

Payments for Environmental Services Knowledgebase

October 2007

As part of the USAID/EGAT/NRM funded Payments for Environmental Services (PES) Associate Award, the SANREM CRSP Knowledgebase (SKB) was expanded to include information resources related to Payments for Environmental Services. In September 2007, the SKB contain metadata on approximately 160 significant PES and PES-like projects and 150 additional PES information resources (books, journal articles, reports, etc.). The following sections provide a brief overview of the SKB and then more details on PES specific metadata and how the SKB can be queried to identify PES information resources.

SANREM Knowledgebase

The SANREM Knowledgebase (SKB) is an on-line data base of “information resources” (books, reports, journal articles, videos, movies, presentations, etc.) produced or identified, classified, and summarized by SANREM CRSP researchers. The SKB provides on-line access to significant information resources relevant to sustainable agriculture and natural resources management. The database is searchable via fields such as: title, creator/author, creation date, keywords, media type, time period, location, description (abstract), language, and SANREM Project Number (if appropriate). The SKB is located on the SANREM CRSP website at: http://www.oired.vt.edu/sanremcrsp/menu_information/knowledgebase.php.

Information Technology Development: Application developers from Agriculture, Human and Natural Resources Information Technology (AHNR-IT) at Virginia Tech were enlisted to develop the SANREM Knowledgebase web application. The SANREM Knowledgebase was built using Apple's WebObjects development platform. WebObjects is a state-of-the-art Java based application server that is particularly well suited for designing complex, high traffic web applications. In addition to WebObjects, the SANREM Knowledgebase also uses the Oracle Database Management System. By using WebObjects in conjunction with Oracle, the SANREM Knowledgebase is able to provide fast, secure, and reliable data access to its clients. The SKB went on-line in the fall of 2005 and has been updated continuously to improve its functionality. It provides the ability for SANREM CRSP researchers to classify and catalog key SA and NRM information resources.

A researcher is granted the ability to login into the system by a SKB administrator and is given one of three levels of permission. The first level of permission, “cataloger”, allows the researcher to enter resources or to view all resources in the system. To add a new resource, the researcher classifies the resource using a standard set of metadata. The Dublin Core Metadata Initiative (<http://www.dublincore.net>) defined the initial metadata elements in the SKB. An expanded list of key words specific to SA and NRM were then developed to guide and accelerate metadata entry and searches. The list of keywords is updated periodically. The researcher also has the option of uploading non-copyrighted resources to a central server to allow access to the resource via the Internet. Resources can be any type of file (PDF, Word, images, video, etc.). As of Sept. 24, 2007, 1928 SANREM CRSP-generated information resources and other SA and NRM information resources have been cataloged and entered into the SKB.

The second level of permission is that of “reviewer”. Reviewers have all the rights of “catalogers”, as well as the right to review and edit the metadata other researchers. All resources submitted to the SKB by catalogers must be reviewed and approved by “reviewers” for quality control purposes before the resources are published and available to the public. Reviewers have the right to publish approved resources. Once a resource is published, it becomes available to the public through open access on the web. The final and highest level of permission is that of “administrator”. The “administrator” has all the rights of catalogers and reviewers, as well as the ability to add or deactivate users or change user permission levels.

The general public has the ability to search the database for published resources. Resources may be searched by a number of different criteria including title, keyword, creation date, GPS location, and date of data collection, etc. Resources matching the given criteria are returned in a list format from which they can be inspected and downloaded if appropriate. Data entry and searches are facilitated by the SKB Metadata Guide available from the SKB website:

http://www.oired.vt.edu/sanremcrsp/menu_information/knowledgebase.php

PES Specific Metadata

Entries for PES-related projects and resources in the SKB contain both standard knowledgebase metadata (e.g. “title”, “creator,” “description”) and PES-specific metadata. Either or both of these may be used for searching the database.

The query webpage is accessible at:

<http://www.ext.vt.edu/cgi-bin/WebObjects/SANREM.woa/wa/advancedSearch>.

Searching for PES entries:

- To limit a search to PES-specific entries, use the “SANREM project id” drop-down list to select “**PES-1**” (this is located at the bottom of the webpage)
- You can limit your search to only **PES projects** by selecting “**project**” from the list of “Type” options, or limit your search to only **PES resources** by selecting “**text.**” If you would like your search to include both projects and resources, you do not need to select either.

Searching by keywords:

Restricted keywords (general SKB and PES)

- The SKB has both a general keyword list and a PES-specific keyword list; both of these restricted keyword lists are used for PES entries. You will likely have the most success with your search if you locate the relevant keywords on the restricted lists.
- The keyword lists appear on the right hand side of the page (PES-specific keywords are at the bottom); click on the listed categories and they will expand to show the keywords for each category.
- Searching for multiple keywords is non-exclusive – your results will include entries with any of the selected keywords (i.e. selecting additional restricted keywords will increase, rather than decrease, the number of results).

PES Specific Keywords

[Climatic Zone](#)

- [Alpine](#)
- [Arid](#)
- [Cold](#)
- [Humid](#)
- [Semiarid](#)
- [Subhumid](#)
- [Subtropical](#)
- [Temperate](#)
- [Tropical](#)

[Ecosystem](#)

- [Agricultural](#)
- [Aquatic](#)
- [Coastal](#)
- [Coral Reef](#)
- [Desert](#)
- [Freshwater](#)
- [Grassland](#)
- [Island](#)
- [Marine](#)
- [Mountain](#)
- [Natural Forest](#)
- [Paramo](#)
- [Plantation Forest](#)
- [Riparian](#)
- [Savanna](#)
- [Shrubland](#)

[Tundra](#)

[Wetland](#)

[Ecosystem Services Targeted/Benefiting](#)

- [Air purification](#)
- [Biodiversity](#)
- [Carbon Sequestration](#)
- [Climate regulation](#)
- [Detoxification/decomposition of wastes](#)
- [Drought control](#)
- [Erosion control](#)
- [Flood control](#)
- [Genetic resources](#)
- [Habitat](#)
- [Minimum streamflow protection](#)
- [Nutrient cycling](#)
- [Pest control](#)
- [Pollination](#)
- [Protection from UV rays](#)
- [Renewable energy](#)
- [Renewable resources](#)
- [Seed dispersal](#)
- [Soil quality](#)
- [Tourism & recreation](#)
- [Water purification](#)
- [Watershed services](#)

Unrestricted / free text search

- Use the free text box at the top of the search page to enter any words you would like to search for. This can include a part of the title, the creator (individual or corporate), the geographic location, and keywords not found on the restricted list.
- This search function does not search the restricted keyword list (i.e., if you type in “biodiversity,” it will not necessarily find entries for which “biodiversity” is selected as a restricted keyword.)
- You may add additional search terms by clicking the button “Add Search Criteria.” Your search results will show only entries that match all of the free text search criteria you enter.

Searching by PES-specific search criteria:

- Click “**Display PES Specific Search Criteria**” (located toward the bottom of the query page)
- You may select multiple terms within a category; this will increase the number of results.
- Selecting terms from different categories will limit your search results to entries that include one of the selected terms from each of the categories.
- The PES search criteria are included below for your convenience.

The PES search criteria are:

- **Type of PES project**
(proposal, feasibility or research project, implemented project)
- **PES Project Definition:**
Voluntary transaction between PES buyers and sellers?
Well-defined environment service?
Well-defined and identified environmental service buyer(s)?
Well-defined and identified environmental service provider(s)?
Are payments to providers conditional on buyer securing environmental services?
- **Promoted Action**
Poverty reduction (as a stated goal)
Protection of existing environmental services
Restoration/establishment of environmental services
- **Valuation Method (Cost Based)**
Replacement costs
Cost of providing surrogate services
Damage cost avoided
- **Valuation Method (Revealed Preference)**
Market Price Method
Productivity approach
Surrogate market approaches
- **Valuation Method (Stated Preference)**
Contingent valuation
Conjoint analysis
Choice experiments

- **Provider Compensation Method**
 - Cash payment to provider
 - In-kind payment to provider
 - Cash or in-kind payment to provider associations
 - Support for the legalization of land-ownership titles
 - Provision of social services and infrastructure
 - Investment financing to improve land management
 - Certificates and special product seals
 - Technical assistance, training and marketing support
 - Rural tourism and ecotourism community support
 - Expansion of access or use rights to natural resources
 - Violation of contract results in no payments
 - Payments decrease with contract violation severity
- **Service Buyer**
 - Hydroelectric
 - Water utility
 - Private sector
 - Tourists or tourism operators
 - Irrigators
 - Land developers
 - International conservation donors
 - Intermediaries
 - Government
- **Service Provider**
 - Government
 - Landowners
 - Untitled landholders
 - Parks/Reserves
 - Community
 - NGO
 - Industry
- **Service Intermediaries**
 - NGO
 - Government
 - Private
- **Measure of Service Provided**
 - Direct measure (of quantity of service provided (tons, km, ha, m², etc.))
 - Indirect measure (services provided (land use changes, contracts signed))

This publication was made possible by the United States Agency for International Development and the generous support of the American people for the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program (SANREM CRSP), based at Virginia Tech. This work, Global Assessment of Best Practices in Payments for Ecosystem Services Programs, was supported through USAID Associate Award EPA-A-00-06-00004-00. Please send suggestions for corrections and improvements to Theo Dillaha, SANREM CRSP Program Director, dillaha@vt.edu

