



## Developed-developing world partnerships for sustainable development (1): An ecosystem services perspective



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### ABSTRACT

Developing-developed world partnerships potentially present win-win opportunities for addressing climate-active gas emissions at lower cost whilst propelling developing nations on a lower-carbon trajectory, as carbon emissions, capture and storage are geographically independent. Expanded PES (payment for ecosystem service) principles provides a framework for assessing the transparency and efficacy of partnerships, tested on the model developed by The Converging World (TCW). The TCW partnership model currently links south-west England and Tamil Nadu, raising funds for wind turbines in India to avert emissions from conventional sources and reinvesting operating surpluses into restoration of tropical dry evergreen forest (TDEF). Over assumed 100-year progression to climax community, 123 ha of restored TDEF sequesters a conservatively calculated 270,545,880 tCO<sub>2</sub>. This forest area is restored using operating surpluses from a 2.1 MW turbine, which generates renewable energy over 20-year operating life conservatively calculated as averting 80,000 tCO<sub>2</sub>e compared to a conventional energy mix. Forest restoration funded from turbine generation surpluses represents a substantial ‘multiplier effect’, providing around 3000 times greater overall carbon reductions. Climate regulation is one of a linked set of ecosystem services, albeit a driving ‘anchor service’, that may be optimised to increase overall benefits to stakeholders and contribute to UN Sustainable Development Goals.

### 1. Introduction

Numerous partnerships between the developed and the developing world have been established to promote sustainable development. Some, such as the UN Millennium Development Goals (United Nations, 2015a) reflect the moral responsibility of already-developed states to assist developing nations with poverty alleviation and related development targets. The successor Sustainable Development Goals (SDGs) (United Nations, 2015b) are framed around the goal of achieving ‘The Future We Want’, including both the developed and developing world. International commitments build upon, and are supported by, state aid programmes such as the UK’s DfID (Department for International Development), Sweden’s SIDA (Swedish International Development Cooperation Agency) and USAID (the United States Agency for International Development). Redistributive funds from advantaged to less privileged areas also feature across trading blocs such as the EU’s Less Favoured Areas scheme (EU, 2013) and SADAC (the Southern African Development Community).

Acknowledgement of obligations upon the developed world, ad-

vantaged by historic exploitation of globally common resources, is also evident in market-based initiatives. These include economic incentives under REDD+(Reducing Emissions from Deforestation and Forest Degradation) for developing nations to retain carbon stored in forests through conservation and sustainable management (UN REDD, 2014). The Clean Development Mechanism (CDM under Article 12 of the Kyoto Protocol) is also market-based, providing an auditable mechanism for states with emission-reduction or emission-limitation commitments to implement relevant projects in developing countries thereby earning saleable certified emission reduction (CER) credits that count towards meeting Kyoto Protocol targets (UNFCCC, undated). The World Bank is also market-based, with an official goal of reducing poverty guided by a commitment to promoting foreign investment and international trade through provision of loans to developing countries for capital programmes (World Bank, undated). Market-based schemes with a bi-directional flow of benefits, be they financial or other forms of outcome, are seen in a range of international ‘payment for ecosystem services’ (PES) schemes (OECD, 2010; UNEP and IUCN, undated). Organisations such as Forest Trends, an international non-profit organisation seeking to expand the value of forests to society, provide

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brokerages for businesses and other institutions to partner with representatives of forest interests overseas wishing to undertake sustainable management and restoration (Forest Trends, undated).

Five foundational principles established by Wunder (2005) define PES as: a voluntary transaction where; a well-defined ecosystem service (or land-use likely to secure it); is 'bought' by a (minimum of one) ecosystem service buyer; from a (minimum of one) ecosystem service provider; only if the ecosystem service provider secures ecosystem service provision (conditionality). Smith et al. (2013) develop further PES principles including: 'beneficiary pays'; direct payments to ecosystem service providers; additionality (actions over-and-above those resource managers are expected to undertake); ensuring permanence; and avoiding leakage. Everard and McInnes (2013) recognise risks of generating externalities for non-focal services through measures to maximise one or a few favoured services, as seen today in many established markets (food production, water supply, etc.) and potentially therefore in emerging service markets (carbon and biodiversity offsetting, etc.) Everard and McInnes (2013) instead recommend a 'systemic solutions' approach based on "...low-input technologies using natural processes to optimise benefits across the spectrum of ecosystem services and their beneficiaries", explicitly recognising that all ecosystem service outcomes have to be considered systemically within decisions and interventions. The rights of all beneficiaries of ecosystem services are thereby also integrated into decision-making, and net societal value is optimised rather than benefits skewed to a favoured few at potential deficit to overlooked beneficiaries (including future generations). These expanded PES-related principles are described in more detail in Box 1.

These expanded PES-related principles provide a basis for considering the robustness and equity of market-based developed-developing world partnerships, seeking mutually beneficial outcomes rather than simple aid or one-way payments. This is necessary due to the

varying distributional characteristics of different ecosystem services. For example, a biodiversity offset to protect or enhance a population or habitat in a recipient region may, in simple terms, result in net gain or stasis in species or habitat protection at a global scale yet is unlikely to make a meaningful contribution to conservation in the donor region. By contrast, the service of global climate regulation is independent of where carbon is emitted, captured or retained. Developed-developing world partnerships for sustainable development have then to be nuanced to take account of the differing characteristics of multiple services.

Historically, and often still today, management decisions have tended to be reductive, driven by the narrow disciplinary interests of specific government departments, regulatory bodies, businesses, land managers or other constituencies often blind to or dismissive of externalities. Practical examples of wider negative ramifications arising from a narrow focus on single or few outcomes include the many negative consequences arising from large dam schemes around the world (World Commission on Dams, 2000), degradation of water resources through over-abstraction driven by short-term economic priorities (Everard, 2015a) and the clearance of fringing mangroves from the Mumbai shoreline for real estate development yet increasing the vulnerability of communities to natural hazards (Everard et al., 2014). Recognition of systemic outcomes across all ecosystem services and their associated beneficiaries requires a more integrated basis for decision-making. As a practical example of the scale of wider and often overlooked potential benefits and disbenefits, the overall ecosystem service value of global forests was calculated at over \$16 trillion (Costanza et al., 2014), of which only 6% of temperate forest and 1.6% of tropical forest valuation is from the bundled provisioning service of 'raw materials' (de Groot et al., 2012).

In practice, one or – more rarely – a few linked ecosystem services are the principal driving forces for decision-making about ecosystem

### Box 1.: Expanded PES-related principles

Five foundational PES principles (Wunder, 2005) define PES as:

1. A **voluntary transaction** where;
2. A **well-defined ecosystem service** (or a land-use likely to secure that service);
3. Is 'bought' by a (minimum of one) **ecosystem service buyer**;
4. From a (minimum of one) **ecosystem service provider**; if and only if
5. **Conditionality**: the ecosystem service provider secures ecosystem service provision, or the execution of measures agreed as likely to secure service supply or enhancement, as a basis for payment.

Smith et al. (2014) augment these principles with:

- **Beneficiary pays**: payments are made by the beneficiaries of ecosystem services (individuals, communities and businesses or governments acting on behalf of various parties);
- **Direct payment**: payments are made directly to ecosystem service providers (in practice, often via an intermediary or broker);
- **Additionality**: payments are made for actions over-and-above those which land or resource managers would generally be expected to undertake (note that precisely what constitutes additionality will vary from case-to-case but the actions paid for must at the very least go beyond regulatory compliance);
- **Ensuring permanence**: management interventions paid for by beneficiaries should not be readily reversible, providing continued service provision; and
- **Avoiding leakage**: PES schemes should be set up to avoid leakage, whereby securing an ecosystem service in one location leads to the loss or degradation of ecosystem services elsewhere.

Everard and McInnes (2013) emphasise the need to take a systemic approach to assessment seeking 'systemic solutions' comprising "...low-input technologies using natural processes to optimise benefits across the spectrum of ecosystem services and their beneficiaries", including three linked principles:

- The **full range of ecosystem service outcomes** have to be considered in all options, decisions and interventions;
- The **rights of all beneficiaries** of ecosystem services are therefore also brought into decision-making; and
- Net societal value is optimised rather than benefits to a favoured few achieved at potential detriment to overlooked beneficiaries (including future generations).

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