CIF CLIMATE INVESTMENT FUNDS

IMPACT EVALUATION EARLY EVIDENCE SERIES

COUPLING AFFORESTATION WITH SOCIAL PROTECTION: EFFECTS ON FOOD SECURITY AND INCOMES

The African Development Bank's (AfDB) Gazetted Forests Participatory Management Project for REDD+ aims to address two pressing developmental objectives in Burkina Faso: improving the carbon sequestration capacity of gazetted forests and reducing poverty in rural areas. The project is supported by the Climate Investment Funds' (CIF) Forest Investment Program (FIP), a financing mechanism to address the drivers of deforestation and forest degradation. In the context of scarce global resources, and the need for lower-income states to manage multiple urgent development challenges, projects such as this look at the feasibility of addressing climate and welfare challenges in tandem. The CIF is currently working with the World Bank's Development Impact Evaluation Group (DIME) to carry out an impact evaluation of the effectiveness, determinants, and replicability of such objectives.

CLIMATE CHANGE AND SOCIAL PROTECTION

The global community has committed, through the Sustainable Development Goals (SDGs), to tackle the coexistent and pressing challenges of climate change, youth unemployment and food insecurity. By 2030, the international development community aims to eradicate poverty (SDG1), end hunger (SDG2), promote productive employment for all (SDG8), all while promoting climate change adaptation and mitigation (SDG13), amongst other goals.[1] With the 2030 deadline fast approaching, and faced with dwindling and increasingly scarce resources, policymakers need more than ever to create synergies between the various sectors of development, and to maximize the reach of their investments.

Climate Crisis and Forestry. Efforts towards limiting the global temperature rise to 1.5–2˚C have often included forest conservation and landscape restoration activities. Resulting from the 2015 Paris Agreement, initiatives such as REDD+, the Bonn Challenge and the African Forest Landscape Restoration Initiative (AFR100) have all put strong emphasis on restoring degraded landscapes while fighting poverty in developing countries. There is broad agreement that these efforts are valuable, but which policy tools best deliver the desired outcomes is still open for discussion.

Human Development and Forestry. In the context of Burkina Faso, food insecurity and undernutrition have proven to be chronically difficult problems to tackle. Over the period 2016-2018, on average, 3.8 million people in Burkina Faso were undernourished, representing 20% of the entire population.[2] In 2019 alone, it was estimated that 3 percent of the entire

QUICK FACTS

DATE
September 2020

COUNTRY
Burkina Faso

PROJECT
Gazetted Forests Participatory Management Project for REDD+

CIF FUNDING
USD 11.5 million from FIP

MDB
African Development Bank

PRODUCT TYPE
Development Impact Evaluation (DIME)

1 World Development Indicators, World Bank, 2016.

2 FAO 2019

population – approximately 687,000 people – would require urgent food assistance during the period June-August, the leanest time of the year in terms of food availability.[3] In a country with 48% forest cover, where forest-based economic activities contribute to over 25% percent of rural household incomes, and 5.6% percent of Gross Domestic Product (GDP),[4] It is clear that tackling the interconnected problems of ecosystem degradation, poverty, food insecurity and climate change will require a synergistic, integrated approach.

CAN PAYMENTS FOR ENVIRONMENTAL SERVICES (PES) DELIVER FOOD SECURITY OUTCOMES?

At the heart of this discussion is Payments for Environmental Services (PES). PES are formally defined as "...voluntary transactions between service users and service providers that are conditional on agreed rules of natural resource management for generating environmental services".[5] While they vary substantially in their implementation, PES often entail offering monetary incentives to individuals or communities, conditional on the provision of well-defined environmental services. It is argued that PES schemes have the potential to also deliver socio-economic and welfare co-benefits, making it an ideal tool for tackling both climate change and poverty-related issues. In theory, as poor community members get involved in PES schemes, the monetary transfers received might serve a social protection role like that of Conditional Cash Transfer (CCTs) or Cash for Work (C4W) Programs.[6]

Within this frame, the ongoing DIME evaluation seeks to assess how well a project geared toward climate mitigation objectives also delivers welfare outcomes such as food security. As part of this program, the communities living around targeted gazetted forests were invited to participate in afforestation campaigns via PES schemes, wherein they received payments contingent on survival rates of trees planted.

The evaluation was based on a sample of 630 households in the vicinity of 11 gazetted forests, each randomly assigned to either PES scheme participation or a control group. Participants were almost exclusively farmers dependent on the forests for household inputs like fuelwood.

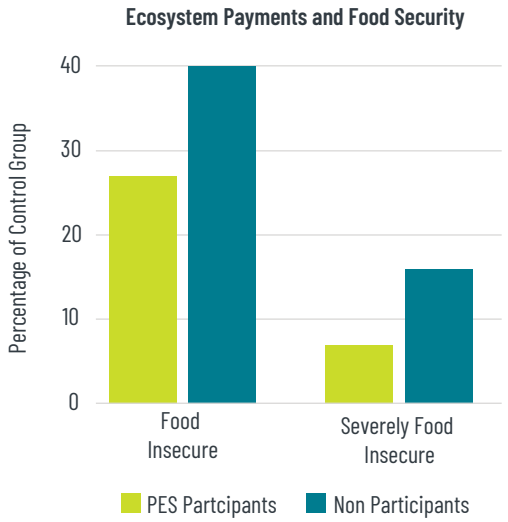
Those in the PES treatment group were members of five-person teams, given a reforestation parcel, and collectively earning ~$0.62 for every newly planted tree that was still alive a year later. The evaluation collected detailed primary data from both the treatment and control groups, at baseline, before the PES contracts were signed, and at mid-line, four months after the payments were made.

EVIDENCE: EFFECTS ON FOOD INSECURITY

The evaluation measured food insecurity via four common household-level indicators: (1) (i) household food consumption expenditures, including both home-produced and purchased food items in the 7 days before the survey; (ii) household dietary diversity score (HDDS), capturing the number of food groups consumed by the household in the 7-day period before the survey; (iii) the household food insecurity access scale (HFIAS); and (iv) household hunger scale (HHS). The findings divided households into 4 categories based on severity: (i) the food secure, (ii) the mildly food insecure, (iii) the moderately food insecure, and (iv) the severely food insecure. The results are robust in comparison to alternative measures of food insecurity such as the household food consumption expenditures, and the Household Hunger Scale (HHS).

FINDINGS: Results indicate that participants in the PES scheme experienced less food insecurity than non-participants at multiple levels of severity (see Figure 1). Participation in the PES schemes was shown to have shielded farmers against food insecurity at a time when they were most vulnerable to it — receipt of incomes coincided with the pre-harvest or lean period, when farmers had little food stocks remaining from the previous season and were in need of funds for food and agricultural inputs, thereby aiding objectives for social protection during "hungry months". 6 months after receipt of PES, households reported an increase in food consumption expenditures of about 12%, a reduction in moderate food insecurity by 35% and reduction in severe food insecurity by 60% in comparison to the control group.

Figure 1.
FOOD INSECURITY EXPERIENCE SCALES, PES VS. CONTROL GROUPS



3 Ibid.

4 Burkina Faso CIF Investment Plan, 2012

5 Wunder, 2015

6 Pagiola et al., 2005

MECHANISMS: SEASONAL LIQUIDITY CONSTRAINTS, POVERTY CYCLES AND THE LONG-TERM EFFECTS OF PES

Given the prevalence of food insecurity in Burkina Faso, and the related interaction with unpredictable rainfed production practices, the lean months increase the propensity for negative coping strategies and availability of only sub-optimal choices regarding investing in future incomes. This is reflected in reduced investment capacities for future agricultural production and constrained capacity for post-harvest welfare, leaving populations vulnerable to vicious poverty cycles. Within this fame, the evaluation looked also at how cash transfers effected overall consumption and investment choices, and their impacts on longer-term income and welfare security.

FINDINGS: Aside from the short-term consumption smoothing which act to address immediate and pressing food security needs at critical times of the year, the data found that recipients also funneled cash receipts towards crop and livestock investment, resulting in increased yields and incomes. I.e., providing social protection dividends also in the long run.

PES participants were found to cultivate larger land areas, invest more in improved seeds and pesticides, and have higher agricultural outputs than their peers.

In addition, while agricultural production was the main economic activity for 90 percent of participants, those receiving PES were significantly more likely to engage in a secondary occupation at endline, particularly in livestock raising, further enhancing incomes. A small share of recipients, about 4 percent, had saved a share of the payments up until the time of the endline survey.

OVERALL INCOME AND CONSUMPTION EFFECTS

In sum, the data points to a 34 percent increase in households' primary income and a 26 percent increase in households' total income for households participating in the PES scheme. Where incomes were seen to come not only from agricultural revenues but also from livelihood diversification, this was represented by a 7 percent point increase in respondents having a second occupation. It was also surmised that participation in PES did not negatively affect other income generating activities, given that tree maintenance required work in the dry season, not competing with the agricultural and livestock rearing labor requirements that were largely of the rainy season.

Based self-reported expenditures at endline, 37 percent of participants were seen to spend some of the cash receipts on food, 22 percent on investment in agricultural inputs, 16 percent on investments in livestock, and 10 percent on investments in transport and mobility (see Table 1).

Table 1.
INTENDED (EX ANTE) AND REPORTED (EX POST) USAGE OF THE PES PAYMENTS

	(1) INTENDED USE	(2) REPORTED USE	(3) SHARES SPENT
Food	0.39	0.37	0.28
Other family expenses	0.31	0.09	0.07
Agricultural inputs	0.29	0.16	0.12
Livestock production	0.16	0.22	0.13
Investments in transport/mobility	0.15	0.10	0.05
Clothing	0.06	0.09	0.05
Cosmetic products	0.05	0.01	0.00
Medication	0.03	0.06	0.02
School fees	0.02	0.14	0.11
Savings			0.04
Observations	330	303	289

Note: In column (1) we summarize the share of PES participants who stated at the time of the disbursement to intend to spend the transfers on the respective items. Participants were able to enumerate up to 3 items. We display the actual use reported by the participants at endline, as the proportion of respondents mentioning the item (column 2) and as share of the transfer spent on it (column 3).

LOOKING FORWARD

Results suggest that, in similar contexts, there is opportunity for PES schemes to work akin to traditional cash transfers, delivering welfare outcomes such as food security while contributing to ecosystem regeneration and climate resilience. theory, such schemes could also leverage the "youth bulge" in Africa,[7] supporting climate action while providing temporary revenues and jobs for unemployed youth. Welfare outcomes could also apply to a range of other demographics currently out of access to traditional livelihood activities. While the evaluation tells the success of context-specific PES schemes, it also opens the door to a far wider array of social protection-climate action solutions, and a rethinking of the cost-benefit analyses of environmental interventions in lower-income and climate-vulnerable countries.

Evaluation Outputs. Findings on PES' effects on food security, titled *Reducing Hunger with Payments for Environmental Services (PES): Experimental Evidence from Burkina Faso* has been published via the World Bank Working Paper, and most recently *American Journal for Agricultural Economics*, a leading academic journal in the field. DIME's impact evaluation of the project is ongoing, endline data has been collected and is being analyzed, and findings are expected to be finalized at the end of 2020, with the full array of lessons shared in 2021-22.

7 Filmer and Fox, 2014