

Payment for Ecosystem Services (PES)



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ENTRIX

About Us

✧ Environmental and Natural Resource Management Consulting Firm

- ✓ Water resource management
- ✓ Environmental permitting and compliance
- ✓ Natural resource liability management

✧ Economics Group of ENTRIX

- ✓ Formerly Northwest Economic Associates (NEA)
- ✓ Expertise in natural resource economics
 - Water valuation, Benefit – Cost, Socioeconomic Impacts



Payment for Ecosystem Services

Background and Introduction

✧ Ecosystem Services:

- ✓ Conditions and processes through which natural ecosystems supply benefits to people
- ✓ Typically not included in conventional markets, thus unpaid for by recipients

✧ Payment for Ecosystem Service

- ✓ Aligning economic incentives with stewardship
- ✓ Linking human and environmental well being



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Examples

✧ Seattle: Cedar River Watershed

- ✓ Plan developed in 1896 to acquire 100,000 acres of land surrounding watershed
- ✓ Plan realized in 1990's through land acquisitions from homesteaders, timber and mining companies, as well as land and timber swaps with the Federal Government.



Source: Friends of the Cedar River Watershed web-site



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Examples

✧ Denver

- ✓ Buffalo Creek (1996) and Hayman (2002) fires caused massive soil erosion



Source: Rill erosion on burned hill slope after Buffalo Creek Fire, John Moody



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Examples

✧ Denver: “watershed maintenance fee” cont.

- ✓ Program to remove sediment cost \$31 million
- ✓ Denver Water has approached legislators with the idea of imposing a maintenance fee to reduce risk of fire



Source: Strontia Springs Reservoir supplies drinking water to Denver and Aurora, USGS

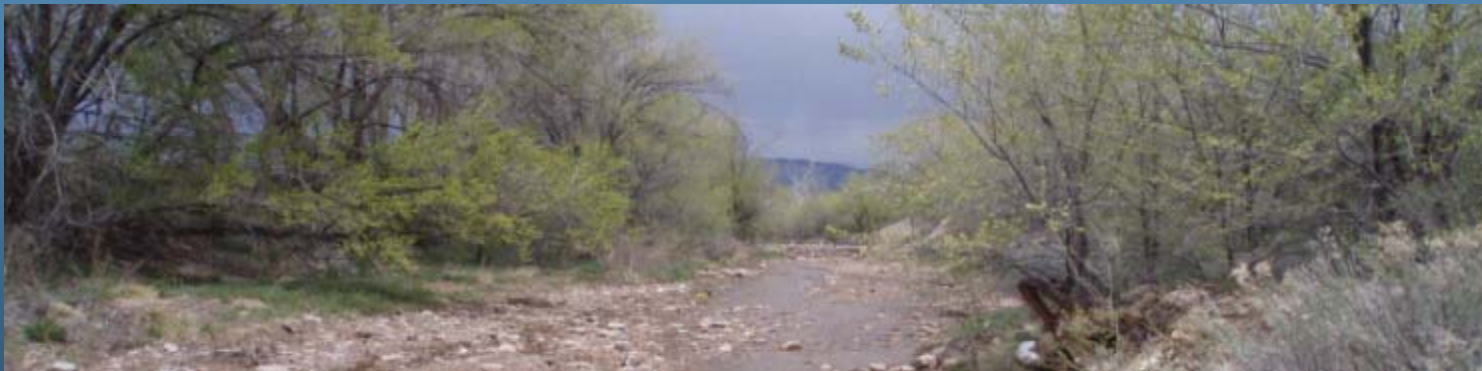


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Examples

❖ Santa Fe Municipal Watershed

- ✓ Forests overcrowded, vulnerable to stand replacing fire
- ✓ Loss of forest cover decreases capacity to regulate flow and control soil erosion
- ✓ Cerro Grande fire evidence



Source: <http://www.santafewatershed.org/>



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Application of PES - Guidelines

✧ Guidelines:

1. Understand Watershed
2. Partnerships & Stakeholder Participation
3. Value Ecosystem Services
4. Develop Watershed Protection Plan
5. Establish Payment Mechanism
6. Develop Funding Quilt



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Application of PES - Guidelines

1. Understand Watershed

- ✧ Prioritize management using maps and models
- ✧ Comprehensive Water Quality Monitoring

2. Partnerships & Stakeholder Participation

- ✧ Salem Example
- ✧ Catskill and Delaware Example
- ✧ Public Outreach Campaign



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Application of PES - Guidelines

3. Value Ecosystem Services

- ✧ Benefit Valuation Techniques
 - Market Values
 - Hedonic Analysis
 - Replacement Costs
 - Avoided Costs (Charles River)
 - Contingent Valuation
 - Benefit Transfer



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Application of PES - Guidelines

4. Develop Watershed Protection Plan
 - ✧ Understanding and Partnerships
5. Establish Payment Mechanism
 - ✧ Simplicity of Design is Important
6. Develop Funding Quilt
 - ✧ Hawkwatch Project - Rockaway Township, NJ



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Conclusion

✧ Investments in watersheds

- ✓ Studies show that every \$1 invested in watershed protection results in savings of \$7.50 to \$200 in costs (Johnson et al 2000)

✧ The threats posed by fire and other damaging events needs conveyed to the public

✧ Benefits of protecting ecosystems also need to be conveyed to stakeholders



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Conclusion

- ❖ Stakeholder and public involvement and collaborations are keys
- ❖ Payment schemes will vary per desired objective and partners involved
- ❖ Multiple funding sources should be explored- funding quilt



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