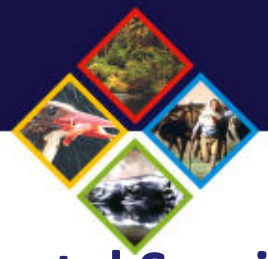
MODULE 3.

Integrating the value of water and wetlands into decision-making



Objectives of Module 3

- To introduce the **Rural Upland Payment for Environmental Service** programme
- To discuss how the **ES approach** can contribute to the wise use of wetlands in Southeast Asia
- To present the **most important policy tools** that can be used to promote a wise use of wetlands
- To discuss **advantages and disadvantages** of each of them
- To give **some examples** to illustrate how the policy tools are used to improve wetland management
- To practice the use of some of these policy tools

Rewarding the Upland Poor for Environmental Services (RUPES)

http://www.dailymotion.com/video/xeazkw_rupes-mud-to-power_shortfilms#.Ue4rSayE7_M

IFAD
INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT

World Agroforestry Centre

LINKING KNOWLEDGE WITH POLICY AND ACTION: THE CASE OF MANUPALI WATERSHED IN SOUTHERN PHILIPPINES

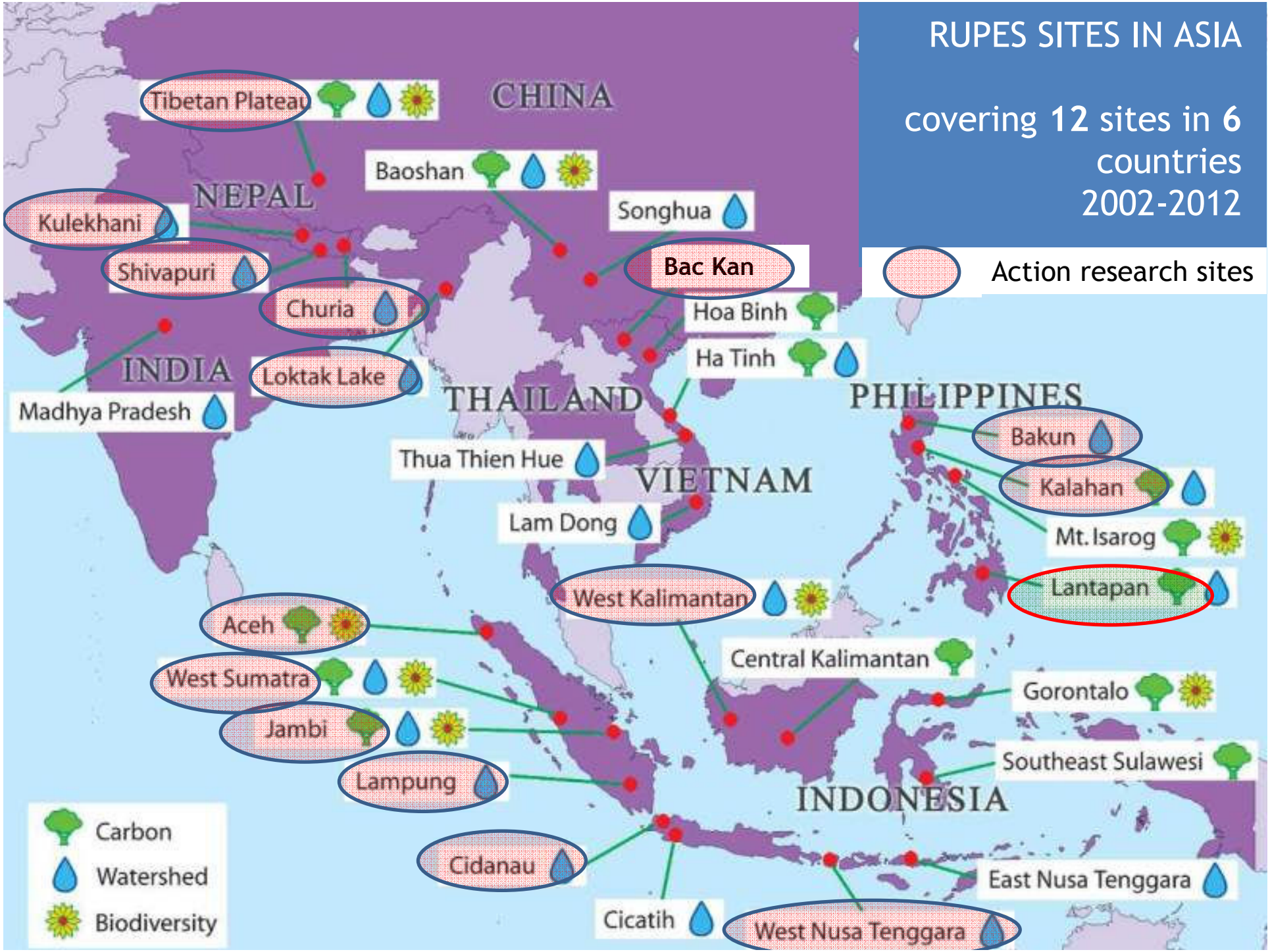
Caroline D. Pinon
Rodel D. Lasco
Leimona Beria
World Agroforesty Centre (ICRAF)

Tanah Lot, Bali, Indonesia
31 August 2013

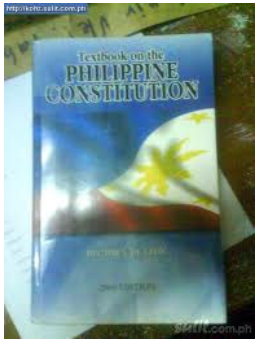
RUPES 2 – Rewards for, Use of and Shared Investment in Pro-poor Environmental Services

Goal: Rewards for provision of environmental services flow to poor people in an Asian context.

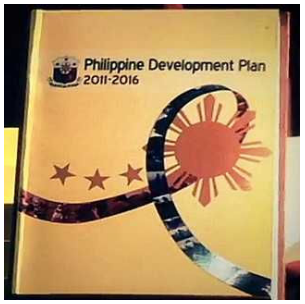
1. **National policy framework:** participation by national policy makers in international fora; and development and improvement of policy frameworks for voluntary, realistic, conditional and pro-poor RES.
2. **International and national buyer and investor engagement:** 'business case' for investment in pro-poor environmental service schemes.
3. **Environmental service intermediaries enabled:** good practices and capacity building for intermediaries
4. **Innovations in effective, efficient and pro-poor RES mechanisms:** rural poor as ES local providers and conditions for success of established and new types of RES mechanisms.
5. **Mainstream RES into IFAD rural development initiatives:** awareness of the potential for RES in rural development.


RUPES SITES IN ASIA
covering 12 sites in 6 countries
2002-2012
Action research sites
CHINA
NEPAL
INDIA
THAILAND
VIETNAM
PHILIPPINES
INDONESIA
Tibetan Plateau
Baoshan
Songhua
Kulekhani
Shivapuri
Churia
Loktak Lake
Madhya Pradesh
Bac Kan
Hoa Binh
Ha Tinh
Thua Thien Hue
Lam Dong
Bakun
Kalahan
Mt. Isarog
Lantapan
West Kalimantan
Central Kalimantan
Gorontalo
Southeast Sulawesi
East Nusa Tenggara
West Nusa Tenggara
Cicatih
Cidanau
Lampung
Jambi
West Sumatra
Aceh
Carbon
Watershed
Biodiversity

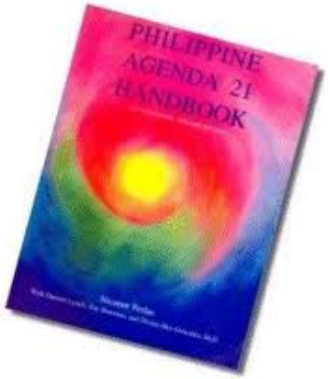
Case study: Rewards for watershed services in Manupali watershed



Art. II, Sec. 16 mandates the need to 'protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature'

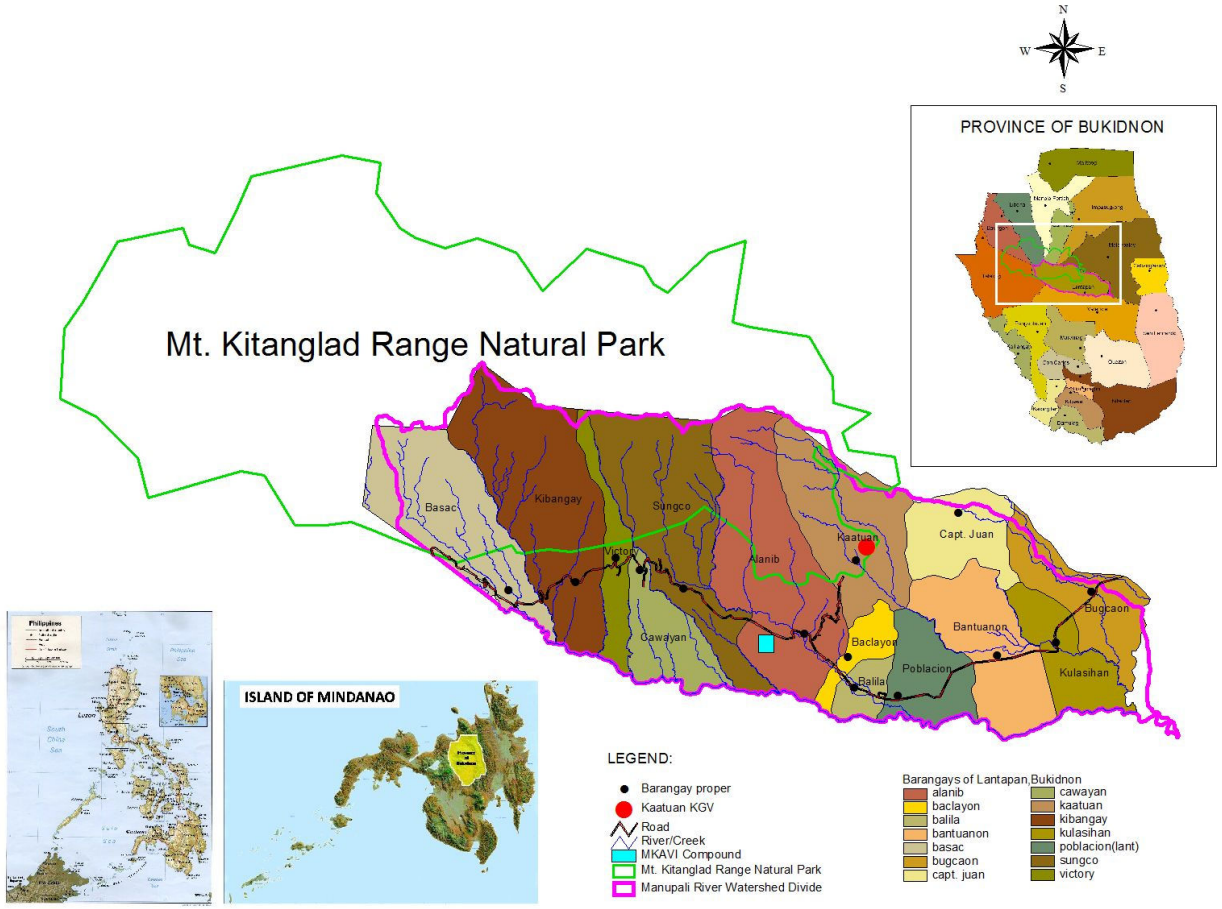


Aims to create a healthy and livable environment where everyone will enjoy the fruits of an ecologically sustainable economic development with institutionalization of PES at the national and local levels as one of the strategies in achieving its goals



Seek to implement national strategies for sustainable development

Manupali watershed in Lantapan, Bukidnon

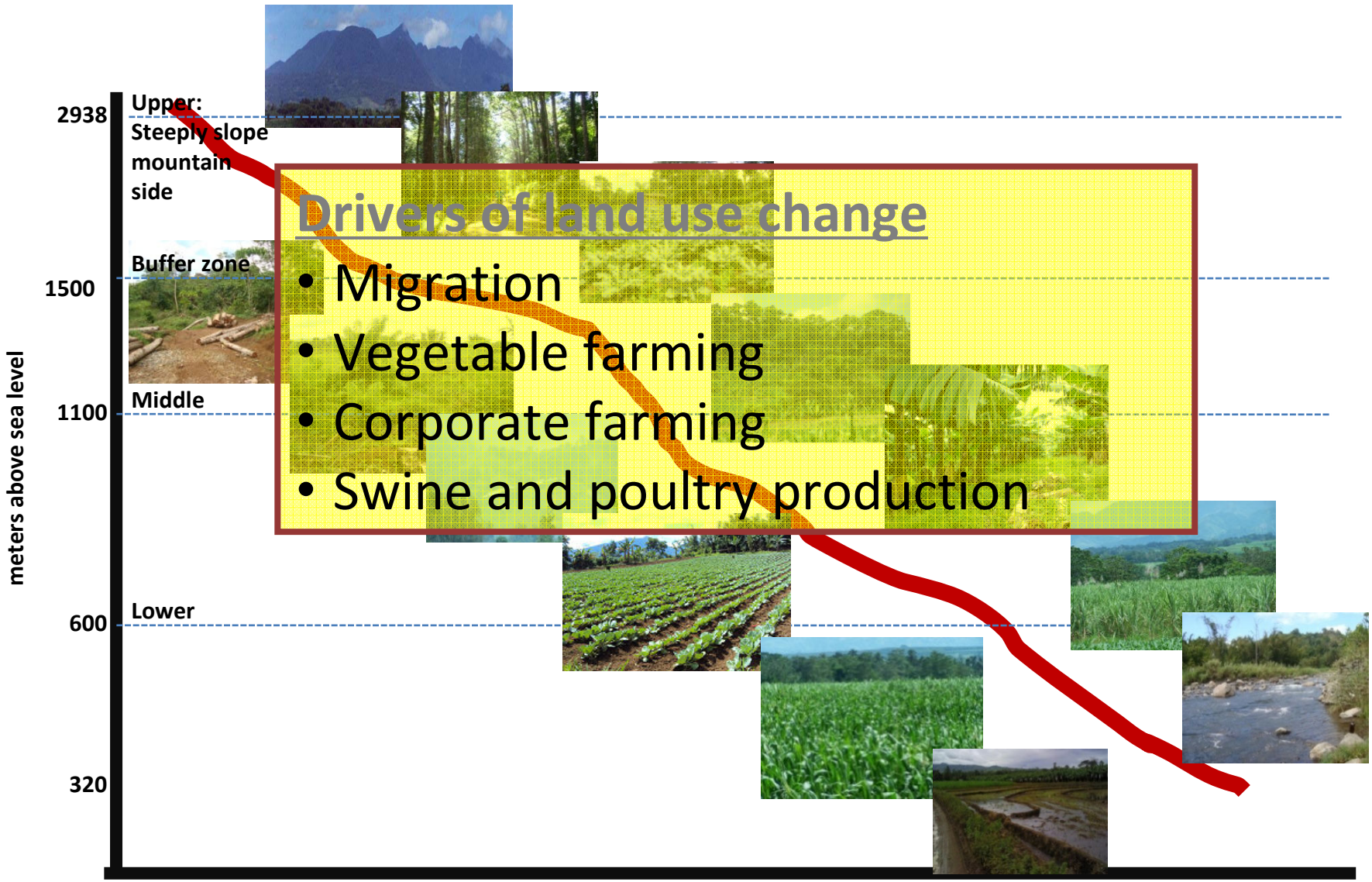


- Land area: 35,465 ha
- 60% agriculture and 40% forest
- Ave annual rainfall 2,522 mm (1987-2005)
- elevation 320 to 2,954 masl
- 70% has slopes greater than 18%
- 51,406 people (2007)

Headwaters of 3 major watershed river systems in Bukidnon

Mt. Dulang-dulang Photo taken by Ben Maputi, Jr. 7/16/11

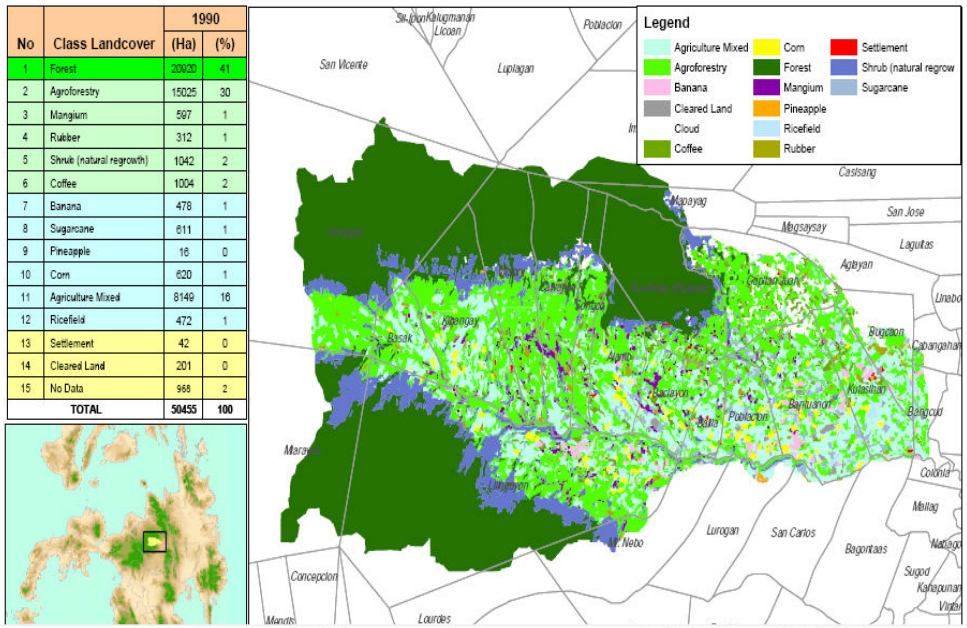
Transect map for land use in Manupali



Adapted from PALA Report, 2010

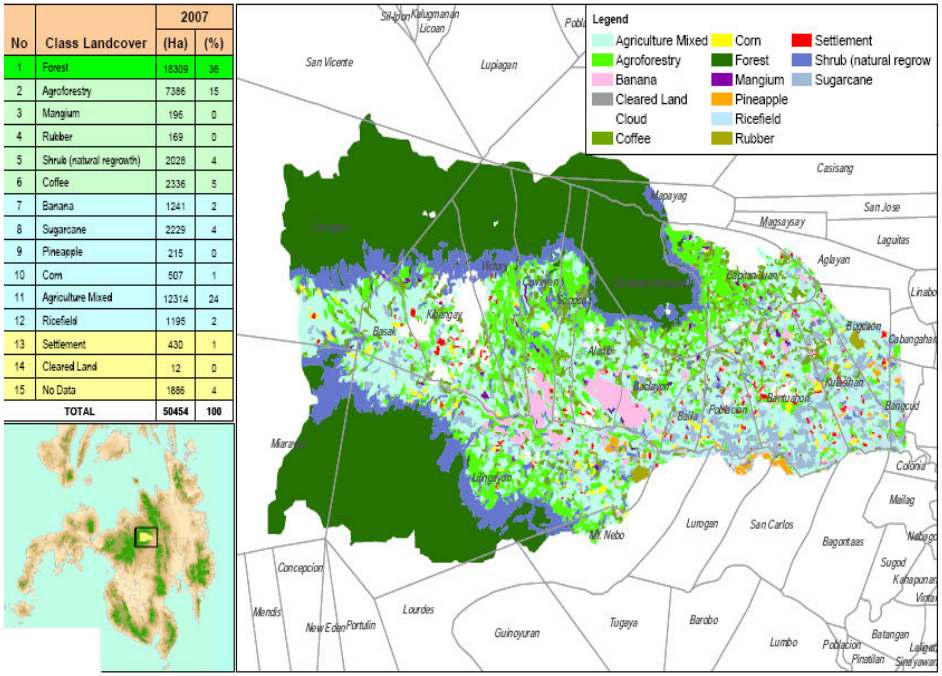
Manupali Watershed Land Cover 1990

No	Class Landcover	1990 (Ha)	1990 (%)
1	Forest	20920	41
2	Agroforestry	15025	30
3	Mangium	597	1
4	Rubber	312	1
5	Shrub (natural regrowth)	1042	2
6	Coffee	1004	2
7	Banana	478	1
8	Sugarcane	611	1
9	Pineapple	16	0
10	Corn	620	1
11	Agriculture Mixed	8149	16
12	Ricefield	472	1
13	Settlement	42	0
14	Cleared Land	201	0
15	No Data	968	2
	TOTAL	50455	100

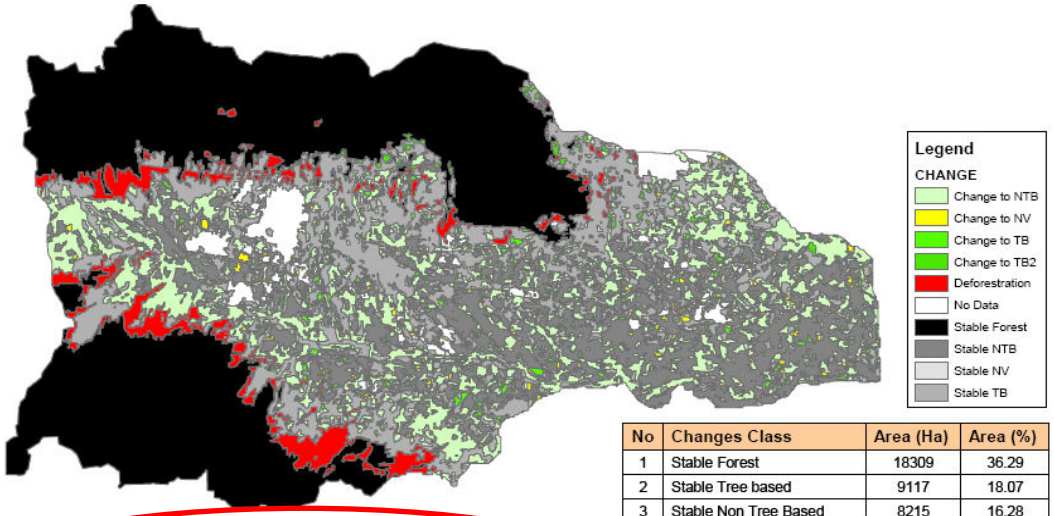


Manupali Watershed Land Cover 2007

No	Class Landcover	2007 (Ha)	2007 (%)
1	Forest	18309	36
2	Agroforestry	7386	15
3	Mangium	196	0
4	Rubber	169	0
5	Shrub (natural regrowth)	2028	4
6	Coffee	2336	5
7	Banana	1241	2
8	Sugarcane	2229	4
9	Pineapple	215	0
10	Corn	507	1
11	Agriculture Mixed	12314	24
12	Ricefield	1195	2
13	Settlement	430	1
14	Cleared Land	12	0
15	No Data	1886	4
	TOTAL	50454	100



Land Cover Changes 1990 - 2007



No	Changes Class	Area (Ha)	Area (%)
1	Stable Forest	18309	36.29
2	Stable Tree based	9117	18.07
3	Stable Non Tree Based	8215	16.28
4	Stable Non Vegetation	10	0.02
5	Deforestation	2611	5.17
6	Change to Tree Based	1017	2.01
7	Change to Non Tree based	8919	17.68
8	Change to Non vegetation	431	0.85
9	No Data	1826	3.62
10	Total	50455	100.00

The deforestation is defined as changes from forest to non-forest
The distinct pattern of change is in the high trend of changes toward non-tree based (16.71%) during the study period

- Overall trend: agricultural land expanded while forest lands decreased

RESULTS

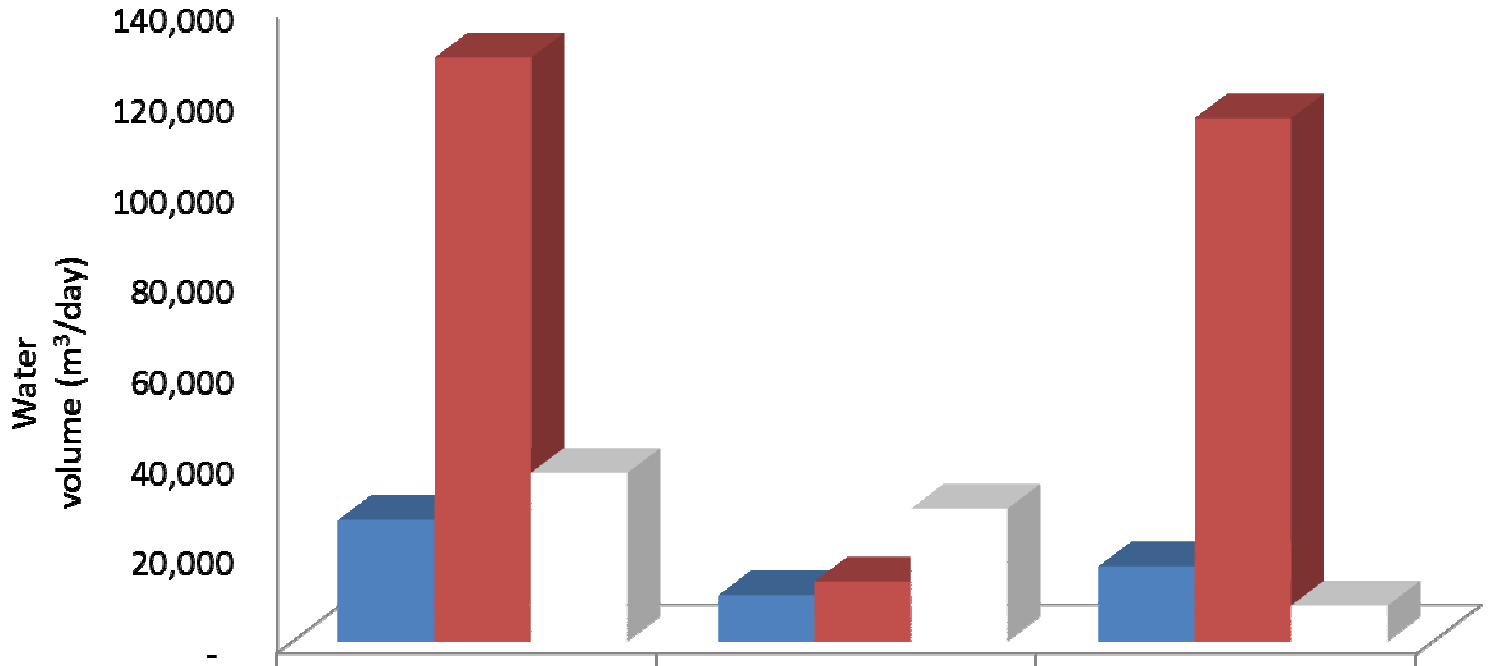
Kulasihan River during dry months

CAUSES

Banana plantation in Alanib village

Water diversion for banana plantations

Fig 3- Simulated net water yield during a 12-year simulation period (1994-2005) versus volume of water rights granted (2007) in three sub-watersheds



	Total water yield	Total water granted to permittees	Net water volume for other users
Alanib River	26,784	10,146	16,525
Maagnao River	128,736	13,153	115,383
Kulasihan River	37,152	29,217	7,848

PRESENT CONDITION OF PULANGI IV HEP RESERVOIR

That is equivalent to 6,826.69 MWH worth of storage volume loss.

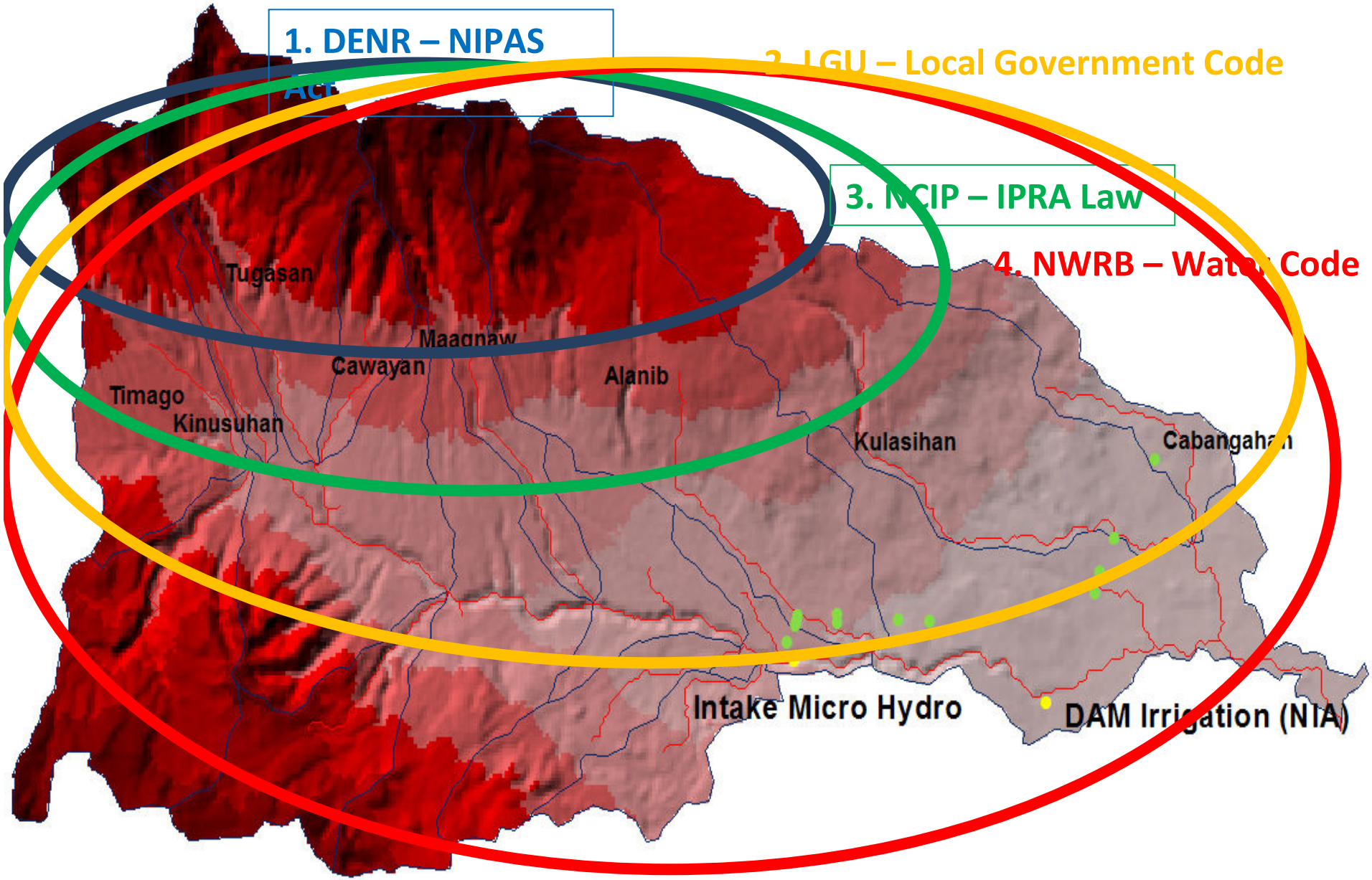
Silt deposition at Waterways is approximately 237,807 cu. meters.

"The amount of silt deposited at the Upper and Lower Pondage Area is estimated to be 26,600,000 cubic meters."

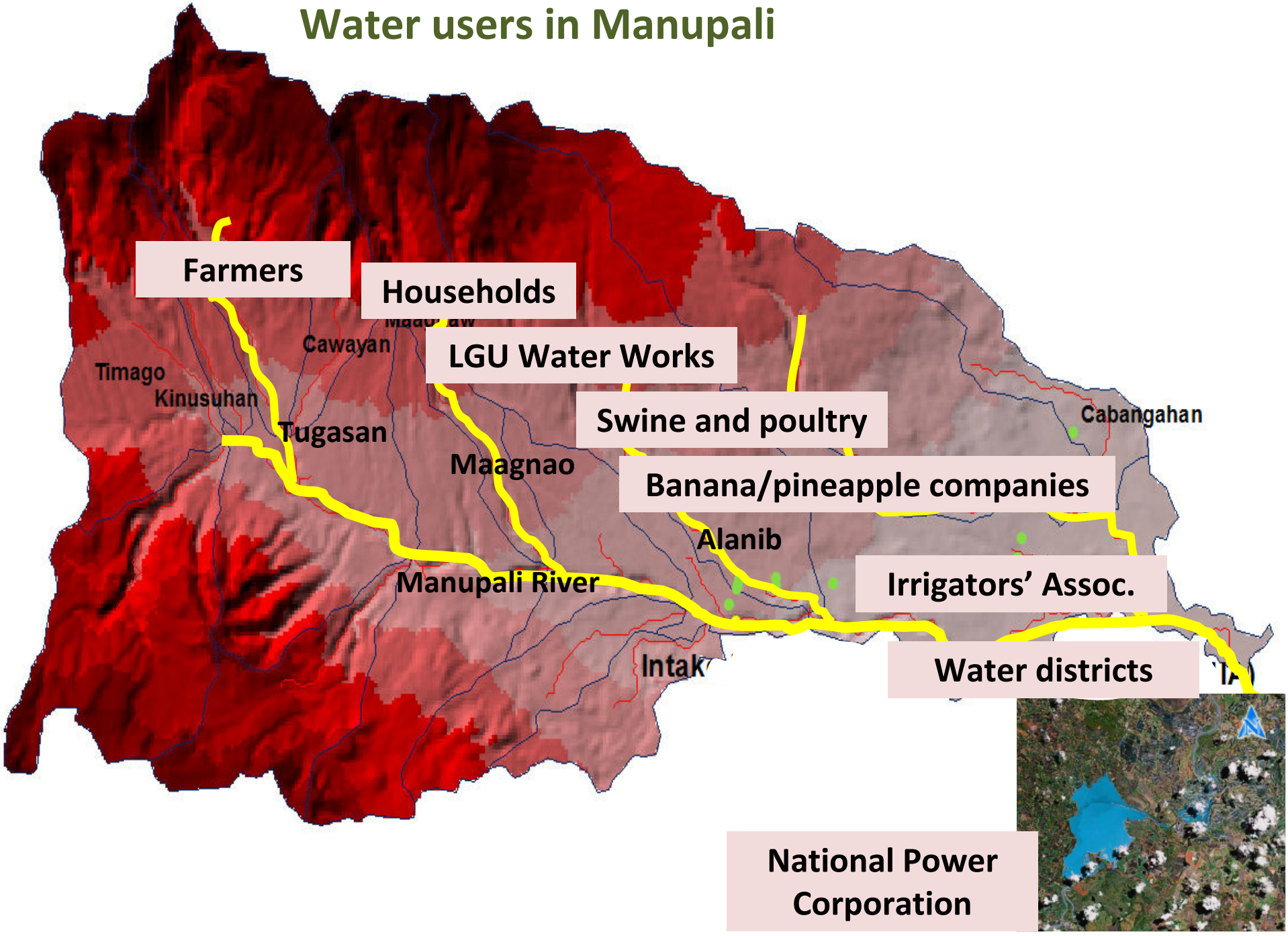
Final Report on the Engineering Preparatory Works for the Dredging/Desilting of Pulangi IV HE Plant Complex. 2002

Siltation rate is estimated to be 1.5MCM/year. It greatly reduced the design live storage capacity by up to 30%. If not acted upon, the reservoir will be dried up in, more or less, 20 years.

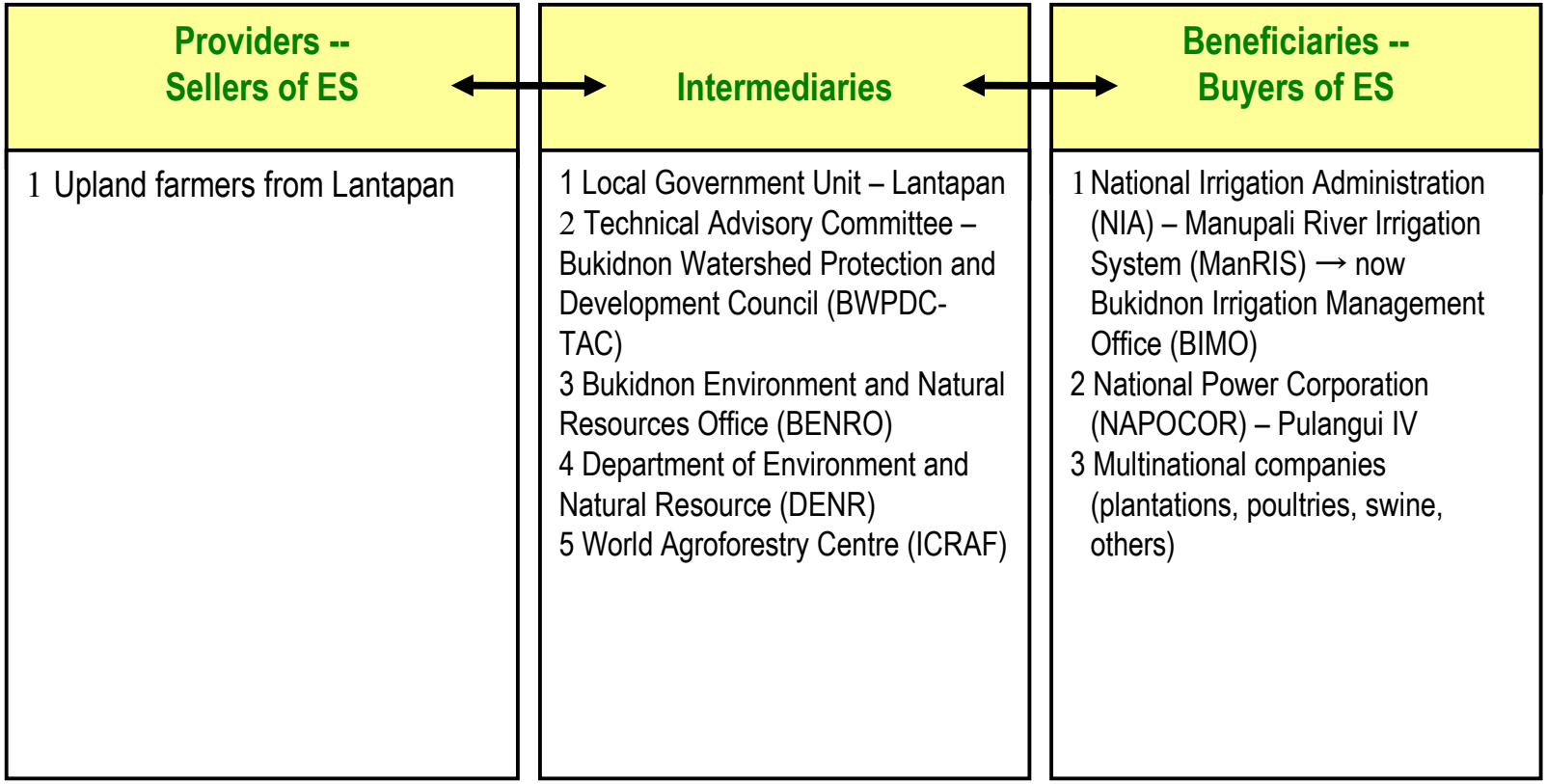
Overlapping of water management regimes and uncoordinated watershed management efforts

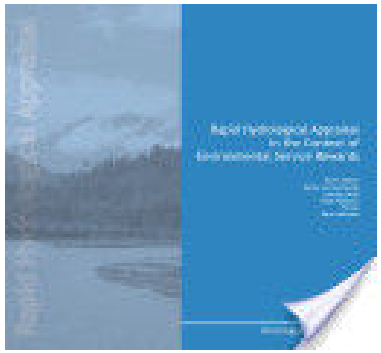


Water users in Manupali



In 2006, collaborated with local partners (RUPES Working Group) in implementing the Rapid Hydrological Appraisal (RHA) to understand the current functioning of Manupali watershed



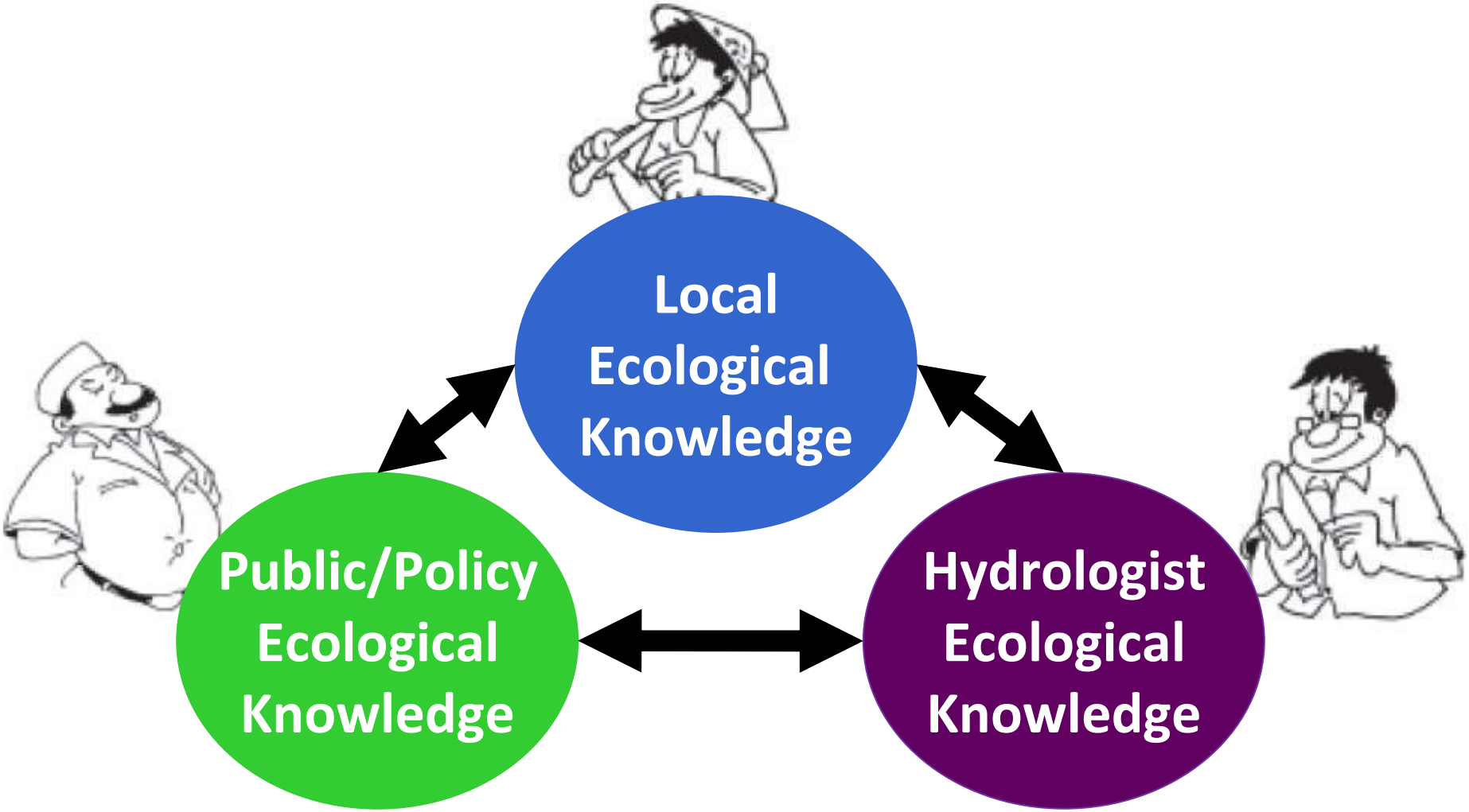


RUPES Framework

7 stages in developing RWS using the Rapid Hydrological Appraisal (RHA) tool

	Stage	Providers, sellers of ES	Intermediaries	Beneficiaries, buyers of ES
I	Scoping		RHA	
II	Awareness		RHA	
III	Identifying partners		RHA	
IV	Negotiations			
V	Action plans		RUPES	
VI	ES Reward support for action			
VII	Monitoring			

Effective and sustainable RWS scheme requires integration of stakeholders' knowledge & perspectives during planning and implementation



MAAGNAW-ALANIB RIVER SUB-WATERSHEDS

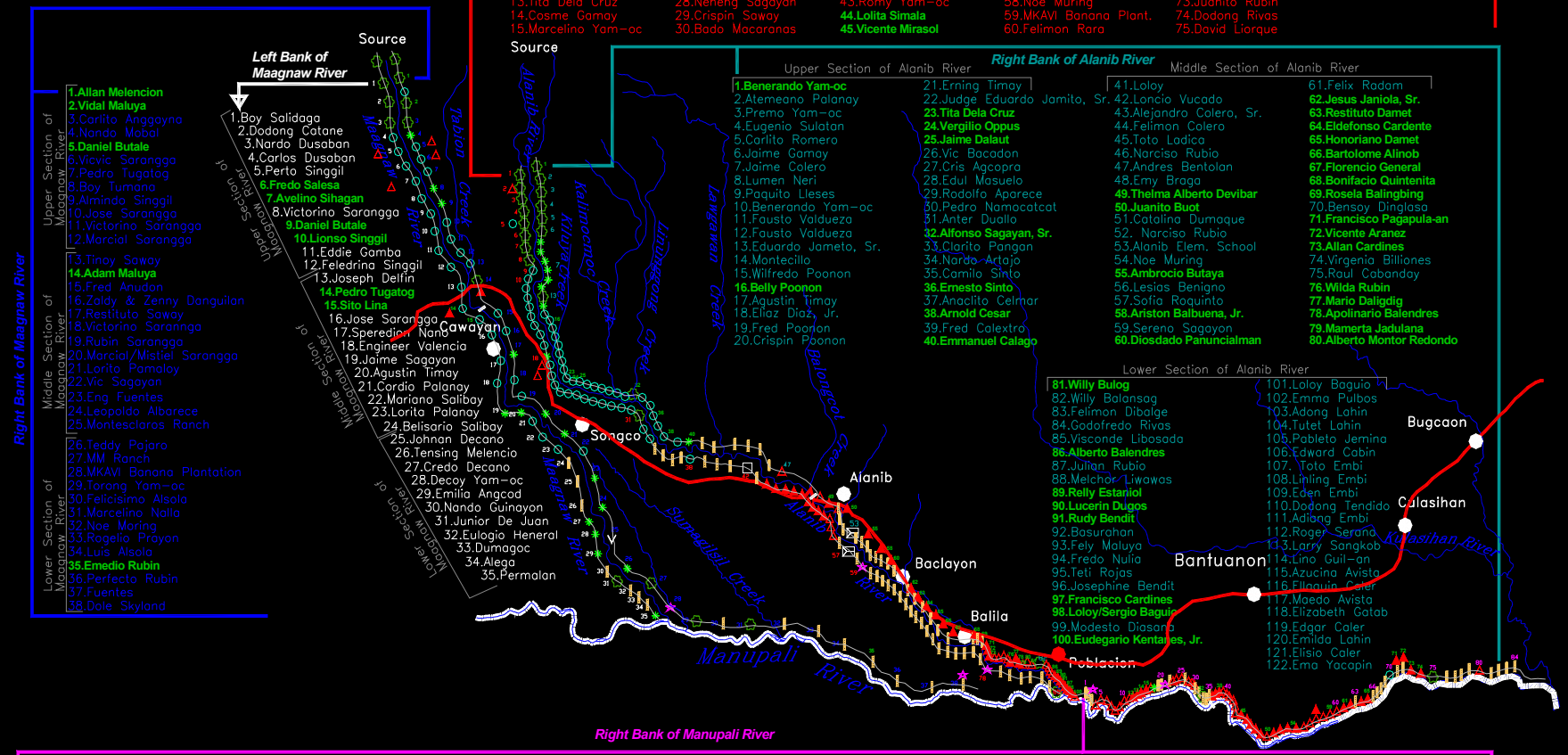
Lantapan, Bukidnon

SCALE: 1:100,000

LEGEND

- BARANGAY
- POBLACION
- RIVER/CREEK
- ROAD
- MUN. BOUNDARY
- RIVER BANK ALLOWANCE
- POULTRY
- SCHOOL
- RESPONDENT
- FORESTAL
- HOUSEHOLD
- VEGETABLE
- GRASSLAND
- SUGARCANE
- RANCH
- BANANA PLANTATION
- BRIDGE

Note: The corresponding number and names in bold green color are respondents



Left Bank of Maagnaw River

Upper Section of Maagnaw River

1. Allan Melencion
2. Vidal Maluya
3. Carlito Anggayno
4. Nando Mobal
5. Daniel Butale
6. Vicvic Sarangga
7. Pedro Tugatog
8. Boy Tumana
9. Almindo Singgil
10. Jose Sarangga
11. Victorino Sarangga
12. Marcial Sarangga

Middle Section of Maagnaw River

13. Tinoy Saway
14. Adam Maluya
15. Fred Anudon
16. Zaldy & Zenny Danguilan
17. Restituto Saway
18. Victorino Saranngga
19. Rubin Sarangga
20. Marcial/Mistiel Sarangga
21. Lorito Pamaloy
22. Vic Sagayan
23. Eng Fuentes
24. Leopoldo Alborece
25. Montesclaros Ranch

Lower Section of Maagnaw River

26. Teddy Pajaro
27. MM Ranch
28. MKAVI Banana Plantation
29. Torong Yam-oc
30. Felicisimo Alsola
31. Marcelino Nalia
32. Noe Moring
33. Rogelio Prayon
34. Luis Alsola
35. Emedio Rubin
36. Perfecto Rubin
37. Fuentes
38. Dole Skyland

Right Bank of Maagnaw River

Upper Section of Maagnaw River

1. Boy Salidaga
2. Dodong Catane
3. Nardo Dusaban
4. Carlos Dusaban
5. Perto Singgil
6. Fredo Salesa
7. Avelino Sihagan
8. Victorino Sarangga
9. Daniel Butale
10. Lionso Singgil
11. Eddie Gamba
12. Feledrina Singgil
13. Joseph Delfin
14. Pedro Tugatog
15. Sito Lina

Middle Section of Maagnaw River

16. Jose Sarangga
17. Speredion Nano
18. Engineer Valencia
19. Jaime Sagayan
20. Agustin Timay
21. Cordio Palanay
22. Mariano Salibay
23. Lorita Palanay
24. Belisario Salibay
25. Johnan Decano
26. Tensing Melencio
27. Credo Decano
28. Decoy Yam-oc
29. Emilia Angcod
30. Nando Guinayon
31. Junior De Juan
32. Eulogio Heneral
33. Dumagoc
34. Alega
35. Permalan

Left Bank of Alanib River

Upper Section of Alanib River

1. Avelino Sarangga
2. Danilo Sarangga
3. Cerelo Sarangga
4. Benerando Yam-oc
5. Danilo Sarangga
6. Romy Sawin-ay
7. Tony Gamboa
8. Benerando Yam-oc
9. Fausto Valdueza
10. Dionesio Centino
11. Mariano Salibay
12. Crispin Sungag
13. Tita Dela Cruz
14. Cosme Gamay
15. Marcelino Yam-oc
16. Rolly Dusaban
17. Vic Bacadon
18. VGL Area
19. Recto Canda
20. Cedenio Luzano
21. Dodo Milana
22. Luisito Sabiniao
23. Apong Abarquez
24. Tommy Abarquez
25. Joy Generalao
26. Mando Yuon
27. Yunie Gunayan
28. Neneng Sagayan
29. Crispin Saway
30. Bado Macaranas

Middle Section of Alanib River

31. Arnelo Salem
32. Felipe Saway
33. Mamerto Saway
34. Fred Calextizo
35. Cayetano Paqueta
36. Junjun Mabao
37. Tiago Dagatan
38. Savellano Benlot
39. Zalde Zarsuelo
40. Emiliano Lleses
41. Eliong Sintaon
42. Gonzalez Poultry
43. Romy Yam-oc
44. Lolita Simala
45. Vicente Mirasol
46. Viceroy Mirasol
47. Simplecio Valcurza
48. Onie Omoncos
49. Warner Daonlay
50. Gunring Egoy
51. Lilibeth Longahit
52. Richard Somania
53. Elaina Sixto
54. Daonlay
55. Ely Yam-oc
56. Nestor Rara
57. Alanib Elem. School
58. Noe Muring
59. MKAVI Banana Plant.
60. Felimon Rara

Lower Section of Alanib River

61. Ferloy Salvana
62. Zosimo Rara
63. Nena Deperino
64. Nestor Rara
65. Boy Janiola
66. Norma Ledres
67. Bonifacio Alsola
68. Rudy Alsola
69. Paulo Macario
70. Marcela Prayon
71. Rogelio Butaya
72. Tata Mandugan
73. Juanito Rubin
74. Dodong Rivas
75. David Liorque
76. Claudio Cardente
77. Felimon Balansag
78. Dole Skyland
79. Carolina Balili
80. Marcelina Guily
81. Willy Velasco
82. Maneling Villamor
83. Loloy Baguio
84. Vergilio Briones
85. Boy Dumanlas

Right Bank of Alanib River

Upper Section of Alanib River

1. Benerando Yam-oc
2. Atemeano Palanay
3. Premo Yam-oc
4. Eugenio Sulatan
5. Carlito Romero
6. Jaime Gamay
7. Jaime Colero
8. Lumen Neri
9. Paquito Lleses
10. Benerando Yam-oc
11. Fausto Valdueza
12. Fausto Valdueza
13. Eduardo Jameto, Sr.
14. Montecillo
15. Wilfredo Poonon
16. Belly Poonon
17. Agustin Timay
18. Eliaz Diaz, Jr.
19. Fred Poorion
20. Crispin Poonon
21. Erning Timay
22. Judge Eduardo Jamito, Sr.
23. Tita Dela Cruz
24. Vergilio Oppus
25. Jaime Dalaut
26. Vic Bacadon
27. Cris Agcopra
28. Edul Masuelo
29. Rodolfo Aparece
30. Pedro Namocatcat
31. Anter Duallo
32. Alfonso Sagayan, Sr.
33. Clarito Pangan
34. Nardo Artajo
35. Camilo Sinto
36. Ernesto Sinto
37. Anaclito Celmar
38. Arnold Cesar
39. Fred Calextro
40. Emmanuel Calago

Middle Section of Alanib River

41. Loloy
42. Loncio Vucado
43. Alejandro Colero, Sr.
44. Felimon Colero
45. Toto Ladica
46. Narciso Rubio
47. Andres Bentolan
48. Emy Braga
49. Thelma Alberto Devibar
50. Juanito Buot
51. Catalino Dumaque
52. Narciso Rubio
53. Alanib Elem. School
54. Noe Muring
55. Ambrocio Butaya
56. Lesias Benigno
57. Sofia Raquinto
58. Ariston Balbuena, Jr.
59. Sereno Sagayon
60. Diosdado Panuncialman
61. Felix Radam
62. Jesus Janiola, Sr.
63. Restituto Damet
64. Eldefonso Cardente
65. Honoriano Damet
66. Bartolome Alinob
67. Florencio General
68. Bonifacio Quintenita
69. Rosela Balingbing
70. Bensoy Dinglasa
71. Francisco Pagapula-an
72. Vicente Aranez
73. Allan Cardines
74. Virgenia Billiones
75. Raul Cabanday
76. Wilda Rubin
77. Mario Daligdig
78. Apolinario Balendres
79. Mamerta Jadulana
80. Alberto Montor Redondo

Lower Section of Alanib River

81. Willy Bulog
82. Willy Balansag
83. Felimon Dibalge
84. Godofredo Rivas
85. Visconde Libosada
86. Alberto Balendres
87. Julian Rubio
88. Melchor Liwawas
89. Relly Estaniol
90. Lucerin Dugos
91. Rudy Bendit
92. Basurahan
93. Fely Maluya
94. Fredo Nulia
95. Teti Rojas
96. Josephine Bendit
97. Francisco Cardines
98. Loloy/Sergio Baguio
99. Modesto Diasana
100. Eudegario Kentanes, Jr.
101. Loloy Baguio
102. Emma Pulbos
103. Adong Lahin
104. Tutet Lahin
105. Pableto Jemina
106. Edward Cabin
107. Toto Embi
108. Linling Embi
109. Eden Embi
110. Dodong Tendido
111. Adiang Embi
112. Roger Serano
113. Larry Sangkob
114. Lino Guil-an
115. Azucina Avista
116. Filaquin Caler
117. Maedo Avista
118. Elizabeth Gatab
119. Edgar Caler
120. Emilda Lahin
121. Elisio Caler
122. Ema Yacopin

Right Bank of Manupali River

Upper Section of Manupali River

1. Alfonso Rivas
2. Honorio Rubio
3. Nemesio Rivas
4. Evelyn Tendido
5. Cristilyn Bacala
6. Recolita Tendido
7. Carlito Singson
8. Gilsosef Tendido
9. Allan Tendido
10. Evangeline Lesionan
11. Boy Sinahon
12. Saling Alsola
13. Dande Pasal
14. Jerry Pasal
15. Edel Pasal
16. Inday Pasal
17. Teru/Loloy Tunas
18. Nemesio Rivas
19. Rameso Ramso
20. Rubin Meletante
21. Dole Skyland
22. Botchoy Rivas
23. Wildy Marcelino
24. Sanny Opog
25. Abraham Marcelino
26. Berot Altumera
27. Rudy Senining
28. Pedoy Senining
29. Ojing Senining
30. Esting Sale/ Willy Masco

Middle Section of Manupali River

31. MM
32. Enting Legada
33. Honorio Rubio
34. Benjamin Bayron
35. MM
36. Rosemarie Pulgo
37. Jerry Campomanes
38. Ely Barleso
39. Rey Iglesia
40. Reynaldo Iglesia
41. Arjano Iglesia
42. Henry Balase
43. Dante Tundag
44. Jerry Flores
45. Erlie Flores
46. Arturo Binggas
47. Roger Binggas
48. Badoy Cagubcub
49. Delfin Cagubcub
50. Artemio Binggas
51. Arjana Resmundo
52. Susan Cardumansia
53. John Gomes
54. Welson Bonggo
55. Charlie Salvan
56. Emilio Baguio
57. Charity Mejares
58. Beverly Sanchez
59. Vilando Olita
60. Jonathan Pitogo

Lower Section of Manupali River

61. Gennieve Dibdib
62. Ponciano Eruelo
63. Gema Iglesia
64. Alex Panganlao
65. Leonie Panganlao
66. Mineheart Cudal
67. Rexfield Cudal
68. Fiscal Recino
69. Esmeraldo Cudal
70. Cesita Quirong
71. Royan Sinto
72. Jonathan Panal
73. Esteban Gabiola
74. Salvador Locsing
75. Elsie Aguilar
76. James
77. Gorio Sarsa
78. Berto Rodrigo
79. Clinton
80. Lita Rampatan
81. Rey Crisanto
82. Tarsio Crisanto
83. Intong
84. Engr. Agripo

Table 1- Perceptions on current hydrological situation in Manupali (LEK and PEK results)

	Causes	Effects	Actions
LEK	-**Decreasing forest cover** -**Expansion of banana and pineapple plantations** -Rivers utilized for local water system	-**Decreasing water supply (e.g. drying up of rivers)** -**Degrading water quality** -Flooding -**Siltation in irrigation canals**	-Protect forest -Plant trees -Efficient use of water
PEK	-Population growth -**Expansion of banana plantations** -**Decreasing forest cover** -**Intensive agricultural production** -Improper waste disposal -Increasing water demand -Unsustainable farming systems	-**Decreasing water supply (e.g. drying up of rivers)** -**Degrading water quality** -**Siltation in irrigation canals** -Sedimentation in reservoir -High treatment costs -Poor rice production	-Massive environmental awareness -Implement environmental policies -Plant trees -Water recycling -**Provide incentives** -**Regulate banana and agricultural expansion**

Modeler's Ecological Knowledge (MEK)

Table 3-Water balance of current, increase agriculture cover scenario (2), and increase shrub lands through fallow scenario (3) in Alanib and Kulasihan sub-watersheds during 12-year simulation (1994-2005). Percentage of precipitation indicated in parentheses.

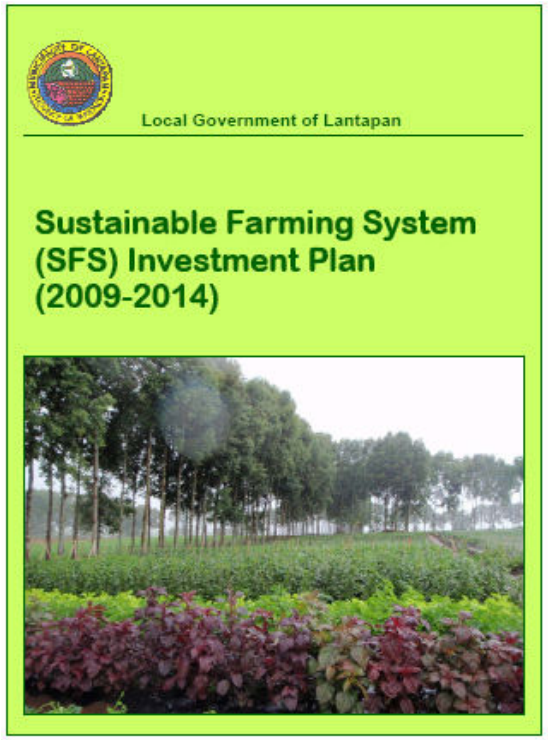
No	Dynamics of water	Alanib sub-watershed				Kulasihan sub-watershed			
		Observed	*Simulated*			*Observed*	*Simulated*		
			Current	Scenario 2	Scenario 3		Current	Scenario 2	Scenario 3
1	Precipitation (mm)	2272.36	2272.36	2272.36	2272.36	2300.67	2300.67	2300.67	2300.67
2	Evapotranspiration (mm)		760.42 (33.54)	1064.58 (46.85)	1703.33 (74.96)		1058.50 (46.01)	438 (19.04)	620.5 (26.97)
3	Other Losses		667.58 (29.37)	382.12 (16.82)	71.9 (3.16)		261.82 (11.38)	599.73 (26.07)	1180.08 (51.29)
4	Riverflow		844.98 (37.18)	825.66 (36.34)	497.13 (21.88)		980.35 (42.62)	1262.94 (54.89)	500.09 (21.73)
	-Runoff (mm)	496.12	516.49 (22.72)	497.17 (21.88)	497.13 (21.88)	535.2	536.90 (23)	546.60 (23.78)	488.44 (21.23)
	-Soil Quick Flow (mm)		≥0.00	0	0		31.00 (1.35)	182.5 (7.93)	8 (0.35)
	-Surface Quick Flow (mm)		-	-	-		412.45 (17.92)	412.45 (17.92)	3.65 (0.16)
	-Baseflow (mm)		328.49 (14.45)	328.49 (14.45)	0		0	121.39 (5.47)	3.65 (0.16)

Source: Tiongco et al. 2010

Potential response options

- **Response Option 1:** Land-use policies and incentives for sustainable land use
- **Response Option 2:** Regulated water rights allocation, effective coordination between water management institutions, and complementary policies
- **Response option 3:** Watershed-level collective action for co-investment, and equitable and fair benefit sharing

Response #1: Implement Lantapan SFS Incentive-Based Policy-Program



- Objective: Give incentives/rewards to deserving farmers and farmer organizations for adopting or having adopted sustainable farming practices, resulting in increased productivity, profitability and sustained environmental services.
- Enacted the Municipal Ordinance No. 114 entitled 'Incentive-support system for farmers adopting or investing in SFS in Lantapan, Bukidnon'
- Developed its 5-year SFS Investment Plan to provide funds for the implementation of the program

<table>
<tr>
<th>Focus of ES</th>
<th>Conditionality applied</th>
<th>Type of scheme and current status</th>
</tr>
<tr>
<td>-Watershed services
-Carbon sequestration
-Biodiversity conservation
-Agri-ecotourism</td>
<td>- Adoption of SFS farming system

Table 1- Sustainable agriculture practices adopted by the Incentive Program
<table><tr><th>Key areas of concern</th><th>Standard practices</th></tr><tr><td>1. Farm productivity</td><td>• Reduce dependence of inorganic fertilizer inputs, pesticides, insecticides and other chemicals
• Employ integrated crop management, including biological control and integrated pest management
• Increase production of, and application of organic fertilizer, such as animal wastes, green and vermi-composts, etc.
• Diversify farm crops with trees and livestock (e.g. application of Vegetable-Agroforesty [VAf] system)
• Plant crops that are resistant to drought or excessive rain
• Develop cropping calendar based on market demand</td></tr><tr><td>2. Soil management</td><td>• Apply crop rotation, green manure, cover cropping, mulching, etc. to build-up soil nutrients
• In sloping farms, reduce soil erosion by applying various soil and water conservation (SWC) techniques, such as contour plowing, hedgerows (e.g. Natural Vegetative Strips [NVS], minimum/zero ridge tillage and other contour barriers)
• No burning of crop residues
• Reduce tillage/cultivation</td></tr><tr><td>3. Water management</td><td>• Apply efficient water management techniques, such as rainwater harvesting during wet season and drip irrigation during dry season
• Small farm reservoir</td></tr><tr><td>4. On-farm biodiversity</td><td>• Provide areas for natural regeneration of native plants/species
• Provide corridors of biodiversity</td></tr><tr><td>5. Capacity-building</td><td>• Farmer undergo training, attend seminars on sustainable farming, and the likes</td></tr></table></td>
<td>• Provision of input subsidies for crop production and NRM-based livelihood projects
• Provision of improved extension services
• Subsidized crop insurance
• Micro-financing support
• Infrastructure support
• Support for marketing
• Awards and recognition</td>
</tr>
</table>

EXAMPLES:

- Annual recognition of Model Farmers in Lantapan
- Provision of livelihood assistance to farmers/farmer organizations from special projects (e.g. World Bank's CFAD-MRDP project and MNCIADP)

Focus of ES	Conditionality applied	Type of scheme and current status
-Watershed services -Carbon sequestration -Biodiversity conservation	Establish tree farms and agroforestry to achieve the LGU's target of planting 55,000 trees for 2011 → Bukidnon/National Greening Program	○ LGU provides the planting materials from the municipal nursery (coffee, timber trees, rubber)
-Biodiversity conservation	Establish 50 agroforestry hectares in Lawgawan bufferzone (2011-2012)	○ USAID-funded projects provides planting materials

Response #3: Establish co-investment with stakeholders to ensure equitable and fair sharing of watershed services

- Developed MOA (Sept 2012) to implement RWS in Manupali with NPC as the buyer, the upland farmers as the providers, and LGU-Lantapan, BENRO, DENR and ICRAF as intermediaries
- Type of RWS: Co-investment and shared responsibility
- Adopted Family Approach to Reforestation and Agroforestry Development (2013-2015) covering 80 ha in Alanib sub-watershed

ES: Water quality and soil erosion control

Obligation of NPC

-Provide TA to the farmer-cooperator
-Allocate funds (3 years)
    -P35,641.96/ha for reforestation
    -P19,001.70/ha for agroforestry (fruit bearing trees)
-NPC shall provide quality tree seedlings
-Provide backyard livelihood projects
-Not exert claim of ownership over the developed agroforestry or tree farm
-But have the authority to monitor the status of the project even after the expiration of the contract
-Conduct pre-and-prior informed consent from the tribal community

Obligation of the farmer cooperator

-Develop area into reforestation farm or agroforestry
-Provide labor, equipment, supplies and materials
-Not plant the seedlings underneath the transmission lines or within 7.5 m and 15 m radius on both sides of 69 kv and 138 kv transmission lines respectively
-Maintain and protect the plantation to achieve 90% tree survival

Challenges

- Gaining the support of different stakeholders with multiple interests and priorities
- Local capacitation to assess ecosystems services and do valuation studies
- Power relations during dialogues and negotiations
- Change of local chief executives/change of companies official
- ‘Conflict of interests’ for some intermediaries
- Issue on community ‘leadership’ – who to deal with?

Lessons learned

- Coordinated participation is important for inclusive co-investment and RWS development with different stakeholders at different scales→ mutual recognition of value and scarcity of water, and existence of social capital and legal basis for RWS
- Respect socio-cultural histories
- Provide time for building trust
- Assessing ecosystem services through direct mentoring and facilitation is effective
- Local champions are important in enabling policies, frameworks and official declarations for RES development

- The government's role in mobilizing and convincing the private sector to include RES schemes in their corporate social responsibilities is crucial
- Land use policies and incentives for sustainable land use are inevitable to maintain and sustain the provision of ES services
- The viability of RWS depends on the policy initiative of government with the support of the stakeholders – It is therefore a political imperative

Thank You

More information about RUPES

RUPES Program

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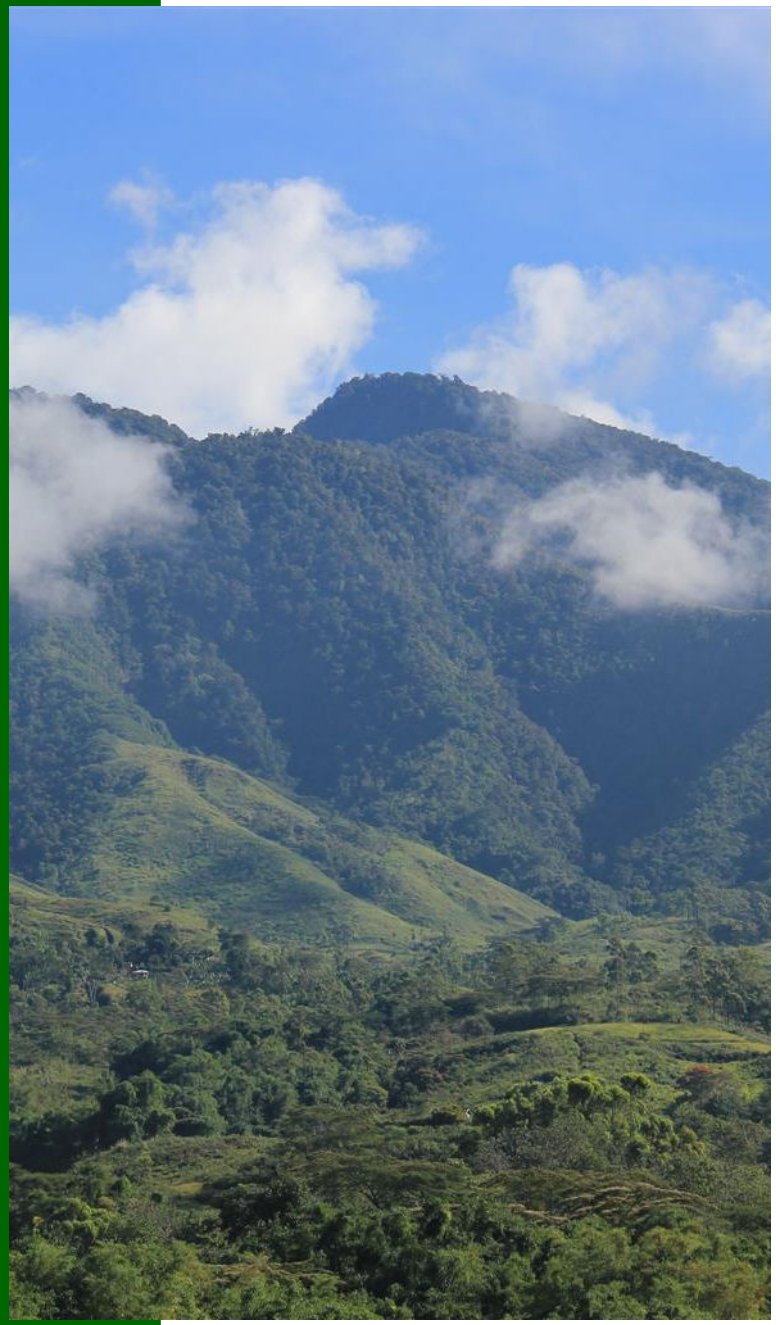
http://www.worldagroforestrycentre.org/sea/Networks/RUPES



Spotlight on Asia: Policy Roundtable

Featuring 4 Ramsar Convention country focal points:

Mr. Danial Lee bin Abdullah	Ministry of Natural Resources and Environment, **MALAYSIA**
Mr. Maheshwar Dhakal	Ministry of Forest and Soil Conservation, **NEPAL**
Ms. Marlynn Mendoza	Department of Environment and Natural Resources, **PHILIPPINES**
Ms. Nirawan Pipitsombat	Ministry of Natural Resources and Environment, **THAILAND**

Policy instruments to wisely manage wetlands

For more information: Chapters 4 and 5 of the TEEB W&W report

By Daniela Russi
Senior Policy Analyst, Institute for European Environmental Policy, IEEP

and Patrick ten Brink
Senior Fellow | Head of Brussels office & Environmental Economics Programme

Policy instruments – Regulations

- **Regulations that reduce pressures** on wetlands (e.g. regulation of water discharges, emissions standards)

- **Regulation of products** – restrictions on product use (e.g. re: endangered species) or on production standards (BATs)

- **Land-use planning**, including the establishment of **Protected Areas** and
  - **Integrated Water Resource Management (IWRM)**
  - **Integrated Coastal Zone Management (ICZM)**
  - **Marine Spatial Planning (MSP)**

slide by Patrick ten Brink and Daniela Russi

IWRM, ICZM, MSP

- focused on landscape scale (e.g. river basin, coastal area, marine region)
- multi disciplinary
- engaging various stakeholders
- they allow policy makers to discuss and formulate multiple objectives, identify synergies among them, discuss trade-offs

slide by Patrick ten Brink and Daniela Russi

The Pangani River Basin IWRM (East Africa)

- The Pangani River Basin provides livelihoods to over three million people, mainly from agriculture and fisheries
- The IUCN Water and Nature Initiative (WANI) carried out a IWRM:
  - participatory governance
  - increased institutional capacity at basin level
  - increased knowledge about water resources
  - empowerment of water users
  - conflict resolution and platforms for stakeholder dialogue
- Water users have been empowered to participate in IWRM and climate change adaptation -> better understanding of the water sector's vulnerability to climate change, pilot actions aimed at adaptation

Source: TEEBcase by Cross and Förster, mainly based on PBWO/IUCN (2009) and Turpie et al. (2005)

Restoration

- **Restoration and rehabilitation of degraded ecosystems** can bring considerable benefits to people, also economic:
  - **Climate change mitigation** and **adaptation**
  - **Flood risk prevention**
  - **Reduction of damage** of storms
  - **Livelihood** for local communities
  - And many more…

- "**Passive restoration**" or **active interventions**

- If thresholds of irreversibility have been passed, the level of biodiversity won't be restored completely, but it is still possible to restore/rehabilitate some ecosystem functions and ES

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An example of good on-site management: the Essex Marshes, UK

- Over 25 years the Essex coast lost approximately 50% of its 30,000 ha of salt marshes, and 1% continues to be lost every year
- In 2002, the Essex Wildlife Trust created a coastal re-alignment project to restore the salt marshes
- Over the next 20 years monetary benefits are expected to be £500,000/ year through savings and income generation
- Additional benefits include: sea wall maintenance, improved water quality, flood defence, and ecotourism opportunities

Source: http://www.natura.org

Policy instruments – Market–Based Instruments

- Taxes, fees, charges, including Environmental Harmful Subsidies (EHS) reform
- Tradable permit schemes, water banks/water funds
- Voluntary schemes, including offsets
- Payment for Ecosystem Services (PES)

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An EHS: low price for irrigation in Italy and Spain

- Irrigation is responsible for a large share of total water consumption (≈ 68% of total water use in Spain and 57% in Italy)
- Low water availability, but low water prices
- Water tariffs are based (with few exceptions) on the irrigated area and not on water use ⇒ farmers are not encouraged to save water
- In Italy, cost recovery rates vary between 20-30% in the south and 50-80% in the north
- Total subsidies to irrigated agriculture in the most important Spanish basins have been calculated at €906 - €1,120 M/yr, including capital and O&M costs

Sources: Arcadis et al. (2012), Berbel et al. (2007), Calatrava and Garrido (2010), OECD (2010), Zoumides and Zachariadis (2009)

slide by Daniela Russi

The salinity credits in Bet Bet, Australia

- Salinization threatens agriculture in the area, damages infrastructure and has a negative impact on the river ecosystems
- It is caused by the reduction in aquifer recharge produced by a reduction in permanent vegetation with deep roots
- The Bet Bet tradable salinity credits auction: farmers could offer their commitment to undertake actions to reduce salinity in exchange for a certain payment
- The farmers who won the auction could fulfil the obligations by reducing salinity in their fields or by buying salinity credits from other farmers who had achieved higher reductions than those established in their contracts

Source: Connor et al. (2008)

slide by Daniela Russi

The MoorFutures programme (restoration+offsetting credits)

- Around 930,000 ha of peatlands have been drained in Germany for agriculture, 300,000 of which in the area of Mecklenburg- Vorpommern. Peatland drainage causes emissions of around 20 million tonnes of CO2-eq. per year
- Between 2000 and 2008, 29,764 ha of peatlands have been restored, by raising the water level in order to prevent further oxidation of the peat
- Also, a system of carbon credits for the voluntary market was established
- The carbon credits were called MoorFutures. They cost 35€ and correspond to 1tCO^2/yr each

- 8,000 MoorFutures sold in M-V so far ⇒ restoration of 55 ha

Source: TEEB case by Förster (2009), mailny based on MLUV - Mecklenburg-Vorpommern (2009), Schäfer (2009)

slide by Daniela Russi

Payment for Ecosystem Services

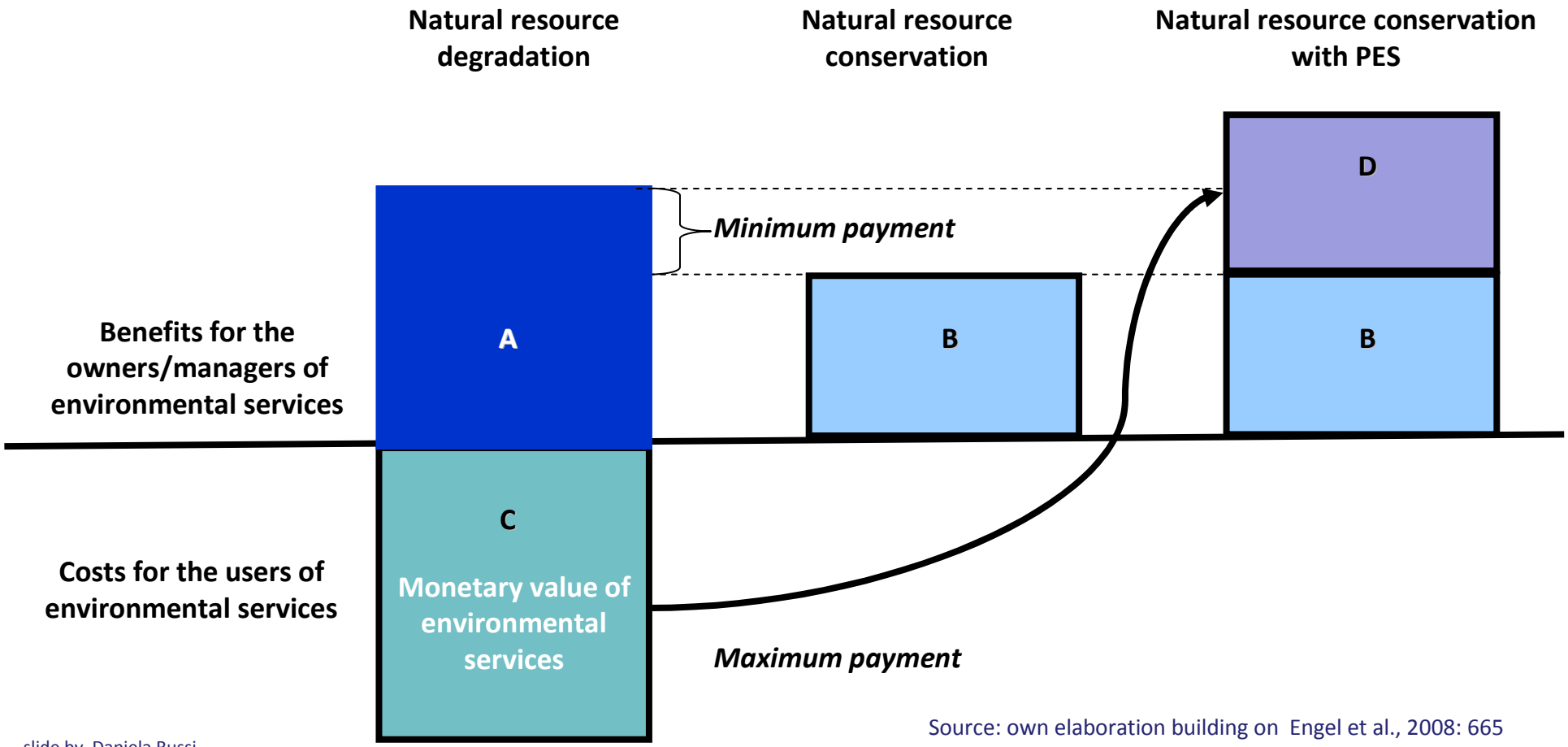
Wunder's definition (Wunder, 2005):

- (a) a voluntary transaction where
- (b) a well-defined ES or a land use likely to secure that service
- (c) is being 'bought' by a (minimum one) service buyer
- (d) from a (minimum one) service provider
- (e) if and only if the service provider secures service provision (conditionality)

slide by Daniela Russi

The Economics of Ecosystems & Biodiversity

PES aim to protect ES by transferring resources from ES beneficiaries to providers, compensating them for the positive externalities they provide to society or to specific social actors, or for their efforts in reducing negative externalities



Source: own elaboration building on Engel et al., 2008: 665

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Payment for Ecosystem Services

- Many PES experiences do not comply with all conditions (i.e. voluntariness, clarity in defining ES, conditionality)
- A broader definition: "*transfer of resources between social actors, which aims to create incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources*" (Muradian et al., 2010)
- Payment usually based on the **opportunity costs** of conservation and not on monetary evaluation ⇒ long process of negotiation

slide by Daniela Russi

It works when:

- The barrier to conservation is mainly **economic** in nature
- A **small fee** may change the individual decisions of the owners or managers of natural resources
- **Property rights** are well defined and the environmental services are definable
- **Buyers** and **suppliers** can be identified, and a transaction between these two categories of actors is possible
- It should not be regarded as a panacea or blueprint for environmental conservation (commodification of nature as a risk for conservation, McCauley, 2006)

slide by Daniela Russi

Vittel, France

- PES programme to preserve the quality of Vittel's bottled water, threatened by the presence of nitrates and pesticides due to the intensification of agricultural and livestock raising practices upstream

- 10 years of negotiations
- Package of incentives available to farmers:
  - 18 and 30 year-contracts to ensure continuity
  - abolition of the debt associated with the purchase of land by farmers
  - an average of €1000/ha to cover the costs related to the transition
  - a lump sum of up to €150,000 per farm to meet the initial costs
  - Technical assistance
- Success: protection of 92% of the water catchment area

slide by Daniela Russi

Institute for European Environmental Policy

Limitations of MBI

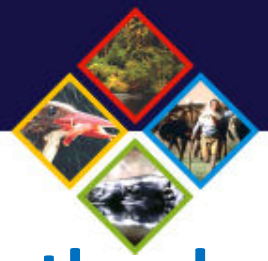
- Are complementary – not substitutes – of environmental regulation
- Not advisable to protect high-value ecosystem or ecosystem services or where failures can lead to severe/irreversible impacts
- Only effective when the cause for environmental degradation is mainly economic (e.g. not useful in case of corruption, or to prevent illegal water abstraction)
- Crowding-out of moral motivations?

slide by Daniela Russi

Scope of MBI – they are useful to

- Internalise part of environmental externalities
- Engage new stakeholders
- Improve funding opportunities
- Allow more flexibility to private actors
- Act as an educational tool

slide by Daniela Russi

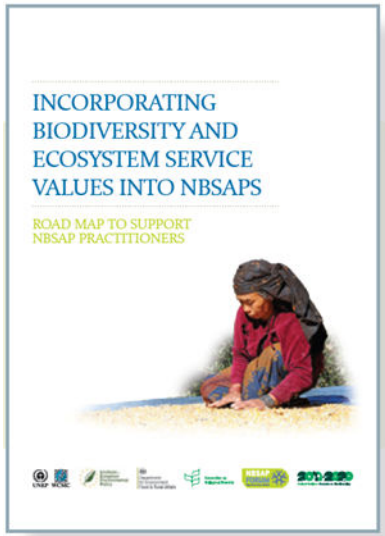


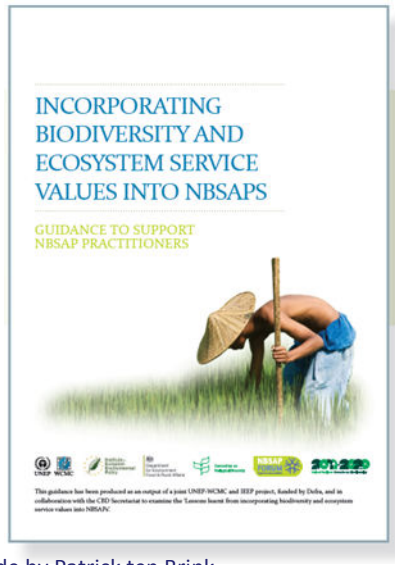
Transforming our approach to water and wetlands

- Wetlands protection/improvement should be integrated in water management at all levels in order to progress towards their wise use
- In order to do that, the ES provided by wetlands need to be assessed – using qualitative, quantitative and monetary methodologies, depending on the objectives, the available information, time and resources
- A variety of policy tools can contribute to wise use, including regulation, establishment of PAs, integrated management and MBIs

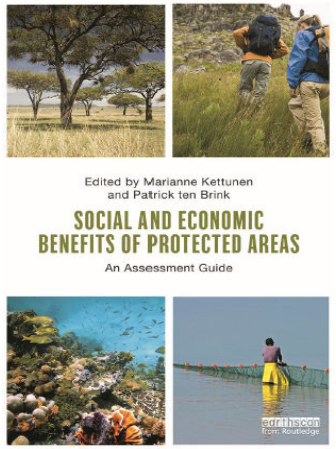
slide by Patrick ten Brink and Daniela Russi

Further readings





- The **TEEB initiative's website**, which includes the main TEEB reports, published since 2010: www.teebweb.org
- The **CBD Technical Series no. 28** focuses on economic valuation's methodologies
- **Social and Economic Benefits of Protected Areas: an Assessment Guide,** The report synthesises wide-ranging global evidence on benefits provided by PAs and provides guidance on how to identify, asses and communicate the various benefits



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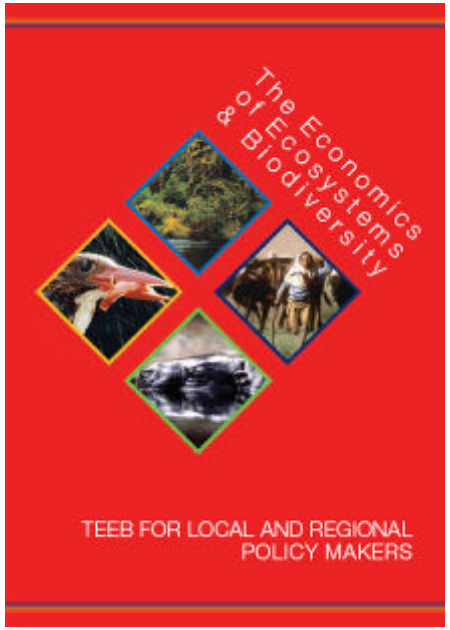
Case Study Practical Exercise: TEEB Reef

Recall the six steps for effectively appraising ecosystem services

- Not a fixed recipe but guidance for policy makers in designing their own processes:



1. Specify and agree on the policy issue with stakeholders.
2. Identify the most relevant ecosystem services.
3. Define the information needs and select appropriate methods.
4. Assess ecosystem services.
5. Identify and appraise policy options.
6. Assess distributional impacts of policy options.

Source: TEEB 2010 – Quick Guide to TEEB for Local and Regional Policy Makers

Establishment of a MPA: Tubbataha Reefs, Philippines

Increasing awareness that ecosystem services are at risk (step2)

- Habitat for a multitude of species
- Provides Sulu Sea with fish larvae
- Appealing destination for divers

Protection enacted at national level (step 5)

- Declaration of MPA 1988 via presidential proclamation imposed no-take policy
- typical conservation-development divide – implementation and enforcement difficult

Source: Tongson E. (WWF 2007)

Commitment of stakeholders to no-take policy (Workshop 1999) (step 1)

- Fishers not convinced that no-take policy increases catch

Sources: Tongson 2007, Samonte-Tan et al. 2008, Dygico 2006

Establishment of a MPA: Tubbataha Reefs, Philippines

Define information needs (step 3)

- Empirical evidence on the benefits of the MPA
- Value of MPA (Willingness-to-pay survey among divers)

Improvement of management (steps 5,6)

- User fee system based on WTP survey
- Involve locals in management
- Sharing scheme regulating distribution of fees

Assess changes in availability and distribution of ecosystem services (step 4)

- Higher fish biomass compared to other offshore reefs
- Fish biomass in nearby reefs doubled since 2000 and perceived fish catches increased between 1999 – 2004 from 10 to 15-20 kg/day
- Survey finds a significant increase in living standard from 2000 to 2004
- Coral cover stabilized at 40% from 1999-2003 before reaching 50% in 2004

Sources: Tongson 2007, Samonte-Tan et al. 2008, Dygico 2006

Practical Exercise Questions – Module 3

- What category of stakeholder can promote which policy tool to address the threats you have identified before?

Stakeholders	Policy tool

- What results could be achieved using the policy tools that you have identified? What are the challenges?

Policy tool	Results	Challenges

Thank you!

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