3

Values, Incentives, and Environmentalism in Ecosystem Services

Peter A. Minang

Abstract

Values have been widely considered important in environmentalism. Similarly, incentives have been widely deployed as mechanisms for influencing environmentalism. Yet little attention has been given to understanding the relationships between values and incentives and how that understanding can best serve environmentalism. This chapter explores connections between values and incentives in the context of ecosystem services in high-diversity tropical forest systems. It highlights the potential linkages between held, assigned, and relational values and multiple incentive types through two main decision-making framings: rational choice and bounded rationality. While economic and financial incentives are largely linked to assigned values, nonfinancial and noneconomic incentives are more linked to relational and held values. In reality though, values influence each other; as a result, the complex processes through which values influence each other and influence behavior become important. Four main value-related implications emerge for designing and implementing incentives that can change environmentally significant behavior in the context of ecosystem services in tropical forests: (a) the need for multiple incentives or mixes of incentives in recognition of diversity in values needed to enable sustainability, (b) mitigating crowding out in incentive structures, (c) the rise of theory of place, and (d) the need for further empirical research to better understand the interactions between values and incentives in the realm of environmentalism with implications for ensuring diversity, justice, and sustainability.

Introduction

The Millennium Ecosystem Assessment (2005) established the tremendous importance and global reliance on Earth's ecosystems for services such as food, fiber, water, fuel, disease management, climate regulation, and many others. It also stressed that most of these services are being severely degraded and

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

exploited unsustainably, largely through human activity. For example, tropical forests represent a direct source of food, fuel, and fiber for more than 1.2 billion people globally (Agrawal 2007), yet tropical forests have shrunk significantly over the years at an average of about 13 million ha per year. Between 1990 and 2011 the world lost in total 135,494,000 ha of forests (74,927,000 ha in the Amazon, 35,769,000 ha in Southeast Asia, and 5,271,000 ha in the Congo). During this period, rainforest loss represented 85.59% of the world's total forest loss (FAO STAT). As a result, there have been growing calls for action to stem the unsustainable exploitation and degradation of ecosystem services (Millennium Ecosystem Assessment 2005).

Understanding environmentalism is an essential part of any effort to influence anthropogenic causes of degradation in ecosystem services. Generally, environmentalism refers to ideas about how humans interact with the natural environment and how the environment should be protected through human effort (Thomas Sikor, unpublished). Behaviorally, environmentalism can be defined as the propensity to take actions with pro-environmental intent (Stern 2000). More specifically, understanding what motivates and informs human choices and actions toward the natural environment is crucial. In addition, values have long been cited as an important underlying motive for human actions on the environment (Stern 2000; Jones et al. 2016). On the other hand, incentives have been widely used as a key intervention to influence human behavior, in a bid to enhance ecosystem services (van Noordwijk et al. 2012). Little attention, however, has been paid to understanding how values relate to incentives and how this can be deployed to improve design and implement more effective and efficient incentive mechanisms. This chapter hopes to contribute to a better understanding of the linkages between values and incentives in ecosystem services management and is structured as follows. I begin with a brief presentation of both values and incentives. Thereafter, decision-making frames of rational choice and bounded rationality are used to establish linkages between values and incentives, and the interactive processes between values and how values influence behavior are explored. Specific ways in which incentives design and implementation could benefit from such an understanding are discussed, and avenues for further research are highlighted.

Values in Environmentalism

According to the Oxford English Dictionary, "values" refers to a person's principles or standards of behavior; one's judgment of what is important in life; or simply, the regard, worth, or usefulness of something. Schwartz (1994) defines a value as "a belief pertaining to desirable end states or modes of conduct that transcends specific situations, guides selection or evaluation of behavior, people and events, and is ordered by importance relative to other values to form a system of value priorities." While values can be acquired during the formative

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

years, they are shaped throughout life, but largely remain stable in later stages of life. They are said to be the bedrock that shapes attitudes, norms, and behaviors (Stern 2000; Jones et al. 2016). Values, therefore, guide decision making and a sense of what is right. Values tend to be mostly individual; however, they can also be collective (i.e., community values) especially in disciplines such as anthropology and sociology. In common-pool or community-managed resources, it might be most appropriate to think more in terms of community or commonly held values as opposed to individual values only.

In a review of human values in understanding and managing socioecological systems, Jones et al. (2016) identify three distinct types of values: held, assigned, and relational. *Held values* refer to ideals of what is desirable, how things ought to be, and how one should interact with the world (Brown 1984; Bengston 1994). *Assigned values* are those attached, for example, to various ecosystem goods, services, and places. They represent the expressed relative importance or worth of an object to an individual or group in a given context (Brown 1984). *Relational values* emerge from the relationships between people and nature and are associated to preferences and hence feelings (Brown 1984; Chan et al. 2016). These three types of values are related. Assigned values are largely shaped by held values, whereas relational values explain the relationships between held and assigned values (Brown 1984; Jones et al. 2016).

The environmental literature identifies other types of values including intrinsic values (those which protect nature for nature's sake) and instrumental values (those which protect nature for humans' sake (Stern 2000; Chan et al. 2016). Kellert (1996) elaborated a typology that includes ten nature-related values: aesthetic, dominionistic, ecologistic-scientific, humanistic, moralistic, naturalistic, negativistic, spiritual, symbolic, and utilitarian. This diversity of value concepts reflects the deep considerations that shape and motivate decisions and actions of individuals as they interact with nature. While values are important, the ways and processes through which values influence and change behavior are even more important in terms of how decision making can be influenced or shaped (Guagnano et al. 1995; Stern 2000; Wunder 2005; van Noordwijk et al. 2012).

Incentives in Environmentalism

Incentives have long been established to be an important element in environmental performance, including restoration of ecosystem services in tropical forests (Wunder 2005; van Noordwijk et al. 2012). Incentives are "anything that can motivate an agent to take a particular course of action" or "any policy, program, institution or economic instrument that motivates conservation and management of forest ecosystems" (Casey et al. 2006:18). They can be broadly listed as being fiscal (e.g., taxes, tariffs, subsidies), economic (e.g.,

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

low interest loans, compensation for certain investments, conditional payments, premiums), reputational (e.g., name, fame, and shame awards), and/or administrative (e.g., privileged access, land or tree rights, shorter processing times) in nature (Rademaekers et al. 2012). Heimlich et al. (1998) discuss five categories of incentives:

1. Involuntary regulatory disincentives
2. Voluntary, nonregulatory economic incentives
3. Institutional innovations that encourage market, legal, and planning authorities to enhance resource conservation
4. Facilitative incentives, including administrative and technical assistance

Several examples of incentives in ecosystem services management exist: prohibition of use, tenure and property rights, taxes and penalties, subsidies, quotas, permits, etc. fall into the regulatory category; payments for ecosystem services (PES), rewards for ecosystem services, certification programs, marketing labels, etc. are in the voluntary category (Casey et al. 2006; FAO 2015). Below, I present two examples of incentive schemes for ecosystem services from the forest sector: PES and Reducing Emissions from Deforestation and Forest Degradation (REDD+). I have chosen PES and REDD+ because they are by far the most widely used in natural resources management in developing countries, and I use them to ground this discussion in reality.

Payments for Ecosystem Services

PES is an innovative set of instruments used to protect and conserve ecosystem and environmental services that has tried to move beyond generic instruments (e.g., protected areas, community conservation, integrated conservation and development). The most widely cited definition of PES is "a voluntary, conditional transaction where at least one buyer pays at least one seller for maintaining or adopting sustainable land management practices that favor the provision of well-defined environmental services" (Wunder 2005:3). Following close to a decade of practice and research, Wunder (2015:241) suggests an expanded definition of PES as "voluntary transactions between services users and service providers that are conditional on agreed rules of natural resource management for generating off-site services." This new definition takes into account critics of bias toward monetary rewards, exclusions of nonmarket transactions, and other weaknesses found in previous definitions. Conditionality emerges as the primary feature of the current definition. Monitoring, reporting and verification, specific standards, participation, transparency, safeguards and pro-poor conditions are emerging as principal conditions in the suite of conditionalities in the PES arena.

Flows of financial capital remain the basic vehicle through which buyers can express their appreciation for environmental services in the most widely used

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

PES mechanisms (van Noordwijk et al. 2012). In the United States and Latin America, where privately owned forests abound, payments or transfers have largely gone to individuals (Casey et al. 2006; Sierra and Russman 2006). In Africa, where communal ownership of forests dominates, transfers of financial resources have been to communities as well as to individuals: the CAMPFIRE Programme on Wildlife in Zimbabwe or the Nhambita Community Carbon Project in Mozambique (Frost and Bond 2007). Transfers may also be viewed as flexible mechanisms through which stakeholders affected by changes in land use can try to influence actors that change land use on a day-to-day basis (van Noordwijk et al. 2012). Land-use proxies have thus been traditionally used as indicators for measuring progress in ecosystem services, as they are more direct and cheaper to measure. Other examples of practical PES schemes include the Reward for Upland Poor Ecosystem Services, water biodiversity, and carbon in Singkarak, Indonesia; Payment for Forest Ecosystem Services in Vietnam at national level; and the Noel Kempff Mercado Carbon Action Project in Bolivia.

Reducing Emissions from Deforestation and Forest Degradation

Incentives and policy change to reduce emissions from deforestation and forest degradation, REDD+, has been promoted as an approach to address climate change and achieve other sustainable development benefits. REDD+ is an evolving concept currently under negotiation within the United Nations Framework Convention on Climate Change (UNFCCC), in which countries can elect and engage in the reduction of emissions from forests against an agreed baseline or reference level. Economic incentives, market and/or fund-based, are to be provided once reported emission reduction has been verified. According to the UNFCCC, emission reductions can consist of reducing emissions from deforestation, reducing emissions from degradation, conservation of forest carbon stocks, sustainable management of forests, and enhancement of carbon stocks. REDD+ is also expected to generate sustainable development co-benefits such as biodiversity, water, and poverty reduction.

Several countries have engaged actions to develop the necessary technical and institutional capacity to implement any mechanism as recommended and supported by the UNFCCC (§70–73, UNFCCC Decision 1/CP16). Actions aimed at developing technical and institutional capacity in developing countries are referred to as REDD+ readiness. While accounting and accountability for emission reduction will be primarily at the national scale, change in behavior and practice will have to reach all forest areas of a country. Where subnational implementation structures can be designed within existing institutions and policies, a major break with business as usual is needed to shift from enhancing to reducing emissions.

There are currently no payments for REDD+ as described within the UNFCCC. However, there are several REDD+ projects within the voluntary

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

market for which payments are being made, such as the Kasigau Corridor REDD+ Project in Kenya (Cerbu et al. 2011; Bernard et al. 2014). Most of these are subnational level activities and are verified and certified through either the Climate Community and Biodiversity Alliance and the Voluntary Carbon Standards. Several of these REDD+ projects are built on integrated conservation and development projects, hence they are highly linked to biodiversity and protected area management (Minang and van Noordwijk 2013).

Like all incentives, PES and REDD+ are designed to influence choices or behaviors of individuals and communities in human environment relations (environmentalism). In most instances, they are designed to build on any behavior or choice that can significantly enhance environmental services. Hence, decision-making processes through which choices are made or behaviors changed are important dimensions to environmentalism.

Linking Values and Incentives: Decision and Behavioral Science Framings

Thaler and Sunstein (2008) distinguish two types of "species": econs and humans. Econ, or *Homo economicus* (the economic man), is one who thinks most rationally, efficiently calculating the details of all options before making rational choices, as imagined by economic theory. Humans, *H. sapiens*, are real people who fall well below the efficient, analytical, and predictive decision-making rules espoused by economic theory. Humans tend to be predictable, show more "feelings," and tend to be stable in choices following long held values and beliefs. These two dimensions of being perhaps explains the two main framings that have shaped decision science in recent times; namely rational choice and bounded rationality, respectively.

Rational Choice

Rationale choice as a paradigm has dominated decision-making thinking for the last decades. It refers to a situation where decisions are made to maximize net benefits from investments in time as well as resources (land and/or nature). Accordingly, aggregate social behavior is the result of the behavior of individual actors, each of whom makes a preferred choice after taking into account the costs and benefits, probabilities of events, and all other necessary information, following a logical process (Scott 2000). An important feature of rational choice is that it assumes that almost complete and perfect information is available to the decision maker. Rational choice considers the individual to be essentially *H. economicus*: this person will balance costs against benefits to arrive at actions that will maximize personal advantage. This thinking has undoubtedly shaped how economics is applied to natural resources and

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

by extension economic incentives for forest resources management. Rational choice theory can thus be directly associated with assigned values.

In large part, economic and financial incentives that currently make up the bulk of incentives in ecosystem services in tropical countries have been driven by bounded rationality thinking. A good part of the PES literature has addressed the determination of the right level of reward, compensation, or payment needed to change a particular course of action in the environment or a given land use (van Noordwijk et al. 2012). A number of studies have discussed the opportunity cost of REDD+ as a possible minimum requirement to enable any deforestation-related PES scheme (White and Minang 2011). The literature on valuation of ecosystem services (de Groot et al. 2012) also demonstrates that economic and financial incentives for ecosystem services are largely based on assigned values. One of the most reported cases of PES—the New York drinking water company and the Catskills catchment—illustrates the key role of rational choice and assigned values in the logic of PES. Instead of spending between 8–10 billion USD on water purification installations, New York City negotiated with local governments in the Catskills catchment area, and subsequently enacted water-friendly land-use restrictions, thereby enabling protection of the watershed and reducing costs dramatically (Appleton 2002). Seymour et al. (2012) argued that assigned values are better predictors of behavior than held values in the natural resource management context. Figure 3.1 illustrates the linkages between financial incentives and underlying values.

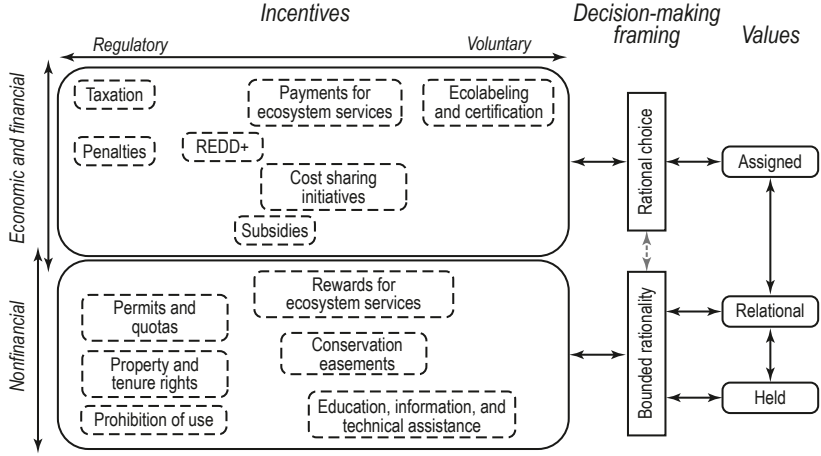

Figure 3.1 Overview of the dynamic and complex relationships between incentives and values in environmentalism, as mediated by decision-making framings.

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

Bounded Rationality

Within behavioral economics, bounded rationality has emerged as a mainstream perspective on how individuals make decisions when information is limited, time for making such decisions is short, the problems being addressed are complex and intractable, and the cognitive abilities of individuals are finite. Under this scenario, individuals employ a "satisficing" heuristic to reach the best possible decision, rather than search endlessly for the "optimal" solution (as in rational choice). Three "bounds" or deviations from the rational choice of standard economic theory have been recognized (Jolls et al. 1998):

1. Bounded rationality is incomplete information that interacts with limits to human cognition and leads to judgment errors or objectively poor decision making.
2. Bounded willpower involves taking actions that individuals know to be in conflict with their long-term interests.
3. Bounded self-interest is the willingness to sacrifice individual interests for those of others.

A number of judgment errors and biases typically enter into decision making in very predictable ways, for both individuals and groups, and there is a tendency to rely on mental short cuts, "rules of thumb," or heuristics. Hence it is conceivable to "nudge" behavior and affect decision making (Jolls et al. 1998).

Nonfinancial and regulatory incentives can be directly linked to bounded rationality thinking and therefore tied to more relational and held values. Relational values emanate from relationships between humans and the environment and have been associated with "feelings," hence the emergence of felt values as a subclass of relational values (Brown 1984; Schroeder 2013). Brown (1984) has argued that held values exist in the conceptual realm and influence judgments (in the relational realm), resulting in behavioral expression of preference in the object realm (i.e., assigned values). Schroeder (2013) argues the exact opposite: felt values are more implicit and can shape held and assigned values at the more explicit level. These views illustrate the complex connections and interactions between values that need to be considered when addressing incentives. It also illustrates the need to understand the pathways through which values influence behavior change.

Stern et al. (1999) attempt to explain how values constitute the basis of environmentalism (defined as the propensity to take actions with pro-environmental intent) using values-beliefs-norms (VBN) theory. VBN theory attempts to explain behavior through a causal chain of five variables: personal values, especially altruistic values; beliefs in terms of ecological worldview, adverse consequences for valued objects, and perceived ability to reduce threats; and pro-environmental personal norms or a sense of obligation to take pro-environmental actions. The argument is that these variables act directly on one another, in the order presented, to shape a series of pro-environmental

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

behaviors ranging from public (e.g., activism) to private. Further, VBN theory argues that values underlie and influence beliefs and norms, which leads to various kinds of behaviors. Several studies have found that altruistic values are stronger among people with pro-environmental behavior (Stern 2000). VBN theory illustrates complex processes behind the behavior being targeted by incentives and the relationships to one or more values.

This discussion illustrates how the logic of certain incentives can be linked to certain values more than others in theory. However, in practice, incentives might, more often than not, be indirectly connected to more than one value. For a conceptual map of how a selected set of incentives might be linked to values, see Figure 3.1.

Implications for Praxis and Research

To understand the linkages between values and incentives in the design and implementation of incentive schemes, multiple incentives (or mixtures of incentives) are required. In addition, for incentive structures, crowding out needs to be mitigated and the rise of theory of place in the deployment of incentives needs to be studied and supported by empirical research.

The Need for Multiple Incentives: Recognizing Diversity for Sustainability

The interdependencies observed between held, assigned, and relational values (see above) suggests that the dominance of single financial or economic incentives is questionable, as currently applied in tropical forestry cases of REDD+ or PES in many countries/places. A diverse set of actors, with diverse values and interests in tropical forests, impose trade-offs and create synergies that must be negotiated if sustainability is to be achieved. This points to the need for multiple instruments and incentives in order to be successful (Minang and van Noordwijk 2013). With his typology of ten nature-related values, Kellert (1996) argues that an individual or community might actually relate to or hold several nature-related values simultaneously, thus making the case for deploying multiple complementary incentives in any given place (see also Schroeder 2013).

Consider, for example, pan-Tropical research on increasing productivity along tropical forest margins in Brazil, Indonesia, Cameroon, Thailand and Peru. This work has shown that subsidies, enhanced financing, and other incentives for intensifying agricultural production along forest margins, as a means of reducing encroachment into forests, was necessary but insufficient as long as demand for agricultural commodities remained inflexible (Palm et al. 2005; Minang and van Noordwijk 2013). Given the deeply instrumental or assigned values of the concerned actors, farms are likely to be established to meet the ever-increasing global demand. Therefore, regulatory mechanisms driven by

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

intrinsic public value (e.g., the creation of protected areas as well as incentives for enforcement) are needed to stop the expansion of agriculture. Despite negotiations and the combination of instruments, agriculture continues to grow. This has precipitated arguments on sustainable or ecological intensification and the need for behavior and value changes in agriculture-forest landscape management—a debate that requires resolution if tropical forestry ecosystems are to be maintained (Pretty et al. 2011; Tittonell 2014).

Economic or financial valuations often represent only a single scale of values—often monetary in nature. Such a scale would not apply, for example, to the quantification of the spiritual, symbolic, or life-saving medicinal value of sacred forests in Africa. To these communities, forests are a part of life. They provide an inextricable connection to nature that can be associated to the biophylia hypothesis (Caston 2013), in which the community is dependent on the forest/nature for their very being. A purely monetary valuation or financial incentive is unlikely to be successful in this environment unless accompanied perhaps by property rights-based regulatory incentives. Understanding the diverse set of values in a given community can help establish the right kind of mix of incentives needed to enable environmentalism.

Bemelmans-Videc et al. (1998) articulated a framework for policy incentives and evaluations: where carrots, sticks, and sermons served as mechanisms to construct a mix of incentives capable of simultaneously addressing multiple value-driven behaviors. Carrots could refer to PES-type or economic incentives to address assigned values. Sticks could be dis-incentives in the form of regulations, rules, punishments, and prohibitions to discourage instrumental or utilitarian behaviors. Sermons could represent more training, education, capacity building and information provision type incentives aimed at reinforcing or changing held intrinsic prosocial and pro-environmental behavior (Figure 3.1). Applying this to the tropical landscape mentioned above, subsidies for intensification (carrots) could coexist with the development and enforcement of protected areas (sticks) and the promotion of sustainable intensification (sermons).

Mitigating Crowding Out: Justice for Pro-Environmentalism

In the realm of multiple incentives, understanding the diversity and depth of values can help mitigate potential crowding out of intrinsic pro-environmental behavior in the use of external incentives within ecosystem services. Increasingly, classic financial or economic incentives are being challenged by experiences in environmentalism from the rural developing world (Martinez-Alier 2002), in terms of how they interface with social motivations. A number of these studies have found that monetary payments can undermine prosocial behavior or altruistic/intrinsic motivation at critical points, especially when they are withdrawn (Cardenas et al. 2000; Reeson and Tisdell 2008).

From “Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity,” edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

Consider, for example, forest carbon and REDD+ payments, which are allocated by project according to a set budget and timeframe. Once the project ends and payments are phased out, it has been found that the actions previously supported are also withdrawn. Imagine REDD+ payments being received by forest countries that have managed sacred forests in Africa for many years out of intrinsic and cultural values. Similarly, there is a risk that fewer countries would seek to ensure that the 17% of national territory remain as protected areas (per the Convention on Biological Diversity Aichi target 11) after REDD+ payments for conservation come to an end. Therefore, considerations of rules and conditionalities (e.g., caps for specific incentives) to address potential for crowding out might be necessary.

The body of knowledge on how incentives crowd out prosocial behavior is largely outside the realm of natural resources management, and ecosystem services in particular (van Noordwijk et al. 2012). Thus there is a pressing need for research in this area, if incentives for ecosystem services are to achieve the desired impact. This research needs to address trade-offs, synergies, and potential tipping points through modeling and other approaches (Gneezy et al. 2011). Without deep understanding of values and value interactions within incentives, it will be impossible to mitigate crowding out. Finally, addressing the free-rider problem in ecosystem services that results from incentives also requires a good understanding of local values, with some potential for influencing justice in environmentalism.

The Rise of Theory of Place

Inherent in every incentive design and implementation is a theory of change: what is the expected impact on human environment relations and how will it unfold? All too often, this is not clearly articulated in terms of the context (i.e., complex institutional landscape, political economy, norms, policies, etc.) within which the incentive will take place and the interactions and implications that can be expected from the incentives (van Noordwijk et al. 2015). The latter has been referred to as theory of place.

Stern et al. (1999) emphasized the importance of context and place in VBN theory by pointing out the central role of ecological worldviews, the perceived ability to take pro-environmental action as key contextual factors that modify values and shape environmental behavior. Guagnano et al. (1995) put context and environment as paramount components in understanding behavior through attitude-behavior-context (ABC theory). ABC theory attempts to increase understanding of behavior as a function of the organism and its environment. It argues that behavior (B) is an interactive product of personal-sphere attitudinal variables (A) and contextual factors (C). In a curbside recycling study, Guagnano et al. (1995) found that attitude and behavior are strongly associated when context is neutral, but almost nonexistent when contextual forces are strong, because context largely determines behavior (see also Stern 2000).

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

Values in natural resources management tend to be place specific. Assigned values, in particular, pertain mainly to given objects or services from a given place (Seymour et al. 2012). Relational and held values have a strong influence on assigned values and are themselves shaped by interactions between multiple variables, such as social processes, interpersonal influences, government policies, private sector, and market influences (Brown 1984; Stern 2000; Chan et al. 2016; Jones et al. 2016). This body of evidence suggests that incentive design and implementation as well as environmentalism actions would benefit from a better understanding of theories of place, in much the same way theories of change are articulated in the management of ecosystem services.

Need for Further Research

For natural resources and ecosystem services, the need for further exploration into the mechanisms and relationships between value, behavior, and incentives cannot be overemphasized. This work can borrow from the economic policy and technology innovations arena, where more understanding exists. Although some work is beginning to emerge (van Noordwijk et al. 2012; Jones et al. 2016), there is a dearth of empirical and experimental work as a whole. Future research needs to pay attention to this to advance environmentalism.

Summary

In this chapter, I have explored the linkages between values and incentives in environmentalism and, in particular, ecosystem services. To enhance the design and implementation of incentives for ecosystem services, it is critical that we understand the potential influences of values on incentive mechanisms (and vice versa). Here, I have focused the discussion around the three main values—held, assigned, and relational values—and highlighted other useful nature-related values (e.g., intrinsic, instrumental, dominionistic, scientific, etc.). Using PES and REDD+ as examples to ground the discussion, linkages between values and incentives were explored through two main decision-making framings: rational choice and bounded rationality. Conceptual linkages between values and incentives in environmentalism are summarized in Figure 3.1. While economic and financial incentives are largely linked to assigned values, nonfinancial and non-economic incentives are linked primarily to relational and held values. In reality, though, values influence each other as well as the behavior that results, and thus understanding the complex processes becomes extremely important. VBN and ABC theories in environmental behavior science can be used to deepen our understanding of the interactions between values and incentives. To change environmentally significant behavior in the context of ecosystem services, four areas emerge pertinent to the design and implementation of effective incentives:

From “Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity,” edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

1. To respond to the diversity of values, multiple incentives or mixes of incentives are needed to enable sustainability.
2. Crowding out needs to be mitigated in incentive structures.
3. The rise of theory of place requires further study in the context of incentive deployment.
4. Further empirical research is needed to enable a better understanding of the links between values and incentives.

Meeting these challenges will positively impact diversity, justice, and sustainability in tropical forest environmentalism.

References

Agrawal, A. 2007. Forests, Governance, and Sustainability: Common Property Theory and Its Contributions. *Int. J. Commons* **1**:111–136.

Appleton, A. F. 2002. How New York City Used an Ecosystems Services Strategy Carried out through an Urban-Rural Partnership to Preserve the Pristine Quality of Its Drinking Water and Save Billions of Dollars. In: The Katoomba Conference. Tokyo: Forest Trends.

Bemelmans-Videc, M. L., R. C. Rist, and E. Vedung, eds. 1998. Carrots, Sticks and Sermons: Policy Instruments and Their Evaluation. New Brunswick, NJ: Transaction.

Bengston, D. N. 1994. Changing Forest Values and Ecosystem Management. *Soc. Nat. Resour.* **7**:515–533.

Bernard, F., P. A. Minang, B. Adkins, and J. T. Freund. 2014. REDD+ Projects and National-Level Readiness Processes: A Case Study from Kenya. *Clim. Pol.* **14**:788–800.

Brown, T. C. 1984. The Concept of Value in Resource Allocation. *Land Econ.* **60**:231–246.

Cardenas, J. C., J. Stranlund, and C. Willis. 2000. Local Environmental Control and Institutional Crowding-Out. *World Dev.* **28**:1719–1733.

Casey, F., S. Vikemann, C. Hummon, and B. Taylor. 2006. Incentives for Biodiversity Conservation: An Ecological and Economic Assessment. Defenders of Wildlife. http://www.defenders.org/publications/incentives_for_biodiversity_conservation.pdf. (accessed Jan. 20, 2017).

Caston, D. 2013. Biocultural Stewardship: A Framework for Engaging Indigenous Cultures. *Minding Nature* **6**:22–32.

Cerbu, G. A., B. M. Swallow, and D. Y. Thompson. 2011. Locating REDD: A Global Survey and Analysis of REDD Readiness and Demonstration Activities. *Environ. Sci. Pol.* **14**:168–180.

Chan, K. M. A., P. Balvanera, K. Benessaiah, et al. 2016. Opinion: Why Protect Nature? Rethinking Values and the Environment. *PNAS* **113**:1462–1465.

de Groot, R., L. Brander, S. van der Ploeg, et al. 2012. Global Estimates of the Value of Ecosystems and Their Services in Monetary Units. *Ecosys. Serv.* **1**:50–61.

FAO. 2015. Incentives for Ecosystem Services in Agriculture. Food and Agriculture Organization of the United Nations. http://www.fao.org/in-action/incentives-for-ecosystem-services/en/. (accessed July 27, 2017).

Frost, F., and I. Bond. 2007. The Campfire Programme in Zimbabwe: Payments for Wildlife Services. *Ecol. Econ.* **65**:776–787.

Gneezy, U., S. Meier, and P. Rey-Biel. 2011. When and Why Incentives (Don't) Work to Modify Behavior. *J. Econ. Perspect.* **25**:191–210.

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

Guagnano, G. A., P. C. Stern, and T. Dietz. 1995. Influences on Attitude-Behavior Relationships: A Natural Experiment with Curnside Recycling. *Environ. Behav.* **27**:699–718.

Heimlich, R., K. Wiebe, R. Claassen, D. Gadsby, and R. House. 1998. Wetlands and Agriculture: Private Interests and Public Benefits: Agricultural Economic Report No. (AER-765). Resource Economics Division Economic Research Service U.S. Dept. of Agriculture. Washington, D.C.: GPO.

Jolls, C., C. R. Sunstein, and R. Thaler. 1998. A Behavioral Approach to Law and Economics. *Stanford Law Rev.* **50**:1471–1548.

Jones, N. A., S. Shaw, H. Ross, K. Witt, and B. Pinner. 2016. The Study of Human Values in Understanding and Managing Social-Ecological Systems. *Ecol. Soc.* **21(1)**:15

Kellert, S. R. 1996. The Value of Life: Biological Diversity and Human Society. Washington, D.C.: Island Press.

Martinez-Alier, J. 2002. The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation. Cheltenham: Edward Edgar.

Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-Being: Synthesis. Washington, D.C.: Island Press.

Minang, P. A., and M. van Noordwijk. 2013. Design Challenges for Achieving Reduced Emissions from Deforestation and Forest Degradation through Conservation: Leveraging Multiple Paradigms at the Tropical Forest Margins. *Land Use Policy* **31**:61–70.

Palm, C., S. Vosti, P. Sanchez, and P. Ericksen. 2005. Slash and Burn Agriculture: The Search for Alternatives. New York: Columbia Univ. Press.

Pretty, J., C. Toulmin, and S. Williams. 2011. Sustainable Intensification in African Agriculture. *Int. J. Agric. Sustain.* **9**:5–24.

Rademaekers, K., R. Williams, R. Ellis, et al. 2012. Study on Incentives Driving Improvement of Environmental Performance of Companies. Rotterdam: ECORYS.

Reeson, A. F., and J. G. Tisdell. 2008. Institutions, Motivations and Public Goods: An Experimental Test of Motivational Crowding *J. Econ. Behav. Organ.* **68**:271–281.

Schroeder, H. 2013. Sensing Value in Place. In: Place-Based Conservation: Perspectives from the Social Sciences, ed. W. P. Stewart et al., pp. 73–87. Dordrecht: Springer Science + Business Media B.V.

Schwartz, S. H. 1994. Are There Universal Aspects in the Structure and Contents of Human Values? *J. Soc. Iss.* **50**:19–45.

Scott, J. 2000. Rational Choice Theory. In: Understanding Contemporary Society: Theories of the Present, ed. G. Browning et al., pp. 126–138. London: Sage Publications.

Seymour, E., A. Curtis, D. Pannell, C. Allan, and A. Roberts. 2012. Understanding the Role of Assigned Values in Natural Resource Management *Australas. J. Env. Manag.* **17**:142–153.

Sierra, R., and E. Russman. 2006. On the Efficiency of Environmental Service Payments: A Forest Conservation Assessment in the Osa Peninsula, Costa Rica. *Ecol. Econ.* **59**:131–141.

Stern, P. C. 2000. New Environmental Theories: Toward a Coherent Theory of Environmentally Significant Behavior. *J. Soc. Iss.* **56**:407–424.

Stern, P. C., T. Dietz, T. D. Abel, G. A. Guagnano, and L. Kalof. 1999. A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism. *Hum. Ecol. Rev.* **6**:81–97.

Thaler, R., and C. R. Sunstein. 2008. Nudge: Improving Decisions About Health, Wealth, and Happiness London: Penguin Books.

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

Tittonell, P. 2014. Ecological Intensification of Agriculture: Sustainable by Nature. *Curr. Opin. Environ. Sustain.* **8**:53–61.

van Noordwijk, M., B. Leimona, R. Jindal, et al. 2012. Payments for Environmental Services: Evolution toward Efficient and Fair Incentives for Multifunctional Landscapes. *Annu. Rev. Environ. Resour.* **37**:389–420.

van Noordwijk, M., P. A. Minang, O. E. Freeman, C. Mbow, and J. de Leeuw. 2015. The Future of Landscape Approaches: Interacting Theories of Place and Change. In: Climate-Smart Landscapes: Multifunctionality in Practice, ed. M. van Noordwijk et al., pp. 375–388. Nairobi: World Agroforestry Centre (ICRAF).

White, D., and P. A. Minang, eds. 2011. Estimating the Opportunity Costs of REDD+: A Training Manual. Washington, D.C.: The World Bank.

Wunder, S. 2005. Payments for Environmental Services: Some Nuts and Bolts. Jakarta: CIFOR.

———. 2015. Revisiting the Concept of Payments for Environmental Services. *Ecol. Econ.* **117**:234–243.

From "Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity," edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.

From “Rethinking Environmentalism: Linking Justice, Sustainability, and Diversity,” edited by Sharachchandra Lele et al. 2018. Strüngmann Forum Reports, vol. 23, series editor Julia Lupp. Cambridge, MA: MIT Press. ISBN 9780262038966.