

Socio-economic dimensions to wetland science

Matthew Simpson – WWT Consulting – matthew.simpson@wwt.consulting.co.uk
Ritesh Kumar – Wetlands International - ritesh.kumar@wi-sa.org

- **Interlinkages between wetland ecosystem services and humans, particularly in the context of poverty**
- **Conceptual framework**
- **Case study – Lake Chilika, India**
- **Approaches and techniques for examining the interlinkages**
- **Project Cobra – Guiana Shield, South America**



- **Wise Use – ‘the maintenance of ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development’ – Ramsar Convention**
- **Ecological character – ‘combination of the ecosystem components, processes and benefits/services that characterise the wetland at a given point in time’**
- **Humans are an integral part of wetland ecosystems, not separate from them**
- **Wetland ecosystems and services form an integral part of livelihood strategies of wetland dependent communities**
- **Livelihood strategies of communities also influence the ecological character of a wetland**



- **Wise Use of wetlands could alleviate poverty (i.e. relieve some of the symptoms of poverty but not transform the poor into non-poor)**
- **Wise use could lift people out of poverty (i.e. reduce poverty to the extent that the poor are transformed into non-poor)**
- **Wise use could prevent people falling, or falling further, into poverty**



- **Local – poverty of wetland dependent communities can result in unsustainable exploitation (over fishing in Lake Malawi through poverty pressures)**
- **National – government strategies to reduce poverty result in unwise use (Vietnam – shrimp production expansion resulting in loss of mangrove forests, saltwater intrusion into freshwater areas impacting crop production)**
- **Global – focusing solely on Millennium Development Goal poverty targets may result in a failure to deliver wetland ecosystem services targets**



Good ecological character



Trade off

Win win

Human ill-being

Human well-being

No go

Trade off

Degraded ecological character



Potential scenarios

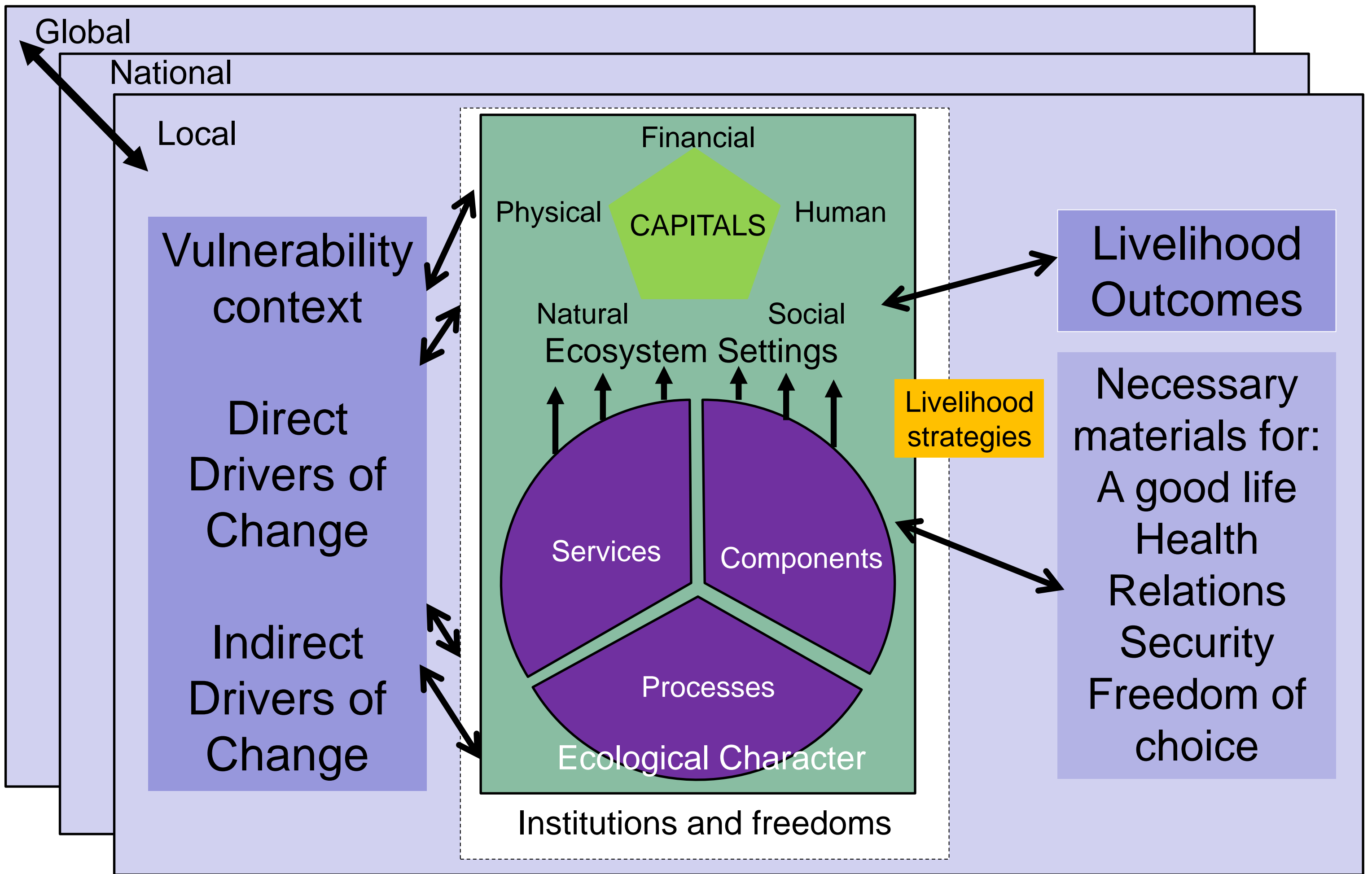
Existing frameworks did not resolve –

- **The identification of specific interventions that result in sustainable links between ecosystem services and livelihoods and the scale they should operate at**
- **A management structure that can be used by both conservation and development sectors**

Five generalisations from frameworks

- **Poverty and well-being are two ends of a spectrum**
- **Wetland management can be a process to encourage participation of the poor**
- **Sustainability of livelihoods is important precondition for achieving wise use**
- **Systems approach makes explicit the links between ecosystem services and livelihoods**
- **Adaptive management is required across scales**



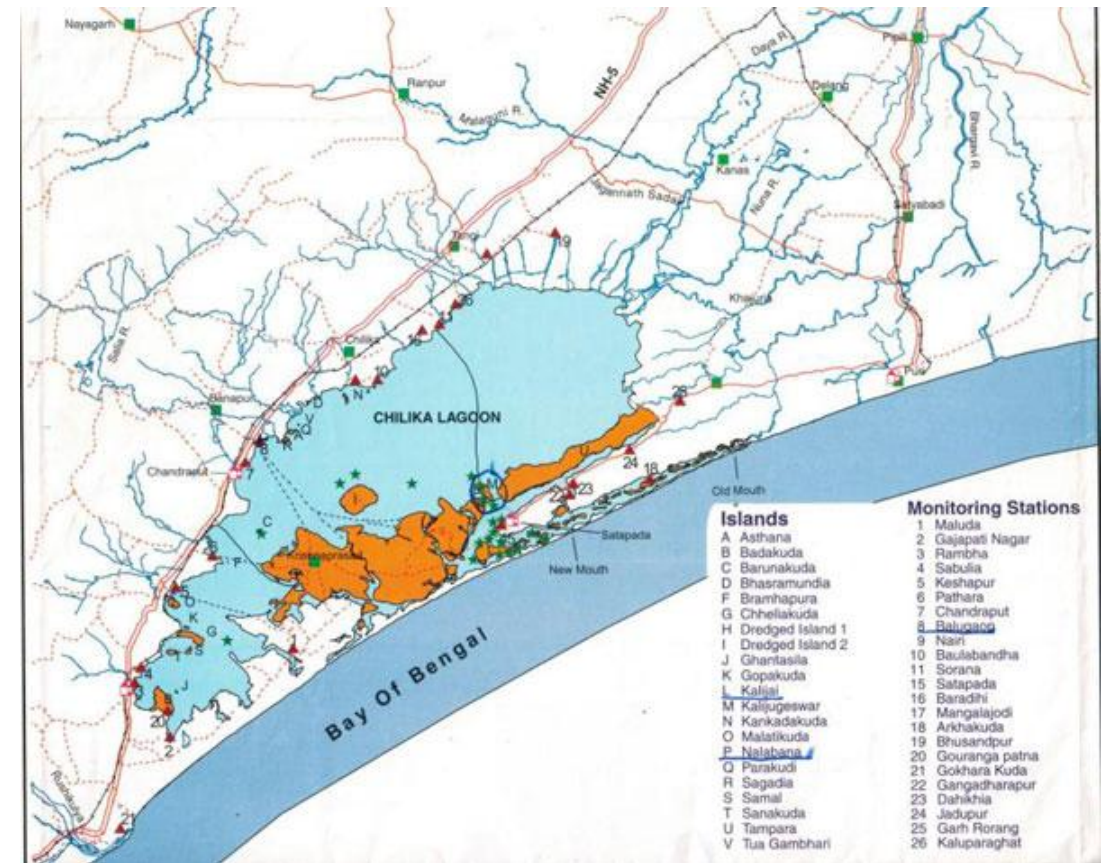


Lake Chilika, Orissa, east coast of India

Wetlands as a setting for livelihood-ecological character

- 1165km² in monsoon and 906km² in dry season
- Supplied by the Mahanadi River basin and separated from the Bay of Bengal by sandbar
- Shallow marine, brackish and freshwater wetlands
- Rich fishery supporting 200,000 fisherfolk, 6% of Orissa's export revenue
- 141 villages surrounding the lake, largely very poor communities
- Self governing complex system of resource partitioning based on species fished
- Linked to local culture and belief system

Mapping livelihood system elements and ecological character



Linkages with external environments –

Vulnerability context

- **Channelisation of the river and prawn aquaculture**
- **Results in change in hydrological regime and introduction of increased sediment loads**
- **Impact on ecological character as shift to freshwater – decline in fishery – put on the Montreaux Record in 1993**



Links changes in wetland ecological character to two key anthropogenic drivers. Provides context interpreting changes in poverty within the wetland communities

Changes in institutions and freedoms

- Introduction of prawn aquaculture destroyed traditional management arrangements
- Shift from “community-managed fishery” to “contested-common”
- With increased profits from prawn aquaculture farmers left their fields and moved to the area
- Orissa High Court abolished traditional rights to fishing grounds and separated up access in 60:40 split in favour of fishing communities
- Prawn aquaculture now banned but 60% of shoreline has illegal prawn production (2009)

Explains changes in occupation and political structures within communities. Highlights conflict between user groups



Livelihood strategies

- **Changes in wetland settings, vulnerability contexts and institutions and freedoms have impacted strategies**
- **Traditional practices were harmonised with wetland character**
- **Shift to complex profit and rent seeking system with fishing community, agrarian communities, middlemen and agents**
- **Shift from flood dependent communities to flood vulnerable communities**

Explains the factors which limited deployment of livelihood capitals for the fishing community



Human well-being

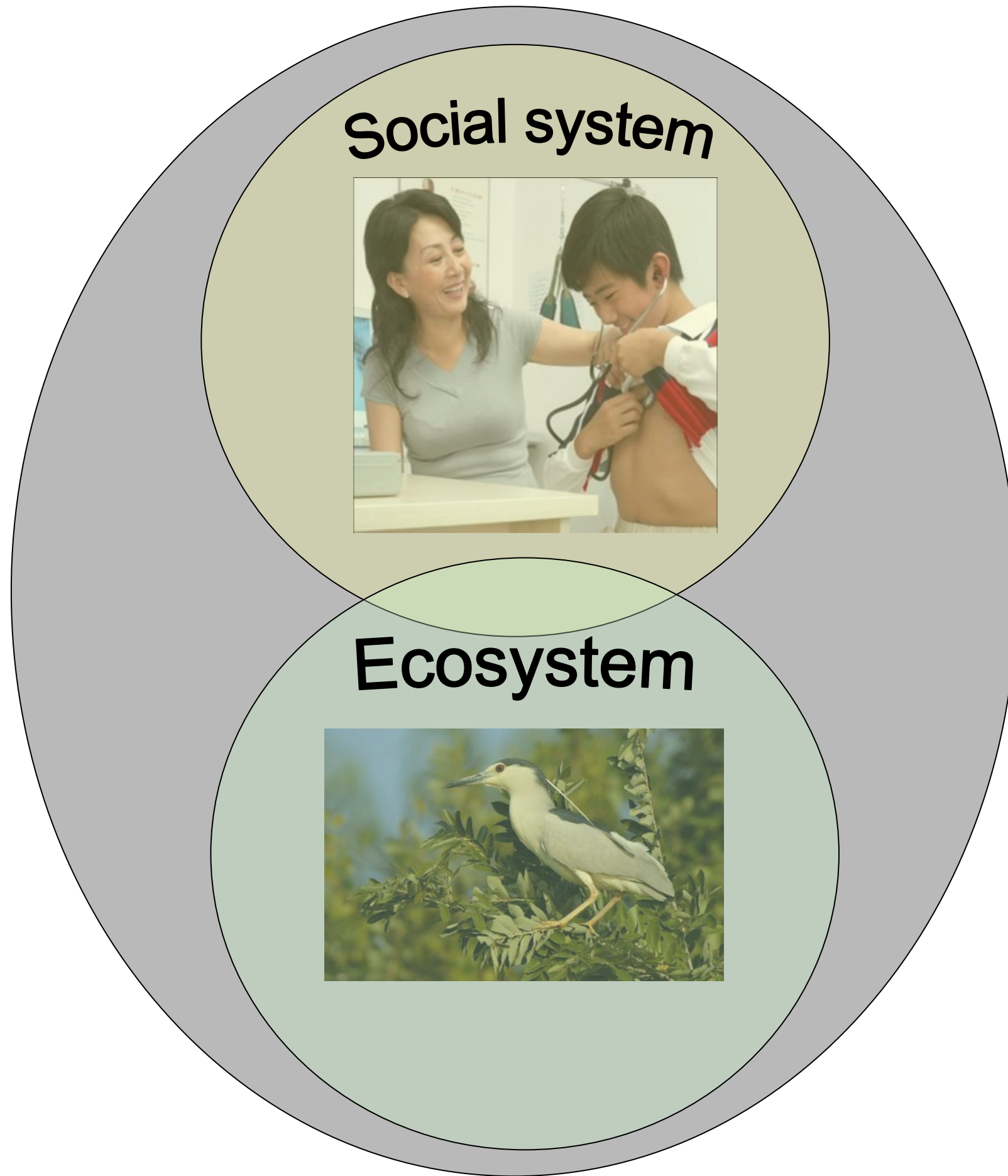
- Largely negative impacts on fishing and agrarian communities
- Fishing community were now highly dependent on middlemen for capital which lead to conflict
- Reduced fish catches impacted on ability to gain the necessary materials for good life and health
- Increased salinity meant crop failure which also reduced materials for good life and health

Assesses the livelihood outcomes on internal, social and ecological parameters



How to assess the wetland ecosystem services and human interlinkages further in practice?





Social system



Ecosystem



**Social –
ecological
system**

System viability approach

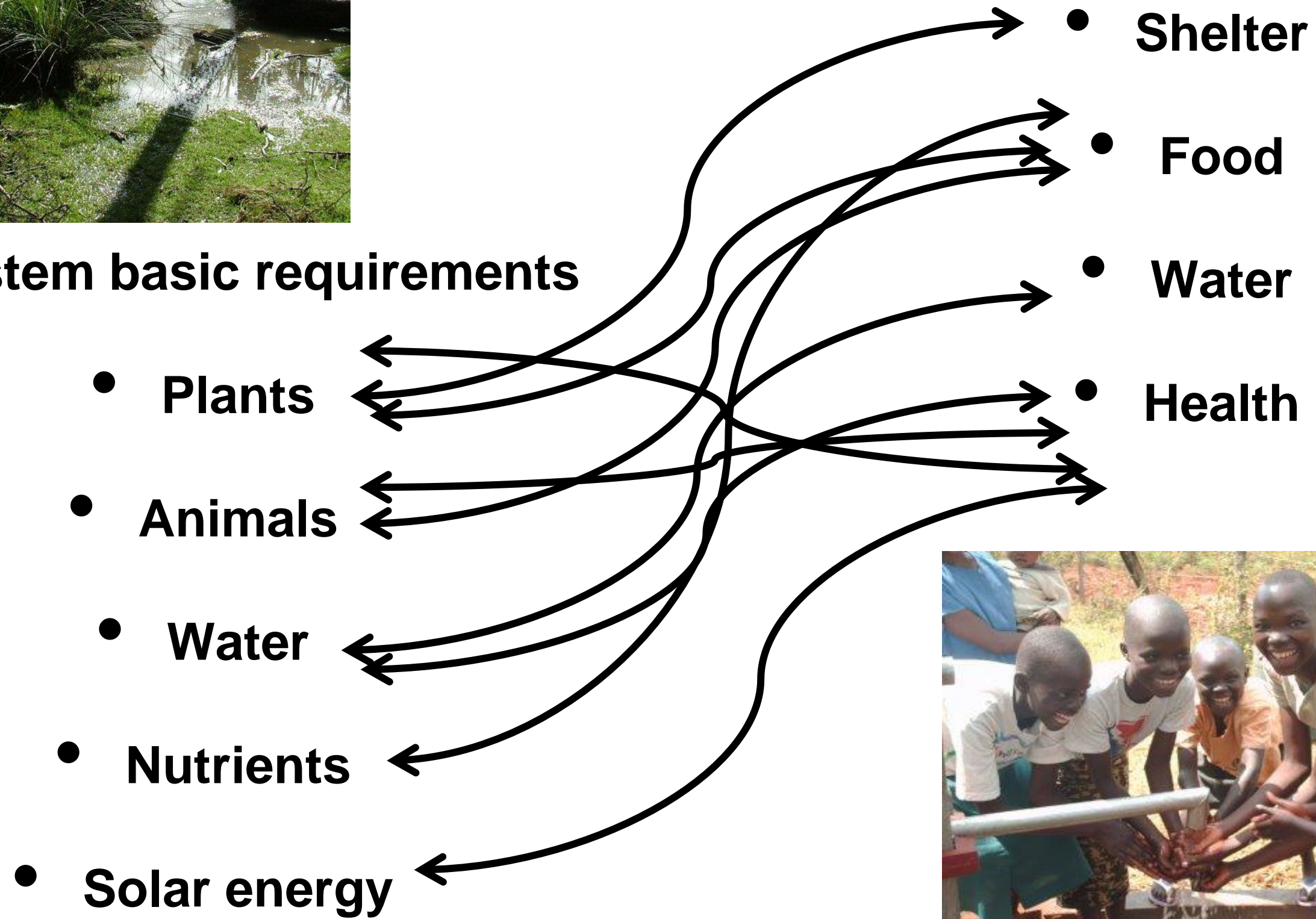
- **Existence** – The basic requirements for survival
- **Effectiveness** – The ability to use limiting resources
- **Freedom of action** – The ability to cope with variations within its surroundings
- **Security** – The ability to withstand change
- **Adaptability** – The ability to evolve
- **Co-existence** – The ability to survive and thrive amongst other competing and/or cooperating systems





Community basic requirements

Ecosystem basic requirements





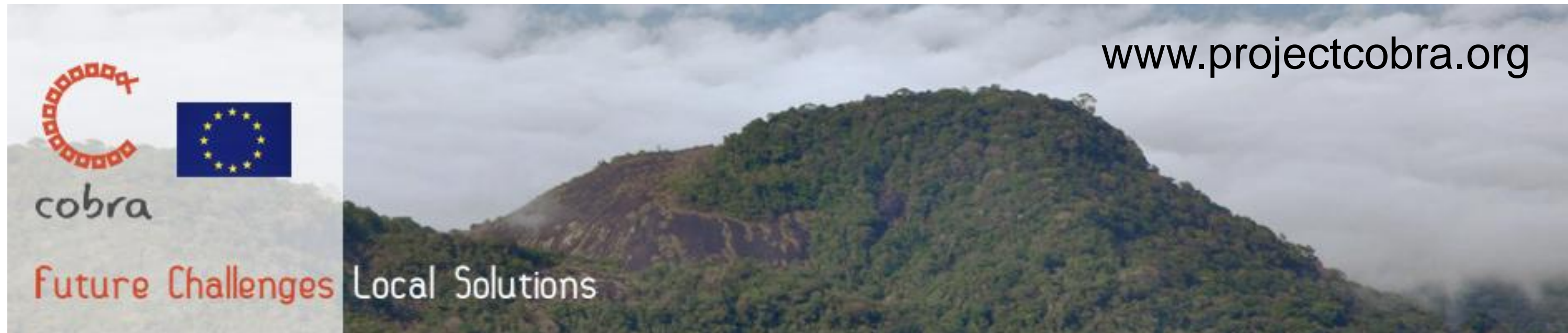
Project Cobra

Mission is to integrate community solutions within policies addressing social, economic and environmental crises

Adopts a system viability approach



Community Owned Best practice for sustainable Resource Adaptive management in the Guiana Shield, South America



- Apitikatxi – Brazil
 - [Equipe de Conservacao da Amazonia](#) – Brazil
 - [Institute for Environmental Security](#) – The Netherlands
 - [IUCN National Committee of the Netherlands](#) – The Netherlands
 - [Iwokrama International Centre for Rain Forest Conservation and Development](#) – Guyana
 - [North Rupununi District Development Board](#) – Guyana
 - [Open University](#) – UK
 - [Politecnico di Torino](#) – Italy
 - [Royal Holloway and Bedford New College](#) – UK
- Donor
- [European Commission Seventh Framework Programme](#)



Ecological sustainability –

balance the immediate needs with those of future generations

Social justice –

give all members of society an equal say in decisions so that these are arrived at in a fair and consensual way





- Understanding the current situation in the Guiana Shield region
- Identifying future scenarios of social-ecological resilience for indigenous communities
- Determining best practice approaches for the delivery of social-ecological resilience
- Building capacity and applying best practice with other communities and CSOs in the Guiana Shield
- Sharing and disseminating project findings



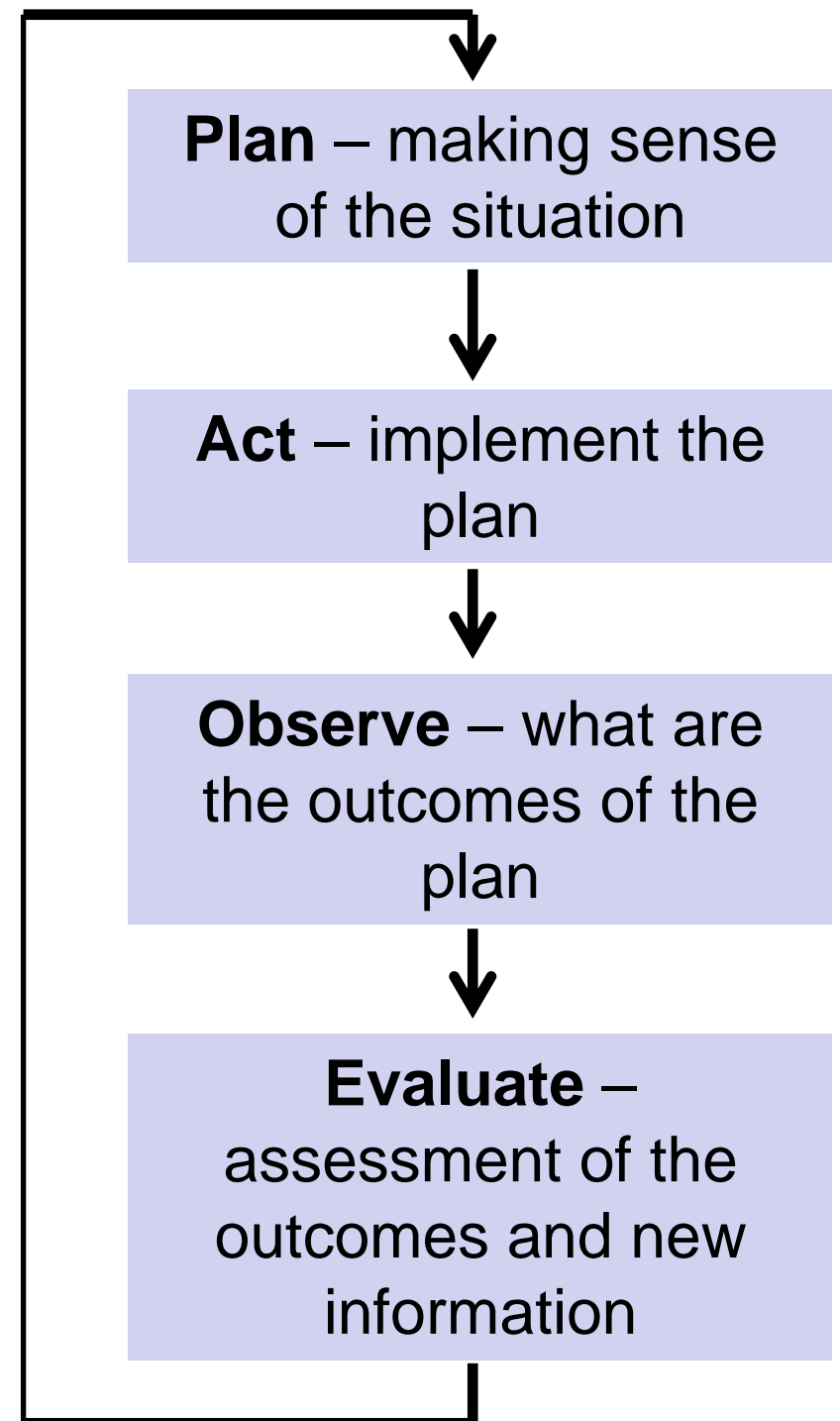


Systems viability approach to determine best practice natural resource management which can cope with environmental, economic and social change

To understand these the project uses Participatory Action Research – Working ‘with’, not ‘on’ a community

Puts the results into action through an adaptive management approach

Communities themselves develop indicators for each system viability element





Participatory video and photos

Gives a voice to local people through videos and photo stories

Includes activities such as storyboarding, filming/photographing, screening, editing and sharing

Process is equally important as end result as it stimulates reflection and discussion in the community

Used as a basis for developing adaptive management approaches





www.projectcobra.org

- **Humans are an integral part of wetland ecosystems, not separate from them**
- **Frameworks are required for understanding the linkages between wetland ecosystems and human socio-economic systems**
- **Systems viability approach can provide a framework for understanding the situation**
- **Techniques such as participatory video and photo can be used to ensure all voices are heard**
- **Adaptive management is required that acknowledges both the ecological and social systems is required**





Thank you

Assessing wetland ecosystem services and poverty interlinkages: a general framework and case study

Ritesh Kumar, Pierre Horwitz, G. Randy Milton, Sonali S. Sellamuttu, Sebastian T. Buckton, Nick C. Davidson, Ajit K. Pattanaik, Monica Zavagli and Chris Baker

**Hydrological Sciences Journal (2011)
56:8, 1602-1621**

