

SANREM Knowledgebase Metadata Guide

Version 3

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Background

Overview

This document describes the purpose, content, and format of the metadata that defines the contents of the SANREM Knowledgebase. The SANREM Knowledgebase (SKB) is intended to serve as a catalog of information resources specific to the SANREM project as well as catalog and archive other resources and projects that relate to sustainable agriculture and natural resource management. The “resources” cataloged in the SKB are primarily articles, papers, and reports but may include other digital resources such as presentations, images, webpages, and other materials that can be referenced. The SKB can store a full copy of digital resources; this practice is recommended unless prohibited by copyright. The overall goal is to make these resources readily available to facilitate the wide and effective dissemination of information and to provide a structure for effective search and retrieval of the resources.

Terminology

Resource: the actual material (book, presentation, article, paper,) being reviewed and cataloged. Resources can be in paper or digital format.

Record: the database entry for a resource; the form containing the bibliographic and descriptive metadata for the resource.

Field: the individual metadata element used to describe a resource.

User: the person or entity creating the record for a resource.

Publishing: approving a resource record and making it available for public access.

Knowledgebase and Metadata

The SANREM knowledgebase stores standard bibliographic metadata as well as information specific to SANREM. The SKB was designed to be flexible enough to catalog a wide variety of types of material. The widely accepted “Dublin Core” database elements and structure provide a standardized template for storing basic information about any resource. While all fields are not appropriate for every resource, some fields are required, and some have a predefined selection list.

Required fields

Title	Keywords	Creation Date
Creator (author)	Description	Type

Restricted field

A list of acceptable entries has been defined for the “Restricted Keywords” and “Landscape System” fields. This restricted vocabulary is used to facilitate the search process and to minimize potential problems from mistyped or misspelled keywords.

Entry Procedure

The overall procedure for adding a resource to the SKB is a two-step process: entry of the primary information by SANREM partners and other approved users, then verification and acceptance (publishing) of the entry by the SKB manager.

Step 1. The user creates a record and enters data in all required fields and others as appropriate. The database has been designed also to store a copy of the resource. All resources in digital format (with the exception of those with copyright restriction) should be uploaded. If a file contains multiple resources and has already been uploaded (i.e., a newsletter containing multiple articles or research briefs), use the "associate existing resource" option and locate the correct file. Storing the resources in the SKB will facilitate permanent archiving, long-term availability, and widest dissemination.

Step 2. The manager reviews the entry for basic content and format, oversees revision of the entry as required, then publishes the record to make it viewable to the public.

The SKB manager will create a user account and provide information on accessing the database to enter records.

Support for Foreign Languages

The SKB database supports Unicode text; diacritical marks and alternate fonts can be used as necessary for entered text (e.g., "C. Turín," or "evaluación," or "Brüsweiler S., U. Höggel and A. Kläy"). Diacritical marks can be entered by:

- Using a keyboard with the necessary capabilities; or
- Entering the text in a Word document ("insert symbol" to access special characters), then copying and pasting the text into the SKB entry form.

Specific Guidelines for Entering Records

Specific guidance for entering records will be found in the following elements:

- The description of the individual metadata fields in the following section.
- Sample entries of several data types in Appendix A.
- SANREM Product Type Definitions in Appendix B.
- A list of the current restricted keywords in Appendix C.
- Definitions of resource "types" in Appendix D.

Revisions and Updating

Please send suggestions for correction and improvement to:
Theo Dillaha, SANREM Program Director, dillaha@vt.edu

Description of the Metadata Fields

1. **Title**

Enter the title data found on the actual resource.

Use no punctuation at the end of the title.

Capitalize as defined below.

Length is limited to 500 characters.

Book title (including conference proceedings):

- Capitalize all significant words (lowercase for articles and prepositions).
- Include subtitles as part of the title, separated by a colon.
- Examples:
 - Between Agroecosystems and Rural Communities
 - West Africa: Civil Society Strengthening for Conflict Prevention

Journal article, paper, book section, report, presentations, general resources:

Capitalize:

- The first letter in the title.
- All proper nouns (countries, names).
- The first letter after a colon (signifies a subtitle).
- Example:
 - Assessing regional impacts of change in the Philippines: Linking economic and environmental models

2. **Alternate Title**

This can be:

- A translation of the title to a different language.
- A form of the title appearing on different parts of a resource
- An alternative form of the title that is significantly different from the entry in the "Title" field.

Use formatting guidelines from the "Title" field.

Length is limited to 500 characters.

3. **Creator (Author)**

This is the person(s) responsible for the resource. Use last name and initials. See examples below for format.

When no individual creator is listed in the resource, enter the publishing or issuing institution's name.

- If an entity is commonly known by an abbreviation of the name, it is acceptable to use the abbreviation (e.g., FAO).

For an editor or editors, add (ed.) or (eds.) after the name(s).

Format:

- For first author: <Last name>, <First Initial>.<Middle Initial(s)>.
- For additional authors: <First Initial>.<Middle Initial(s)>. <Last name>.
- Separate multiple authors with commas except the final two authors, which are separated by "and" (no comma before the word "and").
- No spacing between initials.

Examples:

- One author: Badini, O.

- Two authors: Badini, O. and R.H. Wynne
- Three or more authors: Badini, O., R.H. Wynne, I. Coxhead and A. Rola
- Corporate author: USDA
- One editor: Moore, K.M. (ed.)
- Two or more editors: Bertelsen, M. and K.M. Moore (eds.)

4. **Contributor**

This field is for additional persons or entities that contributed to the resource. Use formatting guidelines from the “Creator” field.

5. **Contact Information**

This field is primarily intended for PES (Payments for Environmental Services) projects but may also be used with other resources if they contain relevant specific contact information. May include information such as name of contact person, e-mail address, mailing address, telephone and fax numbers.

Suggested format:

Separate distinct pieces of information with a slash (/)

Example:

Cameron Odsey / Cordillera Highland Agricultural Resource Management, Sto. Tomas Road, Baguio Dairy Farm, Baguio City 2600, Philippines / Email: charm@mozcom.com

6. **Landscape System**

The landscape system description requires a selection of one or more terms from the following list to define the scale or focus of the resource content:

- Ecosystem
- Watershed
- Farm/Enterprise Scale
- Field Scale
- Governance

For some resources, selecting a landscape system is not applicable.

7. **PES Resource/Project**

This box should be checked *only* for resources or projects related to PES.

Checking this box adds the PES-specific components to the entry form.

Complete guidelines for entering PES projects and resources are available in a separate guide, available on the SANREM website as of fall 2007.

8. **Restricted Keywords**

Restricted keywords are terms that are central ideas to the resource. They act as descriptors of the resource content and will be used by others to search for resources relevant to particular keywords.

The restricted keywords list contains common keywords that pertain to SA/NRM, organized by conceptual categories. The purpose of a restricted keyword list is to provide standardized vocabulary that will facilitate the search process and minimize potential problems from mistyped or misspelled keywords.

Select all keywords that are pertinent to the resource. See **Appendix C** for keyword list.

Suggestion: A printed copy of the keyword list makes efficient selection of relevant keywords easier.

In selecting keywords, three questions should be posed concerning an information resource to help in identifying pertinent keywords:

- What natural resources are involved?
- What social (i.e., cultural, economic, and/or political) dimensions are involved?
- What transformative processes (technologies) are involved?

9. ***Unrestricted Keywords***

This field is for important terms describing the resource that are not found in the restricted keywords list, including entries such as:

- Species' names (*Paraserianthes falcataria*) (italics appear as normal text in SKB).
- Organization names, i.e., World Agroforestry Centre (ICRAF).
- Simulation model names, i.e., Phytomass Growth Simulator (PHYGROW).
- Geographic names (Nicaragua, Andes).
- Keywords in a language other than English, particularly if the resource itself is not in English (biodiversidad, mercados).

Format:

- Capitalize only proper nouns.
- Separate multiple terms with commas.

Examples:

upland agriculture, timber intercropping, Mindanao, Philippines, bioeconomic model, cost-benefit analysis

NOTE: Give priority to defining keywords using the standardized “Keywords” list to maximize searchability and access to the resource.

Length is limited to 2,000 characters.

10. ***Description***

This field provides a summary description of the resource.

Three types of descriptions – abstracts, table of contents, and user-generated summaries - are most common. One or a combination of these can be used.

Also use this field to alert users that the resource is available in another format.

Examples:

- If the resource is available as both a conference paper and a presentation, catalog each resource in a separate record. At the end of the description field in the record for the presentation enter, "Also available as a conference paper."
- If a research brief is also available as a full paper or report, or a conference paper has subsequently been published in a peer-reviewed journal or in conference proceedings, add “Also available as a <type of resource>: <citation>.”
- If the resource is available in multiple languages, note at the end of the description "Also available in <language>"; include translated title and pertinent information for accessing the resource (such as URL or bibliographic citation).

Length is limited to 4,000 characters.

Use only a single space between sentences.

Abstract:

- An abstract taken directly from the resource can be used as a description if:
 - The resource is not copyrighted; OR
 - The abstract of the resource is not copyrighted; OR
 - The copyright holder has granted permission.
- The “user” creating the entry is responsible for the use of copyrighted material.
- Start the entry with “ABSTRACT:” unless the resource uses a different term (e.g., “SUMMARY”); use the term that appears on the actual resource.
- Enter the abstract as continuous text. Separate paragraphs with hard returns.

- Example:
 ABSTRACT: This brief illustrates how environmental projects can respond to donors' demands for evidence of impacts in the early stages of their implementation, before longer-term improvements in natural resource conditions have time to occur. The approach centers on a hierarchical classification of impacts that allows one to capture "intermediate" steps, that is shifts in awareness and attitude that usually precede actual changes in behavior concerning sustainable natural resource management.

Table of contents:

- Format:
 - Begin the entry with "TABLE OF CONTENTS:"
 - Enter as plain text (no formatting).
 - If book sections have listed authors, include their last names after section title, separating the title and authors with a slash (/).
 - Do not include page numbers.
 - If the Table of Contents in the actual resource has numbered sections, it is acceptable to include the numbering.
- Examples:

TABLE OF CONTENTS:
 Formation, potential and challenges of a citizen volunteer water quality monitoring group in Mindanao, Philippines / Deutsch and Orprecio

The Landcare approach: Enhancing community participation in sustainable agriculture and natural resource management / Mercado and Garrity

Holistic management in West Africa: A new approach to community-based natural resource management decision making and institutional development at the decentralized commune level / Bertelsen

TABLE OF CONTENTS:
 I. Introduction
 II. Deforestation in Mexico and the environmental services
 III. The evolution of Mexico's PES program for hydrological services
 IV. Results of implementation, 2003-2004
 V. Putting the Mexican experience into perspective: A conceptual framework
 VI. Learning from the Mexican experience

User-generated summary:

- A user-generated synopsis may be required in cases where no suitable summary is included in the resource or when a copyright prohibits use of resource material.
- Enter as continuous text. Enter a hard return ("Enter") only when separating paragraphs.
- If relevant, include information about the source of the description.
 - Examples:
 - "derived from author's abstract" or
 - "summary from publisher's website; available at: <insert URL for website>"

11. *Publisher*

This field contains the location and name of the publishing house, university entity, organization, or corporate entity responsible for making the resource available.

- If the geographic location of the publisher is unknown, it is acceptable to give only the name of the publisher (this most often will occur with journal articles)

Format:

<city, state or country>: <Publisher's name>

- Do not include a period at the end of the line.
- Common abbreviations and acronyms are acceptable.

Examples:

- Watkinsville, GA: SANREM CRSP
- Elsevier
- Madison, WI: SANREM CRSP SEA
- Makati City, Philippines: Philippine Institute for Development Studies (PIDS)
- Washington, DC: USAID
- Bukidnon, Philippines: International Centre for Research in Agroforestry (ICRAF)
- Blacksburg, VA: Virginia Tech. Office of International Research, Education, and Development (OIREd)

12. ***Bibliographic Citation***

This field should contain the bibliographic information that is part of a complete standard citation and not included in other fields (i.e., not in "Title," "Author," "Publisher," or "Creation Date" fields).

- **Exception:** For resources that are part of another resource (i.e., a chapter of a book or a paper that is published in conference proceedings), there is no bibliographic citation – the reference for the larger work should be placed in the “Is Part Of” field (see description below).

Resource types that typically require bibliographic citations include journal articles, conference papers and presentations, and series (working papers, research briefs, newsletters).

Journal articles:

- **Format:**
<Journal Title> <vol. no.>(<issue no.>): <pagination>
 - Include full journal title or the standard abbreviation for the journal.
- **Examples:**
 - Agricultural Systems 79(3): 261-281
 - Journal of Agricultural Economics and Development 26(1-2): 60-90

Conference papers and presentations:

- **Format for conference papers:**
Paper presented at the <name of conference>, <place>, <date[days month year]>
- **Example:**
Paper presented at the SANREM CRSP Research Scientific Synthesis Conference, Athens, GA, 28-30 November 2001
- **Format for electronic presentations:**
Presented at the <name of conference>, <place>, <date[days month year]>
- **Example:**
Presented at the Conference on Interfaces in the Repatriation and In Situ Conservation of Traditional Crops, University of Georgia, Athens, GA, 30 April -1 May 2004

Series (may be working papers, research briefs, newsletters):

- Use the citation found on the resource.
- **General format:**
<Series title> <series number>
- **Examples:**
 - SANREM CRSP Research Brief 2001 No. 2.
 - SANREM CRSP SEA Policy Brief 2002-3
 - SANREM CRSP Working Paper No. 01-07
 - Drylands Issue Paper No. 49
 - World Agroforestry Center NRM Policy Brief 1
 - ISPPS Working Paper No. 03-04

Thesis or dissertation:

- **Format:**
<Degree>. <City, State abbreviation OR City, Country>: <College/University>.
- **Examples:**
 - Ph.D. dissertation. Athens, GA: University of Georgia
 - MS thesis. Los Baños, Philippines: University of the Philippines

13. Is Part Of

This field is used for resources that come from a parent piece, such as a chapter or section from a book, and gives the bibliographic citation for the parent material.

- This field is NOT for series – the series that a resource is part of is included in the bibliographic citation field.
- If the resource is part of a collection or broader series that is not named in the bibliographic citation field, this information can be noted in the “Description” field.

Format:

In: <Author(s)/editor(s) of parent resource>. <Title of parent resource>, <pagination of book section>

- Do NOT include the creation date or publisher in the “is part of” citation; these metadata should be placed only in their respective fields.
- The format for the elements of this citation follows the same format given for the separate fields.
- If the author/editor of the parent resource is not known, it is acceptable to either use the responsible corporate entity or not enter anything for “author/editor.”

Examples:

- Coxhead, I. and G. Buenavista (eds.). Seeking Sustainability: Challenges of Agricultural Development and Environmental Management in a Philippine Watershed, 138-152
- Cason, K. (ed.). Cultivating Community Capital for Sustainable Natural Resource Management: Experiences from the SANREM CRSP, 27-37
- In: Proceedings of the 12th International Soil Conservation Organization Conference, Vol. III: Technology and Method of Soil and Water Conservation, 277-281

14. Creation Date

This field is for the reference date when the resource was published/presented/created (YYYY).

- For presentations, enter the year of the presentation (date of conference).
- For presentations published in conference proceedings, enter the year of publication.

15. **Type**

This is the type of material the resource represents.

Check the type that best applies:

- Text - contains words to be read (includes images of readable text).
- Image - symbolic visual representation other than text.
 - Text resources will often contain images; however, select “image” only if the resource is solely an image (or images) and does not contain text.
 - Examples: images and photographs of physical objects, graphics, drawings, graphs, maps.
- Project - actual, attempted, or proposed implementation of a specific activity (or activities).
 - Note the distinction between a project and a resource (text, image), which provides information *about* a project. Multiple resources can be referenced in a project description.

See **Appendix D** for descriptions of other resource types.

16. **SANREM Product Type**

This is the type of material the resource represents, e.g., book, book section, conference paper, journal, presentation, report, thesis.

Select the “product type” that most specifically applies to the resource.

The SANREM-specific product types are only for resources published or issued by SANREM (e.g., SANREM Working Papers and SANREM CRSP Annual Reports).

See **Appendix B** for definitions of the SANREM Product Types.

17. **Format**

The format is the physical or digital manifestation of the resource; this field indicates the specific program needed to display the resource.

- Paper (not digital)
- Acrobat Reader
- Image Viewer
- Microsoft PowerPoint
- Microsoft Word
- Movie Viewer
- HTML viewer

18. **Identifier**

This includes all ISBN and ISSN numbers associated with the resource.

This field also indicates if a resource is available in the SANREM management office and whether it is in electronic storage (ES) or file storage (FS).

Format and examples:

- ISBN: 0385424728
- ISSN: 1234-4487
- ISSN: 0002-9602; available in SANREM office, FS
- ISSN: 1234-4487 / EISSN: 1244-4488
- ISBN: 1 904035 72 8 / ISSN: 1605-2293
- ISBN-13: 978-2-8317-0881-2 / ISBN-10: 2-8317-0881-8

Length limit is 100 characters.

19. **URL (type of identifier)**

If available, enter a URL that goes directly to the resource or to a site that gives information on acquiring the resource.

It is possible to enter multiple URLs (e.g., one linking directly to the resource and one linking to a website with publication details).

Examples:

- Journal:
[http://dx.doi.org/10.1016/S0308-521X\(03\)00087-8](http://dx.doi.org/10.1016/S0308-521X(03)00087-8)
- “Other report”:
<http://www.iied.org/pubs/display.php?o=6348IIED&n=2&l=2&a=alam&s=SGK>
(Publication information) and
<http://www.iied.org/pubs/pdf/full/6348IIED.pdf> (direct link to pdf of resource)
- SANREM-specific publication:
http://www.oired.vt.edu/sanremcrsp/documents/WorkingPapers/Final.Strzepek_Final_Report-Working.pdf
(SANREM-produced resources should also be uploaded to the database.)

20. **Language**

Select the primary language of the resource from the drop-down list; if the language is not listed, enter in the “Other” field.

- If the resource is available in multiple languages, select the primary language from the list (if available). Enter the other languages in the “Other” field, separated by semicolons.

Note: If a translation of the title is provided, it should be entered in the "Alternate Title" field.

21. **Spatial**

This field describes geographic coverage of the resource.

Enter geographic areas/regions described in the resource (free text).

Format:

- Separate geographic scales of a location (region, province, country) with commas.
Examples:
 - Cotacachi Cayapas Ecological Reserve, Ecuador
 - Manupali watershed, Mindanao, Philippines
- Separate different geographic locations (i.e., two countries) with semicolons.
 - Cotacachi, Imbabura, Ecuador; Peru, South America

22. **Temporal**

Enter the time period covered in the resource (period during which the research occurred or covers) by entering the beginning and ending years in the format YYYY.

If only the beginning or ending year is known, it is acceptable to enter only one.

The time period may project into the future (e.g., a paper about a project that has a time frame of 1997-2017).

23. **Rights**

Enter either a textual statement or a URL pointing to a rights statement.

Statement of rights should be what appears on the actual resource.

- Exception: “Copyright” should be written out, even if a symbol is used on the actual resource.

Examples:

- Copyright 2000 by the SANREM CRSP. All rights reserved.

- Copyright 2001 by SANREM CRSP and CARE-SUBIR. All rights reserved.
- Copyright Inter-Research 1999
- Copyright 2004 IIED. The material in this paper may be reproduced for non-commercial purposes provided full credit is given to the authors and to IIED. Length is limited to 4,000 characters.

24. Upload Resource

Upload resources only if they are not copyrighted, you own the copyright, or you have been given permission to upload the resource.

25. SANREM Project ID

SANREM Project IDs are only for resources that are produced as a result of SANREM funding.

If the resource is a product of a SANREM project, select the ID that corresponds to the specific project responsible for the development of the resource.

Appendix A

Example Entries for the Metadata Guide

The following examples show only the specific fields used for these entries. While these fields are typical of the different resources included here, your entries may also include metadata in additional SKB fields as appropriate.

Article Published in Refereed Journal

Title: Economic potential of biomass based fuels for greenhouse gas emission mitigation

Creator (Authors): Schneider, U. and B. McCarl

Restricted Keywords: Biomass energy, Afforestation, Carbon Sequestration, Markets, Economic Analyses, Government Policy, Environmental Impacts, Agriculture, Livestock, Economic Policy

Landscape System: Ecosystem

Unrestricted Keywords: Agricultural sector model, ASMGHG, alternative energy, biofuel economics, biomass power plants, greenhouse gas emission mitigation, short rotation woody crops, switchgrass

Description: This paper examines the role biofuels could potentially fill in reducing greenhouse gas emissions by decreasing combustion of fossil fuels. Currently, biofuels are not economically viable if not subsidized. The authors apply a US Agricultural sector model (ASM) to assess how the production and processing of biofuels could be incorporated into a greenhouse gas mitigation market. Emission coefficients for agricultural practices are estimated with crop growth simulation models and hypothetical carbon prices are used to simulate markets and policies. The model results suggest that if carbon prices are at or below \$40 / ton, there is no incentive for biofuels; soil tillage and afforestation are more economic mitigation approaches. If carbon prices exceed \$70, biofuels become the most viable agricultural mitigation option. [summary by the record creator]

Publisher: Netherlands: Kluwer Academic Publishers

Bibliographic Citation: Environmental and Resource Economics 24(4): 291-312

Creation Date (YYYY): 2003

Type: Text

SANREM Product Type: Article Published in Refereed Journal

Identifier: ISSN: 0924-6460 / E-ISSN: 1573-1502

Language: English

Spatial: United States

Rights: Copyright 2003 Kluwer Academic Publishers

Book

Title: Agroecological Innovations: Increasing Food Production with Participatory Development

Creator: Uphoff, N. (ed.)

Restricted Keywords: Sustainable Development, Community Participation, Agriculture

Landscape System: Ecosystem; Farm/Enterprise Scale; Field Scale

Unrestricted Keywords: agricultural development, case studies, Africa, Asia, Latin America

Description:

ABSTRACT: This book presents a collection of innovative, successful and diverse approaches to agricultural development. Documented in 12 case studies, these approaches draw upon greater knowledge, skill and labor input, rather than on larger, unsustainable capital expenditure, and are shown to increase yields substantially. Part 1 of the book (chapters 1-6) deals with issues for analysis and evaluation concerning sustainable agricultural development. Part 2 (chapters 7-18) presents the case studies from Africa, Latin America, and Asia. Part 3 (chapters 19-22) focuses on advancing agroecological agriculture with participatory approaches. The book has a subject index.

Publisher: London, UK: Earthscan

Creation Date (YYYY): 2002

Types: Text

Text Type (If Applicable): Books/Book Chapters

Formats: Paper

Identifier: ISBN: 1-85383-857-8

URL: <http://styluspub.com/books/BookDetail.aspx?productID=49068>

Language: English

Spatial: Africa, Asia, Latin America

Rights: Copyright 2002 Earthscan Publications Ltd.

Book Chapter (or section)

Title: The Landcare Approach: Enhancing community participation in sustainable agriculture and natural resource management in the uplands

Creator: Mercado, Jr., A. and D. Garrity

Restricted Keywords: Soil Erosion, Stakeholders, Community Participation, Sustainable Agriculture, Natural Resource Management

Landscape System: Governance; Farm/Enterprise Scale

Unrestricted Keywords: uplands, Landcare approach, land husbandry, land degradation, farmer groups, local government units, technical facilitation organizations, the Philippines

Description:

Three factors are increasingly fundamental to successful natural resource management in the uplands. First, there is a need for improved land husbandry practices that enable farmers to sustain food production on sloping lands. Such practices would help farmers change gradually from a monoculture system to mixed tree, crop and/or livestock-based systems that provide increased income and environmental protection. Second, there must be real and effective participation by the rural population, through their own local institutions, in the decisions that impinge upon their livelihoods. Third, there must be an effective partnership among service providers and stakeholders. This paper describes the evolution of Landcare, a farmer-led movement in the Philippines that has emerged as an approach to successful natural resource management in the uplands.

Publisher: Watkinsville, GA: SANREM CRSP

Is Part Of: In: Cason, K. (ed.) Cultivating Community Capital for Sustainable Natural Resource Management: Experiences from the SANREM CRSP, 21-28

Creation Date (YYYY): 2000

Types: Text

Text Type (If Applicable): Books/Book Chapters

Formats: Acrobat Reader

Language: English

Spatial: Philippines

Rights: Copyright 2000 by the SANREM CRSP. All rights reserved.

Papers/Seminars Presented

Title: Technical innovations and institution-building for upland development: The case of Landcare in the Philippines

Creator: Catacutan, D.C. and A.R. Mercado, Jr.

Contributor: SANREM (Sustainable Agriculture and Natural Resources Management) and ICRAF (The International Centre for Research in Agroforestry)

Restricted Keywords: Soil Conservation, Soil Management, Soil Erosion, Community Participation, Local Knowledge, Adoption of Innovations, Social Learning, Farmer to Farmer, Agroforestry, Ecoagriculture, Watershed Management

Landscape System: Farm/Enterprise Scale

Unrestricted Keywords: conservation farming, natural vegetative filler strips (NVS), farm productivity, technical appropriateness, grassroots institutional structure, appropriate policies, upland development, tree species evaluation, sloping agriculture land technology (SALT), trash bunds, Landcare approach, vegetative buffer strips, contour farming, hedgerows, technology dissemination

Description:

ICRAF has been conducting research on contour hedgerow systems for the past decade in Claveria, Misamis Oriental and Lantapan, Bukidnon in northern and central Mindanao, Philippines. . . . We concluded that low adoption of the conventional hedgerow system was not only due to some technical constraints but largely to socio-economic and institutional constraints faced by poor farmers in the uplands. . . . In view of this we refocused our efforts toward finding alternative systems that address the technical and institutional issues of conservation farming. We found that natural vegetative filler strips (NVS) provide simple solution to the technical constraints of soil conservation on sloping farms. . . . NVS also provide the foundation for farmers to evolve into complex agroforestry systems with fruit and timber trees and other perennials -- thus, improve total farm productivity. (Excerpt from authors' abstract)

Publisher: Bukidnon, Philippines: International Center for Research in Agroforestry (ICRAF)

Bibliographic Citation: Paper presented at the International Conference on Sustaining Upland Development in Southeast Asia: Issues, Tools, and Institutions for Local Natural Resources Management, ACCEED, Makati City, Philippines, 27-30 May 2001

Creation Date (YYYY): 2001

Types: Text

Text Type (If Applicable): Papers/Seminars Presented

Formats: Acrobat Reader

Language: English

Spatial: Misamis Oriental and Bukidnon Provinces, Mindanao, Philippines

Temporal (YYYY): From 1994 To 2000

Resource Filename: Filename: technicalNovInstBuilding.pdf

Electronic Presentations

Title: Climate change: Why worry?

Alternate Title: Cambio climático: ¿Por qué preocuparse?

Creator: Seth, A.

Restricted Keywords: Tropical Zones, Semiarid Zones, Subhumid Zones, Environmental Impacts

Landscape System: Ecosystem

Unrestricted Keywords: climate change, global warming, carbon cycle, precipitation, temperature

Description:

ABSTRACT: This presentation reviewed the current state of knowledge related to anthropogenically forced global climate change and projections from climate model simulations performed for the IPCC fourth assessment. While the global projections consistently describe a continued and enhanced warming trend in the 21st century, the models are less consistent in their representation of South American precipitation trends in the Amazon basin and monsoon regions. In addition, a review of recent published literature related to observed climate variability and trends in the Altiplano was presented. There is clear observational evidence of an increasing temperature trend and the effects on receding glaciers in the region. With respect to variability, recent studies suggest that reduced (enhanced) rainfall in the Altiplano is associated with enhanced (reduced) westerly winds, i.e., low level winds and moisture flow from the east are related to wet conditions during the rainy season.

Bibliographic Citation: Presented at the First Scientific Team Retreat of SANREM CRSP Adapting to Change in Andean Ecosystems, Batallas, Bolivia, 26-27 April 2006

Creation Date (YYYY): 2006

Types: Text

Text Type (If Applicable): Electronic Presentations

Formats: Microsoft PowerPoint

Identifier: available in SANREM office, ES

Language: English

Spatial: La Paz, Bolivia

Resource Filename: Filename: SethAltiplano-Modeling-Variability-Trends.ppt

Project ID: LTR-4 - Practices and Strategies for Vulnerable Agro-Ecosystems

Conference Proceedings Paper

Title: Impact of Vetiveria Zizanioides (vetiver grass) live barriers on maize production in Honduras

Creator: Hellin, J. and M. Haigh

Restricted Keywords: Soil Conservation

Landscape System: Field Scale

Unrestricted Keywords: live barriers, farmer adoption, steep lands, maize yields, soil moisture storage

Description:

The authors investigated the use of grass strips as a soil conservation method in maize production on steep lands in Central America. Soil tended to accumulate above the strips and to scour immediately below the strips. Over a three-year test period, the authors noted no significant difference in yields between control and test plots except in the drought year of 1997 when maize planted above the grass barriers benefited from the water stored in the accumulated soil. The authors concluded that the grass barriers by themselves did not provide enough benefit to encourage widespread adoption. They did suggest, however, that replacing the grass with a harvestable crop could improve the benefits of the technology.

Publisher: Beijing, P. R. China: Tsinghua University Press

Is Part Of: In: Proceedings of the 12th International Soil Conservation Organization Conference: "Sustainable Utilization of Global Soil and Water Resources," Vol. III: Technology and Method of Soil and Water Conservation, 277-281, Beijing, China, 26-31 May 2002

Creation Date (YYYY): 2002

Types: Text

Text Type (If Applicable): Conference Proceedings

Formats: Acrobat Reader

URL: http://tucson.ars.ag.gov/isco/isco12/volume_3.html

<http://www.tucson.ars.ag.gov/isco/isco12/Volumelll/ImpactofVetiveriaZizanioides.pdf>

Language: English

Spatial: Honduras

Temporal (YYYY): From 1996 To 1998

Resource Filename: Filename: ImpactofVetiveriaZizanioides.pdf

SANREM CRSP Research Brief

Title: Modeling tool improves watershed analysis

Creator: SANREM CRSP

Contributor: Judy, R., G. Shively and I. Coxhead

Restricted Keywords: Tropical Zones, Economic Modeling and Analysis, Economic Impact, Environmental Impact

Landscape System: Watershed

Unrestricted Keywords: Philippines, economic reform

Description:

SANREM CRSP researchers have developed an economic model that provides policy makers with a tool to measure potential successes and failures of proposed economic reforms. Using this tool, researchers and policy makers can anticipate a reform's impacts on a region's economy and natural resources, leading to the implementation of more effective reforms and improved natural resource management. This model was developed and tested using data collected in the Manupali watershed in the Bukidnon province in the Philippines. The Manupali watershed is an effective location to test such a model because economic and environmental linkages between lowland and upland farms provide an optimum test platform. On a more general scale, a model that predicts the impacts of reforms on their regions of interest provides policy makers with a more informed basis for decision-making by indicating potential levels of economic and environmental impact for households, zones, and watersheds. (Excerpt from document)

For more information, see:

Shively, Gerald and Ian Coxhead. 2004. Conducting economic policy analysis at a landscape scale: examples from a Philippine watershed. *Agriculture, Ecosystems, and Environment* 104: 159-170.

Publisher: Blacksburg, VA: SANREM CRSP

Bibliographic Citation: SANREM CRSP Research Brief 2006 No. 2

Creation Date (YYYY): 2006

Types: Text

Text Type (If Applicable): SANREM CRSP Research Briefs

Formats: Acrobat Reader

URL: http://www.oired.vt.edu/sanremcrsp/menu_information/researchbriefs.php
<http://www.oired.vt.edu/sanremcrsp/documents/Research%20Briefs/Research%20Brief%202.pdf>

Language: English

Spatial: Manupali Watershed, Bukidnon Province, Philippines

Resource Filename: Filename: Research Brief 2.pdf

SANREM CRSP Working Papers

Title: Agro-climatic assessment (description and analysis) of Madiama Commune in Mopti region, Mali (West Africa)

Creator: Badini, O.

Restricted Keywords: Soil, Agricultural Ecosystems, Arid Zones, Environmental Impacts, Water Management

Landscape System: Ecosystem

Unrestricted Keywords: agro-ecological characteristics, climatic characteristics, rainfall variability

Description:

To understand and characterize the agro-climatic conditions in Madiama, first, the physiogeography of the area as well as the general climatic patterns of the Sahel region influencing the local climate of Madiama are introduced. Then, local rainfall amounts and variability are described and assessed through the analysis of long-term (30 years at least) annual, monthly, seasonal and decadal (every ten-day) totals. Through the probability analysis of the rainfall carried out on a decadal basis, the seasonality of rainfall and its reliability are described. Also, temperature, potential evapotranspiration, and length of growing season have been analyzed. Finally, the application of this agro-climatic analysis to crop suitability analysis as well as crop improvement and planning useful to Madiama and the region are introduced. (Excerpt from Introduction)

TABLE OF CONTENTS:

Introduction

I. Agro-ecological Characteristics

II. General Climatic Characteristics

III. Agro-climatic Description and Analysis

Conclusion

Publisher: Blacksburg, VA: Virginia Tech. Office of International Research and Development

Creation Date (YYYY): 2001

Types: Text

Text Type (If Applicable): SANREM CRSP Working Papers

Formats: Acrobat Reader

Language: English

Spatial: Mopti Region, Mali, West Africa

Resource Filename: Filename: agro0201E.pdf

Annual Report / SANREM CRSP Annual Report

Title: Advancing Conservation and Use of Natural Resources: SANREM CRSP 2003-2004 Annual Report

Creator: Miller, K. (ed.)

Restricted Keywords: Soil Fertility, Water Quality, Stakeholders, Social Impacts, Economic Impacts, Environmental Impacts, Health Impacts, Adoption of Innovations, Training, GIS

Landscape System: Governance; Watershed; Farm/Enterprise Scale; Field Scale; Ecosystem

Unrestricted Keywords: integration, problem solving, institution strengthening, up scaling, water quantity, Andes, Southeast Asia, West Africa

Description:

EXCERPT: This annual report marks the conclusion of SANREM's second phase (1998-2004). The year was enthusiastically devoted to synthesizing information and making it available to stakeholders. All projects organized and conducted synthesis conferences, often in different formats depending on the stakeholders that SANREM researchers wanted to reach. SANREM SE Asia launched the first synthesis conference on January 13-14, 2004 ("Land Use Change in Tropical Watersheds", Manila, Philippines). SANREM Andes organized its conference in Cotacachi, Ecuador ("Sustainability of Landscapes and Livelihoods in the Andes," January 15-17). SANREM's West Africa's conference was one month later (February 24-26) and titled "Institutional Innovations and Technological Development for a Decentralized and Sustainable NRM". The DSS project, for its part, organized a workshop in Nairobi, Kenya integrating data, research results and analysis at farm- subnational and national level (May 4, 2004).

TABLE OF CONTENTS:

Introduction
SANREM Andes
SANREM Decision Support System
SANREM Global Impacts and Information Exchange
SANREM Southeast Asia
SANREM West Africa

Publisher: Watkinsville, GA: SANREM CRSP

Creation Date (YYYY): 2004

Types: Text

Text Type (If Applicable): SANREM CRSP Annual Reports

Formats: Acrobat Reader

Language: English

Spatial: Andes; Southeast Asia; West Africa

Temporal (YYYY): From 2003 To 2004

Resource Filename: Filename: webY6AR.pdf

Rights: Copyright 2000 by the SANREM CRSP. All rights reserved.

Theses and Dissertations

Title: Intercropping timber with food crops: A bioeconomic assessment of smallholder management options in the Philippine uplands

Creator: Nissen, T.

Restricted Keywords: Economic Impacts, Environmental Impacts, Integrated Crop Management, Tree Crops

Landscape System: Watershed; Farm/Enterprise Scale

Unrestricted Keywords: intercropping, timber farming, small farmers, species selection, planting density and geometry, branch pruning

Description:

ABSTRACT: As the area under vegetable cultivation on the steep slopes of Mt. Kitanglad in the Philippines increases, so does concern about the future economic and ecological health of the farms and watershed. But vegetable farming, because of its intense management demands and returns to land, also provides farmers with distinct opportunities for moving towards profitable and lower-risk perennial-based systems. Experiments were conducted on farms to evaluate under what conditions timber farming would be attractive to small farmers, and the tradeoffs associated with different management decisions, including intercropping, species selection, planting density and geometry, and branch pruning ... More research is needed to quantify the value of non-merchantable timber products, soil fertility effects of short-rotation timber, and the marginal gains to extended periods of intercropping.

[The description has been shortened in this example; the actual SKB entry contains the full abstract.]

Publisher: Athens, GA: University of Georgia

Bibliographic Citation: Ph.D. diss. Athens, GA: University of Georgia

Creation Date (YYYY): 1998

Types: Text

Text Type (If Applicable): Theses and Dissertations

Formats: Acrobat Reader

URL: <http://www.aae.wisc.edu/sanrem-sea/Publications/Abstracts/IntercropTimberFoodCrops.html>

Language: English

Spatial: Mt. Kitanglad, Philippines

Resource Filename: Filename: Nissen.pdf

Rights: Copyright 2000 by the SANREM CRSP. All rights reserved.

Other Reports

Title: Conservation agriculture: Case studies in Latin America and Africa

Creator: FAO

Restricted Keywords: Soil Conservation, Soil Fertility, Soil Organic Matter, Agricultural Ecosystems, Soil Erosion, Conservation Tillage, Green Manure Crops

Landscape System: Ecosystem

Unrestricted Keywords: no-till, cover cropping

Description:

ABSTRACT: The purpose of this publication is to show how conservation agriculture can increase crop production while reducing erosion and reversing soil fertility decline, improving rural livelihoods and restoring the environment in developing countries. Soil organic matter and biological activity in the rooting zone, stimulated by continual additions of fresh organic material (crop residues and cover crops) are the basis of conservation agriculture, as described in the first chapter.

Publisher: FAO (Food and Agriculture Organization of the United Nations)

Bibliographic Citation: FAO Soils Bulletins 78

Creation Date (YYYY): 2001

Types: Text

Text Type (If Applicable): Other Report

Formats: HTML viewer

Identifier: ISSN: 0253-2050

URL: <http://www.fao.org/docrep/003/y1730e/y1730e00.htm>

Language: English

Spatial: Latin America; the Caribbean; Africa

Rights: Copyright 2001 FAO

Appendix B

SANREM Product Types, Definitions

Article Published in Refereed Publication: articles published in scientific journals and other media that undergo peer review for selection and editing

Books/Book Chapters: formally bound publications with an ISBN number and the distinctly authored sections of such publications; Conference Proceedings are a type of book

Papers/Seminars Presented: a written paper presented at a meeting or containing the material presented in a seminar/workshop

Electronic Presentations: a presentation in electronic format; typically contains text and graphics/images. Example: a PowerPoint presentation that can be saved as either a PowerPoint (.ppt) or Acrobat Reader (.pdf) file

Conference Proceedings Paper: a paper published in the proceedings of a meeting or conference (The entire Conference Proceedings publication is considered a "book")

SANREM CRSP Research Briefs: a resource published by the SANREM CRSP highlighting policy-relevant findings from a refereed research publication(s)

SANREM CRSP Working Papers: papers sponsored by SANREM CRSP that are works in progress

SANREM CRSP Annual Reports: an annual report issued by the SANREM CRSP Management Entity and submitted to USAID documenting progress and results of program activities during the designated year

Reports – Annual: an annual report of an organization documenting activities and results during the designated year.

Abstracts: a summary of a research article or other research-based information source

Theses and Dissertations: manuscripts submitted and accepted in order to receive a master's or doctoral degree

Extension Publications (large): resources published by university or government outreach ("Extension") divisions, typically focusing on public education and on practical application of knowledge, e.g., a publication on how to implement a best management practice (BMP)

Fact Sheets (Small Extension Publications): a brief document (one or two pages) designed to convey critical information about an important or more extensive topic in a brief, easily reproducible, and easy-to-read format (often will include photos, graphics, or tables)

Newsletters: an information resource that is sent out periodically to keep readers up to date on recent events, publications, research, perspectives

Magazine and Newspaper Article: a resource from a periodical publication

Other Reports: all types of reports from scientists, consultants, government organizations, NGOs (e.g., FAO Soil Bulletin)

Posters: posters presented at formal meetings, conferences, symposiums, workshops, or seminars. The "poster" can be a digital image (e.g., pdf file) of the actual printed poster.

Videotapes/DVDs: moving-image resources in any medium including films, videos

World Wide Web Sites and Documents: Web pages or web-based documents

Bibliographic Databases: a database or document that compiles citations on resources in a focused subject area

Dataset: information encoded in a defined structure (e.g., lists, tables, and databases)

Germplasm Releases: an announcement of a new species or genetic variety

Other: any text resources that do not fit into any of the above "type" categories

Appendix C Restricted Keyword List

Climatic Zones

- |----Arid Zones
- |----Cold Zones
- |----Humid Zones
- |----Semiarid Zones
- |----Subhumid Zones
- |----Subtropics
- |----Temperate Zones
- |----Tropical Zones

Community

- |----Community Development
- |----Community Institutions
- |----Culture
- |----Ethnicity/Race
- |----Indigenous Community
- Local Governance
 - | |----Collective Action
 - | |----Community Management
 - | |----Community Participation
 - | |----Community Rights
 - | |----Empowerment
 - | |----Leadership Development
 - | |----Social Movements
- |----Local Knowledge
- |----Quality Of Life
- |----Religion
- |----Sedentarization
- |----Social Capital
- |----Stakeholders

Conflict

- |----Conflict
- |----Conflict Resolution
- |----Crisis Intervention
- |----Security
- Wars
 - |----Civil War
 - |----Inter-state War

Conservation

- |----Afforestation
- |----Biodiversity Conservation
- Biological Assessment
 - | |----Biological Indicators
 - | |----Indicator Species
 - | |----Keystone Species
- |----Conservation
- |----Conservation Planning
- |----Conservation Strategy
- |----Ecological Restoration
- |----Environmental Services

- |----Ex Situ Conservation
- |----Germplasm Conservation
- |----In Situ Conservation
- |----Reforestation
- |----Sustainability
- |----Wetlands Conservation

Disasters

- |----Disaster Assistance
- |----Disaster Preparedness
- |----Disaster Recovery
- |----Drought
- |----Earthquakes
- |----Fire
- |----Floods

Ecological Services

- |----Biodiversity
- |----Carbon Sequestration
- |----Climate Control
- |----Disease Control
- |----Flood Control
- |----Nutrient Recycling
- |----Pest Control
- Pollution Control
 - |----Air Purification
 - |----Water Purification

Economic Development

- |----Common Markets
- Credit
 - | |----Agricultural Credit
 - | |----Short-term Credit
- Economic Analyses
 - | |----Economic Modeling and Analysis
 - | |----Economic Statistics and Indicators
- |----Economic Growth
- |----Economic Policy
- |----Enterprise Development
- Enterprise Types
 - | |----Agribusiness
 - | |----Common Enterprise
 - | |----Household Enterprise
 - | |----Joint Enterprise
 - | |----Natural Resource-based Enterprise
 - | |----Small Holder Enterprise
- |----Food Aid
- |----Globalization
- Livelihoods
 - | |----Commercialization
 - | |----Income Diversification
 - | |----Income Generation

- Marketing and Trade
 - |-----Common Trade Policy
 - |-----Exports
 - |-----Imports
 - |-----International Trade
 - |-----Tariffs
 - |-----Trade Barriers
 - |-----Trade Policy
- Markets
 - |-----Local Markets
 - |-----Market Demand
 - |-----Market Supply
 - |-----Niche Markets
 - |-----World Markets
- Payments for Environmental Services
 - |-----Conservation Easements
 - |-----Conservation Incentives
 - |-----Cost Sharing
- Poverty
- Rural Development
- Sustainable Development
- Transfer Payments
- Vulnerability and Risk

Environmental Degradation

- |-----Deforestation
- |-----Desertification
- |-----Eutrophication
- Habitat Destruction
 - |-----Endangered Species
 - |-----Forest Fragmentation
 - |-----Invasive Species
- Over Grazing
- Salinization
- Soil Erosion
- Waterlogging

Food Security

- |-----Famine
- |-----Food Consumption
- |-----Food Safety
- |-----Food Security
- |-----Food Strategy

Government

- |-----Administration
- |-----Agencies
- |-----Democratization
- |-----Fragile States
- |-----Government
- |-----Government Institutions
- Government Policy
 - |-----Decentralization
 - |-----Economic Policy
 - |-----Local Policy

- Laws and Regulations
 - |-----Agricultural Law
 - |-----Consumer Protection
 - |-----Deregulation and Liberalization
 - |-----Environmental Law
 - |-----Intellectual Property Rights
 - |-----Plant Variety Protection
 - |-----Resource Law
 - |-----Trade Regulations
 - |-----Trusts

Households

- Family
 - |-----Extended
 - |-----Nuclear
 - |-----Polygamous
- Gender
 - |-----Boys
 - |-----Girls
 - |-----Men
 - |-----Women

Human Health and Well-Being

- |-----Aflatoxins
- |-----HIV/AIDS
- |-----Health
- |-----Health Education
- |-----Malnutrition
- |-----Medical Services
- Mortality
 - |-----Child Mortality
 - |-----Infant Mortality
 - |-----Maternal Mortality
 - |-----Morbidity
- |-----Pesticide Poisoning
- |-----Quality of Care

Human Settlements

- |-----Concentrated-Dispersed
- |-----Settlement Displacement
- |-----Settlement Relocation
- |-----Village-Town

Impact

- |-----Economic Impacts
- |-----Environmental Impacts
- |-----Health Impacts
- |-----Social Impacts

Migration

- |-----International Migration
- |-----International Remittances
- |-----Rural-Rural Migration
- |-----Rural-Urban Migration

Natural Resources

- Air
 - |-----Air Pollution
 - |-----Air Quality
- Biodiversity
 - |-----Agrobiodiversity
 - |-----Aquatic Resources
 - |-----Fisheries
 - |-----Forests
 - |-----Germplasm
 - |-----Grasslands
 - |-----Marine Resources
 - |-----Plants
 - |-----Rainforest
 - |-----Savannah
 - |-----Wildlife
- Ecosystem
 - |-----Agricultural Ecosystems
 - |-----Aquatic Ecosystems
 - |-----Desert Ecosystems
 - |-----Forest Ecosystems
 - |-----Riparian Ecosystems
- Non-renewable Resources
 - |-----Mineral Resources
 - |-----Oil
- Renewable Energy
 - |-----Biomass Energy
 - |-----Geothermal Energy
 - |-----Hydropower
 - |-----Solar Energy
 - |-----Tidal Energy
 - |-----Wind Energy
- Soil
 - |-----Salinization
 - |-----Soil Conservation
 - |-----Soil Degradation
 - |-----Soil Fertility
 - |-----Soil Management
 - |-----Soil Organic Matter
 - |-----Soil Quality
 - |-----Waterlogging
- Water
 - |-----Flooding
 - |-----Groundwater
 - |-----Sedimentation
 - |-----Surface Water
 - |-----Water Policy
 - |-----Water Pollution
 - |-----Water Quality
 - |-----Water Use
 - |-----Wetlands

Organizations

- |-----Associations
- |-----Civil Society Organizations (CSOs)
- |-----Community-Based Organizations
- |-----Cooperatives
- Nongovernmental Organizations (NGOs)
 - |-----International NGOs
 - |-----Local NGOs
 - |-----National NGOs
- |-----Universities

Resource Management

- Agriculture
 - |-----Agroforestry
 - |-----Cash Crops
 - |-----Commodity Crops
 - |-----Conservation Tillage
 - |-----Ecoagriculture
 - |-----Integrated Crop Management
 - |-----Irrigation
 - |-----Organic Farming
 - |-----Rainfed Agriculture
 - |-----Row Crops
 - |-----Subsistence Production
 - |-----Sustainable Agriculture
 - |-----Tree Crops
- Aquaculture
 - |-----Freshwater Aquaculture
 - |-----Marine Aquaculture
- Farming Systems
 - |-----Agroforestry
 - |-----Alternative Farming
 - |-----Dryland Farming
 - |-----Intensive Farming
 - |-----Irrigated Farming
 - |-----Low Input Agriculture
 - |-----Organic Production
 - |-----Permaculture
 - |-----Shifting Cultivation
 - |-----Small-Scale Farming
 - |-----Traditional Farming
- Fertilization
 - |-----Carbon Sequestration
 - |-----Green Manure Crops
 - |-----Manure
 - |-----Soil Nutrients
- Forestry
 - |-----Agroforestry
 - |-----Non-Wood Forest Products
 - |-----Sustainable Forestry

- Livestock
 - |-----Cattle
 - |-----Controlled Grazing
 - |-----Forage
 - |-----Goats
 - |-----Grazing
 - |-----Grazing Systems
 - |-----Livestock Carrying Capacity
 - |-----Livestock Fattening
 - |-----Pastoralism
 - |-----Poultry
 - |-----Ranching
 - |-----Rangelands
 - |-----Rotational Grazing
 - |-----Sheep
 - |-----Transhumance
- Natural Resource Management
 - |-----Ecosystem Management
 - |-----Forest Management
 - |-----Land Use Management
 - |-----Livestock Management
 - |-----Nutrient Management
 - |-----Pasture Management
 - |-----Pest Management
 - |-----Range Management
 - |-----Water Management
 - |-----Watershed Management
 - |-----Wildlife Management
- Parks
 - |-----Bioreserves
 - |-----Ecotourism
 - |-----National Parks
 - |-----Park Buffer Zone
 - |-----Park Transition Zone
 - |-----Tourism
 - |-----Wildlife
- Planning
 - |-----Farm Planning
 - |-----Land Use Planning
 - |-----National Planning
 - |-----Program Planning
 - |-----Research Planning
 - |-----Rural Planning
 - |-----Urban Planning

- Resource Management Tools
 - |-----Best Management Practices
 - |-----Biotechnology
 - |-----GAP Analysis
 - |-----GIS
 - |-----Land Use Planning
 - |-----Modeling
 - |-----Remote Sensing
 - |-----Survey Research Methods
 - |-----Zoning

Rural Infrastructure

- |-----Storage Infrastructure
- |-----Transportation Infrastructure

Technology Transfer

- |-----Adoption of Innovations
- |-----Adult Education
- |-----Demonstrations
- |-----Experiential Learning
- |-----Extension Service
- |-----Farmer Field Schools
- |-----Farmer To Farmer
- |-----Field Days
- |-----Institutional Capacity Building
- |-----Participatory Processes
- |-----Social Learning
- |-----Social Marketing
- |-----Training

Tenure Systems

- |-----Animal Tenure
- Common Property Resources
 - |-----Communal Pastures
 - |-----Community Forests
 - |-----Community Gardens
- |-----Land Tenure
- |-----Tenancy
- |-----Tenure System
- Traditional Tenure Systems
 - |-----Tree Tenure
 - |-----Water Rights
 - |-----Water Tenure

Appendix D

Other Resource Types

Collection: an aggregation of items. The term collection means that the resource is described as a group; its parts may be separately described and navigated.

Dataset: information encoded in a defined structure (e.g., lists, tables, databases) intended to be useful for direct machine processing.

Event: a non-persistent, time-based occurrence. Metadata for an event provides descriptive information that is the basis for discovery of the purpose, location, duration, responsible agents, and links to related events and resources. The resource of type event may not be retrievable if the described instantiation has expired or is yet to occur. Examples: exhibition, web-cast, conference, workshop, open-day, performance, battle, trial, wedding, tea party, conflagration.

Image: symbolic visual representation other than text. Examples: images and photographs of physical objects, paintings, prints, drawings, other images and graphics, animations and moving pictures, film, diagrams, maps, musical notation

Interactive Source: a resource that requires interaction from the user to be understood, executed, or experienced. Examples: forms on web pages, applets, multimedia learning objects, chat services, virtual reality.

Moving Image: series of visual representations that, when shown in succession, impart an impression of motion. Examples: animations, movies, television programs, videos, zoetropes, or visual output from a simulation.

Physical Object: inanimate, three-dimensional object or substance. Examples: a computer, the great pyramid, a sculpture. Note that digital representations of, or surrogates for, these things should use Image, Text or one of the other types.

Service: a system that provides one or more functions of value to the end-user. Examples: a photocopying service, a banking service, an authentication service, interlibrary loans, a Z39.50 or Web server.

Software: computer program in source or compiled form that may be available for installation non-transiently on another machine. For software that exists only to create an interactive environment, use interactive instead.

Sound: a resource whose content is primarily intended to be rendered as audio. Examples: a music playback file format, an audio compact disc, recorded speech or sounds.

Still image: static visual representation. Examples: paintings, drawings, graphic designs, plans, maps.