ESSVA and Survey Questionnaire

What is ESSVA?

ESSVA = Ecosystem-Service Shared Value Assessment

ESSVA is an acronym of

“Ecosystem-Service Shared Value Assessment”

(By the way, ESSRA is an acronym of
“Ecosystem Service Shared Risk Assessment”)

ESSVA (and ESSRA) are Important Concepts for the Management of Lentic-Lotic Basins

For ESSVA, we need to obtain;

1. **Ecosystem Service Factual Profile (ESFP)**
2. **Ecosystem Service Perceptional Profile (ESPP)**

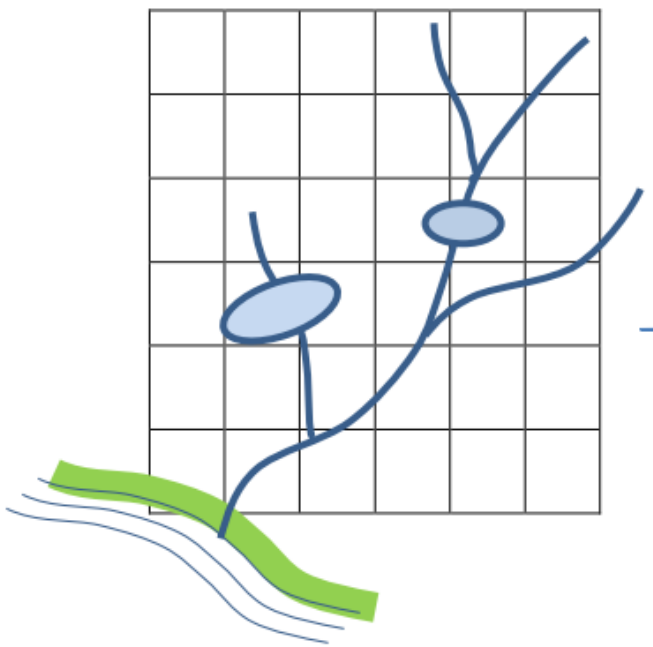
Ecosystem Service Profiles: Factual vs. Perceptional

a. **Ecosystem Service Fact Profiles (ESFPs)**
   - The typical ESFPs include the governmental data on land use, water use, population dynamics (census data), legal and regulatory aspects such as water quality and quantity data.
   - They may also include the information and data developed and compiled in the form of research database, e.g., the GIS and remote sensing analysis results and their application to modeling of various kinds.

b. **Ecosystem Service Perceptional Profiles (ESPPs)**
   - They need to be assessed using a survey form.
   - The form needs to be developed based on the Ecosystem Service framework.

2.2 Mapping of Ecosystem Service Fact Profile (ESPF) >

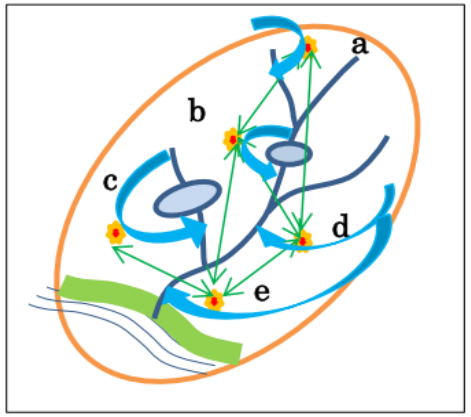
- Some examples of ESPF include:
  - Natural science statistical profiles (government)
  - Socio-economic statistical profiles (government)
  - Environmental profiles (government/research)
  - Ethnic profile (government)
  - Linguistic profiles (government)
  - ...



- Natural science statistics
  - hydrology, geology, chemistry, biology, etc.
- Socio-economic statistics
  - population number and density, economic inputs and outputs, land-use classification, etc.
- Environmental statistics
- Other societal statistics
  - Ethnic and linguistic
- ...

2.3 Mapping of Ecosystem Service Perceptional Profile (ESPP) >

Geographical Representations for Ecosystem Service Profiling

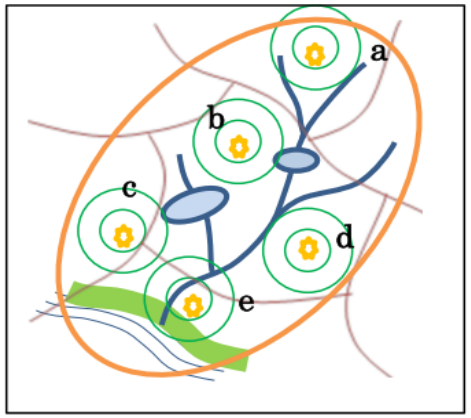


ESPP depicted for the upstream–downstream interactions within a basin

a – e communities

↔ upstream–downstream

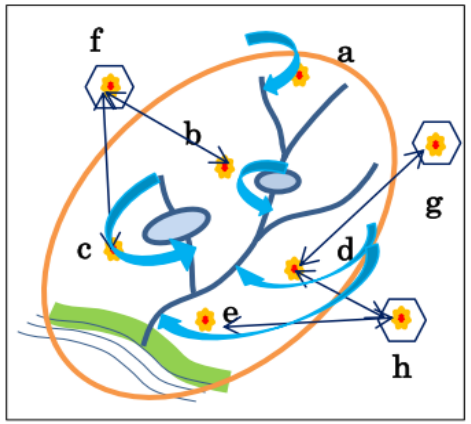
water intake and discharge



ESPP depicted for individual communities within a basin

a – e communities

ESPP sphere of influence at the individual community level



ESPP of inside-the-basin and outside-the-basin communities interacting with each other

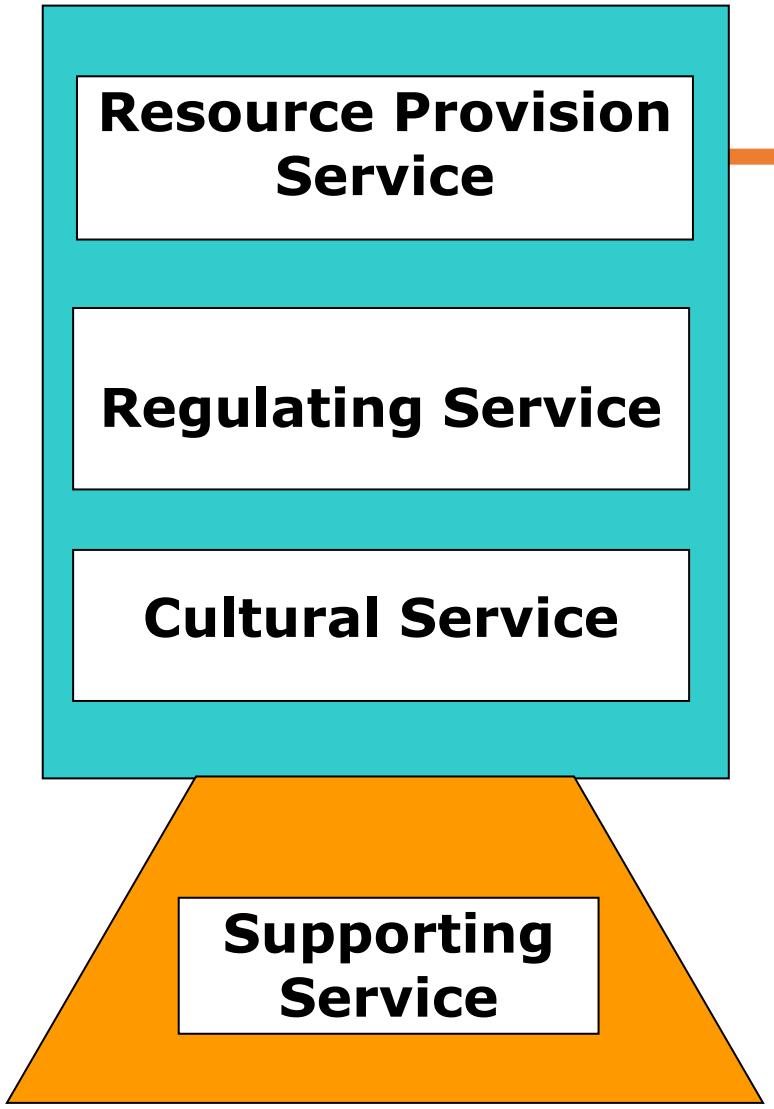
a – h communities

communities outside of the basin

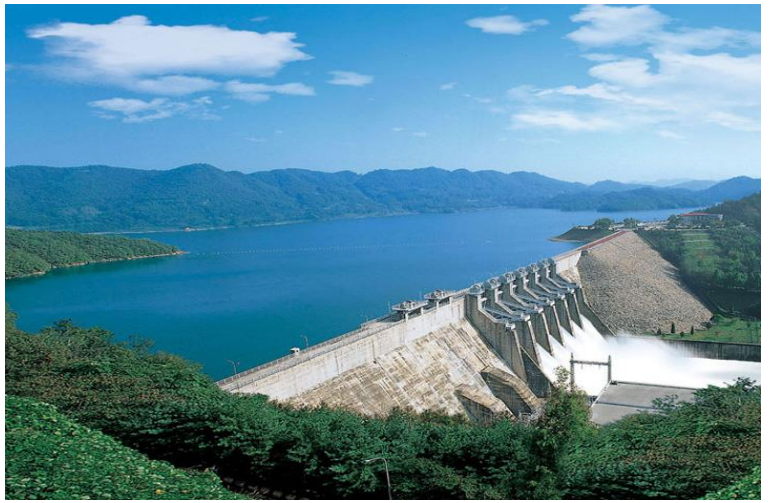
↔ interaction between the communities within and outside the basin

water intake and discharge

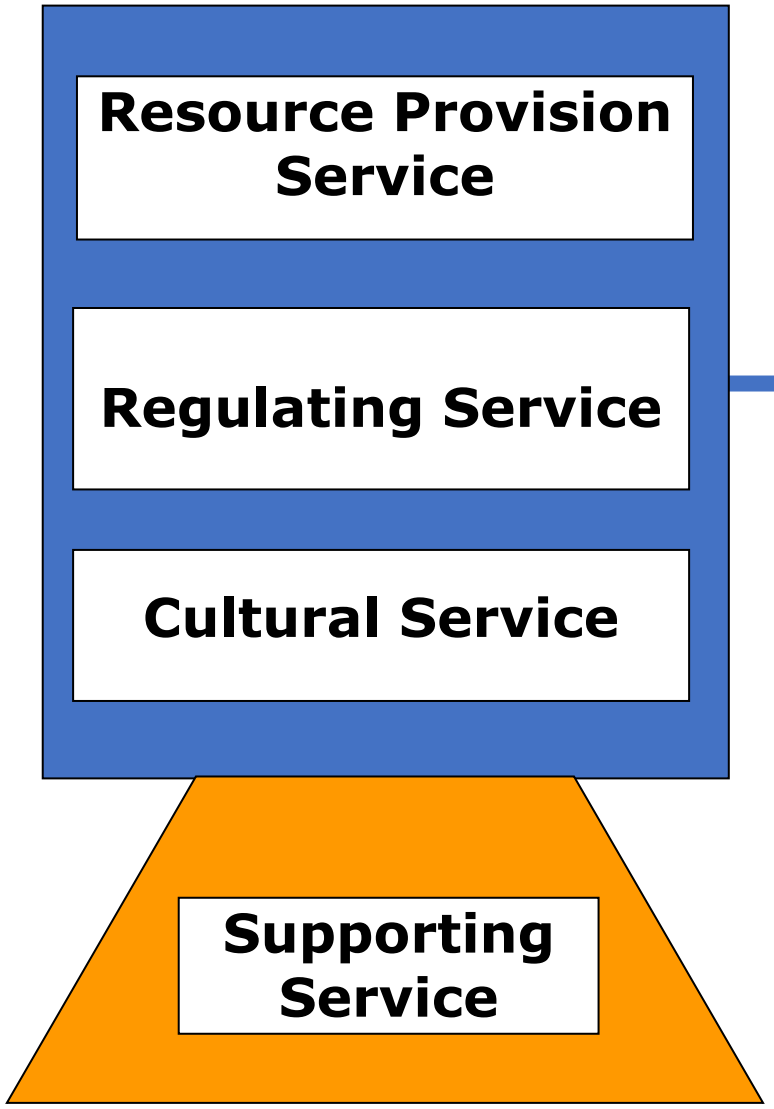
Ecosystem Services



- Water Supplies
- Fish
- Irrigation Crops
- Wood and Fiber
- Fuel
- Hydropower Potential, etc.



Ecosystem Services

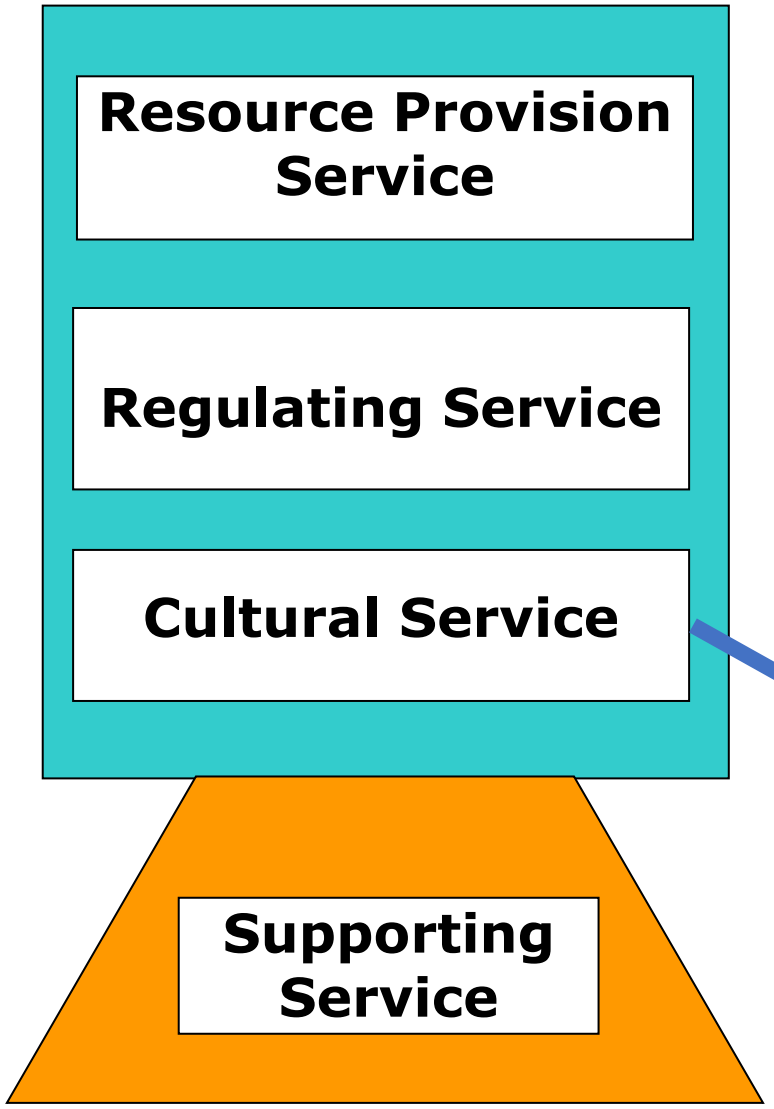


- Flood and Drought Mitigation Capacity
- Self-purification Capacity
- Health Provisions
- Navigation Routes
- Climate Mediation
- Aquatic Habitats
- Diverse Food-chains
- Coastal Ecotone Buffer Capacity
- Fertile Lands

Indigenous Species

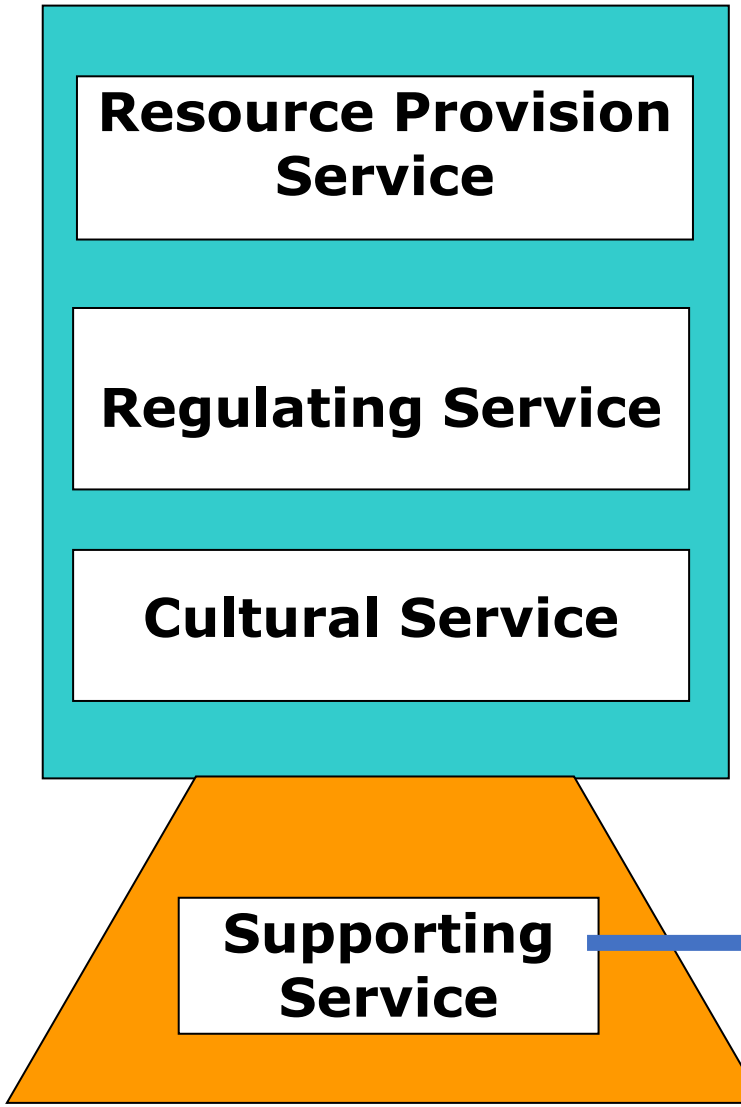
Productive Riparian Ecosystem

Ecosystem Services



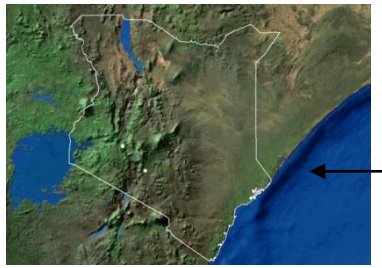
- **Aesthetic and Scenic Values**
- **Religious Sites and Spiritual Values**
- **Historic Sites**
- **Educational Resources**

Ecosystem Services



- **Soil Properties**
- **Habitat formation**
- **Primary production**
- **Nutrient cycling**

Ecosystem Services



Resource Provision Service

Regulating Service

Cultural Service

Supporting Service

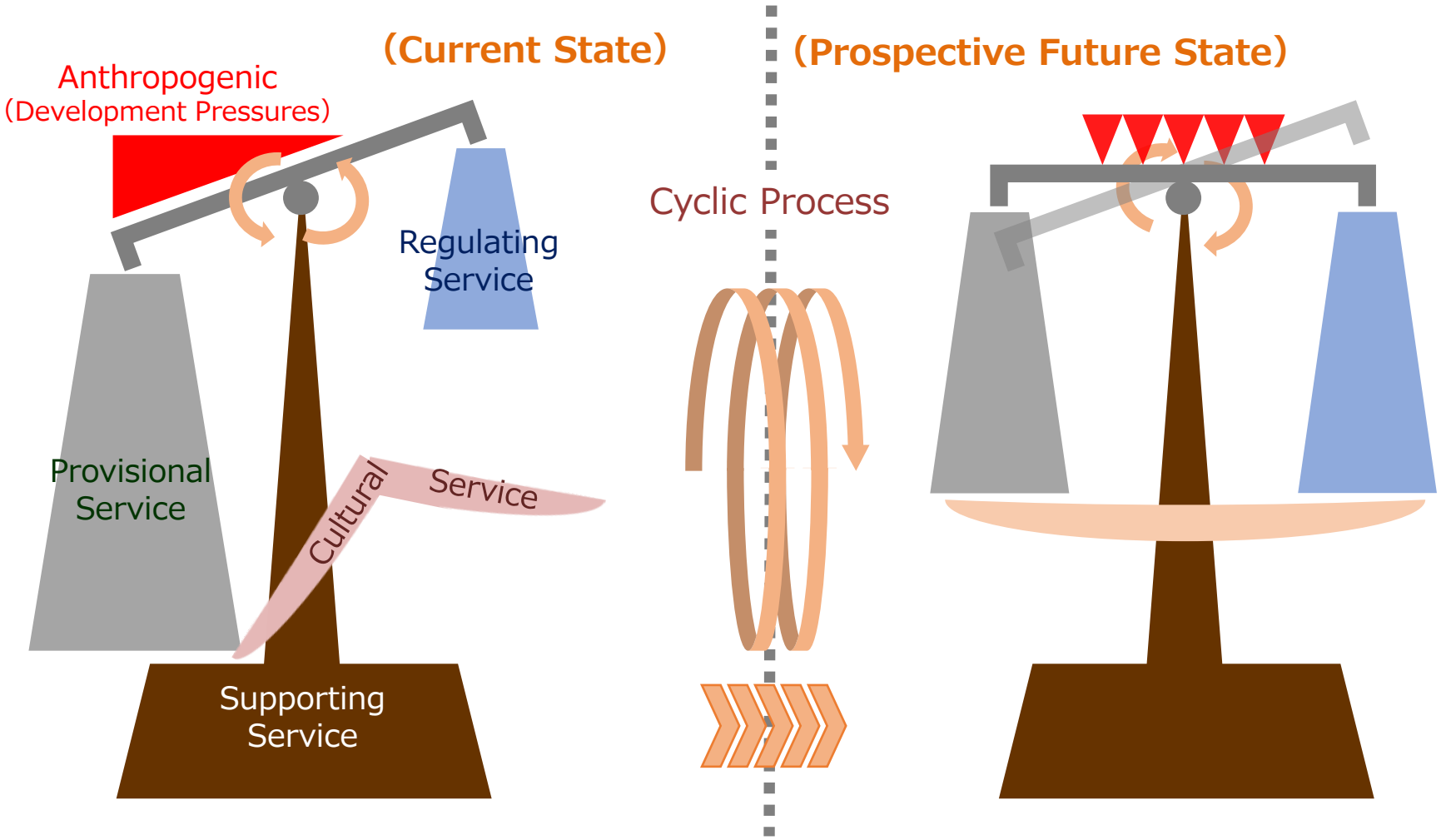
We all **want** **this value**

We tend to **forget** **these values**

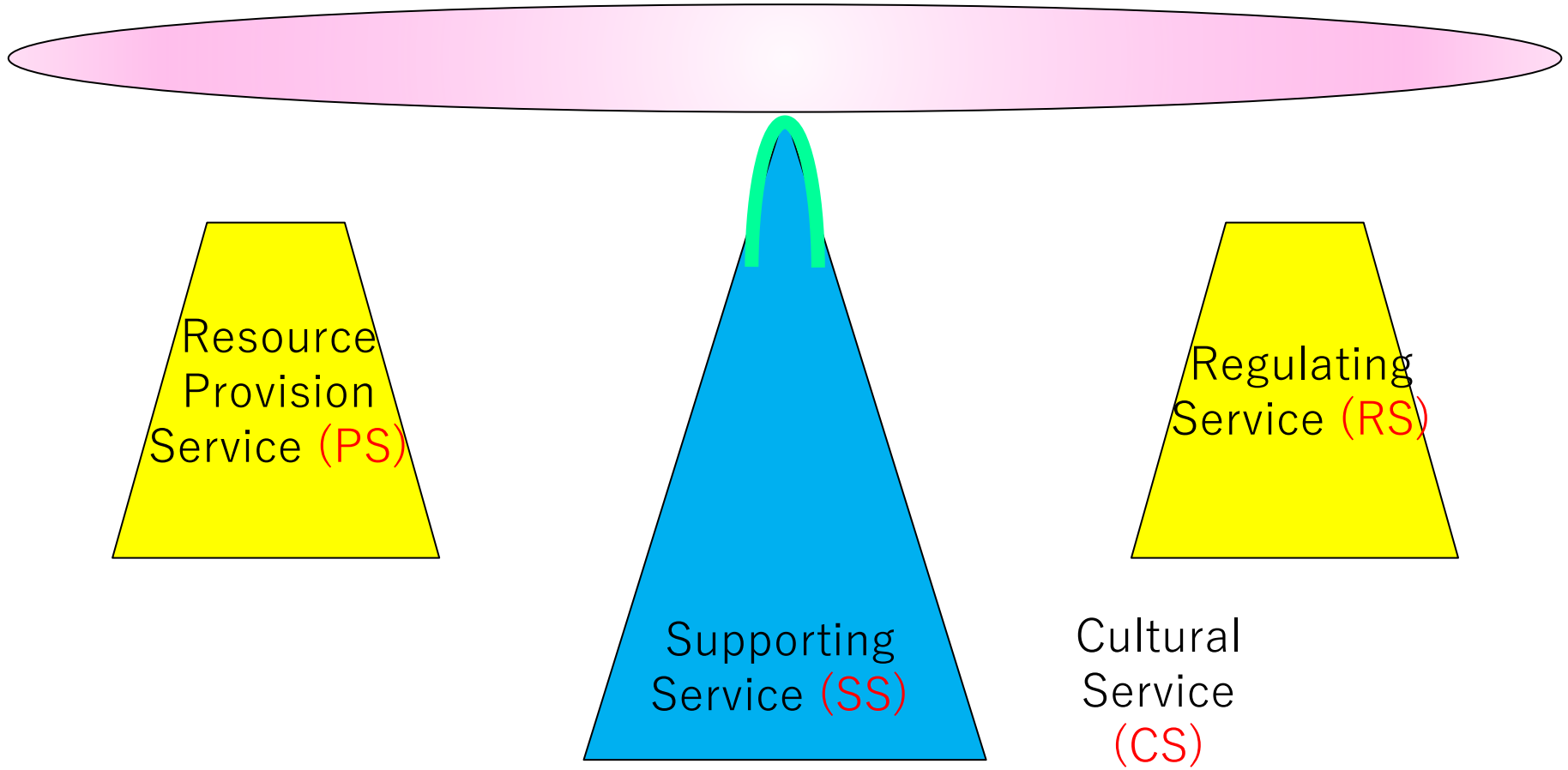
Without Timely Conservation, all Ecosystem Services may Disappear.

River-Lake Basin Ecosystem Service Relationship among 4 Component Services

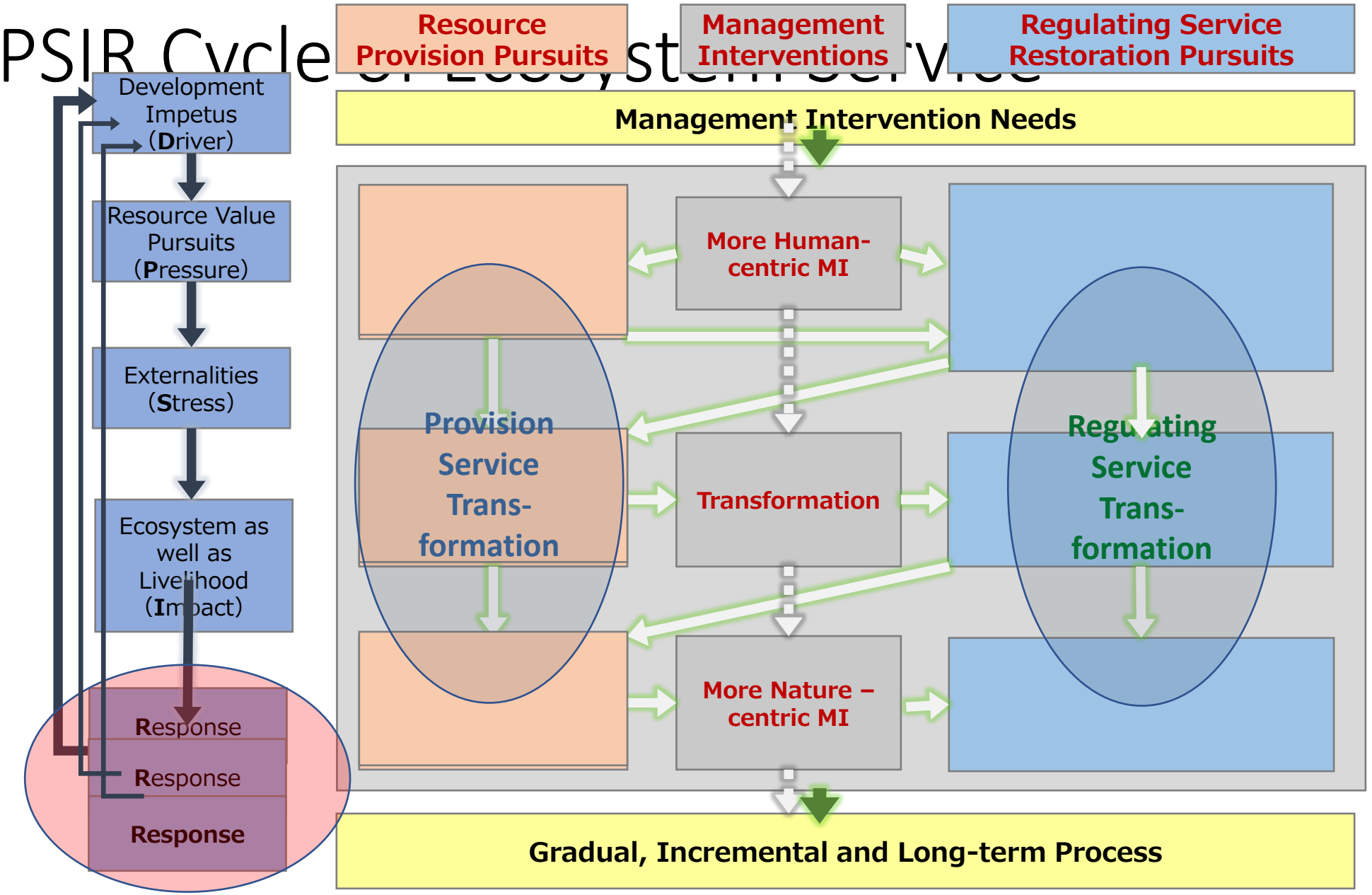
■ The Balance between Provisional and Regulating Services



Balance of PS & RS is a Key for CS



DPSIR Cycle of Ecosystem Service



出典）中村正久委員からの提供資料

Ecosystem Service Framework with DPSIR as related to ILLBM

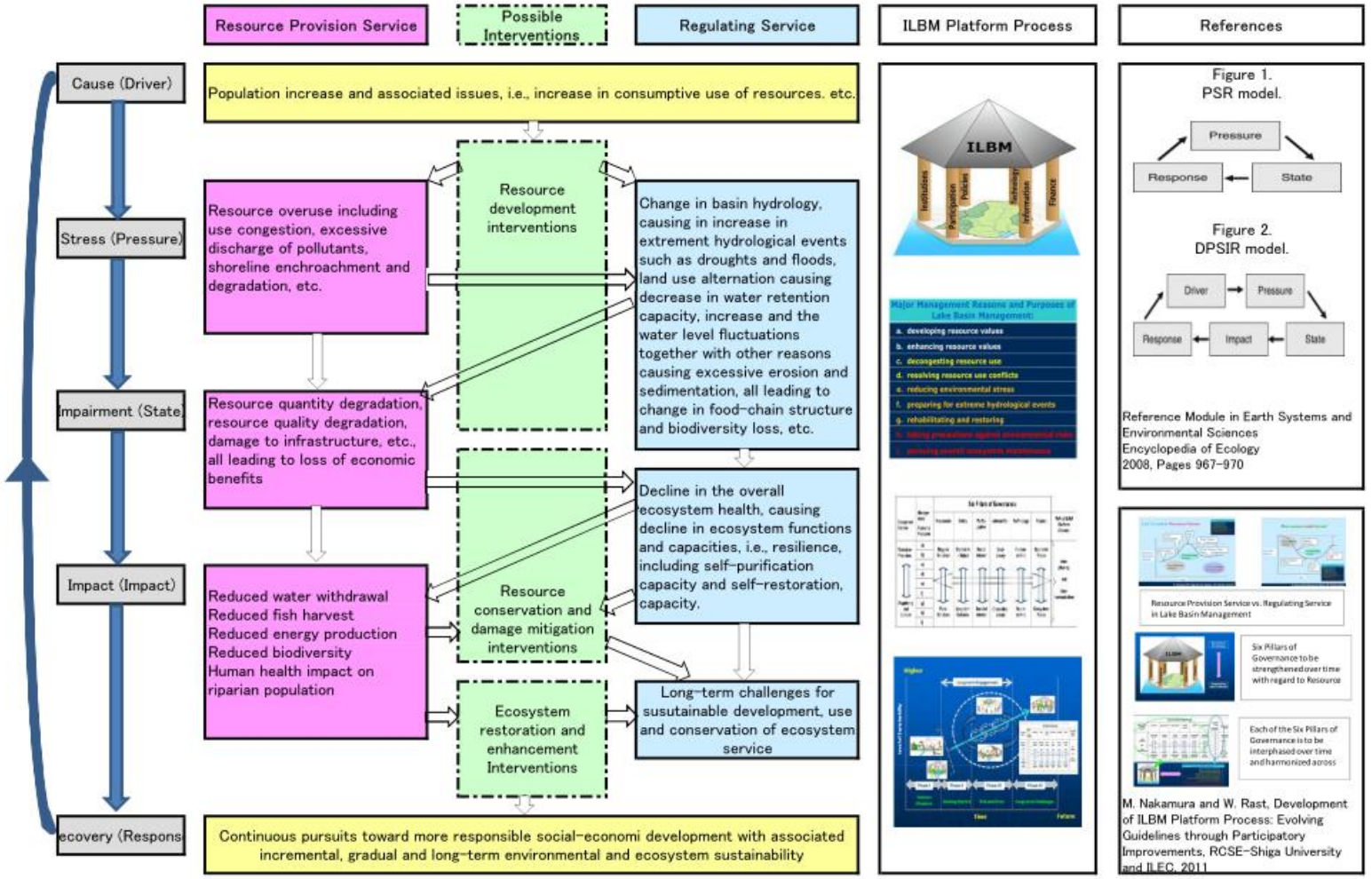
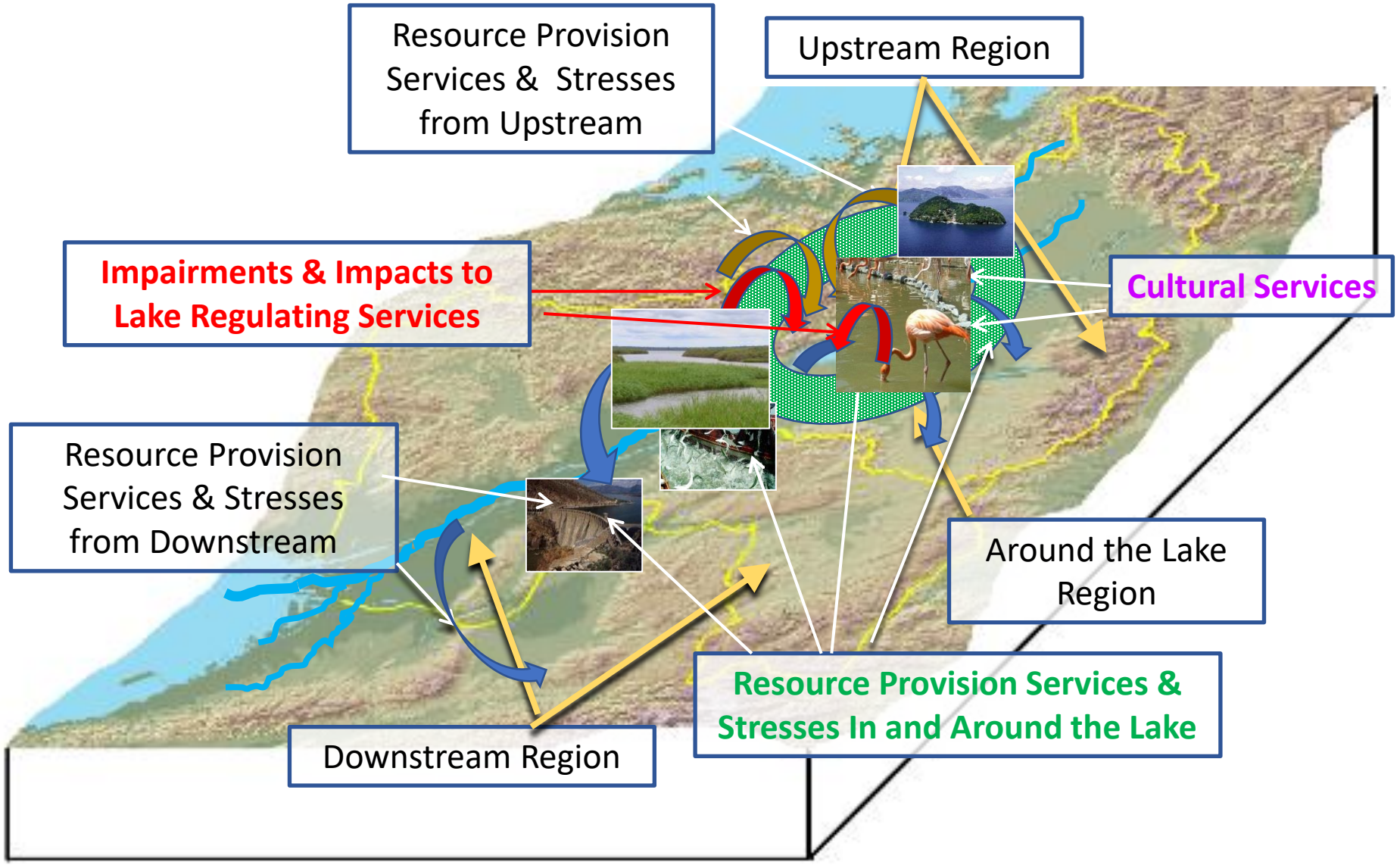


Illustration of the ESSVA Framework



A General Framework to Determine ESPP

a. **Perception about their River-Lake-Estuary System**
    - How much do we know the basin configuration?
    - How much do we know the PS profile of the entire basin?
    - How much do we know the inter-basin PS profiles?
    - **……**

b. On the Individual Perceptional Spheres of Interaction

- What are the “Provisional Service” components?
- What are the pressured put on the “Provisional Service” components, and how much?
- What are the magnitudes of stress put on the Regulating Service functions supporting the “Provisional Service”
- What are the magnitudes of impairment/impact put on the respective Regulating Service functions
- What have been, and will have to be the “Response Measures”, in terms of Six Pillars of Governance

Questionnaire

Idea on Structure & Contents of ESSVA (ESPP)

		Instruction to Questionnaire	Rating
Driver/ Pressure	QS-1	Please indicate the magnitude or Intensity of the “Resource Provisioning Services” (Benefits) Generated in the Upstream River Basin Draining into Your Lake	1-5 Interval Scale
Stress	QS-2	Please indicate the magnitude or Intensity of the “Stress” Put on Your Lake by the Upstream or Downstream Activities Identified in QS-2.	
Driver/ Pressure	Qs-3	Please identify the status of the “Resource Provisioning Services” (Benefits) Generated In and Around Your Lake	
Stress	QS-4	Please identify the degree or Intensity of the “Stress” Put on the Lake by the Activities In and Around Your Lake as Identified in QS- 4.	
Impairment	QS-5	Please indicate the status of “Cultural Services” In and Around Your Lake.	
	QS-6	Please indicate the status and Trends of Impairment of “Regulating Services” (Ecosystem Functions) of Your Lake Over Past Decades.	
Impacts	QS-7	Please indicate the status and Trends of Impacts (Economic Damage, Public Health Hazard, Loss of Environmental Values/Benefits, etc.) of Your Lake Over Past Decades.	
Restoration	QS-8	Policies and Monitoring Activities Regarding Your Lake	Specific Comments
	QS-9	Possible Improvements Regarding Your Lakes	

INFORMATION ABOUT YOU

1. What is your age group? < 20 ◯ 20 – 29 ◯ 30 -39 ◯ 40 – 49 ◯ 50 – 59 ◯ > 59◯

2. What is your gender? Male ◯ Female ◯

3. What is your education level?

Primary school ◯ Secondary school ◯ Certificate ◯ Diploma/Degree ◯ Master/PhD ◯ Others:

4. What is your occupation?

Government ◯ Private sector ◯ Own business ◯ Fisherman/farmer ◯ Unemployed ◯ Others:

5. What are the major sources of livelihoods in your community?

Government ◯ Private sector ◯ Own business◯ Fisherman/farmer ◯ Unemployed ◯ Others:

LEARNING ABOUT YOUR LAKE

1. Where do you live? _____

2. How long have you lived in this area ? < 5 years ◯ 5 – 14 years ◯ 15 – 24 years ◯ > 24 years ◯

3. What is the name of the Lake closest to you? _____

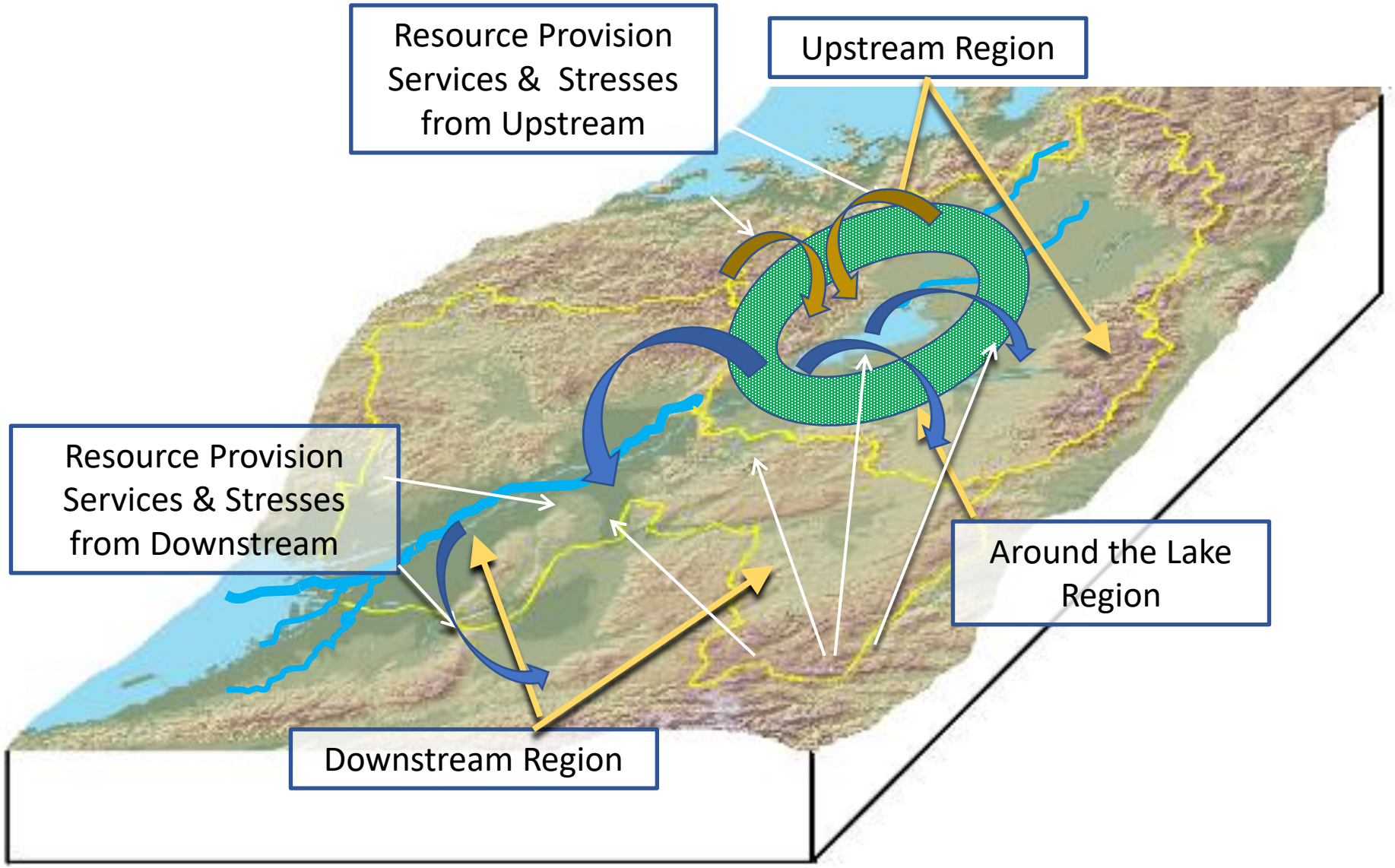
4. How close do you live to the Lake (in km/m)? _____

5. How well do you know the community, flora and fauna near your Lake?

   Very well ◯ Reasonably well ◯ Not very well ◯ I don't know ◯

6. What do you normally use the Lake for? _____

Illustration of the ESSVA Framework



An Overview of the Assessment Form Used

ESPP (Ecosystem Service Perceptional Profile) with regard to;

Q1: Resource use & development activities and associated stress


Agriculture


Livestock


Manufacturing


Mining


Water Use


Commercial Fishing


Subsistence Fishing


Tourism


Hydropower


Transport

Q2: Impairment of nature's functions in the past decades


Biodiversity


Climate moderation


Pollution absorption


Flood mitigation


Drought mitigation


Erosion mitigation

Q3&4: Upstream & downstream impact


From upstream


From downstream


To downstream


To water bodies

Q5: Status of cultural services


Aesthetic values


Traditions


Historical significance


Religious values


Educational values


Natural heritage

Q6: Sanitation & hygiene


Solid waste


Wastewater


Sanitation & Hygiene

Q7&8: Impact of ecosystem services on human health & economy


Human health


Economy

Q9: Stakeholder responsibilities

National	State government	Municipality	You and community	Up & Down stream community	Industrialists	Religious group	Others

Q10: Required governance improvements to improve ecosystem

Institutions	Policies and Programs	Participation	Knowledge and Information	Technology	Financing

Outline

- ❑ Brief introduction of the 3 lake basins
- ❑ An overview of the assessment form used
- ❑ Respondents' attributes
- ❑ Findings
- ❑ General Observations

QUESTION SET 1: Magnitude of Resource Use and Development Activities; and the Degree of Stress

- About the following categories of resource development and use activities, how do you rate their magnitudes? Also, how do you rate the magnitude of their stresses to the environment and ecosystems?

(Kuhusu makundi yafuatayo ya maendeleo na shughuli matumizi ya rasilimali , ni jinsi gani unaweza pima ukubwas yao? Pia, ni jinsi gani unaweza pima kwiwango cha ukubwa wa uharibifu s yao kwa mazingira na viumbe hai?

Using your knowledge and the map in Figure1, please indicate **which one** of the rating best reflects your opinion.

Response	1: None	2: A little	3: Moderate	4: Much	5. Very much	6. I don't know
Color code						
Maelezo ya jibu lako	***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*

		Magnitude of Activity						Magnitude of Stress					
A	Agriculture	1	2	3	4	5	6	1	2	3	4	5	6
													
B	Livestock Production	1	2	3	4	5	6	1	2	3	4	5	6
													
C	Manufacturing Industries	1	2	3	4	5	6	1	2	3	4	5	6
													

4

		Magnitude of Activity						Magnitude of Stress					
D	Mining Activities (Sand, Minerals, Geothermal, Oil)	1	2	3	4	5	6	1	2	3	4	5	6
	   												
E	Domestic Water Use (Drinking, Cooking, Laundry)	1	2	3	4	5	6	1	2	3	4	5	6
	    												
F	Commercial Fishing	1	2	3	4	5	6	1	2	3	4	5	6
	   												
G	Local Subsistence Fishing	1	2	3	4	5	6	1	2	3	4	5	6
	   												

5

		Magnitude of Activity						Magnitude of Stress					
H	Tourism and Recreation	1	2	3	4	5	6	1	2	3	4	5	6




I	**Hydropower projects/dams**	1	2	3	4	5	6	1	2	3	4	5	6

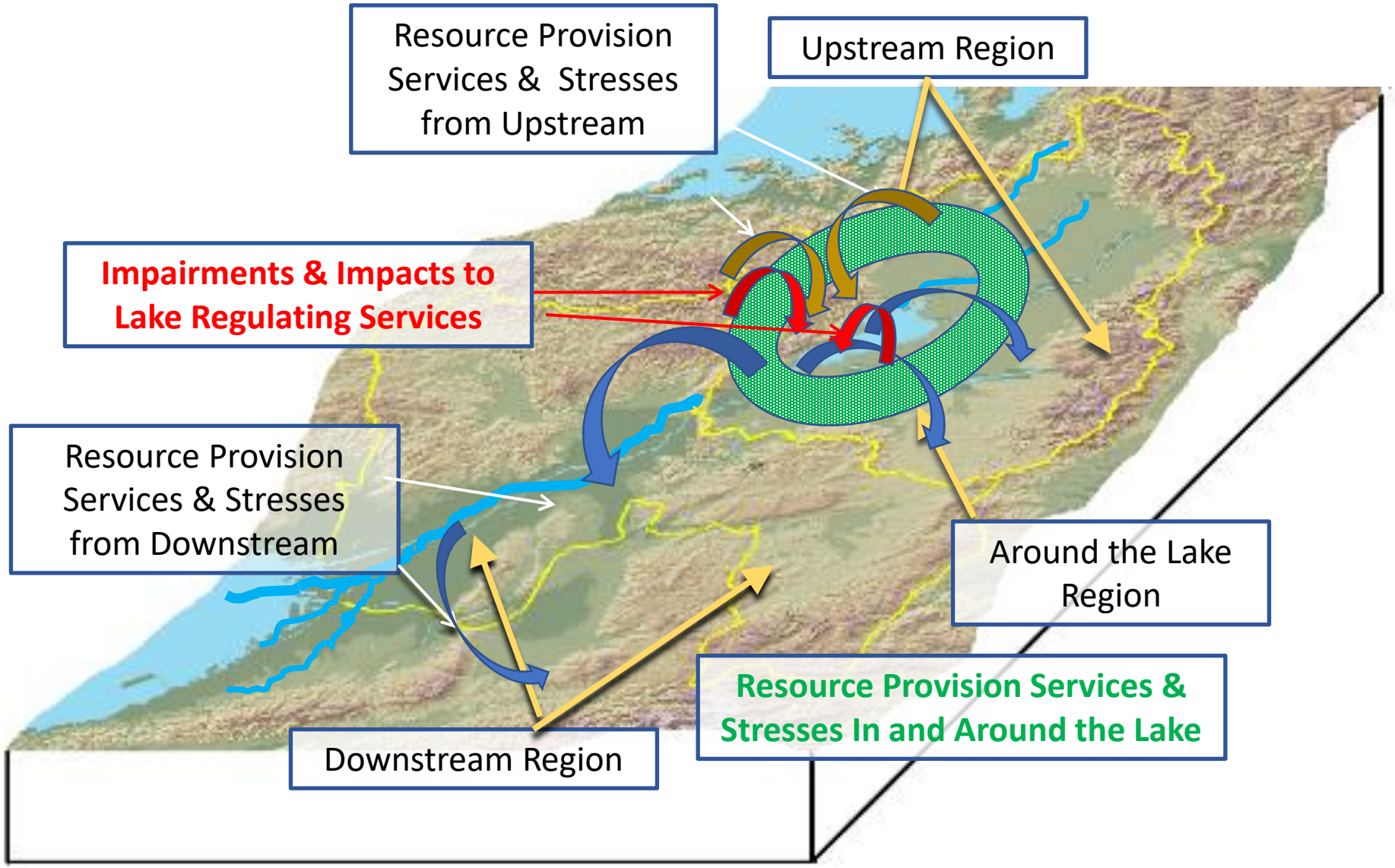



J	**Transport**	1	2	3	4	5	6	1	2	3	4	5	6




6

Illustration of the ESSVA Framework



QUESTION SET 2: Impairments of the Nature's Functions

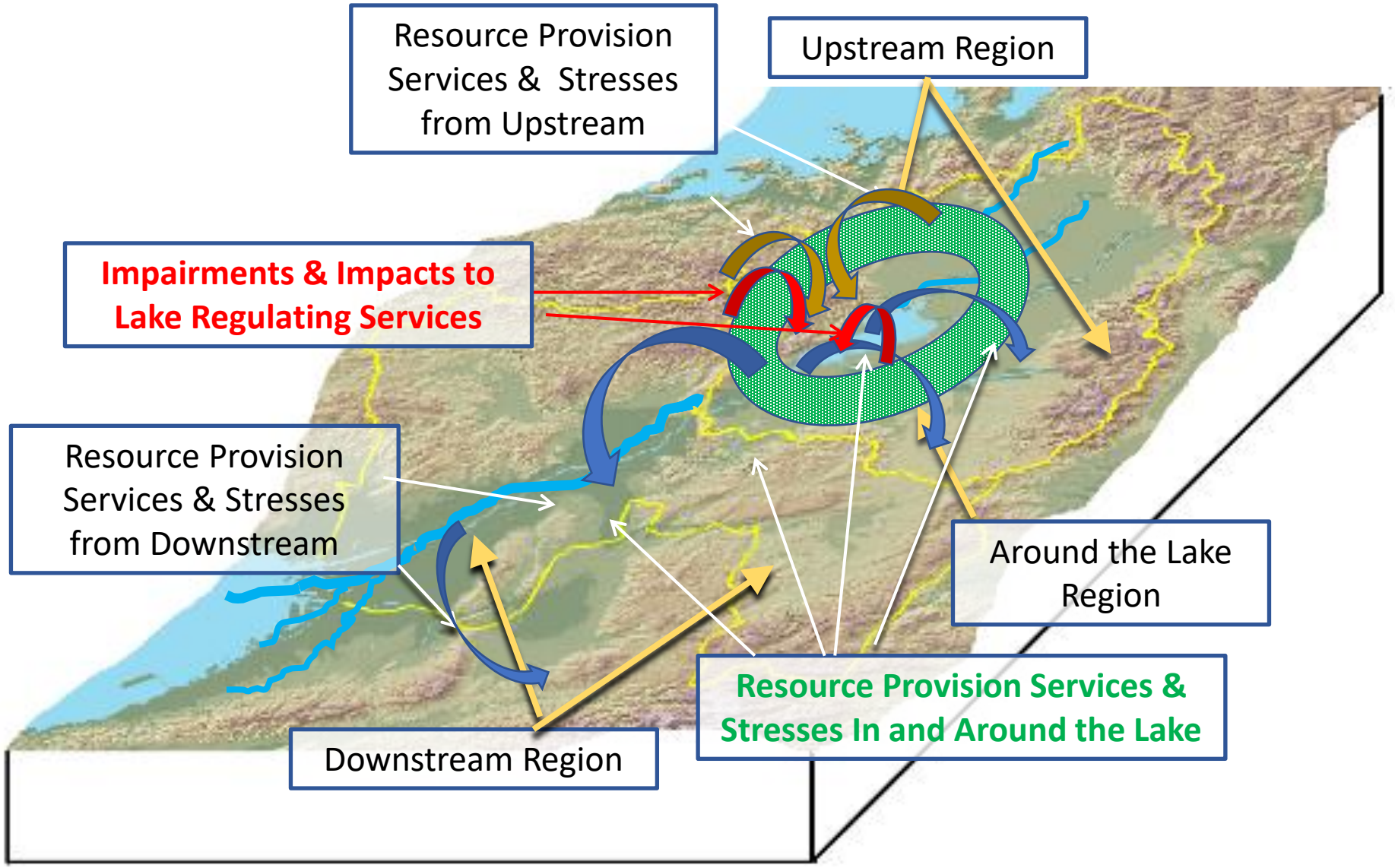
- To what extent, do you think, has each of the following functions of nature, many of them beneficial for humans, decreased (declined, got worse) in the past decades?
- *(Ni kwa kiwango gani , unafikiri, kila moja ya kazi zifuatazo za asili, nyingi zao sikiwa za manufaa kwa binadamu , imepunguka (imepungua, kwa ubaya) katika miongo iliyopita ?*

Response	1: Not at all	2: A little	3: Moderate	4: Much	5. Very much	6. I don't know
Color code						
Maelezo ya jibu lako	***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*

A	Diverse animal and plant habitats forming complex food chains (biodiversity)	1	2	3	4	5	6
	   							
B	Climate moderation (the Nature's function to moderate extreme climate patterns)	1	2	3	4	5	6
	   							
C	Pollution absorption capacity (Wetlands, in particular, can absorb certain pollutants by its ecosystem functions)	1	2	3	4	5	6
	 							

D	Flood mitigation capacity (the Nature's capacity to moderate flooding)	1	2	3	4	5	6
	  						
E	Drought mitigation capacity (the Nature's capacity to moderate droughts)	1	2	3	4	5	6
	  						
F	Erosion mitigation capacity (the Nature's capacity to prevent/reduce erosion)	1	2	3	4	5	6
	  						
G	Others if any	Provide comments below.					

Illustration of the ESSVA Framework



QUESTION SET 3: Direct Impact Your Sub-basin Waters Receive from Your Upstream and Downstream Sub-basin Activites

- How much stress and negative impact do you think your sub-basin waters have been receiving from the activities (agriculture, livestock production, manufacturing industries, ….) of your immediate upstream communities (A)?
- How much from those immediately downstream of yours (B)?

(Kwa maoni yako, ni kiasi gani madhara na uharibifu unadhani maji ya lake/mto imepokea kutokana na shughuli (kilimo, ufugaji , viwanda) katika jamii inaoishi nyanda za juu za lake/ mto (A) ?)

Ni kiasi gani kutoka kwa wale wanakaa sehemu za jini za mto huo (B) ?

Response	1: Not at all	2: A little	3: Moderate	4: Much	5. Very much	6. I don't know
Color code						
Maelezo ya jibu lako	***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*

A	From your **immediate upstream** sub-basin activities?	1	2	3	4	5	6
	    						
B	From your **immediate downstream** sub-basin activities?	1	2	3	4	5	6
	 						

QUESTION SET 4: Direct Impacts of Your Sub-basin Activities to Your Immediate Downstream (A) and to the Most Downstream Water Bodies (B)

- How much stress and negative impact do you think your sub-basin activities are affecting your immediate downstream communities (A)?
- How much to the most downstream water bodies, such as lakes, river-mouth estuaries and enbayments (B)?

Description of response	1: Not at all	2: A little	3: Moderate	4: Much	5. Very much	6. I don't know
Color code						
Maelezo ya jibu lako	***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*
A	To your immediate downstream?				1 2 3 4 5 6	
	  					
B	To the **most downstream water bodies such as lakes and estuaries**?				1 2 3 4 5 6	
	    					

QUESTION SET 5: Status of "Cultural Services" in and around Your Lak- River Basin

- How do you rate the following cultural service (intangible) values in terms of importance as well as degree of degradation through Q1-Q3 activities?

Response		**1**: Not degraded	**2**: Slightly Degraded	**3**: Moderately Degraded	**4**: Seriously degraded	**5**: Very seriously degraded	**6**: I do not know
Color code							
Maelezo ya jibu lako		***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*
A	Aesthetic, human wellbeing and scenic values (*thamani ya aesthetic, maisha bora na ya kuvutia macho*)	1	2	3	4	5	6
							
B	Traditions and traditional practices (*thamani ya tamaduni za jadi na desturi*)	1	2	3	4	5	6
							
C	Historical significance (*umuhimu wa kihistoria*)	1	2	3	4	5	6
							

D	Religious and spiritual values (*thamani ya maadili ya kidini na kiroho*)	1	2	3	4	5	6
	    						
E	Educational and Research values (*thamani ya Elimu na Utafiti maadili*)	1	2	3	4	5	6
	   						
F	Natural heritage and/or home to endangered species (*asili urithi na ni nyumbani kwa aina ya viumbe hatarini*)	1	2	3	4	5	6
	    						

QUESTION SET 6: Solid Wastes, Wastewaters, and Sanitation, Excreta Disposal / Hygiene *(Takataka, maji chafu, na Usafi wa Mazingira, Kinyesi Taka / Usafi)*

Response	1: Not at all	2: A little	3: Moderate	4: Much	5. Very much	6. I don't know
Color code						
Maelezo ya jibu lako	***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*

		Magnitude of Management Problems						Magnitude of Impact on Ecosystem					
A	**Solid Waste Management**	1	2	3	4	5	6	1	2	3	4	5	6
	  												
B	**Wastewater Management**	1	2	3	4	5	6	1	2	3	4	5	6
	  												
C	**Sanitation, Excreta Disposal / Hygiene**	1	2	3	4	5	6	1	2	3	4	5	6
	   												

QUESTION SET 7. 1 Impact on Human Health *(Athari kwa Afya ya Binadamu):*

- Human health is generally supported by ecosystem products and services (such as availability of fresh water, food and fuel sources) which are requisite for good human health. Over the past decade, how much do you think ecosystem service degradation affected each of the following group of people in your basin?

Response	1: Not at all	2: A little	3: Moderate	4: Much	5. Very much	6. I don't know
Color code						
Maelezo ya jibu lako	***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*



	Group of people						
A	Your family	1	2	3	4	5	6
B	Your community	1	2	3	4	5	6
C	Your sub-basin population	1	2	3	4	5	6
D	Your entire basin population	1	2	3	4	5	6

QUESTION SET 8: Impact on Economy *(Athari kwa Uchumi):*

- Economic activities in the river-lake basin use ecosystem products and services (such as fresh water, natural products, and fuels). Over the past decade, how much do you think ecosystem service degradation affected each of the following group of economic activities in your river-lake basin?

Response	1: Not at all	2: A little	3: Moderate	4: Much	5. Very much	6. I don't know
Color code						
Maelezo ya jibu lako	***1**: Hakuna uharibifu*	***2**: Kuna uharibifu kidogo*	***3**: : Kuna uharibifu kihasi (wastani)*	***4**: : Kuna uharibifu sana*	***5**: : Kuna uharibifu kabisa*	***6**: Sijui*




	Domain of Economic Activities						
A	Your household economic activities	1	2	3	4	5	6
B	Your community's economic activities	1	2	3	4	5	6
C	Your sub-basin economic activities?	1	2	3	4	5	6
D	Your entire basin economic activities	1	2	3	4	5	6

QUESTION SET 9: Responsibilities and Ownership *(Majukumu na Umiliki)*

- How much more do you think each of the following stakeholder groups should take a responsible and proactive role?

(Ni kiasi gani zaidi unadhani kila mmoja makundi ya washikawadau wanaofuata wanapaswa kuchukua majukumu la kuwajibika kwa makini ?

1: Not at all	2: A little	3: Moderate	4: Much	5: Very much	6: I don't know
1. Hakuna	*2. kidogo*	*3. wastani*	*4. Mengi*	*5. Mengi sana*	*6. Sijui*

A	National	1	2	3	4	5	6
B	State government	1	2	3	4	5	6
C	Municipality	1	2	3	4	5	6
D	You and your community	1	2	3	4	5	6
E	Your upstream and downstream community	1	2	3	4	5	6
F	Industrialists, business and commercial operators, plantation owner	1	2	3	4	5	6
G	Religious group	1	2	3	4	5	6
H	Others (who)	1	2	3	4	5	6

QUESTION SET 10: Improvement of Basin Governance

- In the next decade or so, how much do you think we needs to be improved for making significant restoration and improvement of river basin ecosystem integrity?

A	Institutions (*taasisi*) – for making organizations and programs more effective for action	1	2	3	4	5	6
B	Policies and Programs (*Sera na Mipango*) – for identifying policies and actions that may be most needed and most effective	1	2	3	4	5	6
C	Participation (*ushiriki wa umma*) –for obtaining public opinion and input	1	2	3	4	5	6
D	Knowledge and Information (*Maarifa na Habari /Elimu*)– - for filling the knowledge gap	1	2	3	4	5	6
E	Technology (*teknolojia/ chaguzi kiteknolojia*) –mix of technological options	1	2	3	4	5	6
F	Financing(*Fedha na ufadhili*)– for exploring different funding sources and financial mechanisms	1	2	3	4	5	6

Benefits of ILBM-ESSVA

- It provides **an opportunity to basin population to evaluate their lake basin** on current and future status and values, helping them to shape a shared vision and common understanding of the issues and challenges facing the lake basin.
- It provides a way to **fill perception gaps between different stakeholders** with different views and interests as well such gaps between people living in different locations in the basin (Upstream, Downstream of the lake, and around the lake).
- It provides a methodology to **the government to listen to the voice of community**, enabling them to develop policies and programs to be widely supported and easily implemented.
- It helps to **develop a sense of "ownership"** in the basin population, facilitating the community participation in lake basin management process.
- It enables different basins to discuss their problems based on the same general framework that would help enhance **the opportunity for mutual *collaboration***

Credits: Prof Nakamura, ILEC Japan