

Development Offsets for the enhancement and maintenance of Ecosystem Services in the Murrindindi Shire of Victoria

Anthea Coggan, Stuart Whitten and Dave Shelton CSIRO Sustainable Ecosystems

Background

Ecosystem services are the functions performed by our environmental assets that lead to desirable outputs such as:

- ▶ clean air and water;
- ▶ the maintenance of biodiversity; and,
- ▶ aesthetically pleasing surrounds.

Although largely taken for granted, ecosystem services provide the conditions and processes that sustain human life.



Different land uses generate alternative sets of ecosystem services. The mix of land uses and management options adopted will lead to a number of benefits and costs, some of which are priced in the market and some of which are unpriced.

For example, agricultural produce is traded and hence prices are observable and well known. Environmental services associated with different land management options are generally not traded, so a value cannot be observed and a market price cannot be captured by landholders for the provision of these services.

With no market incentive for the production of ecosystem services, ecosystems and the services they provide are in decline.

Murrindindi Shire: ecosystem services and the research problem

The Murrindindi Shire is located in the Goulburn Broken Catchment, an easy one and a half hours drive "through lush green valleys and forests of soaring mountain ash", north east of Melbourne. (Murrindindi Shire Council www.murrindindi.vic.gov.au).

The community of Murrindindi describe the location not as a region, but as a lifestyle. This lifestyle exists primarily due to the services that the environmental assets of the catchment provide. However, an increase in the demand for the lifestyle offered by Murrindindi is seeing a conversion of land use from large and relatively low intensity extensive grazing enterprises to much smaller lifestyle farming, hobby farming and rural residential areas.

Development could be described as a blessing and a curse on the Murrindindi community. Whilst the local community welcomes economic benefits of development, it is well understood by the community that key drivers of these economic benefits are the ecosystem services produced in the community which are in decline.

The Murrindindi community is presented with two issues:

1. Current land management is resulting in a decline in ecosystem services into the future. With no action this decline will result in ecosystem service levels well below those enjoyed today.
2. Development will further impact on this decline of ecosystem services.

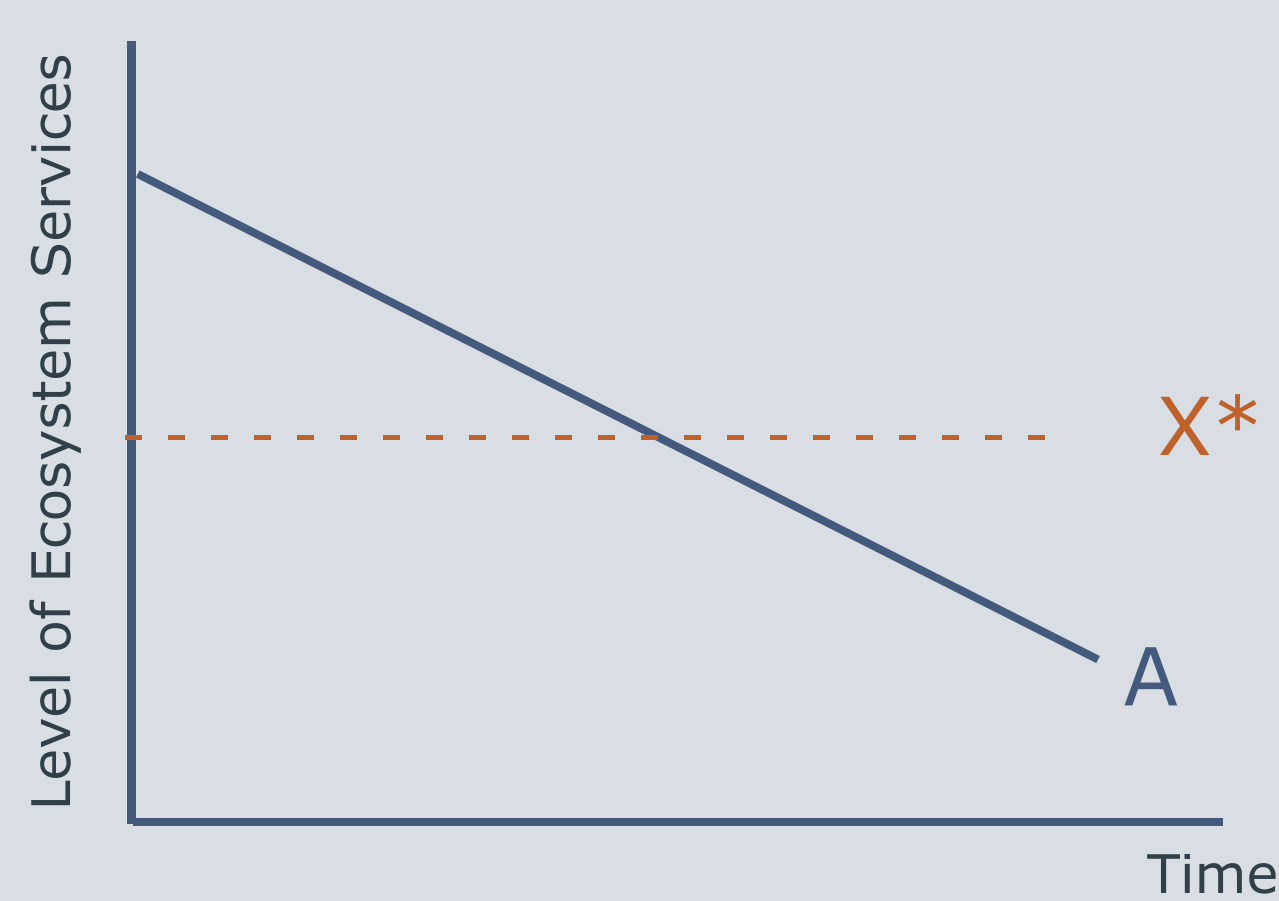


Diagram 1. Ecosystem Services declining over time

To address these issues current land management needs to improve, whilst any adverse impacts on ecosystem services from development are offset.

Development offsets could achieve this. Whilst the change in land use from development is threatening the production of ecosystem services, the change in the mix of property rights at development also offers an opportunity to not only reverse the decline in ecosystem services but to reset the benchmark to a higher level of service provision.

In Diagram 1, current land management results in the provision of ecosystem services on the declining line A. Development offsets, incorporating a baseline minimum level of ecosystem service provision, could reverse the decline and maintain ecosystem services at the desired level of X*.

Contacts
Anthea Coggan ph: +61 2 6242 1669, email: anthea.coggan@csiro.au
Stuart Whitten ph: +61 2 6242 1683, email: stuart.whitten@csiro.au
CSIRO Sustainable Ecosystems GPO Box 284, Canberra ACT 2601 Australia
www.cse.csiro.au

www.ecosystemservicesproject.org

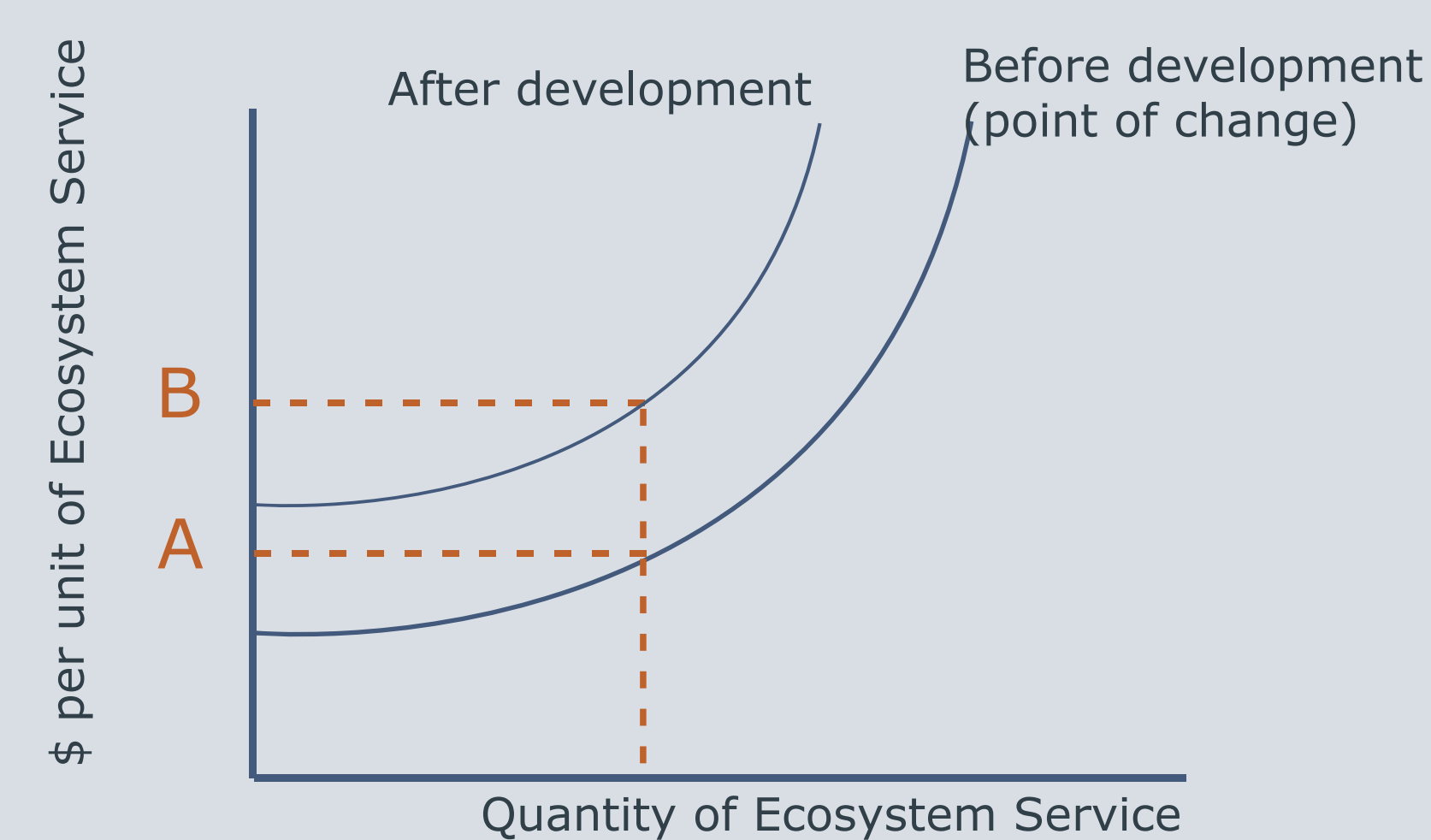
Development offsets

Development offsets are a form of market based instrument (MBI).

- ▶ MBIs seek to encourage certain behaviours through market signals rather than through explicit directives.
- ▶ MBIs in general are said to be more cost effective in bringing about change when compared to prescriptive techniques because they allow innovation and flexibility in meeting the required land management outcome.

Essentially development offsets require the impact of development to be offset so the ecosystem services of a catchment are maintained or enhanced. A market is created elsewhere in the landscape for the provision of the ecosystem service which is to be impacted on by development.

Applying development offsets to help maintain the level of ecosystem services in Murrindindi, could potentially turn the development problem from a threat to an opportunity. This opportunity arises for a number of reasons.



Development offsets offer a potentially cheaper way to provide a desired level of ecosystem services (Diagram 2). This is because the transaction cost and the physical acts required to undertake the land management change will be lower when dealing with a single owner rather than many owners as is the case after development.

For example, the cost to make the change before development is \$A per unit, after development this cost is likely to be higher (\$B/unit).

Diagram 2. The opportunity presented by the development offset.

Other potential opportunities presented by the use of development offsets include:

- ▶ any "no net impact" requirements on developers may be met more cheaply and with increased flexibility with offsite development offsets rather than with onsite mitigation requirements;
- ▶ development may remove future opportunities for ecosystem services production. The development offsets framework at the point of land use change can capture these opportunities before they are removed;
- ▶ development offsets target land that would not currently be captured by land management programs. By implementing a land management change before the properties become small, a new and potentially more costly scheme to pick up the many small property owners is not required; and,
- ▶ development offsets could also achieve economies of scale and scope in ecosystem service provision. This is because a development offset scheme can be designed to facilitate land management change in the most effective places for the desired ecosystem service. For example, through the design of trading schemes and metrics, a development offset scheme could result in revegetation of key areas such as ridge tops and riparian areas.

Development offset design

The design phase of the development offset scheme is essential for an effective and efficient instrument. To design a successful offsets scheme, a number of questions need to be asked.

- ▶ What is the market and who can participate?
 - Who will buy the offsets and is there a legislative platform that creates a demand for offset services?
 - Who will supply the offsets - does the catchment have the capacity to increase the supply of ecosystem services such that the decline is reversed and held at a sustainable level and that any impacts from development can actually be offset?
 - What is the duty of care and ground rules for both the buyers and the providers of offsets?

Once the market participants are identified, the most important stage in the offset design is the metric for trade. As evidenced in other offset schemes operating in the United States, poor metrics have undermined the efficiency of the entire offset market.

Some key questions that need to be answered in order to develop the metric are:

- ▶ How will trade be facilitated such that not only the impacts of development are offset but the decline in ecosystem services are reversed?
- ▶ How do we deal with time lags, concentrations of development and revegetation, and the uncertainty of the outcome?
- ▶ How can we ensure that development and ecosystem services occur in the best locations (eg in riparian areas and on ridge tops, areas of erosion or to manage rising water tables)?

Finally, it is also important to have infrastructure that will support the general operation of the offset market. Some key questions to be answered in establishing the market infrastructure include:

- ▶ Who will verify the offset outcomes?
- ▶ Who will supply the ongoing management and monitoring of the offset?
- ▶ Who bears the risk if the offset fails?
- ▶ Who enforces the offset? how will it be enforced?

