	Facilitated by communication openly and debating issues	Debate, information sharing, open access, participation
	Continual Improvement	Learning through experience and questioning current approach	Reflecting on current status
	Risk Management	Risk is shared and reduced through communication and information	Open communication of risk, sharing of information, focus on potentially disadvantageous outcomes
Structures	Leadership	Through influencing, encouraging, and supporting others	Facilitating, guiding influences
	Cooperation & Collaboration	Partnerships based on needs	Interactive, value creation, consultation of the public at large
	Infrastructure	Decentralized infrastructure tailored for context requirements	Site specific, focus on context,
	Policy Instruments	Learning and capacity building	Focus on capacity building, holistic approach to learning for all stakeholders, collective advantages
	Administrative arrangements	Responsibilities facilitate cooperation as local level; some community management	Cooperation with community, local management, working together
Influences	Authority	Power decentralized and actors integrated by norms, individual responsibility is emphasized	Empowering individuals, focus on norms
	Resources	Resources developed within collaborative organizations; focus on culture in capacity development	Focus on including the 'right' people, organizational culture, decentralized funding

## 4.5: Considerations

The choice for a qualitative comparative case study was made as the interpretive nature of both water governance regimes and governance theories benefits from in-depth analysis rather than empirical generalizability. This enabled the evaluation of the interdependence or coexistence of theoretical components of each theory and allowed the elucidation of dynamic concepts that cannot be reduced to quantifiable analytical data. The choice for a comparative case study design was made to enable the evaluation of two cases in similar contexts but operating at a different scale to evaluate whether their dynamic categorization differs and how this aligns with the theoretical framework outlined in chapter 3.

Using readily publicly available documents increases the reliability of the study as the content of documents is inherently stable. As the researcher is not responsible for constructing the data, the researcher cannot influence it. The downside of this is that researchers do not know whether the documents have been constructed objectively, or whether they are meant to support a narrative. Data collected through any qualitative methodology is likely not to be objective. However, this is not problematic for the inquiry at hand. A potential limitation of this methodology concerns a bias favoring the inclusion of dominant perspectives in the policy documents. What this means is that potential marginalization of specific perspectives will not become apparent from the inquiry. This could be of particular importance given that both California and Florida have a significant Hispanic community whose role in the governance process might not be accurately represented in the documents produced and released exclusively in English.

The validity of the analysis is enhanced by using a coding scheme that has been used in theoretically similar examinations of different cases. A specific strength of analyzing several issues of the same document over a period of multiple years is that it enables researchers to track developments over time (Bowen, 2009). Additionally, the exposure towards ethical issues with designing and conducting research is limited in this case. The most prominent ethical issues “include anonymity, confidentiality, informed consent, [and] researchers’ potential impact on the participants and vice versa” (Sanjari et al., p. 1). None of these issues apply to the analysis of policy documents.

## **5: Results**

The following sections illustrate how different components of the management of the SWP and the NFWMD exemplify theoretically competing governance approaches. The analysis aims to highlight not just how differing elements are concurrently apparent in either of the four categories analyzed, but how seeing them as simply a hybrid governance structure fails to capture the nuanced interdependent and interrelated components that construct the governance approach of the DWR and the NFWMD respectively. In doing so, it simultaneously contributes to the body of literature on water governance and offers a potential nuance to the theoretical approaches taken thus far. Sections 5.1.1 & 5.2.1 will highlight each theoretical category (Actors, Structures, Processes, and Influences) separately for each case.

### **5.1: The California DWR**

In broad lines, the structure of the DWR's management of the SWP centralizes governance authority on a statewide level. The different projects the SWP engages in are separated based on content rather than scale and managed statewide accordingly. This approach within the management of the SWP remained stable, implying a persevering tenacity of state governance as the dominant scale on which water is managed. Take for example the Water Use Efficiency Branch responsible for the statewide integration of water management activities. This division has, throughout the period analyzed, retained the same responsibilities which include increasing "water use efficiency by promoting increased use of non-conventional water sources (...) through planning, technical, and financial assistance." In the period between 2009 and 2012, such activities focused on government-initiated projects to increase water use efficiency but in later years the shift focused to including a wider variety of stakeholders in decision-making processes. This example highlights a direction of developments within the management of the SWP that appeared consistent for all elements analyzed. In combination with the consistency of the types of projects and processes managed by the DWR this implies a level of rigidity characterizing SWP. A potential explanation for the state centered scale of operation is the fact that since the initiation of the SWP in 1963, responsibility for the management of California's statewide water infrastructure has remained with the DWR. The following will discuss whether this has implications for each category and what these implications would be.

### 5.1.1: The Components

#### *Actors*

Considering the role of actors in the management of the SWP, the coding process showed an emphasis on formalized relationships with all non-state actors. When information was sought from focus groups for example, this was done formally, and all non-governmental institutions were subjected to elaborate contracts determining how organizations cooperate. Interestingly, relations with other state-level organizations occurred in a less structured manner throughout the 10-year period analyzed. Network and market-based approaches to relations were observed sporadically and do not appear to indicate a thematic development. This indicates a hierarchical governance approach to interactions, which is corroborated by the purpose and intent of the actors involved, which simultaneously displayed traditionally hierarchical components like *long term planning* to achieve institutionally determined goals as well as an emphasis on collaborative efforts in doing so. The incidence of an emphasis on collaboration, traditionally attributed to network-based governance approaches, increased throughout the 10-year period analyzed. This finding should be nuanced, as collaboration occurred predominantly between government institutions on different levels. The DWR for example collaborated “with water and drainage districts and local entities” to manage water resources. Still, the shift away from strictly hierarchical implementation, to a multilevel albeit government central approach to actors involved is noteworthy.

When it comes to the way in which problem frames are defined and utilized by the dominant actors involved, a mix between market-based and network-based governance approaches was discerned. The DWR frames the management or maintenance of water resources simultaneously in an economic issue as well as an environmental issue which exists within, impacts, and is impacted by a wider ecosystem. The purpose of the DWR, as mentioned throughout the evaluation of most documents, is to “adopt long term solutions (...) [leading to] economic sustainability.” While environmental goals can be seen as inherent to the management of water, the explicit emphasis of taking economic sustainability, commercially viable solutions, and economic acceptability strongly suggest that the purpose of the DWR is market oriented. In the case of the SWP, this market orientation was dominant in the first five years, but increasingly focused on having processes and decision-making being informed by formally consulting a wide variety of commercial and community-based stakeholders. This indicates a transition from the dominance of government pursuing market-based goals to

government including stakeholders on multiple levels to develop an interdisciplinary perspective on the (economic) sustainability of projects.

### *Structures*

The structural arrangements for the management of the SWP present a strong representation of hierarchical governance elements. This is exemplified by the clear demarcation and outline of responsibilities, and the way these responsibilities are justified. Top-down decisions by either the governor, the state legislature, or federal legislation determine specifically what the roles and responsibilities of the DWR are in managing each component of the SWP. The centralization of statewide responsibilities can be argued to originate in the ownership of all SWP infrastructure by the state, as has previously been discussed. However, the establishment of clearly separated responsibilities remains important for all components of the management of the SWP. Still, the analyzed documents show the DWR increasingly focused on structurally including local governments and communities in the development and implementation of water management projects. A concrete example of this is the introduction of grants to enable disadvantaged communities to get involved in Integrated Regional Water Management Plans:

*DWR made \$5 million available for planning grants (development and update of IRWM plans) and made at least \$51 million available for the IRWM Disadvantaged Communities Involvement Program, to ensure the involvement of disadvantaged communities, economically distressed areas, and underrepresented communities in IRWM planning efforts.*

Analysis of recent years shows an interesting development in the structural use of policy instruments by the DWR and the state government in directing the actions and responsibilities of the DWR respectively. Policy instruments were found to increasingly be aimed at either fostering collective advantages or develop a more holistic approach to the structural integration of relevant but often underrepresented stakeholders (see quote above). However, how this occurred was increasingly hierarchical. Regulations, legislation, and executive orders from the governor, for example, directed the DWR to emphasize inclusion and sustainability in water management, with the reports increasingly turning to regulations and legislation to justify developments in the governance of the SWP. The following quote exemplifies in concrete terms, how the structure of water governance in California transitions towards the inclusion of

a wider variety of stakeholders, to then justify this process by means of the traditional regulatory hierarchy:

*DWR and four other State agencies (...) undertook a comprehensive stakeholder process to develop a long-term framework to make water conservation a California way of life, as directed by the Governor's Executive Order B-37-16, issued on May 9, 2016.*

It should be noted that the first five years of analyzed documents did not utilize top-down legislation or regulation to justify developments in structures.

### *Processes*

The processes by which the DWR manages the SWP do not neatly fit any type of categorization. The accountability and legitimacy of DWR activities for example, were addressed through the explicit clarification of all processes involved with the management of water resources, or by referring to documents in which processes were clarified. While this can be considered a component of a hierarchical governance approach to organizational processes, there is a distinct lack of reference to concepts like 'independent scrutiny' and 'structured accountability mechanisms.' Following a market-based paradigm, the DWR explicated for example competitive tendering processes in which it has contingencies in place to ensure competitive neutrality. Yet, this does not address internal process accountability. A general direction for the development of internal processes can be distilled. Over the 10-year period, the emphasis shifted towards open access, debate, and participation at all operational stages, indicating a shift to market-based governance.

When it comes to mechanisms to foster continual improvement, a mix between a market-based and hierarchical governance approach can be discerned. Formal evaluation of processes and structured forms of feedback were established throughout the documents. For example, the "DWR is required to report to the Legislature by the end of 2016 and make recommendations on needed changes if the State is not on track to meet per capita [water use reduction] targets." As a result of process evaluations, the DWR extensively emphasizes the importance of "best management practices" based on private sector management strategies in improving the DWR's functioning. To promote the adoption of private sector approaches, the DWR even initiated a grant program which "provided funds for implementation of all urban best management practices and agricultural efficient water management practices (EWMPs) that would result in local, regional, and statewide benefits."



Regarding leadership and cooperation, the processes within the management of the SWP follow the authority of the DWR as the central governing body. The analyzed documents did not display programs, projects, or developments within water management that were not spearheaded by the government. However, it did acknowledge extensive cooperation and consultation of various stakeholders, both private sector and community oriented. Formalized cooperation between the DWR and these non-governmental actors were referred to with similar frequency as to cooperation between the DWR and other governmental institutions. Still, the aim and direction of these consultations were determined either by the DWR or by the state legislature.

### *Influences*

Decision making and general functioning by the DWR in managing the SWP is influenced predominantly through the hierarchical authority within the wider structure of the California state government. Especially in the first half of the 10-year period analyzed, either the DWR or the state government was ultimately responsible for determining the direction of developments in water governance. Management plans are for example evaluated and implemented by the DWR Division of Statewide Integrated Water Management, rather than through joint ventures with private sector organizations or in cooperation with the public. Aside from this influence through authority, the DWR promoted water management capacity building for public agencies, for example through the Integrated Regional Water Management (IRWM) grant funding: “In June 2008, DWR awarded thirty-one local public agencies Local Groundwater Assistance (LGA) grants with \$6.4 million in grant funding. Twenty-one received their maximum requested grant amounts. Four agencies received capacity building grants worth \$50,000 each.” This quote taken from the 2009 annual management report highlights initial efforts to develop water management resources within the governmental hierarchy. Interestingly, this mostly applies to building the capacity of local public agencies to implement directions and regulations developed by the DWR.

While the documents did not display a shift in dominance of the authority of government within California’s water management, analysis showed subtle shifts towards including a wider variety of individuals in informing decision-making processes. As mentioned before in the sections on *structure* and *actors*, the DWR formally included community and private sector stakeholders, specifically farmers, in developing interventions meeting stakeholder needs. Specifically, the funding of projects attempting to empower individuals

from (economically) disadvantaged communities in the second half of the 10-years included in the analysis displays this shift. This, in combination with extensive government outreach and education programs, shows a shift in focus towards network-based resource/capacity building.

Additionally, documents for the last three years analyzed displayed the introduction of norms centralizing a holistic concept of (private) individuals and Californian society at large in its water governance. Concretely, this refers to the 2016 Executive Order in which the Governor directed a variety of state agencies to develop in cooperation with the public “a long-term framework to make water conservation a California way of life.” This resulted in the DWR initiating “a series of public listening sessions (...) [and] stakeholder meetings”. These two developments display a subtle shift in the category *influences* from exclusively hierarchical to increasingly including network-based elements.

### **5.1.2: Concluding the California DWR**

The analysis of the DWR’s management of the SWP showed how the components *actors*, *processes*, *structures*, and *influences* cannot be characterized by a single governance approach. Additionally, the analysis showed it is potentially problematic to determine a hybrid framework based on the categorizations of each of the components individually. Doing so in the case of California would neglect the interplay between different elements of governance approaches that often simultaneously determine the character of the DWR’s approach to water governance. This idea will be developed further in chapter 6.

The component *actors* can be characterized simultaneously by its government centricity and relative hierarchical rigidity which over time developed towards a more dynamic approach to stakeholders focused on inclusion, adopting a problem frame synthesizing market and network-based governance approaches. In evaluating *structures*, components of network-based governance were found to complement an existing hierarchical governance-based framework with clear responsibilities and top-down management. The DWR’s process management could not clearly be characterized but a shift towards network-based governance process management through participation and open access was discerned. Additionally, components of hierarchical and particularly market-based governance emphasizing best management practices were found in the DWR’s *processes*. Finally, hierarchical governance remained dominant for the *influences* component of the DWR, slowing subtle transitions towards enabling influences of non-government actors like farmers and individuals to help shape the long-term development of water governance.

These findings support the idea of layering in which traditionally hierarchical elements of governance provide a foundational structure on which elements of alternative governance approaches, in this case predominantly network-based governance, are implemented. Additionally, the functioning of market-based governance elements within the California DWR did not follow the theoretical expectation of strong emphasis on private sector actors throughout all elements. Conversely, the discussion will show that market-based governance was represented in a theoretically unexpected, yet influential way. The network-based governance theoretical expectation of the functioning of the California DWR as a meta-governor is not supported by these results as dynamic elements of network-based governance manifested in the internal functioning of the DWR rather than in its role in a wider governance network.

## **5.2: The NFWWMD**

In Florida, the Water Management Districts are not responsible for constructing, maintaining, and managing water infrastructure. These responsibilities are given to local counties and cities. As a result, the NFWWMD is structured around seven regions for which it operates. Based on evaluations of regionally contextual requirements, the District determines what should be done to ensure effective water management throughout Northwest Florida. Interestingly, a project that has been consistently promoted for all regions concerns the interconnection of institutionally decentralized infrastructure. Consequently, the District maintains both a regulatory and facilitating function in which it synthesizes legislative requirements imposed top-down with local context formal and informal collaborative networks, whilst adopting a market-based rhetoric in performance measurement. For each of the following sections discussing Actors, Structures, Processes, and Influences respectively, the development of the District's governance approach will be evaluated, and the most notable takeaways will be explained.

### **5.2.1: The Components**

#### *Actors*

In the case of the NFWWMD, the relationship between actors involved is marked by a combination between elements representing hierarchical and market-based governance. One coding category, which highlights a thematic similarity between the two governance approaches, namely *pressure to perform*, was disproportionately represented. Throughout the

10-year period analyzed, the emphasis on the institutional pressure to perform steadily increased. However, this pressure to perform is inextricably linked to market-based elements of performance measurement and commercially oriented evaluations of organizational performance. This link was discerned for the problem framing and creation of knowledge as well. Use of measurement tools to evaluate institutional effectiveness were often used to enforce performance measurement standards, exemplified in the following:

*The established target for ERP is 100% timely issuance of qualified permits. During FY 2010-2011, 370 permit applications requiring action during the fiscal year were received. Of these, five were transferred to DEP, two were denied for failure to respond, and 23 were withdrawn. The remainder met conditions for issuance and received permits. None fell outside of the 90-day period, signifying the program continues to be implemented in an efficient and effective manner.*

What this indicates is that rather than being a collection of elements representing isolated governance approaches implying a hybridity of governance, the elements used to analyze the position of actors in the NFWFMD display a unified approach that simultaneously embeds and synthesizes multiple governance approaches into one. Conversely, the problem frame adopted in the NFWFMD is dominantly market-oriented, regularly emphasizing cost effectiveness and price efficiency as leading considerations in the evaluation of projects and activities. Over the analyzed timeframe, the way actors engaged with the problem of water management developed to include sustainability for communities involved, yet never departing from the leading focus on costs. Considering the inclusion of actors, the NFWFMD emphasized collaboration extensively. From the documents analyzed, the role of the District as a node in a multilevel governance network including Federal, State, and local governments became clear. This culminated in collaboration becoming a normative goal for the District, which based performance evaluations of several District wide programs on whether collaboration with a wide variety of commercial and community stakeholders was achieved. The importance of collaborative efforts between multiple levels of government, with a focus on community outcomes on a local level strongly indicates a network-based governance approach to the actors involved in Florida's water management.

### *Structures*

The structures of water governance within the NFWWMD are generally earmarked by regulatory decentralization and the focus on local communities. Concretely, the structure of the District is divided according to regions and each region is contextually evaluated. Consequently, regulations and programs are designed to match the needs of individual regions. This means that a substantial amount of the responsibilities of the District are structured around towns, cities, and counties. In line with a network-based governance approach, the administrative arrangements of the NFWWMD are geared towards enabling communities to develop their own capacities. This was represented throughout the documents analyzed in statements to the effect of “The District continued to assist rural communities in the development of sustainable water supplies”. Interestingly, the water management infrastructure in the NFWWMD is managed at a local level, which is in line with the development of its administrative structures to emphasize local and community agency in water management, as well as an emphasis of the importance of individuals representing different agencies ‘working together’ to attain their goals. However, the District initiated several projects to interconnect water infrastructure to enable wider regions to aid in mitigating water shortages and provide additional water flow possibilities in the occurrence of heavy rainfall. This highlights how the district operates within a dynamic structure of local management systems and seeks to use this structure to create collective benefits for local communities.

This network-based focus is juxtaposed by the policy instruments the District can use to reach its desired outcomes. The policy instruments the District has at its disposal are overwhelmingly regulatory and legislative. Concurrently, the responsibilities of the District and the structure by which it manages water resources in Northwest Florida are determined by statewide legislature. “In 1997, the Florida Legislature amended the Florida Water Resources Act (Chapter 373, F.S.) to provide direction to the state’s five water management districts on regional water supply planning. This amendment provided a two-step process that involves: (1) dividing the jurisdictions of each water management district into water supply planning regions and assessing the water supply needs and sources of each region; and (2) developing regional water supply plans for those regions identified as either having, or being likely to develop, future water supply constraints.” This indicates that the collaborative and network-based outcomes of the (administrative) structure of the NFWWMD are rooted in the overarching hierarchical legislative design of the state of Florida.

### *Processes*

The processes of the NFWFMD can clearly be categorized as a hybrid governance component in which competing governance approaches are represented in distinct process management. Firstly, accountability and legitimacy of processes is enhanced by formal evaluations of the planning and functioning of the District, which is conducted by the state Department of Environmental Protection. These evaluations are consequently used to enhance the functioning of the District. As the district is actively responsible for the local or regional implementation of a variety of projects, it also conducts evaluations of said projects to assess whether they are adequately managed. This formalized evaluation has been statutorily mandated: “Provisions of Chapter 62-40.520, Florida Administrative Code (F.A.C.), require the District to include within the DWMP a procedure for evaluating progress toward implementing the plan on an annual basis.” This is indicative of a hierarchical governance approach.

Secondly, cooperation with other organizations focused either on local governments or private sector organizations, including utilities. In establishing several hydrological evaluation models and in predicting the necessity for certain regions to actively change their water management strategy the NFWFMD consulted extensively with private sector parties and turned to private sector solutions to increase organizational effectiveness. While the scale of implementation and governance remained local throughout the period analyzed, community stakeholders were not actively engaged in development processes. Rather, the consolidated annual reviews emphasized the value of for example the implementation of IT solutions in increasing service delivery efficiency. Interestingly, these developments are geared towards increasing public access to services provided by the District and distribute knowledge about the governance process. It appears therefore, that the development of internal processes in the NFWFMD are driven by a market-based governance approach.

Finally, the District’s leadership is characterized by its focus on facilitating the capacity development of other actors involved. Whether this entails assisting local governments like “the Eastpoint Water and Sewer District in test well development and aquifer testing,” or providing “technical assistance to farmers, primarily within the Jackson Blue Spring contribution area, to improve irrigation efficiency,” the NFWFMD facilitates actors in its management network to effectively manage water resources. The ability for the District to do this is embedded in a broader framework in which the state government and the District cooperatively determine a long-term direction for regional and local water management. This indicates a prevalence of network-based governance against the backdrop of a hierarchical governance framework in the process management of the NFWFMD.

### *Influences*

The structuring of influences in the NFWFMD can be categorized as government centralized. However, these influences appear to come both from top-down statewide as well as bottom-up local influences. This creates a dynamic environment in which the District has developed a ‘middle-man’ role, satisfying state mandated water management developments through extensive co-creation between the District and local governments. This dynamic is fueled by a decentralized funding structure in which the District is statutorily awarded a proportion of the area’s tax revenue that is considerably lower than the costs involved with developing and implementing programs to meet state goals. Consequently, each consolidated annual review extensively addresses the origins of funding for each project. The funding has to annually be secured. In 2010 for example, funding was received from the “Water Management Land Trust Fund; Florida Forever (...); District General Fund; Legislative special appropriations; Federal grants; Local government and water supply utility cost-sharing; and Water Protection and Sustainability Program Trust Fund.” This indicates that influences on the District are based on network interactions rather than being strictly hierarchical or market based.

This stable network component of the structure of *influences* in the NFWFMD is amplified by a normative conceptualization of collaboration in capacity development that was found to be increasingly present in the documents analyzed over time. Collaboration and cooperation between various actors are believed to enable the inherent value in co-creation. While the documents analyzed inherently bias the authority of government, the explicit reference to “a cooperative approach between utilities, the District, and DEP [which] will be sought for any project development”. This blurs a clear separation of responsibilities and implies that resources of all actors involved influence the functioning of the NFWFMD. Yet, all regulations, programs, and projects initiated by the District ultimately must be justified to the Florida State government, implying that the District acts with a top-down mandate. The dynamic nature of (funding) resources therefore introduces complexity to a traditionally hierarchical framework. The reason for this is that while the District has formal authority to initiate programs, it does not have the funding to implement most of the programs without the cooperation of local governments and utilities, creating a tension between bottom-up and top-down *influences* that is maneuvered by the NFWFMD.

### 5.2.2: Concluding the NFWFMD

The analysis of the NFWFMD approach to governing Northwest Florida's water resources showed how the components *actors*, *processes*, *structures*, and *influences* cannot be characterized by any individual governance approach. Conversely, the analysis showed that even in characterizing the individual components it is often problematic to draw a distinctive conclusion. While a superficial reading of the documents can show a significant departure from historically dominant hierarchical and market-based governance approaches towards network-based governance, this would not acknowledge the importance of the institutional backdrop which was often represented by traditional governance approaches. As with the first case, the choice of document selection, focusing on government issued management evaluations, is likely to present a reporting bias in favor of government institutions, which should be considered in the interpretation of the results.

The roles of and interactions between *actors* in the NFWFMD was categorized by a pressure to perform supported by market-based performance measurement indicators. Simultaneously, the District adopts a dominantly market-based perspective on the framing of the problem to be addressed by actors, which is contrasted by a network-based emphasis on inclusion and collaboration. Considering *structures*, the District is characterized by regulatory decentralization and a focus on local communities, channeling network-based governance, while policy instruments at the disposal of the District are rooted in the strictly hierarchical legislative framework of the state of Florida. When it comes to *processes*, formal governmental evaluations ensure accountability while process cooperation is focused on local governments and private sector actors as well as communities. This prevalence of network-based governance is supported by the leadership style of the District, which appeared almost exclusively geared towards facilitating other actors. Finally, *influences* in the NFWFMD are determined by funding complexity which enables both top-down and bottom-up authority which the District navigates.

Reflecting on the theoretical expectations, the NFWFMD case provides support for the notion that market-based governance permeates several elements by emphasizing the necessity of private sector practices, interest, and expertise in ensuring efficient governance. This is paired with support for the network-based governance expectation that governmental actors increasingly function as meta-governors of governance networks. The twofold way in which the NFWFMD does this implies a theoretical novelty which will be analyzed in the discussion. Interestingly, the hierarchical governance expectations of layering and instrumental sedimentations are not supported by this case, which rather paints a picture of the three



approaches coexisting on an even plain and co-constructing a unified governance approach. The way in which these perspectives interact will be extensively elaborated on in the discussion.

## 6: Discussion

### 6.1: The California DWR

The analysis of California's Department of Water Resources and how it manages the State Water Project supports the theoretical expectation that water governance regimes cannot easily be categorized by either of the three dominant governance approaches discussed. A hybrid categorization, as has been argued by Pahl-Wostl (2019) and Van de Meene, Brown & Farrelly (2011) to be necessary for a categorization of water governance approaches, appears to fit this case best. For California, said hybrid approach seems to represent hierarchical governance more clearly with a development throughout the 10-year period towards the inclusion of more network-based components, particularly in *actors* and *influences*. This is in line with previous scholarship which found that hierarchical governance can provide a superstructure within which elements of 'alternative' governance components can manifest. The prevalence of hierarchical governance in *structures* supports Christensen & Lægreid's (2011) concept of layering. This implies that developments in all categories are layered over a traditional bureaucratic structure, which therefore influences the institutional outcomes of these developments. However, demarcating components of a single unitary organization based on theoretical assumptions in constructing a hybrid regime type negates the inherent organizational complexity that is unique to each case. A fruitful discussion of the case should therefore move beyond the categorization of individual components and evaluate how the sum of its parts transcends a hybrid governance approach. The following will attempt to provide a synthesis of categories and shows how they in effect cannot be demarcated.

Hierarchical structures embed structural influence within that same hierarchy. Actors develop problem frames based on their resources, which creates a dynamic system of influences. Still, authority and formal influences are determined by the structuring of processes. All components interact and developments in one have effects beyond their theoretical boundaries. The DWR's hierarchical structure, in combination with its state-owned infrastructure, centralizes it as the dominant regulatory body, essentially determining the 'rules of the game.' As the DWR functions in accordance with the larger legislative system of the California State government, it has a limited capability to address structural issues, like the inclusion of more actors, funding structures, or even decision-making processes. When the State government consequently orders the DWR to, for example, "make water conservation a California way of life", this strategic adjustment has implications for all governance components. It is practically impossible to impose a way of life top-down, implying that local

actors need to be included to reach successful outcomes, which introduces network-based components to the governance approach. This in turn affects not just the actors involved, but the knowledge and experiences they have access to, and the way issues are put on the agenda and framed. Processes would have to become more geared towards inclusion, which slowly started to happen within the DWR after the Governor's executive order in 2016. While formal authority does not require change to accommodate the strategy adjustment, turning conservation into a California way of life necessarily includes the facilitation of capacity building for communities, farmers, local governments, and other individuals, which in turn affects the resources they have access to and their role in the governance system. This shows perpetual interdependence of categories and individuals constructing the DWR. The example chosen happens to be a development towards a form of network-based governance, but this could occur for any of the three theoretical perspectives.

This dynamic depiction of the DWR as an almost organic system could theoretically be argued to bias network-based governance. It is, however, neutral towards any of the components. This way of understanding a governance system highlights a risk in the categorization of individual governance components. Namely, the interaction between the DWR and its environment. When analyzing any of the components individually, external developments could be marginalized in their effect on other components of the organization. The 2008 financial crisis provides the best example to illustrate this. In the case of California, the Governor considerably reduced funding for several years after the crisis as other State institutions were in more need of funds. Its theoretical category, *influences*, can explain this as a shift towards or a reiteration of hierarchical authority. However, this would not necessarily account for the consequent developments of best management practices and an emphasis on efficiency in *processes*. While this category can be argued to be influenced by the crisis, the mechanism behind its development is a shift in influences/priorities. Understanding the governance as an organic interdependent system can account for the effect developments in any individual component have on the organization as a whole, as well as the way it interacts with its environment.

## **6.2: The NFWFMD**

The findings for the case of the NFWFMD similarly follow the theoretical expectation that no single governance approach can account for all components of Northwest Florida's water governance. Additionally, the characterization of individual components appears to present a theoretical incoherence. In applying for example, a network-based governance approach,

dynamic and decentralized structures are expected to coincide with a trust and capacity building attitude towards actors involved. This would then be expected to foster an informal approach to instruments used to reach desired outcomes. In the NFWWMD, this consistency was not apparent, indicating support for the theoretically predicted organizational hybridity. Take for example the highly decentralized water infrastructure in Northwest Florida which implies a distinctly localized nature of water governance. At the local level, the District focused on the development capacity and the inclusion of communities. Yet, the policy instruments that determine water governance in the District are overwhelmingly hierarchical. Simultaneously the programs and projects that are implemented on a local level, in cooperation with local stakeholders, are determined on a statewide level while coordinated regionally. This synergy between hierarchical and network-based governance is juxtaposed by the consistent emphasis on performance measurement and private sector management approaches to ensure effective management and evaluation. Consequently, the individual categories often do not expressly favor one of the three governance approaches but rather a complex web of overlapping and occasionally theoretically contradicting elements. This system is held together by the way in which the NFWWMD establishes itself, or is established, in a network of actors involved.

The position of the District supports Pahl-Wostl's (2019) argument that the role of the government body central to a policy field is transitioning towards what they call meta-governance. As discussed in the theoretical framework, government bodies that function in a network of actors increasingly become 'managers' of their interactions and influences. While the notion of meta-governor implies a government orchestrating an arena, the NFWWMD presents an institution that simultaneously governs multiple regional arenas, following a hierarchical regulatory system presented by the State legislature, and functions as a stakeholder in each of these arenas. The institutional design in which water management districts provide the link between state-level strategy and regional planning and implementation implies that rather than developing from a role as an involved actor to a role as meta-governor, the duality of functioning is likely to remain. This indicates that in the case of water governance in Northwest Florida meta and actively involved governance are not mutually exclusive. This is exemplified by the Districts role to manage and evaluate all regional planning and implementation developments to ensure they are in line with the targets set on a state level, while at the same time the District facilitates the development and implementation of said plans for each of the seven regions. Such a role would theoretically establish the NFWWMD in a network-based governance paradigm. This paradigm, however, is unsuitable for explaining the complex interactions between governance components described above.

This does not necessarily diminish the utility of analyzing water governance systems through the four categories utilized. Instead, it implies the necessity to discuss the categories as part of the NFWFMD as a single unitary organization. The top-down chain of authority in Florida implies a formally hierarchical structure. This is complicated by the decentralization of infrastructure which has created a complex network of often not interrelated water management systems. Consequently, the District utilizes private sector management strategies to resolve the tension between local implementation and statewide regulation. A tension which is perpetuated by the NFWFMD's fractionalized and project-based funding structure. Simultaneously, District staff cooperate with a wide range of government and non-governmental stakeholders in each region to build local capacities and service community needs. When analyzed as a whole, the District appears to follow a network-based governance approach. However, this does not represent a strict reading of the previously discussed results section. Based on the *actors*, and *processes*, one could argue that hierarchical and market-based governance are predominant in parts of the District's approach, which is substantiated by government centered top-down and bottom-up influences. This reading would negate the emphasis on capacity building throughout the wider governance network which is greater than the sum of all categories.

### **6.3: Comparing the Cases**

The most obvious contrast between the two cases discussed is scale. California's large-scale management represents more elements of hierarchical governance than Northwest Florida's local governance approach. The California DWR sought to retain control and authority in its water management following hierarchical governance principles, while the NFWFMD functioned as a government central node in a network. This carries the implication that meta-governance of water systems does not necessarily exist as a superstructure of a network but can manifest itself within said network. Interestingly, this local governance approach included a high level of active stakeholder management following market-based processes compared to the California DWR's strategy. Theoretically, the assumption that large-scale management goes hand in hand with hierarchical governance appears to be supported by the analysis of California. However, the pervasive reliance on hierarchical, government centered instruments and processes within a smaller scale setting like the NFWFMD shows that a different scale level does not carry the necessary implication of an alternative governance mode. The centralization of government in both cases furthermore implies that scale cannot be concluded to be a determining factor in governance approaches in these cases. Additionally, following

Pahl-Wostl's (2019) argument for meta-governance, California's DWR should have moved towards a more facilitating role as meta-governor of a network of actors whereas the NFWFMD would have either had to function as an actor in a network, or as a manager of the interactions in said network. California, while moving towards more network-based influences, was not found to transition towards maintaining a network of actors involved, and the NFWFMD did not opt for either role, retaining the coupled responsibility of bottom-up delivery and facilitation as well as top-down regulation. The differences in scale were therefore not coupled with theoretically expected governance approaches for either case.

A simultaneous difference between the two cases is their respective (lack of) development throughout the ten-year period analyzed, resulting in steadily different dynamic governance systems. While the timeframe from 2008-2017 was tumultuous as a result of increasing demands on water resources, droughts, and financial crisis, the NFWFMD did not display substantial shifts in structure, rhetoric, process, or activity. Northwest Florida was focused on facilitating other governmental actors in 2008. It was responsible for attaining statewide goals in 2008. It managed a wide range of contextually adapted projects in 2008. None of these things changed significantly over the ten-year period that followed. While the same holds for the California DWR concerning structure, it expressly transitioned towards inclusion of input in informing decision-making procedures. Formally, this did not alter decision-making, nor did it implementation or authority. Yet, it represents a distinct shift towards ideals of inclusion underlying network-based governance. This could be indicative of a general transition towards network-based governance and the lack of the NFWFMD's transition can be argued to be the result of its structurally network-oriented design. This appears to substantiate the theoretical belief in an increased dominance of network-based governance. However, the intertwined and interdependent nature of network & market based as well as hierarchical governance approaches presents an alternative understanding. Rather than governance approaches fundamentally altering over time, components of approaches build on respective contexts of cases to construct a dynamically unique system that cannot be categorized. Concurrently, stability in actions and projects potentially implies that popular theories of governance do not necessarily explain cases better but can be the result of biased terminology. In the context of these cases this is represented through the pervasive use of market-based language describing components of hierarchical and network-based governance. It furthermore indicates that one perspective can inform the interpretation and integration of governance techniques theoretically ascribing to a different perspective. This supports a nuance of Christensen & Lægread's (2011) concept of layering. Components of alternative governance

modes are built on the sediment of traditional approaches, with traditional and novel components perpetually influencing each other. Consequently, traditional governance theories become unable to explain ‘traditional governance components’ and alternative governance theories fail to provide a generalizable explanation of ‘alternative governance components.’

This is exemplified by the pervasive similarity in that governance approaches were hardly ever exclusively identified, but rather in tandem. This means that in many cases, an element of hierarchical governance implied or could simultaneously be identified as a network, or market-based governance element. This is the reason why market-based governance has not been extensively discussed hitherto. In relation to other governance approaches, market-based governance was represented least. Yet, in the language used to describe governance, a market-based perspective was overtly dominant. To illustrate, on average the term governance or its derivatives was used twice in each annual review, whereas the term ‘management’ was used roughly 270 times per document analyzed. This rhetoric was used to describe any form of governance used, be it strictly hierarchical and government led, or normatively focused on the inclusion of disadvantaged communities. Efficiency, performance measurement, and cost-effectiveness remained implicit throughout all documents. Theoretically, this conflicts with the traditional conceptualization of governance approaches. Rather than market-governance concretely contributing to a wide range of policy instruments, actor management, or processes/structures, a market-based ideology underpins all documents analyzed. Consequently, a market-based perspective impacts not only the design, but the functioning, evaluation, and reporting of a governance/management system even though the individual components of said design can fall in a categorization of a different governance approach. Additionally, addressing water governance issues through a management perspective takes the inherent political importance of water and reduces it to a technological problem that can be resolved with the right capacities. Both cases exemplify this belief and address inclusion and capacity building to attain goals and meet targets set by government institutions. Above all, this implies that governance approaches and the practices of governance do not abide by theoretical demarcations in design and functioning that are often assumed or argued in academia.

What follows from this is arguably the most significant finding that has been implied and explicated throughout the result section and in the individual case components of the discussion. Theoretical categorization of water governance systems according to pre-established elements does not adequately consider the contextual interplay and necessary codependence of at least two and in some examples all three governance approaches displayed

in the cases discussed. Water governance in Northwest Florida and California cannot be categorized, nor can a hybrid governance approach provide adequate categorization. Even the concept of layering, which takes into account institutional context, does not provide a sufficient understanding of governance modes. The reason for this is that it takes a fixed governance approach as a starting point on which other elements are built. The analysis of the cases, however, implies that traditional governance structures do not only impact the vernacularization of novel governance approaches, but rather that these novel elements affect the implementation and understanding of traditional governance approaches as well. This conclusion can only be drawn by transcending the aim of establishing potentially generalizable (hybrid) categorizations and in doing so, implying a nuanced alternative attitude to understanding water governance approaches. The trade-off of this attitude is a reduction in generalizability of findings, as it relies heavily on understanding the individuality of cases discussed. However, in both the NFWFMD and the California DWR reporting on water management, the unique way in which elements of governance approaches are integrated into preexisting context implies that to thoroughly understand water governance, this attitude is necessary.

To conclude, the discussion of the individual cases highlighted what these theoretical implications mean for a case. Considering California, the transition towards increasingly network-based normative motivations behind its water resource ‘management’ manifested itself through formal legislation and regulation top down. The developments in its governance approach, however small, impacted the functionality of the elements that were already apparent in a variety of governance components. Take for example decision-making structures, which were influenced by the inclusion of disadvantaged communities. Aside from displaying how competing theories of governance can be simultaneously represented in an actual governance system, the results and discussion showed that the theoretically demarcated categories impact and influence each other. This means that addressing the categories *actors*, *processes*, *structures*, and *influences* separately fails to provide an understanding of their interdependence. This held true for the NFWFMD case as well. In Northwest Florida, the market-based approach to internal and external performance management as well as the consistent emphasis on pressure to perform underpinned the structural relation of dependency the water management district had both with local and state government bodies. However, these influences functioned in a larger overarching legislative framework which determined the direction of action for all actors involved and asserted the necessity of collaboration in building capacity for all actors. The cases combined therefore provide support for the idea that a



relatively straightforward categorization of governance components does not yield an effective understanding of the way theoretical governance approaches are represented in actual cases.

## Conclusion

This academic inquiry set out to understand how three theoretically dominant governance approaches, namely hierarchical, market-based, and network-based governance, could explain the constitution of water governance systems. In applying these theories to the cases of the Northwest Florida Water Management District and the California Department of Water Resources, it sought to answer the question: *How do components of hierarchical, market-based and network-based governance explain the water governance structure in California, compared to Northwest Florida?* As water is becoming an increasingly scarce resource, the necessity of understanding how it is governed is dramatically increasing. The body of theory applied was selected based on a literature review evaluating the two dominant bodies of politically focused water scholarship: conflict and governance. This literature review showed that while conflict remains an important avenue for research to address, the mechanisms behind water conflict are generally believed to originate in governance. Based on dominant scholars in the field of water governance, such as Pahl-Wostl (2019), the three traditionally dominant governance approaches were consequently adapted to suit the unique components of water governance. The theoretical expectations drawn from this formed a threefold categorization of hierarchical, market, and network-based governance structured according to *actors, processes, structures, and influences*.

The answer to the research question is that a conceptualization based on separate governance components cannot adequately explain the constitution and development of the governance systems of the California DWR and the NFWWMD. What can be concluded is that while the NFWWMD's governance structure remained relatively stable, the California DWR subtly developed towards network-based governance. Both cases were characterized by the codependence of different governance approaches either between or within the components analyzed. The NFWWMD displayed a stability over time in representing market-based governance through the component *actors*, which simultaneously implied network-based beliefs in inclusion and collaboration. *Structures* were focused on capacity building of local governments, while simultaneously being directed by a top-down legislative and regulatory hierarchy, representing a synthesis of hierarchical and network-based governance respectively. This holds for *processes* too, which were government dominated, but centralized facilitating community capacity building. Finally, *influences* were determined by funding complexity that meant the NFWWMD relied both on top-down and bottom-up funding to operate. When it comes to the case of the California DWR, the results display a similar dynamic. *Actors* were

characterized as hierarchical but moving towards network-based inclusivity. A similar pattern was discerned for *structures*, which increasingly included network-based components into a hierarchical framework. Market-based and hierarchical governance remained dominant in the DWR's *processes*, and influences, while slowly developing towards inclusion remained overwhelmingly hierarchical. The stable representation of network-based governance in the NFWFMD and the subtle but noticeable developments towards said governance approach in the California DWR could imply a trend towards the increased prevalence of network-based water governance, which is in line with inquiries by Van de Meene, Brown & Farrelly (2011), and Pahl-Wostl (2019).

However, the most noteworthy findings of this inquiry relate to the inability of separating components of governance structure in both cases. The theoretical implication of this is that elements of hierarchical, network -and market-based governance approaches not merely coexist within governance systems but can be seen as amending and being amended by preexisting governance modes, ultimately cocreating a theoretically novel unitary conceptualization encompassing the individuality of each governance system. The NFWFMD is a governance system where network-based components add a centralization of community and local context, but in which relations are managed, maintained, and evaluated through market-based cost-benefit analyses. A system in which all components are dependent on state and federal legislature, whilst water management districts require state and local funding to be able to operate, which enforces multiple streams of accountability and an underlying pressure to perform at both scales ranging from district wide to county level. The California DWR is a top-down statewide organization that has been legislatively mandated by the highest governing body in the state to be more inclusive. To attain the network-based goals of inclusion and participation, the DWR has implemented market-based processes and has hierarchically determined that disadvantaged communities should be actively included in governance. These are not network-based systems, nor are they hierarchical, nor market-based. The analysis of these cases highlighted above all that they are a canvas for the interplay between components that can individually be characterized but deserve to be synthesized into one unique mode of water governance.

The limitations of the theoretical model applied, consist of a restricted ability to explain interactions between multiple governmental organizations on the same or different levels within a hierarchy and a bias towards theorizing a hybrid form of governance which does not explain the intricacies of the interdependencies between the different components identified. These limitations are subtle and cannot easily be addressed by adapting the theoretical model.

Rather, they imply an approach to evaluating results aware that an organization cannot simply be divided into parts that can represent different governance types to construct a hybrid governance system. Hybrid governance systems imply a perspective on governance that is too sterilized and does not account for the occurrence of theoretical contradictions. What this means is that it could be possible for a single element within for example the component *actors* to concurrently display characteristics in line with hierarchical and market-based governance. In interpreting the results for this inquiry, all components were separately discussed, but always while retaining awareness of the dynamic and almost organic nature of organizations to add novel nuance to the traditional understanding of the theoretical interplay of governance approaches in evaluating cases. To apply this theoretical model, a qualitative methodology was selected, as the individuality of governance systems needs to be understood in depth and qualitative methods provide the only way to account for structural contingencies and contextual developments adequately.

While the analysis of governance reports has been conducted in several prominent comparative water governance case studies and publicly accessible documents significantly increase the reliability of the findings, several issues with the selected documents should be mentioned. Firstly, as all documents were created by government institutions a bias towards a government central perspective should be considered in interpreting this inquiry. While the documents made explicit mention of the involvement of other actors, they almost exclusively presented other actors in relation to the governmental institution, which bears the risk of overemphasizing a single perspective on the governance/management of water resources. Additionally, the documents analyzed were internally evaluated and constructed for public access, which means that the primary data observed is not a first-hand observation of the actual governance structures of the two cases. Yet, as this inquiry focused on a longitudinal evaluation of governance development over a 10-year period, rather than on a single moment, annual governance reports were determined to be the most reliable data source. A final methodological limitation concerns the language of the documents used. As both California and Florida have significant Hispanic populations, using exclusively English-language documents cannot evaluate the potential marginalization of Spanish-speaking people in these water governance cases. Additionally, this inquiry could not move beyond categorizing and explaining the components of water governance and link them to governance effectiveness as there currently is no reliable methodology to do this qualitatively.

In conclusion, this implies that further research and policy development should to a greater extent than it currently does, emphasize how context and contingency shape, and are

shaped by competing theoretical approaches that cumulate not into the sum of hybrid components, but into a singular governance system. This recommendation has the potential of empowering and substantiating quantitative good governance research in informing the context-dependent qualitative components of case-by-case governance. This should be accompanied by extensive methodological inquiries establishing an approach to successfully correlate in-depth qualitative analyses with generally quantitative methodologies evaluating governance effectiveness. As a relatively limited number of in-depth qualitative water governance case-studies exists, scholarship should also focus on building a significant body of literature understanding a larger number of individual cases. Simultaneously, findings from in-depth case studies like this inquiry will contribute to scientific understanding of the relevance of governance theories. While traditional theories provided sufficient understanding of the governance components of the NFWFMD and the California DWR, perpetual development of both practical governance and theoretical comprehension needs to be accounted for in future research. This will result in a better understanding of how water resources are governed globally and could lead to the establishment of contextually informed best water governance practices which can help policymakers worldwide address increasing stress poor governance is continuing to put on water supplies all around the world and help to ensure that governance bodies are equipped to deal with the scarcity that will plague over half the world's population sooner rather than later.

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## **Appendix A: Primary Documentation**

### **Primary Documents California DWR**

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Document provided by The California State Department of Water Resources on 09/04/2022
- Brown, E. G., Laird, J. & Cowin, M. W. 2013. Bulletin 132-10: *Management of the California State Water Project. Covers Activities during Calendar Year 2009.*  
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