GREEN BUILDING STANDARDS IN THE GULF

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By

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Standards will play a large role in generating sustainability in the future. They will serve not only pave the way for international environmental regulations, but also to establish designs and specifications for building systems that reduce energy. Given the importance of sustainability to areas in extreme temperatures, such as the Gulf Cooperation Council (GCC), which includes Saudi Arabia, Kuwait, Oman, Qatar, Bahrain and the United Arab Emirates, engagement in the standards-setting processes is key. This thesis explores the likelihood of the GCC’s six member states collectively adopting one set of green building standards.
The research and writing of this thesis is dedicated to my academic advisor Dr. Linda Garcia, for opening mind up to new ways of thinking and for her ongoing support. I would also like to thank my thesis reader Dr. Evan Barba for his continued encouragement and guidance throughout the writing of this research. Lastly, I would like to thank my parents Mark Zimmermann and Cynthia Anthony for their unwavering encouragement of my ideas and academic pursuits over the many years.

Many thanks,

LISA ZIMMERMANN
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We live in a globally networked society. No longer are nation states’ actions without consequence to countries located geographically far away, nor are the productions and technological advancements emerging in one region difficult to transfer to another part of the world (Giddens, 1990). As technology continues to advance, governments and businesses’ abilities to communicate and operate beyond their geographical barriers also expand. As this occurs, networks become entangled; geographical boundaries become blurred; and markets, businesses and cultures become intertwined (Bauman, 1998). Another word to describe this phenomenon is “globalization.”

Globalization is increasing at a fervent pace. One example of increased globalization can be seen in the amount of collaborative scientific research that has been produced. According to a study by the United Kingdom’s Royal Society (2011), more than 35 percent of scientific research articles are the product of international collaborations — representing a 25 percent increase from 15 years prior (United Kingdom Royal Society, 2011). Similarly, the United Nations Conference on Trade and Development (2012) reported an increasing proportion of international production of goods and services being traded across national borders rather than sold in home countries (United Nations Conference on Trade and Development, 2012).

For globalization to take place requires coordination across a variety of arenas including the economic, technical, political and cultural. This is a complex process with coordination intertwined at many levels including the “global, transnational regional, nation-state and sub national regional levels” (Hollingsworth, 1998). One example of a company that coordinates
globally is the United States-based United Parcel Service (UPS). UPS is responsible for delivering packages throughout more than 220 countries and employs 395,000 people worldwide to serve approximately 9.4 million customers daily (UPS, 2015). UPS’s Information Technology (IT) infrastructure not only globally tracks its packages, but also coordinates and synchronizes information across the company’s international departments, such as finance, marketing and sales (Lawlor, 2007).

Standards provide the means for such coordination. Standards can be defined as the rules governing all interactions—be they among people, between people and machines, or among machines (Garcia, 2013). Accordingly the English language is the standard that allows for international discourse. Likewise, the binary structure is used as a standard for computer processing. By stringing binary code bits into bytes, meaning is exchanged. According to the American Code for Information Exchange (ACSII), the binary 01100001 can be translated into the number 97 and also represents a lowercase a (“ASCII Table and Description,” 2010).

Standards coordinate interactions within networks and the more parties that join a network, the more benefits this network provides. As a result, existing large-scale networks offer positive externalities, benefits, making it harder for alternative networks to establish and sustain themselves (Grewal, 2008). Consider Yelp, a company that crowd-sources online reviews for restaurants, stores and more across the globe using a standardized platform. The more active users in each network, the more helpful the website becomes. Due to the established base, new

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\[i\] In other codes, this binary number can mean something different. It depends on the context and the standard being used.

\[ii\] This refers to potential costs at all states, such as costs related to development and production, or manufacturing
competitors must struggle to become established (Rohlfs, 2001; Grewal, 2008; Grewal et. al, 2009).

Because of these network effects, global standards are not neutral. They typically benefit some players at the expense of others. (Grewal, 2008) As Grewal has noted, the standard setting process is both “disruptive” and “uneven” (Grewal, 2008, p. 20). Take for an example, the World Trade Organization’s (WTO) nondiscriminatory, free-trade standards. In order for a country to enjoy access to the world’s economies through valuable international markets, it must join the WTO and adhere to its standards (Grewal, 2008). However, these standards have historically been tailored to industrialized nations (Grewal, 2008). This disadvantages newcomers and nations with nonmarket economies. As a result, these nations might fare better under discriminatory trade practices. Nonetheless, they must comply with the WTO’s nondiscriminatory trade standards in order to continue trading in choice markets (Grewal, 2008).

Given the significant social and political implications of standardization, how standards are set and who is involved in setting them are of major importance. Historically, the largest companies and countries have governed the standards arena. In the area of telecommunications, for example, AT&T was able to use is large market to leverage its standards internationally (Brock, 2004). Likewise Microsoft employed its market power to establish its operating system and browser as an international standard (Arnold, 2001, p. 544; Sebenius, 2002). In a global economy, many more newcomers will enter the standards arena, and issues will likely arise as to how to assure that decision-making is fair and equitable.

The standards scene will also become more complicated as the scope of standards increases to include an expanding array of social issues. One need only consider the growing
need for environmental standards. Pollution and over-consumption threaten our world’s natural resources. There are more than 500 million cars on earth and that number is expected to increase to one billion by 2030 (“51 Facts About Pollution,” 2013). These problems have no national boundaries and extend across the globe. Nonetheless, given the diverse cultures, geographies and political systems involved, dealing with social issues across national boundaries is difficult.

In this regard, one area that may be especially problematic is developing standards for green building—a term used for structures that are environmentally friendly and resource efficient, according to the EPA (2008). A future point of contention may stem from the fact that green building practices are useful and appropriate for all geographical regions. For example, take the case of green roofs and walls, which can help to filter air, bind dust particles and lower CO2 levels. In certain areas of the world, such as the Middle East, plastic pieces of the structures used to build green roofs and walls will melt due to extreme heat. Therefore, these plastic parts must be buried or made with stainless steel in such areas. As importantly, the type of soil found in the Middle East is largely made up of sand, which means for a green wall to be successful, it must be mixed with other organic matter and growing mixture (Velazquez, 2014).

As one might expect, the issues associated with green building practices are particularly salient in the member states of the Gulf Cooperation Council (GCC), which are located in the Persian Gulf. The GCC member states are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. After years of criticism from the global community for poor environmental standards, these countries now invest heavily in sustainability projects, and their associated standards, that meet the regions’ unique geographic needs. One example is the United Arab Emirates’ Masdar City, which aims to be the world’s most sustainable city. The goal of the
city, which is located in the UAE’s Abu Dhabi emirate, is to “[pioneer] a ‘greenprint’ for how cities can accommodate rapid urbanization and dramatically reduce energy, water and waste” ("About Masdar City, n.d.").

Standards will play a large role in generating sustainability. They will serve not only pave the way for international environmental regulations, but also to establish designs and specifications for building systems that reduce energy. Given the importance of sustainability to areas in extreme temperatures, such as the GCC, engagement in the standards-setting processes is key. Given the importance of sustainability to the GCC countries, they will need to become more fully engaged in standard-setting processes. However, because green building certification standards have traditionally been developed where the large Western countries prevail, it remains uncertain as to whether standards produced at this level meet the unique needs of the GCC states.

This raises questions about the GCC’s options. Are existing building standards flexible enough to fit the GCC’s needs? Or, if not, can the GCC countries overcome the first-mover advantages of Western green building standards by collaborating to a sufficient degree to create a critical mass of supporters for an alternative set of standards more appropriate for their regional needs? Or, alternatively, is it possible the GCC could end up without a collective and coherent set of green building standards?

This research seeks to address these questions. To this end it will proceed as follows. Chapter two conceptualizes this thesis by discussing the literature relevant to the research questions, such as an introduction to the GCC and green building, as well as previous literature addressing standards, standards processes (in general and specifically in the GCC), networks, globalization and collective action problems. Based on this literature, the chapter develops three
hypothetical scenarios and the measures by which these scenarios will be analyzed. Chapter three describes these measures and the analytical framework for this research. Chapter four examines two previous standard-setting efforts within the GCC. These case study analyses will identify the conditions under which future collaboration among the GCC states is most likely. Chapter five will then examine the three green building standards’ scenarios in the light of the findings presented in chapter four, identify findings, discuss the limitation of this research and propose future areas of study.
CHAPTER 2: CONCEPTUAL FRAMEWORK

This thesis raises questions about green building standards in the GCC region. Though there is no consistent definition of “green building standards,” environmental agencies, such as the United States’ Environmental Protection Agency (EPA), use the term to “encompass model codes, rating systems, and other publications that provide criteria for the design, construction, and maintenance of buildings” (“Green Building Standards, 2014). Specifically, this research asks: 1) Are current international green building standards flexible enough to fit the GCC’s needs? 2) Can the GCC states collaborate with one another to a sufficient degree to create a critical mass of supporters in favor of an alternative set of local green building standards more appropriate for their regional needs? 3) Alternatively, is it possible that—failing outcome (1) and (2) the GCC region will end up without a coherent body of appropriate green standards? This chapter seeks to conceptualize these possibilities by developing three alternative scenarios that draw upon the literature in the field. Section one of this chapter will characterize the literature in the field. Section two will—based on the literature—develop the three alternative scenarios and propose measures to be used to assess the future outlook. In chapter three these measures will be fully developed.

Part One

Review of Literature

To develop these scenarios, this thesis introduces the GCC by providing historical context and surveys the relevant literature on the nature of green building, standards, the global
context in which green standards are developed, the role of network effects in determining outcomes in the standards process, and the role of collective action in achieving a standards consensus.

**Introduction to the Gulf Cooperation Council (GCC)**

The Gulf Cooperation Council is a political and economic union of six of the Persian Gulf states, including the United Arab Emirates, Saudi Arabia, Qatar, Oman, Kuwait and Bahrain. In addition to these states’ shared cultural and political identities grounded in Islam, two events propelled the GCC alliance to form in 1981: the Islamic revolution in Iran in 1979 and the Iraq-Iran War that began in 1980 (Legrenzi, 2011). “The war gave the six Gulf sheikhdoms the possibility of setting up an alliance that professed neutrality” (Legrenzi, 2011). The alliance was intended to strengthen relationships among the six member countries and encourage cooperation (“Gulf Cooperation Council,” 2015). Given the regional conflict in the region, it’s no surprise that one of the areas where cooperation was planned was in the military (“Gulf Cooperation Council,” 2015).

Another commonality among the six states is the GCC states are rentier states. “According to the rentier state theory, Arab monarchies survive by exploiting the ‘rent revenues from the oil industry’” (Reiche, 2010, p. 4). This revenue is then used by the government to provide its subjects with great material benefits “without the need for heavy taxation or democratic representation” (Reiche, 2010, p. 4). GCC states rely on this rent from oil; the money these states gain from the export “describes a distributive societal contract on which the government’s legitimacy depends” (Reiche, 2010, p. 11).
Almost half the world’s oil can be found within the six member states of the GCC (“Profile: Gulf Co-operation Council,” 2012). Additionally 23.6 percent of the world’s proven gas reserves are located in the GCC (Reiche, 2010; “BP Statistical Review of World Energy,” 2008). The international community has criticized the region as a top contributor to global pollution (Reiche, 2010).

In the first few years of the 21st century, several GCC states diversified their economies from solely focusing on oil to expanding into a range of profitable sectors. The region boomed; construction and growth were central prerogatives. The GCC’s real GDP grew at an average rate of 5.2 percent annually since 1998, with a cumulative increase of 65 percent (“The GCC in 2020 Outlook for the Gulf and the Global Economy,” 2009). The rapid economic development paired with low energy prices has “fuelled the emergence of energy and water intensive cultures and practices,” wrote Yvo de Boer, a KPMG Climate Change and Sustainability Special Global Advisor, in a “future-proofing” sustainability report on the region (Future-proofing Business in the GCC Opportunities for Sustainable Growth,” 2012, p. 5).

Massive economic expansion, in turn, led to a population explosion in the region—overall GCC population grew from 28 million in 1998 to 43.2 million in 2010 (“The GCC in 2020 Outlook for the Gulf and the Global Economy,” 2009; “Factbox: Gulf Arab countries’ population, economy, military,” 2012.) Subsequently, demands for domestic energy and desalinated water escalated. Electricity usage (or demand) grew at an annual average rate of eight percent from 2000 to 2009 (“Future-proofing Business in the GCC Opportunities for Sustainable Growth,” 2012). “At the same time, GCC companies are becoming more tightly
entwined in a globalized economy and complex international supply chains. They are interacting more with foreign markets and businesses for which the sustainability agenda has attained a higher profile” (Future-proofing business in the GCC Opportunities for Sustainable Growth., 2012, p. 5). The GCC’s environmental abuses compromise its image in the international setting. Partially a response to the spread of its tarnished environmental image, there’s a growing desire to launch “green projects” in the region.

In response, the GCC states have made a commitment toward improving the environment by developing plans for sustainable green systems. However, governance struggles, a lack of market incentives and unpredictable political behavior have complicated the success of these efforts. Furthermore, governance over the energy sector is fragmented throughout the region (Lahn et. al., 2013).

**What is Green Building?**

Writing at the turn of the 21st century, Jane Lubchenco argued in her article “Entering the Century of the Environment: A New Social Contract for Science” published in Science magazine that “business as usual” would not suffice to keep us sustained and to combat the environmental challenges ahead “(Lubchenco, 1998, p. 492). She called for expanding sustainable lifestyles. Significant sustainability efforts have been focused on “green building,” which refers to the practice of constructing environmentally responsible and “resource efficient” structures, according to the U.S. Environmental Protection Agency (“Green Building: Frequent Questions,” 2008). In fact, the green building marketplace has boomed, creating markets for green building technologies and products, which lead to an acceleration of green building (McGraw-Hill Construction, 2013).
Although the green building and technology movement is still in its early stages, some expect that it will inspire innovations and transformations as daunting as the changes brought about by information technology during the last 20 years (“Green Technology,” 2015). There are a number of factors that will determine the future of green building and green technology, including costs\(^{ii}\), design, availability of materials and manpower, user adoption rates of developed technologies and more. One of the most important, however, will be the role of *standards and standardization*.

**What are standards?**

To fully assess how standards will affect the evolution of green technology in today’s global economy, we must first define what standards are, and describe the role they play in coordinating socioeconomic activities. Because standards have significant consequences, we also need to look at how, and by whom, standards are set (Office of Technology Assessment [OTA], 1992; Garcia, 2013).

Standards have been defined in a variety of ways. These may differ depending on researchers’ different interests and the diverse purposes that standards serve (Grewal, 2008; Busch 2011, Abbott and Snidal, 2015). However, together these definitions provide a basis for characterizing green technology standards, and how they might evolve in the GCC countries. Some of the most relevant definitions are discussed below.

The International Standards Organization, which sets international standards, poses the narrowest definition of standards. Because it develops standards through a consensus process, it views its products as negotiated specifications. These specifications are deliberately focused so

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\(^{ii}\) This refers to potential costs at all states, such as costs related to development and production, or manufacturing and marketing.
that they can be used to develop technologies in accordance with a definitive and common set of criteria (“ISO: What is a standard,” n.d.).

On the other hand, sociologist Lawrence Busch paints a broader picture of standards. Viewing standards through a phenomenological lens, he characterizes standards as norms that embody “subtle power” (Busch, 2011). Accordingly, he differentiates standards based on the type of power they embody. For example, Bush identifies “Olympian Standards” as a rule, or recipe, that gives rise to a single winner, or a few winners -- as is the case for Grammy Award recipients (Busch, 2011, p. 43). He characterizes a second type of standard as “Filter Standards,” which instead of identifying winners, “eliminate the unacceptable” (Busch, date, p. 44). The third type of standard described by Busch is “Ranking Standards,” which place people or objects in a “linear, hierarchical order” (Busch, 2011, p. 45). The final category that Busch cites is “Division Standards:” these divide people or objects into categories that are unranked (Busch, 2011, p.46).

Stefano Ponte, et al. defines standards as norms. According to these authors, norms serve as “a model by which people, objects, or actions (including Government regulation itself) can be judged and compared, and which provide a common language to evaluators, the evaluated, and their audiences” (Ponte et al, 2011, p. 1). The authors argue for such a broad definition on the grounds that today standards cover an increasing number of domains and are developed by an increasingly diverse set of actors (Porte, et al., 2011).

Like Busch, David Grewal also sees standards in terms of power. He defines standards as “focal points,” which allow for coordinated behavior (Grewal, 2008, p. 5). Because actors need to coordinate their behavior in order to be effective, they are often “compelled” to adhere to a
majority standard, even it when it is suboptimal (Grewal, 2008). It is in this way that standards embody power.

Garcia employs the most inclusive definition of standards. According to her, standards can be defined as “the interfaces governing all interactions, be they individuals, machines, words, or elements of the natural world” (Garcia, 2013). According to Garcia, standards can also be distinguished by the purposes that they serve. For example, some standards, such as safety, or equality standards, serve to control behavior. Other standards, such as product standards, serve to coordinate behavior. They establish specific criteria or conditions needed for products to interact (Garcia, 2013). In turn, platform standards establish the infrastructure and architecture that links people and things in a “networked configuration” (Garcia, 2013).

Lastly, Kenneth W. Abbott & Duncan Snidal (2015) argue that standards, and the associations affiliated with them, are a subset of governance (Abbott, Snidal, 2015). As such, they provide both “a guide for behavior and for judging behavior” (Abbott, Snidal, 2015, p. 345). According to Abbott and Snidal, standards are created to deal with externalities, which occur whenever one actor’s handling affects the welfare of another (Abbott, Snidal, 2015, p. 347).

This thesis builds on these theories of standards. First, Garcia’s broad definition and approach of standards as “an interface governing interactions,” as well as her distinction among control standards, product standards and platform standards, allows this thesis to focus on the diverse aspects of green standards (Garcia, 2013). Secondly, because GCC standards are negotiated through a nation state’s political actors, Grewal and Busch’s definitions emphasizing power will aid in examining contentious relationships and issues (Grewal, 2008; Busch, 2011). Third, Abbott’s and Snidal’s normative interpretation of standards will be useful in considering
the influence of international pressures and different states’ priorities with respect to the development and adherence to green standards. Lastly, in accordance with Abbott’s and Snidal’s perspective, we can view standards and governance issues as being intertwined (Abbott and Snidal, 2015; Peters, 2009).

**Institutional Arrangements for Standard-Setting**

Just as the type of standards vary, so too do the ways in which they are set. Understanding the processes through which standards are set is will help us track the various processes and milestones at play in the GCC’s development of green technologies.

Many standards can are developed via the market (Garcia, 2013; Abbott and Snidal, 2015). In such cases, standards emerge in a bottom-up process, competing with others and allowing the market to decide on the winning standards/products/services. One might assume the market winners are the best possible options, and therefore most aligned with the public interest. However, lower quality standards can emerge due to a number of factors, such as market fluctuation, or powerful people or companies simply having more resources to “strong arm” a win (Sebenius, 2002, p. 43-51).

Standards can also be prescribed in a top down fashion by some legitimate or accepted authority (Garcia, 2013). In other words, standards can be prescribed by the government, public regulation, a private-sector association or another private authority. For example, the president of a company can determine the jobs employees will perform as well as the behaviors affiliated

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iii However, market solutions rely on assumptions of a perfect market “where the effects of an action on the welfare of others are mediated wholly through the market” (Abbott & Snidal, 2015, p. 348).

iv For example, consider Microsoft’s power and financial resources during the “Browser Wars” in the 1990s (Sebenius, 2002). This influence and power made it possible for Microsoft to fight a smarter, more cutthroat contest within the marketplace, which, consequentially, resulted in Microsoft’s Internet Explorer winning the “Browser War” over Netscape (Sebenius, 2002, p. 43-51).
with these roles (Garcia, 2013; Abbott and Snidal, 2015). Likewise, parents can define the number of hours their children watch TV and governments can establish the regulatory standards over a country’s highway system (Garcia, 2013).

In addition, standards can be developed through a negotiated and “voluntary consensus process” (Garcia, 2013). This standards process takes place midway between the market and the government (Garcia, 2013; Ernst, 2012). Voluntary standards develop their rule through a consensus process, but mirror the market-based standards process in that those who join the discussion have market power and can influence the standard outcome (Garcia, 2013). Safety standards are sometimes determined through a voluntary consensus process (Garcia, 2013; Abbott and Snidal, 2015; “Voluntary Standards,” 2013). According to the U.S. Consumer Product Safety Commission, “in many cases these [voluntary] standards bring industry groups, government agencies and consumer groups together to agree on best consumer product safety standards,” (“Voluntary Standards,” 2013). Furthermore, voluntary standards organizations, such as the American National Standards Institute (ANSI) or Underwriter Laboratories (UL), collaborate to develop and agree upon standards regarding, for example, consumer products (“Voluntary Standards,” 2013).

**International Standard Setting Processes**

Tim Büthe and Walter Mattli (2011) distinguish the differences between international and national standard setting processes (Büthe and Mattli, 2011). In doing this, the authors outlined four types of processes that illustrate these differences. The authors define Type 1 as “Public (Governmental) Non-market Standard-Setting,” in which standards are set in an international agreement, such as the Kyoto Protocol (Büthe and Mattli, 2011, p. 19 and p. 33). Type 2 are
Public Standard-Setting Bodies in Market Competition,” which entail “competing standards developed by/in national, regional, or minilateral public bodies,” such as the EU Directorate General Competition vs. U.S. Department of Justice (Büthe and Mattli, 2011, p. 19 and p. 33). The third type of standard setting process is “Market-Based Private International Standard-Setting.” In this case, standards are created by competing consortia, or individual firms, as occurred in the case of Microsoft’s operating system, Windows (Büthe and Mattli, 2011, p. 19 and p. 33). The fourth and final type of process is “Non-market Private International Standard-Setting,” which is developed in a “transnational focal standard-setting body,” such as the International Accounting Standards Board (Büthe and Mattli, 2011, p. 19 and p. 33).

This literature on standard setting processes provides a map of the standards setting process whether it takes place through the market, through regulation or through a voluntary consensus (Garcia, 2013; Abbott and Snidal, 2015). As important for the purpose of this thesis is the literature that addresses views the standard-setting process as one comprising a blend of private and public organizations on both the international and national levels (Büthe and Mattli, 2011; Abbott and Snidal, 2015). As our societies and economies continue to become more globally integrated, both the diversity of our standards, as well as the “regulatory overlap and norm conflict,” increase (Peters et. al, 2009, p. 1).

The Global Context in which Green Standards are Set

We can understand globalization as the process by which networks of actors, ideas, information and money are connected across great distances (Nye & Donahue, 2000; “KOF Index of Globalization,” 2013). More specifically, Anthony Giddens (1990) explains
globalization as “the intensification of worldwide social relations, which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa” (Giddens, 1990). Consider the KOF Index of Globalization’s conceptualization of the term “as a process that erodes national boundaries, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence” (“KOF Index of Globalization,” 2013). Similarly, the International Monetary (IMF) fund characterizes globalization as the “integration of economies” throughout the globe (Globalization: Threat or Opportunity? An IMF Issues Brief, 2000). Hence, to conceptualize globalization, we must look beyond the networks of nations.

With globalization increasing, so too has the integration and inter-reliance of previously distinct national and regional establishments increased (Winn, 2009). As noted by Winn, “these differences in national legal cultures open the door to many new forms of regulatory competition,” (Winn, 2009, p. 190). A century ago, long-distance travel and communication were rarities, so global standards and regulations were not paramount (Busch, 2011). Today, setting standards is more “urgent” because one can, for example, travel across the ocean in just a few hours, or communicate instantly across the globe (Busch, 2011, p. 38). Furthermore, a century ago, differences among product standards were not salient because product markets were mainly domestic (Büthe and Mattli, 2011). Today, the global integration of these product markets has “greatly and lastingly increased international interdependence” (Büthe and Mattli, 2011).

On what levels are our networks becoming more geographically compressed and interdependent? The KOF provides three broad categories to analyze the effects of globalization.
Category one, *economic globalization*, addresses the great distance that capital and information related to the market flows (“KOF Index of Globalization,” 2013). Category two, *Political globalization*, is defined as a “diffusion of government policies (“KOF Index of Globalization,” 2013). Lastly, the KOF explains *social globalization* as the “spread” of information, ideas, images and people (“KOF Index of Globalization,” 2013). Classifying globalization into these three categories provides a lens through which to analyze and distinguish among the political, social and economic influences related to the GCC states’ developments, and future developments, with respect to green technologies.

Our ability to address, diffuse and spread information across increasingly globalized networks both incentivizes coordination even as it often introduces new complexities and costs. Consider a global business seeking to comply with an international standard. On one hand, the company might be strongly incentivized by the opportunities made available by complying with the standard. On the other, however, complying with this standard may require the company to redesign its products, production equipment and so forth (Büthe & Mattli, 2011). Identifying the costs and opportunities associated with green standards helps to identify the likelihood that a standard will be adopted.

**Network Structure: The Role of Networks**

As we have seen, globalization occurs through networks. Hence, understanding “globalization” requires a basic understanding of networks. A network is an interconnected group of people or things linked together. They can be viewed as nodes and links (Buchanan, 2002; Grewal, 2008). Depending on their architecture, networks are *capable* of promoting beneficial cooperation, which according to Grewal can take various forms (Grewal, 2008).
However, this process is not equally beneficial to all network actors because globalization is as an “uneven process” (Grewal, 2008, p. 20).

Standards coordination takes place through networks’ links/ties. Networks have both strong and weak ties (Granovetter, 1973). Strong ties can be defined as other actors in the network with whom one regularly interacts; weak ties then can be defined as actors with whom one infrequently interacts, ties outside the network. Consider a network of friends; these friends have strong ties to each other because they have dense network interconnections. However, the people in this network also have several acquaintances with which they are weakly connected in other network nodes (e.g. they only speak on occasion). Networks structured with both strong and weak ties have both strength and access (“bridges”) to outside information and other networks (Burt, 2005; Buchanan, 2003).

**Standard-setting in the GCC**

Green standards set at the GCC’s alliance level are influenced by individual state’s strong and weak network. Therefore, understanding the power and “strength of weak ties” will be important in my analyses of the GCC’s administration structure in chapter three. To assess the likelihood of collaboration among GCC states with regard to green building standards, we need first to describe standard setting in the GCC. It is through this lens that we can best analyze the process of standard setting in green building.

The GCC structure is not tightly bound, nor is it clearly defined (Legrenzi, 2008). The Supreme Council is the highest decision maker in the alliance; it consists of the head of state from each member country of the GCC. The council meets once a year and the presidency
Decision-making in GCC differs radically from other international organizations (Legrenzi, 2008, p. 42). This is due in part from the loose structure of the alliance. Hiba Khodr and Danyel Reiche (2012) explain that no existing theoretical framework fits quite right. Legrenzi writes that the search for consensus is “painstaking,” but he explains, “the top-down structure and absence of checks and balances makes it easier to implement some types of decisions once these are arrived at by the Supreme Council” (Legrenzi, 2008, p. 42). The procedures that the GCC carries out resemble those of the six member states’ governments “in their opaque and informal nature” (Legrenzi, 2008, p.112).

Although standard setting in the GCC has traditionally been done using a top-down approach, the sovereign’s of individual member states play an important (Lahn, Stevens, Preston, 2013; Legrenzi, 2008). Though historically the GCC has coordinated on policies, member states’ sovereignties take precedence over coordination attempts. At the GCC level, individual states’ sovereigns are still key. As Legrenzi notes, “Individual states have rarely sacrificed their foreign policy priorities on the altar of reaching a common stance. Sovereignty is still paramount in the GCC states even if the closer personal ties between rulers certainly constitute an asset when it comes to policy coordination” (Legrenzi, 2008, p. 87). In fact, at a 2013 expert workshop on “Cooperation for Energy Conservation in the GCC Countries,” discussions centered around

v Arabic alphabetical order.
“how standard setting at the regional level could support national-level actions” (Lahn, Stevens, Preston, 2013; 2013).

The GCC also has a formal standard setting organization called the Gulf Cooperation Council Standards Organization (“Bylaws,” n.d.). The GCC’s Supreme Council transformed the Saudi Arabian Standards Organization (SASO) into a GCC organization in 2001 and thus, the GSO was born. The objectives of the organization are to achieve “coordination, integration and interconnection between [GCC states] in all areas leading to their unity, and pursuant to the objectives of the GCC Economic Agreement” (“Bylaws,” n.d.). However, a core principle of the Regional Conformity Assessment Scheme (RCAS), which was adopted into the GSO in 2005, that it will retain national standards bodies and GSO coordinating, but “all standards are to be voluntary” (The Regional Conformity Assessment Scheme in the Cooperation Council of Gulf Arabic States, 2011; GCC Conformity Assessment Scheme, n.d.).

Network Effects and Network Power

The selection of one standard over another has significant economic, political and social consequences. As Grewal and Büthe and Mattli have described, selecting one standard over another can shift power relations in a network. Given the high stakes involved in global standard setting, “severe conflicts of interest are likely,” especially in the international sphere where rules are likely to be “intensely fought” (Büthe & Mattli, 2011, p.9; Grewal, 2008). At the heart of this conflict is the battle for network power.

Network power is achieved through externalities, which are the positive or negative consequences or effects that occur after a decision is made, a good is produced, or a standard is set. People adopt a network’s standard in order to reap the positive externalities that are
associated with adoption. As Jeffery Rohlf (2001) describes, in any network externalities are generated when the number of network users expands and each user benefits from being connected to more persons or nodes (Rohlf, 2001). The more people who join a network and adopt its standards, the more beneficial that network becomes, and the harder it is to change its standards because users become locked in (Grewal, 2008; Rohlf, 2001). A classic example of lock-in can be seen in our continued use of the less-efficient QWERTY keyboard (David, 1985). Though more efficient keyboards exist, it’s a very challenging standard to change due to the amount of money invested by both companies and consumers (David, 1985). On the other hand, if congestion occurs due to the expansion of users negative externalities can set in.

Network Power Strategies: First Movers and Bandwagons

To gain network power, interested parties may seek to establish a first mover advantage. The first mover advantage refers to the benefits to be gained when one is first to market. By doing this, the first-mover hopes to not only establish his or her standard, but also diffuse it in advance of competitors, thereby gaining network power. If a first mover is successful and dominates the market, consumers can get locked-in. Understanding whether there is a first-mover advantage, and what this advantage does in the standard setting process, is needed to better understand the state of standards development within green technology standards in the GCC (Rohlf; 2001). Grewal describes this tipping point as a point at which a network surpasses two critical thresholds (Grewal, 2008, p. 38). The first, according to Grewal, is the “threshold of visibility” (Grewal, 2008, p. 38). This is the point at which a network becomes large enough to attract non-users. Another way to achieve network power is to take advantage of bandwagon effects: the more something is used, adopted or believed the more its use, adoption or belief will
increase. Bandwagons are very hard to start and “often end up in a ditch before they can get underway” (Rohlfs, 2001, p.4). Without enough momentum, a bandwagon will fail. However, once a bandwagon does gain momentum and crosses a certain tipping point, it’s difficult to stop (Rohlfs, 2001). The second threshold Grewal writes about is the “threshold of inevitability.” At this point a network becomes so predominant that virtually all nonusers will likely adopt its standard (Grewal, 2008).vi

**Collective Action Problems**

Standard setting requires interested parties to act in conjunction with one another. Collective action, put simply, occurs when a group collectively acts, or makes a decision, that will benefit the whole group. But collective action is often a problem

Mancur Olson challenged the previous assumption that a group will act collectively if its members would thereby benefit (Olson, 1965). As he Olson claimed “rational, self-interested individuals will not act to achieve their common or group interests” (Olson, 1965). According to his analyses, collective action rarely happens unless the group is very small or group members are coerced (Olson 1965). The larger the group, the harder collective action becomes (Olson 1965). Some people will simply “free ride” because they know there are enough others in the group to do the work (Olson, 1968).vii Still, collective action can be accomplished if there is a user who can sponsor the effort because he or she would benefit from the action.

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vi For a long time, those with a PC had access to many more applications than those who used a Macintosh. The PC users who wanted to access the myriad of applications offered could “choose any operating system they [wanted], so long as it [was] Microsoft Windows” (Rohlfs, 2001, p. 4; Sebenius, 2002).

vii At the core of this idea is a major problem, although a group of people may agree on a common interest, they also disagree on many other interests (*Encyclopedia Britannica*, 2015).
Additionally, the costs surrounding the development and negotiation of collective action can be quite high (Olson, 1968). The larger the group, the higher the costs are to organize the process (Olson, 1968; Garcia, Leickly, Willey, 2005). Participants may deem the action not worth their time or money. Olson suggested selective incentives -- offering positive and negative rewards -- to encourage participation. (However, even organizing a system like this would take a lot of time and funds.)

Selective incentives are not enough to solve the collective action problem (Oliver, 1993). Pamela Oliver (1993) wrote that the problem is Olson’s selective incentives solution is that someone must pay for the selective incentives (Oliver, 1993, p. 175). “Paying for a selective incentive is, itself, a collective action in that it provides a benefit to everyone interested in the collective good, not just the people who pay for the incentive” (Oliver, 1993, p. 274).

However, selective incentives are a condition often found in cases where groups achieved collective action (Ostrom, 1990). Elinor Ostrom (1990) found that certain conditions and criteria make collective action more likely. Ostrom discovered that when groups are successful in achieving collective action, they share several key design principles. When collective action takes place: 1) Group boundaries must be clear and defined; 2) The rules used to govern collective goods match the local conditions and needs; 3) those impacted or affected by these rules can participate in modifying these rules; 4) the rights of the rulemaking community is respected by external authorities; 5) a system for monitoring members’ behaviors exists and is monitored by community members; 6) a graduated sanctions/selective incentives system is used for those who violate the rules; 7) low cost conflict resolution mechanisms are available; 8)
responsibility for governance is organized in nested layers, from the bottom level up to the full interconnected system (Ostrom, 1990).

To determine the likelihood that GCC states will collectively act, this thesis will incorporate components of the literature discussed in this section. This thesis understands and utilizes Olson’s research, which showed that collective action is not assumed nor is it easy for groups to collectively act (Olson, 1965). This thesis will also include Olson’s findings that the larger a group’s size, the more challenging collective action becomes (Olson, 1965). Previous literature makes it clear that selective incentives are not enough to achieve collective action (Oliver, 1993; Ostrom, 1990). This thesis will measure the GCC’s likelihood of collective action by asking whether the GCC states meet the eight conditions Ostrom discovered (Ostrom, 1990). To do this, in chapter three, I will examine the current condition of the green technology field in the GCC countries.

Part Two

Hypotheses and Proposed Measures

Based on the literature and my research questions, the following hypotheses are proposed:

H.1) The GCC will adopt existing, international green building standards

H2) The GCC will form a critical mass to set alternative green building standards for the

H3) The GCC will end up without a coherent body of appropriate green standards.
The theoretical concepts discussed in chapter two provide a framework for the empirical analysis that follows. Chapter three will address how Ostrom’s eight design principles provide the analytical measures for this research.
Elinor Ostrom’s eight design principles give this research a basis from which to assess the likelihood of the GCC’s collaboration regarding green building standards. The principles are supported by theory and empirical evidence and have been used in a variety of frameworks to analyze resource management institutions (Ostrom, 1999; Cox et. al, 2010; Quinn et. al, 2007; Fleishman et al., 2014). These principles are not intended to be used as a “blueprint to be imposed on resource management regimes,” but rather as a framework from which to analyze past and present situations (Agrawal, 2002; Quinn et. al, 2007). The design principles have since expanded up to 33 principles (Agrawal, 2002), but in keeping with Quinn et al. (2007) and Yandle (2003), this research will limit its analytical framework to the original eight design principles named by Ostrom (Quinn et al., 2007, Yandle, 2003).

![Ostrom’s Design Principles](image)

**Figure 3.1, Ostrom’s Eight Design Principles.** Note. Created by Lisa Zimmermann for “Green Building Standards in the Gulf” in 2015.
Review of Method in Previous Studies

In 2007 Quinn et al. used Ostrom’s design principles as a way of evaluating community management in semi-arid Tanzania. The authors evaluated each design principle based on data collected through interviews, and then determined if each of the design principles were present and, if so, the authors noted whether the presence was “strong” or “weak” (Quinn et al., 2007). The authors found:

“If the design principles are used not as a prescription for management but as a framework for understanding management then they can serve a useful purpose. The design principle approach has shown the importance of boundaries, conflict and negotiation in CPR management, which can then be set in the wider social and ecological context” (Quinn et al., 2007).

As in Quinn’s study, this thesis plans to use Ostrom’s principles as a framework to better understand management in the GCC.

Similar to Quinn’s approach, in “Governing large-scale social-ecological systems: Lessons from five cases,” Fleischman et al. (2014) applied Ostrom’s design principles as a method for analysis. Fleischman’s study also noted whether the principles were present or absent; however, in noting this, the study listed additional qualifying descriptions. In other words, instead of simply noting a principle was “present,” the study listed that a principle was present, but also “weak,” “inclusive,” or “contested.” The study’s synthesized findings suggested that “two conditions may consistently play a role in the success or failure of large scale social-ecological governance.” They were well-defined boundaries and monitoring of conditions (Fleischman, 2014).
Robert Stern’s research on natural resources and emerging technologies applied Ostrom’s principles to his research situation by asking if each principle was not only present, but also “applicable” (Stern, 2011). He answered, “yes,” “no,” or “possibly” to each principle. Then, he noted whether there was a challenge in applying each principle or not. If a challenge existed, he defined the challenge (Stern, 2011). In his study, Stern found Ostrom’s design principles to have “considerable external validity,” but he proposed modifying the design principles when applying them to global resource commons.

**Applying Ostrom’s Principles to this Research**

Not all of Ostrom’s design principles must be present for collective action to occur, but their presence is strong where there are successes in collective action (Ostrom, 1990; Cox, 2010). Determining whether Ostrom’s design principles are present in the GCC’s previous management of standards will serve as a method towards identifying points of collaboration and contestation during the standards negotiation process. Therefore, following a framework similar to the previous research discussed, this research will note the *presence* of each principle as well as whether each principle is *applicable* to the situation under analysis. This research will be presented in a matrix that will be set up as follows.

**Column 1: Ostrom’s eight design principles.** In this column, I list each of Ostrom’s Design Principles (DP) separately, one per row.
**Column 2: Present (to what degree).** In this column, I will determine whether each design principle it is present, absent, not known or unclear. The inclusion of “not known” in this case study is necessary because some sources are contradictory. (When contradictions do occur, they are noted in the footnotes.) Also in column two, if information is available, a description is added to provide additional information (e.g. strong, weak, inclusive, exclusive and so forth).

**Column 3: Applicable.** In this column I will determine whether the DP in question is applicable, partially applicable or whether its application cannot be determined given the information available.

**Column 4: Challenges.** In this column, I will note any challenges associated with applying a specific principle to the situation under analysis.

The analytical framework of this research will be structured in a matrix as follows.

**Example of Matrix to be used for Analytical Framework**

<table>
<thead>
<tr>
<th>Ostrom’s Design Principles</th>
<th>Present (to what degree)</th>
<th>Applicable</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP #1: Are group boundaries clearly defined?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 4: ANALYSIS OF CASE STUDIES

This chapter will apply the method discussed in chapter three to two case studies for a historical comparison. The first case study discusses the GCC’s efforts to collectively adopt a single unified currency standard. This effort failed. The second case study illustrates a successful example of the GCC members collectively acting to implement a National ID standard for GCC national citizens. Since green building standards are platform standards, the two case studies described here also represent situations where the GCC member states came together in an attempt to establish a platform standard.

Case Study #1: GCC Single Currency Standard

The GCC attempted to set a common currency platform standard, However, this standard has yet to be achieved. Currencies serve as the platform from which a nation’s citizens (or an alliance of nations, such as the European Union, or GCC) can exchange goods and services. Traditionally currencies are set through a top-down process.

Before determining the presence of Ostrom’s design principles for collective action, it is necessary to provide a narrative of events, and presentation of event triggers, which is detailed below.
What Happened?

1982: the GCC states began discussing coordinating financial policies, including a single, unified currency. All the states, decide to “peg their currencies to the dollar until a monetary union is formed” (“Dancing to a New Tune;” 2012; Legrenzi, 2008).

2001: at the Muscat Summit, the Supreme Council ordered the GCC states to adopt the U.S. dollar as the “common peg” by January of 2003 (Antoniades, 2014). GCC sovereigns made a plan to form a monetary union by 2005 with a single currency by 2010 (“Dancing to a New Tune;” 2012).

2005: The International Monetary Fund (IMF) distributed a press release supporting the GCC’s single currency standard plan and the 2010 deadline (Antoniades, 2014).

2006: Oman announces it will withdraw from the Gulf Monetary Union and the single currency standard. Oman reported that it’s withdraw from the agreement was tied to the 2010 launch date. Oman’s believed this target date was “too optimistic” because it left little room for the country to meet the criteria determined for a single currency (Antoniades, 2014; Al-Hinai, 2007). Oman was willing to reconsider joining the agreement, but only after the GMU was established (Antoniades, 2014). As of the time of this research, Oman has yet to rejoin discussions around the single currency standard.
2007: Kuwait de-pegged from the U.S. dollar, but remained committed to the Monetary Union and the single currency (Said. & Ziemba, 2009).

2008: Then, in June, GCC bankers wrote a monetary union deal and plan for a monetary council that “will form the first leg of a common central bank” (“Dancing to a New Tune;” 2012) In August, the central banks of the United Arab Emirates announced a two-stage implementation process scheduled for 2010. In December, the GCC leaders signed a monetary deal along with a charter for the monetary council (“Dancing to a New Tune;” 2012; “GCC Monetary Agreement,” 2010).

2009: In March the deadline for implementing a single currency was extended. However, in May, after a decision was made to situate the monetary council in Riyadh, Saudi Arabia, the UAE announced its withdrawal (“Dancing to a New Tune;” 2012).

In December, the proposed name for the single currency, ‘Khaleeji,’ which is Arabic for “of the Gulf,” was turned down. According to the Finance Ministry resources, which were quoted in local papers, the proposed name was “too general” (Summit – Gulf Daily News, 2009). Also, in December, the four remaining states, Kuwait, Saudi Arabia, Qatar and Bahrain, ratified an agreement and the GCC Supreme Committee began the GCC monetary project. The Agreement specified that a Monetary Council would decide the name of the single currency (“GCC Monetary Union Agreement,” 2010).

2010: The GCC Monetary Committee hosted its first meeting (“Dancing to a New Tune;” 2012).
2013: Reports of “chatter” from local news agencies stated that a single currency would be implemented by the end of the year; however, the Monetary Council reportedly said that these were simply rumors and false (“Gulf Common Currency Chatter Returns Again,” 2013).

2015: The six GCC states do not have a standard currency, nor do the four GCC states that are still in discussions about a single currency standard.

Analysis: Case Study #1, GCC Single Currency Standard

(Ostrom’s DPs Applied)

<table>
<thead>
<tr>
<th>Ostrom’s Design Principles</th>
<th>Present/ Absent (to what degree)</th>
<th>Applicable</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP #1: Are group boundaries clearly defined?</td>
<td>Present</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The proposal of a single currency standard was meant for only the GCC member states. All other states in the region that are not members of the GCC are not to be included in the standard.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| DP #2: Do the rules used to govern these collective action rules also match local needs and conditions? | Present / Unclear | Yes | **Challenges with current agreement between Kuwait, Bahrain, Qatar and Saudi Arabia**

The Monetary Council is composed of a Board of Directors, which consists of a president and governor from each of the central banks in Qatar, Kuwait and Bahrain and the monetary agency of Saudi Arabia. However, although participation from each member state is present, under Article 12 of the agreement, the Central Bank that will be established “shall supersede the Monetary Council” (“Gulf Monetary Council – Board of Directors,” 2012). This is important because the Central Bank (CB) is tasked with crucial tasks such as defining and implementing policy around a single GCC currency standard and managing foreign reserves of the GCC’s single currency. However, the Central Bank is independent. Article 15 states: “Neither any of the GCC bodies nor the government of entities of the Member States shall give instructions to the CB, the [existing GCC] National Central Banks or to any member of their executive bodies that would influence the performance of their tasks and duties as assigned by the present Agreement and its statue. The GCC and public bodies shall respect this principle and shall not seek to influence the members of the executive bodies of the CB and the NCBs while performing...
Challenges with initial currency standard agreement, which led to Oman and the UAE opting out of the agreement:

According to the Emirates Center for Strategic Studies and Research (2007), one of the reasons stated for Oman’s withdraw in 2006 from the single currency agreement was that “the Sultanate has its own economic and financial compulsions, which offer no room for meeting the criteria set for the common currency” (Al-Hinai, 2007). The state believe the 2010 deadline to launch a single standard currency was not feasible (Antoniades, 2014).

The UAE’s withdraw from the single currency is related to challenges associated with this design principle due to the state’s fear a conservative regulation regime headquartered in Saudi Arabia would influence the central bank and compromise the UAE’s open economy model (specifically with regard to Dubai. If this were to occur, it might threaten the UAE’s “future expansion as a global financial hub” (Ramady, 2010, p. 464).

<p>| DP #3: Are those who will be impacted/af | Present, weak | Yes | According to Article 10 of the Monetary Agreement, the exchange rate of GCC member states against a single currency would be specified at a |</p>
<table>
<thead>
<tr>
<th>DP #4: Are the rights of the rulemaking community respected by external authorities?</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In 2005, the International Monetary Fund’s Managing Director Rodrigo de Rato announced the IMF’s support of the GCC’s decision to adopt a single currency (Hebous, 2006; Antoniades, 2014).</td>
</tr>
<tr>
<td>DP #5: Does a system for monitoring members’ behaviors exist, and is it monitored by members of the community members?</td>
<td>Yes, a proposed system exists.</td>
<td>Yes</td>
</tr>
<tr>
<td>DP #6: Is a graduated sanctions/selective incentives system being used?</td>
<td>Partially Present</td>
<td>Partially</td>
</tr>
<tr>
<td>DP #7: Are low cost conflict resolution mechanisms available?</td>
<td>Unclear / Weak</td>
<td>Yes</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>----------------</td>
<td>-----</td>
</tr>
<tr>
<td>According to Article 24, member states may seek to settle interpretation or implementation disputes through “amicable vehicles.” However, if this is not possible, the dispute will be “referred to arbitration in accordance with the rules to be agreed upon” (Gulf Monetary Union Agreement, 2010).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is unclear if this conflict resolution provision is effective or low cost.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DP #8: Is responsibility for governance organized in nested layers, from the bottom level up to the full interconnected system?</th>
<th>No</th>
<th>Partially</th>
</tr>
</thead>
<tbody>
<tr>
<td>The proposed governance is to implement the currency through a top-down process, using the CB representatives as the enforcers throughout the GCC’s banks.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The UAE and Oman’s concerns over governance and decisions to opt out of the currency standard agreement, suggests that the state’s proposed governance was not acceptable to them. Whether or not a nested form of governance would fare better is unclear here.</td>
<td></td>
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</tr>
</tbody>
</table>
Further Discussion

In the formation of a Monetary Union and adoption of a currency standard, GCC leaders saw a political opportunity to build power and reputation from which its actions might be judged. By successfully integrating to a single currency, the GCC could send a political “message of unity” conveying it’s heightened stability and power. As Abbott and Snidal (2015) point out, standards are also used as a measure from which others judge a behavior.

“At the block level, the states gain bargaining power by creating an overwhelming political constituency. The direct benefit is that any policy communicated at the supranational level carries more weight than policies communicated at the national level” (Antoniades, 2014).

However, increasing the bargaining power at the GCC level came at the cost of the state’s sovereignty/autonomy at the state's national levels. “While each country will have the right to vote on every decision and policy, financial and economic integration requires that a large number of decisions be taken at the supranational, and not the national level” (Antoniades, 2014).

Points of contention toward collaboration cluster around design principles #2, #3, #5 and #8. Consider DP #2: when the announcement was made that the Monetary Council would be based in Saudi Arabia, the UAE withdrew its participation from the standard’s negotiation. There appears to be a relationship between the event (withdrawing from the standard) and the Emirate's fear that the currency standard would not meet its local needs because the standard’s ruling body was to be based outside its own borders. Distrust appears to play a role in the GCC’s failure to
meet DP #2. “The enthusiasm for ‘cooperation’ and ‘regionalization’ at the societal level is matched by a healthy distrust of possible Saudi hegemony” (Legrenzi, 2008).

When this distrust is mixed with the cloudy governing nature of the GCC, as Legrenzi writes, DP #3 and 5 also present challenges. As discussed in chapter two, the more parties involved, the harder it is to reach collective action (Olson, 1965). One way to foster collective action in a situation with multiple parties is to grant those impacted by the standard the ability to participate, modify and monitor the rules (Ostrom, 1990). If it is not transparent to member how they might participate and modify the standards they are asked to collectively adopt, the inclination to adopt the standard decreases. The currency standard case demonstrates this point. Additionally, given that the GCC’s single currency standard was inclusive only to the six GCC member states, the loss of the UAE and Oman eliminated a third of the countries from the proposed standard’s user base. The more people in a network who adopt a standard, the more positive externalities the members of this network will benefit (Grewal, 2008). However, the inflexibility of the system caused Oman and the UAE to drop out, reducing the potential positive externalities, and consequently the currency standard’s discussions have lost momentum.

The loss of momentum as well as the lack of transparency, trust and local incentives (DP #2 and #6) compounded with the GCC’s lack of power and governing authority, created a situation where the UAE and Oman could simply opt out of the standard. As discussed in chapter 2, the GCC’s structure does not give it the authority to coerce the states to comply without a unanimous vote from all six sovereigns. Thus, collective action for adopting a single currency has yet to come to fruition.
**Case Study #2: National E-Identity Cards Standard**

One example of a scenario where the GCC member states collectively and successfully adopted the same standard is in the case of national e-identity cards. These cards allow naturalized citizens in the six states to travel from one state to the other without a Visa or passport.

Over the last decade, GCC countries began national identity management programs, but in 2012, the GCC adopted a unified identity card reader’s program based on an “edict of the GCC Supreme Committee” (Al-Khouri, 2013; “ID Cards to Let GCC Nationals Breeze through Airports,” 2012). The unified identity cards constitute a platform standard that makes it easier for nationals of GCC countries to travel to other GCC states simply using their national ID. In other words, the new standard speeds up the immigration process when traveling to and from GCC member states for GCC naturals. This standard, it should be noted, does not apply to the large population of expatriates living among the region.

Before determining the presence of Ostrom’s design principles for collective action, a narrative of events, and presentation of event triggers is necessary and, therefore, detailed below.

**What happened?**

**2002:** In October Oman launched the first smart card-based national ID program in the Middle East using “GlobalPlatform” technology (GlobalPlatform.org Case Study, 2004). The country’s goal was to improve the identification process of its citizens as well as enhance its information technology infrastructures to provide additional public services, while also ensuring increased levels of safety (“Case Study – The Sultanate of Oman – National ID Program,” 2004).
2003\textsuperscript{viii}: Bahrain launched a Smart ID card. This Smart ID card included a microchip that stored the card holder’s “name, address, national identification number, digital fingerprints and driver's license, passport, medical, financial and educational data” (Bahrain Takes Swipe into the Future with New Smart ID Cards, 2003).

2005: The United Arab Emirates launched its first national ID smart card (Bennett, 2008).

2006: The Kingdom of Bahrain was presented the “Best Electronic Identity Card in the Middle East during the Card-Ex conference in Cairo, Egypt (“Arabian Pioneering Award for Best Electronic Identity Card,” 2009). According to the Central Informatics Organization’s (CIO) page on the government website of Bahrain, the CIO documented the standards and specifications of a proposed GCC ID card and invited GCC member states to a workshop to discuss the document. During the workshop, agreements were reached among GCC states on required standards and specifications (CIO, Bahrain, 2006). Saudi Arabia launches its first national ID smart card the same year.

2007: Qatar launches its first national ID smart card.

2009: Kuwait launches its first national ID smart card.

\textsuperscript{viii} Local Bahraini sources cite the launch date in 2003, however, Bennet (2008) cites Bahrain’s smart card launch date in 2005.
2012: The GCC adopted a unified identity card reader’s program based on an “edict of the GCC Supreme Committee” (Al-Khouri, 2013; ID Cards to Let GCC Nationals Breeze through Airports,” 2012). The existing national ID systems infrastructures served as “a reliable platform to establish trust between different entities cutting across borders” (Al-Khouri, 2013). These multi-layered systems had the government at the center.

After the Supreme Committee’s announcement of the standard, the UAE built a model where the e-government served as the identity proxy. “The GCC federated identity management concept is based on extending the services provided by national identity providers to the GCC bloc, in which each identity provider will act as a proxy for any of the others (Al-Khouri, 2013). This will serve to bridge the identity providers in a seamless bind for individual digital identity holders across the identity providers” (Al-Khouri, 2013).ix

2013: By March, 19 million GCC citizens (40 percent) had registered for their National ID cards (Al-Khouri, 2013)

Analysis: Case Study #2, GCC’s National Smart ID Card Standard

(Ostrom’s DPs Applied)

<table>
<thead>
<tr>
<th>Ostrom’s Design</th>
<th>Present (to what)</th>
<th>Applicable</th>
<th>Challenges</th>
</tr>
</thead>
</table>

ix However, at this stage there have been some interoperability issues, but the standard is still being carried out across the GCC (Al-Khouri, 2013).
<table>
<thead>
<tr>
<th>Principles</th>
<th>degree)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DP #1: Are group boundaries clearly defined?</strong></td>
<td>Present</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>DP #2: Do the rules used to govern this collective action rules also match local needs and conditions?</strong></td>
<td>Present</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>The new standard is built on top of existing national standards. Very few changes needed to be applied to facilitate phase one of the National ID standard.</td>
<td></td>
</tr>
<tr>
<td><strong>DP #3: Are those who will be impacted/affected by these rules able to participate and modify said rules?</strong></td>
<td>Partially Present (Interoperability workshops were conducted in GCC countries.)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>The individual service providers at each state were allowed to remain in place. “The GCC federated identity management concept is based on extending the services provided by national identity providers to the GCC bloc, in which each identity provider will act as a proxy for any of the others. This will serve to bridge the identity providers in a seamless bind for individual digital identity holders across the identity providers” (Al-Khoury, 2013, p. 31).</td>
<td></td>
</tr>
<tr>
<td>DP #4: Are the rights of the rulemaking community respected by external authorities?</td>
<td>Present, strong</td>
<td>Yes</td>
</tr>
<tr>
<td>---</td>
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<tr>
<td>The new standard system was implemented at each of the six GCC state’s borders, both at the state’s airports and seaports (Al-Khoury, 2013, p. 32).</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DP #5: Does a system for monitoring members’ behaviors exists and is it monitored by community members?</th>
<th>Present</th>
<th>Partially</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because the National ID standard is built on top of each state’s existing system, each state and their respective IT providers already had monitoring systems in place. In this sense, yes, local community members monitor the new standard.</td>
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</table>

| DP #6: Is a graduated sanctions/selective incentives system | Unclear | Unclear |
| DP #7: Are low cost conflict resolution mechanisms available? | Yes | Yes | Until a full interoperable system is in place, the current infrastructure is open and flexible enough to accommodate the changes necessary to implement the standard.

Because many of the GCC’s individual national digital identity systems were based on common international standards, the basic components for an interoperable platform between the states already existed (Al-Khoury, 2013, p. 31). |
| DP #8: Is responsibility for governance organized in nested layers from the bottom level up to the full interconnected system? | Yes, strong (many nested layers) | Yes | Partially

See Figure 4.1 below from Al-Khoury’s 2013 study. The diagram shows a generic framework for identity services, issuance and management. The diagram shows that composition of the “national identity management framework in each |
of the GCC countries” (Al-Khour, 2013.)

Though the current GCC National ID standards were set from the top-down (via the Supreme Council), many of these standards already existed because they emerged from the bottom-up through knowledge share workshops at the state level.

up and top-town standard setting processes, it’s difficult to determine whether a strictly bottom-up standard setting procedure is a necessary condition for collective action.

Further Discussion

In case study #2 similar standards and processes were established at the state level prior to the collective standard discussions. Though each state’s national ID / “smart” cards varied, each were “equipped with advanced functionalities that [addressed] digital transformation requirements” such as providing ID parameters and secure storage to provide and verify a person’s identification on-site, while permitting secure and trusted transactions to occur remotely (Al-Khouri, 2013). Additionally, national ID card systems had “multi-factor authentication capabilities [providing] match-on-card and match-off-card features” to facilitate, verify and authenticate a person’s identity (Al-Khouri, 2013). Lastly, national identity providers from each state provided these services to its natural citizens (Al-Khouri, 2013). The standards (rules) met each state’s local needs and satisfied DP #2 because the GCC states developed local systems first and then only needed to slightly adjust these system’s standards to integrate the national standard.

With regard to DP #3 and #5, addressing community members abilities to participate/modify the rules and the ability to monitor these rules does not appear to be a challenge in case study #2. In contrast to the first case study, there was not a clear struggle to control the standard, or the power it carries, because the standard’s regulators were not rooted in one location of the GCC network. Each state updates its own national ID system’s standards; therefore, there was no need for a “headquarter” location like there was in case study #1 with the Monetary Council’s location.

Another important difference between the two studies is time. GCC states adopted national ID standards at different times, but shared best practices along the way. Though each
state that implemented an individual state ID, implemented it as “mandatory” for its citizens, it appears the wave of standard-setting emerged from advancements in information technology and knowledge sharing practices among states in the region. By 2012, multiple systems were in place utilizing similar international standards introduced from both contractors and governments. Only later was the standard implemented from the top-down at the GCC level of governance. This blend of “nested, interconnected governance” satisfies DP #8. Furthermore, this complex, but flexible, structure allows the GCC’s National ID network to accommodate future changes and build in future interconnection points.

Both of the two case studies discussed in this chapter entailed platform standards with multiple levels of governance involved. In looking at green building standards in the GCC, which are also platform standards, there are some key lessons to be learned. When a standard is controlled by an actor (or state), or monitored in a specific state, it impacts the GCC’s ability to collectively act. This is illustrated in case study #1 by the UAE’s withdraw from the currency standard. On the other hand, when no one state is given more control of the standard than the others, as see in the National ID card case, there appears to be less contestation and more opportunities for collaboration.

Other collaboration points are correlated with the ability for those impacted by the standard to modify the standard (Ostrom, 1990). As discussed throughout this thesis, not all standards are right for all regions, just as not all e-reader systems were correct for each GCC state, but the ability to modify standards by using card reader systems best suited for their individual state’s securities’ infrastructures, the GCC states were able to collectively adopt the national ID standard. Lastly, in considering DP # 7, which relates to low cost conflict resolution
mechanisms, the national ID standard’s infrastructure was built to accommodate existing
standards, which required little expense for the individual states. On the other hand, in case study
#1, creating an entirely new currency standard was a more foreboding task because the economic
infrastructure within each state needed to change, making completing such a task a very costly
and time consuming endeavor.
CHAPTER 5: ANALYSIS AND CONCLUSIONS: THE GCC’S GREEN BUILDING STANDARDS

In general, the GCC supports sustainability and green building standards (Aldablan, 2014). The GSO Technical Committee for Construction and Building Materials (TC6) boasts more than 1,200 standards (optional) and regulations (mandatory) in construction in building (Aldablan, 2014). A variety of organization established these standards, and they are identified below:

- 58 percent are standards set by ISO, the International Standards Organization
- 18 percent are standards set by CEN, the European Committee for Standardization
- 16 percent are standards set by ASTM, the American Society for Testing and Materials
- 8 percent are standards prepared by the GSO itself

Additionally, in May 2015 ASTM, with the International Construction Technology and Building Materials Exhibition, will host a workshop in Doha, Qatar to “introduce GCC-based participants to additional knowledge of codes and standards and their support for sustainable construction as well as the link between codes and standards with manufactured products and compliance” (ASTM, 2014). Additionally the GSO’s Secretary General Nabil Molla is serving a three-year term on the international board of directors for ASTM (ASTM, 2014).

Out of the nearly 600 green product certification system standards, this research found the four most cited standardized systems used in the GCC are LEED, BREEAM, the Pearl Rating System and QSAS (Vierra, 2014). These systems set platform standards for both
controlling the interactions that will take place and for presenting a standard by which we may judge a behavior (Garcia, 2013; Abbott and Snidal, 2015).

Not all green building standards are the same; each produces different externalities. Certification systems apply different weights to variables, utilize different assessment tools and each of these vary depending on a region’s location and the resources available (Shaawat & Jamil, 2014). Additionally, the standard calculations, which are applied to gage these weights, also differ (Shaawat & Jamil, 2014). “Hence [a] building rating system developed for any specific region becomes inappropriate for other regions” (Shaawat & Jamil, 2014).

A discussion of each of the four building rating standards most used in the region is can be used to identify whether Ostrom’s DPs could be fulfilled in this situation.

#1 Leadership in Energy & Environmental Design (LEED) — used as a green building standard in the following GCC states: UAE, Saudi Arabia and Oman

The first version of LEED was developed in 1998 by the U.S. Green Building Council (USGBC). LEED is one of the well-recognized green building rating systems globally and the primary system used in

<table>
<thead>
<tr>
<th>Building Rating/Certification System</th>
<th>Country of Origin</th>
<th>Free or for a fee?</th>
<th>GCC countries who use the system/rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEED</td>
<td>United States</td>
<td>For a fee</td>
<td>United Arab Emirates</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Saudi Arabia</td>
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<tr>
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<td></td>
<td></td>
<td>Oman</td>
</tr>
<tr>
<td>BREEAM</td>
<td>United Kingdom</td>
<td>For a fee</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oman - BREEAM-Gulf (withdrawn)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bahrain - BREEAM-Gulf (withdrawn)</td>
</tr>
<tr>
<td>PEARL RATING SYSTEM FOR ESTIDAMA</td>
<td>United Arab Emirates (Abu Dhabi Urban Planning Council)</td>
<td>Free</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>GSAS</td>
<td>Qatar</td>
<td>For a fee</td>
<td>Qatar</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kuwait</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Saudi Arabia</td>
</tr>
</tbody>
</table>

Figure 5.1 Green Building Standards Found in the GCC. Note. Created by Lisa Zimmermann for “Green Building Standards in the Gulf” in 2015.
the United States (LEED, 2015). LEED is a “voluntary rating system to evaluate the environmental performance of a building over almost the entire life cycle” (Shaawat & Jamil, 2014). LEED “guides the design, construction, operations and maintenance for buildings, houses and “communities” (LEED, 2015). LEED also offers certifications. Certification fees are based on the rating standards the project is aiming to certify under and the size of this project (“LEED Certification Policy Manual,” 2015). As of the time of this research, more than 54,000 projects worldwide were seeking LEED certification (“About USGBC - US Green Building Council,” 2007).

In 2013, there were 1,236 LEED-rated projects in the GCC: 67 percent in the UAE, 16 percent in Qatar, 13 percent in Saudi Arabia and a combined 4 percent in Bahrain, Kuwait and Oman (“Focus on Sustainability in Construction,” 2014; “New Report Says GCC's Green Construction,” 2014).

#2 Pearl Building Rating System (PBRS) — used as a green building standard in the following GCC states: United Arab Emirates

PBRS was established in 2010 as part of Abu Dhabi’s Estidama initiative. The aim of Estidama, which means sustainability in Arabic, is to “create more sustainable communities, cities and global enterprises and to balance the four pillars of Estidama: environmental, economic, cultural and social” (“Pearl Building Rating System (PBRS) – Estidama, 2014). The PBRS ranges in levels of certification from one to five Pearls. Additionally the system has three stages of certification: the Pearl Design Rating, the Pearl Construction Rating and the Pearl

*A Note on the UAE and Green Building:* The UAE is thought to be a leader in green building practices in the region (“Focus on Sustainability in Construction,” 2014; “New Report Says GCC's Green Construction,” 2014). Recently, Abu Dhabi completed its first 4-Pearl-rated building in Masdar City, which is Abu Dhabi’s “low-carbon, sustainable urban development.” Masdar City is meant to serve as a “test bed” for international renewable technology and energy companies in order to build a sustainable city that maximizes convenience while reducing negative environmental impacts (“Masdar City Welcomes the Completed IRENA,” 2015).

**#3 Building Research Establishment Environmental Assessment Methodology (BREEAM) – used as a green building standard in the following GCC states: UAE**

Established in the United Kingdom in 1990, BREEAM is one of the longest environmental assessment, rating and certification standards for buildings. There are currently 425,000 BREEAM-certified buildings and two million have registered for assessment since the standard launched (BREEAM: What is BREEAM, 2007). BREEAM’s measures include facets relating to “energy and water use, the internal environment (health and well-being), pollution, transport, materials, waste, ecology and management processes” (BREEAM: What is BREEAM, 2007). These standards, like LEED, are also available for a fee.

**#3a BREEAM-Gulf -- *was* used as a green building standard in the following GCC states:**

*Bahrain and Oman.*
In 2008, BREEAM-G was introduced; however it was withdrawn in 2011. It is worth mentioning here because BREAAM incorporated regional factors of the gulf and attributed different weights to these standards in order to make the standards more useful for the GCC’s unique environment. “The main cause of its withdrawal was a lack of support from constructors and owners of buildings. People didn’t take much interest in applying the procedures mentioned by BREEAM-G,” according to Shaawat and Jamil (Shaawat & Jamil, 2014).

#4 Global Sustainability Assessment System (GSAS) formerly known as the Qatar Sustainability Assessment System (QSAS) – used as a green building standard in the following GCC states: Qatar, Saudi Arabia and Kuwait

In 2010, the Gulf Organization for Research and Development developed GSAS with collaboration from TC Chan Centre at the University of Pennsylvania and the School of Architecture at the Georgia Institute of Technology (GSAS Overview – GORD, 2014). GSAS was created after an extensive analysis of best practices in 40 building codes from around the globe (Qatar Sustainability Assessment System | EcoMENA, 2012; GSAS Overview – GORD, 2014). GSAS’s objective is to minimize the ecological impact and build sustainable environments “while [addressing] the specific social and cultural needs and environment of the region” (GSAS Overview – GORD, 2014).

Unlike the UAE’s Pearl Rating System, GSAS is a standard that is priced, similar to BREEAMS and LEED (“GSAS/QSAS Technical Guide – GORD,” 2012). In an interview with
Qatar Construction News, Farwa Zahra, Meshal Al Shamari, director, Qatar Green Building Council, actively marketed the GSAS as a platform standard for green products:

“One of the challenges that we face here is the unavailability of the right information; many investors or developers like to use green materials but don’t know what services or materials are available in Qatar… So what we are trying to do is make a kind of platform for those products. Any company that would like to register has to come to us, we review the product to check it is clean” (Zahra, 2015).

An interesting component of GSAS is that the environmental design programs at Qatar University and King Fahd University swiftly incorporated GSAS into their curriculums (Balbo, 2012). Additionally, Qatar Construction specifications were required to integrate GSAS requirements (Balbo, 2012). “This means that upcoming designers are systematically trained in GSAS, and mandatory compliance by developers is simpler to achieve because the system is now codified in national building specs,” wrote Laurie Balbo in the Green Prophet (Balbo, 2012). She argued that these two distinguishers are important because LEED and BREEAM are not incorporated into national building codes, nor are LEED, BREEAM or Estidama a part of any core curriculum for design students (Balbo, 2012).

In 2013 Kuwait adopted GSAS, but no date has been set for its implementation (“The Kuwait Report,” 2013). Saudi Arabia also adopted the GSAS, but very limited information is available regarding its implementation of the standard.
Collective Action Potential: Analysis and Case Study Comparison of the GCC’s Green Building Standards

The case studies in chapter four shed light on the GCC’s management of standards in two different situations. To determine the likelihood of the GCC collectively activating to adopt one regional green building standard, this research will discuss each DP below and address the findings revealed in chapter three’s case studies. For the purpose of this discussion, the DP’s are rephrased to discuss the future versus the present.

DP #1: Could group boundaries be clearly defined?

Green building standards in the GCC do not have well defined boundaries. Not only are there a multitude of standards, but there are also multiple standard setters. There is also not a clear understanding of how these standards are enforced. One example of boundary confusion can be seen in Saudi Arabia. Saudi Arabia has multiple LEED buildings, such as its King Abdullah University of Science and Technology (KAUST) campus, which earned a LEED Platinum rating in 2010 ("Green Campus,” 2010). However, Saudi Arabia recently adopted the GSAS standard. No information is available that suggests the state will update its LEED buildings to meet GSAS standards.

The National ID case study does present support for how the GCC might arrive at clearly defined boundaries in green building standards; however, the case study’s findings suggest that one way for the GCC to collectively agree on a set of green building standards might exist if each GCC member state had its own clearly defined set of green building standards and that
these standards were similar among the states. However, as discussed earlier in this chapter, this is not the current situation. The chances of this happening in light of the GCC’s current construction efforts appears unlikely because not every state has a defined system, nor is every state practicing green building to the same extent.

**DP #2: Could the rules used to govern these collective GCC green building standards also match local needs and conditions?**

With the creation of the GSAS and Pearl Building Standards, the GCC has already successfully created green building standards that meet the regions’ local conditions. However, there are several issues related to the GCC’s likelihood to adapt either of these regional options collectively as a nation. First, the presence of more than one regional standard makes it difficult to adopt one collectively. Given that all six GCC states would have to unanimously agree, it’s unlikely that the UAE or Qatar would give-up the standards created in their state. As we know, standards yield network power; therefore, it’s difficult to see one state forfeiting this power to the other, even if it would be in the GCC’s overall best interest. Additionally, the UAE’s choice to opt out of the currency standard (once the announcement was made to move the Monetary Council’s headquarters to Saudi Arabia) suggests that if the GCC attempted to introduce QSAS as a single GCC green building standard, the UAE might again refuse to adopt the standard.

A third point worth mentioning is that although all the GCC states are geographically in the same region and have similar environments, the local GSAS standards system developed in Qatar resulted in “performance-based sustainability building rating system customized to the unique conditions of Qatar” (Shaawat & Jamil, 2014).
DP #3: Could those who will be impacted/affected by these standards be able to participate and modify these standards?

If the GCC approached green building standards in a similar way as it did its National ID standards, this DP could potentially be fulfilled. With regard to the National ID standards, Bahrain and the UAE developed standards and systems and then invited other GCC states to attend workshops to discuss and build upon these standards.

Another point related to this DP is that currently international standard setting organizations are also having workshops with the GCC states to engage key GCC actors in the standard setting process. If these standards and their networks gained momentum and formed a bandwagon, the GCC might on a de facto note end up adopting international (adaptable) green building standards. However, again, this seems unlikely due to the emergence of region-specific standards (e.g. GSAS and Pearl).

DP #4: Would the rights of the rulemaking community respected by external authorities?

If the GCC could collectively adopt a region-specific green building standard and demonstrate through actual environmental changes and statistics, DP number four could be fulfilled. However, because DP #5 hinges on so many other #DPs, it’s difficult to predict in this situation.

DP #5: Could a system for monitoring members’ behaviors exist and could it be monitored by community members?

The policy initiatives do not clearly state how green building standards will be enforced or monitored. They lack cohesion (Green buildings: Arab cities 'must enforce tough standards,'
Enforcement of green building standards is difficult to gage in the GCC. This is largely due to the availability of cheap resources. Another important point to address is that environmentally friendly behaviors are not rooted in the behaviors of GCC citizens yet. The availability of cheap resources makes sustainability efforts not appear as crucial. It’s difficult to see a collective decision among the GCC states to create a building standard, which would be monitored by community members that don’t follow, or “buy-into” the standards’ worth.

**DP #6: Could graduated sanctions/selective incentives be used?**

The two case studies were inconclusive with regard to this DP. Based on the case studies and research about the GCC’s current green building standards, the potential for uniform graduated incentives and sanctions across the GCC does not appear likely at this time. “Currently, consumers have little incentive to rein in their consumption due to the cheap cost of electricity, which is heavily subsidized” (“The GCC in 2020,” 2009).”

Previous studies have suggested sanctions such as tariff increases targeting those with higher incomes, but this would require household income data, which has traditionally been unavailable, and that which is available, unreliable (“The GCC in 2020,” 2009). Another proposal included progressively phasing out higher tariffs as energy consumption increased (“The GCC in 2020,” 2009).

**DP #7: Could low cost conflict resolution mechanisms be made available?**

If a collective green building standard were flexibly implemented in phases, such as the National ID standard, then DP #7 has potential. In other words, if each state were left to devise or adopt its own green certification systems, as was the case with the national ID systems, but
also required to meet certain specific standards within the green building system, then the 
National ID case study could be used as a model for how to adopt a consistent set of regional 
green building standards. This solution would leave the power in the individual GCC state’s 
control, leaving sovereignty intact, as well as promoting collaboration while mitigating the 
distrust and power challenges that were present in the currency standard case study.

**DP #8: Could responsibility for governance be organized in nested layers, from the bottom- 
level up to the full interconnected system?**

Building on the discussion under DP #7, one way in which the GCC might collectively 
adopt green building standards is to adopt core standards that are already present in a many of 
the existing green building systems’ standards. The National ID standard was partially successful 
in achieving a collective standard because governance over the standard was nested in layers, 
including the GCC-level, the state-level and the business stakeholder’s level. Lastly, as seen in 
the currency standard case study, placing ultimate authority in one solution standard to be 
delivered through a muddled governance structure did not bode well for collective action among 
the GCC states.

**Conclusions**

This research draws the following conclusions with regard to the three green building 
standard scenarios in the GCC, which were hypothesized in chapter two. (The three hypotheses 
are also restated below).

**H.1) The GCC will adopt existing, international green building standards.**

In light of the analysis above, this thesis finds that H1 will continue to be present among 
the GCC states, but the degree to which H1 remains true is shifting due to the emergence of
regionally designed green building standards, such as the GSAS and Pearl. Given the increasing presence of workshops hosted by, and new partnerships formed with, international environmental standard setters (such as ASTM) in the region, international green building standards are likely to continue to play a role in the region.

**H2) The GCC will form a critical mass to set alternative green building standards for the region.**

The majority of this thesis focuses on H2. The analysis of the GCC’s green building standards situation suggests that it is unlikely the GCC will adapt a region specific, single set of standards. This is due to the impending standard’s war between the UAE’s Pearl standard and Qatar’s GSAS.

This research recommends that if the GCC utilizes lessons learned from previous collective action attempts, it might be able to reach a critical mass of core, generic, flexible green building standards. These standards could be established top-down from the GCC, but implemented at the individual GCC state level, within each state’s green building systems. With this flexibility, the GCC’s would place much of the control at the individual state level, which in turn leaves potential for the presence of #DP 3, which allows for states to modify the standards in a way that makes best sense for their local conditions.

**H3) The GCC will end up without a coherent body of appropriate green standards.**

Twenty years ago this research would have come to this conclusion. However, as this research has illustrated, there has been a shift in the GCC’s attitude toward environmental
practices. This attitude shift combined with the GCC’s increased engagement, awareness and investment in green building and green technologies make H3, in its entirety, unlikely. Though it is likely that the GCC will end up without one, coherent set of green building standards, it is unlikely that the green building standards that individual GCC states adopt will fail to be appropriate for the region. With the development of Pearl and GSAS, standard-setting in green building, and the green building standards, are becoming more appropriate for the GCC’s unique regional conditions.

**Limitations of Research**

A challenge during this research was finding historical data from the GCC itself related to green building. This thesis relied on the available data, international studies and information available through the GCC’s government websites as well as local news websites. Another limitation of this study is the lack of quantitative data. This thesis primarily relies on qualitative data gathered in applying the analytical framework derived from Ostrom’s design principles. Future research might also include a survey of the sovereigns involved in the standards process in order to determine their opinions. Then this quantitative data could be analyzed in comparison to the qualitative findings achieved in this research.

**Future Studies**

This research discusses a number of topics that go beyond the scope of this thesis. Given that a point of collaboration for GCC states is more likely to occur when no one member state has more control of a standard than another, future studies could look at how the GCC might collectively decide to adopt the general, flexible standard this research recommends in the discussion under hypothesis two. Future studies could explore the economic opportunities the
GCC might capitalize on if the supra-government were to establish flexible core standards
(similar to the National ID case study model) that would then be implemented within each
nation’s individual green building systems.

Another area of future research exists in the exploration of opportunities available to the
GCC and the relation of these opportunities to green building standards in the region. Previous
research suggests that the GCC’s innovation policy would need to be linked to environmental
and economic policies (Mahroum & Alsaleh, 2012). Future studies might also explore, what
structural changes might need to occur to encourage additional innovation? How might these
apply to the GCC and to any country, or region?

Concluding Note

The GCC is unlikely to adopt a uniform standard around green building standards, but
this research concludes that a uniform green building certification standard is not the best option
for the GCC at this time. The region has only recently become concerned with how it treats the
environment and it continues to over-consume and over-pollute (Zahra; 2015). The GCC’s
investment in green projects, knowledge share and standards is promising, especially with regard
to the region’s development of two region specific green building standards. There is no one-size
fits all green building system, the project pursued and the area where the project will be

In terms of green building, standards are more than a label, but they are a method by
which the world is becoming more sustainable. In looking at how, when and where these
standards govern sustainability, we can improve upon them and facilitate collective actions so
that we may sustain our inhabitable planet.
References


