Assessing the role of economic instruments in a policy mix for biodiversity conservation and ecosystem services provision

"How can AEM be more successful as instruments to promote biodiversity conservation?"

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Outline

Compare the experience from the current and potential use of AEM in 3 case studies (scope, aims and methods).

Discuss AEM role in the wider conservation policy mix and evaluate their performance.

Present recommendations for policy design and implementation.

What are AEM?

AEM are designed to encourage landholders to adopt more environmentally friendly practices in the management of their land.

Many different types of measures are included under the AEM umbrella.

Includes measures:

- aimed at promoting improved farming practices

- oriented to promote biodiversity conservation in agro-forestry mosaics

- promoting afforestation, not having specific biodiversity conservation objectives

What are AEM?

Examples of **commitments covered by EU-AEM schemes** include:

- environmentally friendly extensification of farming

- management of low-intensity pasture systems

- support for traditional farming systems and the use of native species

- integrated farm management and organic agriculture

- afforestation

- conservation of high-value habitats and associated biodiversity

Case studies

In POLICYMIX, AEM were analysed for 3 case study countries: **Portugal, Germany and Brazil.**

AEM payments integrated into the EU Common Agricultural Policy (CAP) framework, for Portugal and Germany.
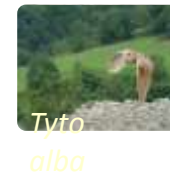

Adoption of **i**ntegrated **c**onservation and **d**evelopment **p**rojects (**ICDPs**) in agrarian reform settlements in Brazil, framed by the Brazilian federal Forest Code.

Portugal – AEM/ITI scheme for conservation

Integrated Territorial Intervention - AES that uses a site specific approach applied to areas of special conservation interest, e.g. Natura 2000 sites.

With a focus on a specific ITI measure (**grazing extensification and *montado* regeneration**) - particularly relevant for the conservation of the ***montado* ecosystem** in southeastern of Portugal.

Falco sp.

Otis tarda

Grus grus

Tyto alba

Felis silvestris

Lynx pardinus

Aquila fasciata

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Portugal - aims

Ex-post analysis

- implementation of AEM at the **national level**.

- refined with a **local case study** on the left bank of the Guadiana River – to investigate the reasons for the lack of success of the ITI scheme.

Portugal – aims

Ex-ante analysis

Focused on the measure **grazing extensification and *montado* regeneration** in the local case study area:

- to identify the most promising areas.

- to investigate how compensation levels and other contract design features (e.g. density of cork trees) influence farmers' willingness to join.

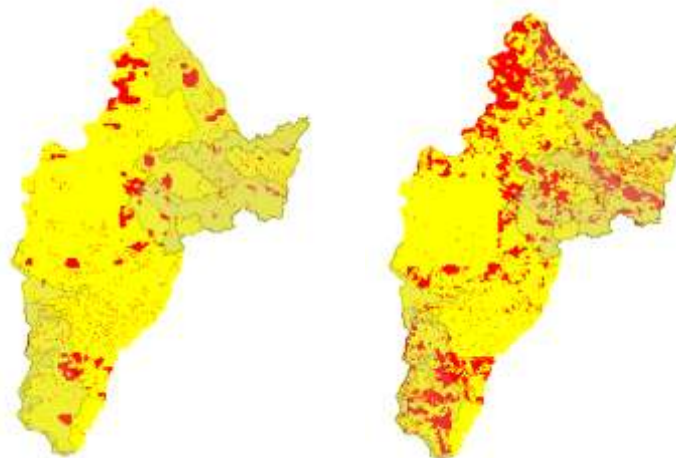- provide recommendations to increase effectiveness and complementarities with other measures.

Portugal - methods

Ex-post: review of existing documented information (national); survey conducted with farmers and other relevant stakeholders (local).

Ex-ante: spatial targeting exercise using Marxan with zones, and a choice experiment.

Germany - Afforestation in Saxony
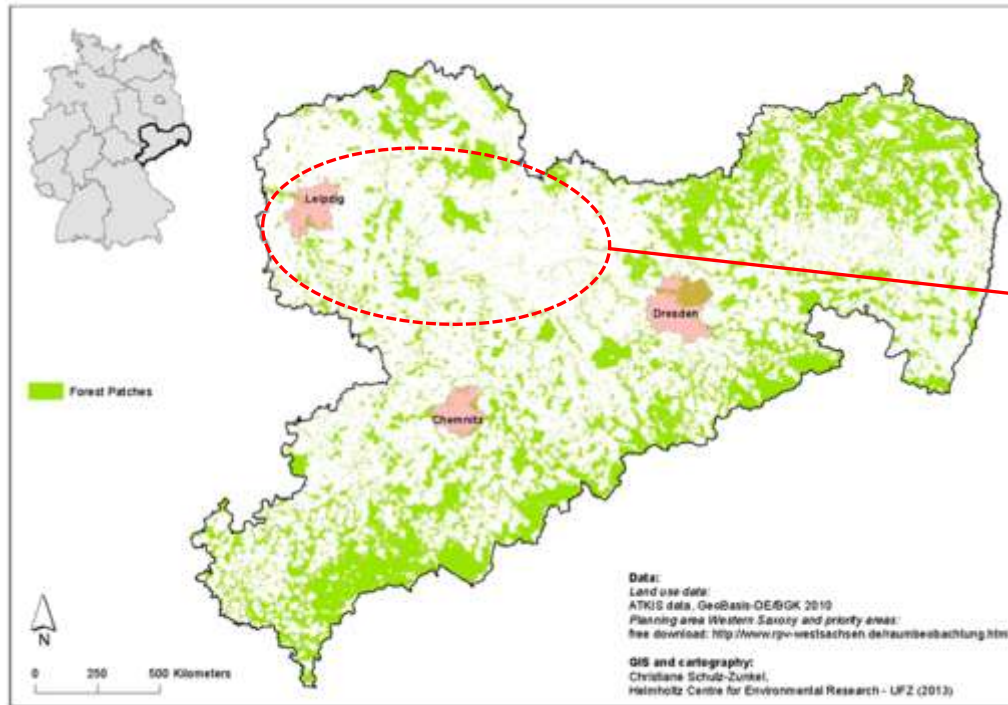
West Saxony is dominated by agriculture and has very little forest cover.

The government wants to **increase the forest cover**.

An agri-environmental scheme for **afforestation** is in place, but landowners are not interested.

Germany - Aims

Ex-post analysis of an existing, but unsuccessful, AEM for afforestation

Identify the aspects (economic, institutional, ecological) that discourage/motivate landowners to enroll in afforestation schemes.

Explore the conditions under which landowners in regions with limited forest cover would be willing to afforest.

Provide policy recommendations for afforestation scheme design.

Germany - methods

A choice experiment and a follow-up questionnaire with a subset of CE respondents were applied.

To investigate the compensation required by landowners for converting some of their land into forest and other relevant contract design features

- e.g. contract duration, provision of technical advice, opportunity to return to agriculture after the contract ends.

Brazil: deforestation mitigation in the Amazon

- NW Mato Grosso (NW MT), 7 municipalities – 8% of Amazon biome. Mining, extensive cattle ranching, timber exploitation, and land tenure conflicts.

- High rates of **deforestation** (although overall Amazon rates are declining) – credit embargo in place.

- **Clear demand for analysis and contribution to REDD+ strategies**.
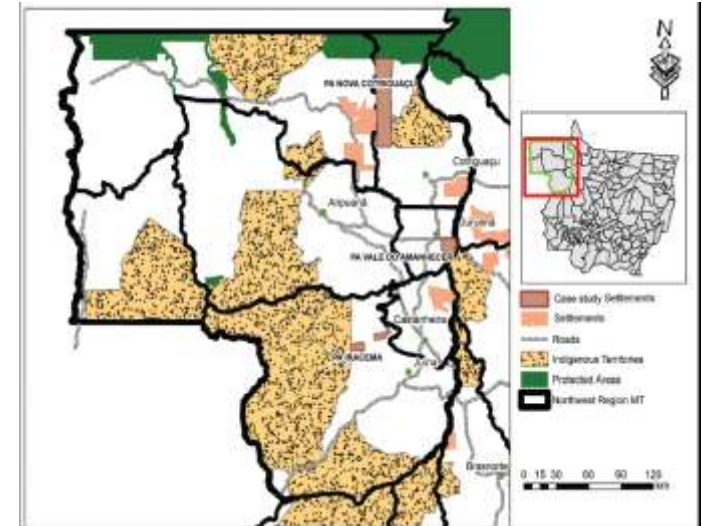
Brazil – aims

- Analyse **effectiveness** of a mix of policy instruments related to the historical and revised **national Forest Code**, with a focus on the Amazon region.

- Analyse the **impact of a sequence of** Integrated Development and Conservation projects (**ICDPs**) and respective AEM promoted for deforestation mitigation, 1995-2010, in land reform settlements in Northwest Mato Grosso.

- Identify **lessons learned for REDD+**; strategies and instruments for a mix of policies, from a systems perspective.

Brazil – methods

- Satellite imagery and on-site interviews.

- **Landscape level:** 3 PAs (Land Reform Settlements), from 14,400 ha – 100,000 ha

- **Individual farm lot level**: small farmers (<430 ha, most 30-100 ha) - "n": about 100 farmers in the 3 municipalities – ICDP participants/non-participants.

- **Biophysical indicators**: Baselines and change over time in Carbon stocks, tree diversity (in agroforestry and remnant forests), forest cover (settlement and lot scale).

- **Economic indicators:** land use mosaic, income, labor demand and income x land use.

- **Institutional indicators:** legitimacy of actions and institutions, measures applied, valuation and relevance for decison to deforest.

AEM in the policymix – conflicts and synergies

AEM are complementary to regulatory instruments, hopefully having a synergistic effect, but with different roles

European AEM schemes act mainly as **additional financial incentives.** They are established on top of existing legal requirements (e.g. forest law and planning, conservation areas) and 'good farming practices'.

In Brazil, **ICDPs** are designed to counter the narrow focus of conservation and development policies (e.g. protected area creation).

AEM in the policymix – conflicts and synergies

However, AEM can also conflict with existing regulatory instruments.

Germany - According to forest law, forests need to remain in perpetuity, but landowners prefer short-term AES contracts and the option to return to agriculture after the contract ends.

AEM in the policymix – conflicts and synergies

Other economic incentives in place may have a conflicting role with AEM and biodiversity conservation objectives in general.

Portugal - ITI measures targeting forestry in areas of particular conservation interest (e.g. Natura 2000) implies the loss of another existing broad based agricultural incentive – the AEM Single Payment Regime – that is much less demanding in terms of allowed practices and commitments and provides higher revenues per hectare.

Germany – analysed AES competes with a number of other AES available to landowners.

AEM in the policymix – conflicts and synergies

There is a risk that AEM include within themselves potential conflicting objectives and cross incentives.

Portugal - applying for several measures in the same period leads to penalties (e.g. the incentive provided by biological production will be reduced if landowners also apply the measures specifically tailored for the ITI).

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AEM in the policymix – conflicts and synergies

In general, improved coordination with other instruments is needed.

Brazilian Amazon – ICDPs should be better coordinated with credit provided (supporting agroforestry systems) and rural environmental licensing.

8 year sequence of interactions identified by Vivan et al 2013

Instruments and ICDP Interventions	Forest code	Production Map	Tech assistance	Social Organization	SIMLAM: CAR, LAU	Certification	Infrastructure	Market development	Credit financing	Contracts with ind. communities	Contracts with private companies	Public outreach	Expand production
Brazilian Forest Code		cpl			seq	seq			syn*			cpl	cpl
Production study for NTFP: mapping remaining forest			syn	cpl	syn	syn*	cpl	cpl	syn*	cpl	cpl		cpl
Training and technical assistance				syn*	cpl	syn*	cpl	cpl	cpl	cpl	cpl	cpl	cpl
Cooperative social organization					cpl	cpl	cpl	cpl	cpl	cpl	cpl	cpl	cpl
SIMLAM: Environmental registration and licensing (CAR and LAU)						syn*		cpl	syn*			cpl	cpl
Legal certification of sustainable production							cpl	syn*	syn*			syn	cpl
Material investments in infrastructure								cpl	syn*	cpl	cpl	syn*	
Market development for Brazil nut products									cpl	cpl	cpl	cpl	cpl
Credit financing (CONAB)										cpl	cpl		syn*
Contracts with surrounding indigenous communities											cpl	cpl	cpl
Contracts with private companies and CONAB												cpl	cpl
Public outreach and political exposure through national and international recognition of effectiveness													cpl
Efforts to expand Brazil nut production													

Legend: cpl = complementary; syn = mutually reinforcing/synergistic; cnf = conflicting; seq = sequentially dependent.
The direction of sequential dependence is from row to column.

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Sequencing and implementation of AEM

Sequencing in the implementation of the different policy instruments can explain some of the observed lack of success.

Portugal - perceived lack of fairness and poor participation of local actors in the design and implementation process of Natura 2000 sites reduces landowners' inherent bond to biodiversity and affected their commitment with conservation efforts. This has reduced their willingness to adhere to the ITI measures.

Brazil MT – although some advances were made to avoid deforestation, settlers are path dependent on the regional land use paradigm that embraces forest degrading beef cattle ranching.

Desired sequencing of ICDPs instruments - Brazil

Establishment of priorities.

Training and technical assistance.

Social and cooperative organization.

Certification of products / environmental registry of properties and settlements.

Infrastructure (buildings, equipment).

Market development, credit, financing.

Contracts: Private and Public purchasing arrangements (strategic redundancy).

Dissemination (international prizes and recognition in the press).

Increase in scale and complexity of socio-ecosystems.

Sequencing and implementation of AEM

The (at least apparent) erratic pattern of changes in regulations introduces a perception of lack of control and policy stability in targeted actors that reduces adhesion to voluntary contracts.

Portugal – in the interviews with farmers they expressed their difficulty in dealing with uncertainty and do not believe in the effectiveness of the ITI measures in the medium and long term.

AEM in the policymix – governance issues

There are conflicts at different levels of governance due to poor communication and interaction, and an overlap of managing institutions.

Mismatch between institutions and their goals induces confusion among landowners and reduces the credibility of the instruments and of the authorities that manage them.

Impact evaluation - effectiveness

AEM have not always been successful.

Experience with AEM analysed in Portugal and Germany has not overall been favourable.

Afforestation in Saxony (2007-2013) - low subsidy payments, partial reimbursement of investment costs, complicated application procedures, farmers reluctance to get involved in something completely new.

ITI in Portugal (2011-2012) - rather complex eligibility requirements established, insufficient financial compensation, lack of technical support, administrative barriers and unfavorable economic conditions.

Impact evaluation - effectiveness

But, in Brazil effectiveness of ICDPs appears positive and seems to have been relatively successful at the individual plot level.

However the overall Amazon land use trends of widespread deforestation and biodiversity loss were not reverted.

Potential impacts at a landscape scale will strongly depend on how other instruments (environmental law and its enforcement, alternative productive chains, technical assistance, local governance of resources and collective enforcement of common rules) achieve functionality and impact.

Ex-ante analysis – how to improve effectiveness of instrument mixes - Saxony

The subsidy level was rated as the third most important attribute influencing farmers' choice between contract alternatives in the CE.

Participation in AES could be enhanced if landowners
- are offered short-term contracts rather than long-term contracts.
- receive technical advice on planting and managing forests.

Regional plans (forest allocation) need to be re-designed in terms of forest connectivity, because

- landowners prefer small afforestation patches.

Ex-ante analysis – how to improve effectiveness of instrument mixes - Portugal

Participation in ITI measure could be enhanced if:

• The incentive is increased to compensate for the opportunity costs associated with targets imposed in cattle density and in the number of trees that have to be maintained by the end of the contract

• Farmers are offered short-term contracts rather than long-term contracts.

• Farmers have flexibility to decide on the area offered for contracting.

• Bureaucracy is reduced and technical support is provided.

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How to improve effectiveness of instrument mixes - Brazil

Ex ante simulation of AEM effectiveness in future land use scenarios was not undertaken.

However, it is clear that the combination of:

- collective reserve creation within settlements,
- ongoing extension,
- technical assistance and
- market channel development for forest-based enterprises

Represent a potentially cost-effective means to surmount the contradictions inherent in the cattle dominant economy of NW MT.

General recommendations

Some general recommendations has emerged from our 3 case studies.

Although some are not really new or translate common sense, we found that they arise as important aspects that have been neglected in the case studies.

General recommendations

Provide an explanation why measures are important and offer technical advice for farmers on the implementation of AEM.

Establishing the links between the implementation of the prescribed actions and the expected outcomes in terms of conservation of biodiversity and ecosystem services seems to be a key point for the stakeholders interviewed in the case studies.

General recommendations

Simplify the application procedures and reduce the administrative burden to farmers and landowners.

General recommendations

Design carefully the contracts and promote ex-ante evaluation of the expected results. It is important to correctly target the proposed measures and establish appropriate compensation levels.

Combining biophysical data with economic data, and information about social aspects and stakeholders' values and attitudes towards biodiversity conservation.

Combining different tools, such as spatial optimization methods, stakeholder interviews, surveys and economic valuation techniques.

General recommendations

Guarantee some form of **policy stability and ensure predictability in the conduction of biodiversity conservation policies** to targeted stakeholders.

Adaptiveness in the design of policy instruments is a desirable feature, but care should be taken to avoid that targeted stakeholders perceive these changes as a seemingly erratic pattern of policy experimentation.

Policy stability is even more relevant when adhesion to a specific AEM implies the commitment of farmers and forest managers to prescribed practices and actions with a lifetime of several years, which is very often the case.

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General recommendations

Foster potential complementarities between policy instruments for biodiversity conservation and avoid counteracting incentives.

Final remarks

Linking ex post and ex ante analysis contributed to identify further aspects that can make AEM more cost effective and attractive to farmers and better integrated into the conservation policy mix.

Methodological approaches were **interdisciplinary** and flexible, and took into account the quality of data available.

The CE approach adopted in Saxony and Portugal could be used to calibrate the scheme design.

Marxan with zones also revealed a good potential for spatial AEM targeting.

Final remarks

In all cases, the factors that appear most important include **participatory design** and **continuous technical support** to disentangle the complexity of multiple land use incentives and practices.

This is particularly important in a policy environment in which changes are introduced erratically over time, and discontinuities in funding prevail, provoking uncertainty and unwillingness to adopt permanent measures.

Success depends on a correct sequence of instruments and adaptive institutional learning.

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Thank you!