To cite this output:
Wunder, S, *et al* (2011) Tropical Forests in Poverty Alleviation: From Household Data to Global-Comparative Analysis
ESRC End of Award Report, RES-167-25-0257. Swindon: ESRC

ESRC End of Award Report

For awards ending on or after 1 November 2009

This End of Award Report should be completed and submitted using the **grant reference** as the email subject, to **reportsofficer@esrc.ac.uk** on or before the due date.

The final instalment of the grant will not be paid until an End of Award Report is completed in full and accepted by ESRC.
Grant holders whose End of Award Report is overdue or incomplete will not be eligible for further ESRC funding until the Report is accepted. ESRC reserves the right to recover a sum of the expenditure incurred on the grant if the End of Award Report is overdue. (Please see Section 5 of the ESRC Research Funding Guide for details.)

Please refer to the Guidance notes when completing this End of Award Report.

Grant Reference	RES-167-25-0257		
Grant Title	Tropical forests in poverty alleviation: from household data to global-comparative analysis		
Grant Start Date	1st January 2008	**Total Amount Expended:**	£499,013
Grant End Date	30th June 2011		
Grant holding Institution	CIFOR		
Grant Holder	Sven Wunder, Principal Economist		
Grant Holder's Contact Details	**Address**	**Email**	
	Rua do Russel, 450 / sala 601 Glória, CEP: 22.210-010 Rio de Janeiro (RJ), Brazil	s.wunder@cgiar.org	
		Telephone	
		+55 (21) 2285 3341	

Co-Investigators (as per project application):	**Institution**
Prof. Arild Angelsen	Norwegian University of Life Sciences & CIFOR Associate Researcher
Dr Brian Belcher	Royal Roads University (Canada) & CIFOR Associate Researcher
Ronnie Babigumira (post.doc. position)	CIFOR
Dr. William Sunderlin	CIFOR
Prof. Katrina Brown	University of East Anglia, Norwich, UK
Prof. Frank Ellis	University of East Anglia, Norwich, UK

1. Non-technical summary

Please provide below a project summary written in non-technical language. The summary may be used by ESRC to publicise your work and should explain the aims and findings of the project. *[Max 250 words]*

The role of forest and environmental income in rural development and poverty reduction remains poorly documented and not obvious to policymakers. Launched in 2004, the aim of the Poverty and Environment Network (PEN) has been to help changing that. PEN developed the currently most comprehensive global database on forest and environmental income, with questionnaires applied to 8000+ households in 50+ study sites in 24 developing countries. At the core of PEN is comparative, detailed socio-economic data that was collected quarterly at the household and village level by 50+ research partners using standardised definitions, questionnaires and methods. This involved training and supervision of about collaborative research teams, led in most cases by developing country partners.

Preliminary results show that forest income on average constitutes about one fifth of total household income, while environmental income (forest and non-forest) makes up more than one fourth, corresponding to agricultural crops' share. This significant contribution to rural livelihoods from usually "hidden" sources strengthens the case for more systematic data collection of forest and environmental income in large-scale poverty surveys such as the World Bank's LSMS surveys, and in national income accounting. Conversely, the role of forests as safety nets in response to income shocks, and as an income source that is stabilizing within-year seasonal income fluctuations, both proved to be less prominent than commonly assumed. These and other results were presented at a scientific workshop in UEA (Norwich), and at a policy conference in London. Our methodological advances were documented in a recently published Earthscan book.

2. Project overview

a) Objectives

Please state the aims and objectives of your project as outlined in your proposal to the ESRC. *[Max 200 words]*

The *primary* project objective was:

I. To undertake a comprehensive global-comparative analysis of the role of forests and environmental income in preventing and reducing rural poverty, built on a centrally coordinated pan-tropical data bank with high-quality primary household and village data collected though PEN (*research outputs*);

The *secondary* project objectives were:

II. To elaborate recommendations for tangible forest-poverty interventions, and feed them into national and global policy processes (*policy impacts*);

III. To enhance the ability of project partners in using best-practice methods for conducting

income-accounting rural household surveys, and to suggest improved research methods for future studies of environmental incomes and rural livelihoods (*capacity building* and *methodological innovation*).

b) Project Changes

Please describe any changes made to the original aims and objectives, and confirm that these were agreed with the ESRC. Please also detail any changes to the grant holder's institutional affiliation, project staffing or funding. *[Max 200 words]*

I. No changes, but field sites ended up encompassing a broader geographical coverage
II. No changes
III. No changes

c) Methodology

Please describe the methodology that you employed in the project. Please also note any ethical issues that arose during the course of the work, the effects of this and any action taken. *[Max 500 words]*

The Poverty and Environment Network (PEN) is a collaborative research effort with about three dozens of participating research partners (mainly PhD students) and a dozen of external experts from universities worldwide, operating together with the core researchers from CIFOR and UEA, including as PEN co-supervisors and support persons (in addition to the academic supervisors) . A prototype household and village questionnaire was jointly developed among partners (see PEN questionnaire), as well as accompanying technical guidelines, a code book, and database templates for entering PEN data (available here). PEN partners all used these standardised survey tools so that case study data was comparable between sites, and compatible for subsequent integration into the global data set.

Each case study consisted of a number of villages, and in some cases geographically separated sites. Villages were selected in a stratified way to capture the variation within the targeted area (e.g. close vs. remote from markets and roads, forest abundance vs. scarcity, population density, ethnicity, tenure types, etc.). Our global sample included 24 countries across all three major developing continents (Asia, Africa, Latin America), and a total of more than 8000 households. Data collection was conducted by local enumerators who were trained and supervised by the PEN partner in charge of the site. PEN supervisors also visited their corresponding partners in the field to provide tangible advise in research design and implementation. Fieldwork periods depended on individual PhD cycles, starting in 2006 and ending in 2010. The PEN village and household surveys have been translated into nine languages (available here).

Village surveys were generally conducted in small groups (with village leaders and a cross-section of citizens) at the beginning and end of the survey periods, to collect data common to all households (e.g. geographic and climate variables, village-level demographics, infrastructure, forest cover and land use, risks, wages and prices, etc.). The initial village survey provided background information, whilst the terminal one recorded changes over the 12-month period.

Household surveys were conducted with household heads (or another adult household member, in their absence). First, annual surveys were done at the beginning and end of the survey period, respectively, to collect general household socio-economic data (demographics, assets and savings, land tenure, etc.) and qualitative information about forest-use, prices, shocks and vulnerability. Secondly, quarterly surveys served to meticulously record cash and non-cash (subsistence) incomes from all major sources: wage, business, forest and environmental sources were based on a recall period of one month, whereas data for crop, livestock and other sources of income were based on three-month recall periods. The four quarterly surveys jointly covered a full year. Short recall periods were designed to capture seasonal variations and increase accuracy.

Data cleaning and global data base construction took much more time than we expected, tackling problems such as compatibility of quantity local units, errors and outliers, some negative sectoral incomes, variations in subsistence pricing outcomes, etc. While we are still improving bits and pieces in the database, the basic numbers as presented in the London conference are now fairly robust.

d) Project Findings

Please summarise the findings of the project, referring where appropriate to outputs recorded on the ESRC website. Any future research plans should also be identified. *[Max 500 words]*

The key preliminary findings, as presented at the science workshop at UEA (Norwich) and the project-concluding PEN policy conference at The Royal Society on 15 June 2011, are:

1. On average, forest income constitutes about one fifth of total household income, while environmental income (forest and non-forest) makes up more than one fourth. This means that, in areas were communities have access to some forest resources (completely deforested areas were not included in our sample), resources extracted from the wild contributed about the same amount of income as agricultural crops. While selected case studies came up with similar findings, these global results are thought-provoking and innovative to the way we understand rural household economies in developing countries.

2. Forest reliance (defined as the *share* of forest income in total household income) varied somewhat less with income levels than previous literature had found. Typically, a pattern had been found in case studies where the poor were much more forest-dependent than the non-poor. In our study, this structural relationship is found to be less pronounced. Hence, one can say that forest income is not just for the poorest, but for everyone at our study sites, which were dominated by peasants and smallholders with differing degree of assets and wealth.

3. Another surprising finding reported was that forests play less of a primary role as household safety nets in response to shocks, and have also a less than expected role in terms of filling recurrent seasonal income gaps. This does not imply that forests have

no role that in fulfilling these functions, but rather that other shock responses and gap fillers – notably, wage employment, dissaving and asset sales, and monetary assistance from social networks are more prominent than forest-based responses to fluctuations.

4. In terms of the intra-household gender balance, we found that men bring as much or more forest products to the households as women, although there is a clear pattern of women being more involved in subsistence activities and men in cash-earning activities.

5. Firewood constitutes the single most important forest product, contributing on average to almost one fifth of forest income, followed by timber (about 10%).

6. More than a quarter of all households had cleared forest area for crop cultivation within the last year of the survey, with the relatively well-off 20% of households clearing 30% more than the poorest 20%. This does not lend support to the common hypothesis that poverty is the primary driver of forest clearing.

After the ESRC-DFID grant has ended (end-June), our work to fully consolidate the data has continued. We have a pre-agreement with the journal *World Development* for a Special Issue that will feature PEN and other quantitatively oriented empirical work regarding forests, household incomes, and livelihoods. A high-level article on forest incomes (*Nature* or *Science*) is also still envisaged. Finally, we have vis-à-vis project objective 3 summarized our methodological experiences in the Earthscan book (2011) M*easuring livelihoods and environmental dependence: methods for research and field work* (240 pp).

e) Contributions to wider ESRC initiatives (eg Research Programmes or Networks)

If your project was part of a wider ESRC initiative, please describe your contributions to the initiative's objectives and activities and note any effect on your project resulting from participation. *[Max. 200 words]*

N.A.

3. Early and anticipated impacts

a) Summary of Impacts to date

Please summarise any impacts of the project to date, referring where appropriate to associated outputs recorded on the ESRC website. This should include both scientific impacts (relevant to the academic community) and economic and societal impacts (relevant to broader society). The impact can be relevant to any organisation, community or individual. *[Max. 400 words]*

Scientific impacts

Methodological innovation
Best-practice methods for conducting income-accounting surveys were developed (prototype questionnaires, guidelines, and code book) and made publicly available (here) in nine languages. A methods book was published (see below).

Capacity building
The 36 PEN partners (mostly from developing countries) benefitted from years of involvement in this major international research project, including the following:

- Individual fieldwork supervision; assistance in research design and implementation
- Three methods training workshops: Bogor 2004, Brisbane 2005, Copenhagen 2006.
- Three analytical workshops: Barcelona 2008, Bogor 2009, Cheltenham 2010.
- 10 PhD and 2 Masters PEN Partner graduates completed (more to come)

An estimated 250-300 local enumerators in the research sites benefitted from significant training and experience in livelihoods survey methods.

Partnerships
40+ partnerships with research institutions worldwide were developed in making this global research project reality.

PEN-related publications
The following PEN-related publications have been recorded on ESRC's website:

- Angelsen,A., H.O.Larsen, J.F.Lund, C.Smith-Hall., & S.Wunder 2011. (eds) *Measuring livelihoods and environmental dependence: methods for research and field work*, Earthscan, Edinburgh(240 pp).
- 6 book sections authored by PEN Partners
- 15 peer reviewed journal articles by PEN Partners (more to follow)
- 16 publications in conference proceedings
- 10 PhD and 2 Masters theses
- 1 policy brief

Media and communications

- PEN website (http://www.cifor.org/pen)
- 21 editions of PEN news (mailing list)
- 4 CIFOR's Forest Blog
- 1 article in CIFOR News
- 16 articles in the international media about the PEN policy conference (*Nature News,*

American Scientist, Scientific American, The Ecologist, etc. (click here).
- 4 non-CIFOR newsletter or bulletin articles

Conferences & workshops:
PEN hosted a one-day international policy conference at The Royal Society in London (see event report), and a two-day open science workshop at the UEA, Norwich (see event report). For these high-profile events, ESRC-DFID funding was leveraged, using other PEN projects and CIFOR core funds for 75% of the extensive costs. PEN also organised three panels/sessions at high-profile international conferences: IUFRO, World Forestry Congress, IASCP (see event reports). 70+ oral and poster PEN presentations were delivered at international conferences.

New or revised policies, programmes or practices informed by PEN
CIFOR and NORAD conduct a multi-million global-comparative study on reduced emissions from deforestation and forest degradation (REDD), and use PEN questionnaire tools and research protocols as models for field research.

Economic and societal impacts
None that we know of so far.

b) Anticipated/Potential Future Impacts

Please outline any anticipated or potential impacts (scientific or economic and societal) that you believe your project might have in future. *[Max. 200 words]*

• The PEN global database will be made publicly available by 2013, according to the data sharing rules for the PEN project that were agreed with ESRC. A data set of this size is unique, and will allow for analyses about rural household economies that go well beyond forestry (e.g. in the area of vulnerability and resilience to climate change).

• At least six key results papers from the global PEN analysis to be published in a special issue of *World Development* in 2013 (due to long queuing time for WD special issues), edited by PEN scientists Wunder, Angelsen and Belcher.

• One synthesis high-profile journal article published in *Nature* or *Science* by mid-2012.

• Possibly elaboration of a 'forest sourcebook' (in 2012), as step towards the development of a forestry module for use in the World Bank's Living Standard Measurement Survey (LSMS), which are applied broadly in developing country and serve as a basis for economic policy- and decision-making. A World Bank LSMS specialist already attended our Norwich and London events, and we have now been invited to present our findings in the Wye City Group's fourth conference in November 2012 (http://4thwyeconferencerio.ibge.gov.br/index.php/en/the-wye-city-group).

You will be asked to complete an ESRC Impact Report 12 months after the end date of your award. The Impact Report will ask for details of any impacts that have arisen since the completion of the End of Award Report.

4. Declarations

Please ensure that sections A, B and C below are completed and signed by the appropriate individuals. The End of Award Report will not be accepted unless all sections are signed. Please note hard copies are NOT required; electronic signatures are accepted and should be used.

A: To be completed by Grant Holder

Please read the following statements. Tick ONE statement under ii) and iii), then sign with an electronic signature at the end of the section (this should be an image of your actual signature).

i) The Project

This Report is an accurate overview of the project, its findings and impacts. All co-investigators named in the proposal to ESRC or appointed subsequently have seen and approved the Report.	X

ii) Submissions to the ESRC website (research catalogue)

Output and impact information has been submitted to the ESRC website. Details of any future outputs and impacts will be submitted as soon as they become available.	**X**
OR	
This grant has not yet produced any outputs or impacts. Details of any future outputs and impacts will be submitted to the ESRC website as soon as they become available.	☐
OR	
This grant is not listed on the ESRC website.	☐

iii) Submission of Datasets

Datasets arising from this grant have been offered for deposit with the Economic and Social Data Service.	**x**
OR	
Datasets that were anticipated in the grant proposal have not been produced and the Economic and Social Data Service has been notified.	☐
OR	
No datasets were proposed or produced from this grant.	☐