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# Comparison of Direct Transfers for Human Capital Development and Environmental Conservation

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**Summary.** — Over the past 30 years, direct transfers to beneficiaries have become an increasingly important tool for addressing society's need for effective, efficient, and equitable conservation and development, and have been widely used to generate socially desirable outcomes in human capital development (HCD) programs and Payments for Ecosystem Services (PES) programs. Yet, the two types of programs have been examined in distinct bodies of literature without much reference to each other. By systematically reviewing peer-reviewed journal articles, dissertations, and select working papers, we suggest important similarities and differences between HCD cash transfer and PES programs that have been overlooked, particularly in how direct transfers are conceptualized and operationalized and how intended and unintended program outcomes are produced. Rather than considering HCD cash transfers and PES as two distinct tools, a common framework that conceptualizes direct transfers as an umbrella mechanism to produce socially desirable outcomes can contribute to effectively engaging target populations, addressing the needs of beneficiaries in a holistic way, comprehensively evaluating program impacts, and enabling opportunities to build synergies and minimize redundancies and competition across programs. We conclude by offering five insights into future research, program development, and policy innovations. Specifically, PES programs can learn from HCD cash transfer programs to (1) incorporate considerations of economic and gender inequalities to better sustain long-term environmental outcomes; (2) enhance collaboration among PES scholars, program practitioners, and policy makers to improve PES design and implementation and minimize adverse unintended impacts; (3) use randomized control trials to measure the causal impacts of PES; and (4) reconsider the role of conditionality to promote simultaneous production of environmental, economic, and social benefits. HCD cash transfer programs can learn from PES programs to (5) explore collaborative, community-based program design and implementation to facilitate not only adoption of socially desirable behaviors but also long-term human capital gains.


*Key words* — PES, ecosystem service, environmental service, cash transfer, conditionality, randomized control trial

## 1. INTRODUCTION

In the last decade, new approaches to solving societal problems based on direct transfers to individuals, households, and communities, have become increasingly popular in fields as varied as education, health, and environmental conservation. Among them, direct transfers to enhance human capital development (HCD), and specifically conditional cash transfers (CCTs), have taken a center stage. In CCT programs, cash or in-kind transfers are distributed to beneficiaries, conditional on them undertaking socially desirable behaviors. CCT programs vary in design, scope, and outcomes, but tend to focus on increasing human capital, such as mother–child health and schooling for girls (Adato & Hoddinott, 2009). A few programs have focused on other socially desirable outcomes, such as social inclusion (Cookson, 2016), small-business support (Blattman, Green, Jeannie, & Jamison, 2013), and smallholder agricultural production (Davis, Handa, Arranz, Stampini, & Winters, 2002). Following the rigorously evaluated success of *Programa de Educación, Salud, y Alimentación* (PROGRESA), Mexico's CCT program in education and health (Skoufias & Parker, 2001), CCTs have diffused widely, impacting millions around the globe. In 2015, CCT programs were operating in 64 countries (Honorati, Gentilini, & Yemtsov, 2015). As of 2013, one of the largest CCT programs, Brazil's *Bolsa Família*, had served 13.8 million families (Campello & Neri, 2014).

In parallel to the expansion of CCT programs aimed (mostly) at enhancing human capital, a similar expansion of programs known as Payments for Ecosystem Services [1] (PES) has occurred since the 1990s, with 66 billion USD spent globally on watershed-focused PES programs alone as of 2011 (Bennett, Carroll, & Hamilton, 2013). PES is designed as an economic instrument for environmental conservation, in

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which natural resource owners receive payments (cash or in-kind) to manage their resources in ways that benefit others, with compensation paid only if owners comply with binding requirements that seek to produce ecosystem services (Engel, Pagiola, & Wunder, 2008; Norgaard, 2010; Wunder, 2005, 2008, 2013, 2015). Sven Wunder first defined PES in 2005, and revisited the definition in 2015. Currently, PES is defined and widely accepted as "(i) voluntary transactions (ii) between service users (iii) and service providers (iv) that are conditional on agreed rules of natural resource management (v) for generating offsite services" (Wunder, 2015: 241). Conditionality as "the single defining feature" of PES programs (Wunder, 2015: 234) effectively separates PES from previous environmental conservation approaches in which conservation programs were *de facto* transfers to communities without explicit obligation to adopt conservation behaviors. One example of PES is the Sloping Land Conservation Program in China, the largest land retirement program in low- and medium-income countries. The program rewards rural households with a set amount of cash or grain per year for each hectare of cropland converted to forest (Bennett, 2008; Song *et al.*, 2014). Another example is the smaller scale, municipal-level *Pimampiro* program in Ecuador, in which downstream urban households pay a water surcharge that provides payments to upstream households in return for their protection and regeneration of forest and plains (Rodríguez de Francisco, Budds, & Boelens, 2013; Wunder & Albán, 2008).

CCT and PES programs share many characteristics: both rely on direct transfers to generate socially desirable outcomes, generally target poor households, and monitor compliance with conditions. Yet, with two exceptions (Persson & Alpízar, 2013; Rodríguez, Pascual, Muradian, Pazmino, & Whitten, 2011), these programs have been examined in distinct bodies of literature without reference to each other. HCD cash transfer programs have been primarily examined by development economists, geographers, and anthropologists, while PES have been primarily examined by ecological economists, ecologists, and geographers. This points to a need and an opportunity for comparing, contrasting, and potentially coalescing these two types of direct transfer programs because, we believe, they have much to learn from each other.

In this article, we review and synthesize the conceptual and empirical literature on direct transfers for enhancing human capital and environmental conservation. Our results can be used to inform the development of future direct transfer programs to produce various environmental and non-environmental benefits. We ask four linked questions: (1) How are direct transfers conceptualized across the HCD and PES research? (2) How are direct transfers operationalized in HCD and PES programs? (3) What are the intended and unintended, direct and indirect, impacts of direct transfers in HCD and PES programs, and how are they evaluated? (4) How is conditionality understood and implemented in HCD cash transfer and PES programs? Out of our review arises another related question: would PES programs benefit from relaxing or perhaps eliminating conditionality, similar to what has occurred in HCD cash transfer programs?

After reviewing our methods in Section 2 below, we answer these questions sequentially in Section 3. We then highlight the need to use a common framework to conceptualize, operationalize, and evaluate direct transfers for enhancing human capital and environmental conservation. We conclude by offering five insights into what the HCD cash transfer community and the PES community may learn from each other.

## 2. METHODS

In this article, we bridge two bodies of research: direct transfers to enhance human capital and to enhance ecosystem services. In the review of HCD research, we included studies that examined conditional and unconditional cash transfer programs. In the review of PES research, we included studies that discussed programs defined as PES and programs under other labels, such as Compensation and Rewards for Environmental Services (Swallow *et al.*, 2009) and Payments for Watershed Services (Asbjornsen *et al.*, 2015), which also involve direct transfers for the provision of ecosystem services.

We took an extended approach to the review by employing several search strategies and incorporating multiple types of literature (Petticrew & Roberts, 2006; Savoie, Helmer, Green, & Kazanjian, 2003; Victor, 2008). Our extended approach brought together sources from peer-reviewed journals, dissertations, and working papers. We included both conceptual and empirical studies that used a wide range of methods (e.g., randomized control trials, quasi-experiments, ethnographies). Our strategies for identifying relevant literature included electronic database searches, snowball sampling, and experts' recommendations. For both the HCD and PES literatures, we conducted electronic database searches using Web of Science, JSTOR, AnthroSource, and ProQuest Dissertations & Theses. Terms employed in electronic database searches for the HCD literature are presented in Table 1 and for the PES literature in Table 2. We searched the title, keyword, abstract, and topic fields of these databases. Although we did not explicitly filter the literature by publication date, all of the sources identified through our screening (described below) were published in 2000 or later, allowing us to ensure the timeliness and relevance of the literature under review. The last time we systematically searched the database was March 2015, and we added new papers published after March 2015 as they came to our attention. Given the prevalence of HCD cash transfer programs in Latin America, some Spanish search terms and the names of specific known programs were also included in the search. For both the HCD and PES literatures, we also gathered additional sources through snowball sampling from in-text references and recommendations from experts in the two fields. Finally, we reviewed websites of research groups that had produced working papers and reports on HCD cash transfer and PES programs, such as the Center for International Forestry Research.

We screened results from electronic database searches based on their discussions of conditional or unconditional payments referenced in their title, keywords, and abstract. For some of the results from our initial searches, their title, keywords, and abstract did not explicitly include terms such as "conditional" or "conditionality," but seemed to discuss payments that are contingent upon compliance with a contract. In those cases, we read the entire paper to determine if conditionality was discussed, and if so, we included the paper in our review. As a result, we reviewed and screened over 2,000 papers from our searches. In the end, we compiled, analyzed, and synthesized a total of 177 papers, including 69 papers discussing HCD cash transfers, 106 papers discussing PES, and two papers discussing both HCD cash transfers and PES.

After compiling the 177 papers, we formulated a new database to guide and record extraction of data from each paper. Data extracted included methodological details, unit of analysis, attributes of the HCD cash transfer or PES programs, discussion of conditionality, discussion of confounders (e.g., gender, inequality), main results, and broader impacts. We

recorded extracted data in the new database, expanded summaries for each paper, and analyzed the database to identify themes that appeared across papers.

Table 1. *HCD cash transfer literature search terms.*

| | | | |
|---|---|---|---|
| *Cash transfer programs and types* | | | |
| Conditional cash transfer | | | |
| Unconditional cash transfer | | | |
| Cash transfer program | | | |
| Anti-poverty program | | | |
| Education maintenance allowance | | | |
| Social risk mitigation project | | | |
| Red de protección social | | | |
| Transferencias monetarias condicionadas | | | |
| Bono Juana Azurduy | | | |
| Bono Juancito Pinto | | | |
| *Cash transfer mechanisms and outcomes* | | | |
| Cash transfer | AND | *Conditionalit* | OR |
| | | Intra-household | OR |
| | | Intrahousehold | OR |
| | | Gender | OR |
| | | Gender-targeted | OR |
| | | Incentive mechanism | OR |
| | | Monitoring | OR |
| | | Poverty alleviation | |
| *Conditionality and outcomes* | | | |
| *Conditionalit* | AND | Poverty alleviation | OR |
| | | Social welfare | OR |
| | | Social development | OR |
| | | Social safety net | OR |
| | | Poverty reduction | OR |
| | | Anti-poverty | |

Table 2. *PES literature search terms.*

| | | | |
|---|---|---|---|
| *PES programs and types* | | | |
| Payment for ecosystem services | | | |
| Payment for environmental services | | | |
| Payment for ecological services | | | |
| Payment AND ecosystem services | | | |
| Sustainable use financing | | | |
| Sustainable use activities | | | |
| Conservation contracts | | | |
| Sustainable resource management | | | |
| Servicios ecosistémicos | | | |
| Mecanismos de retribución por servicios ecosistémicos | | | |
| *PES mechanisms and outcomes* | | | |
| Payment* for environmental services | AND | *Conditionalit* | OR |
| OR | | Pro-poor | OR |
| Payment* for ecosystem services | | Intra-household | OR |
| | | Intrahousehold | OR |
| | | Gender | OR |
| | | Incentive mechanism | OR |
| | | Monitoring | OR |
| | | Forest | OR |
| | | Carbon | OR |
| | | Water | OR |
| | | Sustainable resource management | OR |
| | | Market-based | |

## 3. RESULTS AND DISCUSSION

### (a) *How are direct transfers conceptualized in the HCD and PES research?*

Direct transfers are conceptualized similarly in both the HCD cash transfer and PES literatures as a socially driven tool to correct market failures, increase the provision of public goods, and promote socially efficient outcomes. Differences persist in what these programs *are* and what they *should be*. Particularly, differences emerge from the way the literature describes the political economy of the programs, the integration of anti-poverty goals into the programs, and the importance of adapting the programs to local contexts (Table 3). Below we discuss these differences.

#### (i) *The political economy of HCD cash transfer and PES programs*

In the HCD cash transfer literature, viewing payments as an economic tool to promoting public goods has been well accepted (Adato & Hoddinott, 2009; Fiszbein *et al.*, 2009). In contrast, in the PES literature debates still exist about whether incentive-based programs are the best tool to generate environmental conservation (Büscher, 2012; Kolinjivadi, Grant, Adamowski, & Kosoy, 2015; McAfee & Shapiro, 2010). The results below focus on these debates in the PES literature.

Among ecological economists who first conceptualized PES as a Coasean solution to the problem of underprovision of ecosystem services, some have challenged the original definition of PES by Wunder (2005). For instance, Farley and Costanza (2010) and Muradian, Corbera, Pascual, Kosoy, and May (2010) argue that few PES programs contain the perfect conditions required for a Coasean bargain to be socially efficient, including perfect information, voluntary action, and a tradeoff between efficiency and equity. Instead, they argue, actual PES implementation is complex due to the interplay of payment intensity, payment directness, and commodification level. Further, scholars have not been able to reach consensus on whether PES is truly a neoliberal market-based mechanism. Many PES programs include government interventions, such as obligatory payments from ecosystem service users to providers. Such interventions indicate a Pigouvian approach that regulates market processes rather than a Coasean approach that grants autonomy to the market, suggesting that many PES programs do not fit the classic definition of a market-based PES (Fletcher & Breitling, 2012; McElwee, 2012; Pirard, 2012; Schomers & Matzdorf, 2013; Shapiro-Garza, 2013a; Wunder, 2005). Based on these criticisms, the literature in ecological economics has gradually shifted away from viewing PES as a market-based scheme to viewing it as a reciprocity-based scheme, through which payments are meant to support and reinforce pre-existing pro-environmental attitudes and practices rather than to impose new practices (Cranford & Mourato, 2011; Farley & Costanza, 2010; Vatn, 2010).

Both within and beyond the literature in ecological economics, some scholars also argue that the commodification of ecosystem services is not the most appropriate approach for conservation. One issue is that commodification may result in a bias where investments are skewed toward the provision of more profitable ecosystem services, such as a maximum-carbon-trapping eucalyptus forest, at the expense of less profitable but equally valuable ecosystem services, such as biodiversity (Farley & Costanza, 2010). Others have gone further to argue that PES is a neoliberal conservation approach and

Table 3. *Summary of similarities and differences between HCD cash transfer and PES programs identified from the systematic review.*

| Results | HCD cash transfer literature | Representative authors (yr) | PES literature | Representative authors (yr) |
|---|---|---|---|---|
| *3a. How are direct transfers conceptualized?* | | | | |
| *3a(i). Political economy of direct transfers* | (i) Payments are economic approach to public goods | (i) Adato and Hoddinott (2009), Fiszbein et al. (2009) | (i) Debates about whether incentives are best tool for producing environmental outcomes<br>(ii) Some concern about commodification of ecosystem services | (i) Büscher (2012), Kolinjivadi et al. (2015), McAfee and Shapiro (2010)<br>(ii) Farley and Costanza (2010), Gómez-Baggethun et al. (2010), Sullivan (2009) |
| *3a(ii). Integration of anti-poverty goals* | (i) Poverty reduction goals well accepted | (i) Adato and Hoddinott (2009), Fiszbein et al. (2009) | (i) Debates about whether poverty reduction goals should be included<br>(ii) Tradeoffs between efficiency, efficacy, and equity | (i) Pascual et al. (2010), van Noordwijk and Leimona (2010), Wunder (2005, 2008)<br>(ii) Osborne (2015), Pascual et al. (2010), Swallow et al. (2009), Tacconi (2012) |
| *3a(iii). The importance of adapting to local contexts* | (i) Well accepted that it is critical to consider the socio-cultural contexts in which programs are implemented | (i) Adato and Hoddinott (2009), Adato et al. (2011), Porter and Dornan (2013) | (i) Recent focus on importance of incorporating local perceptions of the environment into design and implementation | (i) Asquith et al. (2008), Blay et al. (2008), Cranford and Mourato (2011), Jackson and Palmer (2015) |
| *3b. How are direct transfers operationalized?* | | | | |
| *3b(i). Targeted beneficiaries and constraints to participation* | (i) Have targeted poor households based on demographic characteristics<br>(ii) Have focused on women and children | (i) Adato and Hoddinott (2009), Álvarez et al. (2008), Das et al. (2005), Rawlings and Rubio (2005)<br>(ii) Bradshaw (2008), Molyneux (2006), Molyneux and Thomson (2011) | (i) Have targeted based on the biophysical attributes of natural resources surrounding human communities<br>(ii) Land tenure can be a constraint to participation | (i) Ajayi et al. (2012), Barton et al. (2009), Chen (2010), Engel et al. (2008), Wendland et al. (2010)<br>(ii) Asquith et al. (2002), Bremer, Farley, Lopez-Carr, and Romero (2014), Farley et al. (2011), Gong et al. (2010), Pagiola et al. (2005), Wunder (2008) |
| *3b(ii). Types of transfers made to program participants* | (i) Have provided both cash and in-kind transfers, and mixed evidence about effectiveness of cash vs. in-kind transfers | (i) Aker (2013), Cunha (2014), del Boca et al. (2014), Gangopadhyay et al. (2015), Skoufias et al. (2013) | (i) Have provided both cash and in-kind transfers, and in-kind transfers are favored because of participant preference, reduced monitoring need, non-rival and non-excludable nature, less concerns about crowding out, and less susceptibility to corruption and theft | (i) Aker (2013), Asquith et al. (2008), Chen et al. (2014), Devereux and Vincent (2010), Kerr et al. (2014), Kolinjivadi *et al.* (2015), Sommerville et al. (2010) |
| *3b(iii). Ways to determine payment size and structure* | (i) Little discussion of how to determine payment size<br>(ii) Some discussion of a universal vs. a differentiated payment structure<br>(iii) Linking payment size to opportunity cost has potential, but decision needs to take into account social equity | (i) Angelucci (2012), Baird et al. (2009), McGuire (2013)<br>(ii) Baird et al. (2011), Benhassine *et al.* (2015), Fernald et al. (2008), Filmer and Schady (2009a, b), Hou (2006)<br>(iii) Rawlings and Rubio (2005) | (i) Opportunity cost is used to determine payment size but is difficult to estimate<br>(ii) Debates about a universal vs. a differentiated payment structure<br>(iii) Tradeoffs between efficiency and equity need to be considered | (i) Ajayi et al. (2012), Jindal et al. (2013), Pattanayak et al. (2010)<br>(ii) Chen (2010), Pagiola and Arcenas (2013), Wünscher et al. (2008)<br>(iii) n/a |

(*continued on next page*)

Table 3 (*continued*)

| Results | HCD cash transfer literature | Representative authors (yr) | PES literature | Representative authors (yr) |
|---|---|---|---|---|
| *3c. What are the impacts of direct transfers and how are they evaluated?* | | | | |
| *3c(i). Differences in evaluation methods* | (i) Have emphasized causal impacts<br>(ii) Randomized control trials (RCTs) frequently used to establish counterfactuals | (i) Fiszbein et al. (2009)<br>(ii) Same as above | (i) Have focused on environmental additionality, and recognize the difficulty of measuring it<br>(ii) Non-experimental methods and observational data most commonly used<br>(iii) Limited ability to establish counterfactuals | (i) Pascual et al. (2010), Pattanayak et al. (2010), Sommerville et al. (2009)<br>(ii) Persson and Alpízar (2013), Wunder et al. (2008)<br>(iii) n/a |
| *3c(ii). Documented positive program impacts* | (i) RCT-based evidence suggests positive impacts on increasing the use of targeted public services<br>(ii) Mixed results on whether increased use of public services lead to increased human capital<br>(iii) Positive impacts on household consumption, labor market participation, and psychosocial well-being of participants | (i) Adato and Hoddinott (2009), Akresh, de Walque, and Kazianga (2013), Akresh, de Walque, and Kazianga (2016), Attah et al. (2016), Baird et al. (2011), Baird et al. (2014), Barber and Gertler (2010), de Brauw and Hoddinott (2011), Fiszbein et al. (2009), Gaarder et al. (2010), Garcia and Hill (2010), Haushofer and Shapiro (2016), Maluccio et al. (2010), Rawlings and Rubio (2005), Robertson et al. (2013), Samuels and Stavropoulou (2016), Schady and Araujo (2008), Skoufias et al. (2013), Soares et al. (2010)<br>(ii) Same as above<br>(iii) Same as above | (i) Very limited RCT-based evidence suggests some positive environmental impacts<br>(ii) Results from qualitative case studies and econometric quasi-experimental analyses are inconclusive<br>(iii) Little work on quantifying the social benefits of PES seems to suggest positive income or welfare effects | (i) Jayachandran (2013), Jayachandran et al. (2016)<br>(ii) Blay et al. (2008), Bremer, Farley, Lopez-Carr, and Romero (2014), Pattanayak et al. (2010), Wunder et al. (2008)<br>(iii) Asquith et al. (2008), Bremer, Farley, Lopez-Carr, and Romero (2014), Clements et al. (2010), de Koning et al. (2011), Ingram et al. (2014), Milder et al. (2010), Song et al. (2014), Yañez-Pagans (2014) |
| *3c(iii). Adverse unintended consequences* | (i) Can create tension and disrupt social relations<br>(ii) Mixed results on impacts on women's empowerment but some evidence points to increased gender inequality<br>(iii) Practitioners and policymakers are becoming aware of adverse unintended consequences<br>(iv) Little RCT-based evidence exists | (i) Pavanello et al. (2016), Undurraga et al. (2016)<br>(ii) Adato et al. (2016), Bradshaw (2008), Cookson (2016), Jones et al. (2008), Molyneux (2006), Molyneux and Thomson (2011), Slater (2011), van den Bold et al. (2013), Yoong et al. (2012)<br>(iii) Molyneux and Thomson (2011)<br>(iv) n/a | (i) Some adverse unintended environmental consequences, occurring primarily though leakage<br>(ii) Can reinforce economic inequalities in various ways<br>(iii) Can change gender relations and produce gender-differentiated outcomes<br>(iv) Little RCT-based evidence exists | (i) Engel et al. (2008), Sierra and Russman (2006), Wunder (2005), Wunder et al. (2008)<br>(ii) Asquith et al. (2008), Börner et al. (2010), Börner and Wunder (2008), Kolinjivadi et al. (2015), Lansing (2014), Milne and Adams (2012), Rodríguez de Francisco et al. (2013), Vatn (2010), von Hedemann and Osborne (2016), To et al. (2012)<br>(iii) Asquith et al. (2002), Bee and Basnett (2017), Brown and Corbera (2003), Corbera et al. (2007), Kariuki and Birner (2016), McAfee (2012)<br>(iv) n/a |

| | | | | |
|---|---|---|---|---|
| *3d. How is conditionality understood and implemented?* | | | | |
| *3d(i). Philosophical underpinning of conditionality* | (i) Argument that conditionality increases public support through beneficiary accountability<br>(ii) Ethical objections that conditionality contributes to insecurity of vulnerable populations and imposes a paternalistic attitude | (i) Adato and Hoddinott (2009), Adato *et al.* (2010), Porter and Dornan (2013) Fiszbein et al. (2009), Yeboah (2014)<br>(ii) Cunha (2014), Porter and Dornan (2013), Standing (2014) | (i) Conditionality widely viewed as a defining feature and necessary to produce environmental outcomes<br>(ii) Premise of conditionality challenged by discussion of intrinsic motivation to conserve the environment in the broader conservation literature | (i) Ferraro and Simpson (2002), Kerr et al. (2014), Swallow et al. (2010), Tacconi (2012), Wunder (2015)<br>(ii) Kerr et al. (2014), Neumann (2005), Robbins (2012) |
| *3d(ii). How conditionality enables the production of intended program outcomes* | (i) Participant perception of conditionality has an effect on program outcome<br>(ii) RCT-based evidence suggests conditional cash transfer (CCT) programs can produce positive impacts, but so do unconditional cash transfer (UCT) and labeled cash transfer (LCT) programs<br>(iii) Meta-analyses suggest CCTs and UCTs are statistically equally effective in achieving desired program outcomes | (i) Fernald et al. (2008), Fernald and Hidrobo (2011), Schady and Araujo (2008)<br>(ii) Akresh et al. (2013), Attanasio et al. (2015), Baird et al. (2011), Benhassine et al. (2015), Haushofer and Shapiro (2016)<br>(iii) Baird et al. (2014), Manley et al. (2013) | (i) Conditionality considered necessary to produce environmental outcomes<br>(ii) Debates about conditional payments crowding-out versus crowding-in people's intrinsic motivation to conserve the environment broadly discussed<br>(iii) No study directly tests the necessity of conditionality | (i) Ferraro and Simpson (2002), Kerr et al. (2014), Kolinjivadi et al. (2014), Muradian et al. (2010), Raes et al. (2014), Sommerville et al. (2009), Swallow et al. (2009), Swallow et al. (2010), Tacconi (2012), van Hecken et al. (2010), Wunder (2008), Wunder (2015)<br>(ii) Bremer, Farley, Lopez-Carr, and Romero (2014), Corbera et al. (2007), Cranford and Mourato (2011), Farley and Costanza (2010), García-Amado et al. (2013), Gómez-Baggethun *et al.* (2010), Kosoy and Corbera (2010), McCauley (2006), Vatn (2010)<br>(iii) n/a |
| *3d(iii). How conditionality contributes to the adverse unintended consequences* | (i) Lack of participant choice in service providers increases burden of compliance and leads to drop out<br>(ii) Conditions more likely to prevent participation from the extremely poor and marginalized<br>(iii) Implications of conditionality for gender relations<br>(iv) Evidence generally not from RCTs | (i) Álvarez et al. (2008), Cookson (2016), Rodríguez et al. (2011)<br>(ii) Álvarez et al. (2008), Das et al. (2005)<br>(iii) Cookson (2016), van den Bold et al. (2013)<br>(iv) n/a | (i) Can limit participation of poor and marginalized populations in four ways, thus increasing economic inequalities within communities<br>(ii) Feelings of exclusion among non-participants and of powerlessness among participants about making own natural resource decisions<br>(iii) Reinforce existing power relations<br>(iv) Different opportunity costs and rates of participation between women and men<br>(v) Evidence is not from RCTs | (i) Bremer, Farley, and Lopez-Carr (2014), Corbera et al. (2007), Hayes (2012), Krause and Loft (2013), Lansing (2014), McAfee (2012), Muñoz-Piña et al. (2008), Rodríguez et al. (2011), Saint-Macary et al. (2013), Vatn (2010), von Hedemann and Osborne (2016), Zbinden and Lee (2005)<br>(ii) Hayes et al. (2015), Kosoy *et al.* (2007), Muradian et al. (2010), Pascual et al. (2010), Sommerville et al. (2009), Swallow et al. (2009), Vatn (2010)<br>(iii) de Melo and Piaggio (2015), Sommerville et al. (2009)<br>(iv) Jindal et al. (2013), Revollo-Fernandez and Aguilar-Ibarra (2014)<br>(v) n/a |
| *3d(iv). Operating cost of conditionality* | (i) Monitoring conditionality represents varying percentages of total program costs<br>(ii) No study directly compares benefits and costs of conditionality | (i) Adato and Hoddinott (2009)<br>(ii) n/a | (i) Generally recognized that enforcing strict conditions is technically difficult and financially costly | (i) Asquith et al. (2002), Kaczan et al. (2013) |

is fundamentally problematic because it accepts the same political-economic system that produced the environmental and social problems it seeks to redress (Büscher, 2012; Gómez-Baggethun, de Groot, Lomas, & Montes, 2010; Kolinjivadi *et al.*, 2015; Sullivan, 2009). Scholars in this camp contend that this neoliberal conservation approach has two potential problems. First, PES accentuates rather than reconciles the nature-culture divide, diminishing the importance of local human-nature relations, the non-economic values of nature, the less tangible or less measurable aspects of ecosystems, and the non-material interests that motivate human actions (Jackson & Palmer, 2015; Kolinjivadi *et al.*, 2015; McAfee, 2012; McAfee & Shapiro, 2010; Milne & Adams, 2012; Shapiro-Garza, 2013b). Some view PES as a form of commodity fetishism that diminishes people's moral and cultural ties to the environment and legitimizes the "cashing out" of natural resources (Gómez-Baggethun *et al.*, 2010: 1209; Kosoy & Corbera, 2010). Second, PES imposes a single-value metric based on market or non-market valuation. This valuation approach is likely to separate the often interdependent ecological and social benefits, and fail to equally and comprehensively measure these benefits (Kosoy & Corbera, 2010; Kumar *et al.*, 2013; Spash, 2011; Zhang & Pagiola, 2011).

(ii) *The integration of anti-poverty goals into HCD cash transfer and PES programs*

Besides differences in the understanding of what HCD cash transfer and PES programs *are*, there are differences in the understanding of what these programs *should be*. HCD cash transfer programs have explicitly stated and widely accepted core goals of social and economic development, and there is little debate about the poverty-reduction nature of HCD programs. In contrast, there is less certainty in the PES literature about the ability and responsibility of PES programs to go beyond the provision of ecosystem services and to promote social outcomes such as poverty reduction. In PES programs, poverty reduction is often considered part of a "triple-win" approach of environmental effectiveness, economic efficiency, and social equity (Kolinjivadi *et al.*, 2015; McAfee & Shapiro, 2010). The extent to which PES programs incorporate poverty reduction or social development goals alongside environmental goals varies, as do opinions on whether PES programs should be pro-poor or should focus on producing environmental impacts (Farley, Anderson, Bremer, & Harden, 2011; van Noordwijk & Leimona, 2010; Van Hecken & Bastiaensen, 2010; Wunder, 2005, 2008). Pagiola, Arcenas, and Platais (2005: 239) discuss how the Coasean view of PES separates efficiency from equity considerations, thus dictating that PES be conceptualized "as a mechanism to improve the efficiency of natural resource management, and not as a mechanism for poverty reduction" (See also Muradian *et al.*, 2010). However, others argue that addressing social inequalities and empowering communities is necessary for PES programs to operate successfully (Kolinjivadi, Adamowski, & Kosoy, 2014; Kolinjivadi *et al.*, 2015; Pascual, Muradian, Rodríguez, & Duraiappah, 2010; Pascual *et al.*, 2014). These scholars assert that social equity contributes to lasting environmental outcomes, and not incorporating social equity considerations into PES programs risks overlooking the interactions between the ecological, social, and political processes that produced conservation challenges in the first place (Pascual *et al.*, 2014). At the heart of these debates is the realization that PES programs unavoidably face tradeoffs; notably, increasing a program's equity or other positive social impacts often comes at the expense of economic efficiency and/or environmental effectiveness (Osborne, 2015; Pascual *et al.*, 2010; Swallow *et al.*, 2009; Tacconi, 2012).

Some PES scholars have explored various PES program designs to strengthen the equity and development outcomes alongside the environmental outcomes. Specifically, efforts have been made to examine the connections between PES and poverty reduction among poor landholders in low-income countries (e.g., Daw, Brown, Rosendo, & Pomeroy, 2011; Leimona, Joshi, & van Noordwijk, 2009; Muñoz-Piña, Guevara, Torres, & Braña, 2008; Pagiola *et al.*, 2005). Often, poor landholders are unable to participate in PES programs because they depend on subsistence farming (Corbera, Kosoy, & Tuna, 2007). For the landowning and landless poor to benefit from PES programs, scholars have suggested that PES programs must reduce transaction costs, provide upfront payments to help with investment costs, seek out labor-intensive land-use changes, provide additional incentives for the poorest participants, and reduce paperwork to facilitate participation (Locatelli, Rojas, & Salinas, 2008; Pagiola, Rios, & Arcenas, 2010; Pagiola *et al.*, 2005). Key factors that contribute to a PES program's ability to produce win–win outcomes include the sustainable use of ecosystem services, tradeoffs between different services, the spatial flows of services, economic feedbacks in environmental markets, land tenure security, and strong governance (Bremer, Farley, & Lopez-Carr, 2014; Farley *et al.*, 2011; Gong, Bull, & Baylis, 2010; Tallis, Kareiva, Marvier, & Chang, 2008; Wunder, 2005).

(iii) *The importance of adapting HCD cash transfer and PES programs to local contexts*

Those who study direct transfers for enhancing human capital have long argued that program practitioners and policy makers should consider the socio-cultural contexts in which the programs are implemented to avoid unintended impacts (Radcliffe, 2015). The socio-cultural contexts examined have included norms and attitudes regarding incentives, local administrative and institutional capacities, experiences of poverty, gendered divisions of labor, social exclusion, and consumption (Adato & Hoddinott, 2009; Adato, Roopnaraine, & Becker, 2011; Porter & Dornan, 2013). Such considerations can help program practitioners and policy makers move away from a one-size-fits-all model that is often ineffective or inappropriate (Pellerano & Barca, 2017), and it is in this sense that local contexts can be seen as part of the conceptualization of direct transfers. In contrast, PES programs have only started considering the importance of socio-cultural contexts and local environmental values in recent years. For example, Jackson and Palmer (2015) argue that PES stakeholders must take into account local views of nature, links between ecosystem services and human wellbeing, and the complexity of socio-ecological systems. Kolinjivadi *et al.* (2015) state that PES objectives should be flexible, and that payments and their conditions must reflect local conditions.

In comparison to HCD cash transfer programs, PES programs seem to have experimented more with various collaborative, community-based approaches (e.g., community-based monitoring and land-use planning), in part as a way to more effectively address local contexts. Some PES scholars argue that such approaches are more effective in producing environmental outcomes and less expensive than top-down approaches (Asquith, Vargas, & Blay *et al.*, 2008; Cranford & Mourato, 2011; Wunder, 2008). Especially in areas with natural resource conflicts, Jackson and Naughton-Treves (2012) suggest that a hybrid approach combining the strengths of a PES scheme with a community-based strategy such as the

Integrated Conservation and Development Projects (ICDPs), can be more effective than PES alone. Some PES scholars also recognize that people hold pro-environmental attitudes and are not motivated solely by economic incentives to change their land-use practices, and that, in fact, direct conditional payments might "crowd out" such pro-environmental attitudes (Kerr, Vardhan, & Jindal, 2014; Sommerville, Jones, & Milner-Gulland, 2009; Vatn, 2010). To reduce the risk of "crowding out" and to foster community-based PES, some have suggested varying payment schemes and designs. For example, Cranford and Mourato (2011) suggest a two-step PES based on the framework of community conservation. The first step focuses on establishing institutional conditions, assessing local environmental attitudes, and forming a social context conducive to PES. The second step aims to support previously established pro-environmental behaviors by offering incentives. Further, incentives must be seen as supportive of pre-existing environmental attitudes and behaviors, not as a coercive tool to change destructive behaviors (Cranford & Mourato, 2014).

In summary, our review suggests that the HCD cash transfer literature and the PES literature both view direct transfers as a tool for correcting market failures and for increasing the provision of public goods, but important differences exist between the two bodies of literature. While there is consensus on what HCD cash transfer programs *are* and what they *should be*, there is less consensus in the PES literature about the political-economic nature of PES programs and the extent to which non-environmental goals should be integrated into PES. Additionally, PES programs have experimented with collaborative, community-based program design and implementation more than have HCD cash transfer programs.

### (b) *How are direct transfers operationalized in HCD and PES programs?*

We find differences in how direct transfers are operationalized to enhance human capital and environmental conservation, in three areas: (i) targeted beneficiaries and constraints to participation, (ii) types of transfers made to program participants, and (iii) ways to determine payment size and structure (Table 3). We discuss these differences next.

#### (i) *Targeted beneficiaries and constraints to participation*

Both types of programs target beneficiaries based on some assessment of intended program outcomes: human capital improvement in the case of HCD cash transfer programs and the provision of ecosystem services in the case of PES programs. These intended program outcomes then inform the selection of beneficiaries. HCD cash transfer programs tend to target poor households based on demographic or socioeconomic characteristics (Adato & Hoddinott, 2009; Das, Do, & Ozler, 2005; Rawlings & Rubio, 2005; Álvarez, Devoto, & Winters, 2008). Many programs specifically target women, with the expectation that transfers earmarked to women will empower them and result in health, nutritional, and educational benefits to children (Adato *et al.*, 2011; Bradshaw, 2008; Gitter & Barham, 2008; Molyneux, 2006; Molyneux & Thomson, 2011).

In contrast, PES programs do not necessarily target poor households. In fact, PES schemes that strictly target poor households are rarely successful because these households often rely on farming or other natural resource-dependent activities for subsistence (Bremer, Farley, & Lopez-Carr, 2014; Corbera *et al.*, 2007). Selection of beneficiaries in PES programs tends to be based on the biophysical attributes of natural resources surrounding human communities. Particularly, PES programs tend to target communities with legal control over natural resources that are critical for the provision of ecosystem services (Ajayi, Kelsey Jack, & Leimona, 2012; Barton *et al.*, 2009; Chen, 2010; Engel et al., 2008; Wendland *et al.*, 2010). Thus, security of land tenure becomes an important constraint to program participation, and often serves to exclude the landless poor from participating in PES programs (Asquith, Ríos, & Smith, 2002; Bremer, Farley, & Lopez-Carr, 2014; Farley *et al.*, 2011; Gong *et al.*, 2010; Grillos, 2017; Pagiola *et al.*, 2005; Wunder, 2008). Although secure land tenure is not always necessary for households to participate in PES programs, complicated land tenure situations, such as overlapping land tenure or communities not holding ownership rights to their lands, make PES programs hard to implement.

#### (ii) *The types of transfers made to program participants*

Both HCD and PES programs have provided cash and in-kind transfers to program participants. A few HCD studies show that in-kind transfers can be as effective as cash transfers (Aker, 2013; del Boca, Flinn, & Wiswall, 2014; Gangopadhyay, Lensink, & Yadav, 2015; Skoufias, Unar, & de Cossio, 2013), while more studies report that in-kind transfers are much less cost-efficient than cash transfers, usually because of the transportation and administrative costs of distributing goods like food (Cunha, 2014; Skoufias *et al.*, 2013). Some also criticize in-kind transfers for being a manifestation of paternalistic desires for recipients to consume specific goods, though this depends on how easy the goods can be sold or exchanged for other goods (Cunha, 2014; Gangopadhyay *et al.*, 2015).

In PES programs, in-kind transfers are more accepted, and beneficiaries sometimes prefer them over cash transfers (Asquith, Vargas, & Wunder, 2008; Wunder, 2005). In-kind transfers have been reported to have several advantages. For example, targeted in-kind transfers, such as providing an electricity stipend to discourage cutting trees for firewood, are a viable alternative to cash transfers because they reduce the need for monitoring (Asquith *et al.*, 2008; Chen, Viña, Shortridge, An, & Liu, 2014). Others argue that in-kind transfers can be valuable in community-based PES programs because they can be non-excludable in consumption and can benefit the whole community instead of particular individuals or households (Sommerville, Jones, Rahajaharison, & Milner-Gulland, 2010). Another argument for in-kind transfers is that, psychologically, they may be less likely than cash transfers to "crowd out" landholders' intrinsic motivation for environmental conservation (Kerr *et al.*, 2014). Finally, several studies argue that in-kind transfers may be less susceptible than cash transfers to corruption and theft (Aker, 2013; Devereux & Vincent, 2010; Kerr *et al.*, 2014; Kolinjivadi *et al.*, 2015). Despite these arguments, little has been done to rigorously compare the effectiveness of cash versus in-kind transfers across the two bodies of literature.

#### (iii) *Ways to determine payment size and structure*

It is generally agreed that the size of payment in a PES program should be determined by the opportunity cost of abandoning previous land uses or of not undertaking new ones prohibited by the program (Ajayi *et al.*, 2012; Jindal, Kerr, Ferraro, & Swallow, 2013; Pagiola & Arcenas, 2013; Pattanayak, Wunder, & Ferraro, 2010; Wünscher, Engel, & Wunder, 2008). Yet, this recommendation is impractical because opportunity costs vary within and among communities, often constitute hidden information, and are particularly

difficult to estimate (Ajayi *et al.*, 2012; Pattanayak *et al.*, 2010). For instance, landholders might have different land types and land uses with different opportunity costs, and might not fully disclose these costs to PES administrators. Such information asymmetries can lead to information rents, or excess financial compensation given to landholders with low opportunity costs, which undermine the efficiency of PES programs (Ajayi *et al.*, 2012; Ferraro, 2008, 2010; Jindal *et al.*, 2013; Pattanayak *et al.*, 2010). The PES literature also points to the need to decide between a universal payment structure where a fixed amount of payment is given to each program participant and a differentiated payment structure where an individually determined payment amount is given to each program participant. On average, fixed payments are higher than individually determined payments because they are based on the highest opportunity cost among ecosystem service providers. Individually determined payments can reduce the total amount paid to program participants by ensuring that payments do not exceed each participant's opportunity cost. However, as previously noted, determining each participant's opportunity cost can be difficult, and different payments within and among communities may also produce grievances (Chen, 2010; Pagiola & Arcenas, 2013; Wünscher *et al.*, 2008).

In contrast to the extensive discussion about payment size and structure in PES programs, little discussion has occurred in the HCD cash transfer literature (Baird, McIntosh, & Özler, 2009). Significant variation in payment size has been documented. Angelucci (2012) estimates that as a percentage of pre-program total household expenditures, HCD payment amounts have ranged from 1% in Bangladesh, to 6–8% in Brazil, Ecuador, Honduras, and Jamaica, to 22–29% in Mexico and Nicaragua; however, there is little understanding of how these programs determined the size of payment. Anecdotes from different programs seem to suggest that the size of payment is often determined arbitrarily. For example, McGuire (2013) finds that in 2006 when Bolivia started a universal CCT program for primary school attendance targeting all children in public schools, a figure of $28/child/year was decided arbitrarily, driven by the high revenues from oil and gas exports. It turned out that the amount was too low, and Bolivia remains one of the few places in Latin America where the CCT program has not increased school enrollment or attendance (McGuire, 2013). Some HCD cash transfer programs offer differentiated payments to participants based on their characteristics (e.g., number of children in a household, gender of child) but do not take into consideration poverty level or cost of living, while in other programs all participants are entitled to the same amount (Saavedra & Garcia, 2013). Paying the same amount to all program participants is straightforward, easy to administer, and easy to communicate to communities. However, as Fiszbein *et al.* (2009) point out, a universal payment structure does not allow for fine-tuning program impacts for a given budget because it misses the opportunity to leverage different levels of human capital within and across communities. A few studies have compared the impacts of different payment sizes and structures on human capital outcomes, but their results are largely inconclusive (Baird, McIntosh, & Özler, 2011; Benhassine, Devoto, Duflo, Dupas, & Pouliquen, 2015; Fernald, Gertler, & Neufeld, 2008; Filmer & Schady, 2009a; Hou, 2006). As Filmer and Schady (2009b) suggest, the appropriate size of payment is likely to depend on the relative weight given to the program's redistributive and human capital improvement goals.

Last, the concept of opportunity cost has not been used in HCD cash transfer programs as much as in PES programs, to determine the socially optimal size of payment to program participants (de Janvry, Finan, Sadoulet, & Vakis, 2006; de Janvry & Sadoulet, 2006; Rawlings & Rubio, 2005). Much in the same way that the opportunity costs of land types and land uses vary across households, the opportunity costs of adopting behaviors that enhance human capital, such as sending children to school, also vary across households in relation to variables such as the child's age, sex or birth order. In both HCD cash transfer and PES programs, an opportunity-cost-based approach can help recognize and capture the unobserved heterogeneity in land types, land uses, livelihood strategies, and household attributes, and link this heterogeneity to the payments made to program participants. However, besides the aforementioned empirical challenges of assessing opportunity costs, there are also ethical considerations—will this approach advantage those who are better off and disadvantage those who are worse off? For example, will richer households with higher opportunity costs receive more payments than poorer households, even though the richer households would have sent their children to school irrespective of the program? Or will poorer landholders who have lower opportunity costs receive less payments than richer landholders, even though the natural resource management practices promoted by the PES program would preclude the poorer landholders from using their land for subsistence? As such, decisions to use opportunity cost to determine the socially optimal size of payment in HCD cash transfer programs will likely have important equity implications. Additionally, while opportunity cost can help determine the minimum size of payment needed to trigger the adoption of socially desirable behaviors by individual participants within a community, it is also important to be mindful of an upper limit paid to the community, which should not exceed the total amount of positive externalities that can be generated from improvements in human capital or the provision of ecosystem services by the community, unless redistribution is a program goal.

In summary, our review suggests several differences in how direct transfers are operationalized to enhance human capital and environmental conservation. Although HCD cash transfer and PES programs sometimes reach the same population, they use different strategies to identify program beneficiaries. Cash payments are often used to enhance human capital, while both cash payments and in-kind transfers have been used in PES programs, even though the relative effectiveness of cash versus in-kind transfers remains contested. There are also debates in both types of programs about the advantages and disadvantages of using a universal payment structure versus a differentiated payment structure that is based on heterogeneous opportunity costs within and among communities. Ultimately, determining payment size and structure requires a balance between optimizing social efficiency and safeguarding social equity.

### (c) *What are the impacts of direct transfers and how are they evaluated?*

Our review identifies three major differences between HCD cash transfer and PES programs with respect to the evaluation methods used to measure impacts, the types of positive impacts documented, and the adverse unintended impacts analyzed (Table 3). We discuss these differences next.

#### (i) *Differences in evaluation methods*

Evaluations of HCD cash transfer programs emphasize the need to measure *causal* impacts—how the social and economic attributes of households or communities with the program differ from what they would have been without it (Rubin Causal

Model; Holland, 1986). Similarly, evaluations of PES programs emphasize the need to measure *additionality*—the *additional* impacts a PES program has produced that would not have been produced had the program not been implemented (Pascual *et al.*, 2010; Pattanayak *et al.*, 2010; Persson & Alpízar, 2013; Sommerville *et al.*, 2009; Tacconi, 2012). Even though the HCD cash transfer and PES programs do not use the same terms, they agree on the need to measure program impacts over carefully constructed counterfactuals (i.e., what would have happened without the program). However, they differ in an important aspect: their methodology and ability to establish *valid* counterfactuals for making claims about the *causal* impacts of the program.

Generally speaking, evaluation methods fall into three broad camps: (i) experimental, (ii) quasi-experimental, and (iii) observational. Detailed descriptions of these evaluation methods are provided in Glennerster and Takavarasha (2013). Briefly, in an experimental evaluation, entities are assigned *at random* to receive the program (i.e., treatment) or to be used as controls; in a quasi-experiment, which entities will participate in the program is "determined by nature, politics, an accident, or some other action beyond the researcher's control," and a comparison group is selected to be as similar to the treatment group as possible; and in an observational evaluation, all entities self-select to participate in the program, and there is no treatment versus control groups (Greenstone & Gayer, 2009: 27). Our review reveals that many HCD cash transfer programs have been evaluated using randomized control trials (RCTs), an experimental method (Fiszbein *et al.*, 2009), but most PES programs have been evaluated using observational methods. Specifically, our review identifies 34 studies that used RCTs or quasi-experiments for evaluating HCD cash transfer programs; but for evaluating PES programs[2], only one working paper (Jayachandran, de Laat, Lambin, & Stanton, 2016) and one published article (Jayachandran, 2013) used RCTs, and one published article (Pagiola *et al.*, 2010) and one dissertation (Yañez-Pagans, 2014) used quasi-experiments.

Experimental methods are better than non-experimental methods in establishing valid counterfactuals and inferring causality. Specifically in RCTs, some people are randomly assigned to participate in a program (i.e., treatment) and others to be (temporarily) excluded from it (i.e., control). This means, on average, the treatment and control are statistically identical at baseline, and the only reason for differences between the treatment and control at endline is the random assignment to the program. As such, RCTs allow the accurate capturing of additional impacts caused by program participation (Pattanayak *et al.*, 2010; Persson and Alpízar, 2013). In a non-experimental evaluation, however, one cannot conclude that the counterfactual captures what would have happened without the program, because who participates in the program is not determined at random. Particularly, because program participation is voluntary, those who decide to participate are likely to differ from those who do not. Quasi-experimental and observational studies are not able to disentangle such differences, thus suffering from selection bias (Persson and Alpízar, 2013). While statistical techniques, such as regression analysis and matching, can help control for factors confounding the impacts of the program, they cannot control for unobserved variables that determine participation (e.g., risk tolerance).

In summary, we find that the *causal* impacts of HCD cash transfer programs have been documented to a great extent using RCTs, but very few PES programs are able to claim *causal* impacts. As Wunder, Engel, and Pagiola (2008) note, most PES program evaluations assess additionality *ex post* with anecdotal evidence, which only supports arguments for probable additionality. Compared with HCD cash transfer programs, PES programs also face the additional hurdle of measuring environmental additionality, which includes a lack of common metrics for measuring ecosystem services and the difficulty of determining appropriate temporal and geographic scales for measurement (Pascual *et al.*, 2010).

(ii) *Positive impacts of HCD cash transfer and PES programs*

Rigorous evidence from an early conditional HCD cash transfer program in Mexico, PROGRESA, has been the basis for the adoption of this type of social program in many countries (Bourguignon *et al.*, 2006; Skoufias & Parker, 2001). Most HCD cash transfer programs have a strong focus on improving health and schooling, and evaluations have shown that these programs generally increase the use of relevant public services (e.g., preventative health services, primary and secondary schooling) (Adato & Hoddinott, 2009; Akresh, de Walque, & Kazianga, 2013, 2016; Baird, Ferreira, Oezler, & Woolcock, 2014; Baird *et al.*, 2011; de Brauw & Hoddinott, 2011; Garcia & Hill, 2010; Lomelí, 2008; Maluccio, Murphy, & Regalia, 2010; Robertson *et al.*, 2013; Schady & Araujo, 2008). Many studies have documented positive human capital outcomes (e.g., higher wages, better child health, poverty reduction) resulting from the increased use of public services (e.g., Adato *et al.*, 2011; Barber & Gertler, 2010; Soares, Ribas, & Hirata, 2010), while others have argued that the increased use of public services may not necessarily lead to enhanced human capital (Bradshaw, 2008; Cookson, 2016; Delgado, 2013; Forde, Bell, & Marmot, 2011; Lomelí, 2008; Molyneux, 2006). Additionally, HCD cash transfer programs have been shown to have positive effects on the amount and quality of household consumption (Haushofer & Shapiro, 2016; Rawlings & Rubio, 2005), labor market participation (particularly reduction of child labor) (Fiszbein *et al.*, 2009; Skoufias *et al.*, 2013), and the psychosocial wellbeing of participants (Attah *et al.*, 2016; Gaarder, Glassman, & Todd, 2010; Samuels & Stavropoulou, 2016). The HCD cash transfer literature has also increasingly discussed program effects on women's empowerment. Some evaluations have found that cash transfers, particularly those that target women, empower women by increasing their bargaining position within the household, thereby lessening gender inequalities (e.g., Adato, Barahona, & Roopnaraine, 2016; Agarwal, 1997; Barber & Gertler, 2010; Kabeer, 2008; Radel, Schmook, Haenn, & Green, 2016; van den Bold, Quisumbing, & Gillespie, 2013).

In the PES literature, the only two RCT-based evaluations both focus on Uganda's PES program aimed at deferring deforestation, and suggest that the program holds promise of shifting behavior and reducing deforestation (Jayachandran, 2013; Jayachandran *et al.*, 2016). Specifically, Jayachandran *et al.* (2016) show that from 2011 to 2013, participating villages experienced a 2–5% tree cover decline, compared with a 7–10% decline in control villages. Beyond these two studies, positive environmental impacts of PES programs have been documented using only non-experimental methods. For example, Wunder *et al.* (2008) demonstrate the use of environmental indicators (e.g., land-use change, improved water quality, wildlife population) in PES evaluations, characterizing nine PES programs as having high or significant additionality. Bremer, Farley, Lopez-Carr, and Romero (2014) interviewed participants in Ecuador's SocioPáramo program where 22% of participating communities reported reduced practices of burning and grazing of plains. Based on project managers' observations of reductions in new farm clearings,

Blay *et al.* (2008) find positive environmental impacts of a community-based plantation PES program in Ghana. Further, by reviewing both qualitative and quasi-experimental studies, Pattanayak *et al.* (2010: 255) try to answer the question "do payments deliver more environmental services, everything else being equal?" They conclude that PES programs have had modest or no impact on deferring and reversing deforestation. In brief, to date, evaluations of PES programs have produced inconclusive results, and only two RCT-based evaluations exist to demonstrate the *causal* environmental impacts of PES programs.

Moreover, relatively little has been done to quantify the social benefits of PES programs, particularly on the poorest participants or non-participants (Milder, Scherr, & Bracer, 2010). Using non-experimental methods, several scholars have documented the positive welfare effects of PES on participating households (Asquith *et al.*, 2008; Bremer, Farley, Lopez-Carr, & Romero, 2014; Clements *et al.*, 2010; de Koning *et al.*, 2011; Ingram *et al.*, 2014; Song *et al.*, 2014; Wunder, 2008; Yañez-Pagans, 2014). However, these studies do not examine whether PES programs have heterogeneous impacts on program participants or spillover effects on non-participants, and why.

(iii) *Adverse unintended impacts of HCD cash transfer and PES programs*

Unintended program impacts can be beneficial or adverse, private or social, and matter because they need to be taken into account to assess the comprehensive impacts of interventions (Molyneux & Thomson, 2011; Undurraga, Behrman, Leonard, & Godoy, 2016). So far, the literature has mostly focused on the adverse unintended impacts of HCD cash transfer and PES programs. In the HCD cash transfer literature, Pavanello, Carol Watson, Watson, Onyango-Ouma, and Bukuluki (2016) argue that due to targeting and differential distribution of direct transfers, some programs have created tension between beneficiary communities and between beneficiaries and non-beneficiaries. Such tension disrupts social relations and potentially contributes to perceived inequalities and concerns about justice. In a recent RCT-based study in Bolivia, Undurraga *et al.* (2016) show that direct transfers to poor households increased the perceived stress of the better-off households, and induced them to increase their human capital investments to preserve their status; thus, in the short term direct transfers to the poor reduced economic inequality, but led to mixed outcomes in the long term due to the importance of status preservation among better-off members of the community.

Although studies have shown that HCD cash transfer programs can empower women (3c(ii)), a comprehensive review finds that increasing female control of direct transfers does not guarantee that women or their children will benefit (Yoong, Rabinovich, & Diepeeven, 2012). Several scholars have further argued that CCT programs can unintentionally contribute to gender inequalities as they often place the burden of compliance on women but offer them few direct benefits (e.g., Bradshaw, 2008; Cookson, 2016; Jones, Vargas, & Villar, 2008; Molyneux & Thomson, 2011; Slater, 2011). This was especially well documented by Molyneux (2006). Her study shows how PROGRESA in Mexico exemplified the principle of maternalism that underlies many recent Latin American anti-poverty programs, and that, under the program, gender asymmetries were reproduced because women had to fulfill traditional social roles and responsibilities as mothers to secure access to social rights for children. In a review of nearly 200 CCT studies, van den Bold *et al.* (2013) conclude that while qualitative evidence tends to suggest positive impacts on women's empowerment, many quantitative studies have suggested that CCT programs can contribute to gender inequalities. Finally, our review suggests that program practitioners and policy makers are becoming increasingly aware of the potential adverse impacts of CCTs. For example, CARE International UK actually commissioned research to examine how three CCT programs in Peru, Bolivia, and Ecuador affected gender equity and women's empowerment (Molyneux & Thomson, 2011).

In the PES literature, research has also revealed some adverse unintended environmental and social impacts of PES programs. Implementation of PES may result in leakage by displacing negative environmental externalities away from the area where PES is implemented to other areas where PES is not implemented (Engel *et al.*, 2008; Sierra & Russman, 2006; Wunder, 2005; Wunder *et al.*, 2008). Implementation of PES can also accentuate economic inequalities by excluding the landless poor or by unequally distributing benefits (Asquith *et al.*, 2008; Börner & Wunder, 2008; Börner *et al.*, 2010; Rodríguez de Francisco et al., 2013; Kolinjivadi *et al.*, 2015; Lansing, 2014; Milne & Adams, 2012; To, Dressler, Mahanty, Pham, & Zingerli, 2012; Vatn, 2010; von Hedemann & Osborne, 2016). Viewing PES as a way to offset opportunity costs may also threaten social welfare by giving more power to and rewarding those who already have greater resources, potentially upsetting local institutions (Kolinjivadi *et al.*, 2015). Further, without community collaboration PES programs can undermine participants' agency and support for the program by creating feelings of resentment, distrust, and exploitation (Hayes, 2012; von Hedemann & Osborne, 2016), by eroding feelings of control of their lands and livelihoods (Asquith *et al.*, 2002; Hayes, 2012; von Hedemann & Osborne, 2016), and by fostering feelings of dependency on outsiders to meet contract obligations (Hayes, 2012). Some scholars have also discussed in general terms how PES programs may change gender relations and produce gendered conservation and development outcomes within communities (e.g., Asquith *et al.*, 2002; Bee & Basnett, 2017; Brown & Corbera, 2003; Corbera *et al.*, 2007; Kariuki & Birner, 2016; McAfee, 2012). Although discussions about the adverse unintended impacts of PES programs have occurred across various academic disciplines such as ecology, ecological economics, geography, cultural anthropology, and development studies, the extent to which these adverse unintended impacts are known to PES practitioners and policy makers is unclear.

In summary, several differences exist in the HCD cash transfer and PES literatures in how impacts are evaluated, what positive impacts have been documented, and what adverse unintended impacts have been analyzed. So far, the *causal* impacts of HCD cash transfer programs have been more accurately measured using experimental methods, an objective that is yet to be achieved in PES programs. Specifically, RCT-based evaluations have produced sufficient evidence suggesting positive impacts of HCD cash transfer programs on participants' use of targeted public services, although it is still unclear to what extent the increased use would translate into improved human capital over time. In the PES literature, few rigorous evaluations exist to quantify PES programs' impacts on the environment. Finally, most research documenting the adverse unintended impacts of HCD cash transfer and PES programs has come from non-experimental studies. Some of the adverse unintended impacts have been made known to program practitioners and policy makers in the HCD field, but not in the environmental conservation field.

(d) *How is conditionality understood and implemented in HCD cash transfer and PES programs?*

Conditionality is the idea that payments are made conditional on the adoption of certain socially desirable behaviors (e.g., sending children to school, maintaining forest cover) and/or improved program outcomes (e.g., increased human capital, increased provisioning of ecosystem services). The penalty for non-compliance is stopping payments to non-complying participants and asking them to return the payments received. The assumption underlying conditionality is that, if left to themselves, people would not adopt socially desirable behaviors; thus any payments must be conditional on observable actions or measurable outcomes.

Our review shows that conditionality was a lynchpin of both HCD cash transfer and PES programs at their inception, but in recent years the two types of programs have diverged in their approaches to conditionality. PES programs have held fast to conditionality as the "single defining feature" of PES (Wunder, 2015: 234), but HCD cash transfer programs have experimented with different levels of conditionality. HCD cash transfer programs now span the full spectrum of the conditionality continuum, from the fully conditional approach to the fully unconditional approach that hands out cash without requirements (Hanlon, Barrientos, & Hulme, 2010; Pellerano & Barca, 2017). The latter approach, commonly referred to as unconditional cash transfers (UCTs), has been gaining popularity. For example, 40 out of 48 African countries had UCT programs in 2015, twice as many as in 2010 (Honorati et al., 2015). In between the two ends of the conditionality continuum, scholars have also started to devise and test hybrid approaches. For example, Benhassine *et al.* (2015) implemented a labeled cash transfer program to increase child school attendance in Morocco. The transfers were not conditional on school attendance, but the educational intent was signaled by disbursing the transfers in schools during enrollment period (hence, "labeled").

Beyond these trends, our review identifies four sets of debates about conditionality: (i) the philosophical underpinning of conditionality, (ii) how conditionality enables the production of intended program outcomes, (iii) how conditionality contributes to the adverse unintended impacts of direct transfers, and (iv) the operating cost of conditionality. Below we detail these four sets of debates (Table 3) and lay out the theoretical and practical arguments for why PES scholars, program practitioners, and policy makers should explore different levels and modalities of conditionality.

(i) *The philosophical underpinning of conditionality*

In the HCD cash transfer literature, several scholars have described how direct transfers often receive low public support because they are seen as handouts that reinforce stereotypes of laziness of poor populations; thus, imposing conditionality can serve to increase social and political support by creating beneficiary accountability (Adato & Hoddinott, 2009; Adato *et al.*, 2010; Porter & Dornan, 2013; Fiszbein *et al.*, 2009; Yeboah, 2014). However, some scholars have posed ethical objections to conditionality in HCD cash transfer programs. They argue that conditionality contributes to the insecurity of vulnerable populations by targeting them as participants, then imposing conditions that are hard for them to meet, which might even lead to their expulsion from the program and cessation of benefits (Standing, 2014). Conditionality also implies a paternalistic attitude by donors (Cunha, 2014; Porter & Dornan, 2013), and threatens the decision-making power of program participants (Standing, 2014).

In PES programs, despite the fact that landholders can sign up voluntarily, conditionality underlines the premise of PES and has not been negotiable. PES programs assume that landholders use the environment to benefit themselves and must be coerced to conserve the environment through extrinsic incentive, compliance monitoring, and penalties for non-compliance. In the PES literature, we find no study that explicitly questions the necessity of conditionality in PES programs. But, in the broader conservation literature, scholars who study human-environment relations, particularly geographers and cultural anthropologists, have long argued against the characterization of landholders in low-income countries as purely motivated by self-interest. Instead, they have emphasized people's intrinsic motivations to conserve the environment and the roles of social and cultural systems, political economies, and institutions in shaping decisions by individuals, households, and communities to manage natural resources (Kerr *et al.*, 2014; Neumann, 2005; Robbins, 2012). This points to the need to carefully quantify people's intrinsic motivations for conservation and investigate how these motivations may change with conditional and unconditional payments.

(ii) *How conditionality enables the production of intended program outcomes*

Studies that document the impacts of various degrees of conditionality come exclusively from the HCD cash transfer literature. As detailed in 3c(ii), there is significant evidence suggesting that CCT programs can produce intended outcomes. In a nuanced argument, some studies have documented that beneficiaries' perception of conditionality can also affect outcomes (Fernald & Hidrobo, 2011; Schady & Araujo, 2008). For example, a study of the Bono de Desarrollo Humano, a HCD cash transfer program in Ecuador in which conditions were unclear and not well enforced, shows that the impact of the program was "only significant among households that believed there was a schooling requirement associated with the transfers" (Schady & Araujo, 2008: 70). In another study of the same program, Fernald *et al.* (2008) show an effect on child height only among children whose mothers believed payments were conditional. Yet, positive program outcomes are not restricted to CCTs. In two UCT programs in Kenya and Uganda, poor households received cash with no condition to fulfill and no restriction on how to spend the cash. An RCT-based evaluation of the two programs suggests that the UCTs increased the short-run consumption and psychological wellbeing among participants (Haushofer & Shapiro, 2016). Further, an RCT-based evaluation of the aforementioned program to increase child school attendance in Morocco shows that labeled cash transfers were more effective than CCTs in reducing dropout, increasing re-enrollment for those who dropped out, and reducing the share of never-schooled children; as such, the labeled cash transfers can provide the necessary nudge to convince parents of the value of schooling without the strong shove of the costlier CCTs (Benhassine *et al.*, 2015). This then raises two questions: (i) which type of programs, on average, produce larger positive impacts? and (ii) is any measurable difference between CCTs and UCTs large enough to warrant the imposition of conditions and the associated costs of monitoring and enforcement? Although a few studies suggest that CCT programs have slightly larger effect sizes than their unconditional equivalent (Akresh *et al.*, 2013; Attanasio, Oppedisano, & Vera-Hernández, 2015; Baird *et al.*, 2011), meta-analyses of 35 studies of school enrollment (Baird *et al.*, 2014) and 21 studies of child nutrition (Manley, Gitter, & Slavchevska, 2013) have both concluded that, on average, UCTs and CCTs are statis-

tically equally effective in achieving desired program outcomes. In brief, our review identifies solid empirical evidence from the HCD cash transfer literature that supports future experimentation with conditionality.

In contrast, the need for conditionality in PES programs has not been questioned or empirically tested. Some scholars have discussed alternative "PES-like" programs (Wunder, 2008: 281) that place less emphasis on payments being conditional and focus more on aligning payments with land-use decisions and social interests (Kolinjivadi *et al.*, 2014; Muradian *et al.*, 2010; Raes, Aguirre, D'Haese, & Van Huylenbroeck, 2014; Swallow *et al.*, 2009; van Hecken *et al.*, 2010). Even in such programs, conditionality is still considered necessary to produce environmental outcomes (Ferraro & Simpson, 2002; Kerr *et al.*, 2014; Sommerville *et al.*, 2009; Swallow, Leimona, Yatich, & Velarde, 2010; Tacconi, 2012; Wunder, 2015). Some conditionality-relevant debates have occurred in the broader conservation literature. Several scholars have argued that paying people for conservation imposes a purely economic valuation of ecosystem services that undermines people's cultural and moral ties to the environment, thus "crowding out" people's intrinsic motivations for conservation (e.g., García-Amado, Pérez, & García, 2013; Gómez-Baggethun *et al.*, 2010; Kosoy & Corbera, 2010; McCauley, 2006; Vatn, 2010). Meanwhile, other scholars argue that upfront direct transfers could be framed as supportive of preexisting conservation behaviors or as reciprocal to cover the costs associated with undertaking new conservation practices, thus presenting opportunities for "crowding in" or reinforcing people's intrinsic motivations for conservation (e.g., Bremer, Farley, Lopez-Carr, & Romero, 2014; Corbera *et al.*, 2007; Cranford & Mourato, 2011; Farley & Costanza, 2010). The debates about "crowding-out" versus "crowding-in" are still far from over. Missing in these debates is direct engagement with conditionality, suggesting a great need for assessing the extent to which conditionality affects people's intrinsic motivations for conservation and whether conditionality is necessary for producing intended environmental outcomes.

(iii) *How conditionality contributes to the adverse unintended impacts of direct transfers*

Some of the adverse unintended impacts were previously discussed in 3c(iii), but this section underlines empirical evidence that specifically links conditionality to these impacts. The evidence presented below mainly comes from observational evaluations, so results must be read with caution.

The HCD cash transfer literature has shown that participants in CCT programs often have little capacity to choose their service providers to comply with program conditions (e.g., using a particular healthcare service or sending children to a particular public school), which can increase their potential dissatisfaction and likelihood of dropping out from the program (Cookson, 2016; Rodríguez *et al.*, 2011; Álvarez *et al.*, 2008). Further, some scholars argue that conditions may be beneficial if they act as a screening mechanism to dissuade non-poor households from participating in the program because the opportunity costs of fulfilling program conditions would be higher for those households (Das *et al.*, 2005; Álvarez *et al.*, 2008). Others have argued the opposite—conditions are in fact more likely to prevent extremely poor and marginalized individuals or households from participating and benefitting. For example, Mexico's *Oportunidades* program (previously PROGRESA) specifically targeted poor households, yet indigenous populations and the extreme poor in better-off communities still had a higher probability of dropping out (Álvarez *et al.*, 2008). Additionally, a number of scholars have noted that conditionality may affect gender relations (Radcliffe, 2015; van den Bold *et al.*, 2013). For example, after a careful study of *Juntos*, an CCT program deployed by the Peruvian government to promote social inclusion in rural areas, Cookson (2016: 1201) concludes that: "while these women experienced exclusion and marginalization before the CCT programme arrived in Cajamarca, the conditional aspect of the CCT creates new moments of exclusion."

In the PES literature, scholars have also argued that enforcing conditionality may contribute to adverse unintended impacts. Besides reducing landholders' intrinsic motivations for conservation as previously discussed, enforcing conditionality may also restrict landholders' ability to integrate local ecological knowledge in their management of natural resources (Hayes *et al.*, 2015), and limit their flexibility to adapt to climatic and other environmental changes (Hayes *et al.*, 2015; Rodríguez *et al.*, 2011). On the social side, scholars have provided observational evidence suggesting four possible ways that enforcing conditionality could affect social equity in communities where PES is implemented.

*First*, by imposing conditions PES programs can limit the participation of poor and marginalized populations even when they are eligible with land tenure, thus increasing economic inequalities within communities (e.g., Bremer, Farley, & Lopez-Carr, 2014; Krause & Loft, 2013; Lansing, 2014; McAfee, 2012; Muñoz-Piña *et al.*, 2008; Rodríguez *et al.*, 2011; Vatn, 2010; von Hedemann & Osborne, 2016). This is because households that are poor and marginalized tend to (i) have difficulties in completing entry requirements (e.g., providing a map of the property) due to a lack of knowledge and administrative skills (Bremer, Farley, & Lopez-Carr, 2014; Zbinden & Lee, 2005), (ii) feel dependent on outside help to maintain contractual obligations which they may not have access to (Hayes, 2012), (iii) have less flexibility to undertake new land-use practices that are subject to conditional contracts (Bremer, Farley, & Lopez-Carr, 2014; Corbera *et al.*, 2007), and (iv) be more risk-averse in terms of potential penalties associated with non-compliance due to unforeseen reasons (Saint-Macary *et al.*, 2013). *Second*, enforcing conditionality can create feelings of exclusion among non-participants of PES and of powerlessness among participants about making their own natural resource decisions, leading to community members perceiving the program as unfair (e.g., Hayes *et al.*, 2015; Kosoy *et al.*, 2007; Muradian *et al.*, 2010; Pascual *et al.*, 2010; Pham, Garnett, & Aslin, 2011; Sommerville *et al.*, 2009; Swallow *et al.*, 2009; Vatn, 2010). *Third*, some PES programs rely on community monitoring and leverage social disapproval and sanctions to enforce conditionality (e.g., Blay *et al.*, 2008; Rodríguez de Francisco et al., 2013). This approach can lead to influential individuals reinforcing their power and reaping excessive personal benefit from the PES scheme, leading to tensions and reduced actual and perceived social equity in communities (de Melo & Piaggio, 2015; Sommerville *et al.*, 2009). *Last*, some scholars argue that men and women differ in their levels of aversion toward risks associated with enforcement of conditionality, leading to differentiated willingness to participate in PES programs (Jindal *et al.*, 2013; Revollo-Fernandez & Aguilar-Ibarra, 2014). When more men than women participate in PES programs, bargaining power shifts to favor men, potentially exacerbating gender inequalities (Kariuki & Birner, 2016). This last area of concern is receiving growing attention from geographers, although little empirical evidence exists that specifically links PES conditionality with intrahousehold relations and gender.

(iv) *The operating cost of conditionality*

Our review finds that little research has directly discussed the cost of monitoring and enforcing conditionality, but the topic is of great interest to program practitioners, policy makers, and donors because it affects the overall program cost (Baird *et al.*, 2009). In theory and all else held equal, one might expect that programs that enforce conditionality would be more expensive than programs that do not enforce conditionality, owing to the additional costs of monitoring and enforcement. However, studies have shown mixed results regarding the cost of implementing conditionality in HCD cash transfer programs, because "the intensity of monitoring conditionalities is a choice made by program designers and implementers" (Adato & Hoddinott, 2009: 303). Previous work has documented that the cost of monitoring and enforcing conditionality as a percentage of total program cost can vary (Adato & Hoddinott, 2009). Some evidence shows that as a program becomes more established, the cost associated with implementing conditionality increases; while other studies show that because fixed program costs decrease over time, the overall administrative costs associated with program implementation (including the cost of monitoring and enforcing conditionality) also decrease over time.

In the PES literature, it is generally recognized that enforcing conditionality can be technically difficult and financially costly. Enforcement requires a monitoring regime to verify the flow of ecosystem services, which often constitutes a major financial cost for PES programs (Asquith *et al.*, 2002). For instance, Fundación Natura Bolivia spent, on average, 12.5% of their total program cost on activities related to monitoring and compliance enforcement (N. Asquith, personal communication, September 12, 2016). Several PES studies discuss ways to reduce continuing monitoring cost, including using spatial analytical tools for monitoring (Honey-Rosés *et al.*, 2009; Muñoz-Piña *et al.*, 2008). However, technology-based monitoring and enforcement schemes require technical expertise and large investments, which are beyond the reach of poor communities, thereby contributing to empowering people outside of the community (Corbera, 2012). Additionally, stricter conditions often require larger monetary compensations to attract participants. Using a choice experiment, Kaczan, Swallow, and Adamowicz (2013) show that a hypothetical high-conditionality PES program required a larger payment to attract participants than a medium-conditionality program.

Looking across the HCD cash transfer and PES literatures, it is unclear whether the benefit associated with implementing conditional programs merit the cost of monitoring and enforcing the conditions, particularly as other factors besides conditionality also affect outcomes (Aker, 2013; de Brauw & Hoddinott, 2011; Gitter, Manley, & Barham, 2013; Slater, 2011; van den Bold *et al.*, 2013). This suggests a need to compare the benefits and costs of otherwise similar programs that only differ in whether or not they impose conditionality (Adato & Hoddinott, 2009). Such assessments can help program practitioners, policy makers, and donors make informed decisions about program design and implementation.

## 4. CONCLUSIONS

To conclude this article, below we (i) summarize the main findings from our review, (ii) make a plea for using a common framework to approach direct transfers for enhancing human capital and environmental conservation, and (iii) offer five practical insights into what the HCD cash transfer and PES communities may learn from each other.

### (a) *A brief summary of the main findings*

Direct transfers to beneficiaries have become an increasingly popular approach to generate socially desirable outcomes related to human capital development and environmental conservation. Yet, the two types of programs have been assessed in distinct bodies of literature (Rodríguez *et al.*, 2011). Both types of programs have conceptualized direct transfers as a tool for correcting market failures and for increasing the provision of public goods. There is a general agreement of what HCD cash transfer programs *should be* and what they *are*, while more debates exist about the political-economic nature of PES programs and the extent to which non-environmental goals such as poverty reduction or social equity should be incorporated into PES programs. In terms of implementation, although both types of programs often reach similar populations, they tend to use different strategies to identify program beneficiaries and to determine payment sizes and structures. Across the HCD cash transfer and PES literatures, one shared concern is the potential of both types of programs to exacerbate various forms of inequalities between participating and non-participating households and communities. Our results highlight a great need for using experimental methods to evaluate PES programs in general, and the adverse unintended impacts of both HCD cash transfer and PES programs in particular. Finally, conditionality has been consistently considered a lynchpin of PES programs since their inception, but HCD cash transfer programs have experimented with relaxing or eliminating conditionality in recent years. Thus, our review calls for experimental assessments of the *causal* relations between conditionality and the intended and unintended, positive and negative, impacts of direct transfers, particularly for enhancing environmental conservation.

### (b) *A plea for using a common framework to approach direct transfers*

Society's need for effective, efficient, and equitable conservation and development programs will continue to grow (United Nations, 2012), and direct transfers will likely continue to be an important strategy for addressing such need. Our review suggests important similarities, overlaps, and synergies between HCD cash transfer and PES programs that have been overlooked. Rather than considering HCD cash transfers and PES as two distinct tools for generating different program outcomes, we make a plea for using a common framework to approach direct transfers as an umbrella mechanism to produce socially desirable public goods. Because both types of programs often target and reach similar populations, use the same incentives (i.e., direct transfers), are concerned with tradeoffs between program effectiveness, efficiency and equity, and face many similar unresolved problems, using a common framework to approach direct transfers and to break down the program silos can contribute to effectively engaging target populations, addressing the needs of potential beneficiaries, allowing comprehensive evaluations of program impacts, and enabling opportunities to build synergies and minimize redundancies and competition across different programs (Muradian *et al.*, 2010; Persson & Alpízar, 2013; Rodríguez *et al.*, 2011). A common framework would also allow for sharing insights across currently separate bodies of literature. Specifically, gains would arise in using a common framework to address questions, such as: (i) how to determine the size and

structure of payment? (ii) what are the local and non-local, intended and unintended, externalities that merit attention? (iii) what are the tradeoffs of using different evaluation methods to assess impacts? And (iv) to what extent is conditionality necessary? How to devise this common framework and bring the two types of programs to the same table is far from obvious, but below we offer five insights into what the HCD cash transfer and PES communities may learn from each other, which may serve as a starting point for future communication and collaboration between the two communities.

### (c) *Five insights into what the two types of programs may learn from each other*

First, HCD cash transfer programs have commonly incorporated understandings of economic and gender inequalities in communities to inform their selection of beneficiaries and to show their program impacts, particularly on the disadvantaged populations. PES programs may benefit from similar efforts to better understand how economic and gender inequalities affect the use and distribution of environmental payments within households and how environmental payments in turn shape local economic and gender inequalities. Such understanding can help PES program practitioners and policy makers develop strategies to sustain the interest of communities to produce ecosystem services in the long term.

Second, PES programs have experimented with collaborative, community-based program design and implementation. HCD cash transfer programs may benefit from exploring similar collaborative, community-based strategies to improve program effectiveness. Closer engagement with communities may help assess the extent to which increased use of targeted public services contributes to enhanced human capital. Such understanding is important for facilitating the production of socially desirable outcomes (i.e., enhanced human capital) rather than outputs (i.e., the use of public services or adoption of specific behaviors).

Third, program practitioners and policy makers in the HCD field are becoming increasingly aware of the adverse unintended impacts of their programs, and have made some efforts to address them. This is not yet the case in PES programs. Discussions about the adverse unintended impacts of PES programs, particularly those associated with enforcing conditionality, have mostly occurred among a small group of PES scholars. The question remains what these PES scholars can learn from their colleagues in the HCD cash transfer community to enhance communication with others who also study PES programs but do not always pay close attention to their unintended social and cultural impacts. Similarly, efforts are needed to connect these PES scholars with PES program practitioners and policy makers to try to minimize adverse unintended impacts through improved PES design and implementation.

Fourth, in the HCD cash transfer literature RCT has become the gold standard for measuring *causal* impacts; as such, the positive impacts of HCD cash transfers have been well established. In the PES literature, however, impact evaluations have relied on non-experimental methods and observational data, which cannot provide valid counterfactuals necessary to clearly understand net program impacts, or additionality, for which PES programs strive (Persson & Alpízar, 2013). In fact, RCT is rarely used in the field of environmental conservation (Ferraro & Pattanayak, 2006; Game & Leisher, 2013), partly because evaluations tend to take place during or after program implementation and evaluators often have little or no control over program design. Additionally, some scholars value the strengths of qualitative research design for capturing people's knowledge, perspectives, and experiences related to environmental conservation over the strengths of quantitative research design. However, the widespread effective use of RCTs in the HCD cash transfer literature sheds light on the utility of RCTs in the PES field. Our review suggests that RCT is greatly needed in a variety of contexts to firmly establish the benefits of PES and to measure the unintended impacts of PES (Pattanayak *et al.*, 2010). This requires close collaboration among PES scholars, program practitioners, and policy makers so that RCT-based evaluations can be planned prior to program implementation. Also important to note is that RCTs have been critiqued for failing to explain how or why interventions produce effects, and why a given intervention might produce different effects when implemented with a new population (Deaton, 2010; Heckman, 1992). Thus, beyond measuring the *causal* impacts of PES, additional work should continue to focus on how and why positive impacts are produced, what triggers heterogeneous impacts, and how to maximize positive impacts and minimize potential adverse impacts.

Finally, research shows that enforcing conditionality in PES can be financially and socially costly. To our knowledge, no research has uncovered the broader range of intended and unintended, environmental and social, impacts of conditional versus unconditional PES. Our review provides solid empirical evidence from the HCD cash transfer literature that suggests the potential of unconditional payments. Our review also lays out several arguments for why the PES community should learn from the HCD cash transfer community to rigorously compare the benefits associated with implementing conditional payments with the cost of monitoring and enforcing conditions, to consider modifying the level and modality of conditionality, and to assess the potential of removing conditionality to increase the simultaneous production of environmental, economic, and social benefits. We hope these arguments are sufficiently compelling to intrigue the PES community to rethink the role of conditionality.

## NOTES

1. Wunder (2015: 239) discusses "ecosystem service" versus "environmental service." He suggests that payments for environmental services seem to originate as a translation of Costa Rica's Pago por Servicios Ambientales program, but there is no meaningful difference between the two terms. Thus, we use "ecosystem service" in this article to be consistent and to avoid confusion.

2. We are aware of a recently completed RCT by Fundación Natura Bolivia to evaluate the impact of a reciprocal watershed agreement program, but the results have not yet been published.

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