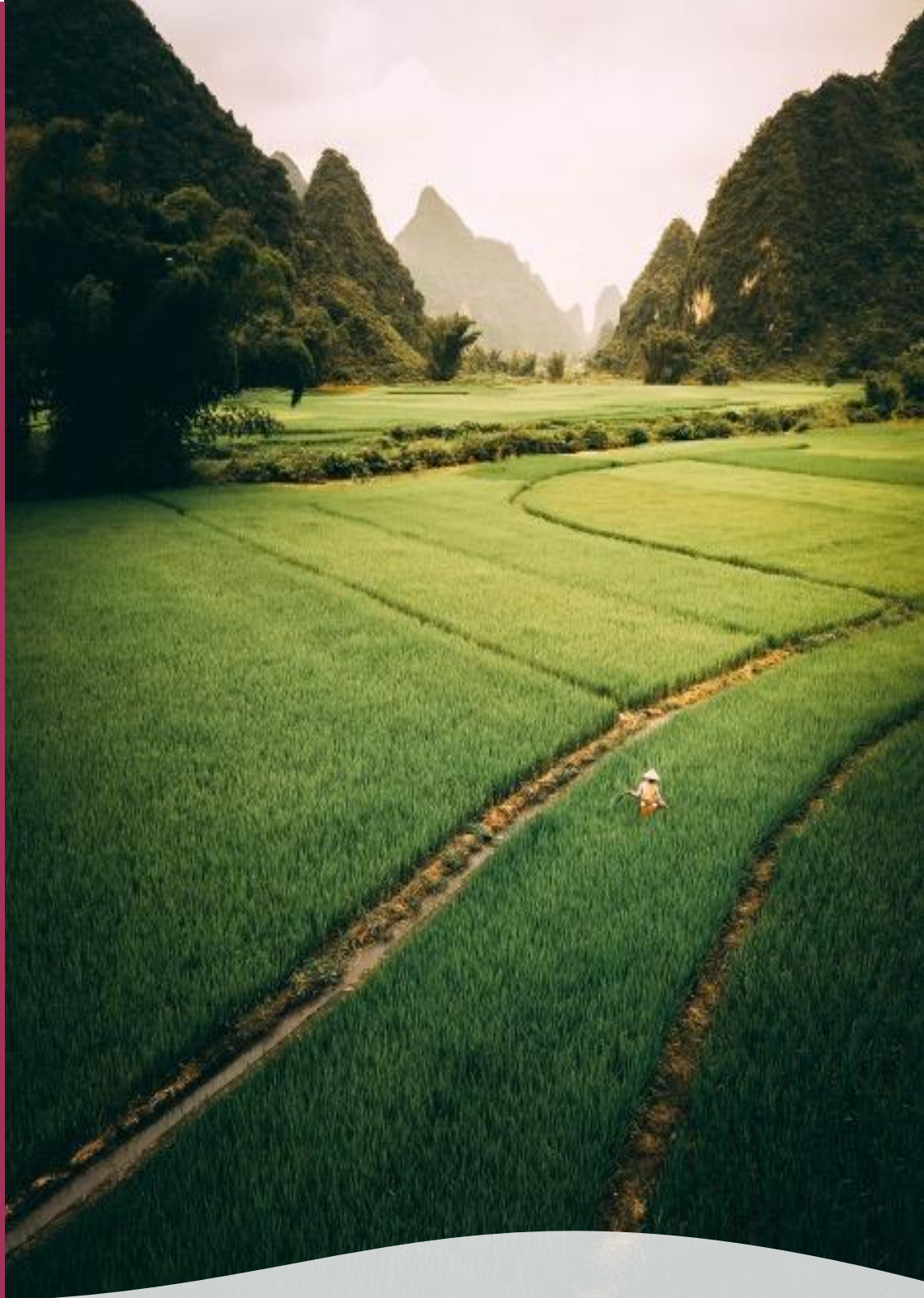IEU LEARNING PAPER

12/2020

Evidence review on results-based payments: Evidence gap map and intervention heat map

Josh Meuth Alldredge, Emma De Roy, Elangtlhoko Mokgano, Peter Mwandri, Tulika Narayan, Martin Prowse, Jyotsna Puri, William Rafferty, Anu Rangarajan and Faraz Usman

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First Print Edition

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About this IEU Learning Paper

This paper takes stock of the evidence on the effectiveness of results-based payments using a systematic, multisectoral search of the literature. The paper synthesizes insights that may be employed for results-based approaches in the climate domain.

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ABSTRACT

The public goods nature of climate mitigation – which means that costs are borne by a few, but benefits are enjoyed by many – frustrates concerted international collective action. Results-based payments (RBPs), which involve a funder who agrees to make payments to agents for achieving pre-agreed, verified results, are a unique approach that can potentially address these misaligned incentives at the heart of the climate challenge. They can do so by making payments to service providers or to beneficiaries contingent on achieving specific outcomes that deliver public benefits for the global commons. Such approaches are also applicable in adaptation interventions. This paper presents an evidence review on the effectiveness of RBPs in non-Annex I settings and low-income contexts in Annex I countries (which are the groupings of developing and developed countries, respectively, within the context of the Kyoto Protocol of the United Nations Framework Convention on Climate Change). It synthesizes insights from a wide range of sectors to enhance the application of results-based approaches in the climate domain.

The evidence review presents a systematic, multisectoral search of publications in the academic and grey literature. The search was restricted to quantitative studies published between 2000 and 2020 that assessed the effectiveness of one or more RBP interventions using experimental, quasi-experimental or non-causal designs. Based on sector-, intervention- and implementation-related characteristics extracted from a sample of 428 studies that met these inclusion/exclusion criteria, we developed an evidence gap map (EGM). The EGM followed a consistent intervention/outcome framework to highlight the distribution of the evidence base on the impacts of various RBP interventions on beneficiary-, service-provider- and investor/system-level outcomes.

The EGM reveals that vouchers, pay-for-performance models, payments for environmental services and conditional cash transfers have been extensively studied, whereas the evidence base on broader RBP modalities is much thinner. It highlights regional patterns in the use of these modalities: most evidence comes from North America, East Asia and Pacific, sub-Saharan Africa, and Latin America and the Caribbean. Evidence from South Asia and especially from the Middle East and North Africa was limited. Nearly half the evidence across all countries is drawn from applications in the health sector, followed by agriculture and forestry, and education; evidence on RBPs in the energy sector is sorely lacking.

Using the same intervention/outcome framework, we developed an intervention heat map (IHM) that highlights the distribution of 15 approved financial commitments by the Green Climate Fund (GCF) that employ results-based modalities. Nearly all this amount (representing approximately 7 per cent of the GCF's total commitments between 2015 and 2020) was allocated as part of the GCF's REDD+ pilot programme, which rewards countries for achieving verified emissions reductions from forestry programmes.

A comparison of the EGM and the IHM reveals that there is potential for greater use of results-based approaches in the GCF's funding portfolio, including the use of vouchers and conditional cash transfers, which have already been deployed in GCF-supported projects. In addition, there is considerable potential to (i) broaden the GCF's existing RBP-based commitments to projects to enhance beneficiaries' adaptive capacity and to ensure long-term sustainability of project impacts, and (ii) increase support for projects that directly incentivize service providers.

ABBREVIATIONS

AMC	advance market commitments
CCT	conditional cash transfer
CO₂	carbon dioxide
EAP	East Asia and Pacific
ECA	Europe and Central Asia
EGM	evidence gap map
GCF	Green Climate Fund
GHG	greenhouse gas
IEG	Independent Evaluation Group
IHM	intervention heat map
LAC	Latin America and the Caribbean
LDC	least developed country
MNA	Middle East and North Africa
NAR	North America
P4P	pay-for-performance
PES	payments for environmental services
PICOS	population, intervention, comparator, outcome and study design
RBP	results-based payment
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks
SAR	South Asia
SIDS	small island developing state
SSA	Sub-Saharan Africa
TOC	theory of change
USAID	United States Agency for International Development

A. INTRODUCTION

Climate change is a defining policy challenge of the twenty-first century. This section begins with a description of the seemingly intractable nature of the climate challenge. Next, it provides an overview of results-based payments (RBPs) and highlights their potential to accelerate progress on global climate goals. The section concludes with a summary of the objectives of this evidence review.

1. DESCRIPTION OF THE PROBLEM: THE CLIMATE CHALLENGE

Recent assessments of trajectories for carbon dioxide (CO_2) and other greenhouse gas (GHG) emissions suggest that global average temperatures will likely increase by approximately 3°C over pre-industrial levels by the year 2100 (Hausfather & Peters, 2020). A growing body of work highlights the substantial negative impacts of such warming. Climate change is likely to negatively affect incomes and economic growth (Burke and others, 2015; Newell and others, 2017), food security (Mbow and others, 2019), public health (Carleton and others, 2020), conflict (Hsiang and others, 2013) and natural ecosystems (Hoegh-Guldberg & Bruno, 2010).

The international community has responded to this challenge in a variety of ways. Global treaties such as the Paris Agreement on climate change have sought to establish emissions mitigation targets and foster international consensus and coordinated climate action. At the same time, national and subnational initiatives have complemented (and sometimes outpaced) international action (e.g. Hsu and others, 2018; International Energy Agency, 2020). However, climate change mitigation is a public good, which frustrates concerted international collective action. Firstly, each country's emissions cumulatively increase global GHG concentrations, while climate impacts are often distributed unequally. This implies that each country's abatement efforts necessarily entail higher national costs than national benefits. Additionally, unlike other environmental challenges, the effects of climate change will be fully realized farther out in the future. These delayed impacts further dampen enthusiasm for decisive action because humans discount the value of a later reward.

Large regional disparities in who has contributed most to global emissions so far, who will drive emissions growth going forward and who stands to bear the brunt of resulting climate damages pose challenges for designing equitable climate policies. More impoverished regions, in particular, have lower levels of emissions-generating economic activity relative to wealthier regions. As shown in Figure 1a, which presents Climate Watch (2018) data on annual regional emissions, sub-Saharan Africa and South Asia each contributed less than 10 per cent of global emissions in 2016. In addition, Figure 1b shows that each region's share of cumulative global emissions was even lower (Ritchie & Roser, 2017). Yet countries in these regions will bear a disproportionate burden of future damages. For example, projections suggest that climate change will reduce agricultural yields in sub-Saharan Africa and South Asia by up to 25 per cent by the year 2080; yields in the wealthier, northern latitude countries of Europe and North America, in contrast, are expected to increase (European Environment Agency, 2010). At the same time, relatively poor regions will drive future emissions growth in a variety of sectors as incomes increase. Over the next three decades, for instance, nearly all the growth in energy demand and associated GHG emissions is forecast to come from low- and middle-income countries (Wolfram and others, 2012).

Figure 1. **Regional emissions patterns**

(a) Annual emissions, 2016

(b) Cumulative emissions, 1950–2016
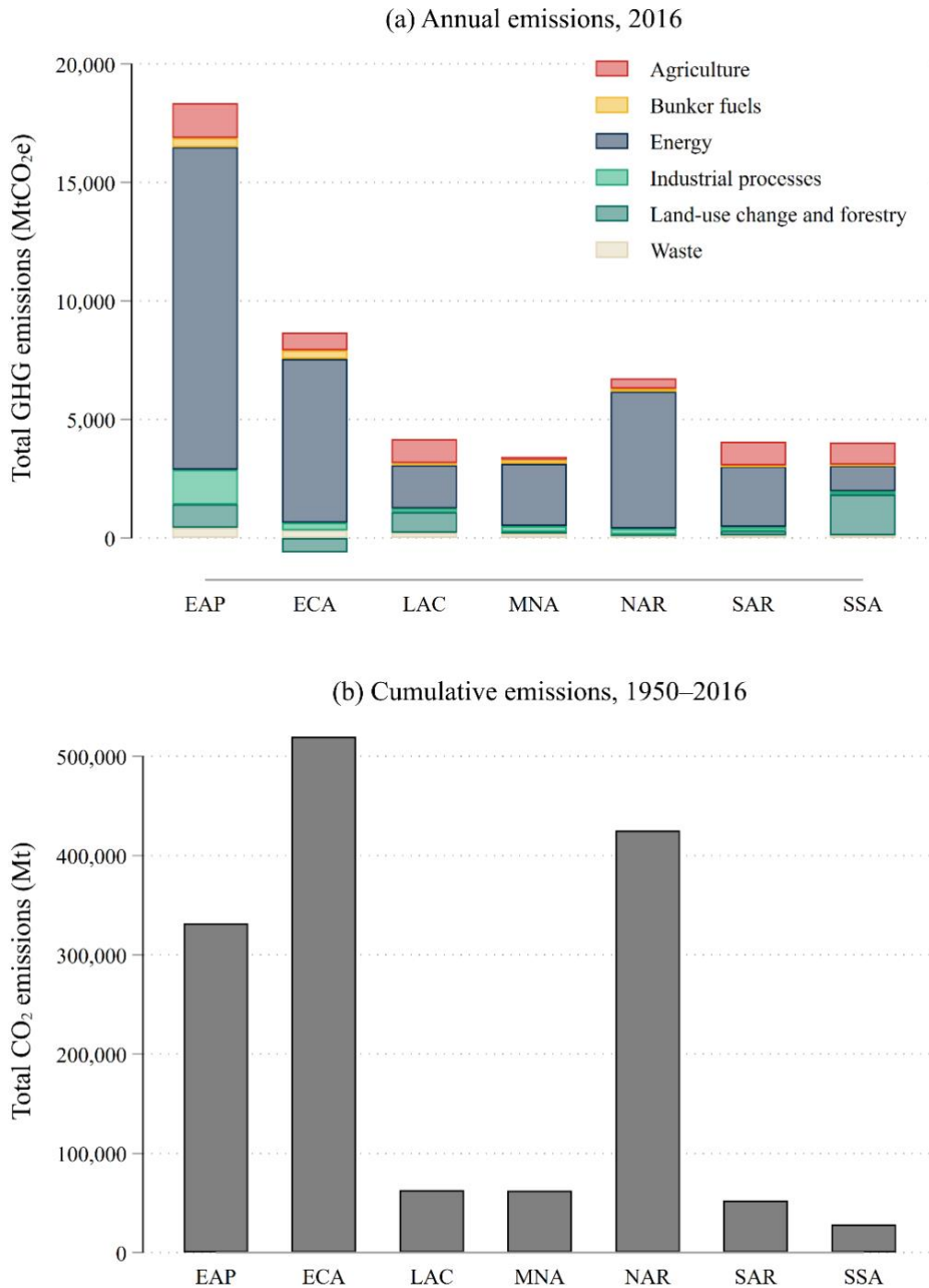
Source: For panel (a): Climate Watch (2018); for panel (b): Ritchie & Roser (2017)
Notes: EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; NAR = North America; SAR = South Asia; SSA = sub-Saharan Africa; GHG = greenhouse gas; Mt = metric megatons; MtCO2e = metric megatons of carbon dioxide equivalent.
"Energy" in panel (a) includes (i) building; (ii) electricity/heat; (iii) fugitive emissions; (iv) manufacturing/construction; (v) other fuel combustion; and (vi) transportation.
Panel (b) reports CO_2 emissions from fossil fuels and cement production only; land-use change is not included.

It is increasingly clear that current efforts are insufficient. Absent dramatic reductions in annual GHG emissions brought on by innovation and technology adoption, behaviour change and policy reform, the international community is unlikely to limit warming to 1.5°C relative to pre-industrial temperatures, a central objective of the Paris Agreement (Rogelj and others, 2016). Several policy tools and interventions (such as a carbon tax or a global emissions trading scheme) can help drive progress towards meeting these ambitious emissions goals (e.g. Goulder & Schein, 2013). However, breakthrough solutions are needed to bridge the gap between what is needed and what business-as-usual approaches will achieve. RBPs are a unique approach that holds promise. This modality addresses the misaligned incentives at the heart of the climate challenge by making payments to service providers or to beneficiaries contingent on achieving specific activities, outputs or outcomes that deliver public benefits for the global commons. They also leverage the creativity and investment of multiple actors, who are free to try different approaches to achieve the same outcome.

2. RESULTS-BASED PAYMENTS: POTENTIAL TO LEVERAGE INCENTIVES FOR CLIMATE ACTION

An RBP contract involves a funder who agrees to make payments to agents for achieving pre-agreed, verified results.[1] In so doing, RBPs convene multiple agents (often in competition with each other) to achieve outcomes and in the process:

- Align agent-level incentives, thereby partly addressing the market failures that prevent the emergence of well-functioning markets for welfare-improving goods, services and innovations;

- Increase accountability by linking financing more directly to desired outcomes rather than specific inputs or outputs, which may be ineffectual or ill-suited for local contexts, thereby increasing funding effectiveness and lowering risks for funders;

- Foster autonomy to innovate and adapt by letting agents pick the inputs and processes needed to achieve desired results; and

- Crowd-in resources of agents that take on the challenge to achieve the pre-specified outcomes, whether by labour effort they provide or monetary funding to support their effort.

There can be considerable variation in how particular RBP interventions structure, target and deliver incentive payments (see Table 1 for a summary of the key RBP interventions that are the focus of this evidence review). These differences have important implications for how various interventions potentially generate competition, alter the risk–reward payoff for participants and foster nascent markets for beneficial goods and services (Mainville & Narayan, 2017). For instance, grand challenges (such as the XPRIZE) are often structured as winner-take-all competitions designed to incentivize innovation and technological breakthroughs. Because only one prize is typically awarded, grand challenges place relatively higher levels of risk on participants, which can limit participation to those who have the resources needed to make large investments in research and development and take on additional risk. In contrast, payments for environmental services (PES), which are offered to farmers or landowners in exchange for managing land in ways that provide environmental benefits, are typically awarded to multiple beneficiaries who achieve the pre-specified outcome and are not in any competition with one another. This incentive structure makes them uniquely suited to encouraging the adoption and uptake of existing products and practices. It is worth noting, however, that despite this important difference, both approaches bring to bear the creativity and resources of multiple actors on achieving the desired outcome. Specifically, these

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[1] Although RBP contracts can also involve a single agent, in this evidence review we focus principally on those that incentivize multiple entities at the same time, with the exception of impact bonds that do not require multiple agents.

mechanisms foster creativity by giving the agents considerable freedom in how they achieve desired outcomes.

Table 1.   *Overview of key RBP interventions*

RBP TYPE	RBP INTERVENTION	INCENTIVE STRUCTURE	KEY FEATURES, INCLUDING EXAMPLES OF USE, COMPETITION, PRICING AND RESOURCES
Supply side	Grand challenge	Donor pays out a grand prize to typically one winner upon achieving a pre-specified outcome.	• Typically used for technology development (e.g. climate-resilient houses) • Puts multiple agents in competition with each other • Places high risk on competitors because only one (or few) prizes are awarded • Encourages participation of agents that have resources for initial investment and the ability to take the higher risk of not winning a prize (because only one or few prizes are awarded) • May lead to monopolistic pricing of innovation, especially if only one prize is awarded • Increases pool of resources to solve the problem
	Advance market commitment	Donor makes a binding agreement to purchase or subsidize the purchase of a pre-specified quantity of the innovation if it meets predefined characteristics.	• Used for technology development (e.g. vaccines) • Puts multiple agents in competition with each other • Encourages participation of agents that have resources for initial investment and ability to take the higher risk (because products of only the winners are purchased) • Limits monopolistic pricing because donors set the price at which product is purchased • Increases pool of resources to solve the problem • Risk of donor reneging on agreement (Leoni, 2019)
	Impact bond	Investors and donors enter a contract that prespecifies the outcomes to be achieved by the investment and the payment schedule by which donors repay the investors if the project achieves pre-specified social outcomes.	• Used for service delivery rather than innovation • Does not typically put several agents in competition • Focused on investors and service providers • Increases pool of resources (from investors) to solve the problem • "One-buyer-one-provider" model that does not involve competition • Independent verification methods are required to ensure outcomes are achieved • Provides flexibility to the service providers in designing how the outcomes are delivered

RBP TYPE	RBP INTERVENTION	INCENTIVE STRUCTURE	KEY FEATURES, INCLUDING EXAMPLES OF USE, COMPETITION, PRICING AND RESOURCES
	Payment for environmental services	Donor (or other entity benefiting from the actions) pays agents if and only if they take actions that improve environmental outcomes (e.g. planting trees).	• Used for encouraging beneficiary adoption of existing products and services; reduces their risk of adoption • Prizes awarded to multiple agents (beneficiaries), but the agents are not in competition with each other • Independent verification methods are required to ensure outcomes are achieved • Provides flexibility to the service providers in designing how the outcomes are delivered
	Pay-for-performance	Donor offers financial incentives to service providers for meeting certain performance measures (e.g. efficiency, quality).	• Used for improving quantity/quality of service delivery by linking compensation to pre-specified performance targets • Brings in multiple actors, but not in direct competition • Can also be used to penalize poor outcomes • Typically focuses on intermediary inputs/processes/practices rather than final outcomes
Hybrid	Pull mechanism	Market incentivization prize that pays private sector agents if they sell products that meet pre-specified characteristics and sale agreements. Payments can be per unit of sale or proportional to sale relative to other sellers, with or without milestone prizes that are awarded to a limited number of agents.	• Simultaneously incentivizes supply and demand of the technology through agent effort to increase sale of technology • Used for encouraging adoption of products and services • Aims to address market failure that otherwise limits development of market for a technology • Puts multiple agents in varying degrees of competition with each other depending on specific incentive structure (proportional, per unit, with or without milestone prizes) • Increases pool of resources (from investors) to solve the problem • Aims to create a market for the technology • Independent verification methods are required to ensure outcomes are achieved • Provides flexibility to the service providers in designing how the outcomes are delivered

RBP TYPE	RBP INTERVENTION	INCENTIVE STRUCTURE	KEY FEATURES, INCLUDING EXAMPLES OF USE, COMPETITION, PRICING AND RESOURCES
	Voucher	Donor commits to reimburse accredited providers on the basis of services delivered to voucher recipients.	• Simultaneously incentivizes supply and demand of the technology through agent effort to increase the use of vouchers • Focused on increased delivery and adoption of services • Brings in multiple actors, but not in direct competition • Increases pool of resources
Demand side	Conditional cash transfer	Donor promises monetary transfers to families, conditional on those households taking pre-agreed actions that improve social outcomes (e.g. sending children to school).	• Focused on adoption of services by beneficiaries • Beneficiaries are typically not in direct competition with each other if there is adequate supply of services available on the basis of which cash awards are made, and as long there is adequate supply of resources for providing cash transfers • Does not increase pool of resources except through households' efforts to utilize socially beneficial services • Independent verification methods are required to ensure outcomes are achieved

The different types of RBPs presented in Table 1 can be broadly classified into three groups based on the identity of the targeted agent. Specifically, supply-side RBPs alter the incentives for service providers to increase the supply of beneficial goods and services. Advance market commitments, for instance, are RBP contracts under which funders promise to purchase a predetermined quantity of a desired good or service (such as a vaccine) if and when one is developed. This contract lowers the private sector's risks associated with investing in high-cost research and development by creating a viable market for innovations. Demand-side incentives, in contrast, target final beneficiaries directly to increase demand and promote the consumption of beneficial goods and services. Conditional cash transfers (CCTs), for instance, are incentives offered to households or individuals in exchange for consuming social services that improve socioeconomic and demographic outcomes. Finally, hybrid incentives combine characteristics of both supply- and demand-side mechanisms. Pull mechanisms are an example of such a hybrid tool, which can incentivize sales of beneficial goods and services by private sector service providers. Specifically, by linking incentive payments to verified sales, pull mechanisms encourage service providers to increase their capacity to supply targeted goods or services while also engaging in activities to identify and invigorate demand among potential end users and customers.

There is emerging evidence that the use of RBPs has broken down implementation barriers and driven progress on intractable social challenges in diverse sectors. An initial review of evidence suggests that the literature is rich for RBPs in the health sector (Audit Commission 2005; Brenzel and others 2009; Eichler and others, 2013; Eldridge & Palmer, 2009; Gorter and others, 2013; Mendelson and others, 2017; Renmans and others, 2016; Renwick and others, 2016; Suthar and others, 2017; Turcotte-Tremblay and others, 2016; Mueller-Langer, 2013). In particular, CCTs deployed as part of national health systems have increased the use of preventive and maternal health services and have improved health outcomes (Gertler, 2004; Lagarde and others 2007; Owusu-Addo & Cross, 2014). In the education sector, the use of CCTs has increased enrolment and attendance, although the evidence on impacts on learning outcomes is weaker (Baird and others, 2014). Similarly, vouchers provided to low-income households and individuals – including in high-income settings – have enhanced access to housing, educational and health services; increased competition among service providers; and improved a host of socioeconomic outcomes (Bellows and others, 2010; Kling and others, 2005; Sandström & Bergström, 2005).

Results-based mechanisms have also been used to deliver climate finance (World Bank Group & Frankfurt School of Finance and Management, 2017). In particular, PES delivered through projects based on afforestation/reforestation; improved forest management; Reducing Emissions from Deforestation and Forest Degradation Plus Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks (REDD+); and sustainable agriculture have become a key modality through which funders pursue climate goals. Prior evidence reviews have assessed the potential of PES (Snilstveit and others 2019; Samii and others 2014) and applications for biodiversity conservation (Herzon and others 2018), but the literature is relatively limited. In addition, although the broader evidence base on the impacts of such payments on deforestation is mixed (Pattanayak and others, 2010), recent rigorous evaluations point to their potential to significantly increase forest cover (Arriagada and others, 2012; Jayachandran and others, 2017). Applications of RBPs in the energy sector – where they have been deployed to incentivize the adoption, sale and use of climate-friendly energy technologies and to promote innovation across the energy supply chain – are also common (Vivid Economics, 2013).

There is promise in the potential of RBPs to drive climate action, yet lessons from a multisectoral, loosely linked literature make it difficult to distil clear insights. This evidence review takes stock of the disparate evidence base on the effectiveness of RBPs across all sectors. In so doing, it

synthesizes actionable insights for the enhanced application of RBPs to effectively meet international climate goals.

B. METHODS

In this section, we first present the meta-theory of change that guided our evidence review. We then outline our intervention/outcome framework, which was informed by the theory of change. Next, we present the evidence review's inclusion/exclusion criteria and describe the search strategy we used to search for and identify the relevant literature. Finally, we detail the literature coding, extraction and analysis process we used to generate the evidence gap maps and intervention heat map that provide insights on the distribution of the broader RBP literature and on the Green Climate Fund's RBP investments, respectively.

1. META-THEORY OF CHANGE

The meta-theory of change (meta-TOC) shown in Figure 2 highlights the key pathways through which the deployment of RBPs alters incentives and promotes the delivery of key outputs, which in turn determines intermediate and final outcomes at the service-provider, beneficiary, investor and system-wide levels. [2] These causal pathways start with the recognition that supply-side, demand-side, and hybrid RBP interventions target and influence distinct groups of actors/agents and beneficiaries through their distinctive incentive structures. As noted previously, supply-side RBPs exclusively target service providers. The supply-side RBPs work by increasing the expected returns to service providers from investing in either the development of or sale of a socially beneficially good or service. In doing so, the RBPs address underlying market failures, such as lack of awareness of the technology by potential consumers or poor distribution networks. These RBPs incentivize investments in capital infrastructure, operational process and/or management judged necessary by the service provider to achieve desired outcomes. Different types of supply-side RBP interventions entail different levels of competition and risk for participants, and thus can be used to incentivize distinct types of outcomes and market structures (e.g. incentive structures that reward multiple agents favour the development of a competitive market for the technology). In addition, if the targeted service provider is a policymaker or public-sector agency, a supply-side RBP intervention may also be deployed to incentivize output-level investments to bring about policy reform. Because a key advantage of RBP tools is that investments in outputs are left to the discretion of the service provider, such changes typically go unobserved by funders. Nevertheless, they constitute a crucial piece of the causal chain linking the intervention, implementation and results.

Hybrid investments (such as pull mechanisms) share some of these characteristics, but because they incentivize the sale of products or services by service providers, they simultaneously invigorate supply (directly) and demand (indirectly) because a sale requires that demand is expressed. On the other hand, demand-side RBPs are targeted exclusively at beneficiaries to promote increased consumption of existing goods and services and thus do not incentivize output-level investments by service providers. These RBPs aim to increase the expected utility of adopting the technology by offering a cash reward, thereby addressing underlying market failures that limit adoption.

Moving through the causal chain, the meta-TOC highlights how output-level investments induced by supply-side and hybrid RBPs yield interim outcomes – namely, increased supply and quality of

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[2] Service providers are public or private sector agents who deliver goods and services to potential end-users. Depending on the context, this can include a variety of actors (such as agricultural extension agents promoting a particular agricultural practice, local secondary schools, health clinics, and grocery stores). Beneficiaries are the agents that an intervention ultimately seeks to benefit, either directly or indirectly (e.g. school-age youth, farmers). Investors include public or private sector agents who provide funding, management, and/or oversight for an intervention (e.g. bilateral/multilateral development agency, private foundation, government agency).

goods and services and, if relevant, the introduction of desired policy reforms. The meta-TOC also outlines the links between interim outcomes at the service-provider and beneficiary levels. Increased supply of goods and services by service providers, for instance, gives rise to increased awareness and access by beneficiaries (e.g. through service provider investments in marketing or distribution networks), which can itself be induced by the deployment of demand-side incentives targeted at beneficiaries.

Figure 2. *Meta-theory of change*

INTERVENTIONS ——— **OUTPUTS** ——— **INTERMEDIATE OUTCOMES** ——— **FINAL OUTCOMES (ILLUSTRATIVE SECTORAL EXAMPLES)**

Interim / Sustained

SUPPLY
- Grand challenges
- Impact bonds
- Payments for environmental services
- Advance market commitments
- Pay-for-performance

HYBRID
- Pull mechanisms
- Vouchers

DEMAND
- Conditional cash transfers

Altered incentives
Service providers: Increase in expected revenue from provision of goods and services
Beneficiaries: Increase in expected utility from consumption of goods/services

OUTPUTS
Service providers
- Improved management
- Increased investments in capital, marketing, and operations
- Increased accountability to constituents and beneficiaries
- Increased efforts to bring about policy reform

INTERMEDIATE OUTCOMES — Interim
Service providers
- Increased supply of goods/services
- Improved quality of goods and services
- Policy reforms introduced

Beneficiaries
- Increased access to goods/services
- Increased awareness of goods/services
- Increased acceptability of goods/services

INTERMEDIATE OUTCOMES — Sustained
Service providers
- Higher revenues
- Increased autonomy to innovate and adapt
- Stronger supply chains

Beneficiaries
- Increased consumption of goods/services
- Increased demand

FINAL OUTCOMES

Health
- Better health outcomes (e.g., lower prevalence of preventable diseases)

Education
- Better learning outcomes (higher achievement and attainment)

Agriculture and forestry
- Sustainable use of inputs
- Higher yields
- Enhanced forest cover
- Lower greenhouse gas emissions

Energy and environment
- Improved access to energy
- Improved air quality
- Lower greenhouse gas emissions
- Increased climate resilience

System-level impacts
- Higher funding effectiveness
- Lowered investor risk
- "Crowding in" of new funds
- Market creation/support
- Policy reform

Potential unintended consequences
- Neglect of other priority areas (e.g., less holistic approach)
- Perverse incentives (e.g., overuse of goods and services)
- General equilibrium effects (e.g., increase in prices of goods and services)
- Effects on equity (e.g., monopolistic pricing of innovations resulting from Grand Challenges; more equitable educational outcomes)

Underlying assumptions about enabling environment
Moderators at micro/meso/macro levels
- Political and ideological framework
- Institutions, resources, and verification capacity
- Economic structures and incentives
- Appropriate technology
- Skilled individuals
- Cultural norms and expectations

Interim outcomes subsequently yield sustained outcomes for both service providers and beneficiaries. Increased awareness, for instance, is likely to increase adoption of, as well as demand for, the goods and services targeted by beneficiaries, which in turn leads to increased revenues for service providers. This self-reinforcing interplay between service providers and beneficiaries is central to how intermediate outcomes yield ultimate results, which are often what RBP interventions aim to drive. Accordingly, the meta-TOC in Figure 2 highlights illustrative sectoral examples of outcomes in the health, education, agriculture and forestry, and energy and environment sectors that have routinely been targeted by RBP interventions. Notably, the service providers, incentivized by the RBPs, may learn about the lack of acceptability of the technologies and tweak their products to increase take-up in their quest to obtain incentive payments.

Sectoral RBP applications can also yield improved investor-level and system-wide outcomes. By linking payments directly to results, for instance, RBP interventions lower the risks donors, governments and other investors face, which has the potential to improve funding effectiveness. Bringing multiple actors to compete with each other also "crowds in" new sources of funding. By supporting the dissemination of innovations that improve well-being, RBP interventions also support the creation and expansion of markets for nascent goods and services.

That said, it is worth noting that the same mechanism through which RBP interventions effectively alter and align incentives can also yield unintended consequences. Depending on how underlying incentive structures are designed, RBP tools may lead to overuse of targeted goods and services, sometimes in ways that lead to the neglect of other priority sectors. Similarly, an increase in demand for a good or service can increase its market price in the medium to long term, which in turn has equity implications for end users who do not receive incentives for consumption. Further, a focus on private sector actors to drive results may mean that they exclude the poorest beneficiaries, who face significant constraints in adopting technologies.

The logic of RBP interventions is based on the assumption that goods, services and activities targeted by incentives will yield desired outcomes (e.g. forests left intact by PES recipients will sequester carbon). Underlying assumptions about the enabling environment, which determines the ways in which various actors respond to new incentives, are also crucial. These include complementary economic and political institutions that lend credence to the RBP contract between funders and agents; the availability of context-appropriate technologies and other resources that enable intermediate outputs to translate into final outcomes; compatible cultural norms and expectations that allow agents to respond to monetary incentives; and the ability to verify outcomes or results. In the absence of these foundational elements of the causal pathway, incentives alone are unlikely to be sufficient to drive transformational change.

2. INTERVENTION/OUTCOME FRAMEWORK

The meta-TOC described above directly influenced the structure of our intervention/outcome framework, which maps key RBP interventions directly onto outcomes at the beneficiary, service-provider, investor and system-wide levels, as shown in the evidence gap maps and intervention heat map we develop below. This includes sector-specific outcomes (such as higher test scores among beneficiaries targeted by RBP interventions in the education sector), investments in outputs (such as efforts to improve management, supply chains or marketing efforts by service providers) as well as potentially unintended effects (such as the inefficient overuse of goods and services targeted by incentives). Specifically, three key priorities drive this structure:

- **Consistent mapping of interventions onto outcomes:** The intervention/outcome framework connects the meta-TOC to the evidence gap maps and intervention heat map we develop using a consistent structure that highlights both outputs and intermediate and final outcomes.

- **Recognition of the importance of different actors/agents and levels:** The framework recognizes that supply-side, demand-side and hybrid RBP interventions alter incentives at various beneficiary, service-provider and investor-wide levels, thereby enabling us to systematically track the effectiveness of specific RBP interventions on outcomes at these differing levels.

- **Multisectoral tractability:** Given the diverse sectors and domains within which RBPs have been deployed, we designed the intervention/outcomes framework with multisectoral tractability in mind – namely, that the ways in which it categorizes interventions and outcomes should be both sufficiently narrow to generate valuable insights about the distribution of evidence on the effects of RBPs and sufficiently broad to be easily adapted for analyses focused on sectors or interventions beyond those highlighted in the meta-TOC.

3. INCLUSION/EXCLUSION CRITERIA

To systematically characterize a large, disparate literature on the effectiveness of RBPs, an underlying focus on breadth (e.g. across sectors, geographies and study methods) guided this evidence review's scope. More formally, we relied on the PICOS (population, intervention, comparator, outcome and study design) model to precisely describe our inclusion/exclusion criteria below (see Appendix 1 for additional details).

a. Population

Following the country-level categorizations outlined in the United Nations Framework Convention on Climate Change, we included studies that assess the effectiveness of an RBP intervention in:

- Non-Annex I countries;
- Low-income contexts/settings (defined in relative terms) in Annex I countries; and
- Non-Annex I and Annex I countries (jointly) if associated analyses distinguish effects and report results separately across the two samples.

We excluded any study that presented a combined analysis on both non-Annex I and Annex I countries without reporting results across the two samples separately, unless the intervention was carried out in a low-income context/setting in an Annex I country.

b. Interventions

We included assessments of the effectiveness of RBP interventions:

- Across all sectors;
- Delivered at any administrative level; and
- Delivered to any type of beneficiary (e.g. household, individual) by any type of actor (e.g. government, non-governmental organization).

In addition, we also did not impose any restrictions related to intervention-level characteristics (such as modality, intensity, duration or complexity of intervention delivery). In particular, we did not exclude studies based on restrictions related to sample size, thereby ensuring that pilot-scale interventions, which often focus on newer, more innovative approaches, were captured by our evidence review. Furthermore, we complemented our broad focus on RBPs by also focusing on specific RBP intervention types (starting with those shown in the meta-TOC outlined in Figure 2 and then expanding our focus based on the results of our search).

c. Comparator

We considered quantitative studies that clearly identified a comparison/control group. The nature of a comparison/control group can depend closely on the specific methods deployed in the study (e.g. control group in a randomized controlled trial; preintervention outcomes for the unit on analysis in a before-and-after design; within-community non-adopters in a study using a community-level fixed-effects design). We excluded any study without a clearly articulated control group (e.g. descriptive/predictive analyses highlighting drivers and determinants of selecting into RBP interventions) as well as quantitative methods for which the use of comparison/control groups was not relevant (e.g. life cycle assessments).

d. Outcomes

Consistent with our multisectoral intervention focus, we adopted a multi-actor focus and looked at a range of outcomes measured at the beneficiary, service provider, investor and system-wide levels. In addition, in line with our broad criteria related to study-level characteristics, we considered studies that measured outcomes at any point following the administration of the relevant RBP intervention.

e. Study design

We focused on studies that used both causal (experimental and quasi-experimental) and non-causal designs, with one important caveat: for CCTs, we relied only on systematic reviews. Experimental designs include studies that use randomization to delineate statistically indistinguishable treatment and control groups to evaluate causal impacts. Quasi-experimental designs aim to evaluate causal impacts in the absence of randomization and include (but are not limited to) difference-in-differences, regression discontinuity, instrumental variable and propensity score matching designs. Non-causal designs (e.g. correlation analysis using cross-sectional data) do not aim to evaluate causal impacts but rather offer insights on simple quantitative relationships between key variables.

f. Exclusion criteria

We excluded all qualitative studies as well as studies that did not clearly articulate a comparison/control group. As mentioned above, we also excluded studies that did not focus on low-income populations in Annex I countries or that did not report results for Annex I and non-Annex I countries. Finally, we excluded all published or grey literature that was not in English, as well as all studies published before the year 2000.

4. SEARCH STRATEGY

Consistent with the broad approach characterized in our inclusion/exclusion criteria, our search strategy was designed to systematically identify relevant publications on the effectiveness of RBP interventions in academic journals as well as in the grey literature. In this section, we describe our three-stage search strategy, outline the databases and repositories our search targeted, and describe the search terms that we used.

a. Search steps

We used a three-stage search strategy to search for studies germane to this evidence review. First, we searched the titles, abstracts and keywords of studies catalogued by academic databases for terms related to RBPs (excluding those related to CCTs), impact measurement and comparison groups.[3]

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[3] A full list of the search terms we used for our main literature search (presented in syntax appropriate for the Scopus database) is shown in Appendix 2.

We then separately searched titles, abstracts and keywords of studies catalogued in these databases for a set of terms specific to CCTs and systematic reviews. Consistent with our inclusion/exclusion criteria, this enabled us to deploy distinct, targeted searches for:

- Systematic reviews on the effects of CCTs; and
- Both individual studies and systematic reviews related to all other types of RBPs.

We complemented these systematic searches with manual searches of a set of databases focused exclusively on systematic reviews and evidence syntheses (Table 2).

Finally, we adapted our search terms for the grey literature, for which we developed a custom search engine using the Programmable Search Engine tool developed by Google. Our custom search engine enabled us to search for and identify relevant publications (such as reports and unpublished working papers) hosted on preselected repositories. We complemented our custom search engine with Think Tank Search, a custom search engine developed by Harvard Library that enabled us to search for relevant publications hosted by over 1,200 global think tanks and research centres.[4]

b. Databases and repositories

Table 2 presents the full list of databases and repositories (covering published academic articles and systematic reviews, evidence syntheses and grey literature) that we used.

Table 2. List of targeted databases

DATABASE TYPE	DATABASE NAME	COMMENTS
Published academic articles and systematic reviews	Scopus (*https://www.scopus.com/*)	Cross-disciplinary repository
	EconLit (*https://www.aeaweb.org/econlit/*)	Economics/social science repository
Systematic reviews and evidence syntheses	• Collaboration for Environment Evidence Database of Evidence Reviews (CEEDER) • The Campbell Collaboration • Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) systematic reviews • Evidence for Nature and People data portal	
Grey literature	Custom search engine developed using Google Programmable Search Engine tool covering: • World Bank Policy Research Working Papers series • World Bank IEG Independent Evaluations and Annual Reviews • Abdul Latif Jameel Poverty Action Lab (J-PAL) Policy Publications and Evaluations • Innovations for Poverty Action (IPA) Publications • International Initiative for Impact Evaluation (3ie) Publications • Center for Effective Global Action (CEGA) Research Publications • Inter-American Development Bank (IADB) Office of Evaluation and Oversight Publications	

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[4] A custom search engine developed using the Google Programmable Search Engine tool uses Google's search algorithms to identify and deliver up to 100 of the most relevant search results from targeted databases and repositories. The use of two distinct custom search engines will yield up to 200 relevant grey literature publications.

DATABASE TYPE	DATABASE NAME	COMMENTS
	• AgResults Projects and Evaluation • USAID Development Experience Clearinghouse	
	Harvard Library Think Tank Search (*https://guides.library.harvard.edu/hks/think_tank_search*)	Covers 1,200+ global think tanks and research centres

c. Search terms

Our systematic search terms (presented in Appendix 2) were organized in the following categories:

1) **RBP terminology**

   a) **Basic terms:** This subcategory includes terms that are often used interchangeably with or are closely related to the phrase "results-based payments", including "payments by results", "performance-based financing" and "pay-for-performance".

   b) **Intervention-specific terms:** This subcategory includes terms that are often used interchangeably with or are closely related to the specific RBP interventions outlined in the evidence review's meta-TOC (Figure 2). For example, to comprehensively search for studies that focus on "payments for environmental services", we included "payments for environmental benefits", "payments for ecosystem services" and "payments for ecosystem benefits".

2) **Impact measurement terminology:** This category includes terms related to the measurement and tracking of impacts, such as "effectiveness", "affected", "increased" and "improved."

3) **Comparison group terminology:** This category includes terms related to the articulation of comparison groups (such as "treatment" and "control"). It also includes terms related to specific empirical methods (such as "instrumental variable") that do not always refer explicitly to comparison groups but that generate estimates of causal impacts that are comparative.

4) **General restrictions:** This category contains a set of outlet-, study-, language- and time-specific restrictions to enable us to restrict (academic database) search results to English-language articles and systematic reviews published in peer-reviewed academic journals in or after the year 2000. When adapting terms from this category for our grey literature, we relaxed outlet-specific constraints.

Consistent with our inclusion/exclusion criteria, we did not include any geography-related terms (because our evidence review seeks to capture studies that could potentially have a global focus). We also did not include any terms related to specific sectors and outcomes (given the evidence review's multisectoral focus). To operationalize our search terms, we deployed Boolean operators to combine our various search terms and categories. Specifically, we combined search terms within each category using the OR operator, and each of the search categories using the AND operator.

5. DATA COLLECTION AND ANALYSIS

In this section, we describe our study screening procedure, which we applied to the studies found by our search procedures to identify publications germane to the goals of this evidence review. We then outline the process we used to extract relevant study- and intervention-level characteristics from each relevant study to generate our evidence review database. For both components, we also describe the steps we took to ensure consistency in screening, data extraction and coding quality

across multiple screeners and coders. Finally, we describe how this data set informed the development of evidence gap maps and the intervention heat map.

a. Screening of studies

To screen studies for relevance, we randomly assigned all studies identified by our search process to a team of study screeners, who used a checklist-based screening tool (following the study inclusion/exclusion criteria presented in Appendix 1) to carefully review the title, abstract and keywords for each identified study for relevance. Prior to beginning screening, each study screener participated in a basic training session on the objectives and scope of the evidence review and, in particular, on the review's inclusion/exclusion criteria. As part of this training, we also assigned a randomly selected sample of 100 studies to all screeners for simultaneous screening and used follow-up discussions on inconsistently screened studies (e.g. a study that was marked as "relevant" by one screener but not by another) to refine the screening process. Once screening began, 10 per cent of studies were assigned to all screeners to continue to monitor screening consistency. Screening was used to exclude studies that were not germane to the evidence review. Studies that met the inclusion/exclusion criteria proceeded to the data extraction stage.

b. Data extraction and management

We randomly assigned studies that were germane to the evidence review to a team of study coders, who conducted a close review of each study and extracted key study-specific characteristics following a coding framework (see Appendix 3 for an overview of the coding framework). This framework enabled extraction of data related to the following:

- Relevance status
- Design-specific characteristics (including regional focus, sample size and empirical design)
- RBP-specific characteristics (including the specific type of RBP intervention deployed, as well as identities of the actor administering the RBP intervention, the agent being incentivized by the intervention and the beneficiary being targeted);
- Broad sectoral focus (e.g. health, education)
- Study results (namely, the specific outputs or outcomes reported by the study along with information on the direction and, if appropriate, statistical significance of the reported quantitative estimate)

If a study reported multiple effects associated with the RBP intervention in question (e.g. the impact of school vouchers on school attendance, test scores and household expenditures), the coding framework also allowed for each outcome to be coded separately. In addition, the coding framework contained a separate module specifically for systematic reviews related to CCTs (see Table A - 2), which enabled extraction of data on the scope, results and quality of the evidence synthesis presented in each systematic review, partly following the SURE checklist for systematic reviews adapted by Snilstveit and others (2016). In line with our inclusion/exclusion criteria (Appendix 1), we relied on only systematic reviews to characterize the evidence base on CCTs. For systematic reviews focusing on other RBP interventions, we instead identified the underlying studies included within each review, which were then coded individually as part of our data extraction process.

Once again, to ensure consistency of coding quality, 10 per cent of studies selected for data extraction were assigned to both coders for independent coding before the start of the full data extraction process. Inconsistencies in the coding of this subset of studies were resolved through additional training and discussions to refine the data extraction process.

C. SEARCH RESULTS AND DESCRIPTIVE STATISTICS

This section provides an overview of the number of studies identified, screened and included in the evidence review. It also highlights distributions of the records extracted from included studies by RBP intervention type, region and sector.

1. SEARCH AND SCREENING

The search found nearly 2,000 studies (1,817 academic articles and systematic reviews identified in academic databases; 8 systematic reviews identified in the designated systematic review/evidence review repositories; and 173 grey literature publications identified by our custom search engines). Figure 3 summarizes the distribution of studies found and included in the evidence review. Following the removal of duplicates and screening for relevance, 428 studies were selected for inclusion in the evidence review, consisting of 403 articles, briefs and reports, and 25 systematic reviews on the effectiveness of CCTs.

As noted above, to enable ex post validation of screening consistency, all study screeners reviewed approximately 10 per cent of the 1,626 studies retained for abstract and title during the abstract/title screening phase. Around 91 per cent of these studies were screened consistently by all screeners. Consistency checks during closer reviews of the text and coding yielded similar consistency rates.

Figure 3. **PRISMA flow diagram summarizing search/screening results**
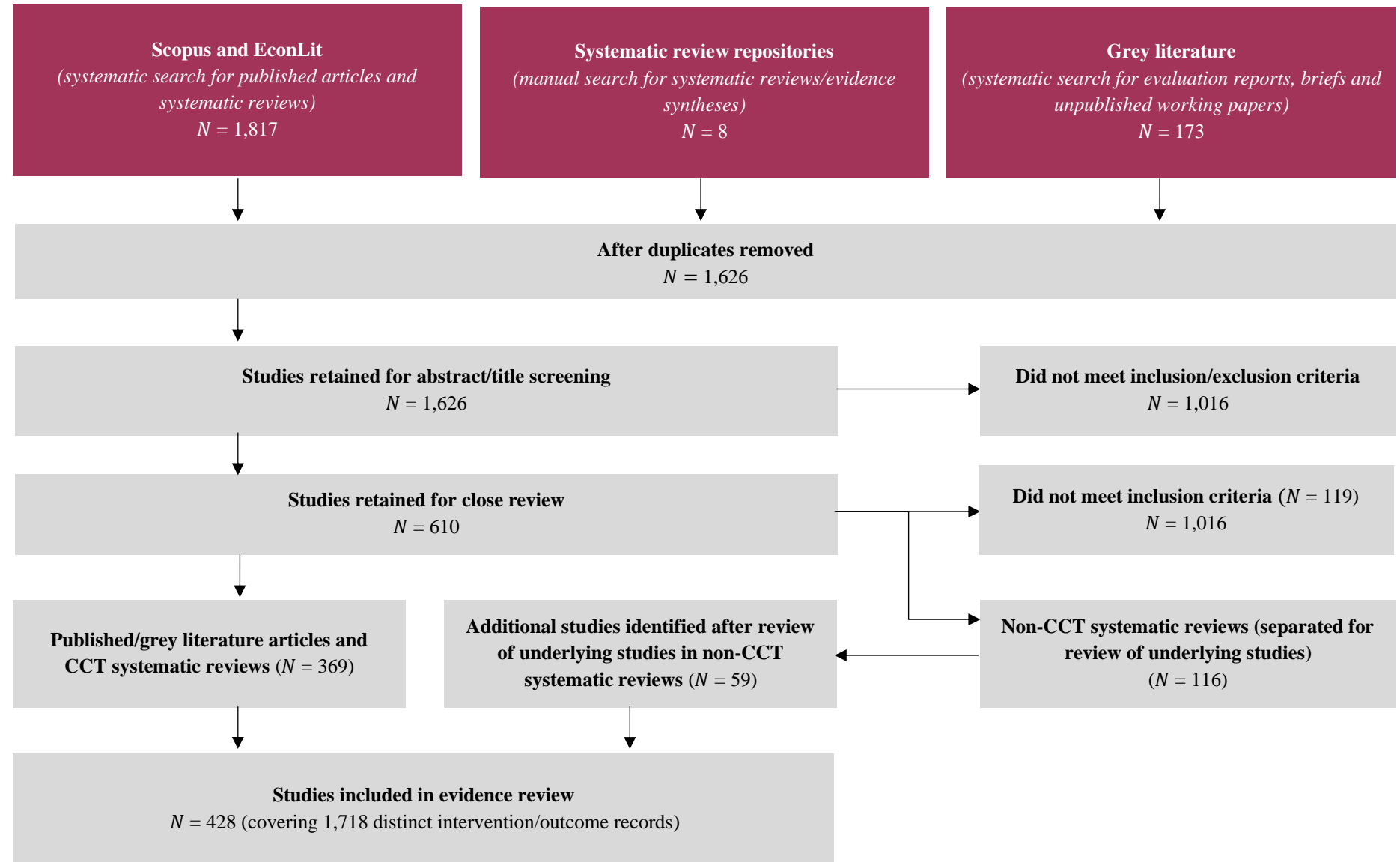
2.   DISTRIBUTION BY RBP INTERVENTION TYPE

The evidence base on the use of vouchers was the deepest, followed by those on pay-for-performance (P4P) and PES interventions. Figure 4 highlights the distribution of RBP intervention types featured in the studies included in this evidence review.[5] Voucher-based interventions constituted over one third of records extracted from included studies, and 30 and 25 per cent of the sample focused on P4P and PES interventions, respectively. It is also worth noting that even though the evidence on the impacts of CCTs was drawn exclusively from systematic reviews – which limits how "frequently" these outcomes are recorded in our final data set as reviews typically report syntheses of outcomes from multiple studies – outcomes from studies that focus on CCTs constituted nearly 15 per cent of records. In contrast, few studies reported impacts of pull mechanisms or impact bonds on outcomes of interest, and we found no relevant studies that focused on the impacts of grand challenges or advance market commitments (AMCs) in our sample of published and grey literature. For this reason, in the remainder of this section, we present descriptive statistics disaggregated by the top five categories of RBP interventions only.

Figure 4.   Distribution of studies by RBP type
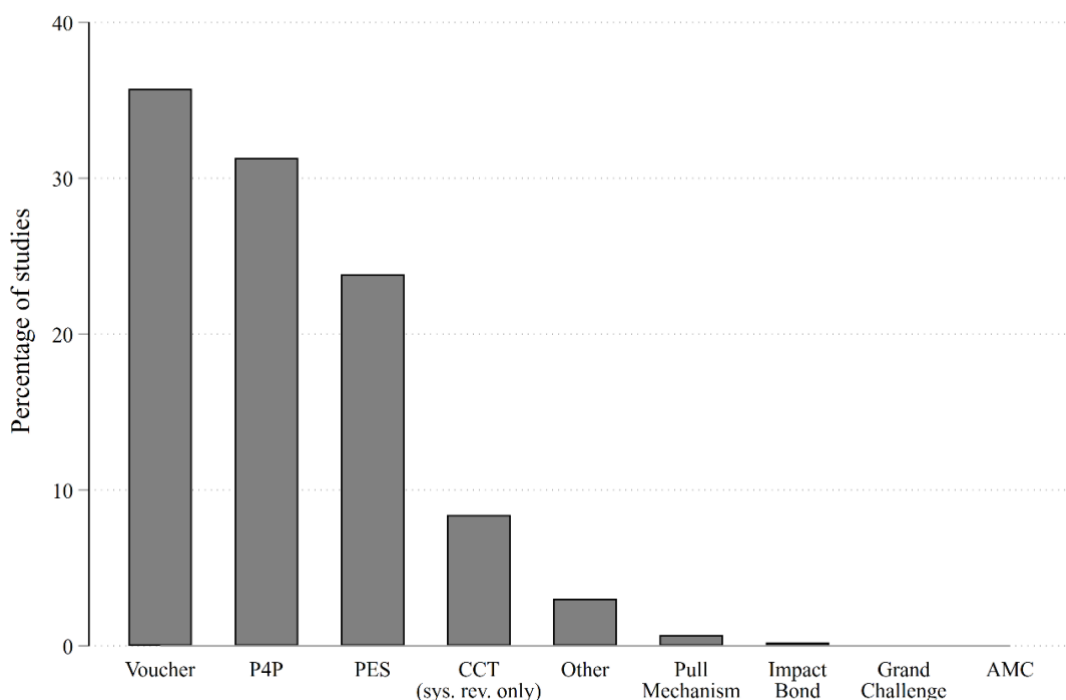
Notes: P4P = Pay-for-performance; PES = Payment for environmental services; CCT = Conditional cash transfer. The "other" category includes studies on results-based transfers not covered by any other category, including conditional foreign aid (Öhler & Nunnenkamp, 2012), non-monetary incentives provided to health workers (Bernal & Martinez, 2020; Carmichael and others, 2019), and reemployment bonuses provided to recipients of unemployment benefits (Ahn, 2018).
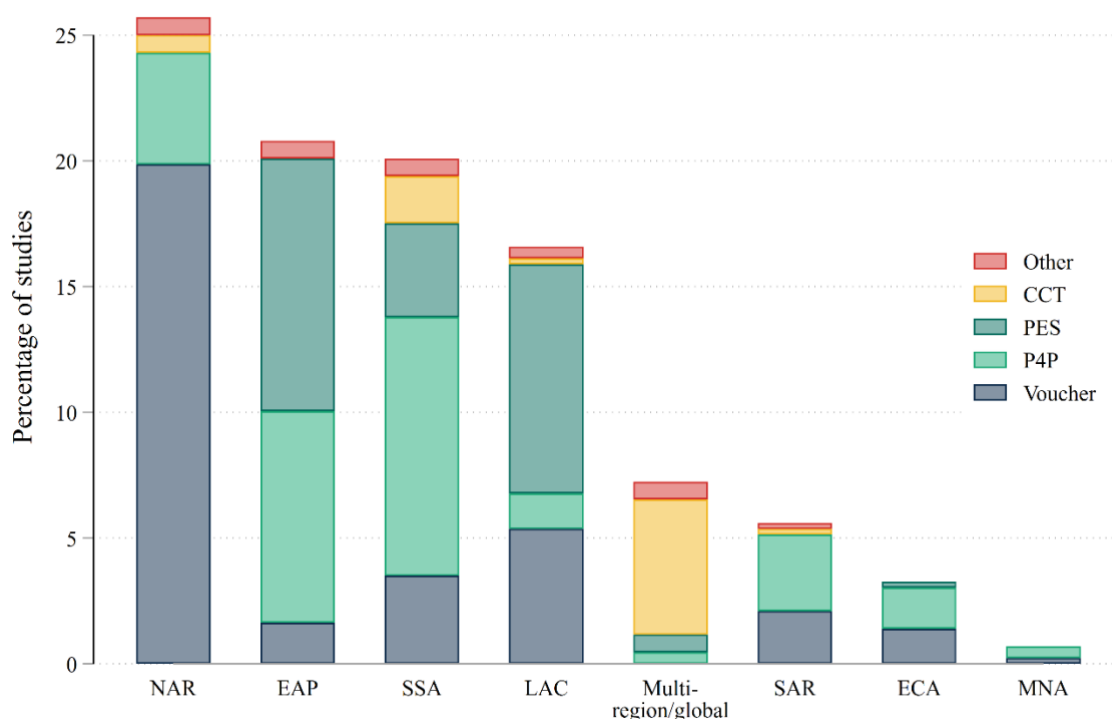
3.   DISTRIBUTION BY REGION

Over a quarter of the relevant literature on RBPs documented evidence from North America, followed closely by East Asia and Pacific, sub-Saharan Africa, and Latin America and the

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[5] Because a study can focus on more than one RBP intervention, the sum of the percentages over all RBP intervention types need not equal 100.

Caribbean. Figure 5 presents the distribution of studies by region and includes single-country studies and multi-country studies restricted to a single region, as well as multi-region/global studies. The figure shows that, even though the evidence review's inclusion/exclusion criteria restricted its scope to only include studies from Annex 1 countries if they focused on a low-income context or setting (relatively defined), over 25 per cent of coded outcomes were from studies that focused on a North American context (primarily the United States). Sub-Saharan Africa, Latin America and the Caribbean, and East Asia and Pacific each contributed 15 to 20 per cent of included studies, and multi-region/global studies (that is, those that focused on more than one country across different regions) contributed just over 5 per cent of the sample. Somewhat surprisingly, we found a relatively low share of studies that focused on South Asia in our sample. We similarly found low shares of studies that focused on Europe and Central Asia (at least partly due to our inclusion/exclusion criteria restricting the types of studies from Annex 1 countries that were deemed relevant for the review) or the Middle East and North Africa.

Figure 5 also highlights within-region distributions of studies for selected RBP intervention types. We found that studies in our sample that assessed the effectiveness of voucher-based interventions overwhelmingly focused on voucher programmes in North America. This is unsurprising; housing, school and food voucher schemes that target low-income households and individuals in the United States, for example, have been extensively studied (e.g. Chetty and others, 2016; Wolf and others, 2013). Similarly, we found that most of the studies that looked at the impacts of PES interventions focused on Latin America and the Caribbean, East Asia and the Pacific, and sub-Saharan Africa. This is consistent with the regional distribution of active PES programmes (Ezzine-de-Blas and others, 2016). In addition, we found that most of the studies that assessed P4P interventions did so in the sub-Saharan African context, including recent assessments of national and regional health-focused P4P schemes in Rwanda and Tanzania (Basinga and others, 2011; Binyaruka and others, 2018; Mayumana and others, 2017). Lastly, most of the studies that focused on CCTs adopted a multi-region/global approach. This was primarily due to our decision to focus exclusively on systematic reviews, which often synthesize multi-country evidence, to assess the evidence base on the impacts of CCTs (such as Durao and others, 2020).

Figure 5.   *Distribution of studies by region*

Notes: EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; NAR = North America; SAR = South Asia; SSA = sub-Saharan Africa.

4. DISTRIBUTION BY SECTOR

Nearly half of the RBP literature was in the health sector, with the rest of the evidence base relatively evenly spread between agriculture and forestry, education and other sectors. Figure 6 highlights the sectoral distribution of the studies included in the evidence review.[6] Over 45 per cent of all studies focused wholly or in part on the health sector, 20 per cent of included studies related to agriculture and forestry, and another 15 to 20 per cent related to education. Despite increasing use of results-based approaches to target energy outcomes (e.g. Vivid Economics, 2013), almost no study focused on an application of RBPs in the energy sector.

Within-sector distributions by type of RBP revealed expected patterns. Studies that assessed the effectiveness of PES schemes, for instance, overwhelmingly focused on agriculture and forestry, while P4P- and CCT-focused studies were skewed towards the health sector. Similarly, 30 to 40 per cent of studies that looked at voucher interventions focused on health, education or "other" sectors (such as housing).

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[6] We coded studies as having a primary and, if relevant, a secondary sectoral focus. For this reason, a study may be counted in more than one sector.

Figure 6.   *Distribution of studies by sector*
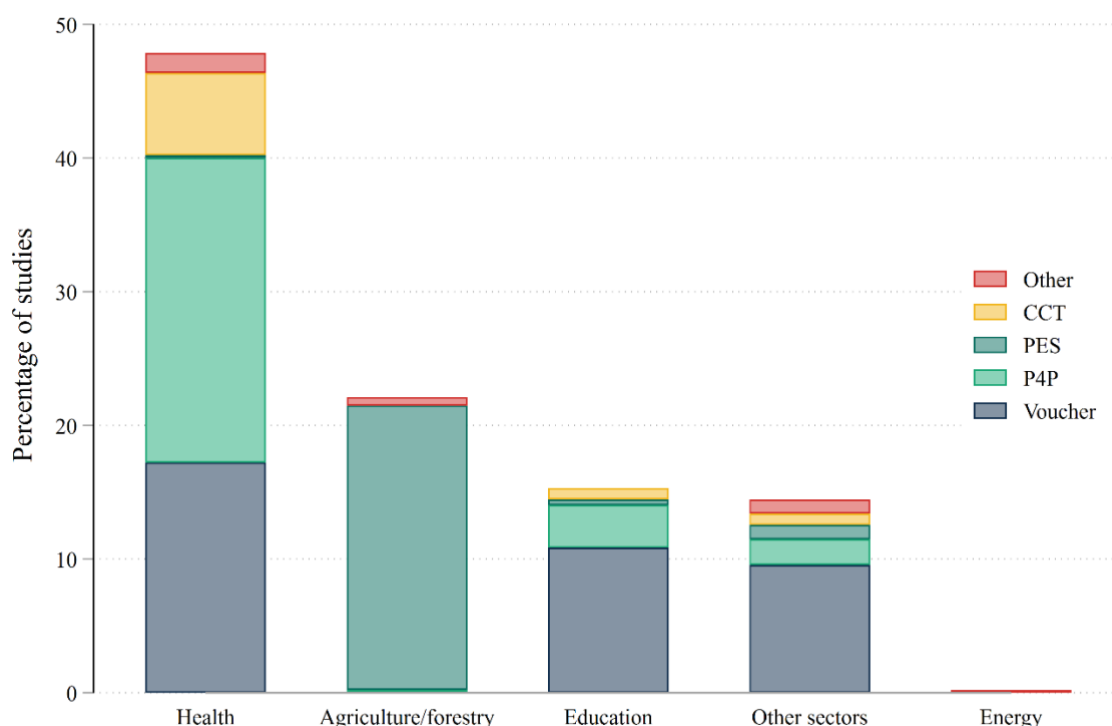
Notes: "Other sectors" covers studies not covered by any other sectoral categories, including housing (e.g.
Shroder, 2002), labour/employment (e.g. Ahn, 2018), multisectoral studies (e.g. Sherr and others,
2009) and water (e.g. He and others, 2015).

D. EVIDENCE GAP MAP

**A majority of the relevant scholarship on RBPs focused on the use of vouchers to incentivize
improvements in beneficiaries' sector-specific and socioeconomic outcomes, followed by P4P
and CCT interventions and PES mechanisms.** P4P and CCT interventions also targeted
consumption and supply of goods and services, and PES mechanisms targeted system-wide
outcomes, primarily in the environmental domain. Table 3 presents the overall evidence gap map
(EGM), which maps the evidence on RBP impacts of outcomes extracted from all included studies
to our intervention/outcome framework.[7] In addition, Table A - 3 through 4.6 present results from
applying various cross-sectoral and cross-regional filters to the main EGM to highlight other
patterns in the evidence. Specifically, Table A - 3 shows results for Annex I and non-Annex I
countries; Table A - 4 shows results by region; Table A - 5 focuses exclusively on evidence from
least developed countries (LDCs), as designated by the United Nations; Table A - 6 presents sector-
disaggregated distributions for the top three sectors shown in Figure 6; Table A - 7 highlights results
by different agent types (i.e. the type of actor directly incentivized by a particular RBP
intervention); and Table A - 8 presents a similar filtering by RBP beneficiary type (i.e. the type of
actor a particular RBP intervention seeks to ultimately benefit).[8]

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[7] Recall that we only used systematic reviews and not individual studies to review the evidence on CCTs. For this reason,
all EGMs indicate CCTs separately for comparability.

[8] Although we had initially intended to create a filtered EGM to present evidence from small island developing States
(SIDS), we only found one paper focusing on an RBP intervention in a SIDS context – namely, a randomized controlled
trial by Chin-Quee and others (2010), who tested the effectiveness of vouchers to incentivize the uptake of oral
contraceptive pills in Jamaica. For this reason, we do not present a separate EGM for SIDS. We do not feature a separate
EGM for the energy sector for a similar reason.

Table 3.　　　　*Evidence gap map: Overall*

Interventions	Outcomes/Outputs	Beneficiaries						Service Providers					Investor/System-wide							S
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Supply	Grand Challenge																			
	Impact Bond												2							
	Payment for Environmental Services		16		22	101	71		3					7		9	4	1	54	5
	Advance Market Commitment																			
	Pay-for-performance	1	34	14	44	241	6	19	72	145	16	11		4		8	1		8	4
Hybrid	Pull Mechanism	4		2	2	5	2										1	2	3	2
	Voucher	6	6	42	74	328	70		1	22		1		3	1	2			5	1
Demand	Conditional Cash Transfer (SRs only)				37	86	10		11	13				1		7			5	2
	Other		3		4	9	2			13				3	1				3	

Notes:　Each cell indicates the relevant count of intervention/outcome records extracted from studies/systematic reviews included in the evidence review. A study may report more than one record. SR = systematic review (underlying studies not reviewed). Maximum value indicated in white font colour. Column titles indicated below:

Beneficiary level
A　Awareness of goods and services
B　Acceptability of goods and services
C　Access to goods and services
D　Consumption of goods and services
E　Final outcomes: Sector-specific
F　Final outcomes: Socioeconomic

Service provider level
G　Management/investment in capital, marketing, and operations
H　Innovation/supply of goods and services
I　Quality of goods and services
J　Other output changes
K　Enterprise-level outcomes

Investor/system-wide level
L　Investment risk
M　Financial or economic return on investment
N　Total aid amount
O　Aid effectiveness
P　Market creation or expansion
Q　Policy change or reform
R　Other investor or systemic outcomes

S　**Unintended consequences**

E. INTERVENTION HEAT MAP

In this section, we examine the distribution of funds allocated by the Green Climate Fund (GCF) using results-based modalities. We first provide an overview of the GCF projects approved to disburse funds using results-based approaches. We then visually present our results using an intervention heat map (IHM) based on our intervention/outcome framework.

1. OVERVIEW OF INTERVENTIONS

Between 2015 and 2020, the GCF committed USD 7.2 billion across 159 projects, of which at least USD 529 million was approved to be disbursed using results-based modalities deployed as part of 15 projects. Our data on the GCF's funding commitments came from a detailed review of the funding documentation for 15 GCF projects approved to disburse funds – either wholly or in part – using results-based modalities.[9] Table 4 provides an overview of these projects. Together, these projects represented a financial commitment of nearly USD 693 million from the GCF between 2016 and 2020.[10] Around 76 per cent of this amount (USD 529 million) was allocated for results-based modalities. The difference between the total budgeted amount and the amount disbursed using results-based approaches is due to differences in the financing instruments used for the projects. Nearly all identified projects used either the "grants" or the "results-based payment" financing instruments.[11] In the context of GCF projects, the latter instrument is used by projects that have been approved under the GCF's REDD+ RBP pilot programme to provide monetary transfers to countries for verified emissions reductions stemming from reduced deforestation and forest degradation. For this reason, we treated nearly all the budget for these projects (except for a 2.5 per cent charge indicated for use of proceeds and non-carbon benefits) as disbursed under results-based modalities (namely, PES mechanisms). In contrast, a results-based approach is typically one of many activities deployed as part of projects that use the "grants" financing mechanism, which is reflected in underlying budget allocations (see Appendix 5 for additional details related to identifying the budget share associated with these results-based sub-components).

The GCF relied principally on PES mechanisms to deploy its results-based commitments, followed by a mix of CCT- and voucher-based approaches. As shown in Table 4, our review of project-level funding documentation shed light on the specific types of RBP interventions used in each project. We found that 10 of the 15 results-based projects funded by the GCF used PES mechanisms to deliver targeted incentives, 3 relied on CCTs, and 1 project combined CCT- and voucher-based approaches (by delivering redeemable vouchers to targeted beneficiaries, conditional on completion of key project-level milestones).

GCF projects that used PES mechanisms primarily targeted global emissions reductions, while those that used CCT- and voucher-based approaches also targeted a wider range of sector-specific and socioeconomic outcomes. We used project funding documentation to identify the specific outcomes targeted by the results-based components of each project. As funds for projects approved using the GCF's "results-based payments" financing instrument were provided in exchange for verified emissions reductions, we assumed this is the primary targeted outcome for each of these projects. Identifying specific outcomes for "grants" projects was somewhat more complex. Consider, for instance, project FP125, which aimed to enhance the resilience of

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[9] We did not review the project documentation of all GCF projects to identify these projects. Eight projects are part of the GCF's REDD+ RBP pilot programme, while the remaining were extracted from an internal GCF dataset tracking the use of CCTs across recent projects. For this reason, we do not believe that these projects represent the totality of the GCF's results-based commitments.

[10] We excluded any amount co-financed by national governments or other organizations.

[11] The only exception is project FP146, which used a mix of "senior loans" and "grants".

smallholder farmers through increased use of climate-resilient agricultural practices. Only a subset of project beneficiaries (specifically, poor and near-poor individuals) were eligible for the hybrid CCT–voucher mechanisms deployed as part of this project, which suggests that in addition to beneficiaries' sector-specific resilience outcomes, results-based approaches also intended to improve socioeconomic outcomes. When necessary, we made assumptions related to the distribution and allocation of project funds over one or more outcomes, drawing on project- and activity-level objectives stated in the funding documentation (as described in Appendix 5).

Table 4. **Overview of GCF projects using results-based modalities**

GCF PROJECT NUMBER	COUNTRY FOCUS	GCF FINANCIAL INSTRUMENT	RBP INTERVENTION TYPE	TOTAL GCF COMMITMENT (MILLIONS, USD)	RBP-ALLOCATED AMOUNT (MILLIONS, USD)
FP019	Ecuador	Grants	PES	41.2	17.0
FP062	Paraguay	Grants	CCT	25.1	2.4
FP067	Tajikistan	Grants	CCT	9.3	1.6
FP100	Brazil	Results-Based Payment	PES	96.5	94.1
FP110	Ecuador	Results-Based Payment	PES	18.6	18.1
FP117	Lao PDR	Grants	PES	17.8	4.1
FP120	Chile	Results-Based Payment	PES	63.6	62.1
FP121	Paraguay	Results-Based Payment	PES	50.0	48.8
FP125	Viet Nam	Grants	CCT/Voucher	30.2	3.5
FP130	Indonesia	Results-Based Payment	PES	103.8	101.3
FP134	Colombia	Results-Based Payment	PES	28.2	27.5
FP142	Argentina	Results-Based Payment	PES	82.0	80.0
FP144	Costa Rica	Results-Based Payment	PES	54.1	52.8
FP146	Nicaragua	Senior Loans/Grants	PES	64.1	12.1
SAP002	Kyrgyzstan	Grants	CCT	8.6	3.1

2. DISTRIBUTION OF GCF FUNDING

Table 5 maps the GCF's RBP-allocated commitments to our intervention/outcome framework in the form of an IHM.

Table 5. *Intervention heat map of GCF's results-based financing (nominal USD, millions)*

INTERVENTIONS \ OUTCOMES/OUTPUTS		BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
Supply	Grand Challenge																			
	Impact Bond																			
	Payment for Environmental Services					2.0	7.7										5.7		502.4	
	Advance Market Commitment																			
	Pay-for-performance																			
Hybrid	Pull Mechanism																			
	Voucher					1.8														
Demand	Conditional Cash Transfer					6.4	1.6												0.8	
Other																				

Notes: Column titles indicated below:

Beneficiary level
A Awareness of goods and services
B Acceptability of goods and services
C Access to goods and services
D Consumption of goods and services
E Final outcomes: Sector-specific
F Final outcomes: Socioeconomic

Service provider level
G Management/investment in capital, marketing, and operations
H Innovation/supply of goods and services
I Quality of goods and services
J Other output changes
K Enterprise-level outcomes

Investor/system-wide level
L Investment risk
M Financial or economic return on investment
N Total aid amount
O Aid effectiveness
P Market creation or expansion
Q Policy change or reform
R Other investor or systemic outcomes

S **Unintended consequences**

F.   DISCUSSION

In this section, we bring together the findings from the EGM and IHM to reflect on the patterns the EGM revealed on the use of RBPs, and its implication for achieving climate goals. We also offer some specific insights to inform the GCF's interventions.

1.   PATTERNS IN USE OF RBPS AND IMPLICATIONS FOR CLIMATE

The evidence base suggests that RBPs have been extensively used to incentivize individuals and households, as well as service providers, across multisectoral contexts. The evidence base on voucher-, P4P-, PES- and CCT-based approaches was relatively deep, whereas that grand challenges, impact bonds, AMCs and pull mechanisms was thinner. Although the effects of vouchers have been studied in multisectoral contexts (including health and education as well as housing and labour/employment), the evidence base on P4P and CCT mechanisms was drawn primarily from health-related applications; assessments of the effectiveness of PES interventions, in contrast, expectedly focused almost entirely on the agriculture and forestry sector (Figure 6). Despite these different sectoral applications, each of these interventions have been used primarily to incentivize individuals and households or service providers (Table A - 7). In addition, the effects of P4P-based approaches on service-provider-level outcomes (including the quantity as well as quality of supplied goods and services) had also been studied extensively (Table 3).[12] It is important to note that even that though there is thinner evidence on the efficacy of grand challenges, they are used extensively to incentivize technology development.[13] This points to a need to evaluate their efficacy, which we suspect is weakened by the delivery of a technology at the end of the grand challenge even if there is evidence that without the challenge it would not have been delivered. Conrad and others (2017) detail an approach to evaluate grand challenges that would inform these evaluations.

RBPs have most frequently targeted sector-specific outcomes. While the relative use of RBP interventions differed across sectors, within sectors there was a concentration of evidence around the extent to which RBP interventions drove sectoral outcomes (Table A - 6). This suggests that despite significant differences in underlying incentive structures, targeted agents and modalities through which incentive payments are delivered, RBP interventions can be deployed to achieve progress on outcomes in multisectoral settings.

RBPs may be uniquely suited to address both demand- and supply-side constraints and promote uptake of technologies and practices that deliver climate benefits. Multisectoral innovations that lower emissions (such as climate-smart agriculture and cleaner household-level energy technologies) deliver global public goods. These benefits are typically not internalized by end users, leading to low adoption (Foster & Rosenzweig, 2010). Even when technologies enhance end users' resilience to climate change and deliver private benefits (e.g. cool roofing solutions that lower ambient temperatures in informal housing), they often remain prohibitively expensive for the poor (Mendelsohn, 2012). Supply-side barriers (such as weak supply chains) exacerbate these challenges. RBPs targeted at individuals and households may help align incentives, enhance affordability and increase demand for climate-smart solutions, while those targeted at service providers may incentivize necessary investments in supply chains, management and marketing to help meet this demand.

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[12] This may be partly because P4P contracts often aim to incentivize organizational agents (such as health care facilities or clinics), whereas PES approaches typically target individual landowners and farmers. This may make the former more likely to induce organization-level changes.
[13] Since 2011, for instance, just USAID and its partners have funded and launched 10 grand challenges in a variety of sectors, including maternal health, education, and agriculture (USAID, 2020).

2. GOING FORWARD: INSIGHTS FROM THE EVIDENCE BASE FOR THE GCF

A comparison of the EGM on the effectiveness of RBPs (Table 3) with the IHM on the distribution of the GCF's RBP-based commitments (Table 5) yields five key insights to guide future GCF projects.

First, there is potential for growth in the use of RBP-based approaches within the GCF's overall funding portfolio. GCF funding for RBPs deployed as part of the projects we analysed was only 7 per cent of its total commitments between 2015 and 2020. Of the 15 projects analysed for this evidence review (covering nearly all of the results-based funding across the 15 projects), 8 committed funding as part of the GCF's REDD+ pilot programme, which rewards countries for verified emissions reductions stemming from reduced deforestation and forest degradation. While funding allocated via the REDD+ pilot programme is likely to grow as an increasing number of REDD+ projects mature from Phase 2 (implementation) into the largely untested Phase 3 (RBPs following verification), there are opportunities to allocate funds using other RBP modalities. For instance, the EGM revealed that the evidence base on the use of vouchers to induce uptake of social services (principally in the health sector) was deep. The bulk of this evidence was drawn from the North American context, in which systems to establish and honour voucher-based payments are relatively well developed compared to low- and middle-income countries. Nevertheless, GCF-supported projects have experimented with the use of vouchers to induce uptake of climate-smart agricultural technologies. Further GCF efforts to use vouchers to support widespread adoption and sustained use of technologies that deliver climate benefits in this way should initiate by understanding the relevant constraints and opportunities that exist in developing contexts.

Second, there is potential to expand the GCF's existing RBP-based commitments to target climate "co-benefits". For instance, the EGM revealed that assessments of the efficacy of PES mechanisms had focused on impacts on cross-sectoral and non-environmental socioeconomic outcomes (such as agricultural yields and household income/expenditure) almost three times as frequently as they had on only impacts on deforestation rates or emissions reductions. In contrast, the GCF had deployed PES mechanisms overwhelmingly to target verified emissions reductions as part of its REDD+ pilot programme, without an explicit focus on other resulting benefits. Targeting of co-benefits could help increase potential beneficiaries' capacity to adapt to climate change. It may also help enhance the long-term sustainability of the climate solutions that GCF-supported projects seek to promote.

Third, there is potential for the GCF to grow its support for projects that directly incentivize service providers. The EGMs that disaggregate the evidence based on the agent targeted by different types of interventions show that P4P-based approaches have been extensively used to enhance the quality of goods and services – and, to a lesser degree, the overall supply of goods and services – delivered by providers. P4P approaches had also been used to target outcomes at the level of service providers. In contrast, a focus on service providers was noticeably absent from the GCF's portfolio of RBP-based commitments that we analysed. Although P4P interventions have been deployed primarily in the health sector (Figure 6), complementarities exist in the ways these payment modalities could be adapted for sectors more directly related to climate-related mitigation or adaptation activities. Providers of agricultural extension services or of adaptive livelihood strategies that may not be adapted by households focused on short-term outcomes, for instance, could be incentivized through P4P interventions in ways that have been used for health care facilities. Insofar as such incentives promote the uptake of climate-smart technologies and climate-resilient practices, they can help advance progress in line with the GCF's overall goals and objectives in both mitigation and adaptation.

Fourth, GCF's results-based commitments must carefully account for the potential for unintended consequences. Results-based incentives can induce complex behavioural responses by targeted agents. In the climate domain, the implications of such behavioural responses can be significant. Incentives provided to end-users to switch to energy-efficient technologies, for instance, can lead to over-use, potentially reversing emissions gains (e.g. Usmani and others, 2017). In non-Annex 1 countries, where the local capacity to rigorously verify whether pre-specified outcomes were appropriately achieved may be relatively weak, such unintended effects may never come to light. This may partly explain why relatively few studies in this evidence review reported unintended impacts (Table 3). Yet, if not accounted for during the design phase, unintended effects may end up partially offsetting the environmental benefits achieved by enhanced deployment of results-based modalities to catalyse climate action.

Finally, as GCF considers various RBPs modalities, it should conduct careful prospective analysis to assess the implications of using different incentive structures. It may not be appropriate for mitigation-related outcomes to pin results on GHG reduction directly if service providers or end-users cannot accurately determine the influence of their activities on emissions. Instead, it may be useful to focus on intermediate outputs and processes proven to reduce GHG emissions and those in manageable control of service providers and end-users (e.g. adoption of LED lights, energy-efficient appliances). Incentive structures achieve sustainable impacts if they focus on addressing the core constraints limiting the development or adoption of activities that deliver climate benefits. Incentive structures that can create demand for emissions-reducing goods and services (or demand for attributes correlated with lower GHG emissions) are preferable to those that reward adoption of actions that would not be sustained once the RBP mechanism is removed. Further, incentive structures differ in the degree of competition they induce among participants, the number of participants they attract, and the type of market that the particular RBP modality leaves behind.

G. CONCLUSION

RBPs can help drive progress towards meeting ambitious global climate targets. This evidence review takes stock of the disparate evidence base on the effectiveness of results-based approaches across multiple sectors to synthesize insights for their enhanced application in the climate domain. We identified 428 studies on the effectiveness of RBP interventions through systematic searches and screening of the academic and grey literature. Based on sector-, intervention- and implementation-related characteristics extracted from these studies, we developed an EGM that highlighted the distribution of the relevant evidence on the impacts of various RBP interventions on beneficiary-, service-provider- and investor/system-level outcomes. The EGM revealed that vouchers, pay-for-performance models, PES and CCTs have been extensively studied, whereas the evidence base on the use of grand challenges, impact bonds, AMCs and pull mechanisms is thinner. It also highlighted regional patterns in the use of these interventions and the outcomes they target. Most of the evidence was drawn from assessments in North America, East Asia and Pacific, sub-Saharan Africa, and Latin America and the Caribbean; evidence from South Asia and especially from the Middle East and North Africa was relatively limited. Similar patterns existed in the sectoral distribution of included studies, with nearly half of the evidence drawn from applications in the health sector, followed by agriculture and forestry, and education; evidence on RBPs in the energy sector was scant.

Using the same intervention/outcome framework that guided the structure of the EGM, we developed an IHM that highlighted the distribution of the GCF's financial commitments to results-based approaches in 15 recent projects. A comparison of the broader evidence base on RBPs to

these funding patterns suggests that there is considerable potential for growth in the use of results-based approaches in the GCF's funding portfolio.

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APPENDICES

Appendix 1. INCLUSION/EXCLUSION CRITERIA ORGANIZED USING THE PICOS (POPULATION, INTERVENTION, COMPARATOR, OUTCOME AND STUDY DESIGN) MODEL

INCLUDED	ILLUSTRATIVE EXAMPLES OF WHAT WILL BE CAPTURED	EXCLUDED
1. Population		
Studies that focus on results-based payment (RBP) interventions in: • Non-Annex I countries • Low-income contexts/settings (defined in relative terms) in Annex I countries • Non-Annex I and Annex I countries (jointly) if analyses distinguish effects across the two samples	• Evaluation of an education voucher programme in Bangladesh • Evaluation of a housing voucher programme targeting low-income families in the United States • Global evaluation of payments for ecosystem services (PES) that separately reports results by World Bank income classification	Combination of both non-Annex I and Annex I countries if analyses do not distinguish the two samples (unless the intervention is in a low-income context/setting in an Annex I country)
2. Intervention		
Multisectoral focus looking at RBP interventions in, among other things, infrastructure, social protection, health, education, justice, aid, mitigation, poverty, adaptation and conservation	• Evaluation of PES in agricultural and forestry sector • Evaluation of use of voucher-based incentives in education sector	
RBP interventions delivered at any administrative level (national and subnational)	• Evaluation of a global grand challenge to incentivize innovation • Evaluation of development impact bond to incentivize improvements in educational outcomes in four Indian states	
RBP interventions delivered to any beneficiary type	• Evaluation of farmer-level delivery of PES • Evaluation of household-level education voucher programme	
RBP interventions implemented by any actor	• Evaluation of advance market commitment contract developed and administered by the World Bank • Evaluation of food voucher programme administered by government agency	
Studies looking at RBP intervention with different: • Modes of delivery • Doses • Durations • Intensities		

INCLUDED	ILLUSTRATIVE EXAMPLES OF WHAT WILL BE CAPTURED	EXCLUDED
• Co-interventions • Degrees of complexity • Sample sizes (including pilot-scale tests of recent innovations)		
3. Comparator		
Studies that identify a comparison/control group	• Experimental evaluation of education voucher programme with "control" and "treatment" households • Before-and-after design comparing postintervention outcomes among a sample of farmers that received PES with preintervention outcomes	• Descriptive/predictive analyses without a clear comparison/control group • Methods that do not use comparison/control groups (e.g. life cycle assessment)
4. Outcome		
Outcomes measured at any point following the RBP intervention	• Evaluations of RBP intervention reporting outcomes from follow-ups at the three-month, one-year or five-year marks	
Multi-actor focus with outcomes reported at the beneficiary, service-provider, investor and/or system-wide levels	• Reported beneficiary-level outcomes (e.g. children's learning outcomes) • Reported service-provider-level outcomes (e.g. revenues) • Reported investor-level and system-wide outcomes (e.g. aid effectiveness)	
5. Study design		
Quantitative studies (experimental, quasi-experimental and non-causal designs)	• Randomized controlled trials • Difference-in-differences design • Before-and-after design • Correlational analyses	
For conditional cash transfers (CCTs): *Only* systematic reviews will be included	• Systematic review of the experimental literature evaluating impacts of CCTs on vaccination rates in low- and middle-income countries	
Peer-reviewed published literature	• Articles and reviews published in peer-reviewed academic journals (e.g. *Environmental and Resource Economics, Health Policy*)	
Grey literature	• Reports, preprints, and unpublished working papers from selected repositories and	

Included	Illustrative examples of what will be captured	Excluded
	think tanks (e.g. AgResults projects/evaluations database)	
English-language literature		
Published in or after the year 2000		

Included	Illustrative examples of what will be captured	Excluded

Appendix 2. Scopus search terms

	Category	
1	**RBP terminology**	
(a)	Basic terms	"payment* by result*" OR "result*-based payment*" OR "result*-based financ*" OR "result*-based fund*" OR "result*-based aid" OR "pay*-for-result*" OR "pay*-for-performance" OR "pay*-for-success" OR "performance-based fund*" OR "performance-based financ*" OR "performance-based aid" OR "performance-based pay*" OR "performance-related pay*" OR "performance-based incentiv*" OR "cash on delivery" OR "performance-based incentive*" OR "output-based aid" OR "outcome-based financ*" OR "incentiv* pay*" OR "merit pay" OR "performance-oriented transfer*" OR "performance-based contracting" OR "performance-driven loan*" OR "policy-based loan*" OR "result*-based lending"
(b)	Intervention-specific terms	
	Grand Challenges	"grand challenge*" OR "proportional prize" OR "winner-take-all" OR "inducement prize*"
	Impact Bonds	"impact bond*" OR "social benefit bond*" OR "green bond*" OR "development bond*"
	Payments for Environmental Services	"payment* for ecosystem* service*" OR "payment* for environment* service*" OR "payment* for ecosystem* benefit*" OR "payment* for environment* benefit*" OR "carbon credit*" OR "carbon offset*"
	Advance Market Commitments	"advance* market commitment*"
	Pull Mechanisms	"pull mechanism*" OR "pull fund*" OR "pull financ*"
	Vouchers	(voucher* W/2 (health* OR medic* OR school* OR educat* OR food* OR housing))
2	**Impact measurement terminology**	impact* OR evaluat* OR effect* OR efficac* OR benefit* OR improv* OR progress OR growth OR increas* OR decreas* OR reduc* OR gain OR declin* OR success* OR statistic* OR affect* OR higher OR lower OR reach OR adopt* OR penetrat* OR outcome*
3	**Comparison group terminology**	"quasi experiment*" OR "quasi-experiment*" OR quasiexperiment* OR "random* control* trial*" OR "random* trial*" OR "RCT*" OR randomi* OR (matching W/2 (study OR procedure OR "using" OR use* OR observable*)) OR "propensity score" OR psm OR "regression discontinuity" OR "regression kink" OR "fuzzy regression" OR "sharp regression" OR "discontinuous design" OR "rdd" OR "difference* in difference*" OR "difference*-in-difference*" OR "diff in diff" OR "diff-in-diff" OR (random* W/1 (allocat* OR assign* OR select*)) OR "research synthesis" OR "fixed effect*" OR "synthetic control" OR "rapid evidence assessment*" OR "systematic literature review*" OR "systematic* review*" OR metaanaly* OR "meta analy*" OR "meta-analy*" OR "control* evaluation" OR "control* treatment" OR "instrumental variable*" OR "as an instrument" OR (heckit W/2 (model* OR estimat* OR procedure OR method)) OR (heckman* W/5 (sample OR selection OR model OR correction)) OR ((treatment OR intervention OR comparison OR control OR subsidy) W/0 group) OR ((counterfactual OR "counter factual" OR "counter-factual" OR random*) W/2 (study OR studies OR analysis OR experiment*)) OR ((counterfactual OR "counter factual" OR "counter-factual" OR random*)

	CATEGORY	
		W/2 (outcome*)) OR causal* OR "control group*" OR "comparison group*" OR ((control OR treatment) W/0 (communit* OR village* OR school* OR farm* OR household* OR student* OR mother* OR patient*)) OR (experiment* W/1 (study OR studies OR analysis OR design*)) OR ((treatment OR intervention) W/2 effect*) OR "intention-to-treat" OR "intention to treat" OR "econometric analysis" OR (impact* W/1 (evaluation OR study OR studies)) OR ("controlled before" W/2 after) OR "quasi experimental time series" OR "interrupted time series" OR "cross-sectional data"
4	**General restrictions**	
	Published in or after the year 2000	(PUBYEAR > 1999)
	Source type: Academic journal	(LIMIT-TO (SRCTYPE , "j"))
	Document type: Research article or review	(LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE, "re"))
	Language: English	(LIMIT-TO (LANGUAGE , "English"))

Appendix 3. DATA EXTRACTION FRAMEWORK

Table A - 1 outlines data that were extracted from the academic articles and grey literature publications identified by the search. Table A - 2 outlines the same for systematic reviews related to CCTs and includes modules to evaluate the quality of each review following the checklist adapted by Snilstveit and others (2016).

Table A - 1.   Data extraction framework for academic articles and grey literature publications

TOPIC	POTENTIAL RESPONSES	ADDITIONAL DETAILS
A. General information		
Coder ID		
Publication ID		
Publication type	☐ Academic ☐ Grey literature	
Publication title		
Publication author(s)		
Publication year		
DOI		For academic publications
Journal name		For academic publications
If article not relevant	☐ Not relevant	For tagging articles found to not meet inclusion/exclusion criteria during the data extraction process. No further coding conducted.
If article not accessible	☐ Not accessible	For articles found to not be accessible after library review. No further coding conducted.
If article a systematic review of CCTs	☐ CCT systematic review	Article coded using framework shown in Table A - 2 instead.
If article a systematic review of non-CCT RBP interventions	☐ Non-CCT systematic review	Articles included in the systematic review screened using inclusion/exclusion criteria and, if found to be relevant and not identified by original literature search, added to list of articles requiring data extraction. No further coding conducted of systematic review.
Regional focus	☐ EAP ☐ ECA ☐ LAC ☐ MNA ☐ NAR ☐ SAR ☐ SSA ☐ Multi-region/global	

TOPIC	POTENTIAL RESPONSES	ADDITIONAL DETAILS
	☐ Other, specify: ____	
Country (if single-country focus)		
Country grouping	☐ Small island developing State (SID) ☐ Least developed country (LDC) ☐ N/A	
Coder notes		
B. Intervention		
RBP type	☐ Grand challenges ☐ Impact bonds ☐ Payments for environmental services ☐ Advance market commitments ☐ Pull mechanisms ☐ Vouchers ☐ Conditional cash transfers ☐ Other, specify: ____	
Beneficiary type	☐ Individuals/households ☐ Organization/establishments/firms ☐ Communities ☐ Other, specify: ____ ☐ Unsure or N/A	The actor that the RBP intervention ultimately aims to benefit
Agent type	☐ Individuals/households ☐ Organization/establishments/firms ☐ Communities ☐ Other, specify: ____ ☐ Unsure or N/A	The actor that the RBP intervention incentivizes
Principal type	☐ NGO ☐ Local/national government ☐ Foreign government ☐ Multilateral organization ☐ Researcher/academic ☐ Private investor ☐ Other, specify: ____ ☐ Unsure or N/A	The actor that manages the RBP intervention and/or delivers the RBP incentive
C. Study design		
Empirical/quantitative method	☐ RCT ☐ Regression discontinuity ☐ Matching/PSM ☐ IV/2SLS ☐ Difference-in-differences ☐ (Controlled) before-and-after ☐ Heckman correction ☐ Interrupted time series	

Topic	Potential responses	Additional details
	☐ Cross-sectional regression analysis ☐ Other, specify: _____	
Sample size		
Unit of analysis	☐ Individual/households ☐ Farms/plots ☐ Organization/establishments/firms ☐ Communities ☐ Higher administrative divisions ☐ Other, specify: _____	
Study start year		
Study end year		
D. Outcomes		
Study primary sectoral focus	☐ Health ☐ Education ☐ Agriculture and forestry ☐ Energy ☐ Other, specify: _____	
Study secondary sectoral focus	☐ Health ☐ Education ☐ Agriculture and forestry ☐ Energy ☐ Other, specify: _____ ☐ N/A	If applicable
Outcome 1: Level	☐ Beneficiary ☐ Service provider ☐ Investor/system-wide ☐ Unintended consequence ☐ Other, specify: _____ ☐ Unsure	
Outcome 1: Theme	Select relevant outcome theme from I/O framework.	
Outcome 1: Indicator	Specify: _____	
Outcome 1: Result	☐ Positive/statistically significant ☐ Positive/not statistically significant ☐ Negative/not statistically significant ☐ Negative/statistically significant ☐ Unsure or N/A	
Outcome 1: Moderators	☐ Unit-specific characteristic (Sex, wealth, education, firm size, etc.) ☐ Context-specific characteristics (rural/urban, weather/landscape, institutional factors, etc.) ☐ Unsure	

TOPIC	POTENTIAL RESPONSES	ADDITIONAL DETAILS
	☐ N/A	
⋮	⋮	⋮
Outcome 20: Level	☐ Beneficiary ☐ Service provider ☐ Investor/system-wide ☐ Unintended consequence ☐ Other, specify: ____ ☐ Unsure	
Outcome 20: Theme	Select relevant outcome theme from I/O framework.	
Outcome 20: Indicator	Specify: ____	
Outcome 20: Result	☐ Positive/statistically significant ☐ Positive/not statistically significant ☐ Negative/not statistically significant ☐ Negative/statistically significant ☐ Unsure or N/A	
Outcome 20: Moderators	☐ Unit-specific characteristic (Sex, wealth, education, firm size, etc.) ☐ Context-specific characteristics (rural/urban, weather/landscape, institutional factors, etc.) ☐ Unsure ☐ N/A	

Table A - 2.   Draft data extraction framework for systematic reviews related to CCTs

TOPIC	POTENTIAL RESPONSES	ADDITIONAL DETAILS
A. General information		
Coder ID		
Publication ID		
Publication type	☐ Academic article ☐ Grey literature	
Publication title		
Publication author(s)		
Publication year		
DOI		For academic articles:
Journal name		For academic articles:
If article not relevant	☐ Not relevant	For tagging articles found to not meet inclusion/exclusion criteria during the data extraction process. No further coding conducted.

TOPIC	POTENTIAL RESPONSES	ADDITIONAL DETAILS
Regional focus	☐ EAP ☐ ECA ☐ LAC ☐ MNA ☐ NAR ☐ SAR ☐ SSA ☐ Multi-region/global ☐ Other, specify: ____	
Country (if single-country focus)		
Country grouping	☐ Small island developing State (SID) ☐ Least developed country (LDC) ☐ N/A	
Coder notes		
B. Intervention		
Beneficiary type	☐ Individuals/households ☐ Organization/establishments/firms ☐ Communities ☐ Other, specify: ____ ☐ Unsure or N/A	The actor that the RBP intervention ultimately aims to benefit
Agent type	☐ Individuals/households ☐ Organization/establishments/firms ☐ Communities ☐ Other, specify: ____ ☐ Unsure or N/A	The actor that the RBP intervention incentivizes
Principal type	☐ NGO ☐ Local/national government ☐ Foreign government ☐ Multilateral organization ☐ Researcher/academic ☐ Private investor ☐ Other, specify: ____ ☐ Unsure or N/A	The actor that manages the RBP intervention/delivers the RBP incentive
C. Study design		
Number of included studies		
Methodological focus	☐ Experimental only ☐ Experimental and/or quasi-experimental only ☐ Any empirical and/or quantitative study	

Topic	Potential responses	Additional details
	☐ Other, specify: _____	
Unit of analysis focus	☐ Individual/households ☐ Farms/plots ☐ Organization/establishments/firms ☐ Communities ☐ Higher administrative divisions ☐ Other, specify: _____	
Start year of period covered by search		
End year of period covered by search		
D. Outcomes		
Sector	☐ Health ☐ Education ☐ Agriculture and forestry ☐ Energy ☐ Other, specify: _____	
Outcome 1: Level	☐ Beneficiary ☐ Service provider ☐ Investor/system-wide ☐ Unintended consequence ☐ Other, specify: _____	
Outcome 1: Theme	Select relevant outcome theme from I/O framework.	
Outcome 1: Indicator	Specify: _____	
Outcome 1: Result	☐ Positive/high confidence ☐ Positive/low confidence ☐ Negative/low confidence ☐ Negative/high confidence ☐ No effect, unsure or N/A	
Outcome 1: Moderators	☐ Unit-specific characteristic (Sex, wealth, education, firm size, etc.) ☐ Context-specific characteristics (rural/urban, weather/landscape, institutional factors, etc.) ☐ Unsure ☐ N/A	
⋮	⋮	⋮
Outcome 20: Level	☐ Beneficiary ☐ Service provider ☐ Investor/system-wide ☐ Unintended consequence ☐ Other, specify: _____	

TOPIC	POTENTIAL RESPONSES	ADDITIONAL DETAILS
Outcome 20: Theme	Select relevant outcome theme from I/O framework.	
Outcome 20: Indicator	Specify: _____	
Outcome 20: Result	☐ Positive/high confidence ☐ Positive/low confidence ☐ Negative/low confidence ☐ Negative/high confidence ☐ No effect, unsure or N/A	
Outcome 20: Moderators	☐ Unit-specific characteristic (Sex, wealth, education, firm size, etc.) ☐ Context-specific characteristics (rural/urban, weather/landscape, institutional factors, etc.) ☐ Unsure ☐ N/A	
E. Methods used to identify, include and critically appraise studies		
Are the criteria used for deciding which studies to include in the review reported?	☐ Yes ☐ Partially ☐ No	Did the authors specify: ☐ Types of studies ☐ Participants/settings/population ☐ Intervention(s) ☐ Outcome(s) YES: All NO: None PARTIALLY: Any other
Was the search for evidence reasonably comprehensive?	☐ Yes ☐ Partially ☐ No ☐ Can't tell	Were the following done: ☐ Language bias avoided (no restriction of inclusion based on language) ☐ No restriction of inclusion based on publication status ☐ Relevant databases searched (Minimum criteria: All reviews should search at least one source of grey literature such as Google; for health: Medline/PubMed + Cochrane Library; for social sciences IDEAS + at least one database of general social science literature and one subject-specific database) ☐ Reference lists in included articles checked ☐ Authors/experts contacted YES: All PARTIALLY: Relevant databases and reference lists are both reported NO: Any other

Topic	Potential responses	Additional details
Was bias in the selection of articles avoided?	☐ Yes ☐ Partially ☐ No	Did the authors specify: ☐ Independent screening of full text by at least 2 reviewers ☐ List of included studies provided ☐ List or number of excluded studies provided YES: All PARTIALLY: Independent screening and list of included studies provided are both reported NO: All other
Did the authors use appropriate criteria to assess the quality and risk of bias in analysing the studies that are included?	☐ Yes ☐ Partially ☐ No	Did the authors specify: ☐ The criteria used for assessing the quality / risk of bias were reported ☐ A table or summary of the assessment of each included study for each criterion was reported ☐ "Sensible" criteria (such as a recognized tool or checklist) were used that focus on the quality/risk of bias (including selection bias, contamination, attrition bias, detection bias and reporting bias)
F. Methods used to analyse the findings		
Were the characteristics and results of the included studies reliably reported?	☐ Yes ☐ No ☐ Partially ☐ N/A	Was there: ☐ Independent data extraction by at least 2 reviewers ☐ A table or summary of the characteristics of the participants, interventions and outcomes for the included studies ☐ A table or summary of the results of all the included studies YES: All PARTIALLY: First and third only NO: All other N/A: If no studies/no data
Are the methods used by the review authors to analyse the findings of the included studies clear, including methods for calculating effect sizes if applicable?	☐ Yes ☐ No ☐ Partially ☐ N/A	YES: Methods used clearly reported PARTIALLY: Some reporting on methods but lack of clarity NO: Nothing reported on methods N/A: If no studies/no data
Did the review describe the extent of heterogeneity?	☐ Yes ☐ No ☐ Partially ☐ N/A	☐ Did the review ensure that included studies were similar enough that it made sense to combine them, sensibly divide the included studies into homogeneous groups, or sensibly conclude that it did not

Topic	Potential responses	Additional details
		make sense to combine or group the included studies?
		☐ Did the review discuss the extent to which there were important differences in the results of the included studies?
		☐ If a meta-analysis was done, was the I^2, chi square test for heterogeneity or other appropriate statistic reported? If no statistical test was reported, is a qualitative justification made for the use of random effects?
		YES: First, second and (if relevant) third
		PARTIALLY: Only first
		NO: Any other
Were the findings of the relevant studies combined (or not combined) appropriately relative to the primary question the review addresses and the available data?	☐ Yes ☐ No ☐ Partially ☐ N/A	How was the data analysis done? ☐ Descriptive only ☐ Vote counting based on direction of effect ☐ Vote counting based on statistical significance ☐ Description of range of effect sizes ☐ Meta-analysis ☐ Meta-regression ☐ Other, specify: _____ ☐ N/A (e.g. no studies or no data) How were the studies weighted in the analysis? ☐ Equal weights (this is what is done when vote counting is used) ☐ By quality or study design (this is rarely done) ☐ Inverse variance (this is what is typically done in a meta-analysis) ☐ Number of participants (sample size) ☐ Other, specify: _____ ☐ Not clear ☐ N/A (e.g. no studies or no data) Did the review address unit of analysis errors? ☐ Yes – took clustering into account in the analysis (e.g. used intra-cluster correlation coefficient) ☐ No, but acknowledged problem of unit of analysis errors ☐ No mention of issue ☐ Not applicable – no clustered trials or studies included YES: Appropriate table/graph/meta-analysis, appropriate weights, and unit of analysis errors addressed (if relevant)

TOPIC	POTENTIAL RESPONSES	ADDITIONAL DETAILS
		PARTIALLY: Appropriate table/graph/meta-analysis, appropriate weights, but unit of analysis errors not addressed (if relevant)
		NO: If narrative OR vote counting (where quantitative analyses would have been possible) OR inappropriate reporting of table, graph or meta-analyses
		N/A: If no studies/no data
Does the review report evidence appropriately?	☐ Yes ☐ No ☐ Partially ☐ N/A	☐ The review makes clear which evidence is subject to low risk of bias in assessing causality (attribution of outcomes to intervention), and which is likely to be biased, and does so appropriately
		☐ Where studies of differing risk of bias are included, results are reported and analysed separately by risk of bias status
		YES: Both criteria should be fulfilled (where applicable)
		NO: Criteria not fulfilled
		PARTIALLY: Only one criterion fulfilled, or when there is limited reporting of quality appraisal (the latter applies only when inclusion criteria for study design are appropriate)
		N/A: If no studies/no data
Did the review examine the extent to which specific factors might explain differences in the results of the included studies?	☐ Yes ☐ No ☐ Partially ☐ N/A	☐ Were factors that the review authors considered as likely explanatory factors clearly described?
		☐ Was a "sensible" method used to explore the extent to which key factors explained heterogeneity?
		☐ Descriptive/textual
		☐ Graphical
		☐ Meta-analysis by sub-groups
		☐ Meta-regression
		☐ Other
		YES: Explanatory factors clearly described and appropriate methods used to explore heterogeneity
		PARTIALLY: Explanatory factors described but for meta-analyses, sub-group analysis or meta-regression not reported (when they should have been)
		NO: No description or analysis of likely explanatory factors
		N/A: Too few studies, no important differences in the results of the included studies, or the included studies were so dissimilar that it would not make sense to explore heterogeneity of the result

Appendix 4. ADDITIONAL EVIDENCE GAP MAPS

Table A - 3.   EGM: Annex 1 and Non-Annex I countries

INTERVENTIONS		OUTCOMES/OUTPUTS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
ANNEX I	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services																			
		Advance Market Commitment																			
		Pay-for-performance			11	7	56	3	1	2	10	3					3				
	Hybrid	Pull Mechanism			2																
		Voucher		3	36	21	234	67			3	1			2	1	1			5	1
	Demand	Conditional Cash Transfer (SRs only)				1	3	1												1	
	Other					1	1				2				1						
NON-ANNEX I	Supply	Grand Challenge																			
		Impact Bond												2							
		Payment for Environmental Services		16		22	100	69		3					6		7	4	1	51	4
		Advance Market Commitment																			
		Pay-for-performance	1	34	3	37	182	3	18	69	133	13	11		3		5	1		8	4
	Hybrid	Pull Mechanism	4			2	5	2									1	2		3	2
		Voucher	6	3	6	53	91	3		1	19				1		1				
	Demand	Conditional Cash Transfer (SRs only)				1	16			2	12				1						
	Other			1		3	7	2			11				2					2	

Notes: Each cell indicates the relevant count of intervention/outcome records extracted from studies/systematic reviews included in the evidence review. A study may report more than one record. Maximum value indicated in white font colour. Multi-country or multi-region/global studies not included. PES = Payment for environmental services; AMC = Advance market commitment; P4P = Pay-for-performance; CCT = Conditional cash transfer; SR = systematic review (underlying studies not reviewed). Column titles indicated below:

Beneficiary level

A   Awareness of goods and services
B   Acceptability of goods and services
C   Access to goods and services
D   Consumption of goods and services
E   Final outcomes: Sector-specific
F   Final outcomes: Socioeconomic

Service provider level

G   Management/investment in capital, marketing, and operations
H   Innovation/supply of goods and services
I   Quality of goods and services
J   Other output changes
K   Enterprise-level outcomes

Investor/system-wide level

L   Investment risk
M   Financial or economic return on investment
N   Total aid amount
O   Aid effectiveness
P   Market creation or expansion
Q   Policy change or reform
R   Other investor or systemic outcomes

S   **Unintended consequences**

Table A - 4. EGM: Regional disaggregation

Region	Type	Interventions / Outcomes/Outputs	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
EAP	Supply	Grand Challenge																			
		Impact Bond												2							
		Payment for Environmental Services		3		3	33	42							4		3	3		28	2
		Advance Market Commitment																			
		Pay-for-performance		12	1	14	73	1		11	27	3	5		2			1		7	1
	Hybrid	Pull Mechanism																			
		Voucher			1	6	3			1											
	Demand	Conditional Cash Transfer (SRs only)																			
	Other			1		3		2													
ECA	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services				2															
		Advance Market Commitment																			
		Pay-for-performance					18			1		1									
	Hybrid	Pull Mechanism																			
		Voucher				4	5														
	Demand	Conditional Cash Transfer (SRs only)																			
	Other																				
LAC	Supply	Grand Challenge																			
		Impact Bond																			

		OUTCOMES/OUTPUTS \ INTERVENTIONS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
		Payment for Environmental Services		10		1	43	11			2				2		3	1	1	25	2
		Advance Market Commitment																			
		Pay-for-performance				1	13			7	11	3	1								3
	Hybrid	Pull Mechanism	3				4													3	2
		Voucher	2	1		21	32	3			15				1						
	Demand	Conditional Cash Transfer (SRs only)					1														
	Other						6				3				1					2	
MNA	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services																			
		Advance Market Commitment																			
		Pay-for-performance		1	2		5		2	1	17								1		
	Hybrid	Pull Mechanism																			
		Voucher					3														
	Demand	Conditional Cash Transfer (SRs only)																			
	Other																				
NAR	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services																			
		Advance Market Commitment																			
		Pay-for-performance			11	7	42	3	1	1	10	2					3				

		OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
INTERVENTIONS			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
	Hybrid	Pull Mechanism			2																
		Voucher		3	36	16	228	67		3		1			2	1	1			5	1
	Demand	Conditional Cash Transfer (SRs only)				1	3	1												1	
	Other					1	1				2				1						
SAR	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services																			
		Advance Market Commitment																			
		Pay-for-performance	1	12		2	18	2		3	6	1	4				4				
	Hybrid	Pull Mechanism																			
		Voucher	1	1		6	26														
	Demand	Conditional Cash Transfer (SRs only)					7														
	Other										4										
SSA	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services		3		16	24	16			1				1		1		1		
		Advance Market Commitment																			
		Pay-for-performance		9		20	69		16	47	72	6	1		1		1				
	Hybrid	Pull Mechanism	1			2	1	2										1	2		
		Voucher	3	1	5	21	28				4						1				
	Demand	Conditional Cash Transfer (SRs only)				3	8			2	12				1						

INTERVENTIONS		OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
		Other					1				4				1						
MULTI-REGION / GLOBAL	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services					1	2									2				1
		Advance Market Commitment																			
		Pay-for-performance					3			1	2				1						
	Hybrid	Pull Mechanism																			
		Voucher					3														
	Demand	Conditional Cash Transfer (SRs only)				33	67	9			9	1					7			4	2
		Other		2			1										1			1	

Notes: Each cell indicates the relevant count of intervention/outcome records extracted from studies/systematic reviews included in the evidence review. A study may report more than one record. Maximum value indicated in white font colour. Multi-country or multi-region/global studies not included. PES = Payment for environmental services; AMC = Advance market commitment; P4P = Pay-for-performance; CCT = Conditional cash transfer; SR = systematic review (underlying studies not reviewed). Column titles indicated below:

Beneficiary level
A   Awareness of goods and services
B   Acceptability of goods and services
C   Access to goods and services
D   Consumption of goods and services
E   Final outcomes: Sector-specific
F   Final outcomes: Socioeconomic

Service provider level
G   Management/investment in capital, marketing, and operations
H   Innovation/supply of goods and services
I   Quality of goods and services
J   Other output changes
K   Enterprise-level outcomes

Investor/system-wide level
L   Investment risk
M   Financial or economic return on investment
N   Total aid amount
O   Aid effectiveness
P   Market creation or expansion
Q   Policy change or reform
R   Other investor or systemic outcomes

S   **Unintended consequences**

Table A - 5.   EGM: Least developed countries (LDCs) only

INTERVENTIONS		OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
LDC	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services		5		17	25	19		1				1			1			3	
		Advance Market Commitment																			
		Pay-for-performance		14		25	78	1	16	50	80	7	1	1			5				
	Hybrid	Pull Mechanism																			
		Voucher	3		5	10	29			1							1				
	Demand	Conditional Cash Transfer (SRs only)					14			2	12			1							
		Other	1			3	1				4			1							

Notes: Each cell indicates the relevant count of intervention/outcome records extracted from studies/systematic reviews included in the evidence review. A study may report more than one record. Maximum value indicated in white font colour. Multi-country or multi-region/global studies not included. PES = Payment for environmental services; AMC = Advance market commitment; P4P = Pay-for-performance; CCT = Conditional cash transfer; SR = systematic review (underlying studies not reviewed). Column titles indicated below:

Beneficiary level
A   Awareness of goods and services
B   Acceptability of goods and services
C   Access to goods and services
D   Consumption of goods and services
E   Final outcomes: Sector-specific
F   Final outcomes: Socioeconomic

Service provider level
G   Management/investment in capital, marketing, and operations
H   Innovation/supply of goods and services
I   Quality of goods and services
J   Other output changes
K   Enterprise-level outcomes

Investor/system-wide level
L   Investment risk
M   Financial or economic return on investment
N   Total aid amount
O   Aid effectiveness
P   Market creation or expansion
Q   Policy change or reform
R   Other investor or systemic outcomes

S   **Unintended consequences**

Table A - 6. *EGM: Sector-specific disaggregation (for top three sectors)*

INTERVENTIONS		OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
HEALTH	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services					3														
		Advance Market Commitment																			
		Pay-for-performance	1	33	3	42	214	1	18	68	137	10	7		2		8			7	4
	Hybrid	Pull Mechanism			2																
		Voucher	6	5	31	64	213	38		1	5	1		1			1			2	
	Demand	Conditional Cash Transfer (SRs only)				32	58	5		11	13				1					1	1
	Other	Other				1	4				13				2						
AGRICULTURE AND FORESTRY	Supply	Grand Challenge																			
		Impact Bond												2							
		Payment for Environmental Services		16		22	101	67			3				7		9	4	1	54	5
		Advance Market Commitment																			
		Pay-for-performance					4														
	Hybrid	Pull Mechanism	4			2	5	2									1	2		3	2
		Voucher																			
	Demand	Conditional Cash Transfer (SRs only)																			
	Other	Other					4								1					2	
EDUCATION	Supply	Grand Challenge																			
		Impact Bond																			

INTERVENTIONS	OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
Hybrid	Payment for Environmental Services		3				3													
	Advance Market Commitment																			
	Pay-for-performance		1	11	1	21		1	3	8	6									
	Pull Mechanism																			
	Voucher	3		11	9	107	19			17				3	1	1			1	1
Demand	Conditional Cash Transfer (SRs only)				3	11										7				
Other																				

Notes: Each cell indicates the relevant count of intervention/outcome records extracted from studies/systematic reviews included in the evidence review. A study may report more than one record. Maximum value indicated in white font colour. Multi-country or multi-region/global studies not included. PES = Payment for environmental services; AMC = Advance market commitment; P4P = Pay-for-performance; CCT = Conditional cash transfer; SR = systematic review (underlying studies not reviewed). Column titles indicated below:

Beneficiary level
A   Awareness of goods and services
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E   Final outcomes: Sector-specific
F   Final outcomes: Socioeconomic

Service provider level
G   Management/investment in capital, marketing, and operations
H   Innovation/supply of goods and services
I   Quality of goods and services
J   Other output changes
K   Enterprise-level outcomes

Investor/system-wide level
L   Investment risk
M   Financial or economic return on investment
N   Total aid amount
O   Aid effectiveness
P   Market creation or expansion
Q   Policy change or reform
R   Other investor or systemic outcomes

S   **Unintended consequences**

Table A - 7.   EGM: RBP Agent

INTERVENTIONS		OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
INDIVIDUAL/HOUSEHOLD	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services		16		21	101	71		3					7		9	4	1	50	3
		Advance Market Commitment																			
		Pay-for-performance	1	19		15	150	5	8	10	67	13	10		3			1		7	1
	Hybrid	Pull Mechanism	3				4													3	2
		Voucher	6	6	42	74	326	70		1	18	1			3	1	2			5	1
	Demand	Conditional Cash Transfer (SRs only)				35	78	8		10	13				1		7			2	2
	Other			3		4	9	2			7				2					2	
ORGANIZATION/ESTABLISHMENT/FIRM	Supply	Grand Challenge																			
		Impact Bond												2							
		Payment for Environmental Services		1															1		
		Advance Market Commitment																			
		Pay-for-performance		15	14	36	135	3	17	57	109	7	6		3		8	1	1		
	Hybrid	Pull Mechanism	1		2	2	1	2									1	2			
		Voucher				3	11				17					1	1				
	Demand	Conditional Cash Transfer (SRs only)					12								1						
	Other										10				1						
COMMUNITY	Supply	Grand Challenge																			
		Impact Bond																			

INTERVENTIONS	OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
Hybrid	Payment for Environmental Services				8	1	2							3		1	3	1	3	
	Advance Market Commitment																			
	Pay-for-performance					2				2						1				
	Pull Mechanism																			
	Voucher						1													
Demand	Conditional Cash Transfer (SRs only)																			
Other																				

Notes: Each cell indicates the relevant count of intervention/outcome records extracted from studies/systematic reviews included in the evidence review. A study may report more than one record. Maximum value indicated in white font colour. Multi-country or multi-region/global studies not included. PES = Payment for environmental services; AMC = Advance market commitment; P4P = Pay-for-performance; CCT = Conditional cash transfer; SR = systematic review (underlying studies not reviewed). Column titles indicated below:

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Service provider level
G   Management/investment in capital, marketing, and operations
H   Innovation/supply of goods and services
I   Quality of goods and services
J   Other output changes
K   Enterprise-level outcomes

Investor/system-wide level
L   Investment risk
M   Financial or economic return on investment
N   Total aid amount
O   Aid effectiveness
P   Market creation or expansion
Q   Policy change or reform
R   Other investor or systemic outcomes

S   **Unintended consequences**

Table A - 8.   ***EGM: RBP beneficiary***

INTERVENTIONS		OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
INDIVIDUAL/HOUSEHOLD	Supply	Grand Challenge																			
		Impact Bond																			
		Payment for Environmental Services		9		22	99	70		3					6		9	4		44	3
		Advance Market Commitment																			
		Pay-for-performance	1	34	14	44	241	6	19	71	145	16	11		4		8	1		7	4
	Hybrid	Pull Mechanism	1		2	2	1	2									1	2			
		Voucher	6	6	42	74	328	70		1	22	1			3	1	2			5	1
	Demand	Conditional Cash Transfer (SRs only)				37	86	10		11	13				1		7			5	2
	Other			3		4	9	2			13				3		1			2	
ORGANIZATION/ESTABLISHMENT/FIRM	Supply	Grand Challenge																			
		Impact Bond												2							
		Payment for Environmental Services					1										2			2	
		Advance Market Commitment																			
		Pay-for-performance						2	1	7	1	4		1			3	1	1		
	Hybrid	Pull Mechanism	1			2	1	2									1	2			
		Voucher																			
	Demand	Conditional Cash Transfer (SRs only)																			
	Other																1				
COMMUNITY	Supply	Grand Challenge																			
		Impact Bond																			

INTERVENTIONS		OUTCOMES/OUTPUTS	BENEFICIARIES						SERVICE PROVIDERS					INVESTOR/SYSTEM-WIDE							S
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
		Payment for Environmental Services		10		8	46	9							5		5	3		16	2
		Advance Market Commitment																			
		Pay-for-performance					15			5	6				1		1				
	Hybrid	Pull Mechanism	3				4													3	2
		Voucher			1		31	14													
	Demand	Conditional Cash Transfer (SRs only)																			
	Other			2			1								1		1			2	

Notes: Each cell indicates the relevant count of intervention/outcome records extracted from studies/systematic reviews included in the evidence review. A study may report more than one record. Maximum value indicated in white font colour. Multi-country or multi-region/global studies not included. PES = Payment for environmental services; AMC = Advance market commitment; P4P = Pay-for-performance; CCT = Conditional cash transfer; SR = systematic review (underlying studies not reviewed). Column titles indicated below:

Beneficiary level
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Service provider level
G   Management/investment in capital, marketing, and operations
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Investor/system-wide level
L   Investment risk
M   Financial or economic return on investment
N   Total aid amount
O   Aid effectiveness
P   Market creation or expansion
Q   Policy change or reform
R   Other investor or systemic outcomes

S   **Unintended consequences**

Appendix 5. EXTRACTING PROJECT-LEVEL DATA FOR INTERVENTION HEAT MAP

In this appendix, we describe our approach for extracting project-level intervention and financial data from the funding documentation for GCF projects that use RBP modalities. We also highlight key assumptions made during this process to identify (a) the share of the total project budget approved to be disbursed using results-based modalities and (b) the specific outcomes targeted by underlying RBP interventions when these details are unclear.

1) **FP019: Priming Financial and Land-Use Planning Instruments to Reduce Emissions from Deforestation (Ecuador)**

    – Project documentation available at *https://www.greenclimate.fund/project/fp019*

    – Results-based funding allocation: Project sub-components 2.1 ("Incentives and capacity-building for sustainable production through support for production kits") and 3.1 ("Incentive payments through Ministerio del Ambiente y Agua's [MAE] Socio Bosque Programme [SBP] project portfolio to predetermined areas and beneficiaries") provide results-based incentive payments to targeted beneficiaries

        + Objective of sub-component 2.1: "Provide an economic incentive to support livestock producers during the transition to more sustainable production, in order to offset the reduction of income expected during the transition from a conventional to sustainable process, thus allowing the new production system to grow and consolidate while improving farmers' living conditions. This incentive takes the form of a direct payment to the producer to compensate for the loss of income during the transition period, until the production system becomes economically viable and sustainable."

        + Objective of sub-component 3.1: "To support the expansion of SBP outside of its former areas of intervention, specifically in areas that are under threat of deforestation."[14]

    – RBP-allocated amount: USD 17,025,518

        + Sub-component 2.1: USD 9,257,518

        + Sub-component 3.1: USD 7,768,000

    – RBP type: Payments for ecosystem services

    – Outcomes: Based on the description of the relevant subcomponent objectives, we assumed the total RBP-allocated amount is equally distributed to target: (a) beneficiary-level socioeconomic outcomes, (b) service-provider-level market creation/expansion, and (c) investor-level/system-wide other outcomes (such as mitigation).

2) **FP062: Poverty, Reforestation, Energy and Climate Change (PROEZA) (Paraguay)**

    – Project documentation available at *https://www.greenclimate.fund/project/fp062*

    – Results-based funding allocation: Activity 1.7 ("Make environmental conditional cash transfer [E-CCT] payments to beneficiaries") provides results-based incentive payments to targeted beneficiaries

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[14] The funding documentation describes SBP as follows: "SBP provides financial incentives to individual and community landowners who voluntarily commit to conserve native forests for a 20-year period. Since 2008, SBP has signed agreements covering an area of 1.4 million ha of tropical forests. It is expected to add approximately 200,000 ha of forest per year until 2020. Additionally, SBP includes incentives for restoration and sustainable forest management. SBP invested about USD 6.2 million in 2015 in financial incentives to individual and community landowners; however, its geographical scope is still limited and needs to be scaled-up and better coordinated with ATPA actions."

+ Relevant project objective: "The project will improve the environmental and social resilience of these families, offering them technical support and economic incentives to establish climate-smart agroforestry production systems and/or multifunctional 'Close-to-Nature' planted forests (CTNPF) on their land (average area of 0.8 ha per family), totalling approximately 13,940 ha. The project will offer 6 proven agroforestry climate-smart production systems that combine income generation with environmental protection…"

– RBP-allocated amount for Activity 1.7: USD 2,395,163

– Outcomes: Based on the description of the project objective, we assumed the total RBP-allocated amount is equally distributed to target: (a) beneficiary-level socioeconomic outcomes, (b) beneficiary-level sector-specific outcomes (such as resilience), and (c) investor-level/system-wide other outcomes (such as mitigation).

3) **FP067: Building climate resilience of vulnerable and food insecure communities through capacity strengthening and livelihood diversification in mountainous regions of Tajikistan (Tajikistan)**

– Project documentation available at *https://www.greenclimate.fund/project/fp067*

– Results-based funding allocation: Project Component 2 ("Resilience building at household and community level through diversification of livelihoods and market access") aims to use CCT-based approaches to incentivize investments in local infrastructure upgrades (namely, "small scale agricultural and rural infrastructure assets that benefit their communities and halt land degradation"). In addition, the documentation notes specifically that "all the participating communities of the project have already been identified. Each beneficiary will receive a total transfer of USD 31 over the 4 years" and indicates that there will be a total of 50,000 direct beneficiaries.

– RBP-allocated amount: USD 1,550,000 (that is, USD 31 per direct beneficiary).

– Outcomes: Based on the project's focus on incentivizing infrastructure investments that increase community-level resilience, we assumed the total RBP-allocated amount is equally distributed to target: (a) beneficiary-level socioeconomic outcomes and (b) beneficiary-level sector-specific outcomes.

4) **FP117: Implementation of the Lao PDR Emission Reductions Programme through improved governance and sustainable forest landscape management (Lao PDR)**

– Project documentation available at *https://www.greenclimate.fund/project/fp117*

– Results-based funding allocation: Table 4 in the funding documentation indicates that a total of EUR 2,000,000 of performance-based payments will be delivered through the project to incentivize adoption of "'white list' good agricultural practices (GAPs) such as intercropping, mulching, no-tillage". In addition, the documentation notes that the term "performance-based payments is somewhat artificial. Upfront payments will be issued on an annual basis. This means that, if continued funding is required, the beneficiary will be required to submit a new funding request. This provides an opportunity for the NPMU to assess beneficiary performance to date and, if needed, to stipulate corrective actions or to withhold subsequent payments. Thus, even for upfront payments there is a performance-based element."

– RBP-allocated amount: EUR 3,481,250 (USD 4,073,062.5).

+ Assumption: Based on the description of the results-based funding allocation, in addition to EUR 2,000,000 indicated as "performance-based payments", we assumed that 50 per cent of the total project budget indicated as "upfront payments" in Table 4

of the funding documentation will also be delivered using results-based modalities. We assumed EUR 1 = USD 1.17.

– Outcomes: Based on the project's focus on incentivizing infrastructure investments that increase sustainability, productivity and resilience of land-use practices, we assumed the total RBP-allocated amount is equally distributed to target: (a) beneficiary-level socioeconomic outcomes and (b) beneficiary-level sector-specific outcomes.

5) **FP125: Strengthening the resilience of smallholder agriculture to climate change-induced water insecurity in the Central Highlands and South-Central Coast regions of Vietnam (Vietnam)**

– Project documentation available at *https://www.greenclimate.fund/project/fp125*

– Results-based funding allocation: Project sub-activities 1.4.3 and 2.1.4 incentivize up to 8,621 farmers to make investments in climate-resilient agricultural practices, inputs and infrastructure through the provision of redeemable vouchers that partly subsidize associated costs. These vouchers are provided to targeted beneficiaries conditional on successful completion of courses within the project's Farmer Field Schools programme (Activity 2.1).

– RBP-allocated amount: As sub-activity-specific budget data are unavailable, we calculate the amount to be disbursed through the provision of a combination of conditional cash transfers and vouchers by assuming that each of the project's sub-activities is assigned an equal share of the relevant activity-level budget amount:

+ Activity 1.4 (USD 4,468,867) consists of four sub-activities, which implies that sub-activity 1.4.3 is allocated USD 1,117,216.75

+ Activity 2.1 (USD 12,039,312) consists of five sub-activities, which implies that sub-activity 2.1.4 is allocated USD 2,407,862.40

+ Therefore, total RBP-allocated amount is USD 3,525,079.15

– Outcomes: Based on the project's focus on incentivizing infrastructure investments that increase resilience, we assumed the total RBP-allocated amount targets beneficiary-level sector-specific outcomes.

6) **FP146: Bio-CLIMA: Integrated climate action to reduce deforestation and strengthen resilience in BOSAWÁS and Rio San Juan Biospheres (Nicaragua)**

– Project documentation available at *https://www.greenclimate.fund/project/fp146*

– Results-based funding allocation: Project funding from the GCF is allocated using senior loans and grants as funding instruments. The funding documentation notes that "[t]he GCF grant…would be invested mainly in incentives for small-holders and indigenous communities at the agricultural frontier to transform their agricultural practices and restore landscapes…" Specifically, the role of project output 1.2.2 is to "[p]rovide financial incentives to communities for sub-projects submitted according to Operational Manuals."

– RBP-allocated amount: USD 12,100,000 allocated for project output 1.2.2 (Table 10a).

– Outcomes: Based on the project's focus on landscape restoration, we assumed the total RBP-allocated amount targets system-wide "other" outcomes.

7) **SAP002: Climate services and diversification of climate sensitive livelihoods to empower food insecure and vulnerable communities in the Kyrgyz Republic (Kyrgyz Republic)**

– Project documentation available at *https://www.greenclimate.fund/project/sap002*

– Results-based funding allocation: As part of Component 2 ("Livelihood strengthening and diversification to increase the adaptive capacity of vulnerable groups and build community resilience"), up to 102,000 beneficiaries will receive a total conditional cash transfer of USD 30.50, conditional on project participation and contribution to establishing adaptation measures/infrastructure (such as rehabilitating assets) and improving community-level adaptive capacity.

– RBP-allocated amount: USD 3,111,000 (USD 30.50 per beneficiary).

– Outcomes: Based on the project's focus on incentivizing infrastructure investments that increase adaptive capacity, we assumed the total RBP-allocated amount targets beneficiary-level sector-specific outcomes.

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