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## **ESS – Extension of Social Security**

### **Protecting people and the environment: Lessons learnt from Brazil's Bolsa Verde, China, Costa Rica, Ecuador, Mexico, South Africa and 56 other experiences**

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ESS – Working Paper No. 54

Social Protection Department

INTERNATIONAL LABOUR OFFICE, GENEVA

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### *ILO Cataloguing in Publication Data*

Schwarzer, Helmut; Van Panhuys, Clara; Diekmann, Katharina

Protecting people and the environment : lessons learnt from Brazil's Bolsa Verde, China, Costa Rica, Ecuador, Mexico, South Africa and 56 other experiences / Helmut Schwarzer, Clara van Panhuys, Katharina Diekmann ; International Labour Office, Social Protection Department (SOCPRO). - Geneva: ILO, 2016  
(Extension of Social Security series ; No. 54)

International Labour Office Social Protection Dept.

social protection / sustainable development / environmental management / community development / poverty alleviation / case study / Brazil / China / Costa Rica / Ecuador / Mexico / South Africa

02.03.1

*ILO Cataloguing in Publication Data*

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Printed in Switzerland.

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## Abstract

This working paper: (i) provides an overview of 56 Payments for Environmental Services (PES) experiences in 19 countries from the global south that combine social protection and environmental objectives within one programme (ii) analyses the Brazilian Bolsa Verde programme and four PES schemes from China, Costa Rica, Ecuador, Mexico and one public work programme in South Africa from a social protection point of view by building upon the guidance provided by the Social Protection Floors Recommendation, 2012 (No. 202); (iii) extracts some lessons learnt from existing PES schemes that may be useful when designing, implementing and monitoring social protection programmes such as the Brazilian ‘Bolsa Verde’ programme; (iv) proposes some concrete and innovative ideas on how to combine existing social protection programmes with PES schemes with a view to protecting both people and environment and ultimately supporting the achievement of sustainable development for everyone everywhere.

**JEL Classification:** H23, H55, I38, Q56, Q57, Q58

**Keywords:** social protection, cash transfers, social assistance, environmental services, climate change, rural livelihoods, indigenous and tribal peoples, economic incentives, public employment programme, Brazil, China, Costa Rica, Ecuador, Mexico, South Africa



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## Acknowledgements

The authors would like to thank the Brazilian Ministry of Environmental Affairs (MAA), whose request was the basis for the research undertaken, for its contributions and collaboration.

The authors are particularly grateful to Isabel Ortiz, Director, Social Protection Department, ILO Geneva and Peter Poschen, Director, ILO Country Office for Brazil (previously Director Enterprises Department) ILO Geneva, for their support, comments and advice.

The authors gratefully acknowledge the ILO Country Office for Brazil for its feedback and support of the study. Special thanks are due to Paulo Sergio Muçouçah, Coordinator of the Decent Work and Green Jobs Programmes, ILO Brasília Office for his review, feedback and inputs.

The authors further thank Marek Harsdorff, Green Jobs Specialist, Enterprises Department; Martin Oelz, Senior Specialist, Equality and Non-Discrimination and Rishabh Dir, Technical Officer, Gender Equality and Diversity Branch, Conditions of Work and Equality Department as well as Aidi Hu, Social Protection Specialist Asia, Social Policy, Governance and Standards Branch, Social Protection Department, ILO Geneva for reviewing the study and for their useful comments and suggestions.

Thanks are also due to Fabio Duran, Health and Social Protection Economist, Social Policy, Governance and Standards Branch, Social Protection Department, ILO Geneva and Mito Tsukamoto, Senior Economist, Employment Policy Department for their feedback and guidance on questions raised.

Finally the authors thank Dr Jessica Vechbanyongratana for the editing and final review of the study, Kristijan Marinkovic and Sandrine Baronetti for the formatting and review of the text and Victoria Giroud-Castiella for the overall coordination and review of the publication.





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## Executive summary

The *Bolsa Verde* programme launched in 2011 provides more than 51,000 extremely poor Brazilian families with cash payments as compensation for maintaining forest covers. With this innovative programme, the Brazilian Government combines the social protection programme *Bolsa Família* with a Payment for Environmental Service approach, thus combining social protection and environmental conservation objectives.

Payments for Environmental Services (PES) are commonly defined as a voluntary transaction where a buyer ‘buys’ a well-defined environmental service, if and only if the environmental service provider secures the provision or conditionality. There are hundreds of PES or PES-like schemes in the world today. Most of them are carbon sequestration or watershed programmes. In Asia, Latin America and the Caribbean they are usually financed by governments, while in Africa the trend goes towards donor-financed schemes. In the last decade, PES have increasingly combined the initial environmental objective, with a social one, thus taking into account that poor people are also relevant providers of environmental services. For example in Ecuador’s *Socio Bosque*, 70 per cent of the payments are effected to small-scale landowners.

At the same time, much progress has been made in developing policies and programmes extending social protection, including implementing national social protection floors aimed at guaranteeing at least access to essential health care and basic social protection benefits to all. The Social Protection Floor approach, as reflected by the Social Protection Floors Recommendation, 2012 (no. 202) calls for policy coherence and coordination thus recognizing that the multiple social, economic and environmental challenges people are facing are intrinsically linked. More recently, the 2030 Agenda for Sustainable Development adopted in 2015 considers how to better integrate the economic, social, and environmental aspects of sustainable development.

Nonetheless, initiatives that aim at simultaneously improving social as well as ecological protection are still very few. Examples include public employment programmes, such as India’s Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and South Africa’s Working for Water programme, as well as the Brazilian *Bolsa Verde* programme which links an existing social protection programme (the well-known *Bolsa Família*) with a PES approach.

The study was developed following a request from the Brazilian government and provides an overview of 56 international experiences in 19 countries from the global south that combine social and environmental objectives within one programme. It aims to extract some lessons learnt from existing PES schemes that may be useful when designing, implementing and monitoring social protection programmes such as the *Bolsa Verde* programme. For this purpose, both PES experiences that have a strong pro-poor focus, and those on the other side of the spectrum focused primarily on achieving ecological objectives, were reviewed. Four PES schemes from China, Costa Rica, Ecuador, Mexico and one public work programme in South Africa were selected as case studies. Although the literature on PES schemes is extensive, this study distinguishes itself as it approaches PES schemes from a social protection point of view by building upon the guidance provided by the Social Protection Floors Recommendation, 2012 (No. 202).

In the concluding section, concrete and innovative ideas are provided on how to combine existing social protection programmes with PES schemes and how to reduce potential tensions between environmental and social protection objectives. Concrete recommendations, distilled from the analysis of the five case studies, include practical considerations that should be taken into account when creating, designing, implementing and monitoring schemes or programmes combining both objectives. Targeting dilemma’s

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exit strategies versus long term sustainability, training components, transaction costs, the rights and contributions of indigenous and tribal peoples, participation, land tenure and ownership issues, coordination mechanisms, information campaigns, and respect for the life and dignity of participants are among the key considerations.

Overall, when designing and implementing such hybrid programmes, it is essential to carefully formulate and consider both goals from the onset and be aware that one of the objectives may be achieved more fully in certain cases. This also means that pro-poor PES schemes or hybrid social protection programmes cannot and should not be the sole responsible for delivering on the respective objectives. From a social protection point of view, this is essential to guarantee that everyone can access their right to social protection and is not excluded due to a conflict between objectives. Programmes combining social protection and environmental objectives should thus be developed within a set of coordinated policy tools with a view to protecting both people and environment and ultimately supporting the achievement of sustainable development for everyone everywhere.

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## Abbreviations

ANA	Agência Nacional de Águas (National Water Agency, Brazil)
APA	Área de Proteção Ambiental (Area of Environmental Protection, Brazil)
ATM	Automatic teller machine
BFA	Bolsa Floresta Associação (Bolsa Floresta Associations, Brazil)
BFF	Bolsa Floresta Familiar (Bolsa Floresta Families, Brazil)
BFR	Bolsa Floresta Renda (Bolsa Floresta Income, Brazil)
BFS	Bolsa Floresta Social (Bolsa Floresta Social, Brazil)
BPC	Benefício e Prestação Continuada (a non-contributory pension, Brazil)
BRL	Brazilian real
CadÚnico	Cadastro Único (single registry, Brazil)
Caixa	Caixa Económica Federal (Federal Bank, Brazil)
CC	Casa Civil (Office of the Chief of Staff of the Presidency of the Republic, Brazil)
CCT	Conditional Cash Transfer
CDM	Clean Development Mechanism
Censipam	Management and Operations Centre of the Amazon Protection System
CFW	Cash for work
CIFOR	Center for International Forestry Research
CNY	Chinese yuan
CONAFOR	Comisión Nacional Forestal (National Forestry Commission, Mexico)
COP	Conference of the Parties
CRES	Compensation and Rewards for Ecosystem Services
CTC	Consejo Técnico Consultivo (Advisory Technical Committee, Mexico)
CU	Conservation Unit
DfID	Department for International Development
EEPSEA	Economy and Environment Program for Southeast Asia
EGS	Employment guarantee scheme

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EIIP	Employment Intensive Investment Programme
ELR	Employer of last resort
EPWP	Expanded Public Works Programme (South Africa)
ES	Environmental Service
ESPA	Ecosystem Services for Poverty Alleviation
FAS	Fundação Amazonas Sustentável (Amazonas Sustainable Foundation, Brazil)
FCPF	Forest Carbon Partnership Facility
FFW	Food for work
FIP	Forest Investment Program
Flonas	Floresta Nacional (National Forest, Brazil)
FONAFIFO	Fondo Nacional de Financiamiento Forestal (National Forestry Fund, Brazil)
GIS	Geographic information system
HIV/AIDS	Human immunodeficiency virus infection and acquired immune deficiency syndrome
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Brazilian Institute of the Environment and Renewable Natural Resources)
ICMBio	Instituto Chico Mendes de Conservação da Biodiversidade (Chico Mendes Institute for the Conservation of Biodiversity, Brazil)
ICMS	Imposto sobre Circulação de Mercadorias e Serviços (Tax on the circulation of goods and services, Brazil)
ICRAF	World Agroforestry Centre
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
ILO	International Labour Organization
INCRA	Instituto Nacional de Colonização e Reforma Agrária (National Institute of Colonization and Agricultural Reform, Brazil)
INPE	Instituto Nacional de Pesquisas Espaciais (National Institute for Space Research, Brazil)
IUCN	International Union for Conservation of Nature

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MA	Millennium Ecosystem Assessment
MAE	Ministerio de Ambiente de Ecuador (Ministry of the Environment of Ecuador)
MDA	Ministério do Desenvolvimento Agrário (Ministry of Agrarian Development, Brazil)
MDS	Ministério do Desenvolvimento Social e Combate à Fome (Ministry of Social Development and Fight against Hunger, Brazil)
MF	Ministério da Fazenda (Ministry of Finance, Brazil)
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme (India)
MMA	Ministério do Meio Ambiente (Ministry of the Environment, Brazil)
MPOG	Ministério do Planejamento, Orçamento, e Gestão (Ministry of Planning, Budget and Management, Brazil)
NDRC	National Development and Reform Commission (China)
NFPP	Natural Forest Protection Programme (China)
NGO	Non-governmental organization
OAS	Organization of American States
OECD	Organisation for Economic Co-operation and Development
PAE	Projeto de Assentamento Agroextrativista (Agro-Extractivist Settlement Project, Brazil)
PAF	Projeto de Assentamento Florestal (Forest Settlement Project, Brazil)
PDS	Projeto de Desenvolvimento Sustentável (Sustainable Development Project, Brazil)
PEP	Public employment programme
PES	Payment for Environmental Service
PPSA	Pago por Servicios Ambientales (Costa Rica)
PRESA	Pro-poor Rewards for Environmental Services in Africa
PRONAFOR	Programa Nacional Forestal (National Forest Programme, Brazil)
PSA-CABSA	Programa de Servicios Ambientales por Captura de Carbono y los Derivados de la Biodiversidad para Fomentar el Establecimiento y Mejoramiento de Sistemas Agroforestales (Environmental Services Program for Carbon Capture and Biodiversity Derivatives for Promoting the Establishment and Improvement of Agroforestry Systems, Mexico)

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PSAH	Pago por Servicios Ambientales Hidrológicos (Payment for Hydrological Environmental Services) (Mexico)
PSAP	Programa Nacional Forestal Pago por Servicios Ambientales (National Payment for Environmental Services Forest Programme) (Mexico)
PSNP	Productive Safety Net Programme (Ethiopia)
PWP	Public works programme
PSW	Payment for watershed services
RDS	Reserva de Desenvolvimento Sustentável (Sustainable Development Reserve, Brazil)
REDD	Reducing Emissions from Deforestation and Forest-degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks
Resex	Reserva Extrativista (Extractivist Reserve, Brazil)
RPPN	Reserva Particular do Patrimônio Natural (Natural Heritage Private Reserve, Brazil)
RUC	Registro Único de Contribuyentes (tax identification number, Ecuador)
RUPES	Rewarding the Upland Poor for Environmental Service
SEMAD	Secretaria de Estado de Meio Ambiente e Desenvolvimento Sustentável de Minas Gerais (Secretariat of Environment and Sustainable Development of the State of Minas Gerais)
SDG	Sustainable Development Goals
SDI	Social Development Index
SEMAD	Secretaria de Estado de Meio Ambiente e Desenvolvimento Sustentável
SFA	State Forestry Administration (China)
SINAC	Sistema Nacional de Áreas de Conservación (National System of Conservation Areas, Costa Rica)
SiPAM	Sistema de Proteção da Amazônia (Amazon Protection System)
SLCP	Sloping Lands Conversion Programme (China)
SMEs	Small and Medium-sized Enterprises
SPF	Social Protection Floor
SPU	Secretaria do Patrimônio da União (Union's Property Department, Brazil)
SUS	Sistema Único de Saúde (Unified Health System, Brazil)

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TAUS	Terms of Authorization for Sustainable Use
TNC	The Nature Conservancy
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States dollar
WCNR	Wildlife Conservation and the Nature Reserve Development Programme
WWF	World Wildlife Foundation
WRI	World Resource Institute





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## 1. Introduction

Thinking on how to advance the global development agenda beyond 2015 has been centred on the need to put sustainable development at the heart of the agenda in order to address a multitude of challenges currently facing our world.

Despite progress made in the past decades, only an estimated 27 per cent of the world population has access to comprehensive social security and around 40 per cent are under the international poverty line of US\$2 per day, which suggests that they do not have access to a social protection floor at all (ILO, 2014). These gaps are enormous considering that everyone has the right to receive social security and live a life in dignity (1948 Universal Declaration of Human Rights, article 22 and 25).

Environmental perspectives are also not very promising: greenhouse gas emissions—the main cause for climate change—have increased by more than 70 per cent between 1970 and 2005 and continue to rise (ILO, 2013, p. 11). The Organisation for Economic Co-operation and Development (OECD) estimates, that 40 per cent of the world's population will live in areas with severe water shortages by 2050 (Water Resources Group, 2009). According to the World Bank, the amount of waste produced will almost double by 2025, adding to the pollution of soil, water, and air (Hoorweg and Bhada Tata, 2012). Biodiversity is also severely threatened and it is estimated that by the end of this century up to 30 per cent of all animals will be endangered (Díaz et al., 2009).

Since these challenges are assumed to be intricately linked, the 2030 Agenda for Sustainable Development (UN, 2015) considers how to better integrate the economic, social, and environmental aspects of sustainable development, as also envisaged in the Millennium Declaration (UN DESA, 2014) and the RIO+20 Conference on Sustainable Development in June 2012. Designing and adopting integrated policies, rather than policies aimed at addressing only one of these challenges at the time, would be more efficient and (cost) effective, their impact would be more important, and progress would be achieved more rapidly and in a sustainable manner (UN, 2014).

Despite this broad agreement on the need for policy coherence and coordination across and within sectors, organizations, and programmes, it is yet an open question on how different objectives can be combined within specific programmes or policies. In practice, there are only very few cases of initiatives that aim at simultaneously improving social as well as ecological protection. Examples include public employment programmes, such as India's Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and South Africa's Working for Water programme, as well as several payment for environmental services (PES) schemes, commonly defined as a transaction or cash transfers between an environmental service provider and service buyer, that include the objective of poverty alleviation.

The *Bolsa Verde* (Green Grant) programme, links an existing social protection programme (the well-known *Bolsa Família*) with a PES approach. With the goal to address both objectives in a wider context, the Brazilian Government also proposed the adoption of 'socio-environmental protection floors' during the Rio+20 conference in June 2012. This proposal aimed to ensure basic income security and access to essential health care for all while also promoting the proper use of natural resources, including benefit payments for environmental conservation, credit for sustainable production, labour guarantees for generating green job amongst others (Governo Federal Brasil, 2013, p. 64).

The current paper was developed following a request from the Brazilian government and aims to provide an overview of international experiences that combine social and environmental objectives within one programme and extract some lessons learned from

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existing PES schemes that may be useful when designing, implementing and monitoring social protection programmes such as the *Bolsa Verde* programme. It thus aims to answer the question, “*how to design a pro-poor PES programme that reaches both social and environmental objectives and how potential tensions between these two objectives can be reduced.*”

For this purpose, both PES experiences that have a strong pro-poor focus, and those on the other side of the spectrum focused primarily on achieving ecological objectives, were selected. Although the literature on PES schemes is extensive, this study distinguishes itself as it approaches PES schemes from a social protection point of view by building upon the guidance provided by the Social Protection Floors Recommendation, 2012 (No. 202). Although the important environmental impacts of many PES schemes are recognized, the study will not discuss positive environmental impacts in detail.

The paper starts by briefly highlighting the linkages between social protection and the environment as this assumption is the basis underlying the research question. Both the concepts of Social Protection Floors (SPFs) and payments for environmental services (PES) are then defined and described in Chapter 2. Chapter 3 focusses on the Brazilian experience by presenting the social protection programmes linked to the SPF concept in Brazil, including its key social assistance programme, *Bolsa Família*, as well as covering 11 existing PES schemes, focusing on the largest one to date, *Bolsa Floresta*. In the second part of this chapter, *Bolsa Verde* will be described in detail.<sup>1</sup> Chapter 4 provides a brief overview of the 56 international experiences that were examined. Out of these 56 experiences from the global South, four PES programmes (in China, Costa Rica, Ecuador, and Mexico) with a pro-poor focus were selected and further analysed from a social protection perspective. In addition, one example of a public employment programme, South Africa’s Working for Water, analysed following the same approach. In Chapter 5 the main lessons learned from the literature are summarized and linked to the five case studies and the Brazilian *Bolsa Verde* programme.

The last chapter presents the main conclusions and recommendations that can be taken into consideration when designing, managing, or implementing a pro-poor PES programmes, including some of relevance for *Bolsa Verde* specifically. This chapter also provides some thoughts on how environmental and social objectives can be best achieved as part of wider policy considerations aimed at ensuring that everyone has access to at least a basic minimum level of social protection while also promoting inclusive growth and sustainable development.

## 2. Social protection and the environment

In the following sub-chapters, the linkages between social protection and the environment are highlighted as they are the basis for the assumption that hybrid programmes combining both social protection and environmental objectives provide a concrete and effective solution to the call for policy coherence. To answer the research questions, the study will focus on Payment for Environmental services (PES) and approach these experiences from a social protection point of view by building upon the guidance provided by the Social Protection Floors Recommendation, 2012 (No. 202). In light of this, the current chapter discusses and defines the concepts of “Social Protection Floors” and “Payments for Environmental Services.”

<sup>1</sup> The document presents a specific chapter on the Brazilian experience on the basis of information collected to develop a technical cooperation project between the Government of Brazil, notably the Ministry of Environmental Affairs (MAA), and the ILO focusing on policies that strengthen environmental and social protection, to be developed in 2016.

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## 2.1. Linkages between social protection and the environment

It is widely known that there are strong links between poverty, social protection, and the environment (see figure 1). Several hundred million (mainly poor) people depend on the biodiversity of forests, coasts, or oceans for their livelihoods, and their destruction causes severe income losses. In addition, poor people are usually most affected by environmental disasters as they tend to live in the most threatened areas. As they usually do not have the means to protect themselves ex-ante and lack social protection, their vulnerability to environmental shocks increases. In many countries, indigenous and tribal peoples are among those population groups which are particularly vulnerable to environmental shocks as their livelihoods depend heavily on natural resources, while at the same time also often lacking adequate access to social protection. Furthermore, their positive contributions to the environment, including through their traditional knowledge and practices, should have also been recognized.<sup>2</sup>

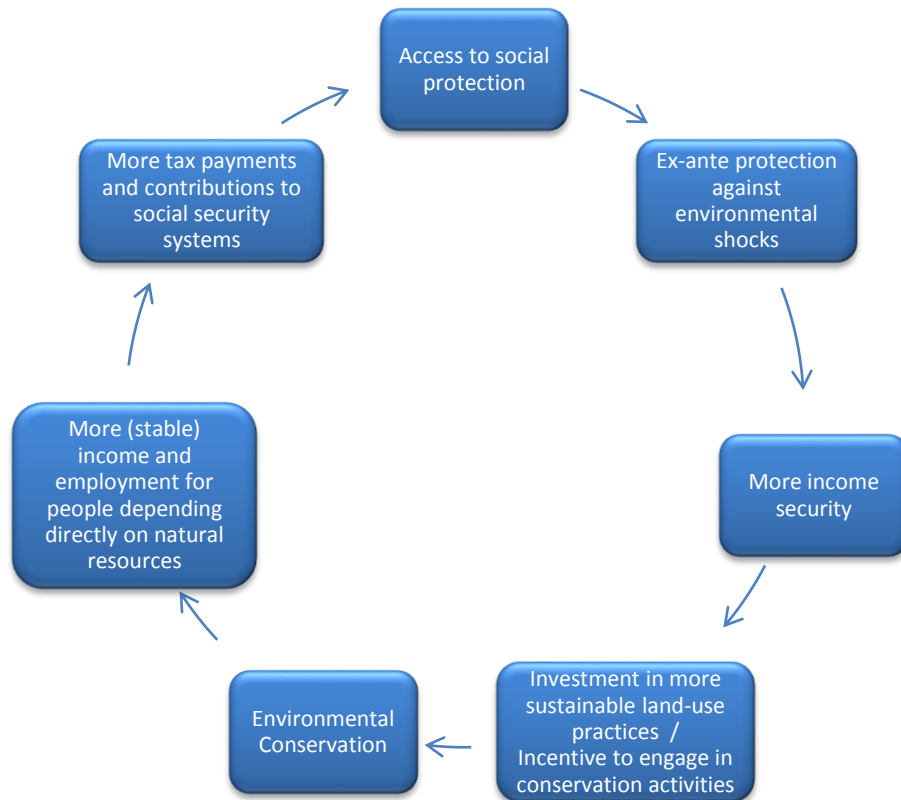
Poor people might also find themselves locked into environmentally harming activities and practices such as deforesting to use the wood as an income source or as fuel for cooking (given the lack of other energy sources). Another example is the absence of garbage systems in poorer areas, which is likely to cause littering and the polluting of soil, water, and air.

By reducing social risks, providing a secure basic income, and increasing access to basic social and health-care services, including water, electricity, food, education, and financial services, social protection can have a strong influence on poverty as well as on the environment. A stable source of cash income and risk mitigation can contribute to create incentives for participants to increase ‘risk taking’ towards more sustainable jobs. It allows for saving and long-term investments in assets, tools, or land-use practices that can have a positive impact on environmental conservation. It might also allow people not to be forced to harm the environment for economic reasons. Social protection schemes can also be combined with awareness raising and educational activities related to environmental conservation and protection.

Environmental catastrophes (and conversely environmental conservation) can also have an impact on social protection policies by causing a loss (or in some cases an increase) of employment, income, and related access to social protection and basic social services. Extreme weather events with probable links to climate change, for example, are likely to lead to losses of jobs, income, and access to social protection. However, conserving the environment can also cause a loss of jobs, for example, through greening the economy by restructuring resource-intensive industries, such as mining, iron, or steel. On the other hand, efforts to promote renewable energy can also create employment, having a positive impact on access to social protection (ILO, 2013, pp. xii, xv, and 10).

<sup>2</sup> The ILO Indigenous and Tribal Peoples Convention, 1989 (No. 169) acknowledges in its preamble the “distinctive contributions of indigenous and tribal peoples to the cultural diversity and social and ecological harmony of humankind”, while also calling for measures to extend social protection to these peoples (Part V of the Convention). See also 2015 Paris Agreement, Art. 7, which addresses the positive role of indigenous peoples’ knowledge and practices in the context of climate change mitigation and adaptation. Available at <https://unfccc.int/resource/docs/2015/cop21/eng/109r01.pdf>.

Figure 1. Socio-economic and environmental challenges are intricately linked



## 2.2. What are social protection floors?

During the last decade, the role of social protection has been strengthened in the international debate on development as recently reflected in the 2030 Agenda for Sustainable Development.<sup>3</sup>

Inspired by various concrete examples of social policies in the Americas and elsewhere, the concept of ‘inclusive growth’ was developed. Increasingly social protection is seen as an indispensable element of equity that can have sustainable effects on opportunities and on the potential of a country’s future development (Behrendt, 2013a). It is now widely recognized that the objective of sustainable and inclusive growth and development can hardly be achieved without the extension of social security coverage to larger groups of the population.

This development has been strongly supported by the ILO and resulted in the adoption of a new international legal instrument, the Social Protection Floors Recommendation, 2012 (No. 202).<sup>4</sup> The Recommendation provides countries with

<sup>3</sup> Several SDGs include targets referring to social protection and a target referring to social protection floors, namely Target 1.3 (Implement nationally appropriate social protection systems and measures for all, including floors, as well as Target No. 3.8 (Achieve universal health coverage,...), Target 5.4 (Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies...), and Target 10.4 (Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality).

<sup>4</sup> The ILO Social Protection Floors Recommendation, 2012 (No. 202), was adopted almost unanimously (one abstention) by governments, employers’, and workers’ representatives of 184 Member states at the 101st Session of the International Labour Conference.

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concrete guidance on how to give effect to the human right to social security (ILO, 2012) and promotes a two-fold aim: (1) the establishment of national social protection floors within comprehensive social security systems and (2) the progressive provision of higher levels of protection guided by ILO social security standards

The Recommendation, defines social protection floors as nationally defined sets of basic social security guarantees which should ensure at least, over the life cycle, that all in need have access to essential health care and to basic income security. Social protection floors are underpinned by the principles of non-discrimination, gender equality, responsiveness for special needs, the universality of protection, social inclusion as well as respect for the rights and dignity of people covered by social security guarantees, which make them particularly relevant for reaching out to marginalized groups such as indigenous or tribal communities.<sup>5</sup>

The approach builds upon a “pluralism of methods” on how to progressively ensure universal coverage according to the national context and priorities. Furthermore, policy coherence and coordination across sectors and institutions are among the key principles of the Recommendation No. 202 which specifically calls for efforts to “build and maintain comprehensive and adequate social security systems coherent with national policy objectives and seek to coordinate social security policies with other public policies”.<sup>6</sup>

#### **Box 1. Social security terminology**

##### **Social transfers**

All social security benefits comprise transfers, either in cash or in kind, such as transfers of income, goods, or services (e.g. health-care services). This transfer may be from the active to the old, the healthy to the sick, or the affluent to the poor, among others. The recipients of such transfers may be in a position to receive them from a specific social security scheme because they have contributed to such a scheme (contributory scheme), are residents (universal schemes for all residents), fulfil a specific age criteria (categorical schemes), meet specific resource conditions (social assistance schemes), or because they fulfil several of these conditions at the same time. In addition, it is a requirement in some schemes that beneficiaries accomplish specific tasks (employment guarantee schemes, public employment programmes) or adopt specific behaviours (conditional cash transfer programmes).

##### **Social protection**

Social protection is often interpreted as having a broader character than social security, including, in particular, protection provided between members of a family or members of a local community. It is also used in some contexts with a narrower meaning than social security, understood as comprising only measures addressed to the poorest, most vulnerable, or excluded members of society. Thus, in many contexts the terms “social security” and “social protection” are used interchangeably. In this report, pragmatically, the term “social protection” is used both as an alternative expression for “social security” and to denote the protection provided by social security in the case of social risks and needs.

<sup>5</sup> The ILO Indigenous and Tribal Peoples Convention, 1989 (No. 169), while seeking to promote and ensure the protection of indigenous peoples’ cultures, institutions, environment, traditional knowledge and occupations, also add provides for adequate provisions of health services and progressive extension of social security, and their consultation and participation and regarding the designing and implementation of such measures. See Articles 4, 6, 24 and 25 of the Convention. For more detailed information on the content of the Convention, see ILO: Understanding the Indigenous and Tribal People Convention, 1989 (No. 169). Handbook for ILO Tripartite Constituents, International Labour Standards Department (Geneva, 2013).

<sup>6</sup> This need for policy coherence has also been echoed at the International Labour Conference of 2013 in the Resolution and Conclusions concerning sustainable development, decent work, and green jobs which states that “sound, comprehensive and sustainable social protection schemes are an integral part of a strategy for transition towards a sustainable development pattern [...]”

### **Social security**

The notion of social security adopted here covers all measures providing benefits, whether in cash or in kind, to secure protection, inter alia, from:

- lack of work-related income (or insufficient income) caused by sickness, disability, maternity, employment injury, unemployment, old age, or death of a family member;
- lack of access or unaffordable access to health care;
- insufficient family support, particularly for children and adult dependants; and
- general poverty and social exclusion.

Social security schemes can be of a contributory (social insurance) or non-contributory nature.

### **Social assistance**

Social assistance refers to schemes or programmes that provide benefits to vulnerable groups of the population, especially households living in poverty. Most social assistance schemes are means-tested.

### **Cash transfer programmes and conditional cash transfers (CCTs)**

A cash transfer programme is a non-contributory scheme or programme providing cash benefits to individuals or households, usually financed out of taxation, other government revenue, or external grants or loans. Cash transfer programmes may or may not include a means test. Cash transfer programmes that provide cash to families subject to the condition that they fulfil specific behavioural requirements are referred to as conditional cash transfer programmes (CCTs). This may mean, for example, that beneficiaries must ensure their children attend school regularly, or that they utilize basic preventative nutrition and health-care services.

Source: ILO, 2014.

## **2.3. What are payments for environmental services?**

Between 1960 and 2000, the world population doubled and the global economy increased more than sixfold. This has led to increasing demands on natural assets, eventually resulting in loss of ecosystems. In fact, a recent assessment revealed that over the same period, nearly two-thirds of global ecosystem services were in decline (Millennium Ecosystem Assessment, 2005, p. 5). Since the provision of environmental services (ES) that protect ecosystems are generally non-valued (financially) by the users of these services, one response to the threat to ecosystems was the development of payments for environmental services (PES) in the 1990s. PES can be described as “a way to financially internalize externalities”, meaning that they create a market for ES by translating external, non-market values of the environment into real financial incentives for land managers to provide these services (Noordwijk and Leimona, 2010, p. 1; Sommerville et al., 2009).

The literature does not provide a consensus on the definition of PES. The most commonly used and accepted definition is given by Sven Wunder (2005, p. 3), senior economist at the Center for International Forestry Research (CIFOR) in Brazil. He defines a PES as:

1. a voluntary transaction where
2. a well-defined environmental service (or a land use likely to secure that service)
3. is being ‘bought’ by an environmental service buyer (at least one)
4. from an environmental service provider (at least one)

- 
5. if and only if the environmental service provider secures the provision (conditionality).

Those who have evaluated PES interventions in practice have found that most interventions aiming to implement PES do not meet all of these criteria (Sommerville et al., 2009). Even Wunder himself says, that “there are probably very few true PES” complying with all five elements of his definition (Wunder, 2005, p. 4). Nevertheless, since both scholars and practitioners of PES, such as CIFOR and the Katoomba Group’s Ecosystem Marketplace, use this definition, this is the definition that will be referred to in this paper.

Attempts to take the variety of PES schemes into account include a trial to develop alternative vocabulary. Thus, in the literature one can also find the terms such as compensation and rewards for ecosystem services (CRES), rewards for environmental services, and payments for ecosystem services. Terminology that includes ‘compensation’ or ‘rewards’ reflects the fact that benefits are not necessarily cash payments. They can include non-financial incentives, including the provision of access to various types of capital (human, social, natural, physical, and financial) (Noordwijk and Leimona, 2010). The term ‘ecosystem services’ used by the Millennium Ecosystem Assessment (MA) refers to positive benefits that people obtain from ecosystems. Unlike environmental services, this also refers to provisioning services such as food, fibre, and timber (Millennium Ecosystem Assessment, 2005, p. V, 27; Sommerville et al., 2009). There are also attempts to classify different categories of PES, such as payments for watershed services (PWS), or to categorize them according to their scale including regional and international payments for environmental services. Nevertheless, the term payments for environmental services remains the most widely recognized one. Therefore, it will be used for the purposes of this paper.

Environmental services are commonly classified into four categories:

- Carbon sequestration: aims at the long-term storage of carbon in woody biomass and soil organic matter. As buyers and sellers can be located anywhere in the world, it is considered a ‘global’ market. An example is an electricity company, which pays farmers to plant and maintain additional trees.
- Watershed protection: aims at providing an adequate amount of good quality water as well as at controlling flooding, erosion, and soil salinization. Since buyers and sellers live in the area that is to be protected, it is considered the most regional or local ES. An example is downstream water users (private companies or households) that pay upstream farmers for adopting land use that limit deforestation, flood risk, and/or soil erosion.
- Biodiversity protection: aims at conserving areas that maintain biodiversity. This can originate at the international level or at a more local level. The sellers have to be situated in the protected area while this is not necessarily the case for the buyers. An example is when conservation donors compensate local people for protecting or restoring areas with large biodiversity.
- Landscape beauty: aims at maintaining natural sources of inspiration and culture, as well as commerce by eco-tourism. As with biodiversity protection, this ES can take place at the international or on a more local scale as buyers can, but do not need to be, located in or close to the protected area. An example is a tourism operator that pays a local community for not hunting in an area used for tourists’ wildlife viewing.

While some of these services might be traded together (e.g. protected biodiversity is also attractive for tourists), there can also be trade-offs between these services (e.g. a fast-

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growing plantation that maximizes carbon sequestration might not be very biodiversity-rich) (Wunder, 2005, p. 2).

There is a large range of concrete design possibilities for PES. Schemes not only vary according to the type of environmental service offered, but also in terms of coordination and ways of financing, scope, forms of land use, forms of payments, among others. Referring again to the types of the environmental services, PES can either be area-based or product-based. In area-based schemes, the contract applies to land or resource use according to a pre-agreed number of units, usually hectares. For example, watershed services providers are usually paid according to the size of the land that is included in the scheme. In product-based schemes, the buyer pays a green premium on top of the market price of the product being sold. For example, a premium may be charged for coffee that has been produced under sustainable land use. ES can also be classified according to whether they are based on material flows, such as watershed services, or on internal environmental quality, such as biodiversity and landscape beauty (Wunder, 2005, p. 7; Noordwijk, 2005, p. 7).

Regarding coordination and financing, PES can be public, private, or donor-led schemes. Public schemes are managed and financed by the state, usually through general taxes. They are often large, nationwide programmes and tend to include side objectives. The government takes over the role of the buyer and buys ES on behalf of the public. Private schemes tend to be smaller, focusing on a local area (sometimes only covering fewer than five providing families). Users and buyers of ES – private companies or private households – pay providers and sellers of the services directly. Donor-led schemes are encouraged and financed by international donors. They tend to support local, small-scale projects, often within larger initiatives covering more than one country (see e.g. RUPES and PRESA in Chapter 4.1). Schemes can also combine public, private, and/or donor support. Donor-led programmes often aim to increasingly incorporate private companies, with the objective that in the long term they will buy the ES from either individuals or communities. Public schemes can be supported by international donor grants or advice (Wunder, 2005, p. 8).

The forms of land use covered by PES contracts can be use-restricting or asset-building. If they are use-restricting, the provider has to conserve the protected area and is not allowed to use it in any way. Providers are paid the opportunity cost. In asset-building schemes, on the other hand, providers are paid for restoring an area by improving environmental services, e.g. by applying more sustainable production practices. Regarding the kind of payment, providers can be paid in cash or in kind, as well as directly or indirectly. In use-restricting schemes, compensation is usually in the form of direct cash payments, while in asset-building schemes direct compensation can also take the form of in-kind payments. These may include the direct provision of planting materials and tools, skills training and/or technical assistance, and, more indirectly, the improvement of health and educational services, local infrastructure, market preferences, or land tenure security. The improvement of services is often part of programmes where whole communities act as providers instead of individuals. Different forms of payments can also be combined within one scheme. For example, a provider might be paid a cash benefit and additionally receive training and the necessary tools for changing land-use practices (Wunder, 2005, p. 7; Noordwijk, 2005, p. 7). The differentiation between use-restricting and asset-building is relevant in regards to the scope for building sustainable “exit doors” for beneficiaries from cash transfer schemes. Since “use-restricting” by definition limits the creation of new economic activities, “asset-building” allows for the creation of new sustainable jobs and innovative value aggregation chains (see section 5.2.2 in this document).



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### 3. The Brazilian experience – *Bolsa Verde*

Chapter 3 presents the Brazilian experience regarding SPF and PES schemes and describes the key social protection and PES programmes, *Bolsa Família* and *Bolsa Floresta*. This is essential for understanding the *Bolsa Verde* programme, which is presented in detail in the second part of this chapter.

#### 3.1. Social protection floors and payments for environmental services in Brazil

##### 3.1.1. Social protection floors and the *Bolsa Família*

As one of the pioneering countries in Latin America, Brazil introduced social security benefits to formally employed workers at the beginning of the 20th century. Coverage has been gradually extended to other groups of the population, such as to farmers (1967, 1971) and domestic workers (1975). The Brazilian Constitution of 1988 gives every citizen the right to social security, as recommended in the Social Protection Floors Recommendation, 2012 (No. 202). As a consequence, Brazil further extended existing social insurance schemes and developed new social protection programmes to address those who formerly had been excluded from social security benefits. As a result, a large and important conditional cash transfer programme, *Bolsa Família*, was developed.

*Bolsa Família* currently constitutes the central axis of the national poverty fighting strategy. The national extreme poverty eradication plan, *Brasil Sem Miséria* (Brazil without Misery), around which a number of existing programmes were grouped and new ones added, was launched in 2011 by president Dilma Rouseff, developing further the social protection policies of former president Luiz Inácio Lula da Silva. The plan aims to lift 16.2 million people out of extreme poverty by combining cash transfers (axis 1) with programmes that improve access to public social services (axis 2) and those promoting productive inclusion (axis 3). The plan combines the extension and combination of existing programmes with the implementation of new ones, such as *Bolsa Verde* (Governo Federal Brasil, 2014).

Today, Brazil operates a very comprehensive social protection system consisting of both contributory as well as non-contributory regimes that cover a large share of the population. In 2012, 71.4 per cent of employed people between 16 and 59 years of age were covered by the formal social security scheme, while coverage with benefits reached 82 per cent among people over 60 years of age (MPS, 2014). The Brazilian social security system comprises all branches of social security specified in the ILO's Social Security (Minimum Standards) Convention, 1952 (No. 102), which was ratified by Brazil in 2009. The system also includes various programmes that can be viewed as elements of a "social protection floor", in adherence with Recommendation No. 202, such as the already mentioned conditional cash transfer programme, *Bolsa Família*, the non-contributory pension scheme, *Benefício de Prestação Continuada* (BPC), the rural pensions programme, *Previdência Rural*, as well as the *Sistema Único de Saúde* (SUS), which supplies tax-financed universal health care.

One of the current challenges of the Brazilian social security system is to improve the coordination between different types of benefits (e.g. between contributory and non-contributory benefits) as recommended in Recommendation No. 202. *Brasil Sem Miséria* aims to do so by combining various existing programmes under one national plan (Schwarzer et al., 2014).

*Bolsa Família* – together with Mexico’s *Oportunidades* (formerly Progresa) – is a pioneering conditional cash transfer programme in Latin America. With 13.8 million participating families (one quarter of the Brazilian population), it is the largest CCT programme in the world today. Despite its scale, the total cost amounted to only about 0.4 per cent of GDP in the previous years (IPEA, 2013, pp. 11, 29).

*Bolsa Família* was founded in 2003 as part of the *Fome Zero* plan by merging four existing CCT programmes: *Bolsa Escola*, *Bolsa Alimentação*, *Auxílio Gas*, and *Cartão Alimentação*. In 2006 the *Programa de Erradicação do Trabalho Infantil* was added (Fiszbein et al., 2009, p. 35f). *Bolsa Família*’s success in combining existing programmes into one provides an example of the advantages gained through better coordination of different programmes.

The programme combines the immediate goal of reducing extreme poverty in the short term (through monetary transfers to families below the poverty line) with the long-term objective of interrupting intergenerational poverty transmission by ensuring the realization of beneficiaries’ rights to health and education. *Bolsa Família* targets poor families living on less than 140 Brazilian reals (BRL) per person per month and have children up to 17 years of age. The programme also targets extremely poor households with monthly incomes of less than BRL77 per person with or without children. In January 2014, families living in extreme poverty received a monthly basic payment of BRL70 (basic benefit). In addition, they are paid BRL32 per month for each child under 15 years and for a pregnant or breastfeeding mother (variable benefit), and BRL38 per month for each adolescent between 16 and 17 years (variable youth benefit) for a maximum of five children (or four children plus one mother) and two adolescents. Poor families receive the transfers for children, adolescents, and/or mothers, but do not receive the basic benefit. Beneficiary families with children between 0 and 6 years old whose monthly per capita income does not reach BRL70, even with the regular *Bolsa Família* benefit, receive a top-up benefit to bridge the extreme poverty gap (Eradication of Extreme Poverty Benefit). To receive the transfers, the participating families have to fulfil co-responsibilities as listed below. They are seen as supports for the realization of basic social rights enshrined in the Constitution. If a household does not fulfil the co-responsibilities, the programme initially sends a social assistant to verify the reasons and offers additional support instead of menacing and immediate exclusion. The co-responsibilities are:

- prenatal and postnatal health monitoring;
- nutritional monitoring for pregnant and nursing women and for children under 7 years;
- immunization for children under 7 years;
- minimum school attendance of 85 per cent for children between 6 and 15 years; and
- minimum school attendance of 75 per cent for adolescents between 16 and 17 years (MDS, 2012).

*Bolsa Família* provides a good example of how to design a large-scale programme that has positive impacts on poverty and inequality while at the same time improves the designs of other policies such as education and health, thus extending basic protection as suggested in Recommendation No. 202 (IPEA, 2013).

*Bolsa Família* is jointly implemented at the federal and local levels. Targeting, payment, and monitoring take place on both levels. At the federal level, the *Ministério do Desenvolvimento Social e Combate à Fome* (Ministry of Social Development and Fight

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against Hunger (MDS)) is responsible for the general administration, strategic planning, coordination, and control and evaluation of the programme. The federal bank, *Caixa Econômica Federal* (Caixa), is in charge of central data administration and benefit payments. Approximately 5,500 municipalities implement *Bolsa Família* at the local level. The municipalities register families, establish control councils, and supply information to monitor beneficiaries' adherence to the co-responsibilities (ILO, 2009, p. 13).

To reach and identify the beneficiaries, *Bolsa Família* uses a combination of geographical targeting and means-testing based on family per capita income. The MDS estimates a maximum number of total eligible families for each municipality based on the annual household survey, *Pesquisa Nacional por Amostra de Domicílios* (de Brauw et al., 2014, p. 3). Families apply on their own initiative at local offices while programme workers also try to address and identify eligible families in a process called “*busca ativa*” (active search). Potential beneficiaries have to self-declare their income, which is checked on a sample basis. The municipalities register all families with a per capita income of less than the minimum salary in the central database, the *Cadastro Único* (CadÚnico). The CadÚnico is the main targeting instrument, which is increasingly used to identify eligible people of other social programmes (Senarc, 2010, p. 11; World Bank, 2010, p. 38). In 2013, it included information on approximately 25 million Brazilian families (IPEA, 2013, p. 31). The system automatically generates a list of eligible families by applying previously defined criteria. The MDS then conducts consistency checks in the form of internal and external comparisons with non-monetary information recorded in the CadÚnico and information from other databases. This is done to ensure consistency and completeness of the information, identify mistakes, and confirm the beneficiaries. The final list of beneficiaries is handed over to the Caixa, which provides the families with “*Cartão do Bolsa Família*” (electronic cards) and conducts the monthly payments (Lindert, 2007, p. 42f).

*Bolsa Família* has a sophisticated monitoring and control mechanism, which is conducted at the municipal, programme, and federal levels. It focuses on the control of the beneficiary identification process.

### **3.1.2. Payments for environmental services and Bolsa Floresta**

With more than 4 million plant and animal species, Brazil is one of the richest countries in terms of biodiversity (Lerda and Zwick, 2009). Extensive biodiversity can be found in the forests such as *Floresta Amazônica* and *Mata Atlântica*, the tropical savannah, Cerrado, and the Pantanal, one of the world's largest tropical wetlands. Approximately 60 per cent of the Amazon rainforest is located in Brazil. The forests in the state of Amazonas account for 10 per cent of the world's remaining rainforest (Viana, 2008). However, between 1970 and 2009, over 600,000 km<sup>2</sup> of the Brazilian Amazon rainforest had suffered from deforestation, mainly due to cattle ranching, logging, and plantation agriculture (Mongabay, 2009). Although deforestation has been decreasing, it still caused the loss of 5,843 km<sup>2</sup> of rainforest between July 2012 and 2013 (Zeit Online, 2013).

To protect its rainforest and extensive natural resources, Brazil has introduced a wide range of laws, mechanisms, and instruments, including a number of PES or PES-like schemes. In May 2012, there were 33 different legal initiatives based on PES principles. Of these, 13 were federal initiatives (2 laws, 2 decrees, 9 bills) and 20 were state initiatives (14 laws, 6 decrees) (Imazon, 2011, p. 1). Some states have created legal frameworks to allow the distribution of up to 5 per cent of state tax revenues to municipalities (*Imposto sobre Circulação de Mercadorias e Serviços* (ICMS)) to fund projects to preserve the environment (ICMS Ecológico). The funds are distributed to municipalities based on how many environmental conservation units (see below) they maintain and can be understood

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as compensation to municipalities for foregone production due to environmental conservation. This is not a federal-level initiative. This initiative was launched by a number of Brazilian states, the first being Paraná in 1991 (Governo do Estado Paraná, 2014).<sup>7</sup> Another way of protecting certain areas is laid down in the *Código Florestal* (Laws 4.771/1965 and 12.651/2012). It requires all landowners with more than 50 hectares of rural land to convert between 20 and 80 per cent of the land into *Reservas Legales* (Legal Reserves).<sup>8</sup> This can be done either by leaving one's own land unexploited or by purchasing tradable certificates from other landowners within the same micro-region or watershed. The *Lei da Nova Política de Recursos Hídricos* (Law 9433/1997) recognizes water as a public good whose use must be compensated through financial payments. Thus, a usage fee is charged by local water management agencies to hydroelectric, oil, and gas companies. The Law states that the money is to be used for the protection of biodiversity and reduction of air and water pollution. Regarding the Kyoto Protocol's Clean Development Mechanism (CDM), Brazil uses many CDM Projects to reduce methane emissions from landfills. *Compensação Ambiental* (Environmental Compensation), as defined by Law 9.985/2000, aims at offsetting the unavoidable environmental impact of new development projects by requiring a compensatory payment of 0.5-2.0 per cent of the development cost, which should be directed towards protected areas. The *Concessões Florestais* (Law 11.284/2006) and *Taxa de Reposição Florestal* (Law 4.771/65) establish that an individual or a company which explores, uses, transforms, or consumes primary forest products has to pay a tax and/or replant the forests. Finally, the *Imposto de Renda Ecológico* (Green Income Tax Deduction) is the most recent topic currently being discussed (Serviço Florestal Brasileiro, 2010; Portal do Meio Ambiente, 2014).

When it comes to PES in the stricter sense, *projeto de lei* 792/2007 (draft law 729/2007) is currently under review by the Parliament and would create the *Programa Federal de Pagamentos por Serviços Ambientais*. Once approved, the Law would represent a federal legal framework for PES.<sup>9</sup> The first PES projects, mainly small private initiatives, were developed by the middle to the end of the 1990s. Since then, the number and scale of initiatives, projects, and programmes has been growing constantly. Nowadays, there are four large public programmes, including *Proambiente* (2003), *Programa Produtor de Água* (2000), *Bolsa Floresta* (2007), and *Bolsa Verde* (2011) (Annex table A1), as well as over 100 small projects that are either sub-projects under a larger federal programme, a municipal programme, or a private initiative (for a non-exhaustive overview, see Annex table A2). A study published in 2012 by the European Union and the Brazilian Government identified 180 projects in Brazil that can be classified as PES schemes or related to PES schemes (Vivan, 2012, p. 14, Annexes 3-9). The programmes are either financed and/or conducted by federal ministries, municipalities, non-governmental organizations (NGOs), private enterprises, and/or consumers. Most of the existing programmes or projects have exclusively environmental goals and do not have explicit objectives to increase social protection and reduce poverty. Exceptions are the *Bolsa Floresta* (see below) and *Bolsa Verde* (see Chapter 3.2) programmes, which both have an explicit social component.

Another major instrument combining environmental and social objectives, of relevance for the targeting approach of *Bolsa Verde*, refers to the designation of public forests to local communities and the transformation of these public forests into protected areas with the dual objectives to conserve natural resources and generate income (Law

<sup>7</sup> Sixteen states enacted such legislation so far, among them: Sao Paulo (1993), Minas Gerais (1995), Rondonia (1996), Amapá 1996, Rio Grande do Sul 1997, Mato Grosso 2000, Pernambuco 2000, Mato Grosso do Sul 2001, Tocantins 2002, Acre (2004), Ceará (2007), Rio de Janeiro (2007), Piauí (2008), Goiás (2011), Paraíba (2011), and Pará (2012). For an overview, see [www.icmsecologico.org.br](http://www.icmsecologico.org.br).

<sup>8</sup> In the Mata Atlântica region the legal reserve equals 20 per cent, whereas in the "Cerrado" savannas it is 35 per cent and 80 per cent in Amazonia.

<sup>9</sup> See: <http://www.camara.gov.br/proposicoesWeb/fichadetramitacao?idProposicao=348783>.

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11.284/2006). With that purpose, Sustainable Use Conservation Units, Environmentally Distinctive Settlement Projects, and Indigenous Lands were created and riverine agro-extractivist areas recognized. Conservation Units (CUs) are managed by the *Instituto Chico Mendes de Conservação da Biodiversidade* (Chico Mendes Institute for the Conservation of Biodiversity (ICMBio)), a federal government agency linked to the Ministry of Environment. The Conservation Units are divided into Full Protection Units, where regulations and norms are more restrictive and only the indirect use of natural resources is permitted, and Sustainable Use Units, where the sustainable use of natural resources is allowed. The latter are divided into six categories:

- Areas of Important Ecological Interest: usually small areas (public or private) with little or no human settlement and the objective to conserve natural ecosystems of regional or local importance;
- National Forests (*Flonas*): areas in which native species predominate, sustainable and varied use of resources is promoted, and scientific research is allowed; traditional people who have lived here before the creation of the CU are allowed to stay;
- Fauna Reserves: natural areas inhabited by native land or water animal species, adequate for scientific studies about economically sustainable management of fauna resources;
- Sustainable Development Reserves (RDS): natural areas where traditional populations live based upon sustainable systems involving the use of natural resources; public visits and scientific research are allowed;
- Extractivist Reserves (Resex): areas used by traditional populations engaged in extractive activities, subsistence agriculture, and the raising of small animals, ensuring the sustainable use of the existing natural resources; the land is public domain with public visits and scientific research permitted;
- Areas of Environmental Protection (APA): generally large (public and private) areas with important natural, aesthetic, and cultural attributes, relevant for quality of life and well-being of humans, with the objective to protect biodiversity, manage its utilization by humans, and ensure the sustainable use of natural resources; and
- Natural Heritage Private Reserves (RPPN): private areas with the objective to conserve biodiversity; scientific research and tourist, recreational, and educational visits are allowed; created upon initiative of the owner, who is exempted from paying property taxes. (MMA, 2014c)

Environmentally Distinctive Settlement Projects are administered by the *Instituto Nacional de Colonização e Reforma Agrária* (National Institute of Colonization and Agricultural Reform (INCRA)), a federal government agency tied to the Ministry of Agrarian Development. They include:

- Agro-extractivist Settlement Projects (PAE): settlements for traditional communities that promote socially equal and ecologically sustainable use of extractive resources;
- Sustainable Development Projects (PDS): settlements of great socio-economic and environmental interest for communities that are either already conducting or are willing to conduct activities with low environmental impact. These involve, among others, sustainable production of wood and non-wood products, ecological tourism, commercialization of carbon credits, and fish farming; and

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- Forest Settlement Projects (PAFs): settlements aiming to manage sustainable income from forest resources in areas that are suitable for forest, family, community, and sustainable production. (Governo Federal Brasil, 2013, p. 33f).

### *Bolsa Floresta* (Forest Conservation Allowance)

In 2007 the State of Amazonas established the programme *Bolsa Floresta* (Forest Conservation Allowance) as part of a larger programme to generate employment and income from the sustainable use of natural resources (Law No. 3.135 State Policy on Climate Change, complementary Law No. 53 State System for Protected Areas). These laws also provided the basis for the creation of the *Fundação Amazonas Sustentável* (Sustainable Amazonas Foundation (FAS)), which is responsible for managing the *Bolsa Floresta* programme, as well as for generally managing environmental products and services from the State's CUs (Viana, 2008). With more than 8,500 participating families (more than 36,500 persons) in 15 CUs covering a total area of 10 million hectares in 2013, *Bolsa Floresta* is one of the largest PES programmes in the world in terms of land area involved (FAS, 2013; FAS, 2014).

*Bolsa Floresta* has the objectives to reduce deforestation and to improve the quality of life of traditional and indigenous peoples residing in protected areas of the State of Amazonas by rewarding them for their conservation work in tropical forests, providing training and support for sustainable production, and strengthening community associations. The programme has four components:

- *Bolsa Floresta Renda* (BFR) (income component) aims at improving social inclusion and reducing social inequality with the goal to decrease deforestation. It pays a grant of BRL4,000 per CU per year (approximately \$1,665) to fund actions that support the development of sustainable products and simultaneously contribute to the incomes of the families in the respective CUs.
- *Bolsa Floresta Social* (BFS) (social component) provides a payment of BRL4,000 per CU per year (approximately \$1,665) for social investments that improve quality of life in the community. Concrete measures can be adapted to the reality and needs of each CU and can thus differ considerably. Examples are investments in schools, houses, community centres, transportation, communication systems, and energy generators.
- *Bolsa Floresta Associação* (BFA) (association component) are grants paid to CU residents' associations with the objective to strengthen community-based organizations. They amount to 10 per cent of total BFF payments.
- *Bolsa Floresta Familiar* (BFF) (family component) is a monthly stipend of BRL50 (approximately \$21) paid to eligible mothers of families to complement their income. Eligible beneficiaries include traditional and indigenous families that live in Conservation Units of the State of Amazonas. In order to participate, they have to attend a training course on climate change and sustainability. Families have to commit to zero deforestation in primary forest areas but are allowed to sustainably use secondary forests as part of traditional production modalities. They also have to adopt fire prevention practices and participate in the residents' association. (Governo Federal Brasil, 2013, p. 73f; Viana, 2008, p. 146).

*Bolsa Floresta* additionally includes *Programas de Apoio* (support programmes) that foster structural measures with long-term objectives. They are subdivided into: (a) sustainable production programmes that aim to make productive chains such as sustainable forestry and fishing more competitive, mainly through the use of new technologies; (b) health and education programmes to improve access to and quality of both social services; (c) control and monitoring programmes to assess the dynamics of carbon emissions and

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sequestration in the CUs and to introduce technology and innovation into the process of preventing and combating deforestation; (d) management of the CUs programmes to support the elaboration and implementation of long-term management plans; and (e) scientific development programmes related to the dynamics of carbon stocks in the CUs.

According to official data, *Bolsa Floresta* costs approximately BRL1,360 per family per year (approximately \$566) (Governo Federal Brasil, 2013, p. 74).<sup>10</sup> As it is funded by a public-private partnership, the Amazonas State Government contributes one third of the costs, while the remainder is financed by the *Bradesco Bank*, private companies with manufacturing plants in the Tax-free Zone of Manaus, international donations, and private initiatives such as the *Amazon Fund* (Governo Federal Brasil, 2013, p. 73).

### 3.2. Bolsa Verde

*Bolsa Verde* is part of the productive inclusion axis of the *Brasil Sem Miséria* plan, launched in 2011, to eradicate extreme poverty. It was developed based on the fact that almost half of the extreme poor population (46.7 per cent) lives in rural areas, even though rural inhabitants make up only 15.6 per cent of the total population. Brazil also has a need to further develop policies to avoid and prevent deforestation. *Bolsa Verde* was created by the *Ministério do Meio Ambiente* (Ministry of the Environment (MMA)), and is jointly coordinated by the MMA, the MDS, the *Ministério do Desenvolvimento Agrário* (Ministry of Agrarian Development (MDA)), the *Ministério do Planejamento, Orçamento, e Gestão* (Ministry of Planning, Budget and Management (MPOG)), and the *Casa Civil* (Policy Coordination Office of the Presidency of the Republic (CC)). The programme was instituted by Law No. 12.512 on 14 October 2011 and is regulated by Decree No. 7.572 of 28 September 2011 (*Decreto que regulamenta o Programa de Apoio à Conservação Ambiental*). The first payments were made in October 2011. By December 2011, 11.3 million hectares of land were already covered by the programme. As of January 2014, 51,072 families participated in *Bolsa Verde* (MMA, 2014a). The authorized budget amounted to BRL91.2 million (approximately \$38 million) in 2013 and increased to BRL106.2 million (approximately \$44.3 million) in 2014 (SIOP, 2014). *Bolsa Verde* is financed out of general taxes allocated to the annual budget of the MMA (Governo Federal Brasil, 2013).

*Bolsa Verde* aims at reducing extreme poverty while at the same time improving the conservation of ecosystems. In 2011, the first phase was implemented in the nine Brazilian states in the *Amazônia Legal* (Legal Amazon), making up 61 per cent of the entire national territory.<sup>11</sup> During a second stage starting in 2012, *Bolsa Verde* was expanded to the rest of the country (MMA, 2014b).

*Bolsa Verde* benefits families living in extreme poverty in certain priority rural areas, which develop sustainable activities to maintain the vegetation and conserve natural resources. The eligible families receive BRL300 (approximately \$125) every three months for a period of up to two years. Contracts can be renewed, though the Law does not state for how long. To be eligible, the family has to fulfil the social conditions of extreme poverty (income of less than BRL77 per person per month), be registered with the CadÚnico, and be a beneficiary of *Bolsa Família*. The priority rural areas are:

- certain categories of Conservation Units (Resexs, Flonas, RDS) (see Chapter 3.1.2);

<sup>10</sup> BFF BRL600 per family per year; BFR BRL350 per family per year; BFS R\$350 per family per year; BFA R\$ 30,000 per year per CU.

<sup>11</sup> The *Amazônia Legal* covers the states of Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia, Roraima, Tocantins, and parts of Maranhão.

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- Environmentally Distinctive Settlement Projects (see Chapter 3.1.2);
  - territories occupied by traditional people and communities; and
  - other rural areas defined as priority by government decree.

Territories occupied by traditional people and communities refer mainly to riverine families on the banks of rivers whose principal subsistence activities are traditional fishing and extractivism and who have been identified as suitable for the project. Other traditional populations and communities may be included in the future. The territories are managed by the *Secretaria do Patrimônio da União* (Union's Property Department (SPU)) linked to the federal Ministry of Planning. As of January 2014, among the participating families 30,262 (59 per cent) live in Settlements, 17,443 (34 per cent) in CUs, and 3,367 (7 per cent) in territories occupied by traditional populations and communities (MMA, 2014a).

Families are allowed to use the resources provided by forests in a sustainable way. Among others, they are permitted to gather fruits, extract latex, conduct artisanal fishing, and produce crafts from natural resources. The concrete rules for the sustainable use of natural resources and environmental conservation are established and described in the management or regulation publications, which differ according to the priority area. In Conservation Units these documents are Usage Plans, Management Plans, The Concession of the Effective Right of Use, and Fisheries Agreements. For projects in Settlements, there are Usage Plans, Contracts for the Provision of Effective Right of Use, and Cession Agreements. In riverine areas occupied by traditional people there are Terms of Authorization for Sustainable Use (TAUS) (Governo Federal Brasil, 2013, p. 46f).

## Identification of Families

To identify the eligible families, the MMA uses the local offices of several federal agencies, including ICMBio, INCRA, and SPU, to obtain records on families living in the respective priority areas and performing conservation and sustainable use activities. The MMA forwards these records to the MDS which then checks to see if the families are registered in the CadÚnico, are participants of *Bolsa Família*, and if their monthly per capita income is below BRL77 (social eligibility conditions). At the same time, the federal agencies *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis* (Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA)) and *Centro Gestor e Operacional do Sistema de Proteção da Amazônia* (Management and Operations Centre of the Amazon Protection System, linked to the Ministry of Defence (Censipam)) check the vegetation of the area according to federal legislation (environmental eligibility conditions). Based on these results, the MMA finalizes the list of beneficiaries.

Candidates who receive the *Bolsa Família* grant have priority to be enrolled for *Bolsa Verde*. However, those families who quit the *Bolsa Família* programme after starting to receive the *Bolsa Verde* grant do not necessarily lose eligibility for *Bolsa Verde*.<sup>12</sup>

The MMA drafts the Terms of Adhesion document, which has to be signed by the eligible families. It contains general information on the programme including its objectives and operational regulations, as well as the responsibilities of the families regarding the sustainable use of natural resources and environmental conservation by referring to the respective regulating documents (see above). The Terms of Adhesion document includes the name of the head of the family registered previously with *Bolsa Família*. The

<sup>12</sup> See Decree 7.572, Art. 6, Para. 2. Neither Law 12.512 nor Decree 7.572 establishes an absolute need that the *Bolsa Verde* beneficiaries be simultaneously covered by the *Bolsa Família* benefit. The coincidence relates to the fact that the social eligibility criteria for both programmes are the same.



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document is then distributed to local administrators who go to the field, inform the beneficiaries, and collect the signatures. Eligible families who are not registered in the CadÚnico are identified and enrolled (*Busca Ativa*). Based upon the signed Terms of Adhesion, the MMA sends a list of beneficiaries to the *Caixa Econômica Federal* to include them on the *Bolsa Verde* payroll. The families can withdraw the quarterly benefits from Caixa branches, lottery shops connected with the *Caixa*, or automatic teller machines (ATMs) by presenting their *Bolsa Família* card that now includes a green sticker. Those who do not participate at *Bolsa Família* after becoming participants of *Bolsa Verde* receive a specific *Bolsa Verde* card (Governo Federal Brasil, 2013, p. 48). As with *Bolsa Família*, it is therefore not necessary for beneficiaries to have a bank account to receive payments. Each quarterly payment is made in full and partial withdrawals are not allowed. To prevent fraud, the money has to be withdrawn within 150 days or otherwise it will go back to the MMA (MMA, 2014b).

## Training

The concept of *Bolsa Verde* includes environmental training for the beneficiaries. The training is financed by the British Embassy and developed by the International Education Institute of Brazil, a non-profit civil organization focusing on training and qualifications in the area of environmental conservation. The training is supposed to offer guidance and encourage learning that generates productive inclusion of the participating families, while at the same time providing technical assistance on production processes and marketing (IIED, 2014; Campos, 2013). However, there was no information available on whether trainings had started as of January 2014.

## Monitoring

Social Conditions are monitored through the *Bolsa Família* programme, mainly through the CadÚnico. Extensive monitoring has been carried out and there is detailed data on the beneficiaries available online.<sup>13</sup>

The federal agencies IBAMA and Censipam, which were created to monitor the *Sistema de Proteção da Amazônia* (Amazon Protection System (SiPAM)), are responsible for environmental monitoring and have to produce quarterly and annual reports. Monitoring includes quarterly and annual satellite tracking of vegetation in participating areas. Within the Amazônia Legal, SiPAM uses free satellite images from the *Instituto Nacional de Pesquisas Espaciais* (National Institute for Space Research (INPE)), while IBAMA is responsible for satellite monitoring of the areas outside the Amazônia Legal. In addition to satellite images, radar hotspots are used for regular alerts to deforestation. To identify areas to be included in the programme, IBAMA conducts environmental diagnoses. A sample monitoring of beneficiary families is to be conducted periodically from 2014 onwards. This is considered especially important where deforestation is noted on the satellite images. The data on social and environmental monitoring as well as on the payment status of each family is collected in the geo-referenced information system database called SiSVerde. Its development, improvement, and maintenance are under the responsibility of Censipam (Governo Federal Brasil, 2013, p. 50f; Campos, 2013). While social monitoring is well documented, results of environmental monitoring have not yet been published.

Families can be excluded from the programme if they are not in extreme poverty anymore and/or do not comply with the environmental conservation activities outlined in the Terms of Adhesion. However, before families are excluded, local agents visit to check

<sup>13</sup> See: <http://www.mma.gov.br/desenvolvimento-rural/bolsa-verde/item/9141>.

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the reasons for deforestation and provide any necessary assistance to remove obstacles to participation where possible (Governo Federal Brasil, 2013).

## Administration

*Bolsa Verde* is coordinated by the MMA and executed by the Secretary of Extractivism and Sustainable Rural Development, Department of Extractivism. The programme is financed out of the MMAs annual budget. There is an Administrative Committee consisting of MMA, CC, MDS, MDA, MPOG, and *Ministério da Fazenda* (Ministry of Finance (MF)). The Committee is responsible for planning and approving the policies related to *Bolsa Verde*, suggesting priority areas, articulating the actions for the involved federal government agencies, approving the internal organization, as well as suggesting criteria and procedures for a) the selection and inclusion of families, b) monitoring and evaluation, and c) contract extension to the families. Local offices of the federal agencies ICMBio, INCRA, and SPU are responsible for implementing *Bolsa Verde* at the local level. They collect the signatures on the Terms of Adherence and take part in identifying eligible families who are not included in the CadÚnico. The Caixa is responsible for providing the cash payments, while Censipam and IBAMA are responsible for environmental monitoring (Governo Federal Brasil, 2013, p. 41f).

## 4. Pro-poor PES programmes in the Global South

Sub-chapter 4.1 gives an overview of existing PES programmes in the Global South, focusing on pro-poor PES initiatives. Sub-chapter 4.2 analyses four large-scale governmental PES programmes that aim at reducing poverty to different degrees are analysed regarding their key features. Two of the programmes analysed include the Costa Rican *Pago por Servicios Ambientales* (PPSA) and the Mexican *Pago por Servicios Ambientales Hidrológicos* (PSAH), both of which originally did not have an anti-poverty objective but included it in 2003 and 2007, respectively. Both programmes developed a pro-poor bias over time. The other two programmes analysed include the Ecuadorian programme *Socio Bosque* and the Chinese Sloping Lands Conversion Programme (SLCP). The Ecuadorian programme *Socio Bosque* included a poverty release objective since its inception and the Chinese programme had a social dimension among its objectives since its start. However, in practice SLCP is considered less pro-poor than the other three programmes. Subsequently, in sub-chapter 4.6, a special topic in this chapter introduces the positive social and environmental impacts of public employment programmes and their proximity to pro-poor PES. The case of “Working for Water” in South Africa will also be highlighted. As the paper focuses on the social aspects of pro-poor PES schemes, the environmental impacts will not be further discussed in this document.<sup>14</sup>

### 4.1. Overview of selected PES programmes in the Global South

The first private initiatives that can be defined as PES or PES-like schemes were developed in the 1970s, mainly in Asia. However, these usually were scattered small projects and it was not until 1996 that PES schemes received larger international attention. In that year Costa Rica launched the first large-scale national PES Programme, *Pagos por Servicios Ambientales* (PPSA). Since then programmes and initiatives that can be classified as PES schemes have been continually developed around the world. They have

<sup>14</sup> For studies on the environmental impacts, see Cassola (2010b) for *Bolsa Floresta* in Brazil, Porras et al. (2013) for Costa Rica, Alix-Garcia et al. (2009) for Mexico, Espinosa (2005) for Ecuador, Yin et. al (2013) for China, and Rodricks (2010) for South Africa.

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become very popular in the Americas and Asia since the 1990s and more recently also in Africa. Schemes necessarily tend to be concentrated in countries that have significant natural resources. Many programmes in Latin America can be found in Costa Rica, Colombia, and Ecuador, while in Africa they are concentrated in Kenya, Tanzania, and South Africa. Asia has programmes concentrated in China, India, the Philippines, and Indonesia.

As shown in Chapter 2.2, there is a large variety of ways PES schemes can be designed, making it difficult to classify whether an initiative is a “true” PES scheme or not. This, as well as a large number of very small (private) and often short-term initiatives, makes it very challenging to estimate how many PES schemes currently exist in the world.<sup>15</sup> Most of the current programmes are carbon sequestration and watershed programmes, especially those that support sustainable forest management. The *State of Watershed Payments Report* recognized 205 existing watershed programmes around the world in 2012 (Ecosystem Marketplace, 2013). For Latin America and the Caribbean, the Organization of American States (OAS) counts 267 PES schemes, out of which 157 are watershed, 78 are biodiversity, 51 are carbon sequestration, and 4 are ecotourism programmes (OAS, 2014).

According to Ecosystem Marketplace, most programmes are financed by governments, especially in Asia and Latin America and the Caribbean. Programmes in Africa tend to be donor-financed. Most countries with a large number of PES schemes also have at least one large national government programme (Ecosystem Marketplace, 2010).

#### **4.1.1. Overview of the 56 PES programmes reviewed**

Among the 56 PES schemes that were reviewed in 19 countries (see Annex 1, table A1-A4 for more details), 43 small and medium scale programmes were reviewed and 18 national, large scale programmes (see Table 1 below for an overview per country). Among the 19 countries, there are 12 in Latin America and the Caribbean, three in Africa, and four in Asia and the Pacific.

Among these 19 countries, Brazil, Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Nicaragua and Peru have ratified the ILO Indigenous and Tribal Peoples Convention, 1989 (No. 169). Dominican Republic, El Salvador, India, Malawi and Pakistan have ratified the older ILO instrument on indigenous peoples, the Indigenous and Tribal Populations Convention, 1957 (No. 107), which remains in force in these countries.

Among the small- and medium scale programmes there were eight with a pro-poor focus and among the national, large-scale programmes 13. Among the programmes reviewed there wasn't necessarily a correlation between public programmes and a pro-poor focus as those programmes that were not classified as public (or a mix of public and private) include programmes that were managed by and financed from NGOs such as Care, WWF, IFAD and local NGOs, as well as the World Bank and the EU.

Nearly all the national, large scale programmes reviewed were financed from a mix of public and private resources including from international donors such as the World bank, the Netherlands, Spain, IDB, GEF and one through the REDD+ mechanisms (see sub-chapter below for more details on REDD+). Nearly all were also pro-poor however this was may be due to the focus on social protection when pre-selecting the programmes.

Among the small and medium scale programmes, there were only eight with a pro-poor focus (see table 1). Among those 8 with a pro-poor focus, only one (Pinampiro in Ecuador) was mainly financed from private sources, namely the water users. The seven

<sup>15</sup> For a non-exhaustive list of existing programmes around the world, see Annex I.

other programmes with a pro-poor focus, were mainly financed by donors and among those only one was financed also from national public sources (*Asociación Civil Mexicana Servicios Ambientales Oaxaca* in Mexico).

Two small and medium scale programmes (one in Brazil and one in Malawi) were mainly financed from resources coming from tourists who would buy the environmental service (biodiversity respectively landscape beauty). Beside water usage fees or taxes, taxes on other goods have also been used to finance PES schemes. Among the programmes reviewed, two large scale programmes, *Programa Productor de Agua 2000* in Brazil financed amongst other sources from royalties on oil and natural gas and PPSA in Costa Rica financed from contributions of fuel and water taxes completed by private sector and grants.

**Table 1. Number of programmes reviewed per country**

Country	Small and medium scale				National and large scale			
	Number	Pro-poor	Public (or mix)	Initiation year before 2005	Number	Pro-poor	Public (or mix)	Initiation year before 2005
Brazil	7		4		4	3	4	2
Bolivia	3			3	1		1	1
China	1		1		2	1	2	2
Colombia	1			1	2	1	2	2
Costa Rica	5		1	4	1	1	1	1
Dominican Republic	1	1		1				
Ecuador	6	1	1	3	1	1	1	
El Salvador	1		1	1	1	1	1	
Guatemala	1			1	2	2	1	1
India	3			1				
Kenya	3	2						
Malawi	1				1			
Mexico	3	1		3	1	1	1	1
Nicaragua	1		1					
Pakistan	1			1				
Peru					1	1	1	
Phillipines	3	2		3	1	1	1	1
Trinidad and Tobago	1	1	1					
Uganda	1							
Total	43	8	10		18	13	16	

Programmes reviewed covered all four ES types (see table 2) and approximately half were initiated before 2005 and half after 2006 (see table 3). Programmes with a pro-poor focus are among those prior to 2005 and those initiated afterwards. However, in the review it wasn't specified when the programme added the pro-poor focus which may have come later than the initiation year. Although there are a large number of large scale carbon sequestration programmes, such environmental services can also be provided through small scale programmes as in the case of *Asociación Civil Mexicana Servicios Ambientales*

Oaxaca in Mexico and Nariva Wetland Restoration in Trinidad and Tobago. Both also have a pro-poor focus.

And among the national, large programmes: one carbon sequestration, one carbon sequestration and biodiversity, five watershed, agroforestry, forest managements conservation, two programmes provided another type of ES, and one programme provided all four types of ES.

**Table 2. Number of programmes reviewed per type of ES and pro-poor focus**

	Small and medium scale	National and large scale	Pro-poor focus
Watershed	29	8	9
Carbon sequestration	2	1	1
Biodiversity	1		
Carbon sequestration and biodiversity	2	1	2
Watershed and biodiversity	2		1
Landscape beauty and biodiversity	1		
Landscape beauty	1		
All 4 types (watershed, carbon sequestration, landscape beauty and biodiversity)		1	1
Other (including forest management/ conservation and agroforestry)	5	7	7
Total	43	18	21

**Table 3. Number of programmes reviewed per year of initiation and pro-poor focus**

	Small and medium scale	National and large scale	Pro poor focus
Before 2000	6	5	5
2000-2005	15	7	8
2006-2010	11	5	6
2011-present	4	1	1
Unknown	7		1
Total	43	18	21

### Regional/Global Initiatives

As seen in Chapter 2.2, PES schemes were not originally designed with a poverty reduction objective. However, as it has been realized that poor people can be relevant providers of environmental services, currently there are several programmes that include poverty reduction in their objectives. This is mainly the case for programmes that are either donor-led or government-led. In this respect, some multi-country learning initiatives should be mentioned, which promote the development of local PES schemes with an anti-poverty focus in a number of countries. The most important ones are the global initiatives, Reducing Emissions from Deforestation and Forest Degradation and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks (REDD+) and Ecosystem Services for Poverty Alleviation (ESPA), as well as regional initiatives, Rewarding the Upland Poor for Environmental Service (RUPES) in Southeast Asia and Pro-poor Rewards for Environmental Services in Africa (PRESA). All of these initiatives have or had regional action sites in different countries combined with a focus on research and a platform to exchange experiences to develop lessons for future projects.

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The debate on reducing emissions from deforestation in developing countries and approaches to stimulate action was on the agenda of the Conference of the Parties (COP) under the United Nations Framework Convention on Climate Change (UNFCCC) at its 11th Session in Montreal in December 2005. Since then, under the agenda item now called Reducing Emissions from Deforestation and Forest-degradation (commonly referred to as REDD), strategies and policy tools have been discussed, including through which individuals, communities, or other relevant stakeholder groups, mainly in developing countries, can be financially rewarded for reducing emissions from deforestation and forest degradation, as well as how to enhance the carbon stock. REDD represents a set of possible policies, institutional reforms, and programmes that provide monetary incentives for developing countries to reduce greenhouse gas emissions by protecting their forests (United Nations Framework Convention on Climate Change, 2014). REDD was expanded to include strategies that go beyond reducing emissions from deforestation and forest degradation and would also look at the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in reducing emissions (REDD+). Recognizing that forests are almost always inhabited areas and that REDD+ can therefore also have social implications for indigenous peoples and local communities, the possible inclusion of social co-benefits in the REDD+ regime was debated at the 15th and 16th COP in 2009 and 2010, respectively. However, opinions differed largely and it did not become clear whether poverty reduction co-benefits should be an essential ingredient of future REDD+ implementation (Hiraldo and Tanner, 2011).

Various multinational or bilateral initiatives support developing countries with the creation and implementation of national REDD+ strategies, including the Forest Carbon Partnership Facility (FCPF) and Forest Investment Program (FIP), hosted by the World Bank and the UN-REDD Programme. These initiatives can, but in most cases do not necessarily, operate as “buyers” of the environmental services provided. For example, the UN-REDD Programme, launched in 2008, is a UN collaborative initiative that supports national REDD+ efforts in 48 partner countries either by providing direct support to the design and implementation of national REDD+ programmes or through the provision of common tools and methodologies, data and research, among others. By June 2013, total funding from these two streams amounted to \$172.4 million (UN-REDD, 2014).

On a smaller scale, Ecosystem Services for Poverty Alleviation (ESPA) aims to improve the understanding of ecosystem services and their relationship to poverty alleviation by delivering high-quality research. This programme is funded by the United Kingdom's Department for International Development (DfID), the Natural Environment Research Council, and the Economic and Social Research Council, as part of the UK's Living with Environmental Change partnership. It provides grants for local small-scale PES projects, which are then assessed. In 2013, 11 projects, most of them operating in Africa and Asia, were given grants. ESPA also provides a platform (Global Forum) bringing together PES stakeholders willing to share their experiences (ESPA, 2014).

On a regional level, in Southeast Asia, Rewarding the Upland Poor for Environmental Service (RUPES) aims to “[i]ntegrate rewards for environmental services into development programmes to alleviate rural poverty and protect the natural environment” (RUPES, 2014). The objective was to develop reward systems that are generally appropriate in the Southeast Asian context and adaptable to the individual local context. RUPES worked with potential users as well as producers and local institutional partners at each of the sites. The first (test) phase, known as RUPES I (2002-07), included six action sites in Indonesia, the Philippines, and Nepal. Between 2008 and 2012 the second phase, RUPES II, was conducted to follow-up and expand on the lessons learned in RUPES I. The action sites were extended to 16 and now include sites in China, India, and Viet Nam. RUPES was mainly funded by the International Fund for Agricultural Development (IFAD) and coordinated by the World Agroforestry Centre (ICRAF). Various research

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organizations, non-government organizations, and national partners interested in RUPES were part of its steering committee (Leimona et al., 2013).<sup>16</sup>

The main objective of Pro-poor Rewards for Environmental Services in Africa (PRESA) is to improve the living conditions of smallholders in the highlands of East Africa and West Africa by extending fair and effective environmental service rewards. Its activities include action research and practical experience with the aim to engage key stakeholders in active learning on PES. PRESA can be seen as a platform to generate and share knowledge (lessons, tools, experience, advice, and training) on PES practices across Africa. PRESA was implemented in 2008 and includes seven action sites in Guinea, Kenya, Uganda, and Tanzania. However, only one project in the Uluguru Mountains in Tanzania has so far been piloted. PRESA is run by the World Agroforestry Centre (ICRAF) and mainly funded by the International Fund for Agricultural Development (IFAD), supplemented by the Ministry for Foreign Affairs of Finland, the World Bank, the European Union, the United Nations Environment Programme (UNEP), and the United Nations Development Programme (UNDP) (PRESA, 2014; PRESA, 2011).

There are also various international and regional exchange groups focusing on PES, such as the Katoomba Group, an international network serving as a forum for the exchange of ideas and information about PES transactions as markets, as well as for collaboration between practitioners on PES projects and programmes.<sup>17</sup> The East African Forum for Payment for Ecosystem Services is a regional interactive forum with the objective to exchange knowledge, ideas, and experiences, as well as offering help and critiques of ongoing and upcoming projects concerning PES in East Africa and beyond.<sup>18</sup>

#### 4.2. Costa Rica's Pago por Servicios Ambientales

With the creation of *Ley Forestal No. 7575* and the commitment of the Government to use 5 per cent (later reduced to 3.5 per cent) of the fuel tax to fund the remuneration of environmental services, Costa Rica launched its national PES Programme *Pago por Servicios Ambientales* (PPSA) in 1996. It started operating in 1997 and was extended in 1998 by *Ley de la Biodiversidad No. 7788*. PPSA represented a response to the intense deforestation of Costa Rica's forests, which had covered 70 per cent of the country in 1950 but only 20 per cent by 1987. Today, nearly 1 million hectares of forest have been included in the PES programme, contributing to an increase of forest coverage to 50 per cent of Costa Rica's territory.<sup>19</sup> Today PPSA is one of the best-known PES schemes worldwide (FONAFIFO, 2007; Porrás et al., 2013. pp. 29ff, 9).

The government-led programme rewards forest owners with cash payments for four types of environmental services. PPSA was originally divided into protection, reforestation, and sustainable forest management contracts. However, contracts of the latter type have not been renewed since 2002. In 2003 agroforestry projects, such as improved management practices through agroforestry (e.g. shade coffee), were introduced with the objective to include environmental services provided by agricultural activities and to contribute to the reduction of rural poverty by making sustainable small-scale farming

<sup>16</sup> These include the Centre for International Forestry Research (CIFOR), the World Resources Institute (WRI), Conservation International, Winrock International, the International Institute for Environment and Development (IIED), International Union for Conservation of Nature (IUCN), Ford Foundation, the Nature Conservancy, WWF and Economy and Environment Program for Southeast Asia (EEPSEA).

<sup>17</sup> <http://www.katoombagroup.org/>.

<sup>18</sup> <http://www.eafpes.org/>.

<sup>19</sup> PPSA has protected more than 860,000 hectares of forest, reforested 60,000 hectares, and supported sustainable forest management in almost 30,000 hectares since 1997. Since 2003 it has planted 4.4 million trees and promoted natural regeneration of almost 10,000 hectares since 2006.

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profitable. Regeneration projects were included in 2006. However, with a share of 90 per cent, protection projects still make up by far the largest share of all projects, followed by reforestation projects with a share of 6 per cent (Porrás et al., 2013).

Between 1997 and 2012, 15,375 contracts were concluded with individuals, legal entities (including micro-enterprises, family businesses, small and medium-sized enterprises (SMEs), and large companies and their subsidiaries), conservation cooperatives, and indigenous communities. Originally, the programme did not target a specific population group. Payments were given to any landowner of at least 2 hectares of land (1 hectare in reforestation projects) who committed their land to conservation or reforestation. Election of participants was made on a first-come-first-serve basis. This caused payments to go to areas with low risk of deforestation and to rather well-off landowners.<sup>20</sup> In 2003 new eligibility criteria were introduced. Since then, criteria have been weighted according to a point system to determine election priorities. The criteria differ according to the form of the project. They include environmental criteria, such as priorities given to biological corridors, areas with high land-use aptitude for forest plantations, or areas with high risk of soil or water degradation and biodiversity loss. There are also social criteria, such as prioritizing areas with a Social Development Index (SDI) below 40 and setting quotas for participation of women and indigenous peoples.<sup>21</sup> Since 2012 additional points are given to properties of less than 50 hectares (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 128; Porrás et al., 2013, p. 21).

Landowners wishing to participate in the programme have to provide various documents, including the following: (a) application form; (b) proof of his or her identity or the statutes of an organization; (c) proof of legal land tenure or, if not available, official documents that prove the right of possession and are publicly authorized by an official notary, such as a proof of sale; (d) proof that local taxes have been paid; (e) official cadastral map of the property; (f) verification of the size of the area by a professional topographer; (g) cartographic map to indicate the location of the area; (h) legal authentication of the representative; and, for sustainable forestry activities, (i) Forest Management Plan drafted by a *regente forestal* (professional forestry engineer) and approved by the *Sistema Nacional de Áreas de Conservación* (National System of Conservation Areas (SINAC)), which administers the country's protected natural areas (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 9).

Depending on the project, contracts with landowners are concluded for 5 to 15 years and can be extended. Payment is effected either through on-going cash payments or a one-off payment, depending on the arrangement negotiated. In 2010 payments were categorized in ten different payment levels according to the type of project, duration of the contract, and the estimated value of the ecosystem service provided. Today, payment levels vary between \$410 and \$1,470 per hectare per contract.<sup>22</sup> Between 1997 and 2010, on average each farmer was paid \$64 per hectare per year for protecting existing forest (UN-REDD, 2013, Chapter 4).

Between 1997 and 2012, the total expenditure of PPSA amounted to \$341.8 million, varying between \$5.7 million in 2000 and 42.4 million in 2012. The budget comes from government funds, voluntary deals with the private sector, as well as international banks and bilateral agencies. The bulk is financed by the Government, mainly out of the fuel tax (on average \$11.3 million per year) and, since 2006, by 25 per cent of the water tax

<sup>20</sup> A study showed that only 6 per cent of total payments were given to landowners of properties smaller than 30 hectares, while over 80 per cent were paid to people who owned more than 70 hectares. In general, receivers had an average income of \$22,000 per year and 75 per cent earned more than \$820 per month (Grieg-Gran et al., 2005).

<sup>21</sup> For more details on the targeting criteria in Costa Rica, see Porrás et al. (2013, p. 22).

<sup>22</sup> For more details on the payment levels in Costa Rica, see Porrás et al. (2013, p. 16).



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revenue (approximately \$3.6 million accumulated between 2007 and July 2010). PPSA aims to increasingly engage with the private sector. The first contracts were made with three hydroelectric plants between 1997 and 2004. Currently, there are about 80 contracts with the private sector. However private sector contributions still amount to only 3 per cent of the total budget. Income is also generated through the sale of carbon credits under (and outside) the Kyoto Protocol. Grants and loans from the World Bank and other international donors were primarily used in the beginning (Porrás et al., 2013, p. 12).

The main intermediary is the *Fondo Nacional de Financiamiento Forestal* (National Forestry Fund (FONAFIFO)). FONAFIFO collects funds from the users, pools the funds into one general fund, and then is responsible for distributing payments to eligible landowners. Against a fee of about 12 to 18 per cent of the payment, forestry engineers can assist landowners with the application and the implementation of the project. Together with FONAFIFO's regional offices, forestry engineers are also responsible for the monitoring. As sites tend to be small and difficult to monitor via satellites, monitoring is mainly done via site visits by forestry engineers to the participating areas. They, as well as FONAFIFO's technical personnel, are allowed to visit the properties at any time and forestry engineers are responsible for preparing status reports. In addition, some monitoring is being done via geographic information system (GIS) tools and satellite photography. In case of non-compliance with a contract, payments already made have to be returned and the person is excluded from the programme. There have been some local case studies to evaluate social impacts of the programme, but nationwide social monitoring does not seem to have taken place (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, pp. 7, 16, and 56).

#### 4.3. Mexico's *Pago por Servicios Ambientales Hidrológicos*

Inspired by the Costa Rican model, the Mexican Government made some amendments to the Ley Federal de Derechos and launched in 2003 its first national PES programme, *Pago por Servicios Ambientales Hidrológicos* (PSAH), which rewards providers of hydrological environmental services. In 2004 the PES scheme to support biodiversity conservation and carbon sequestration, *Mercado de Servicios Ambientales por Captura de Carbono y los Derivados de la Biodiversidad para Fomentar el Establecimiento y Mejoramiento de Sistemas Agroforestales* (PSA-CABSA), was introduced. Both programmes were merged into the *Programa Nacional Forestal Pago por Servicios Ambientales* (PSAP) in 2006 and integrated into the more comprehensive ProÁrbol plan in 2007. ProÁrbol combined most existing forest conservation programmes and included other strategies such as reforestation, commercial plantation, certification, and tourism. It was renamed *Programa Nacional Forestal* (National Forest Programme (PRONAFOR)) in 2013 (The REDD Desk, 2014).<sup>23</sup> This paper will generally focus on PSAP and will look especially at PSAH regarding concrete design and lessons learned. Until 2012, PSAP covered 2.2 million hectares of forest (USAID, 2012). It has thus surpassed Costa Rica's PES programme in terms of included land surface. PSAH pays private landowners, *ejidos* (a type of commons), and indigenous communities compensation for preserving and protecting the original forest cover on their lands with the objective to increase ground water, improve water quality, and reduce the risk of landslides.<sup>24</sup> Providers have to commit to maintaining the forest cover under contract

<sup>23</sup> For more information on ProÁrbol see <http://www.teebweb.org/media/2013/10/Bundling-of-ESS-in-agroforestry-Mexico.pdf>.

<sup>24</sup> There are two types of communal land tenure in Mexico: agrarian communities (or communes) and *ejidos*. In both types, land belongs to the community based on a Presidential Resolution or a resolution from the Supreme Agrarian Tribunal. While in an agrarian community the land cannot be subdivided for individual use,

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through fire control activities, prevention of illegal logging and hunting, and the installation of signposts to raise neighbours' awareness of activities allowed on the land. While in the beginning the rules on forest use were very prohibitive, critiques from rural social movements and civil society organizations caused a change towards emphasizing active and sustainable forest management activities. Since 2006, participants are required to develop forest management plans, according to which risks are identified and preservation activities scheduled for the contract duration. They also form the basis for future field verifications (Sims et al., 2013, p. 9). The plans need to be elaborated with a technical advisor, for which additional compensation is provided by the programme (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 4; FAO, 2013, p. 3; SEMARNAT, 2011, p. 4).

Up until 2012, more than 5,400 *ejidos*, communities, and small landowners participated in the programme (USAID, 2012). To select participants, a point system is used which weights pre-determined eligibility criteria. In the beginning these criteria only referred to the area in which people were living and the size of their forest, thus criteria focused on environmental aspects. Besides that, election of participants was made on a first-come-first-serve basis. With inclusion in the *ProÁrbol* plan in 2006, social and administrative targeting criteria were introduced and in 2008 the risk of deforestation was added to the criteria. Before 2006, there were nine selection criteria, out of which 40 per cent were environmental; by 2010 there were 26 criteria, out of which 19 per cent referred to environmental aspects (OECD, 2013, p. 146). Priority targeting criteria today include, among others: (a) the area and location of the project, such as form of forest and risk of deforestation; (b) socio-economic criteria, such as level of poverty, proportion of indigenous population, women's participation in the project, and capacity of collective organizations; (c) environmental criteria, such as tree-cover, amount of biodiversity, biomass density, disaster risk, water availability, and land degradation; and (d) other conservation or development efforts, such as the existence of community surveillance networks and community land-use plans (FAO, 2013, p. 3).

To apply, candidates need to present the application form together with official identification, a map of the land to be included, as well as a certification that proves legal ownership of the land. If legal landownership cannot be provided, proof of possession of the land is also possible. Communities and *ejidos* should be registered in the *Registro Agrario Nacional* (National Agrarian Registry) or demonstrate that the registration is in process. Their application also needs to be backed up by an assembly agreement demonstrating the approval of the community representative(s) and commitment of the whole community to participate at the programme (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 9; UN-REDD, 2013, p. 28; USAID, 2012, p. 7).

Contracts are concluded for five years and providers can reapply afterwards. Payments are made on an annual basis at the end of the year provided the land use has not changed. Thus, monitoring is a requirement that precedes payment. Initially, there were two payment levels, which were raised to four in 2004 and to six in 2010.<sup>25</sup> The levels are based on the type of ecosystem, deforestation risk, and opportunity cost. Since 2005, all payments increase regularly according to the federal average minimum salary to prevent devaluation. In 2013, PSAH paid between \$32 and \$93 per hectare per year, the highest amount for cloud forests as they are at high risk of deforestation (USAID, 2012, p. 7; FAO, 2013b, p. 4; FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 12). The money is either paid directly to landowners or to community representatives. Contracts do not include conditions on how the money is used or distributed within a community and

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this can be done in an *ejido*. Thus, each *ejidatario* can have rights to communal lands, but also to individual parcels (USAID, 2012, p. 4).

<sup>25</sup> There was an attempt to introduce 15 different levels in 2008. However, this proved to be administratively too expensive.

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programme officials do not intervene in this respect. Communities can use funds according to their own customs, needs, and practices. However, since 2011, a plan on how PSAH revenues are used needs to be approved by the community assembly and presented upon application to ensure that the use is in accordance with community wishes (USAID, 2012; FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 55).

Up until 2012, \$429 million were distributed to PSAP participants (USAID, 2012, p. 9). The amount per year varied between \$14.4 million in 2003 and 83.6 million in 2010 (SEMARNAT, 2011, p. 4). The programme has received funding from different sources, including contributions from a federal water-usage fee, government budget that is annually approved by the legislature, state and municipal governments, as well as voluntary private contributions and some grants and loans, such as a World Bank loan in 2006. The bulk comes from the Mexican Government (\$60 million per year) and water users (\$25 million per year). The fee is paid by all drinking water users and most bulk water users. The concrete amount varies according to each state (FAO, 2013b, p. 1).

PSAP is administered by the *Comisión Nacional Forestal* (National Forestry Commission (CONAFOR)), which is responsible for managing the system, monitoring performance, and raising funds. Technical advisors act as intermediaries in supporting applicants to access, develop, and implement the programme, as well as develop a forest management plan. They are also part of the monitoring team. Technical advisors need to be registered with CONAFOR. An Advisory Technical Committee (CTC) composed of representatives from different sectors of society, including government agencies, civil society representatives, indigenous populations, and other rural communities, meets three times per year to discuss and promote continuous programme improvements (FAO, 2013b, p. 4).

Forests included in the scheme are monitored by CONAFOR's head office staff on an annual basis by GIS satellite images to detect changes in forest cover. Monitoring is complemented by random visits to the plots through CONAFOR's field staff (USAID, 2012, p. 6). If deforestation is detected, sanctions are imposed, such as the reduction, cancellation, or reimbursement of payments. If forest cover is lost without the fault of the landowner, e. g. through forest fire, payment is cancelled for the land lost, while unaffected areas are still eligible for payment (USAID, 2012; FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 18). The first detailed assessment of social impacts was the study entitled, *Two-dimensional evaluation: The environmental and socioeconomic impacts of Mexico's Payments for Hydrological Services Program*, published in 2013 by the University of Wisconsin (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 57; Alix-Garcia et al., 2013).

#### 4.4. Ecuador's *Socio Bosque* Programme

Ecuador's Constitution, as well as the *Plan Nacional para el Buen Vivir* (National Development Plan), recognize ecosystems and their services as important contributors to human welfare. The National Development Plan includes the objectives for reducing deforestation and improving living conditions (Gobierno Nacional de la República de Ecuador, 2014).<sup>26</sup> Within this political context, the *Ministerio del Ambiente de Ecuador* (Ecuadorian Ministry for Environment (MAE)) was interested to initiate a programme that combines these objectives, leading to the development of *Socio Bosque* in 2008.<sup>27</sup> The

<sup>26</sup> With almost 200,000 hectares of forest lost every year (2005 – 10), Ecuador presented one of the highest deforestation rates in Latin America (Mongabay, 2014).

<sup>27</sup> The legal basis of *Socio Bosque* is the Ministerial Ordinance 169/2008 (*Acuerdo Ministerial*), signed by the Minister of the Environment. The Ordinance refers to a number of articles of the Ecuadorian Constitution to establish the legal foundation of *Socio Bosque*.

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programme was designed within eight months taking into account a number of national and international experiences, including Costa Rica's and Mexico's PES schemes. The MAE preferred to quickly launch the programme and adapt it afterwards on a learning-by-doing basis. For this reason, regional workshops have served as a platform for exchange of experiences between participants and non-participants. By December 2013, 1.23 million hectares of forests were included under *Socio Bosque*. The aim is to eventually cover a total of 4 million hectares, equivalent to 66 per cent of Ecuador's non-protected forests (Ministerio del Ambiente de Ecuador, 2014).

*Socio Bosque* rewards private and communal landowners with regular monetary payments for conserving native forests. Since 2009, the Andean high plateaus, known as *páramos*, were included. From 2013 onwards, active and passive forest restoration is also rewarded. *Socio Bosque* explicitly acknowledges that all four types of environmental services, as described in Chapter 2, are delivered by forests. Non-destructive uses, such as subsistence hunting and gathering of non-timber products, continue to be permitted, as well as productive activities on non-forested land. The main objective is the conservation of forests, wasteland, and native vegetation and their ecological, economic, and cultural values. *Socio Bosque* also includes the goal of reducing greenhouse gas emissions that are associated with deforestation and have therefore become one of the pillars of Ecuador's national REDD+ strategy. The third objective is the improvement of living conditions of people in the forests. The latter has been clearly formulated and taken into account during the design process. Thus, principles, such as fairness and equitability, positive incentives rather than prohibitive clauses not, simplicity, transparency, and legal enforcement, were formulated (Ministerio del Ambiente de Ecuador, 2014; Fehse, 2012).

Private and communal landholders, including indigenous communities, are eligible for the programme. As of December 2013, there were 161,755 participants, with plans to include up to 1 million people. In January 2013, 7 per cent of the participants were communities contributing to 88 per cent of the conserved hectares of land, while 93 per cent of participants were individuals, contributing 12 per cent of the land (Ministerio del Ambiente de Ecuador, 2014). During the design process, the question was raised whether targeting should be done according to poverty level or to environmental needs (Fehse, 2012). Targeting criteria now include both and participants are chosen according to a ranking system consisting of the following: (1) risk of deforestation (9 points); (2) importance of native forests for carbon storage, water provision services, and biodiversity habitat (10 points); and (3) poverty level in the region based on the unsatisfied basic needs index (3 points).

To apply, interested landowners or communities need to provide the necessary documents, which include proof of ownership or legal possession of the land, a copy of the identification card and, if applicable, a copy of the *Registro Único de Contribuyentes* (tax identification number (RUC)), as well as a certificate of a bank account, a tax certificate, and a geo-referenced map of the area that is to be conserved. Communities additionally need to present a document that validates the legal representative, the *Acta de Asamblea* (assembly protocol), and a copy of the statutes of the community. Individuals and communities also need to present a *Plan de Inversión* (investment plan) on how the conservation payments will be spent.<sup>28</sup> There are no restrictions on the use of the money, but it is encouraged to invest in education, health, and infrastructure development. The plan increases transparency in the decision-making process within communities and ensures that all members of the community are informed. It is also used for monitoring socio-economic impacts (see below). Communities can be trained for preparing,

<sup>28</sup> See the form under: <http://sociobosque.ambiente.gob.ec/?q=node/232>;  
<http://sociobosque.ambiente.gob.ec/files/images/articulos/archivos/formato-plan-inversion-participativo.pdf>.

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implementing, and evaluating the plans (Ministerio del Ambiente de Ecuador, 2014; Fehse, 2012).

After the application has been received, field promoters of the MAE's implementing team verify the land. If the application is approved, future participants sign a short standard conservation agreement with the MAE based on a voluntary opt-in approach.<sup>29</sup> This agreement refers to a book with extended rules as well as to applicable national laws. It is foreseen that participants receive professional legal assistance to fully understand the standard agreement. This is to be supported by the field promoters. In addition, the MAE together with other organizations are training community paralegals for that purpose (Fehse, 2012).

The agreements are valid for 20 years with indefinite renewals if participants do not opt out. However, participants are allowed to request an early termination of the agreement. The duration of 20 years was carefully considered with the objective to be long enough to make an impact on livelihoods and promote a change in land use towards conservation. Payment is made twice each year. Payment levels are only differentiated according to the size of the area under contract, thus establishing a bias in favour of small properties with the objective to address social equity. Thus, payment per hectare decreases with an increase in the number of total hectares (Fehse, 2012; (FONAFIFO, CONAFOR, and Ministry of Environment, 2012; de Koning, 2011).

The MAE has signed cooperation agreements with civil society organizations to provide programme participants with capacity strengthening workshops, for example, on control and surveillance or financial management. Since 2013, regional courses to train individual voluntary inspectors and communal forest protectors have been developed. As an additional benefit, an agreement with the *Banco de Fomento*, a public bank that promotes rural development, was made that allows participants to use cash transfer programmes as guarantees and thus gives participants access to credit (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 48).

*Socio Bosque* is financed and conducted by the MAE, which has created an implementation team consisting of staff working in the central office and promoters in different regions. In addition, the programme established several alliances with civil society organizations, such as conservation and development NGOs and indigenous and farmers' organizations (de Koning, 2011).

Up until December 2013, *Socio Bosque's* total costs amounted to \$18 million, which were completely financed by the Ecuadorian Government using the general budget of the MAE. Since 2014, the Government developed a strategy to ensure financing for the 20 year-long contracts by diversifying the income sources (e.g. new green taxes, payments by industry, international funds, and REDD+ payments).<sup>30</sup> However, even with these new income sources, the Government still continues to be the largest contributor. The programme foresees that at least 70 per cent of the budget is to be spent on conservation payments. However, administration costs currently still account for about 40 per cent, among them monitoring costs amount to 10-15 per cent of the total budget (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 117).

Participants agree to be subject to annual monitoring. Environmental monitoring is done through satellite imagery or aerial photography and field visits. This turned out to be more costly and difficult than expected, due to cloud interference and small-scale deforestation that is difficult to detect via satellite images. Therefore, more field visits were

<sup>29</sup> See the agreement under: <http://sociobosque.ambiente.gob.ec/?q=node/198>.

<sup>30</sup> Currently the German Cooperation Bank KfW provides non-refundable support of around \$12 million.

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required and a high number of small land areas increased travel costs. Social monitoring is conducted by reviewing the participants' regular spending reports against the investment plans and verifications during field visits. Payments are conditional on performance and non-compliance may result in suspension of payments or termination of the agreement. If the contract is prematurely terminated, part of the grant may have to be repaid to the programme. The amount decreases with the number of years of participation and is subject to a negotiation process with the MEA that is based on the reasons for cancellation. Since the original design of the programme has taken into account that a conflict of goals could be generated between the enforcement of the agreement and the social acceptability of potential sanctions in case of non-compliance, it is stated that the decision should be balanced such that outcomes are positive for all parties. Thus, enforcement of environmental conditions in the contract takes into account the level of poverty on a case-by-case basis (FONAFIFO, CONAFOR, and Ministry of Environment, 2012; Fehse, 2012).

#### 4.5. China's Sloping Lands Conversion Programme

In China, article 31 of the Environmental Protection Law of 1989 and amended in 2014 formally recognized that the State should set up and improve a compensation mechanism for environmental services. There are several government programmes or initiatives either at the local or national levels that are aimed simultaneously at poverty reduction and environmental compensation and protection. Some of these programmes are the national Sloping Lands Conversion Programme (SLCP), the Caohai nature preserve and poverty reduction programme in Guizhou province, and the bio-diversity conservation and poverty reduction programme operated in Dalinor nature reserve located in the Inner Mongolia Autonomous Region. This study will further focus on the national Sloping Lands Conversion Programme (SLCP), which started its pilot phase in 1999 and was completely implemented by 2002 (IIED, 2012a). It is the largest of the Six Key Forestry Programmes, which were developed as a response to the severe flooding of 1998.<sup>31</sup> The flooding had been caused mainly by soil erosion due to the release of 2 to 4 billion tons of silt into the Yangtze and Yellow Rivers every year, with around 65 per cent of silt coming from sloping cropland. SLCP, commonly referred to as Grain-for-Green, aimed at converting 14.67 million hectares of sloping cropland (out of which 4.4 million hectares is land with slopes greater than 25 degrees, which is most likely to experience severe erosion), and 17.3 million hectares of wasteland back to forests and pastures by 2010 to halt soil erosion. It also formulated the objective of alleviating poverty and assisting poor farm households to shift to more sustainable means of production. Since 2007, further afforestation on converted sloping farmland has mostly been suspended due to a fear of food shortage.<sup>32</sup> However, SLCP on barren land continues and was extended until 2020 (Liu and Wu, 2010; Bennet and Xu, 2003, p. 4; Ferreira dos Santos, 2012, p. 62; Bennett and Xu, 2003).

Since 2013, however, the approach of the SLCP has been largely modified. In line with an official document issued by the National Development and Reform Commission (NDRC) and the Ministry of Interior, a national programme on managing sloping lands was launched to be implemented in 200 counties in 22 provinces over the period of 2013-16.<sup>33</sup> The target is to improve the quality of 285 thousand hectares of sloping cropland either by terracing the land or building raised beds in line with recommendations. The

<sup>31</sup> The other five programmes are the Natural Forest Protection Programme (NFPP), the Desertification Combating Programme around Beijing and Tianjin, the Wildlife Conservation and the Nature Reserve Development Programme (WCNR). Between 2002 and 2008, SLCP made up 53 per cent (CNY151.26 billion) of the total budget of the six programmes (Liu and Wu, 2010).

<sup>32</sup> A nationwide red line has been established, according to which no less than 123 million hectares have to be kept as farmland.

<sup>33</sup> In Chinese only: <http://www.hystbcw.com/Info/View.Asp?id=415>.

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programme is financed jointly by the central and local governments. It is village-based – all rural families of the village and their lands participate in the programme. The sloping lands were terraced along with the restructuring of mountain, water, crop field, road, and residential areas of the villages in question. In addition, the programme also served as a tool for poverty reduction through, amongst others, adjusting the structure of crop production and developing local specialized goods and services.

The initial SLCP programme aimed to target 25 provinces, municipalities, and autonomous regions. By the end of 2008, 8.2 million hectares of cropland had been converted to forestland and almost 27 million rural households participated (Liu and Wu, 2010). By 2011, 20 million hectares of sloping farmland and wasteland had been converted making SLCP the largest PES scheme in the world (Ostwald et al., 2011). The budget for the period 2000-10 amounted to 350 billion yuan (CNY) (approximately \$43 billion), which was completely financed by the central Government. Regarding the financial investment, SLCP is the second largest PES scheme in the world after the United States' Conservation Reserve Programme (Ferreira dos Santos, 2012, pp. 63, 65; IIED, 2012a).

Participating farmers conclude contracts with the Chinese Government and replant trees on sloped farmland and wasteland in exchange for compensation. The land can be transformed into ecological forests (timber producing forests that promote the recovery of the soil), commercial forests (orchards or trees with medicinal value), or grasslands. In the case of ecological forests, compensation is paid for eight years, while for commercial forests and pastures compensation is paid for five and two years, respectively. To alleviate poverty, the programme also aims at stimulating activities such as silviculture, cultivation of fruits, and livestock farming. Thus, farmers are granted the right to extract products from the planted forests once the trees are mature. To guarantee this right, the Chinese Government issues certificates of tenure to tree crops. Farmers are entitled by law to inherit and transfer the contract and extend it upon expiration. They are not allowed to sell that right within the first 50 years of establishing plantations (UN-REDD, 2013; Ferreira dos Santos, 2012, pp. 63, 65; Ecosystem Market Place, 2006; Bennet and Xu, 2003, p. 11).

Until 2004, farmers were compensated by transfers in cash as well as in-kind. They received an annual cash subsidy of CNY300 per hectare (approximately \$50) and an annual grain subsidy of 1,500 kilograms per hectare in the Yellow River Basin and 2,250 kilograms per hectare in the Yangtze River Basin. Additionally, they received free seedlings at the beginning of the planting period. Since 2004, farmers have been only paid in cash. Grain subsidies were converted into cash according to the price of grain at that time (approximately CNY1.44 per kilogram of grain). Currently, total payments have decreased and farmers in the Yangtze River Basin are paid CNY417 per hectare per year (\$68) and farmers in the Yellow River Basin are paid CNY290 per hectare per year (\$48). Instead of free seedlings when entering the programme, farmers now receive a one-time-payment of CNY750 per hectare (approximately \$123). Another change was the introduction of the exemption from taxation on all income derived from the forests and grasslands planted as part of SLCP (Ferreira dos Santos, 2012, p. 65; Bennet and Xu, 2003, p. 10; Liu and Wu, 2010).

Election of participants takes place on a top-down level and is only based on whether the land lies within a programme's targeted area. To select eligible households, the central Government determines quotas for each participating province. The provinces then transmit their quota to the counties, which pass it on further to townships and finally to participating villages. In principle, participation of farmers is voluntary; however, in practice it has been found that participants often feel an obligation to adhere as all inhabitants of a participating village/town have to engage. On the other hand, farmers can only become providers when their town/village participates. Thus, SLCP participation strongly depends on village and township governments (Ferreira dos Santos, 2012, p. 64; Bennet and Xu, 2003).

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SLCP is mainly run by the State Forestry Administration (SFA). SFA, together with the Ministry of Finance and the National Development and Reform Commission (NDRC), sets out the terms of the programme. Local governments act as intermediaries by transferring the funds from the central Government to the farmers and are also responsible for monitoring (Ecosystem Market Place, 2006).

Compliance with the programme is defined in terms of quality, type, and survival of trees and grass planted. In general, survival rate should exceed 75 per cent. However, as the plan allows for diversity in local implementation, the degree of effectiveness is strongly contextual and there seems to be room for interpretation by local inspectors. To check compliance, a series of inspections are conducted at different levels of government. Village officials visit properties frequently to ensure correct programme implementation, while township and county governments come less frequently to conduct formal evaluations. County or higher level governments and the SFA can conduct random inspections if necessary. Households found to be out of compliance with programme rules can be removed from the programme, but this does not seem to happen very often (Bennet and Xu, 2003, p. 7; Ferreira dos Santos, 2012, p. 65f; IIED, 2012a).

#### **4.6. Special topic: Public employment programmes and South Africa's Working for Water**

As mentioned in the introduction, public employment programmes (PEPs) sometimes also aim to simultaneously improve social and ecological protection. It is therefore interesting to briefly look at these types of schemes and identify commonalities with pro-poor PES programmes.

##### **4.6.1. Public employment programmes**

The first public PEPs were developed in the 1930s and are in widespread use in almost all regions of the world. While PEPs are primarily seen as temporary programmes to mitigate effects of natural disasters or economic downturns, more sustainable and long-term approaches are increasingly being promoted. The Global Jobs Pact, adopted by the International Labour Conference in 2009, mentions a role for PEPs to support productive, sustainable recovery centred on investments, employment, and social protection (Philip, 2013, p. 9). Public employment schemes and employment support schemes are also mentioned in the Social Protection Floors Recommendation, 2012 (No. 202), among the possible instruments to provide basic social security guarantees.



## Box 2. Terminology: Public employment schemes

Public employment programmes (PEPs) refer to any government programme that directly creates short-term employment other than through the expansion of the civil service. PEPs include public works programmes (PWPs) and employment guarantee schemes (EGSs) as well as a spectrum of options in-between. Public employment programmes are a type of non-contributory social assistance or cash transfer programme in exchange for work. PEPs target the unemployed, underemployed, and poor, providing income security and contributing to protect the most vulnerable against shocks, while at the same time developing public infrastructure, assets, and services that promote social and economic development. They are often implemented in countries in response to a crisis or as part of a longer term, counter-cyclical employment policy.

Public works programmes (PWPs) refer to more common, traditional PEP programmes. Although a PWP may be a temporary response to a specific shock and crisis, public works programmes can also have a long-term horizon. PWPs include Cash for work (CFW) and food for work (FFW) programmes. Examples include the Argentinian programmes, *Argentina Trabaja* and *Jefes y Jefas de Hogar* (Bertranou and Paz, 2007).

Employment guarantee schemes (EGSs) refer to long-term, rights-based public programmes in which a level of entitlement to work is provided. EGSs are based on the concept of the state acting as an “employer of last resort” (ELR). Such programmes provide employment to those willing and able to work should the labour market not offer such employment. The fundamental objective of the ELR is achieving and maintaining full employment and providing social protection to help the chronically poor at times of vulnerability by providing a form of income security. These programmes are usually also intended to establish or improve physical infrastructure such as roads, irrigation systems, and social or environmental assets. In this way, they contribute to livelihoods and growth even after the period of employment has been completed. Examples for EGSs are the Indian Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), the South African Expanded Public Works Programme (EPWP) (see item 4.6.2), and the Productive Safety Net Programme (PSNP) in Ethiopia.

The Employment Intensive Investment Programme (EIIP) can be seen as an EGS that specifically promotes labour-intensive rather than capital-intensive employment. This approach has been promoted by the ILO for more than 30 years. The EIIP usually focuses on infrastructure investments that simultaneously increase productive employment, including the development of entrepreneurship, skills, and improved access to basic goods and services for the poor. Public infrastructure is developed in areas that are relevant for adaptation to climate change, such as irrigation, water and soil conservation, flood control, and rural transport improvement and maintenance. Well-designed EIIPs may contribute to bridge immediate crisis recovery to long-term development work, as well as contribute to long-term national employment policies. (For more information see: <http://www.ilo.org/public/english/employment/recon/eiip/index.htm>.)

Sources: Lieuw-Kie-Song et al. (2010, pp. 3, 5); Harsdorff et al. (2011); ILO (2014); ILO (2012).

PEPs generally have more than one objective that can be prioritized or combined differently according to a concrete programme. The usual objectives of PEPs are:

- employment creation;
- poverty reduction; and
- infrastructure development and/or provision of public goods and services, such as social or environmental assets.

PEPs delivering environmental services, such as reforestation, removal of litter and garbage, and restoration of degraded land, are increasingly offered (Lieuw-Kie-Song et al., 2010; Harsdorff et al., 2011). For example, South Africa’s Working for Water programme promotes employment in water-clearing activities (see below). PEPs can thus be aimed at generating environmentally sound public goods, reinforcing the development of climate-resilient productive infrastructure, protecting and enhancing the natural resource base, as well as offering access to affordable and clean energy. Under such conditions, PEPs combining social with environmental conservation objectives have some strong commonalities with the PES schemes, where environmental service is the work conducted that aims to protect or restore the environment.

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As described above, Recommendation No. 202 mentions PEPs among the possible instruments that can contribute to the establishment of a social protection floor. When looking at the different modalities of PEPs as described above, from the point of view of the principles governing the SPF-concept, PWPs can contribute within a “progressive implementation” perspective, acting as a basis for the development of more complex programmes to support the unemployed in future. However, if seen as a rather permanent tool of an SPF, the principles of the “rights-based approach” and the “predictability” of benefits suggest that employment guarantee schemes tend to meet to a larger extent the whole set of criteria established by Recommendation No. 202.

#### **4.6.2. South Africa’s Working for Water Programme**

South Africa’s Working for Water programme is an interesting case of a public employment programme that simultaneously targets environmental and social objectives and has a high level of social and political recognition.

Working for Water was introduced in 1995 as a response to the spread of invasive alien tree and plant species that cause damage to South Africa’s economy, destroy biodiversity, threaten water security, increase soil erosion, among others. It is a water-clearing public employment programme that recruits unemployed citizens on short-term public contracts to remove water-intensive alien species from local water catchments by using mechanical, chemical, and biological tools. Participants could be described as ‘mobile-service providers’ who bid for contracts to restore public or private land. They are paid at a nationally-set level according to the competitive salary for similar jobs. When considered as a PES scheme, the environmental service would be the work provided by the participants, in this case watershed protection.

Working for Water also aims to alleviate poverty. It specifically targets marginalized groups and seeks to employ 60 per cent women, 20 per cent youth, and 5 per cent disabled people. An essential element of the programme is to support people in finding work and to strengthening communities. Therefore, participants are obliged to take part in work-related (e.g. skills development and worker safety) and health-related (e.g. HIV/AIDS) trainings. Working for Water provides women a four-month maternity leave at half pay and participants with access to childcare facilities while they are working.

Working for Water is administered through the Department of Water Affairs and Forestry in partnership with other government and provincial departments, as well as with local communities. Since 2003, it has been part of the Expanded Public Work Programme, which combines different public work programmes aiming to provide income and poverty relief. The programme is mainly financed by the Government using poverty relief funds. However, private companies are increasingly becoming purchasers of the environmental service.

Working for Water was created with a strong legal basis that ensures the programme’s longevity as well as participation from private entities. The National Water Act of 1998 charges user fees and limits individual private water rights, making water more valuable. Legislation in some cases even directly mandates removal of the invasive species from private lands.

Currently, Working for Water is active in all major catchments in South Africa and annually provides jobs and training for 20,000 people. Since its initiation, it has cleared more than 1 million hectares of invasive alien plants, releasing 50 million cubic meters of additional water every year, much of which is used for irrigated agriculture, which has a positive impact on local food security. Side benefits included raising public awareness regarding the need to protect the environment as well as on reported improvements in the self-esteem of the workers. Working for Water has been recognised as a good practice in

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terms of environmental conservation initiatives on the continent. It enjoys sustained political support for its job creation efforts and fight against poverty. According to UNDP, “[b]y combining sustainable water management and biodiversity protection with social protection and public works programming, this programme shows how budget spending can invest in natural capital by underwriting economic and social development” (UNDP, 2012, p. 53; Department of Water Affairs, 2014; Ministry of Water and Environmental Affairs, 2014; Rodricks, 2010).

#### 4.7 Comparison of case studies and *Bolsa Verde*

The table below summarizes and compares key facts on the four case studies presented above in addition to *Bolsa Verde*. It can be noted that the PES schemes vary significantly in design and implementation according to the objective for and context in which they were created. In Costa Rica, Mexico, and China, environmental degradation was the initial and foremost reason for the launch of the schemes. The *Bolsa Verde* programme and Ecuador’s *Socio Bosque*, on the contrary, also aimed to fight (extreme) poverty in rural areas from the outset. The Costa Rican, Mexican, and Chinese programmes do not target families as priority units, but rather individuals and institutions. In contrast, the Brazilian programme focuses on families (according to the *Bolsa Família* concepts and methods).

The targeting mechanisms in each of the five case studies include a geographic dimension with a focus on environmentally vulnerable areas. However, the way in which social criteria are included varies significantly across programmes. In Costa Rica, Mexico, and Ecuador, a credit point mechanism has been developed that includes both environmental and social criteria. In China, entire villages in environmentally vulnerable areas are included, whereas in Brazil the social targeting mechanism uses the *Bolsa Família* programme’s existing tools.

The costs of the Latin American programmes, given their relatively small size in terms of number of participants, enrolling some tens of thousands of establishments, families, and/or individuals, seems to remain moderate. Under the Chinese programme, aggregate costs appear to be higher, but the outlays need to be seen against the fact that SLCP covers an enormous geographical area affecting 27 million households and aims to fight both environmental and social risks (silting rivers leading to the loss of agricultural area and high rural poverty), which are crucial challenges for China. Future evaluations should analyse the costs of the respective programmes in detail.

**Table 4. Comparison of the five case studies**

Country	Costa Rica	Mexico	Ecuador	China	Brazil
<b>Programme</b>	<i>Pago por Servicios Ambientales</i> (PPSA)	<i>Pago por Servicios Ambientales Hidrológicos</i> (PSAH)	<i>Socio Bosque</i>	Sloping Lands Conversion Programme (SLCP)	<i>Bolsa Verde</i>
<b>Year started</b>	1996	2003	2008	2002	2011
<b>Reason for launch</b>	Intense deforestation	Intense deforestation	Intense deforestation, high poverty rate in forest areas (part of the National Development Plan)	Severe flooding due to soil erosion	Part of the extreme poverty eradication plan and need to avoid deforestation
<b>Legal basis</b>	Ley Forestal 7.575, Ley de la Biodiversidad 7.788	Ley Federal de Derechos (Art. 223)	Acuerdo 169 (2008), Ministerio del Ambiente	Forest Law (1998) Water Law (2002)	Law 12.512 Decree 7.572
<b>Type of ES</b>	All four	Watershed protection, biodiversity, carbon sequestration	All four	Watershed protection	Not specified, could be considered as all four types
<b>Land included (ha)</b>	1 million (2012), nationwide	2.2 million (2012), nationwide	1.23 million (2013)	20 million (2011), focus on east-west	11.3 million (2011), mainly Legal Amazon <sup>34</sup>
<b>Providers</b>	15,375 contracts (1997–2012)	5,400 contracts, many of which are group contracts (2003–12)	161,755 people	27 million rural households (2002–08)	72,112 families (2011–14)
<b>Budget</b>	2012: \$42.4 million \$341.8 million (1997–2012)	2010: \$83.6 million \$429 million (2003–12)	\$18 million (2008–13).	\$4.3 billion (2002–10)	2013: \$38 million 2014: \$44 million
<b>Financing</b>	Government budget, fuel tax, water tax (sale of carbon credits, private funds, grants and loans)	Government budget, water-usage fee, (voluntary private contributions, grants and loans)	Government Budget (MAE), it is aimed to diversify sources	Government budget	Government budget (MMA)
<b>Compens./ha/year</b>	\$41–\$294 On average: \$64	\$32–\$98	\$0.50–\$60 depending on the total number of hectares included	\$36–\$50	\$500/family regardless of ha
<b>Duration of contract</b>	5, 10, or 15 years, reapplication possible	5 years, reapplication possible	20 years, renewed automatically	2, 5, or 8 years	2 years, renewable for an undefined duration
<b>Monitoring</b>	Mainly site visits, complemented by satellite images; no social monitoring	Mainly annual satellite images, complemented by site visits; no social monitoring	Satellite images/aerial photography and site visits; social monitoring: review of regular spending reports against investment plans	Site visits; no social monitoring	Environmental monitoring through satellite images + sample site visits; social monitoring through <i>Bolsa Familia</i>
<b>Possible exit doors</b>	Agroforestry	Forest management plans	Right to non-destructive activities; investment plan; capacity building workshops; provision of access to credit	Right to extract products from planted forests	Not yet established, exit doors could be created via training, usage and management plans, agroforestry, and development of extractivist value chains

<sup>34</sup> *Bolsa Verde* targeted the Legal Amazon in 2011 and has been extended to the North-East, Central, West, and South since 2012.

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## 5. Lessons learned from literature and case studies

This chapter presents the main design aspects of pro-poor PES schemes as mentioned in the literature, focusing on social rather than environmental aspects. A description follows on whether and how the presented PES case studies, including, when applicable, the South African public employment programme, address these design aspects. The design aspects presented here therefore provide a useful list of relevant aspects to take into consideration when designing a new pro-poor PES scheme or when evaluating and modifying an existing one to strengthen its pro-poor bias.

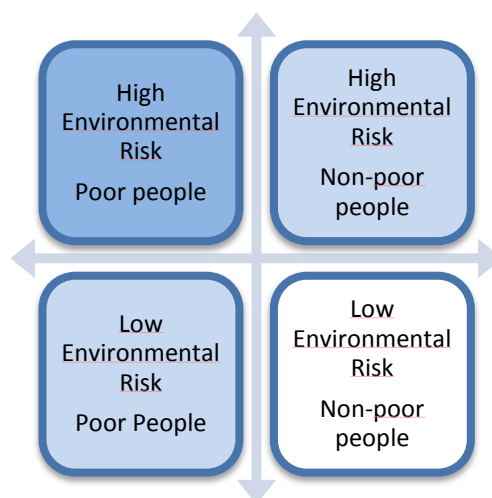
### 5.1 Participants of the PES scheme

Regarding the ES providers, a key question is whether (some) poor people are excluded from participating due to the targeting criteria, a complicated or costly application process, and/or other transaction costs.<sup>35</sup> Another reason for the possible exclusion of poor people refers to a strict enforcement of rules necessary to reach environmental goals. In regards to the buyers, it is relevant to ask if poor people are among the buyers and have to pay for the services provided.

#### 5.1.1. Are poor people excluded as providers due to targeting criteria?

The decision of whom and what to target reflects the main objective of a programme. Thus, a PES that primarily has an environmental objective will prioritize targeting persons, households, or organizations in areas of high environmental risk (those above the horizontal line in figure 2 below), while a programme with a key social objective will primarily target the most vulnerable people even though they might not live in the most threatened environmental areas (those left of the vertical line in figure 2 below). If eligibility criteria focus on ecological aspects, a programme is very likely to exclude (some) poor people as environmental service hotspots do not necessarily coincide with areas where poor people live (bottom left box in figure 2 below) (Leimona et al., 2009, p. 86).

Figure 2. Targeting priorities



<sup>35</sup> In this section, “poor” is defined in terms of monetary poverty.

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For a programme to be pro-poor, it is therefore necessary that it includes criteria that explicitly target poor people (or families). The case studies in Costa Rica and Mexico show this very clearly. The initial absence of social priority targeting criteria in Costa Rica resulted in most of the contracts being allocated in areas with a Social Development Index (SDI) of 40 to 70. PPSA responded to this in 2003 by prioritizing areas with an SDI below 40. However, this approach did not prove to be successful, since mainly large-scale farmers within these areas profited from the programme (Porrás et al., 2013).<sup>36</sup> This shows that if the programme intends to target social characteristics, participants should be targeted according to individual characteristics or geographical targeting should be combined with criteria based on individual characteristics such as the size of the person's property. PPSA acknowledged this in 2012 by giving priority to owners of properties of less than 50 hectares. Current criteria also include efforts to directly target female-headed households and indigenous groups (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 43). However, in terms of budget, the share of small-scale landholders still remains at 7 per cent while farms with more than 100 hectares of land still hold the greatest share at 65 per cent (Porrás et al., 2013, p. 47). In Mexico, poor people were reached relatively successfully from the start of the programme, even though they were not specifically targeted. 78 per cent of payments went to forests owned by people in a situation of 'high or very high marginalization' (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p. 127). This may partly be explained by the fact that in Mexico most forest land is owned by poor people (Alix Garcia et al., 2005).<sup>37</sup> Therefore, by targeting those living in the forest, poor people were automatically reached. In addition, the introduction of social criteria into the targeting point system in 2006 has favoured the inclusion of poorer people, especially of indigenous communities and female-owned properties (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.44).

In Ecuador, the regional poverty level is part of the targeting priority criteria. However, the weight given to this criterion only accounts for up to three out of 22 points. Thus, the main mechanism to ensure social equity is the payment scheme, which decreases payments per hectare proportional to the increasing size of the area included in the programme. This mechanism seems to work well. In 2011 about 70 per cent of the payments were paid to landowners with a land size of less than 50 hectares (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.100). In China, people are only included if their land lies within a targeted area and if their village or town participates in the programme. Explicit targeting of poor people has not yet been considered (Bennet and Xu, 2003; Xu et al., 2005). However, as the programme focuses on the poor mid-west of the country and puts an emphasis on remote regions with high proportions of sloping and degraded land, which is mainly occupied by poorer households, the participation of poor people can be assumed to be high. Nevertheless, this is only the case because in China rural land distribution is relatively equitable. Thus, targeting according to certain areas, instead of individual criteria, is more successful at capturing poor households than, for example, in Costa Rica (Bennet and Xu, 2003, p.17). In South Africa, everyone who is unemployed and lives in rural areas is eligible for the Working for Water programme. The programme seeks to employ 60 per cent women, 20 per cent youth, and 5 per cent disabled people. Poverty is not an explicit eligibility criterion. However, it can be assumed that unemployed people, especially with the mentioned characteristics, are automatically amongst the most vulnerable, thus poor people are indirectly targeted.

While Costa Rica, Mexico, Ecuador, and South Africa use social aspects to different degrees as part of the programme eligibility criteria, participants in China are primarily targeted according to environmental needs. In Costa Rica, Ecuador, Mexico, and China,

<sup>36</sup> Farmers with greater than 100 hectares hold 29 per cent of contracts and 65 per cent of budget; farmers with less than 30 hectares received 35 per cent of contracts, but only 7 per cent of the budget; and farmers with 30-100 hectares of land received 36 per cent of contracts and 28 per cent of the budget (Porrás et al., 2013).

<sup>37</sup> Approximately 80 per cent of forest is held by *ejidos* and indigenous communities and 86 per cent of the forest is located in communities with high or very high marginality (Alix-Garcia et al., 2005, p. 38).

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non-poor people are also eligible. This is not the case for South Africa's Working for Water and Brazil's *Bolsa Verde*. While in South Africa unemployment is a precondition for participation, living in a condition of extreme poverty in addition to living in an environmental priority area are preconditions for participation in Brazil's *Bolsa Verde*. Providers already have to receive the *Bolsa Família* grant and live with less than BRL70 per month per person. Within the participating areas, only extremely poor people are eligible. Therefore, the programme explicitly addresses the poorest families and does not include those living above the extreme poverty threshold.

When looking at targeting from an environmental point of view, it needs to be considered that a PES programme that primarily targets poor people might not maximize potential environmental results since the poorest people do not necessarily live in areas that need the most protection (top right box in figure 3). This conflict was discussed in Ecuador during the design process of *Socio Bosque*. Here, as well as in Mexico and Costa Rica, this issue is addressed by including 'risk of deforestation' among the priority targeting criteria. In South Africa this is not relevant, as the service provided (work) does not refer to the land people live on, but rather to public or private land that is deemed as important to be restored. In *Bolsa Verde*, non-poor persons, who may also be responsible for large-scale deforestation, are not covered by the programme as extreme poverty is a precondition for participation. This debate on targeting shows the limitation of PES schemes. Such schemes must be a part of a number of different convergent policies and cannot be solely responsible for delivering on various objectives on a stand-alone basis. A set of coordinated policy tools will have to address a rather complex web of challenges.

Another important aspect regarding the targeting of providers refers to landownership and land tenure. As landless or very small-scale farmers tend to be among the poorest, the requirement of landownership or minimum land size is likely to exclude many poor people (Wunder, 2005; Pagiola, 2005). In case landownership is required and in view of the fact that insecure or informal land tenure is very common amongst poorer people, the question of the necessity to provide clear land titles upon application is relevant (Wunder, 2005). In addition, it should be considered that if land tenures are not secure, a PES programme might be an incentive for more powerful rent-seeking groups to take control of marginal land. This problem could be solved by including the recognition and documentation of land tenures among the social benefits of the PES scheme. By doing so, it could even contribute to the formalization of land titles (Pagiola et al., 2005; Wunder, 2005; Grieg-Gran et al. 2005; Rosa et al., 2004; Leimona et al., 2009; RECOFTC, 2009). The requirement of landownership for participation in Ecuador's *Socio Bosque* is seen in the literature as one of the critical aspects of the programme. Although programme designers were aware that this might be a financial and/or administrative obstacle for poor people in rural areas, they decided to include it as a requirement to avoid creating conflicts over land (Fehse, 2012). However, there are attempts to address the issue. The *Socio Bosque* programme includes trainings for paralegals to support communities and individuals in obtaining legal recognition and secure land titles. This is done in cooperation with other organizations and international donors. With funding from the Inter-American Development Bank (IDB), the Ecuadorian Government also initiated a large land titling programme in 2010 (IDB, 2010).<sup>38</sup>

In Costa Rica, only landowners can participate. Although minimum land size is very small (1 or 2 hectares), people who do not own any land or own less than 1 or 2 hectares are automatically excluded. In Mexico the problem of ownership is avoided through group approaches. Communities can apply as a group and land can be owned by the community instead of individuals within the community. In China, this problem is not applicable as

<sup>38</sup> The programme aims to update property records for some 800,000 rural properties and enhance legal tenure status for approximately 314,000 properties by 2035.

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landownership is collective. As participants in South Africa are not targeted according to the land they live on, land tenure is not relevant for defining the ES providers. Regarding land size, it should be mentioned that in Costa Rica a maximum land size of 300 hectares has been established to exclude very large-scale farmers. In Ecuador land size has an effect on the payment level, as payments per hectare decrease with land size. This reduces the incentive and remuneration for large-scale farmers. The Costa Rican and Mexican programmes also recognize indigenous lands as eligible, even if the land is neither privately nor publicly held (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.7).

In Mexico and Costa Rica, it can also be observed that the PES schemes contributed to the formalization of land titles, even though recognition of land tenure is not a part of the official compensation. In Costa Rica, for example, some providers choose to pay for legal services to obtain formal land titles with the first payment they receive through the PES. According to the International Institute for Environment and Development (IIED), there are indications that PPSA promoted gradual regularization of property ownership among smaller landowners and thus increased land tenure security, even though regularization of land tenure was not a requirement (Porrás et al., 2013; FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.9). In Mexico, the requirement for community land to be registered with the National Agrarian Registry or to prove that registration is in process has consequently led to increased registration of community lands. In Ecuador, the training and use of paralegals has the potential to improve land tenure security. In China, as a part of the programme the Government formally issues certificates for the right to use the products grown on land. The areas targeted in *Bolsa Verde*, however, only include areas that had already been designated to local communities before the start of the programme. People who live and work in these communities and on these lands are included in the programme. Hence, individual landownership is not necessary for participation and thus should not represent an obstacle to targeted beneficiaries.

There can also be other criteria or requirements that lead to the exclusion of poor people. In Costa Rica, for example, farmers receiving other state benefits, those with mortgages on their land, and those who have debts with the State are not eligible. Such situations may also apply to poor people. In Ecuador, people who do not have a bank account are excluded. In China, everyone who does not live in a participating village or town is automatically excluded, which surely affects poor people. In Brazil, people taking part in another federal environmental preservation incentive programme are excluded.

### **5.1.2. Are poor people excluded due to application/transaction process or costs?**

A complex and/or expensive application or transaction process can also lead to the exclusion of poor people. Other costs that are not covered by the compensation, such as monitoring or adaptation costs, can also be an obstacle to poor people's participation (Wunder, 2005; Grieg-Gran et al., 2005; Leimona et al., 2009; Pagiola et al., 2005; FAO, 2011; RECOFTC, 2009). It is therefore important to keep the application process as simple as possible for the applicant and, if necessary, provide free (or low-cost) assistance to the applicant. In addition, to avoid the burden of high transaction costs especially in the first year, these costs should be calculated and included within the (first) payment (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.4). In Costa Rica, the complicated and costly application process is probably one of the factors that causes the exclusion of the poorest people. Although the number of documents required for applying for PPSA has already been reduced, there are still various requirements in terms of documents and justifications that must be provided which are difficult and/or expensive to produce, such as a document from a professional topographer, an official cadastral map, and a forest



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management plan by a professional forestry engineer. The costs incurred for applying are fixed, which makes it relatively expensive for landowners or tenants of small properties (Porrás et al., 2013, p.43). In addition, the intermediaries who can be hired to provide assistance with the application process charge a fee of 12 to 18 per cent. To minimize application costs, many contracts used to be handled as group contracts, pooling together groups of usually small-scale farmers. However, due to the contract's design, non-compliance of one participant would automatically end the contract for the whole group. Problems arising out of this issue led to the abolition of single collective contracts in 2002 (Porrás et al., 2013, p.19). The scheme recently reintroduced group applications, but these collective contracts are now signed individually to avoid these previous problems (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.54; IIED, 2012b, p.44; RECOFT, 2009, p.21). An additional obstacle for poor people to participate in PPSA used to be that forestry activities were not eligible for credit from the National Bank System and transaction costs for reforestation were not completely covered by PPSA. Therefore, everyone who was not able to finance initial costs was also excluded. However, FONAFIFO made an agreement with the National Bank to allow PPSA applicants to apply for credit.

In Mexico, application and transaction procedures and costs do not seem to be a problem. This can mainly be explained due to the focus on group or community applications, which have been especially encouraged since 2007 when points for applying as a group were added to the eligibility criteria (Sims et al., 2013, p.9). Landowners who are part of a group application or people who are part of a community application do not have to go through the application process individually. Since only one contract is required per group, administration costs decrease. However, according to Muñoz-Piña et al. (2008) "a bias against the poorest of the poor" still exists due to several factors, such as relatively low education levels or limited lobbying and negotiating power vis-à-vis local CONAFOR officials (Muñoz-Piña et al., 2008, p.733). Another reason could be a lack of awareness and available information due to insufficient communication efforts with regards to the programme (UN-Redd, 2013, p.32; Corbera et al., 2009). Therefore, there needs to be complementary targeting for the poorest people (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.55).

*Socio Bosque* in Ecuador requires various documents to be provided when applying for the programme. However, besides the above-mentioned legal land titles, there seems to be no evidence that the provision of these documents causes a problem for applicants. In addition, the programme has established various alliances with NGOs as well as with indigenous and farmers' organizations who support (potential) participants. Among others, these organizations inform potential participants about the process, provide information on the programme, and support the preparation of documents required for the application, including the investment plan.

In China, people do not apply individually, reducing access barriers poor people often face regarding the application process or a lack of knowledge about the programme. Unlike in Mexico, Ecuador, and Costa Rica, in China the SLCP also covers initial transaction costs by providing a one-off payment at the beginning, for example, to allow participants to buy initial seedlings.

In South Africa, the application process is different. An individual contractor designs a project and applies for a contract. If selected, he or she compiles and manages a team of 10 to 15 people to conduct the work and fulfil the contract. This method facilitates the application process, as there is only one application completed for 11 to 16 people. However, further research is needed to evaluate whether this mechanism is exclusionary for some people.

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As in China, *Bolsa Verde* candidates do not need to apply themselves but are identified through the CadÚnico database as well as through project workers as part of the *buscas ativas* (active search) strategy. They do not need to provide any documents nor do any costs arise during the application process. A possible lack of knowledge about the programme does not seem to be the key problem since participants are automatically addressed by the programme. Hence, it can be assumed that the eligible people are well reached. In addition, the *buscas ativas* conducted to identify *Bolsa Família* participants also lead to the identification of more families to be included into *Bolsa Verde*. Regarding the payment levels, *Bolsa Verde* does not consider possible transaction costs, which are likely to arise during the initial adaptation process.

### **5.1.3. Are poor people excluded due to “too strict” enforcement of rules?**

Compliance with programme rules on the part of the providers of environmental services is crucial for a PES to accomplish its ecological objectives. To ensure compliance and effective implementation of PES schemes, monitoring and enforcement of rules through sanctioning in the case of non-compliance is essential. However, this may create a conflict regarding pro-poor objectives. Bennett and Xu (2003, p. 7) describe the situation in the case of China: “withholding subsidies based on low survival rates [of trees] can significantly dampen enthusiasm for the program and potentially harm participant welfare, while delivery without adhering to some indicators of compliance encourages poor implementation.” Thus, the design of the monitoring process may create conflicts between the programme’s environmental and social goals. The decision on how strict monitoring and enforcement of rules are imposed will largely depend on the weight attached to each of the objectives.

Although all programmes in the case studies do have sanctioning mechanisms, it can be observed that monitoring and/or sanctioning is not enforced very strictly in Mexico and China, while it seems to be enforced more often in Costa Rica (Bennet and Xu, 2003, p.7 for China; Sims et al., 2013, p.17 for Mexico; FONAFIFO, CONAFOR, and Ministry of Environment 2012, p.54 for Costa Rica). More lenient enforcement in Mexico and China might partly be due to the fact that monitoring through satellite pictures can be difficult or expensive due to clouds, low tree heights, and the fact that degradation often happens at a spatially small scale and is thus difficult to be tracked. However, there is still a possibility of focusing on site visits instead of satellite images, as done in Costa Rica. In the Mexican approach, payments are conditional on the delivery of the environmental service, which requires a swift monitoring mechanism (FONAFIFO, CONAFOR, and Ministry of Environment, 2012, p.12; Alix-Garcia et al., 2009). In Ecuador, monitoring costs run 10 to 15 per cent of total programme costs, which is considered relatively high. The high monitoring costs might lead to the assumption that monitoring is conducted thoroughly; however, it is not clear how strict sanctioning mechanisms are enforced. Sanctioning is subject to a negotiation process with the MAE on a case-by-case basis and sanctioning decisions take poverty levels into account.

To date, *Bolsa Verde* has conducted environmental monitoring through analysing satellite images. There is no data currently available on whether people have been sanctioned or warned. However, if environmental monitoring improves or is done in more detail in the future, the mechanism of first sending a local agent to a family to check on the reasons for non-compliance, as is done under the *Bolsa Família* programme, can be seen as a good solution to combine social and environmental interests.

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#### **5.1.4. Who pays for the environmental service?**

Regarding the buyers of environmental services, the literature concludes that pro-poor programmes are more likely to be publicly implemented and financed as they tend to have various objectives and not-for-profit interests. This is the situation for all case studies, including *Bolsa Verde*. All five PES programmes are national government programmes that have – to different degrees – poverty reduction as an objective. In addition, private companies can also aim to conduct pro-poor programmes, e. g. as part of a corporate social responsibility strategy.

The second question raised is whether poor people also pay for environmental services (Pagiola et al., 2005; Rosa et al., 2004; Wunder, 2005). This might be the case if they are users of the environmental services produced. In private schemes, poor people are likely to pay for the service if the buying company includes the costs of the ES into the price of the final product (e.g. water). In public schemes, poor people contribute if a PES is financed from taxes or user contributions increase due to the introduction of the PES. This has been the case in Costa Rica where a tax on water increased in 2006 to help fund the PPSA. In Mexico, where all water users contribute to PSAH, the situation is similar. Such an effect can be mitigated if a policy is in place that moderates water price increases for the poor such as a social price-setting policy. In China, South Africa, and Ecuador, financing mainly comes from the general federal budget. Therefore, the higher or lower progressiveness of the tax system will determine the extent to which programmes are paid for by the poor. This is the same case for *Bolsa Verde*, which is financed out of general taxes through the annual MMA budget.

### **5.2. Social impacts of the PES**

The second important point refers to the impact PES programmes have on participating poor farmers and communities in the short and long terms. It is also relevant to consider whether the PES has an impact on non-participating poor. Since social monitoring has not been extensively analysed in the case studies and currently there are few studies on social impacts, this topic will be discussed in theory.

#### **5.2.1. Financial impact on participants (short term)**

The overall question in the short term is whether the financial impact is strong enough to increase total income of the participants and thus reduce (extreme) poverty. For this to be the case, the net payment has to exceed the opportunity cost, which includes income from previous land use (e.g. forest extraction, agriculture, or cattle grazing), and transaction and investment costs (Leimona et al., 2009; Alix-Garcia, et al., 2009). Thus, to estimate the right level of compensation, opportunity costs need to be carefully considered and estimated. They depend on the price of the products produced on the land without the PES, the costs of production (depends on land productivity, soil fertility, available technology, remoteness, economies of scale, distance from markets, quality of infrastructure, costs of labour, among others), among other things (Porrás et al., 2013, p.58). In asset-building schemes, opportunity costs should generally be lower as sustainable alternative land use is supported, which should compensate for the loss of income due to the prohibition of previous land-use practices. Opportunity costs are also usually lower for poorer, small-scale landowners: as their land tends to be less productive (remote areas, poor soils), there are no economies of scale and they usually operate with less technology (Wunder, 2005; Pagiola et al., 2005). It is also of interest to estimate the opportunity costs for large-scale landowners since they are often eligible to participate in PES programmes due to the ecological priorities. Higher payment levels resulting from adaptations to consider opportunity costs would be, of course, positive for meeting social

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objectives. However, estimating opportunity costs is no easy task. A possibility to do so is suggested in the literature through conducting valuation studies in targeted areas. In general, it is important to include communities and people living in the concerned area in the estimation exercise (FAO, 2011; Alix-Garcia et al., 2009).

Opportunity costs are incorporated into some of the programmes under review in this study. The six different payment levels of PSAH in Mexico are, among other factors, based on opportunity costs, whereas in Costa Rica opportunity costs do not seem to be explicitly part of the calculation of the ten payment levels. In Ecuador, the programme designers initially considered basing payments on opportunity costs, but then consciously decided against it. The main reason is the difficulty in estimating the opportunity costs because of a lack of data and the fact that they might vary considerably given specific areas and time. It was also feared that different payment levels would cause an intense social debate and reduce political feasibility. Thus, the decision was taken in favour of a transparent and simple system based only on the size of the land included in the programme (de Koning et al., 2011). In China, opportunity costs are taken into consideration in the two different payment levels of the in-kind transfer of grains (later cash). In South Africa, opportunity costs do not seem to be the key issue that prevents the poor from enrolling since the participants are unemployed, meaning they probably have no other means of income without the programme. However, opportunity costs can certainly play a role through the “self-targeting” mechanism. As payment levels are set nationally according to the salary for similar jobs, it can be assumed that the programme will have an impact on the participants’ incomes. *Bolsa Verde* pays everyone the same amount regardless of land size, family size, former land use, or area. This indicates that opportunity costs, which are likely to vary, are not explicitly considered. Considering the payment amount of BRL100 per month, however, it is likely that *Bolsa Verde* does make up a considerable share of participants’ incomes as only people with an income of less than BRL70 per month per person can participate. Since *Bolsa Verde* is building upon *Bolsa Família*, it is likely that it increases the overall poverty reduction impact of *Bolsa Família* (Neri et al., 2013).

### **5.2.2. Exit strategy for participants (long term)**

To decrease poverty in the long term and avoid dependency on the programmes, it is important that participants are provided exit strategies. This mainly refers to the provision of alternative land use and employment options along with necessary training for participants.

Asset-building programmes, which are likely to allow for the creation of new sustainable jobs, are more likely to be pro-poor than use-restricting schemes, which, by definition, limits the creation of new economic activities. Examples for alternative sustainable land use include agroforestry, agro-tourism, eco-tourism, the extraction of non-timber products, and sustainable agriculture. Moreover, support for finding employment with urban characteristics in rural areas or small cities nearby can also be considered. Alternative employment found with the support of a PES may diversify family income and thus make households less vulnerable to ecological and economic disasters and price fluctuations (FONAFIFO, CONAFOR, and Ministry of Environment, 2012; Grieg-Gran et al., 2005). Participants should receive assistance in adapting to new land-use practices. Therefore, participant training and skills development are key and should be part of every PES. Besides training for alternative employment, training should also include content such as enterprise development, project management, marketing, negotiation, or monitoring and certification (RECOFTC, 2009; Wunder, 2005; Grieg-Gran et al., 2005). From an ecological point of view, training participants on environmental topics and encouraging participants to develop income sources based on sustainable land use while participating in the PES, are highly desirable to ensure that long-term ecological objectives are met after the programme (participation) ends. PPSA in Costa Rica, as well as PSAH in

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Mexico, were originally very restrictive and did not allow any use of the involved land. In Costa Rica, this changed with the introduction of agroforestry contracts permitting the sustainable use of the land by combining agricultural activities with forest conservation. In Mexico, PSAH now promotes management practices which allow for productive activities according to the Forest Management Plans (The Solution Journal, 2012; FAO, 2013b). In Ecuador, subsistence hunting and gathering of non-timber products has always been allowed. *Socio Bosque* also facilitates participants' access to credit due to agreements with the public rural development bank. In China, extraction of products from the forest has always been allowed, provided that the trees are mature. SLCP also promotes activities such as silviculture, cultivation of fruits, and livestock farming. Participants are officially granted the right to the products of their forests. All the programmes under review allow the sustainable use of land and can therefore be classified as asset-building schemes. However, no documentation was found indicating that training, skills development, or education elements take place regularly in Costa Rica, Mexico, and China. In Ecuador, capacity building workshops, e.g. on financial management and control and surveillance, are conducted by civil society organizations in which *Socio Bosque* has established alliances. They also support participants in developing agroforestry or agro-tourism activities. In South Africa, participants are obliged to take part in work-related as well as in health-related trainings. *Bolsa Verde* also allows for sustainable use of the land in line with the signed agreements. It also foresees environmental, social, technical, and professional training for participants to support the adoption of alternative land use. However, as of early 2014, no such trainings had been launched and it is not yet documented to what extent participants engage in alternative land use.

It is important that people can rely on the continuation of a programme so that they can make long-term investments and develop long-term income strategies. Such guarantees are difficult in private programmes. In general, a buyer needs to be satisfied with the service to continue purchasing the service in the future. However, there might also be outside circumstances which could stop a company from buying ES. Also, donor-led schemes automatically end at some point, which might cause people to not engage in long-term investments. In government schemes, it is important to ensure that the programme will continue even after a change of government. Guaranteeing a programme's continuation can be improved by enshrining the programme into law and thus creating a legal framework (Wunder, 2005; RECOFTC, 2009; UN-REDD, 2013). All programmes under review, except for Ecuador, have been instituted by law.<sup>39</sup> The ILO Social Protection Floors Recommendation, 2012 (No. 202), requires that policies and programmes be built upon a strong legal basis as part of the concept of a rights-based approach.

Regarding long-term planning, the duration of the individual contracts with the participants also needs to be considered. They need to be long enough for people to develop and implement sustainable alternative employment and income possibilities. In the programmes reviewed in this study, the durations range from two to eight years in China, five years in Mexico, five to 15 years in Costa Rica, and 20 years in Ecuador. In Mexico and Costa Rica, participants can reapply after the end of the contract, while in Ecuador contracts are automatically extended. The contracts with *Bolsa Verde* participants are only valid for up to two years. Although they can be extended, this initial period seems to be comparatively short for effectively changing land-use practices and developing reliable new sources of income.

<sup>39</sup> The Ministerial Ordinance points to rights and principles foreseen in the Constitution. However, there is no specific law instituting the *Socio Bosque* programme.

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### 5.2.3. Impacts on the community

A PES scheme can also strengthen or lead to the creation of community associations, especially if contracts are signed with the community or if agreements need to be negotiated on a collective basis. In the latter case, coordination between possible providers at the community level can give the individual more bargaining power and decrease transaction costs (Pagiola et al., 2005; Leimona et al. 2009; Wunder 2005, Grieg-Gran et al. 2005; Rosa et al., 2004). However, community approaches can also cause conflicts and exclusion within the community. It could, for example, cause an inequitable sharing of benefits and conflicts within the community if not all members understand and behave according to the agreement. In the international literature, it has also been alerted that large cash injections into communities with weak institutional structures might increase fraud and cause social conflict (de Koning, 2011).

In Costa Rica, the trial to conclude group contracts was not successful in its first attempt as it caused conflicts as described earlier in this paper. It remains to be seen whether the new attempt at group contracts will be more successful. The community focus is an important feature of the Mexican programme. The emphasis on community contracts obliges communities to develop a common plan which needs collective decisions and collective management of forest resources. Thus, when applying collectively, a community needs to present an assembly agreement that shows approval and commitment of the community, as well as a plan on how to use funds that was approved by the whole group. This should prevent the exclusion of individual members. It seems that these approaches have improved the social capital of communities and that PSAH is an opportunity for communities to strengthen capacities and organization (UN-Redd, 2013, p.32). In Ecuador, communities can also apply. Similar to the Mexican approach, the investment plan serves to increase transparency in the decision-making process and ensures that everyone is informed and included in the benefits. This is strengthened further as communities have to document the process of elaborating the investment plan and submit the common agreements made (de Koning, 2011). In China, on the contrary, the rather top-down approach does not build upon community participation. In South Africa individual contractors apply for a project and select a team. Although eligible areas in *Bolsa Verde* are mainly community owned and/or public land, the PES itself pays and approaches individual families within the community. It is therefore an open question whether the programme has an influence on the community or might even lead to conflicts between eligible and non-eligible families within one community. Hence, this question should be raised in a possible evaluation of the programme. Given that other international experiences and even *Bolsa Floresta* present specific policies to strengthen the respective communities, it could also be examined how *Bolsa Verde* could incorporate a community aspect in future.

### 5.2.4. Impacts on non-participating poor

As is often the case, not all poor people can participate in the PES. Thus, it is relevant to analyse whether those who do not participate are negatively affected by the PES scheme (Wunder, 2005; Grieg-Gran et al. 2005; Leimona et al., 2009; Pagiola, 2005; FAO, 2011; RECOFTC, 2009). This refers mainly to non-eligible or non-reached people living in the targeted areas, but it can also include those living outside the targeted areas. The main negative impacts of concern for non-participating poor are a possible decrease of employment possibilities and/or an increase in living costs. Regarding the first aspect, the poorest tend to be employed in the most environmental threatening activities (e.g. logging, firewood and charcoal makers, extractors, farmhands, among others). As the objective of the PES is to stop these activities, people working in these sectors are likely to lose their income sources. However, if alternative land use is promoted that requires the same amount of labour or even demands more labour, this negative impact can be prevented.

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Asset-building schemes can even expand rural jobs and thus benefit unskilled labour (Leimona et al., 2009; Pagiola et al., 2005; RECOFTC, 2009). A rise in living costs could take place due to an increase in food prices as production, and thus supply, are reduced while demand stays constant or even increases as a result of higher incomes among ES providers. Some authors judge that this is an unlikely effect, as PES usually only affect very small and often less productive agricultural land units (Wunder, 2005; RECOFTC, 2009). However, it is usually difficult to assess these impacts. In the case of China, for example, where large amounts of agricultural lands were turned back into forests, it can be assumed that the PES had an influence on food production. This assumption seems confirmed as the Government withdrew sloping productive land from the programme in 2007 due to a fear of food shortage. *Bolsa Verde* addresses all extremely poor people living in the targeted areas. Therefore, possible negative impacts of the PES scheme would affect poor people within the targeted area as well as extremely poor and poor people living in close proximity, but outside the targeted areas.<sup>40</sup> In regions where small-scale farmers are addressed, it remains to be seen if a loss of jobs for non-participants (e.g. temporary jobs in agricultural work) and the supply of food are affected. The latter is a relevant question in Brazil, since small-scale agriculture is responsible for food production (hence food security is an important dimension to consider), whereas large-scale agriculture produces export commodities. Finally, it is also of interest to investigate in an evaluation of social impacts whether PES programmes cause increases in living costs (e.g. housing) in the participating areas.

It is also important to understand if the additional income from *Bolsa Verde* fosters access to social services in and outside of the target areas, such as more demand for the public health-care system. In such a case, it would be necessary to expand the capacities of the affected social services. It is possible that *Bolsa Verde* does not lead to increased use of health and education services vis-à-vis the already existing conditions of the *Bolsa Família* programme, but this is a relevant question to be raised in the evaluation of pro-poor PES programmes.

### 5.3. Dynamic development of the PES

The last main point discussed on the basis of the literature review and the case studies is about the development of PES programmes. This refers to the question of who participates in design decisions and how flexible the programmes are vis-à-vis stakeholders' needs and requests.

#### 5.3.1. Participation of stakeholders

A PES that involves different stakeholders (comprising possible providers) with the design and evaluation process tends to be more pro-poor (Rosa et al., 2004; Leimona et al., 2009). The participation of different stakeholders is another outstanding feature of the Mexican programme. Different stakeholder groups take part in the design, evaluation, and constant re-design of the programme. Today, the Advisory Technical Committee offers a participatory platform to discuss how PSAH can be continuously improved. It provides feedback and critiques to CONAFOR. CONAFOR is also mandated by law to conduct annual external evaluations, which have provided valuable insights into the impacts and recommendations for improvement. According to Sims et al. (2013, p.15), this openness and flexibility has been crucial for the improvement of enrolling areas of high social as well as high ecological priority. In Ecuador, regional workshops foster the contributions of participants and non-participants to possible adaptations of the programme. In Costa Rica,

<sup>40</sup> Those earning more than BRL77 per month per person but less than BRL140 per month per person are considered poor in *Bolsa Família*.

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stakeholders had not been included in the design and evaluation process. However, pressure from indigenous and small-scale farmers has been heard and resulted in various changes in the programme design. The top-down approach in China by definition does not allow much space for farmers to participate in the design and implementation processes in their towns/villages (Bennet and Xu, 2003, p.14; Ferreira dos Santos, 2012, p.69).

*Bolsa Verde* was developed by a team of ministries, which currently composes the Administrative Committee. The inclusion of several ministries with different areas or work, especially the MDS (Social Development), the MDA (Agrarian Development), and the MMA (Environment), ensures an interdisciplinary approach that facilitates the development of a programme with two objectives. However, it is not known whether participants and other stakeholder groups from society were directly included in the original design or are part of the constant review process. It could therefore be discussed how more participation could be guaranteed. Such a participatory approach finds clear support in the ILO's Social Protection Floors Recommendation, 2012 (No. 202). Possible approaches to participation include the adaptation of social dialogue practices to *Bolsa Família* or, if a community approach is considered (see 5.2.3), opportunities for regular community feedback. Also, complaints and appeals of participants through a procedure, such as the existing one for *Bolsa Família*, should be included in the review process. It might also be useful to look at the Mexican example and the role of the Advisory Technical Committee.

### 5.3.2. Flexibility

The Mexican, Costa Rican, and Ecuadorian cases clearly demonstrate another important lesson. The respective programmes have developed over many years and have shown a high degree of flexibility. Although originally the programmes did not include social protection objectives, the programmes became more inclusive over time. In Costa Rica, pressure from indigenous and small-scale producer organizations led to the introduction of changes, such as the inclusion of agroforestry contracts. Today, the promotion of rural development and redistribution of wealth is part of its objectives. PSAH in Mexico has evolved from a payment for the non-use of forests to a programme that promotes management practices which maintain and improve ecosystem services. The participation of environmental users has increased and a poverty dimension has been included (The Solution Journal, 2012; FAO, 2013b, p.3). The *Socio Bosque* concept is inherently flexible, allowing the programme to make necessary adaptations on a learning-by-doing basis. Thus, the programme developed different mechanisms to allow for exchanges of experiences (e.g. regional workshops with participants and non-participants and feedback from field promoters).

These examples show that it is essential to be open to adaptations informed by ongoing evaluations and review processes that include different stakeholders. Such an approach also ensures political support by the communities involved. However, it also needs to be considered that a high level of flexibility might include the risk that participants do not understand future rule changes (de Koning et al., 2011).

## 6. Recommendations and conclusions

The following recommendations and conclusions are derived from the analysis of the country case studies and may be taken into consideration when designing, managing, or implementing a programme that combines social protection and environmental objectives. These suggestions may feed into the dialogue established by the Brazilian Government with the ILO on the *Bolsa Verde* programme and possibilities for its development, including the development of possible exit strategies, a topic of special interest to the



MMA.<sup>41</sup> Where applicable, the principles of the Social Protection Floors Recommendation, 2012 (No. 202), are taken into consideration. The paper concludes with some thoughts aimed at providing an answer to the initial research question on how to design pro-poor PES programmes that reach both social and environmental objectives.

## 6.1. General considerations regarding pro-poor PES programmes

In this concluding section, the initial question will be discussed: how to design a pro-poor PES programme that reaches both social and environmental objectives and how potential tensions between these two objectives can be reduced. In general, PES schemes that include some form of targeting of poor and vulnerable populations will have short-term impacts on poverty by increasing monetary income, as well as long-term impacts through restoring the environment and generating additional sources of employment and income, especially in PES programmes that allow for asset building and the sustainable use of the forests. For example, a PES scheme that restores environmental conditions that lead to increased land productivity or allows for the recovery of fish stocks will improve harvests or catches in the long run. Poverty can be simultaneously reduced if the assets developed are accessible to the poor and sustainably exploited.

Based on the analysis of *Bolsa Verde* and the four other PES schemes in the case studies section, the different programmes can be classified according to whether they are more strongly oriented towards pro-poor or pro-environmental objectives. This is illustrated in the spectrum in figure 3.

Figure 3. Spectrum of programme objectives

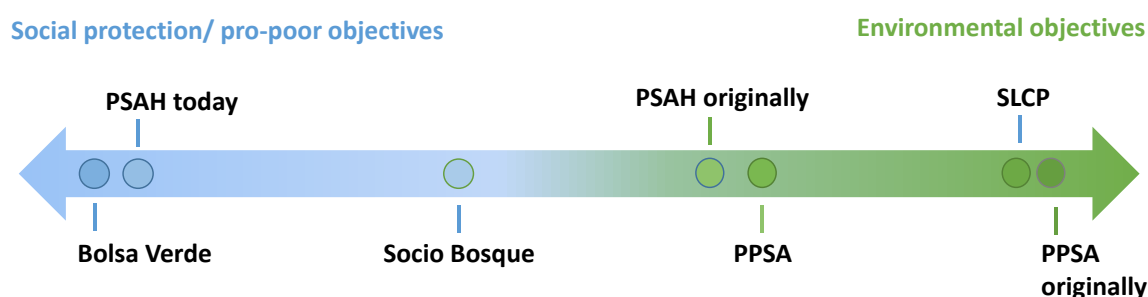


Figure 3 suggests that the programmes attach different priorities to social and environmental objectives. This can be explained through the choice of targeting criteria: programmes that target providers according to the area in which they live are more pro-environmental; programmes that target according to social situation tend to be pro-poor; and some programmes target according to both, attaching different weights to each dimension.

Targeting priorities are closely related to the key programme objectives and the original reasons for developing the programme itself. In Costa Rica, Mexico, and China, the PES programmes were developed due to urgent environmental problems. Therefore, ecological criteria originally guided the targeting decisions. With the introduction of social targeting criteria in Mexico and Costa Rica, the approach moved in the direction of more pro-poor objectives and both programmes became more inclusive over time. While in Costa Rica the focus is still considered to be environmental (the main part of the budget

<sup>41</sup> A South-South Cooperation Project was signed between the Brazilian Government and the ILO on the promotion of sustainable development, decent work, and social protection on 14 November 2014.

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still goes to larger-scale farmers), the programme in Mexico has become more socially focused. In China, social objectives have been part of the programme description from the beginning. However, since SLCP does not include any measures to specifically address poor people, it is considered more pro-environmental than pro-poor. In Ecuador, it can be said that *Socio Bosque* was developed for environmental as much as social reasons. Thus, during the design process, how to reduce possible conflicts were raised (e.g. regarding targeting and monitoring) and decisions were made according to the respective priorities. While targeting clearly has an environmental focus, *Socio Bosque* guarantees social equity through the payment scheme and provides a good example of how to address the targeting dilemma of environmental efficiency vs. social equity.

The reason for developing *Bolsa Verde* was not only to address environmental issues, but also to address social issues. In fact, the programme was developed as part of the *Brasil Sem Miséria* plan, which aims at eradicating extreme poverty. Thus, the key challenge was to design a programme that includes people that live in extreme poverty, which in Brazil is the majority of people living in rural areas. Therefore, the main objective appears to be poverty reduction and the targeting priority lies in addressing people according to their social situation.

Choices related to targeting mean that it is challenging to design a programme that achieves both environmental and social objectives to the same degree. Nonetheless, the case studies show that there is no clear-cut trade-off between the two objectives, but that it is possible to design a PES that brings benefits to both dimensions. However, this does not happen automatically. PES programmes are not automatically pro-poor even if poverty reduction is part of its stated objectives, as can be seen in the Chinese case. It is therefore essential that both objectives are formulated and carefully considered when designing PES programmes. Possible conflicts between targets need to be addressed and solved according to the priority assigned to the social and environmental objectives, as it is done in the Ecuadorian case.

A good example of when possible tensions between environmental and social objectives occur is with regards to monitoring. Compliance with programme conditions is important to the design of a conditional cash transfer programme. However, an excessively high exclusion rate means that there is a systemic failure in achieving the main goal of the programme. If a programme targets families with children who ought to be sent to school and have access to medical services in order to build human capital, forcing a family towards the “exit door” too early without substantive options for earning a living possibly means reducing the chances that the child continues benefitting from school and health services. Similarly, an excessively high exclusion rate from a pro-environmental PES for non-compliance would actually be a failure in achieving the environmental and social goals of the policy. Hence, a mechanism is needed to establish compatibility between the actual goals of the programme and the sanctioning mechanism. The experience of *Bolsa Família* in dealing with non-compliance of programme conditions is an important good practice to consider: social workers are sent to discover the reasons that led families to non-compliance, and only after failing to address the obstacles, the respective families risk being excluded from the cash transfer programme. *Bolsa Verde* foresees using the same mechanism.

Country-specific conditions also need to be taken into consideration. For example, geographic targeting of areas at high environmental risk that simultaneously suffer from high poverty rates is more likely to be pro-poor and administratively cheaper than targeting individuals in cases where inequality in land distribution is small, as is the case of China. If there are large inequalities, the probability that poor people are reached under such targeting is less likely, as was observed in Costa Rica. The better-off are usually those who will be in a position to access information earlier, react quickly, benefit sooner, and reap relatively large benefits from such a programme. The situation of land tenure security is

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also very important. In the case of *Bolsa Verde*, the issue of land tenure was solved innovatively by using a combination of geographic and individual targeting, where eligibility is based on being extremely poor (*Bolsa Família* criteria) and living in an environmentally vulnerable area (MMA criteria). Moreover, existing functions are built on the existing structure of *Bolsa Família*, such as the processes of targeting, addressing, selecting, and paying participants, as well as social monitoring and visits by local agents in cases of non-compliance. This is probably why the administrative costs of *Bolsa Verde* are comparatively low: in the 2014 Budget, BRL3.6 million was allocated for administrative costs compared to BRL102.6 million for benefit payments, resulting in a 3.4 per cent administrative cost share (SIOP, 2014). International experience indicates that administrative costs for targeted programmes are usually higher than what is found in *Bolsa Verde*.

## 6.2. Recommendations

### 6.2.1. Possible design, management, and implementation considerations

The following aspects could be considered when designing, implementing, or managing, a programme combining social protection and environmental objectives:

- **Formulate both objectives clearly** and decide which objective to prioritize in case of conflicts (e.g. Ecuador).
- **Consider objectives carefully when deciding on targeting criteria.**
- Be aware that a PES cannot be responsible for reaching various objectives on a stand-alone basis and thus **needs to be developed within a set of coordinated policy tools. In particular, consider coordinating with:**
  - **Complementary environmental policies:** For a programme to achieve its environmental goals, it is relevant to coordinate or complement the programme with other programmes or policies that aim to achieve similar goals. For example, if a PES is aimed at reducing deforestation, another complementary policy aimed at reducing deforestation but targeting different groups, such as farmers or large businesses, will make the PES more effective.
  - **Policies to support youth and break intergenerational transmission cycles:** Regarding the coordination of different policies (see ILO Recommendation No. 202, Paragraph 3, clause (l)), there may be scope to coordinate a PES programme with, for example, employment or other policies targeted at youth. Thus, where applicable, youth of participating families could be enrolled in environmental training and/or skills development programmes to help address the shortage of opportunities for young adults in the labour market.
  - **National and international framework for the promotion and protection of the rights of indigenous and tribal peoples** as set out in relevant instruments such as the UN Declaration on the Rights of Indigenous Peoples and ILO Convention No. 169, including as regards consultation and participation, as well as traditional knowledge and livelihoods-related practices.
- **Coordinate existing programmes:** To ensure coherence and improve effectiveness, it is important to coordinate existing programmes across different institutions and policies (see Recommendation No. 202, Paragraph 3, clauses (l) and (m)). For example, although *Bolsa Floresta* is a state-level programme and *Bolsa Verde* a

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national programme, it could be advantageous to consider coordinating both programmes more closely. The Ministry of Social Development has signed coordination agreements for the *Bolsa Família* programme with a number of states to complement local supplementary cash transfers and service provisions. Such cooperative agreements might reduce administrative costs and increase the exchange of knowledge and experience. One type of cooperative arrangement, for example, could be to include *Bolsa Verde* participants living in the State of Amazonas in training offered to *Bolsa Floresta* participants.

- **Make sure that participants do not disqualify from other social programmes.** This is especially important for participants close to the threshold income line. For example, since *Bolsa Família* includes important additional benefits, such as schooling and health, the opportunity cost of *Bolsa Verde* for *Bolsa Família* beneficiaries living close to the threshold of extreme poverty would be enormous.
- **Ensure that eligible people know about the programme and that the application process is straightforward and affordable.** This could be done by addressing people directly (as is the case for *Bolsa Verde*) by allowing for group/community applications (as is used in Mexico, Ecuador, and China), and/or by providing free assistance to complete the application (as in the cases of Mexico and Ecuador).
- **Estimate and include compensation for transaction costs in the (initial) payment.** Some programmes, such as in the case of China, have high initial start-up costs in order to meet the environmental programme conditions. Thus, it may be relevant to evaluate the transaction costs associated with the programme and to ex ante adjust the initial payment.
- **Estimate and consider opportunity costs when deciding on payment levels.** From an ecological viewpoint, payment levels should be high enough to cover opportunity costs of farmers. From a social viewpoint, the payment level should help mitigate poverty and provide an income basis for constructing long-term solutions. The option of having variable payment levels impacts administrative expenses and is more likely to be found in strongly pro-environmental cash transfer schemes. A flat-rate payment has the advantage that administration is less complex, less expensive, and increases political viability. However, it might be important to evaluate if opportunity costs differ considerably between participants or areas. If this is the case, it should be evaluated how the opportunity costs can be lowered or compensated. If a community approach is considered, opportunity costs could, for example, be compensated through a community grant while maintaining the simplicity and advantage of an individual flat rate. An alternative to variable payment levels could thus be an individual flat payment rate (as in *Bolsa Verde*) complemented by a variable community benefit (solution not yet tested).
- **Take into account indigenous and tribal peoples' conditions and contributions.** Beside respecting indigenous and tribal peoples' rights, the programme should also take into consideration indigenous and tribal peoples' economic, geographic, social and cultural conditions, including on land tenure and ownership aspects, as well as their distinctive contribution to the environment, including through their traditional knowledge and practices, both in the design and implementation phase. The ILO Indigenous and Tribal Peoples Convention, 1989 (No. 169) provides useful guidance in that regard.
- **Be aware of land tenure and ownership issues that may affect the programme.** For example, a PES that does not require landownership for participation can cause land tenure conflicts, while the requirement of legal land titles is likely to exclude

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(some) poor people. It is therefore important to coordinate the PES with other programmes that aim at regularizing landownership (e.g. Ecuador).

- **Consider community approaches.** To improve long-term benefits, schemes could include non-participants indirectly into the programme benefits and strengthen social capital (e.g. Mexico, Ecuador, and *Bolsa Floresta*). For example, it could be of interest to consider addressing communities instead of, or in addition to, individual participants in localities where a relevant number of participants from the same community are enrolled. A certain amount, for example, could then be paid to the communities, possibly calculated as a proportion of the individual payments. This would allow the group to invest in community infrastructure and foster community organizations. However, be aware that such an approach needs to take action in order to prevent misuse of funds, social or cultural conflict, the respect of indigenous and tribal person's rights and customs and the exclusion of some members of the communities, and also ensure that the institutions and customs of indigenous and tribal peoples are respected where these are not incompatible with fundamental rights as defined in the national legal system and with internationally recognized human rights (see ILO Convention No. 169, Article 8(2)). Possible instruments to avoid this are community management/investment plans (e.g. Mexico, Ecuador). If this is considered, it would be advisable to look at the experience of *Bolsa Floresta*, which channels part of the payments to communities for improving social infrastructure (*Bolsa Floresta Social*) and part to community associations (*Bolsa Floresta Associação*). The experiences of Mexico's PSAH and Ecuador's *Socio Bosque* may also be of interest in this regard.
- **Include stakeholders from different parts of society in the design, implementation, and management processes, and promote (social) dialogue.** It is advisable to include various stakeholders in the processes to improve the design (e.g. Mexico) and management/implementation of existing programmes. A dialogue could be promoted bringing together various authorities, social partners, as well as other relevant actors (see Recommendation No. 202, Paragraph 3, clause (r)). The dialogue could include topics such as targeting, monitoring, payment levels, influence on participating and non-participating people, possible alternative income sources, exit strategies, and contents of trainings. Such a dialogue could also include individual participants, community representatives, non-participants, and other stakeholders in the society. To be able to consider both the social and the environmental objectives of the programme, it should be ensured that stakeholders promoting each of the objectives participate in the dialogue. In the case of *Bolsa Verde* the dialogue could be carried out within existing structures, possibly with the support of social policy councils in place at the local level and *Bolsa Família*'s social workers.
- **Evaluate whether publishing beneficiaries' names affects their dignity.** Recommendation No. 202 recommends ensuring privacy and self-esteem of participants (Recommendation No. 202, Paragraph 3, clause (f)). Although it may be understandable that lists of beneficiaries are publicly accessible for transparency and accountability purposes, it is possible that this could affect the dignity of participants. Therefore, it should be analysed to what extent this is the case and if there are other alternative measures that can be taken to ensure transparency. This could also be a point to be included in an evaluation.
- **Allow for complaint and appeal procedures.** Complaint and appeal procedures for the participants should be set up (see Recommendation No. 202, Paragraph 3, clause (o)).
- **Consider possible negative influences on non-participating poor.** For example, make sure that poor, non-participating people do not have to pay for the ES.

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- **Carefully plan and provide an exit strategy for participants.** For example, make training that covers subjects necessary for the exit strategy, as well as on sustainability, an important component of the programme (see Chapter 6.2.2. for more suggestions and options).
  - **Ensure that people can rely on the continuation of the programme and their individual participation.** To stimulate long-term investments and the effective conversion of land-use patterns, programmes need to be long term. This could be done by enshrining the programme into legislation and by concluding individual contracts that cover relatively long periods of time (e.g. Ecuador).
  - **Monitor social and ecological conditions carefully.** Monitoring should be incorporated into the programmes (see Recommendation No. 202, Paragraph 3, clause (p)), but the enforcing agencies need to be aware that the enforcement of rules requires attaching weights to both the ecological and social objectives. A possible method to increase compatibility between and accomplishment of both goals could be the use of a ‘warning system’ similar to the one used in *Bolsa Família* and *Bolsa Verde*. Participants in these programmes who do not fulfil the programme’s obligations are visited by local agents to investigate why the participants did not comply with the conditions. This could contribute to reducing any potential conflict between the environmental and the social objectives.
  - **Set up a monitoring and evaluation system allowing, amongst others, regular monitoring and a periodic review, as well as programme and impact evaluations.** A monitoring and evaluation system creates and supports a learning process that facilitates future adaptations and improvements as society evolves (e.g. Ecuador, Mexico, and Costa Rica). Regular monitoring and evaluation of cash transfers and social protection programmes in general refers to a good practice that is also supported by Recommendation No. 202. Moreover, such assessments and evaluations should go beyond the financial disbursement, extreme poverty reduction, and targeting efficiency assessment. They should also document the inception and launching phase of the programme, as well as the impacts on people. Other possible areas that could be assessed and evaluated could be impacts of the programme on the community, suitable mechanisms to perform the monitoring of social and environmental programme participation conditions, transaction and opportunity costs, impacts on and interests of non-poor people regarding the programme, and mechanisms to ensure control and transparency.

### 6.2.2. Thoughts about exit strategies

This second part of the recommendations refers to the question of what happens to the participants if or when a pro-poor PES ends. This would be the case after two years in *Bolsa Verde* if the benefit or programme is not extended for one of several reasons or sufficient resources are not available (for example a budgetary restriction seems to exist regarding the number of *Bolsa Verde* beneficiaries). This question is crucial for the long-term results of the project regarding both environmental and social objectives. First, it needs to be determined if a specific exit strategy is desired to avoid programme dependence or if long-term participation delivers more sustainable (environmental) results. As compared to a traditional PES that is focused exclusively on environmental outcomes, *Bolsa Verde* was designed based on and with close links to the *Bolsa Família* programme. For *Bolsa Verde*, as well as some of the pro-poor PES programmes, developing exit scenarios to help participants improve their income and possibly surpass poverty thresholds and thus “graduate” out of extreme poverty is a relevant exercise.

To achieve significant reductions in both deforestation and poverty, *Bolsa Verde* searches for ways to provide and support an exit strategy that allows participants to

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continue preserving the environment and, at the same time, earn an adequate income after compensation ends.<sup>42</sup> Obviously, such an exit strategy also depends on what kind of economic activity is allowed in the respective geographical areas, assuming activities are allowed at all. Therefore, ideas on possible and adaptable exit strategies for *Bolsa Verde* in particular and pro-poor PES programmes in general are derived from the lessons learned from the literature and the four case studies. The ideas are presented and discussed in this section (see also figure 5).

Regardless of which exit strategy is promoted, an important aspect that should be considered is the duration of the contracts of the programme. For example, in the case of *Bolsa Verde*, contracts currently expire after two years with possible extensions. Two years may be too short a time for adapting land-use practices and building up an alternative income source. Also, it might not allow for certain long-term investments. Therefore, **increasing the duration of the contracts** and providing predictable income for a longer time horizon should be considered.<sup>43</sup>

Since PES schemes have the creation of employment among their key goals, providing adequate training is essential for ensuring that PES beneficiaries match the necessary qualifications for alternative employment opportunities, as well as for reaching the ecological objectives in the long term. Therefore, designing and implementing **trainings** should increasingly become important elements of the programme. Training is a condition for participation in the cases of *Bolsa Floresta* and South Africa's Working for Water programme. Since *Bolsa Floresta* has now conducted training for participants for ten years, the lessons learned could be valuable when designing and implementing training modules for other programmes. When planning the concrete contents of training, it is important to decide which long-term exit strategy is desired. A number of ideas and scenarios for trainings, including additional and complementary activities or measures that could be considered for possible exit strategy scenarios, are described below. Not all of them may be relevant for all pro-poor PES or similar programmes.

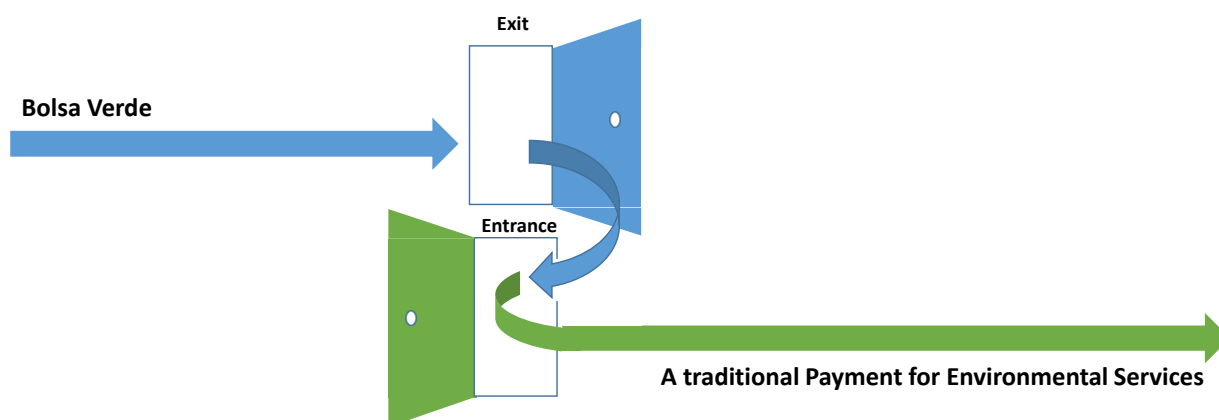
- Training on **sustainable techniques for (small-scale) agriculture or agroforestry would allow people to use their land in a sustainable way and support rural self-employment**. This type of training should include information on micro-entrepreneurship. The Use of Management Plans, which are already part of the contracts, could be employed as a basis to develop strategies on sustainable long-term use of forests. Participants and/or communities should then receive technical advice in drawing up these plans. It could be useful to look closer at the Mexican Forest Management Plans. The provision of microfinance could be considered to give people access to initial credit. The provision of land tenure (or the right to use land) and the improvement of rural infrastructure to facilitate trade could also be useful as part of the compensation provided. In general, it will be important to decide on land use that results in production that can be competitive. Participants and local communities should be included into this decision-making process (see also the above mentioned recommendation on including stakeholders and promoting social dialogue). To facilitate the introduction and commercialization of sustainable products, existing support programmes for agriculture/agroforestry that include small farmers and support the development of innovative markets could be linked to the programme. For this purpose, it could be relevant to look at lessons learned from *Bolsa Floresta*, which includes different types of support programmes.
- Training on **sustainable agriculture or agroforestry could also support the transition of *Bolsa Verde* or other pro-poor PES participants towards a**

<sup>42</sup> The search for an adequate exit strategy has been mentioned as an important issue for the MMA in interviews with the respective officers.

<sup>43</sup> See SPF criterion in Recommendation No. 202, Paragraph 3, clause (c).

**traditional PES scheme** that presents an exclusively environmental objective. Such a PES could either be another public programme in the respective region or it could be a number of local, small-scale (private) PES schemes, when such initiatives exist. To ensure the inclusion of former participants, information and transmission mechanisms that allow for the transition to a traditional PES scheme need to be offered. This means that such an “exit door” needs to be synchronized with the “entrance door” provided by the parallel PES scheme (see figure 4 below). Besides training on sustainable land use, the “exit door” could include elements such as ensuring land tenure security (which was not relevant for participating in *Bolsa Verde* but is likely to be relevant in an exclusively ecological PES), informing people about the new programme, and supporting the application process, where applicable.

**Figure 4. Synchronization of the *Bolsa Verde* “exit door” and ecologically focused PES “entrance door”**



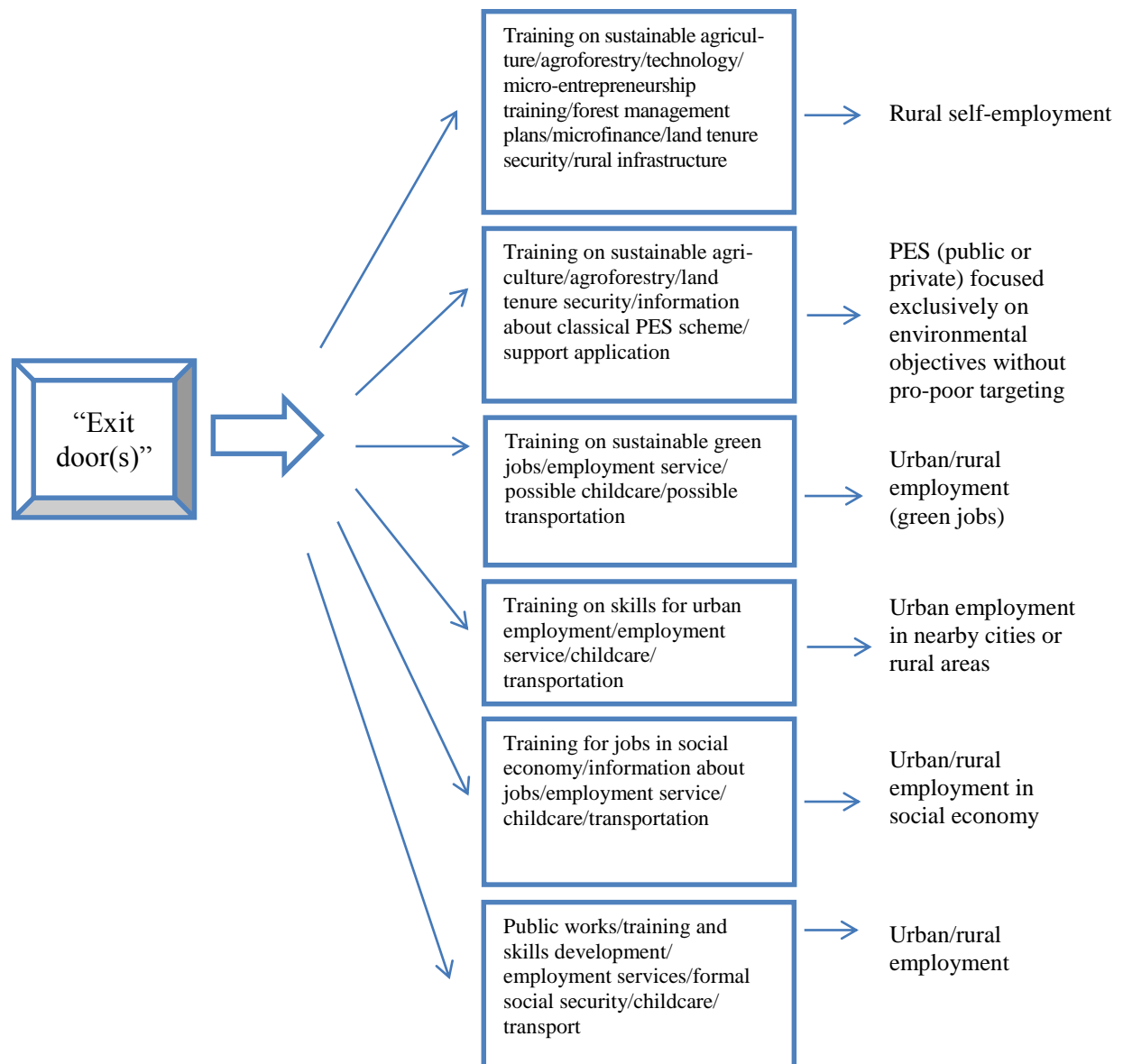
- Training could **focus on preparing participants to work in sustainable green jobs in specifically promoted value chains and productive activities and thus support nearby urban or rural employment**. This would require a discussion and analysis of possible green jobs within existing and potential new value chains and productive activities. The discussion should include the private sector, employment services, as well as green jobs specialists. Provision of childcare and transportation might also become relevant.
- Training could focus on necessary **skills for urban work in (nearby) cities or rural areas** if these opportunities exist and participating families want to diversify their income sources. To do so, it would be necessary to analyse in which areas workers are needed and which skills are essential. It would therefore be advisable to integrate local employment services into the process when possible. At the same time, it is necessary to analyse which jobs are interesting and accessible for the participants in *Bolsa Verde* and other pro-poor PES programmes. Participants could also be included in these considerations. This could be the topic of a social dialogue (see above recommendation on including stakeholder and promote social dialogue) or could benefit from the support of social workers. As the results of this analysis are likely to vary according to region, there should be a certain amount of flexibility in the types of training offered. It would be worthwhile to consider including participants into already existing training programmes. This could also strengthen the coordination between different institutions. The provision of transportation and childcare might also be relevant aspects to explore.
- Training could prepare pro-poor PES or *Bolsa Verde* participants to find **urban or rural employment/work in the social economy**, such as in cooperatives or non-profit organizations. Organizations working on environmental themes would be of



special interest. Possible organizations would need to be identified and included into the process of developing training and supporting participants to migrate to those jobs. The inclusion of employment services and the provision of childcare and transportation if necessary would also be useful. If a community approach is introduced at some point in future, the community development plans could be institutionalized.

- Training **could be combined with short-term public employment** for participants, similar to South Africa’s Working for Water programme. Public works that improve sustainability **would allow participants to gain work experience, self-esteem, and receive related training simultaneously. This combination could increase the chance of finding employment afterwards.** It should be guaranteed that participants are covered by social security while working within the programme. Childcare and transportation to the workplace would also be essential. Employment services should be included to support the transition from the scheme to jobs. If this option is considered, it would be useful to look more closely at the experiences of South Africa (Working for Water, Working for Wetlands, among others) and India (MGNREGS).

Figure 5. Possible exit doors



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The development of any of these strategies needs careful consideration and the inclusion of different stakeholders. If a (social) dialogue is promoted, as suggested above, it is advisable that it includes the question of possible exit strategies. For any strategy, adequate, well-designed training is essential. It is also crucial to coordinate policies to create coherence between employment programmes and local development plans. Coordinating training with educational policies could be taken into consideration, for example, by including youth from participating families and providing opportunities for adults to complete their formal schooling. Developing appropriate exit strategies will take time, effort, and resources.

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## 8. Annexes

### Annex I. Overview of Brazil's large-scale public PES programmes

Name of PES Year of initiation	Region	Mainly financed/managed by	Description
<b>Bolsa Verde 2011</b>	National	<ul style="list-style-type: none"> <li>Ministério do Meio Ambiente (MMA, Ministry of the Environment)</li> </ul>	<ul style="list-style-type: none"> <li>Target group: Families in situation of extreme poverty who are participants of <i>Bolsa Família</i> and live in priority areas defined by the programme</li> <li>ES: conservation of forests; development of sustainable activities</li> <li>Compensation: BRL300 per family every three months for two years, one extension for another two years possible</li> </ul>
<b>Bolsa Floresta 2007</b>	State of Amazonas	<ul style="list-style-type: none"> <li>Governo do Estado do Amazonas (Government of the State of Amazonas)</li> <li>Fundação Amazonas Sustentável (Amazonas Sustainable Foundation (FAS))</li> </ul>	<ul style="list-style-type: none"> <li>Target group: traditional and indigenous families and communities in CUs</li> <li>Conditions: participation in a 2-day training on environmental awareness; commitment to zero deforestation in primary forests; sustainable use of secondary forests is allowed</li> <li>ES: conservation of tropical forests; development of sustainable activities</li> <li>Compensation: BRL50 per family per month; BRL140,000 per CU per year for measures that support production of sustainable products; BRL140,000 per CU per year for social investments that improve living quality; 10% of total payments to families for associations within CUs</li> </ul>
<b>Proambiente 2003 (first payments 2006)</b>	Legal Amazon	<ul style="list-style-type: none"> <li>Ministério do Meio Ambiente (Ministry of the Environment (MMA))</li> <li>Ministério do Desenvolvimento Agrário (Ministry of Agrarian Development (MDA))</li> <li>International Funds</li> </ul>	<ul style="list-style-type: none"> <li>Proambiente = <i>Programa de Desenvolvimento Socioambiental da Produção Familiar</i></li> <li>Target group: farmers and fishers who have a gross income of less than BRL30,000 per year, of which 80% comes from rural activities that mainly use family labour, and own land of less than 4 "módulos fiscais"<sup>44</sup></li> <li>ES: conservation of environment; incorporation of sustainable agricultural practices in production</li> <li>Compensation: 1/3 of minimum wage per month; rural credits; strengthening of social organization; certification of environmental services; establishing of sustainable systems of rural production</li> </ul>

<sup>44</sup> The size of one *módulo fiscal* varies according to the municipality, between five and 110 hectares.

Name of PES Year of initiation	Region	Mainly financed/managed by	Description
<b>Programa Produtor de Água 2000</b>	National/ local (depending on the project)	<ul style="list-style-type: none"> <li>• Agência Nacional de Águas (National Water Agency (ANA))</li> <li>• The Nature Conservancy (TNC)</li> <li>• Royalties of oil and natural gas (3% of royalties)</li> <li>• Environmental compensation paid by hydroelectric enterprises (100%)</li> </ul>	<ul style="list-style-type: none"> <li>• Supports and certifies projects which aim at reducing erosion, siltation, and aggradation of water sources in rural areas to improve the quality, enlargement, and regularization of water supply</li> <li>• All projects have to fulfil conditions established by ANA, such as including monitoring systems, establishing partnerships, providing technical assistance to participating local producers, and supporting sustainable production practices</li> <li>• Projects include the construction of terraces and basins of infiltration, protection of river sources, reforestation of protected areas, or environmental healing</li> <li>• Current projects: <ul style="list-style-type: none"> <li>• Projeto Conservador de Águas Extrema-MG (Rio Jaguari) (see also Cassola, 2010)</li> <li>• Projeto PCJ (Joanópolis, Nazaré Paulista)</li> <li>• Projeto Produtor-ES</li> <li>• Projeto Piripau – DF</li> <li>• Projeto Guandú – RJ</li> <li>• Projeto Guariroba – SP</li> <li>• Projeto Camboriú – SC (municipalities Camboriú and Balneário Camboriú)</li> <li>• Projeto PSA Água APA do Pratigi – BA</li> <li>• Projeto Apucarana – PR/Oásis (Rio Ivaí, Pirapó, Tibagi ; Brumadinho, São Paulo, Apucarana, São Bento do Sul, in future: São José dos Campos)</li> </ul> </li> </ul>

Sources: Bolsa Verde: <http://www.mma.gov.br/desenvolvimento-rural/bolsa-verde/item/8928>;  
Bolsa Floresta : <http://fas-amazonas.org/pbf/?lang=en>;  
Proambiente: <http://www.proambiente.cnpemembrapa.br/conteudo/introducao.htm>;  
Produtor de Água: <http://produtordeagua.ana.gov.br/>;  
<http://produtordeagua.ana.gov.br/Portals/0/DocsDNN6/documentos/Folder%20-%20Programa%20Produtor%20de%20C3%81gua.pdf>.



## Annex 2. Examples of (small-scale) regional/municipal PES projects in Brazil

Name of PES Year of initiation	Region	Mainly financed/managed by	Description
<b>Bolsa Reciclagem 2011</b>	Minas Gerais	<ul style="list-style-type: none"> <li>Secretaria de Estado de Meio Ambiente e Desenvolvimento Sustentável de Minas Gerais (Secretariat of Environment and Sustainable Development of the State of Minas Gerais (SEMAD))</li> </ul>	<ul style="list-style-type: none"> <li>Collectors of recyclable materials are compensated every three months for avoiding the release of carbon dioxide into the air; payment level depends on weight and type of waste</li> <li>Money is paid to cooperatives and associations who have to pass on at least 90% to cooperating or associated collectors and can use the rest for administration, investments in infrastructure, trainings of collectors, among others.</li> </ul>
<b>Produtores de Biodiversidade do Rio Formoso 2011</b>	Rio Formoso, Municipality Bonito, Mato Grosso do Sul	<ul style="list-style-type: none"> <li>Fundação Neotrópica</li> <li>Fundo Brasileiro para a Biodiversidade (Brazilian Fund for Biodiversity)</li> <li>International support</li> </ul>	<ul style="list-style-type: none"> <li>Aims to conserve and recover the Formoso River</li> <li>Rural landowners are rewarded for protecting biodiversity and landscape beauty by maintaining and well-conserving their lands according to environmental legislation</li> <li>Tourists are buyers of the ES</li> </ul>
<b>Cercar para Não Secar 2010</b>	Municipality São Gonçalo do Rio Abaixo, Minas Gerais	<ul style="list-style-type: none"> <li>Prefeitura de São Gonçalo do Rio Abaixo (Municipal Government of São Gonçalo do Rio Abaixo)</li> <li>Fundo de Gestão Ambiental do Município (Fund for the environmental management of the Municipality)</li> </ul>	<ul style="list-style-type: none"> <li>Rural producers are remunerated for fencing in, thus protecting, river sources (between 2010 and 2012, 129 producers fenced 479 river sources)</li> <li>Received best practice prize 2012 of Associação Mineira dos Municípios</li> </ul>
<b>Produtores de Água e Floresta 2009</b>	Atlantic Forest (pilot: Rio Guandu)	<ul style="list-style-type: none"> <li>Secretaria de Estado do Ambiente de Rio de Janeiro (Secretariat for Environment of the State of Rio de Janeiro)</li> <li>Prefeitura Municipal de Rio Claro (Municipal government of Rio Claro)</li> <li>Instituto Terra de Preservação Ambiental (Earth Institute for environmental Preservation)</li> <li>The Nature Conservancy</li> <li>Comitê de Bacia Hidrográfica do Rio Guandu (Committee for the River Basin of the River Guandu)</li> </ul>	<ul style="list-style-type: none"> <li>Water users compensate rural landowners for maintaining forests and, in consequence, support the provision of water in necessary quantity and quality</li> <li>Compensation varies between BRL 10 and 60 per hectare per year depending on the area</li> </ul>

Sources: Bolsa Reciclagem: <http://www.jusbrasil.com.br/topicos/27221752/bolsa-reciclagem>;  
<http://www.coepbrasil.org.br/portal/Publico/apresentarArquivo.aspx?TP=1&ID=911142ee-cd53-4ed9-a002-a49928a51a3b&NOME=Decreto%20Bolsa%20reciclagem.pdf>;  
 Produtores de Biodiversidade da Bacia do Rio Formoso : <http://www.fundacaoneotropica.org.br/projeto-produtores-de-biodiversidade-da-bacia-do-rio-formoso>;  
 Cercar para não secar: [http://www.saogoncalo.mg.gov.br/mat\\_vis.aspx?cd=7826](http://www.saogoncalo.mg.gov.br/mat_vis.aspx?cd=7826);  
 Produtores de Águas e Florestas: [http://www.itpa.org.br/?page\\_id=497](http://www.itpa.org.br/?page_id=497).

### Annex 3. Examples of small-scale private PES initiatives in Brazil

Buyer of PES	Region	Description
Group of hotels	Itacaré, Bahia	<ul style="list-style-type: none"> <li>Pays about 1 times the minimum wage to landowners who maintain the scenic beauty of the properties (maintenance of native forests) and adhere to sustainable agricultural practices</li> </ul>
Perrier-Vitel (water company)	unknown	<ul style="list-style-type: none"> <li>Pays \$230 per hectare per year to owners of land next to their source if they maintain their land covered by native forests</li> </ul>
Ambev (brewery)	Jaguariúa São Paulo	<ul style="list-style-type: none"> <li>Pays up to BRL 125 per hectare per year to farmers who preserve their land and recover the vegetation, keeping the basin of the rivers Piracicaba-Capivari-Jundiá clean</li> <li>Objective: stop water shortage that was produced due to cutting of trees for cattle and agriculture</li> <li>In cooperation with The Nature Conservancy and with support of the city of Jaguariúna</li> </ul>

Sources: Hotels and Perrier Vitel: <http://www.aprendizagempsa.org.br/blog/equipe-comunidade-psa/pagamentos-por-servi%C3%A7os-ambientais-%C3%A9-not%C3%ADcia>  
 Ambev: <http://www.aprendizagempsa.org.br/blog/equipe-comunidade-psa/agricultores-paulistas-s%C3%A3o-remunerados-para-preservar-florestas-e-rios>

## Annex 4. List of main PES schemes worldwide

Country	Name	Year of initiation	Type of ES	Scale	Mainly financed by	Pro-poor focus?	Form of payment	Literature
<b>Bolivia</b>	ICO Water Planting	2003	Watershed	Local (La Aguda community)	Private/donors	No	No regular payments; in-kind rewards for the land users, such as construction of drinking pool	<a href="http://www.watershedmarkets.org/casestudies/Bolivia_ICO.html">http://www.watershedmarkets.org/casestudies/Bolivia_ICO.html</a>
<b>Bolivia</b>	Los Negros	2002	Watershed	Local (los Negros cloud forest)	Donors (long-term downstream farmers)	No	In-kind payments (beehives, barbed wire, fruit trees) worth between \$1.50 to \$3 per hectare per year + training	Robertson and Wunder (2005); Asquith et al. (2008)
<b>Bolivia</b>	Tarija	2002	Watershed	Local (Sama Biological Reserve)	Donors (long-term users)	No	In-kind: participation in conservation projects	<a href="http://www.watershedmarkets.org/casestudies/Bolivia_Tarija_E.html">http://www.watershedmarkets.org/casestudies/Bolivia_Tarija_E.html</a>
<b>China</b>	Green Water Management & Credit	2012	Watershed	Local (Yangtze River)	Public/donors (ISRIC, Dutch consortium, Chinese Government)	No		<a href="http://greenwatercredits.net/content/china">http://greenwatercredits.net/content/china</a> ; <a href="http://www.futurewater.nl/uk/projects/green-water-management-and-credits-toolkit-for-china/">http://www.futurewater.nl/uk/projects/green-water-management-and-credits-toolkit-for-china/</a>
<b>Colombia</b>	Valle del Cauca	1980s	Watershed	Local (Cauca Valley)	Private (voluntary users)	No	Cash or in-kind benefits that aim to support improvement in management practices (erosion control, agro-ecological, and organic productive systems); community training in income-producing activities	Pagiola (2005); <a href="http://www.watershedmarkets.org/casestudies/Colombia_Valle_del_Cauca_E.html">http://www.watershedmarkets.org/casestudies/Colombia_Valle_del_Cauca_E.html</a> ; <a href="http://www.conservationgateway.org/Files/Pages/water-user-associations-c.aspx">www.conservationgateway.org/Files/Pages/water-user-associations-c.aspx</a>
<b>Costa Rica</b>	Heredia Public Service Enterprise	2000 (payments started 2002)	Watershed	Local (Heredia)	Private (extra charge to water bills)	No	Cash payments based on opportunity cost (for conservation and regeneration: \$90 per hectare per year; for reforestation: \$172 per hectare per year for 5 years); technical support for biological waste management alternatives + environmental education; purchase of lands in critical aquifer recharge areas	FAO (2011, p. 287); JM Blanco et al. 2003. <i>Costa Rica. Une experiencia de manejo ambiental innovadora</i> ; <a href="http://www.watershedmarkets.org/casestudies/Costa_Rica_ESPH.html">http://www.watershedmarkets.org/casestudies/Costa_Rica_ESPH.html</a>
<b>Costa Rica</b>	Energía Global	Started in 1997	Watershed	Local (San Fernando River, Vulcan Sarapiquí)	Private/public (hydro-electric power company Energía Global; FONAFIFO)	No	Cash payments: at least \$12 per hectare per year	<a href="http://www.watershedmarkets.org/casestudies/Costa_Rica_Energia_Global.html">http://www.watershedmarkets.org/casestudies/Costa_Rica_Energia_Global.html</a> ; Rojas M and Aylward B (2003); Pagiola (2008)

Country	Name	Year of initiation	Type of ES	Scale	Mainly financed by	Pro-poor focus?	Form of payment	Literature
Costa Rica	Florida Ice & Farm	2001-2007	Watershed	Local (Rio Segundo watershed)	Private (local brewery and water utility company Florida Ice & Farm)	No	Cash payments of \$67 per hectare per year to providers; \$0.002 per bottle of water sold + \$0.002 per bottle recycled to National Park	<a href="http://www.watershedmarkets.org/casestudies/Costa_Rica_La_Florida.html">http://www.watershedmarkets.org/casestudies/Costa_Rica_La_Florida.html</a>
Costa Rica	Costa Rican Electricity Institute	Started in 2000	Watershed	Local (Penas, Blancas, Pirris, Sarapiquí, Carblanco, Reventazon)	Private/donor (Electricity Institute ICE, FONAFIFO)	No	Cash payments of \$64 per hectare per year for 5 years for forest conservation, \$816 over 10 years for forest plantations, and \$1.3 per tree planted	<a href="http://www.watershedmarkets.org/casestudies/Costa_Rica_ICE_eng.html">http://www.watershedmarkets.org/casestudies/Costa_Rica_ICE_eng.html</a>
Costa Rica	The Carbon Sequestration in Small and Medium Farms in the Bunca Region Project	2006	Carbon sequestration	Bunca Region	Public/donor (World Bank Bio-Carbon Fund, FONAFIFO, CoopeAgri)		Cash payments to farmers; training of landowners; generating employment through reforestation	<a href="https://wbcarbonfinance.org/Router.cfm?Page=BioCF&amp;FID=9708&amp;ItemID=9708&amp;ft=Projects&amp;ProjID=9632">https://wbcarbonfinance.org/Router.cfm?Page=BioCF&amp;FID=9708&amp;ItemID=9708&amp;ft=Projects&amp;ProjID=9632</a> ; <a href="https://wbcarbonfinance.org/docs/FONAFIFO-COOPEAGRI.pdf">https://wbcarbonfinance.org/docs/FONAFIFO-COOPEAGRI.pdf</a> ; <a href="http://cdm.unfccc.int/Projects/DB/AENOR1349188271.57/view">http://cdm.unfccc.int/Projects/DB/AENOR1349188271.57/view</a>
Dominican Republic	PROCARYN	2001, extended in 2006	Carbon Sequestration	Local (Yaque del Norte)	Private/donor (Empresa de Generación Hidroeléctrica Dominicana, KfW)	Yes (community development and participation)	Support in elaboration of management plans and managerial support for implementation; financing of part of the investment (e.g. 60% of all costs of reforestation for up to five years); certification of forest management; community development and participation, e.g. supporting organization of smallholders land tenure	<a href="http://www.watershedmarkets.org/casestudies/Dominican_Republic_Procaryn.htm">http://www.watershedmarkets.org/casestudies/Dominican_Republic_Procaryn.htm</a> <sup>45</sup>

<sup>45</sup> <http://hoy.com.do/medio-ambiente-y-procaryn-extienden-plazo-entrega-de-concurso-de-infraestructuras/>;  
<http://books.google.ch/books?id=fLI8OL5EIIQC&pg=PA72&lpg=PA72&dq=procaryn+republica+dominicana&source=bl&ots=TCmaYHftiy&sig=3vJtg15SnmtCsnGFInVRHCGU79Q&hl=en&sa=X&ei=tsOMUsHTHKuS7Aam34HYBg&ved=0CH0Q6AEwCA#v=onepage&q=procaryn%20republica%20dominicana&f=false>.

Country	Name	Year of initiation	Type of ES	Scale	Mainly financed by	Pro-poor focus?	Form of payment	Literature
Ecuador	FONAG (Fondo para la protección de agua)	2002	Watershed	Local (Quito)	Private (water utility and electric power company), supported by the Government	No	Training: environmental education to reduce poaching, garbage dumping, and illegal fires; capacity building to improve agricultural methods and encourage alternative environmentally friendly activities; support in capacity building in environmentally friendly production	Pagiola (2005, pp. 239 and 241); Echevarra (2002); <a href="http://www.watershedmarkets.org/casestudies/Ecuador_FONAG_E.html">http://www.watershedmarkets.org/casestudies/Ecuador_FONAG_E.html</a>
Ecuador	Pimampiro	2000 (payments started 2001)	Watershed	Local (Imbabura province)	Private (water users: 20% increase in municipal water charge)	Yes (improvement of livelihood)	Cash payments every three months of \$1 per hectare per month for undisturbed primary forest, \$0.75 per hectare per month for old secondary forest, and \$0.50 per hectare per month for new secondary forest. Average: \$21.20 month or approximately 30% of monthly household expenditure	Wunder (2011) p. 157; <a href="http://www.watershedmarkets.org/casestudies/Ecuador_Pimampiro_E.html">http://www.watershedmarkets.org/casestudies/Ecuador_Pimampiro_E.html</a> <sup>46</sup>
Ecuador	Cuenca	1984	Watershed	Local (Cuenca City)	Private (5% water user charge; biggest contributor is Municipal Enterprise for Telecommunications)	No	Loans and technical advice to farmers in mid-watershed to increase water use efficiency	<a href="http://www.watershedmarkets.org/casestudies/Ecuador_Cuenca_E.html">http://www.watershedmarkets.org/casestudies/Ecuador_Cuenca_E.html</a> ; Echavarría et al. (2004)
Ecuador	El Chaco	2006	Watershed	Local (el Chaco)	Private (water user charge of \$0.028 - \$0.068 per cubic metre)	No	Cash payment of \$36 per hectare per year every three months for 10 years	<a href="http://www.watershedmarkets.org/casestudies/Ecuador_various_small_funds.htm">http://www.watershedmarkets.org/casestudies/Ecuador_various_small_funds.htm</a>
Ecuador	Celica	2006	Watershed	Local (Quillosara)	Water users/ donors	No	Cash payment of \$52 per hectare per year every three months for 10 years	<a href="http://www.watershedmarkets.org/casestudies/Ecuador_various_small_funds.htm">http://www.watershedmarkets.org/casestudies/Ecuador_various_small_funds.htm</a>
Ecuador	Riobamba	2008	Watershed	Local (Chambo River)	Public/donor	No	Education and training, introduction to technologies (e.g. on improved irrigation); no direct payments	<a href="http://www.watershedmarkets.org/casestudies/Ecuador_various_small_funds.htm">http://www.watershedmarkets.org/casestudies/Ecuador_various_small_funds.htm</a>

<sup>46</sup> Rodriguez\_Pimampiro; Wunder and Alban (2005); Echavarría et al. (2004); Wunder (2005), Echavarría et al. (2004); [http://www4.ncsu.edu/~ajforbes/world\\_forestry/#ecuador](http://www4.ncsu.edu/~ajforbes/world_forestry/#ecuador); Rodriguez [http://www.watershedmarkets.org/casestudies/Ecuador\\_Pimampiro\\_E.html](http://www.watershedmarkets.org/casestudies/Ecuador_Pimampiro_E.html); Ordonez and Puglla (2004).

Country	Name	Year of initiation	Type of ES	Scale	Mainly financed by	Pro-poor focus?	Form of payment	Literature
El Salvador	El Imposible	2001 (pilot)		Local (El Imposible National Park San Francisco Menendez)	Public/private (water users + municipality)	No	Employment for two park rangers; communities around the park receive support for micro-enterprise, promotion of soil conservation techniques, environmentally friendly certified products	<a href="http://www.watershedmarkets.org/casestudies/El_Salvador_El_Imposible_eng.html">http://www.watershedmarkets.org/casestudies/El_Salvador_El_Imposible_eng.html</a> ; Porras and Neves (2006); Rosa et al. (2004)
Guatemala	Las Escobas	2001	Watershed	Local (Cerro San Gil, Escobas River)	Private (water users, increase in municipal water charge)	No	Improved management practices; acquisition of land	<a href="http://www.watershedmarkets.org/casestudies/Guatemala_Cerro_San_Gil.html">http://www.watershedmarkets.org/casestudies/Guatemala_Cerro_San_Gil.html</a> ; Corbera et al. (2007)
India	Sukhomajri	Mid-1970s	Watershed	Local (Haryana's PUNCHKULA District, Chandigarh)	Donor/private (CSWCRTI and the Ford Foundation; water usage fee)		Construction of rain water collection dams that improve water supply to the village; allocation of water use rights to all households within the village; access to 'bhabbar' grass for buffalos of villagers who refrain from letting them graze on the watershed hills	<a href="http://www.watershedmarkets.org/casestudies/India_Sukhomajri_eng.html">http://www.watershedmarkets.org/casestudies/India_Sukhomajri_eng.html</a>
India	Coffee Agroforestry Network (CAFNET)	2009	Biodiversity	Kodago	Private/donor (2 coffee companies in Kodagu; European Union)		Coffee certificate	FAO (2011, p. 192)
India	Kuhan	unknown	Watershed	Himachal Pradesh	Private (upstream village pays downstream village)		One-off cash payment of \$28 for purchasing and transporting saplings in exchange for planting saplings and controlling grazing	<a href="http://www.recoftc.org/site/uploads/content/pdf/Insight_Notes_from_the_Field_II_89.pdf">http://www.recoftc.org/site/uploads/content/pdf/Insight_Notes_from_the_Field_II_89.pdf</a> : p.46
Kenya	Naivasha-Malewa Integrated Water Resource Management Programme	2009 (first payments 2010)	Watershed	Local (Malewa Basin: Upper Turasha, Wanjohi)	Donor (WWF, CARE)	Yes, (improve livelihood)	Payments of \$17 per person in form of vouchers that can be exchanged for tools, seeds, among other things, for one year (can be renewed); trainings on livelihood improvement, environmental conservation, organic farming and management, among others	<a href="http://www.watershedmarkets.org/casestudies/Kenya_Naivasha_Malewa.htm">http://www.watershedmarkets.org/casestudies/Kenya_Naivasha_Malewa.htm</a> ; <a href="http://wwf.panda.org/who_we_are/wwf_offices/kenya/solutions/index.cfm?uProjectID=KE0852">http://wwf.panda.org/who_we_are/wwf_offices/kenya/solutions/index.cfm?uProjectID=KE0852</a> <a href="http://www.watershedmarkets.org/casestudies/Kenya_Naivasha_Malewa.htm">http://www.watershedmarkets.org/casestudies/Kenya_Naivasha_Malewa.htm</a>
Kenya	Naivasha	2011	Watershed	Local (Lake Naivasha)	Private, donor (flower growers, WWF/CARE)		Cash payments to farmers from flower grower; in-kind payments such as grass, trees, and seed from WWF/CARE	<a href="http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=9687">http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=9687</a>

Country	Name	Year of initiation	Type of ES	Scale	Mainly financed by	Pro-poor focus?	Form of payment	Literature
Kenya	Green Water Credits	2007	Watershed	Local (Tana River, Aberdare)	Donor/private (e.g. electricity generating company (KenGen), Water Company; IFAD)	Yes	Cash or in-kind compensation for upstream water producers for specified ES that determine water supplies to consumers downstream	<a href="http://www.greenwatercredits.net/content/kenya;">http://www.greenwatercredits.net/content/kenya;</a> <a href="http://www.ifad.org/climate/regions/esa/green.htm">http://www.ifad.org/climate/regions/esa/green.htm;</a> <a href="http://www.ifad.org/operations/projects/design/105/kenya.pdf">http://www.ifad.org/operations/projects/design/105/kenya.pdf</a>
Malawi	Responsible tourism	unknown	Landscape beauty	Local (Southern Malawi)	Private (Tourists – 1.5% of travel cost)		Cash for local organizations working on environmental protection; training and employment opportunities as guides for locals	<a href="http://www.responsibletravel.com/holiday/6906/malawi-cultural-tour">http://www.responsibletravel.com/holiday/6906/malawi-cultural-tour</a>
Mexico	Fidecoagua (Coatepec)	2002/ 2003	Watershed	Local (Coatepec, Veracruz)	Public/private (water user charge, public funds)	No	Cash payments of \$90 per hectare per year	<a href="http://www.watershedmarkets.org/casestudies/Honduras_El_Escondido.html">http://www.watershedmarkets.org/casestudies/Honduras_El_Escondido.html</a>
Mexico	Zapalinamé	2003	Watershed	Local (Coahuila)	Public/private/ donor (voluntary water user charge, internat. funds, public funds)		Cash payments to providers of \$25 per hectare per year; social development projects for landowners and communities within the reserve	<a href="http://www.watershedmarkets.org/casestudies/Mexico_Zapaliname.html">http://www.watershedmarkets.org/casestudies/Mexico_Zapaliname.html</a>
Mexico	Asociación Civil Mexicana Servicios Ambientales Oaxaca	2000	Carbon sequestration, biodiversity	Oaxaca	Public/donor (CONAFOR, PRONATURA MEXICO)	Yes	Cash Income for communities by selling carbon credits	<a href="http://www.eco-index.org/search/results.cfm?projectID=140">http://www.eco-index.org/search/results.cfm?projectID=140</a> <a href="http://sao.org.mx/?page_id=64">http://sao.org.mx/?page_id=64</a>
Nicaragua	Gil Gonzalez Micro-Watershed	2007	Watershed	Local (Gil-Gonzalez and Las Lajas watersheds)	Public/private, (Municipality, Compañía Azucarera del Sur), support by donors		Cash payments of \$27.70 per hectare per year; in-kind payments: seedlings, tools, technical assistance; one-off 'stock' payment: wire, machetes, other tools	<a href="http://www.watershedmarkets.org/casestudies/Nicaragua_Gil_Gonzalez.htm">http://www.watershedmarkets.org/casestudies/Nicaragua_Gil_Gonzalez.htm</a>
Pakistan	Mangla Dam	Early 1980s	Watershed	2 watersheds	Public (national government)		In-kind one-off payment in form of technical assistance for the construction of soil and water conservation structures upstream from the dam reservoirs to farmers who adopt improved land management techniques	<a href="http://www.watershedmarkets.org/casestudies/Pakistan_Mangla_Dam_eng.html">http://www.watershedmarkets.org/casestudies/Pakistan_Mangla_Dam_eng.html</a>

Country	Name	Year of initiation	Type of ES	Scale	Mainly financed by	Pro-poor focus?	Form of payment	Literature
Philippines	Mt. Kanla-on Natural Park	1997	Watershed	Mt. Kandla-on Natural Park	Private/donor (Kanla-on Spring Water Plant)	Yes	In-kind: tree saplings, two nurseries, technical training to adopt sustainable agroforestry practices; infrastructure development: access road, school buildings, medical clinics	<a href="http://www.watershedmarkets.org/casestudies/Philippines_kanla_on.html">http://www.watershedmarkets.org/casestudies/Philippines_kanla_on.html</a>
Philippines	Cantingas and Panangcalam Watershed	unknown	Watershed, biodiversity	Sibuyan Island	Donor/water users	Yes	Cash payments to Mangyan Tagabukid Tribe	Cremaschi et al. (2013, p. 95)
Philippines	Baticulan Watershed	2004	Watershed, biodiversity	Central Philippines	Water users (levy on water use)		Cash for landowners for reforestation; employment for upland communities in planting and maintaining trees; in-kind: training on agroforestry	Cremaschi et al. (2013, p. 97)
Trinidad & Tobago	Nariva Wetland Restoration	2008?	Carbon sequestration, biodiversity	Nariva wetland	Donor (World Bank)	Yes	Income through sales of carbon emission reductions; new marketing channels of agricultural products; training on planting and tending/maintenance practices, particularly fire prevention practices; on state-of-the-art monitoring techniques; technical assistance	<a href="http://documents.worldbank.org/curated/en/2008/09/10557556/trinidad-tobago-nariva-wetland-restoration-carbon-sequestration-project#">http://documents.worldbank.org/curated/en/2008/09/10557556/trinidad-tobago-nariva-wetland-restoration-carbon-sequestration-project#</a>
Uganda	Uganda Breweries		Watershed	Local (Lake Victoria)	Private (brewery)	No	Cash payments to National Wetlands Programme to filter waste from industrial process involved in making beer; financing of environmental education programmes	<a href="http://www.watershedmarkets.org/casestudies/Uganda_beer_for_wetlands.html">http://www.watershedmarkets.org/casestudies/Uganda_beer_for_wetlands.html</a>



## Annex 5. Overview over large-scale public PES programmes worldwide

Country	Name	Year of initiation	Type of ES	Scale	Mainly financed by	Pro-poor focus?	Form of payment	Literature
<b>Bolivia</b>	Noel Kempff Mercado Climate Action Project	1997	Carbon sequestration, biodiversity	National	Public/private/donor (national Government, Fundación Amigos de la Naturaleza, Nature Conservancy, three energy companies)	No	Holders of pre-existing logging concessions are bought out to increase the area of a national park; complementary activities: monitoring of logging companies, assistance in developing communities to compensate them for loss of employment in timber industry (microcredit schemes, assistance in gaining land titles, alternative employment)	Grieg-Gran et al, (2005, 1517); <a href="http://www.forestcarbonportal.com/project/noel-kempff-mercado-climate-action-project">http://www.forestcarbonportal.com/project/noel-kempff-mercado-climate-action-project</a>
<b>China</b>	Grain for Green – Sloping Land Conversion Pro-gramme (SLCP)	2000	Watershed	National, focus East-West: 27 million rural households (2002-08), 20 million ha (2011)	Public (national Government)	Yes (improvement of living conditions)	Cash payments of \$36-50 per hectare per year + one-off payment of \$91 in beginning; exemption from taxation of all income derived from forests and grasslands planted as part of SLCP, certified right to products grown in the forest	Ferreira dos Santos (2012b); <a href="http://www.watershedmarkets.org/casestudies/China_SLCP_eng.html">http://www.watershedmarkets.org/casestudies/China_SLCP_eng.html</a> and Hesterman D. 2011) <a href="http://news.stanford.edu/news/2011/may/reforesting-rural-china-051111.html">http://news.stanford.edu/news/2011/may/reforesting-rural-china-051111.html</a>
<b>China</b>	Forest Ecological Compensation Scheme (ECO)	2001 pilot), 2004 (full)	Watershed	National: 13 million ha. eligible	Public (national Government)		Cash payments of \$9 per hectare per year to managers of ecological forests	Porras et al. (2008); <a href="http://www.watershedmarkets.org/casestudies/China_Eco_Compensation.html">http://www.watershedmarkets.org/casestudies/China_Eco_Compensation.html</a>

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Colombia	Programa Familias Guardabosque	2003		National : 114,000 families, 4 million ha (2010)	Public/donor (national Government, UN Office on Drugs and Crime)	Yes (improve living conditions, strengthen community organization, fight effects of drug trafficking)	Cash payment of \$204 every two months for 18 months for keeping area free of illicit crops and favour reforestation and conservation of natural ecosystems; technical assistance in establishing sustainable productive projects like coffee, eco-tourism etc.	Bolsa Verde (2013, 68); <a href="http://www.unodc.org/documents/colombia/2013/Agosto/DA2013/Informe_ejecutivo_2007_espanol.pdf">http://www.unodc.org/documents/colombia/2013/Agosto/DA2013/Informe_ejecutivo_2007_espanol.pdf</a> <a href="http://web.presidencia.gov.co/sp/2010/junio/22/24222010.html">http://web.presidencia.gov.co/sp/2010/junio/22/24222010.html</a> ; <a href="http://www.scielo.org.co/pdf/luaz/n27/n27a04.pdf">http://www.scielo.org.co/pdf/luaz/n27/n27a04.pdf</a> <a href="https://spi.dnp.gov.co/App_Themes/SeguimientoProyectos/ResumenEjecutivo/0050002510000.pdf">https://spi.dnp.gov.co/App_Themes/SeguimientoProyectos/ResumenEjecutivo/0050002510000.pdf</a> ; <a href="http://www.scielo.org.co/pdf/luaz/n27/n27a04.pdf">http://www.scielo.org.co/pdf/luaz/n27/n27a04.pdf</a>
Colombia	Plan Verde	1999	Watersheds	National	Public/private (national Government, hydroelectric and agricultural users, share of returns from electricity sales)	No	One-off in-kind payment to private landowners for reforestation and conservation	Porras et al. (2008)

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Costa Rica	Pago por Servicios Ambientales (PPSA)	1996	All	National : 12,375 contracts, almost 1 million ha (2012)	Public, private (contribution of fuel and water taxes), completed by private sector and grants	Yes	forest owners are rewarded with cash payments for each hectare of their land where they protect forests and/or reforest; payment levels vary between \$410 to \$1,470 per hectare per contract; contracts are concluded for 5 to 15 years and can be extended	Pagiola (2008) "Payments for environmental Services in Costa Rica" in <i>Ecological Economics</i> Vol. 65, No. 4, pp. 712–724; Pagiola (2005); FAO (2011, p. 137) <i>PES and Food Security</i> ; Grieg Gran et al. (2005) <i>How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America</i> ; Bolsa Verde (2013, p. 71); <a href="http://www.fonafifo.com/english.html">www.fonafifo.com/english.html</a>
Ecuador	Programa Socio Bosque	2008		161,755 participants (Dec. 2013); 1.23 million ha of land (Dec. 2013)	Mainly public government (general budget), compensations, international cooperation, REDD+ Mechanism, <i>Certificates Socio Bosque</i>	Yes (improvement of living conditions)	Farmers and indigenous communities that voluntarily commit to conserve and protect their native forests, wastelands, and other native vegetation are paid up to \$30 per hectare per contract lasts for 20 years	Bolsa Verde (2013, p. 70); <a href="http://sociobosque.ambiente.gob.ec/?q=node/595">http://sociobosque.ambiente.gob.ec/?q=node/595</a> ; CDKN (2012); Ministerio del Ambiente <a href="http://sociobosque.ambiente.gob.ec/">http://sociobosque.ambiente.gob.ec/</a> ; <a href="http://sociobosque.ambiente.gob.ec/?q=node/44">http://sociobosque.ambiente.gob.ec/?q=node/44</a>

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El Salvador	National Environmental Management Project/ Ecoservicios	2005, started 2006	Agroforestry, forest management, conservation	National (pilot site: Lake Coatepeque)	Donor (World Bank, Global Environment Facility (GEF))	Yes	Cash payments to participating landowners on an annual basis	Pagiolo (2005, p. 240); <a href="http://www.watershedmarkets.org/casestudies/El_Salvador_Ecoservicios.html">http://www.watershedmarkets.org/casestudies/El_Salvador_Ecoservicios.html</a> ; Worldbank <a href="http://www.worldbank.org/projects/P064910/el-salvador-environmental-services-project?lang=en&amp;tab=overview">http://www.worldbank.org/projects/P064910/el-salvador-environmental-services-project?lang=en&amp;tab=overview</a> ; pilot site: <a href="http://www.watershedmarkets.org/casestudies/El_Salvador_Coatepeque.html">http://www.watershedmarkets.org/casestudies/El_Salvador_Coatepeque.html</a>
Guatemala	Forestry incentive programmes of the National Forestry Institute (INAB): PINFOR	1997/1998	Watershed	National: 760,355 beneficiaries conserving and reforesting 328,577 ha of land (2012);	Public/donor (national Government, IDB, Netherlands, Spain)	Yes (generate jobs)	Regular cash payments (landowners are responsible for plantation and maintenance; municipalities for setting up nurseries to ensure long-term sustainability)	<a href="http://www.watershedmarkets.org/casestudies/Guatemala_MAGA.html">http://www.watershedmarkets.org/casestudies/Guatemala_MAGA.html</a> ; <a href="http://www.fao.org/docrep/018/i2875e/i2875e05.pdf">http://www.fao.org/docrep/018/i2875e/i2875e05.pdf</a>
Guatemala	Forestry incentive programmes of the National Forestry Institute (INAB): PINPEP	Pilot 2007	Watershed	National: 5,156 initiatives, 32,000 ha earmarked for protection or productive management of natural forests and 7,000 ha for plantations and agroforestry systems (2010)		Yes (small land-owners are explicitly addressed)	Smallholder Forestry and Agroforestry Vocation incentive Programme (PINPEP)	<a href="http://www.watershedmarkets.org/casestudies/Guatemala_MAGA.html">http://www.watershedmarkets.org/casestudies/Guatemala_MAGA.html</a> ; <a href="http://www.fao.org/docrep/018/i2875e/i2875e05.pdf">http://www.fao.org/docrep/018/i2875e/i2875e05.pdf</a>

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Malawi	Tree Planting for Carbon Sequestration and Other Ecosystem Services Programme	2007	Carbon sequestration	National: small-scale			Inputs and training	<a href="http://www.katoombagroup.org/regions/africa/documents/2009_Malawi_Inventory.pdf">http://www.katoombagroup.org/regions/africa/documents/2009_Malawi_Inventory.pdf</a>
Mexico	Pago por Servicios Ambientales Hidrológicos (PSAH)	2003	Watershed	National: 5,400 contracts (2003-12), 2.2 million ha (2012)	Public/private (government budget, water usage fee)	Yes	Cash payments to participants of \$32 and \$93 per hectare per year; assistance in developing a forest management plan	<a href="http://www.watershedmarkets.org/casestudies/Mexico_National_PSAH_eng.html">http://www.watershedmarkets.org/casestudies/Mexico_National_PSAH_eng.html</a> ; Bulas (2004); Pagiola (2005); <a href="http://www.semarnat.gob.mx/Pages/Inicio.aspx">http://www.semarnat.gob.mx/Pages/Inicio.aspx</a>
Peru	Programa Nacional de Conservación de Bosques	2010		National: 31 communities	Public (government)	Yes (secure food)	Cash payments to households of \$10 per hectare per year; communities must develop an investment plan in which at least 80% of grant will be used to finance sustainable productive projects and 2% for projects of social support	Governo Federal Brasil (2014, p. 68); <a href="http://www.peru.gob.pe/docs/PLANES/14051/PLAN_14051_DS_N%C2%B A008-2010-MINAM_2012.pdf">http://www.peru.gob.pe/docs/PLANES/14051/PLAN_14051_DS_N%C2%B A008-2010-MINAM_2012.pdf</a> ; <a href="http://bosques.minam.gob.pe/index.php?option=com_content&amp;view=article&amp;id=142%3Aboletin-policia-ecologica&amp;catid=35%3Amenu-superior&amp;lang=es">http://bosques.minam.gob.pe/index.php?option=com_content&amp;view=article&amp;id=142%3Aboletin-policia-ecologica&amp;catid=35%3Amenu-superior&amp;lang=es</a> ; <a href="http://www.youtube.com/watch?v=jMzptYwrJUw">http://www.youtube.com/watch?v=jMzptYwrJUw</a>

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Philippines	Watershed Rehabilitation Fund	Mid- 1990s	Watershed	National	Public?/private (watershed rehabilitation fund, Department of Energy), electricity generation companies must assign PHP0.010 for every kilowatt hour generated	Yes	Communities in upper watershed hosting hydropower facilities are compensated (infrastructure projects to increase productivity, provision of basic livelihood needs of community, especially health); most investments actually go to social benefits (more than half of the projects are either health-related or water supply projects of the host communities); funded activities (including improved market access, introduction of new economic activities such as aquaculture, vegetable gardening, and food production, training and capacity building, construction of schools, irrigation systems, better drainage infrastructure, among others); and free electricity and water. In return, the communities provide labour for the building and maintenance of the water system.	Porras et al. (2008)