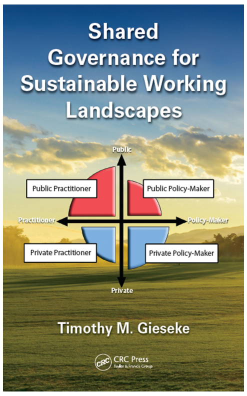

Shared Governance for Sustainable Working Landscapes

Timothy M. Gieseke

A shared governance platform

Publication details
https://www.routledgehandbooks.com/doi/10.1201/9781315371078-12
Timothy M. Gieseke
Published online on: 12 Aug 2016

chapter nine

A shared governance platform

Governance styles of organizations do shift and perhaps even change over time, but organizations should not be expected to adopt different governance styles for the sole purpose of alignment. Governance is a cultural-based characteristic, and so, highly resistant to change (Meuleman, 2008). And in any case, no one governance style is optimum for achieving all objectives as each has their strengths and weaknesses for achieving particular objectives (Jessop, 2003). To resolve this governance paradox, a *shared governance* platform is proposed to enable governance actors from organizations with different governance styles to interact to achieve common outcomes.

9.1 Shared governance

Shared governance is not defined as a new bureaucratic system or government program but a collaborative process to engage traditional, sector-based organizations often constrained by their geographical boundaries and singular purpose (Marsh, 2000). Porter-O'Grady (1992) states shared governance causes a shift from a command-and-control (governance) to a knowledge-based decision system. He states shared governance creates a platform for open engagement with all (actors) contributing to the outcome and having ownership of their decisions. Shared governance is not a democracy, it is an accountability-based approach to structure in which there is a clear expectation that all members of a system participate in its work.

Scharmer and Haufer (2013) used the term "cocreative ecosystem" to describe an evolution of organization structure which is similar to the shared governance concept. He defined it as a platform and a space for cross-sector innovation and engagement. In the evolutionary process of governance styles, shared governance is a relatively recent occurrence (Figure 9.1) and has emerged as social issues have become more complex.

9.1.1 Shared governance principles

In simple terms, shared governance is shared decision making based on the principles of partnership, equity, accountability, and ownership at the point of service (Porter-O'Grady, 2001). These four general principles of

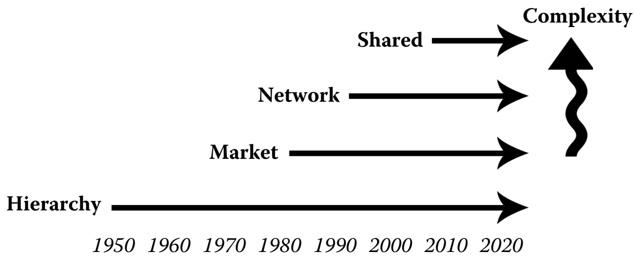

Figure 9.1 Shared governance is added to the evolutionary governance timeline of Figure 5.1. Versions of shared governance were used in the university system as early as the 1960s (Olson, 2009) and emerged in the healthcare field in the 1990s (Porter-O'Grady, 1992). (Adapted from Meuleman, L., *Public Management and the Metagovernance of Hierarchies, Networks and Markets: The Feasibility of Designing and Managing Governance Style Combinations*, Heidelberg, Physica-Verlag, 2008, 43).

shared governance empower actors with decentralized decision-making ability at the point of service (Swihart, 2006).

1. *Partnerships* are essential to building relationships and involve all stakeholders in decisions and processes. It implies each member has a key role in achieving landscape sustainability.
2. *Equity* implies each stakeholder is as important as the others, but does not imply that each stakeholder is equal in terms of scope of practice, knowledge, authority, or responsibility.
3. *Accountability* is the basis for responsibility and allows for evaluation of performance. It creates a willingness to invest in decision making and express ownership in those decisions.
4. *Ownership* requires all stakeholders to contribute something, to own what they contribute, and to participate in achieving the purpose of the work.

These shared governance principles are compatible with multisided platforms: an emerging business model that creates new value through stakeholder interaction.

9.2 Multisided platforms

Multisided platforms create value by bringing two or more customer types together and facilitating interactions to solve a transaction cost problem that otherwise makes it difficult or impossible for different groups to get together (Evans and Schmalensee, 2012). These platforms play critical roles in industries such as credit card payments, mobile phones, financial exchanges, advertising, and various Internet-based industries (Hagiu and Wright, 2011).

Since the emergence of multisided platform businesses in the last decade, many definitions have been proposed to explain their network effects and characteristics. Hagiu and Wright (2011) define a multisided platform to be an organization that creates value *primarily* by *enabling direct* interactions between two (or more) distinct *types* of *affiliated* customers. Others define these platform markets as two groups of agents who interact where one group's benefit from joining a platform depends on the size of the other group that joins the platform. Platforms can also serve as foundations upon which other firms can build complementary products, services, or technologies (Armstrong, 2006).

Evans and Schmalensee (2007) referred to multisided platforms as an *economic catalyst*: creating value that could not exist or would be greatly reduced without it. This new value is created as a result of solving coordination and transaction cost problems between the groups (Evans and Schmalensee, 2012). Evans (2011) stated platforms usually perform three core functions to some degree: matchmaking to facilitate exchange by making it easier for members of each group to find each other, building audiences, and providing shared resources to reduce the cost of providing services to both groups of customers.

Choudary et al. (2015) state a multisided platform is a plug-and-play business model that allows multiple participants (producers and consumers) to connect to it, interact with each other, and create and exchange value.

The fundamental role of a multisided platform is to enable parties to realize gains from trade or other interactions by reducing the transaction costs of finding each other and interacting. Multisided platforms coordinate the demand of distinct groups of customers who need each other in some way. From this perspective, multisided platforms provide a virtual or physical meeting place for customers and users to create value (Evans and Schmalensee, 2012) by reworking the economics of participation (Evans, 2008). This reworking creates efficiencies by reducing *search* and *transaction costs* by bringing consumers and producers together (Hagiu and Wright, 2007).

Multisided platforms emerge in situations in which transaction costs, broadly considered, prevent two sides from working directly with each other (Evans, 2011). Platforms overcome this obstacle by creating a *network community* where users can interact within a *technological infrastructure* and allow users to interact with a value-enhancing *database* (Choudary et al., 2015).

9.2.1 *Network community*

The network is the individuals and groups associated with the use of a multisided platform. In multisided platforms, this association creates an *indirect network effect*: an increase in the value that a customer on one side realizes as the number of customers on the other side increases (Evans, 2011).

These indirect network or cross-side network effects allow some multisided platforms to set the price of participation below cost on one side of the platform to attract customers that in turn attract customers and users on another side of the platform to whom they charge prices above cost. For example, a credit card may be offered free to consumers to entice them to sign up and then businesses may be charged the full cost of making the transaction (Hagiu and Wright, 2011).

Because the businesses' benefits increase as the number of cardholders increase, they are compelled to accept the credit card and pay the expenses.

Network communities are more prone to grow as friction is minimized for users to connect to the network. Social networks such as Facebook and LinkedIn gained initial traction through incorporating network member contact lists to reduce sign-up friction (Choudary et al., 2015). Full network effects are achieved only after a certain critical mass is reached.

The increase in the use of platforms is aligned with the emergence of three transformative technologies associated with network connections: social networks, cloud computing, and mobile access. Social networks connect people globally and maintain their identity online. Cloud computing allows anyone to create content and applications for a global audience. Mobile access allows connection to this global infrastructure anytime, anywhere. The result is a globally accessible network of entrepreneurs, workers, and consumers who are available to create businesses, contribute content, and purchase goods and services. To create value in a network, a technological infrastructure is needed (Choudary et al., 2015).

9.2.2 *Technological infrastructure*

The technological infrastructure of a multisided platform is the means to get a job done, to solve a problem, or to provide a fix. The technological infrastructure delivers the fundamental services the platform needs to perform for those customers who are critical to the success of the platform (Hagiu, 2007). It is the built component of the platform. It is also the component that external producers build on. Examples of infrastructure and producers include Android® and the developers building apps, YouTube® and the producers uploading videos, and eBay® and the sellers posting items for sale (Choudary, 2013).

Baldwin and Woodard (2009) find the fundamental *architecture* behind all platforms is essentially the same. The system has a set of core, long-lived stable components with a set of periphery components that change over time. With this structure, economies of scale can be realized at the core due to fixed costs and increasing the production of the stable components. Economies of scope can also be realized by the periphery components as producers can experiment and choose the best outcomes but without compromising the core components.

Choudary et al. (2015) use the acronym TRIE (tools, rules, interaction, and experience) to describe the makeup and use of the technological infrastructure. *Tools* include the technology and the interface components as part of the platform, such as video uploading capabilities. *Rules* create the boundaries of user behavior. For example, limiting Twitter users to 140 characters is an obvious rule of use where a less obvious example is the use of algorithms determining search results. Tools and rules are what is built into and controlled by platform builders and it creates the infrastructure on which interactions occur and the conditions for such experiences to take place.

9.2.3 Database and content

Data is the foundation of any platform business. Data is increasingly becoming the new currency for platforms (Shields, 2015). Decisions on how much data to store, who to share it with, who not to partner with, what data to make available, and what data to monetize are essential for a multisided platform. In most cases, data serves to provide relevance: matching the most relevant content, goods, and services with the right users. In other cases, the value may lie in the data layer as a data-intensive platform, where the value is entirely in the data being aggregated. Most multisided platforms go beyond simple aggregation of databases and *curate* data and those providing it.

Curation is to ensure the quality of the data is adequate and it is typically done in one of three forms: editorial, algorithmically, and social. Using editors to curate data is effective only to a certain scale unless the editorial function is moved out into the network community by educating the community on the tools of curation (rating, review, reporting, etc.). A second method is using algorithms provided by editors or the community and hence scaling algorithmic curation works very closely with scaling the size of the community. Social curation is relying on the community to curate data and may rely on participant reputations or opinions of experts over novices.

9.3 Multisided shared governance platform

Merging the concept of a shared governance platform with that of a multisided platform creates a multisided shared governance (MSSG) platform. It is designed to operate as a multisided business platform *and* to address governance issues related to agriculture landscape sustainability. The MSSG is a geographic-based platform that acts as the catalyst for the business, social and governmental aspects of agricultural landscape sustainability. It allows government, nongovernmental organizations (NGOs), and the private sector to interact and achieve their interdependent objectives. A MSSG platform provides a new *space* for organizations with conflicting governance styles, disparate valuation strategies, and accounting methods to interact.

In this new space, the network community is able to interact using a geographic information system (GIS)-based technological architecture that accounts for natural capital outputs using landscape index data. This creates a new supply that entices new user behavior resulting in new transactions. New supply, behaviors, and transactions rework the economics of participation in agricultural landscape sustainability.

9.3.1 Creating a new supply

The MSSG platform creates a new supply by delineating the landscape into equal-sized units called natural capital cells (NCCs) as described in Chapter 7. Each NCC has a unique identification code representing its latitudinal and longitudinal location and contains the landscape data required to calculate landscape management index values. Platform users access an *index depository* to choose the index representing the ecoservice of interest. These calculations produce a natural capital unit (NCU), a potential asset of the NCC.

An NCC containing ID number, site, and management data and three NCU values generated by a soil conditioning index (SCI), water quality index (WQI), and a habitat suitability index (HSI) is shown in Figure 9.2. The indices included were developed by the U.S. Department of Agriculture (USDA) and are valid examples, but the indices used may also be developed by platform users. Indices included in the depository will undergo a curation process to ensure they are scientific-based, follow platform protocols, and have the capacity to adapt to the evolution of the platform.

NCUs may represent natural capital outputs and outcomes such as water purification, pollination potential, and carbon sequestration. In reality, these *supplies* are not new, as these outputs and outcomes have always existed, but economically speaking, NCUs are a new supply of tradable ecoservice units. NCUs become a tradable unit by a *conversion of sorts* from nontradable public and common goods, such as sequestered carbon or purified water, into NCUs that become tradable private goods and club goods. This *conversion* is critical, as public and common goods are not tradable because as goods they are nonexcludable.

Excludability lends itself to ownership, and without ownership, assets (such as ecoservices) become *dead capital* unable to generate returns over and above that associated with their direct use (Landell-Mills and Porras, 2002).

Figure 9.3 is a textbook version of the different categories of goods and services relative to their excludability and rival status. Bollier and Helfrich (2012) state the classification of a certain good is not inherent to the good, but is created through a variety of social norms and institutional

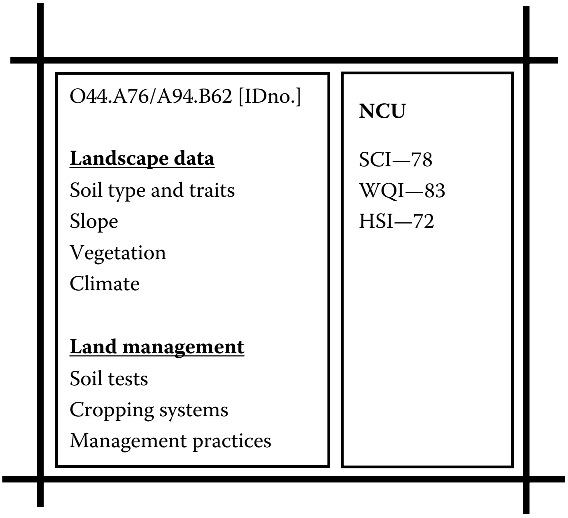

Figure 9.2 A natural capital cell (NCC) contains a location identifying number, landscape, and management data and access to an index depository to calculate natural capital units (NCUs). The NCUs generated by the NCC resource characteristics and management activities create a new supply of tradable ecoservice units.

	Excludable	Nonexcludable
Rival	Private goods	Common goods
Nonrival	Club goods	Public goods

Figure 9.3 Economic goods are categorized relative to their excludable and rival status. Goods deemed nonexcludable do not have ownership characteristics and markets do not spontaneously develop.

approaches that create classifications that then *seem* natural. Ecoservices, relative to NCU data, could exist in more than one classification in Figure 9.3 depending on the capacity of the MSSG platform to manage the data in excludable and rival manners.

9.3.1.1 Nonexcludable goods

A nonexcludable good is a good whereby it is not possible to exclude or prevent people from using the good. Nonexcludability means that consumers cannot be prevented from enjoying the good or service in question, even if they do not pay for the privilege. Today, for instance, it is currently difficult, if not impossible, to exclude downstream communities from benefiting from improved water quality associated with forest regeneration upstream.

Nonexcludable goods are categorized as *public goods* and *common pool goods* with their differences being nonrival and rival, respectively.

9.3.1.1.1 Public goods Public goods have two salient properties, namely, nonexcludable in supply and nonrival in consumption. A lighthouse signal is a classic example of a public good, where the provision is both nonrival and nonexcludable. Public goods contrast with private goods that are excludable and rivalrous in consumption and can be sold to those who can afford to pay the market price (McNutt, 1999).

Where goods are nonrival, the consumption of a good or service by one individual does not reduce the amount available to others. In this situation, there is no competition in consumption since an infinite number of consumers can use the given quantity supplied. An example of a nonrival ecoservice is carbon sequestration. Once carbon is sequestered, the global community may benefit from this in terms of a reduced threat of global warming. Every individual can enjoy the benefits regardless of if they pay for the benefit. Where nonexcludability and nonrivalry exist, they undermine the formation of markets since beneficiaries of the good or services have no incentive to pay suppliers. As long as an individual cannot be excluded from using a good, they have little reason to pay for access. The result is free riding: the ability to use a resource based on others' activities and payments (Kim, 1984). Where everyone adopts free-riding strategies, willingness to pay for public goods will be at or near zero, and the product or service may not be supplied.

9.3.1.1.2 Common-pool goods Goods can be characterized by varying degrees of nonrivalry and nonexcludability. The extent of nonrivalry and nonexcludability will determine the degree of market failure. For instance, where goods are nonexcludable, but rival, they are described as common-pool or open-access resources. They are rivals because there are limits to the available supply or limits to the capacity to supply.

Garrett Hardin's 1968 essay, "Tragedy of the Commons" describes an open-access or common-pool system, where unlimited access to the limited resource of the pasture results in a degradation of the resource. More modern examples of agricultural common-pool resources include irrigation or drainage networks used by local farmers. Elinor Ostrom's (1999) research on open-access governance showed, in some cases, local cooperative actions were able to avert the "tragedy of the commons," but non-excludable, rival goods are prone to over-consumption and degradation.

9.3.1.2 Excludable goods

A good is excludable if it is possible to prevent consumers who have not paid for it from having access to it. A good becomes excludable, not solely by its nature, but when one can at low cost prevent those who have not paid for the good from consuming it. For example, it is cost-effective to require people to pay for a stamp before the postal service will deliver mail or to require a ticket before they board a train. In contrast, it is generally not cost-effective or easy to prevent people from entering a park or from listening to a radio station.

Likewise, it is currently difficult or not cost-effective to exclude people from using or enjoying ecoservices generated from the agriculture landscape. For ecoservices to become a tradable good, they must be excludable, or essentially *converted* to an excludable good. This property of excludability in the supply of a public good is the *sine qua non*, an absolute condition for club goods (McNutt, 1999).

9.3.1.2.1 Club goods The salient characteristic of a club good is excludability (McNutt, 1999). Goods that are excludable and nonrival are described as toll or club goods since markets can be set up in the form of tolls. An example of a toll good is that of roads in national parks, where entry is controlled. Each consumer, theoretically, is able to enjoy the good without reducing its overall value for others, until congestion occurs. Examples of club goods include cinemas, cable television, access to copyrighted works, and the services provided by social or religious clubs to their members. Public goods with benefits restricted to a specific group may be considered club goods. Therefore, a public good that becomes excludable is a club good (McNutt, 1996). In many respects, this club provision offers an alternative to central government delivery and management of public goods. Clubs organize to enable members to exploit economies of scale in the provision of the public good and to share in the cost of its provision (McNutt, 1999). Excludable club goods become private goods when their nonrival status becomes rival.

9.3.1.2.2 Private goods Once property rights are established, the good eventually becomes an excludable and rival private good. Where goods are both excludable and rival, they are described as private as they may be easily supplied by the private sector based on market transactions. A bushel of grain is easily measured, stored, transported, and ownership transferred. One can easily exclude others from using the bushel of grain, as it is rival: if one consumes the bushel of grain, no one else is able to use it.

9.3.1.3 "Converting" nonexcludable goods to excludable goods

The logic or strategy of creating a new supply of tradable ecoservices resides in the *conversion* of nonexcludable ecoservices into a private good and/or a club good. This conversion is accomplished, not by addressing the excludability of the use of the actual good, but by creating an excludable good based on the data that represents the production of the ecoservices. In other words, the NCU, not the water purifying ecoservice or the carbon sequestration ecoservice, becomes the tradable good. Since the economic classification of a certain good is not inherent to the good, but created through a variety of social norms and institutional approaches, changing the norms and institutional approaches can *convert* a good from one economic classification to another (Bollier and Helfrich, 2012).

This conversion is enabled due to ownership of the data required to calculate and substantiate NCU values. NCUs are derived from calculations composed of landscape data and land management information. Since land management information can be proprietary, a NCU calculation, in part, could also be owned by the land manager. This excludable NCU has the potential to be valued as either a private good (rival) or a club good (nonrival). As a club good, it could be traded with several entities seeking landscape sustainability data for the purpose of accounting for sustainability of a supply chain or watershed.

As a private good, the NCUs could be sold to a specific entity for ecoservice credits or for natural resource mitigation. Entities making sustainability claims would presumably need the data to substantiate those claims. As an exclusive good it restricts free-ridership and creates new user behaviors on the demand side.

9.3.2 New user behaviors

The new ecoservice values embedded in the proprietary NCUs enable sustainability demanders to value agricultural landscape sustainability in a manner not previously available. These new values instigate new behaviors from those demanding sustainability. New behaviors from a corporation may consist of valuing the production of NCUs to address a particular resource issue related to the commodities they purchase. A retailer can exert their influence on the type of NCUs needed to access their market. Government agencies may identify the NCUs needed to enroll in a program or to meet a water quality standard. Utilities may identify the types and quantities of NCUs needed to be eligible to engage in water quality trading.

In all cases, the demander readily identifies the NCU supply it desires along with a criteria or value associated with the NCU. The NCU and the economic value associated with it becomes a *sustainability market signal*. For example, a retailer could state that it will purchase a food product that has a WQI > 80. Those in the upstream market *hearing* this market signal will inquire about a WQI and all the issues surrounding the product to determine how it may meet and maintain this market criterion. These new supplies and values instigate new behaviors in pursuit of new transactions. It is this market signal concept being developed and applied by The Sustainability Consortium members and others to encourage suppliers to account for and improve their supply chain.

9.3.3 Enabling new transactions

A primary objective of the MSSG platform and multisided platforms, in general, is to enable transactions that normally would not occur. For example, OpenTable is an application platform connecting potential customers with restaurants with readily available seating (Hagiu, 2014). Without the platform, customers would have to call, restaurant owners would have to answer the call, and then they would discuss the seating and waiting situation and if the match does not occur, the process would start over. Obviously, this is not an insurmountable problem, but the hassle to make and answer the calls becomes significant enough to encourage potential diners to seek out a more streamlined process using OpenTable. In the case of ecoservice markets, the transaction hurdles are not just an inconvenience, but are insurmountable as no ecoservice market has yet to mature in a typical market fashion.

9.3.3.1 Identify transaction costs

The crux of any economic transaction is the necessity for the transaction costs to be sufficiently less than the value in the exchange. A comparative advantage is created in a trade if the transaction costs are minimized in one trade relative to another trade of identical value. Ecoservice markets often have higher transaction costs due to their unique and challenging assessment and assurance needs.

Transaction costs include ex-ante (upfront) costs associated with obtaining relevant information needed to plan, negotiating agreements, making side-payments to gain agreement, and communicating. Ex-post costs are associated with monitoring performance, sanctioning and governance, and renegotiation when the original contract is unsatisfactory. Transaction costs are not only financial. Time and other in-kind contributions should be measured and, wherever possible, monetary values of these inputs should be calculated (Abdalla, 2008).

In addition to typical transaction costs, setup costs for water trading markets are typically high and span several years. Unavoidable costs include concept review and approval, baseline assessments, setting objectives, developing the market, creating the pricing structure, and securing stakeholder buy-in. Trading in any market will not occur if the transaction costs exceed the benefits of a potential trade (Brown et al., 2007).

9.3.3.2 Reduce transaction costs

Strategies that reduce transaction costs generally cause an increase in trades and provide opportunities for new markets to emerge. In "The Nature of the Firm," Coase et al. (1993) explain that firms exist because they reduce the transaction costs that emerge during production and exchange, and capture efficiencies that external entities or individuals cannot.

The intention of creating an MSSG platform is, in part, related to its capacity to reduce transaction costs. Transaction costs are reduced by creating a tradable unit (NCU) where one did not previously exist, by providing an integrated GIS-based accounting system, and like other platforms, transaction costs are reduced due to its matchmaking capacity. After reducing *total* transaction costs, addition savings per individual stakeholders may occur by *sharing* or dividing the transaction costs among stakeholders that mutually benefit.

9.3.3.3 Shared transaction costs and values

If transaction costs, in total, are not further reducible, it is still possible to reduce the transaction costs by sharing or dividing the transaction costs among multiple parties in interdependent transactions. This is possible due to the multiplicity of natural capital outputs from a single parcel of land. For example, if a unit of land (NCC) is managed to sequester carbon, purify water, and provide pollination habitat, the MSSG platform makes it feasible to account for each of these values (NCUs) singularly or in combinations at various scales.

It is this system complexity that *causes* high transaction costs, but if managed, the system's complexity can contribute to this unique strategy to reduce transaction costs. These transaction costs become sharable because ecosystems produce multiple outputs that are used by multiple stakeholders. In this scenario, NCU values become sharable. As long as multiple entities such as government, corporation, utilities, and NGOs mutually benefit from the output and outcomes of a single parcel of land, it is reasonable, and perhaps an economic necessity, to apply a transaction process that captures all the mutually beneficial values.

The shared transaction process supports the *shared value* strategy promoted by Porter and Kramer (2011). The Harvard economists describe shared value as a process, where corporate (and other) stakeholders generate and incorporate new values beyond financial goals. These shared values are embedded in transactions referred to a *Sustainability 1.0* and *1.5* and *Sustainability 2.0* transactions.

9.4 MSSG platform transactions

Ecoservice transactions are enabled by a gridded, GIS-based platform with the capacity of user groups to delineate areas of interest, generate NCUs, and interact with other user groups, particularly land managers, to acquire additional land management data, and assurance for specific outputs and outcomes. The MSSG platform supports three types of transactions: Sustainability 1.0 (S1.0), Sustainability 1.5 (S1.5), and Sustainability 2.0 (S2.0) transactions.

9.4.1 Sustainability 1.0

S1.0 transactions occur between a sustainability demander, such as a business in a sustainable supply chain, and the platform managers. S1.0 transactions are based on NCUs generated from superficial landscape data that is often readily available through government databases, satellite imagery, and GIS systems. The NCU indices and data sources for S1.0 transactions are shown in Figure 9.4.

S1.0 transactions are based on a NCU as an excludable and nonrival club good: excludable in the manner that the NCU is privately owned (by the platform managers) and nonrival in that it can be procured by multiple stakeholders to address each of their sustainability objectives. It is presumed that S1.0 transactions would involve data exchanges for relatively low costs.

9.4.2 Sustainability 1.5

S1.5 transactions occur between a sustainability demander, such as a business in a sustainable supply chain, and land managers. S1.5 transactions are based on NCUs generated from superficial landscape data (S1.0 data) and land management data. Figure 9.4 identifies the source of the NCUs for S1.5 transactions. NCUs generated for S1.5 transactions contain specific data that can provide more precise NCUs values.

S1.5 transactions are also based on an NCU as an excludable and nonrival club good: excludable in the manner that the S1.5 NCU is privately owned (by the land manager) and nonrival in that it can be procured

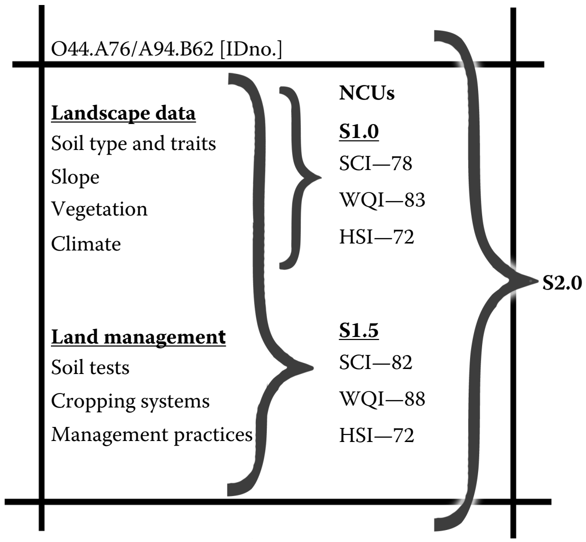

Figure 9.4 NCUs are generated within specific identified NCCs and transacted under three types. S1.0 trades are based on superficial landscape data embedded in the multisided shared governance MSSG platform. S1.5 is based on S1.0 data and proprietary land management information inputted by a platform user (land manager). S1.0 and S1.5 may be traded as club goods. S2.0 trades are based on quantified tradable credits based on S1.0 and S1.5 data along with more specific contract obligations and traded as private goods.

by multiple stakeholders to address their sustainability objectives. It is presumed that S1.5 transactions would involve data exchanges with slightly higher costs relative to S1.0 transactions.

9.4.3 Sustainability 2.0

Sustainability 2.0 transactions are based on NCUs generated from land management strategies designed to generate natural resource credits. As credits, S2.0 transactions are an exchange of an excludable and rival private good: excludable in the manner that the data is private and rival in that only one stakeholder can secure ownership. In this case, the demander is interested in the production of a specific ecoservice credit such as a quantified unit of water quality, wildlife, or carbon, with sole ownership. The MSSG platform would identify the specific area, practices applied, period of time, and other contractual obligations for the transaction. S2.0 credits are based on quantified goods. This is in contrast to S1.0 and S1.5 transactions that are based on the sustainability level of the production system by accounting for ecoservice values.

9.5 *Symbiotic demand versus conflicting governance*

An objective of creating a shared governance platform was to address the wicked component of the inherent conflicts of organizational governance styles. The MSSG platform transcends organizational governance conflicts by supporting shared governance principles at the point of service: the virtual and real landscapes. In this new space, governance actors are able to interact and symbiotically achieve their objectives. The MSSG platform is the catalyst that allows disparate stakeholders to interdependently align their activities to convert governance conflicts into *symbiotic demand*.

9.5.1 *Disparate stakeholder governance*

Even with common objectives, conflicts arise from the modes of action and the sets of values held by typical governance styles. Hierarchy governance values are based on the expectation that there should be a subordinate to the hierarchy, and this governance style relies on regulations and control instruments to meet goals. Market-based governance values a customer perspective and relies on competition and innovation to achieve results. Network-based governance seeks partners and cocreators and relies on trust to achieve outcomes (Meuleman, 2008). In this scenario, a multitude of governance strategies converge creating not just conflicts among the demanders, but inefficiencies and frustration for the supplier: the land manager.

Figure 9.5 includes six of the case studies applied to a fictional, yet realistic and probable scenario. It is possible and quite feasible that among the dozens of agricultural sustainability projects, a land manager could be expected to participate in a federal program (NRCS), a state water quality program (AWQCP), a regional watershed (CBay), a local agriculture retailer (USI), a corporate sustainability supply chain (TSC), and a water quality trading program (EPRI).

The NRCS and AWQCP cases in the top row use hierarchy governance and the remaining projects use network-lead governance styles. None of the projects use identical accounting systems. Two of the accounting systems are practice-based (CBay, EPRI), and the remainder use a combination of outcome- and practice-based methods. All of the cases have interest in S1.0-type values and are seeking S1.5-type values. The EPRI project also seeks S2.0-type (credit) values.

It is within this context that multiple stakeholders seeking common and complementary objectives can cause conflicts and inefficiencies. These conflicts are not necessarily based on *what* should be done, but on *how* things should be done. The result is low and diffuse ecoservice values accompanied by high and multiple transaction costs.

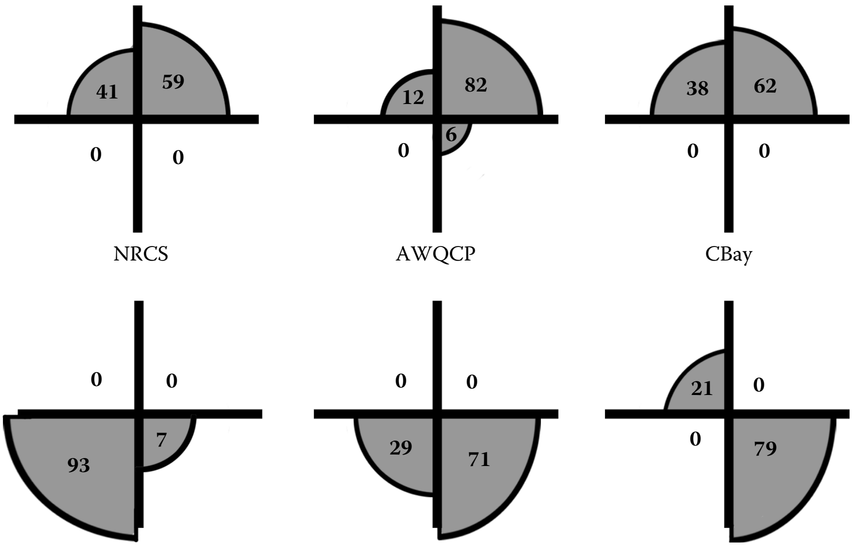

Figure 9.5 Six case studies illustrate the potential for conflicts and inefficiencies created when multiple organizations seek common sustainability objectives with programs developed from different governance sectors with differing governance styles. The three programs at the top of the figure were developed predominantly from public sector governor actors and the bottom three programs were developed predominantly by private sector governance actors. The Natural Resources Conservation Service (NRCS) and Agriculture Water Quality Certainty Program (AWQCP) use hierarchy governance originating from the public policy-maker sector. The remainder use network-lead governance with the CBay originating from the public sectors, the USI from the private practitioner sector, and TSC and EPRI originating from the private policy-maker sector. All use different accounting systems. Each seeks S1.0- and S1.5-type values and the Electric Power Research Institute, Inc. (EPRI) seeks S2.0 values.

9.5.2 Symbiotic demand

Symbiotic demand can emerge from the multiple-demand scenario described in Figure 9.5 *if* the governance actors from the various organizations can interact on a shared governance platform. Symbiotic demand is the result of multiple entities demanding sustainability values within a common forum so that the low and diffuse ecoservice values can be readily combined and the high transaction costs can be reduced and shared.

Symbiotic demand is different from the effect of economies of scale, where the costs per unit are decreased due to efficiencies of production and distribution. Symbiotic demand occurs when the cost *and the unit* is shared among users. The users can share a S1.0 and S1.5 NCU, as it is traded as a club good. Unlike a typical commodity where an increase in demand causes the price to increase and the single highest bidder receives the commodity unit, the cost of S1.0 and S1.5 values (per demander) may decrease as the number of demanders increases, and each bidder may receive the S1.0 and S1.5 values.

The MSSG platform enables multiple entities to procure the same S1.0 and S1.5 data (NCUs) to substantiate their sustainability claims or to meet their objectives interdependently. Figure 9.6 illustrates the flow path of NCC data to generate NCU calculations that are transferred to demanders. In this case, the MSSG platform generates S1.0 WQI data based on NCC landscape data. To generate S1.5 WQI data, land management data from the NCC is added to S1.0 WQI.

The calculations can occur somewhat spontaneously as the NCC interfaces with the indices chosen from the platform index depository. The calculation and assurance of S2.0 WQ credit is developed through a contractual basis.

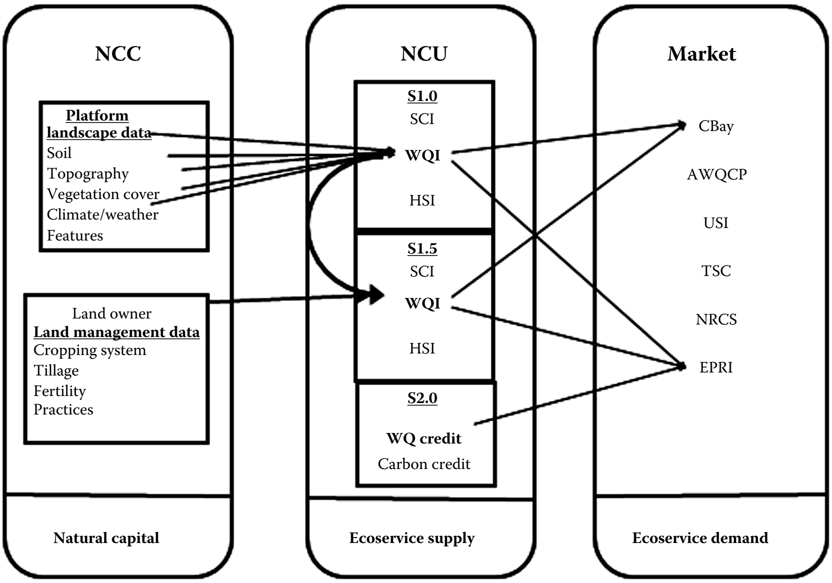

Figure 9.6 *Symbiotic demand* is defined as mutually interdependent transactions between a single land manager and multiple stakeholders procuring the same unit of ecoservices (NCU). The transaction is an S1.0 exchange between the platform managers and each demander (CBay and EPRI), and an S1.5 exchange between the same parties. Costs of the S1.0 and S1.5 are potentially shared between the three parties for a single NCU as club goods. The second transaction set is depicted as a S2.0 exchange between the land manager and EPRI as a private good. The arrows from the NCC section depict the flow of data to generate S1.0 and S1.5 NCUs. Arrows from the NCU to the Market sections depict trades.

In this scenario, CBay and EPRI purchased S1.0 and S1.5 data and EPRI also purchased S2.0 credits. The first transaction set consists of an S1.0 exchange between CBay and the platform managers, and an S1.5 exchange between CBay and the land manager. The second transaction set depicted is a S1.0 exchange between EPRI and the platform managers and S1.5 and S2.0 exchanges between the land manager and EPRI. Since NCU values generated from each NCC may have relatively low economic value, a cryptocurrency or e-currency system (discussed in Chapter 11) embedded with the MSSG platform could make small exchanges feasible and also reduce transaction costs related to monetary exchanges.

Only two transaction paths are depicted in Figure 9.6 to reduce the graphic clutter, but in a functioning MSSG platform S1.0 and S1.5 values could be part of transactions with each of the sustainability demanders as club goods. The S2.0 value, as a private good, could only be exchanged with one demander: EPRI in this case.

This symbiotic demand scenario fosters a shared governance approach as each organization contributes interdependently as they deem appropriate at the point of service. Shared governance is applicable to the emerging business *ecosystem* concept that rejects the idea of a "single win" in traditional enterprise competition. The business ecosystem theory emphasizes that the business environment is a closely linked and mutually dependent symbiotic system, and enterprises need to work with others to develop solutions (Liu et al., 2013).