



**INCREASING THE PACE, EXPANDING THE SCOPE, AND
IMPROVING THE EFFECTIVENESS OF CONSERVATION**

HOW DOES AN ECOSYSTEM MARKETPLACE WORK?

We know current patterns of investment in ecosystem services are not as strategic as they could be. For example, millions of dollars are spent building concrete and steel solutions to water quality problems. Such technological fixes have been a key to some of the most visible improvements in environmental quality, but alone, technological fixes do not protect or restore the natural systems we depend on. Site-by-site, species-by-species and pipe-by-pipe approaches create a high certainty of regulatory compliance, but low certainty they will provide benefits for the resource they aim to protect. The services nature provides are expensive and difficult to replicate. If our goal is a landscape that supports the things we care about and need like clean, healthy and sustainable ecosystems; a thriving economy; and the ability to shape our future, then we need to invest in natural systems.



Emerging markets for ecosystem services create an opportunity to re-align investments in socially, economically, and politically complex watersheds like the Willamette to achieve broader ecological goals. Market-based approaches provide the incentive and flexibility to get beyond regulatory compliance to get ahead of the population and development pressures on the horizon. Market forces can dramatically improve the volume and effectiveness of collective and strategic investment by pooling resources and linking buyers and sellers of ecological services such as air and water quality and fish and wildlife habitat. Emerging ecosystem markets share a common need to:

1. Define which conservation actions generate which types of marketable credits
2. Define who must or can buy those credits
3. The ability to register and track those credits permanently in a centralized and transparent accounting system; and
4. The ability for buyers and sellers to come together to exchange credits in a way that maximizes efficiency, minimizes risk, and places the greatest volume of capital in the conservation of natural systems as possible.

Ecosystem markets are relatively new, allowing for a wide range of design options and roles for individual actors. The Willamette Partnership is facilitating development of these markets. This paper describes some of the roles in an ecosystem marketplace, where multiple credit types are traded and outlines many of the questions that we hope to answer in the coming months.

Roles in ecosystem markets

Ecosystem markets have been discussed in the United States since the 1970s and active since the 1990s. Most are regulatory-driven, where buyers must purchase offsets for their unavoidable environmental impacts. However, demand is also growing from buyers who want to voluntarily offset their impacts.



Regulators from natural resource agencies are often the primary players in ecosystem markets. They set the goals for a market (e.g. no net loss in wetland mitigation banking or a total maximum daily load and waste load allocations in water quality trading). They also approve the activities and measurements used to generate credits (e.g. shade and flow augmentation to reduce temperature). Regulators also monitor transactions and enforce compliance. Currently, many regulators also act to manage credit supply, demand, and exchange.



Buyers are the organizations required to offset environmental impacts, but they can also be organizations and individuals voluntarily wanting to invest in ecosystem service credits. In current markets, buyers may purchase credits from other sellers, or they may work directly with landowners to create credits.



Sellers are the landowners and organizations that voluntarily restore and manage their land for ecological benefits beyond what they are required to do by existing regulations. These might be farmers and foresters, but they might also include land trusts, watershed councils, or for-profit companies.



The **Exchange** is an electronic meeting place of buyers and sellers to trade credits (negotiating price, quantity, and other terms of trade). Currently, few exchanges exist in the form pictured to the left (e.g. the Chicago Climate Exchange). Every market needs some meeting place. To date, most trades have occurred in one-time deals between one

General questions raised in roundtable discussions

Scientific

- What needs to be in compliance plans?
- What is the baseline above which selling credits can occur?

Policy

- Are there discounts for location and time?
- Approve trading areas
- Who can sell credits? And what skills/capacities do they need?
- How do individual trades add up to an overall implementation strategy for a given regulation?
- What guidance/training are needed to encourage the production of high quality credits (e.g. capital needs, demand info, guidance handbooks, rules...)
- How do we avoid disincentives for those already doing good work? Including established collaborations.

Legal

- Are compliance plans enforceable?
- What liabilities do buyers and sellers have?
- When a credit is sold, what is the eligibility of those ecosystem benefits for other programs?

buyer and one or more sellers. The ecosystem marketplace implies multiple buyers and sellers coming together to exchange multiple types of credits.

How does a marketplace for ecosystem services work?

In most ecosystem markets, a regulatory agency sets a goal to achieve some desired environmental condition (e.g. a cap on pollution discharge into a river). Entities that change the land or water in ways that have unavoidable environmental impacts have choices. They can eliminate the impacts themselves, often with technological controls, buy off-set or mitigation credits from the market, or a combination of both. Potential demand for credits is generated by new home construction, road expansion and maintenance, wastewater facility expansion, new energy sources, and the other potential sources of impacts associated with a growing population. Demand for credits is created when parties are unable to meet regulatory requirements through avoidance and minimization efforts. Supply of credits is created when entities individuals or organizations go above and beyond what regulations require. For example, If a farmer restores or expands a riparian buffer, they can look to ask a regulatory agency to acknowledge and approve that action for a specific quantity of credits. A landowner might go beyond planting their riparian buffer to restore upland forest and degraded wetland, or they might place a conservation easement over their lands supporting an endangered species. All of these actions can generate a portfolio of credits for sale in individual markets.

Buyers and sellers then negotiate together to find a price and develop the contracts needed to make sure those environmental benefits are delivered. While there are clearly buyers and sellers of these services, there are still barriers to using individual ecosystem service markets to meet the goals described on the first page. Currently, most trades are one-time deals in individual markets. Each of these deals involve high transactions costs. It takes a lot of time for buyers and sellers to find each other, and it takes a lot of time and resources to get a trade approved through the regulatory process. Trades in just one ecosystem market often lacks incentives for the types of strategic investment in large projects benefiting multiple habitats and ecosystem services. Finally, current markets are often missing the accounting tools needed to demonstrate and reward performance.

In spite of these challenges, individual markets are growing rapidly in terms of trade volume and environmental significance. In 2006, \$30 billion moved through the global carbon market. Nationally, wetland mitigation banking is worth \$235 million. In the Mid-Willamette Valley, there is more than \$30 million in unmet wetland credit demand and point sources throughout the Basin are preparing to spend millions to comply with the new Total Maximum Daily Load. This level of investment from multiple buyers and sellers warrants more coordinated and transparent system to generate, verify, register and exchange ecosystem service credits.

Trading in an ecosystem marketplace

An ecosystem marketplace links together individual ecosystem markets. The larger numbers of buyers, sellers, and transactions creates demand for more efficient and effective trading services. These services include a standardized process for certifying credits and accounting for their generation and sale. We

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refer to this as the “registry.” Greater market activity allows market participants to invest in a centralized “exchange” that creates more accurate market/price information, risk management tools, and trade tracking. This trading model creates new roles.

New roles in an ecosystem marketplace

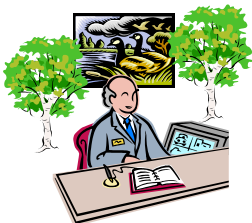
On the credit registration side...



Independent Verifiers confirm conservation actions produce the ecological benefits necessary for credit creation. Verification roles are filled by different actors in markets. In wetland and species banking, a team of regulators verifies credits. In water quality trading, verification can be performed by permittees, third parties, or regulatory agencies. For the marketplace, these verifiers must be able to rapidly assign credit quantities and quality ratings to conservation actions and have no financial interest in the sale of credits. Watershed councils, soil and water conservation districts, and other trusted third parties might fill this role.



Regulatory-approved Certifiers confirm verification reports are consistent with market rules and standards. Certifiers make sure the processes used by the verifiers are valid. Verification/certification roles can be combined or separated. Certifiers can be licensed third parties or regulators.



The Registry is one of the most important elements of the marketplace. It is the database of information and an institution that inventories and accounts for all credits available within a market or a marketplace by documenting their generation, ownership, and trade. It is transparent to regulators, the public, and other market participants. The registry must be supported by user-friendly technology and backed by the financial resources necessary to protect against accounting errors. The registry may sit within a regulatory agency or a third party, but its functions can also be shared by different organizations (e.g. the technology supported by one organization and

Credit Registration Questions

Scientific

- Approve protocols for calculating, assigning, and verifying credit quantity and quality
- Define units of trade
- What performance indicators are needed to show implementation is on track?

Policy

- Approve protocols for certifying
- What info needs to be collected?
- What info is available to whom?
- Who has what kinds of accounts?
- Do financial functions need to be split from info and tracking functions?

Legal

- Who can be a verifier? Certifier?
- What liabilities do they carry?
- How does registry info relate to compliance monitoring?
- What liabilities does the registry carry?

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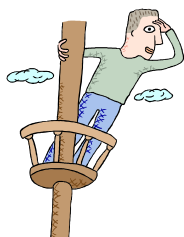
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the assurances by another). Transactions may occur both inside and outside the exchange, but all transactions are recorded in the registry.

On the credit exchange side...



The **Exchange** is a meeting place of buyers and sellers (negotiating price, quantity, and other terms of trade). Prices could be fixed or the market could set them via auction. Exchanges can be made in electronic or face-to-face settings. Just like other transactions with long-term relationships, potential trades go to closing. The terms of trade are finalized, including risk coverage, contracts, long-term monitoring and maintenance, etc. Final trades are reported back to the registry where information is available to regulators and the public. The exchange needs a package of rules on who can trade, how prices are set, and how trades are closed. These rules are shaped by a governing body (e.g. a collective of organizations, regulators, or an individual third party). Exchanges could be open or they could be closed to all but members.



Third Parties work on behalf of buyers, sellers, or the exchange process. They can act as *consultants* providing technical assistance for one party; *aggregators*, working to package credits for sale or demand for purchase; or full *brokers*, acquiring credits and holding them for later on.

Third parties can serve as verifiers or certifiers. They may trade on the exchange floor. Third parties can exist wherever they are permitted and there is a demand for services.

Assurances cover the inherent risks of trades (e.g. a flood through riparian plantings, a broken contract, or rule changes). Each party to a trade pays an assurance premium to cover these risks. The funds are invested in an *assurance pool* of credit types and locations needed to cover trading activity. If the bulk of exchange activity occurs in Willamette temperature credits, assurance pool credits will come from temperature offsets in the Willamette. If activity is lumped in the global carbon market, assurance credits will be purchased globally from carbon offsets. Assurances can be used in lieu of trading ratios or other risk tools, so long as assurances more accurately price and cover the risks of trading activity.



Exchange Questions

Scientific

- What are the real sources of risk?
- Can those risks be covered?

Policy

- How do prices get set?
- Where do negotiations take place?
- How does closing work?
- How is the exchange governed?
- Can third parties own credits?
- How are assurance premiums priced?
- Who manages assurance pools?
- Who decides where funds are placed?

Legal

- Is there standard contract language?
- Approve trading rules
- What liabilities do third parties carry?
- Are assurances legal?
- Can they replace trading ratios?

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Regulators play an important role through both the credit registration and exchange processes. Regulators continue to sign off on which actions generate which credits. New roles might include maintaining lists of approved verifiers and/or certifiers. They will work closely with the registry to track activity. Regulators generally do not approve each trade in the exchange. They monitor activity and annual performance reports. Finalized trades are tracked in the *registry* and available for public view.

Next Steps

The processes and roles described above are synthesized elements from over 30 years of lessons learned from trading on ecosystem services. The elements are designed to meet the goal of a landscape that supports the things we care about and need like clean, healthy and sustainable ecosystems; a thriving economy; and the ability to shape decisions.

After decades of planning and study, stakeholders are fairly certain of the conservation actions that must be taken to improve the services provided by ecosystems. After more than a year of exploring models for ecosystem markets and other tools to increase the pace and scope of restoration, several program options continue jumping to the front of the list.

What remains is the discussion about which organizations fill what roles in an ecosystem marketplace. The roles described above may require new skill sets and/or patterns of operating for some organizations. They might also require little change beyond the language used to describe current actions. For example, soil and water conservation districts work with landowners now to verify the benefits conservation practices generate. Watershed councils currently provide technical assistance to aggregate the benefits from restoration actions of multiple landowners into single grant proposals.

The marketplace model is also scalable depending on the level of market activity. It supports transactions where buyers directly sponsor restoration projects in advance of certified credits. It supports transactions directly between buyers and sellers of credits, and it supports transactions between aggregators, brokers, speculative buyers, and other third parties. The bells and whistles can grow and contract based on trade volumes, but the basic elements remain the same.

Ultimately, an ecosystem marketplace will not succeed without the active involvement of natural resource agencies and other potential market participants in defining these roles and the relationships among actors in the marketplace.

Regulator Questions

Policy

- Can regulators transfer verification roles to third parties? Certification?
- Who maintains the list of approved verifiers and certifiers?
- Who maintains the criteria for approving these people?
- What points in the exchange process need regulatory approvals?

Legal

- What points in the exchange process need regulatory approvals? More generally, which points need nods from which groups to move forward?
- What policy/law needs to change to allow/facilitate these processes?