

ECOSYSTEM SERVICES IN THE CAT PLANNING PROCESS IN HIMACHAL PRADESH

**NATURAL CAPITAL PROJECT WORKSHOP ON
ECOSYSTEM SERVICE BENEFITS OF TARGETED WATERSHED INVESTMENTS
21st MAY 2014
SHIMLA**

Policy Context

- World moving from Independent management of “Natural Resources” and “Development” to middle ground
 - Conservation and development goals are being integrated.
 - Forests can no longer be managed only as a conservation entity
- State of HP also moving towards Agenda of Green Growth (DPL Goals)
- Hydropower seen as a Green Growth option (DPL goal)

Policy Context

- Background
 - Importance of hydropower to HP
 - 23000 MW Potential
 - Important source of Revenue (8% share in GSDP)
 - Challenges for sustainable Hydro Power Development
 - Sustainability depends on good health of forests- provides important Ecosystem Service
 - Optimize Hydro Power by managing catchment
 - Siltation (shutdowns)
 - Water flow regulation (Quantity/Quality/seasonal flow/daily variability)
- Policy – What is the flow & value of forest ecosystem services to Hydropower sector and how can we maximize?
 - IMPORTANCE of CATCHMENT MANAGEMENT

Present Scenario of Catchment Management

- Project Specific CAT Plans
 - 2.5 % of total cost of the HEP
 - Interventions targeted only to catchment of specific project
 - Islands of prosperity/ deprivity
 - Focus on SWC at site scale rather than landscape approach
 - Lacks understanding of how impacts of site level activities can scale up to changes in services delivered to a point of interest (HEP)
 - No effort to maximise return on investment

Present Scenario of Catchment Management

- Comprehensive CAT Plans (CCP)
 - Basin wide approach
 - Based on unconstrained resource scenario
 - Gaps in available funds
 - Need for prioritization to optimize Ecosystem services (w.r.t. HEP facility to sustain green growth)
 - Prioritization of Area
 - Prioritization of Activities

Susceptibility of Run of the river Projects

q Climate change

- Amount and timing of precipitation
- Form of precipitation

q - Change in LULC and Land Management practices

- Quality of water
- Quantity of water
- Time taken to reach HEP

Ø Hydro Power Eco systems services can be increased by changing land use, land cover and land management

Issues needing resolution

- Which activity to be prioritized to get max benefit from investment
- Which area to be prioritized to have max benefit for HEP
- Which Ecosystem service has what value on the basis of Biophysical as well as economic considerations
- Which Ecosystem service needs to be incentivised by way of PES (design of PES)

Issues needing resolution (contd)

- Economic valuation and analysis of Ecosystem services in monetary terms
- To build forest flow accounts
- To capture true contribution of forests to other sectors of economy (intangible regulatory services)
- To demonstrate dependence of other sectors on healthy forests
- To sensitize policy makers for taking informed policy decisions
- Move towards Building Natural Resource accounts
- Leading towards GREEN GROWTH

Scope of the study

- Pilot Study on Ecosystem Accounts through modeling initiated by **Stanford University Team**
- **Study done in 5 pilot locations**
- Which ecosystem services to measure?
 - Water regulation
 - Sediment retention
- Site Selection Criteria:
 - Importance for hydropower production
 - Range of biophysical and land use conditions
 - Data availability
 - Land uses
 - Flow and sediment data for calibration/validation
 - Proxies values

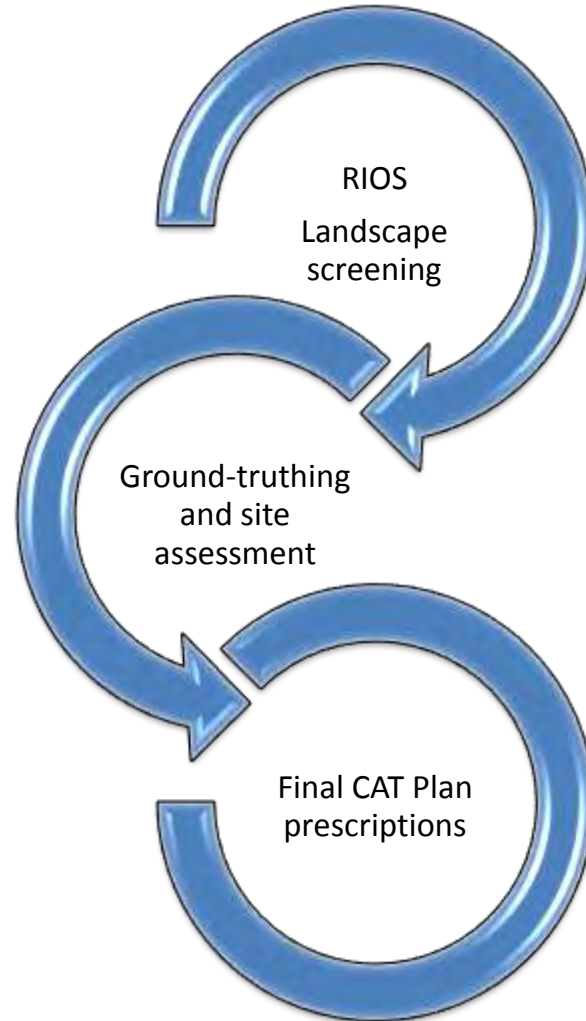
Biophysical Flow

- InVEST Water Yield and sediment retention model coupled with RIOS model applied to
 - Gives a portfolio of activities which can be undertaken under given biophysical conditions
 - Input Data
 - Land cover (vegetative cover, erosion potential, sediment retention)
 - Soils (depth, texture, erodibility)
 - Topography (elevation, slope)
 - Climate (rainfall)
- **CCP data of Satluj basin made use of**

LIMITATIONS

- Does not take into account **glacial** and snow melt
- InVEST model produces long term **annual average** outputs hence calibration of model outputs to a time series is not possible
- Landscape based:- **Point** Activities undertaken at finer scale not captured

Integrating RIOS and CAT Planning



Integrating RIOS and CAT Planning

- Landscape level targeting
- potentially reducing overall costs
- Reducing time to define optimal investment plans.

Where are we?

- Two Phases

- Phase one

- Defining Policy context
 - Sensitization of technical staff
 - Data collection (challenging)
 - Biophysical modeling
 - **Training**
 - **Calibration**
 - Developing framework for economic valuation of services for Hydro sector

- Phase two

- Economic valuation of Ecosystem services
 - Scaling up to district, and state level

How are we going to use this information?

- Prioritizing activities on the basis of maximum **return on Investment** (RIOS model)
- Using Ecosystem services information to **improve targeting** of watershed protection activities
- Generate Investment portfolio for study area at **multiple budget levels**
- The RIOS results demonstrate how a landscape-level approach could be added to the watershed management and prioritization process, potentially reducing the amount of time spent up-front in costly field assessments by narrowing the range of potential sites considerably.

Next Steps

- Work with team to **calibrate** model – consultation in HP in May
- **Capacity building** in state for Ecosystem valuation
- Use this model in one district to do comprehensive **Forest Accounts**
- **Next phase**
 - Economic valuation (link watershed management to flow and sediment)
 - SWAT modeling ?????
 - Scaling up
 - Design appropriate **PES schemes** once value of different ecosystem services is assessed
 - **Integration** with Natural Capital Accounting

Questions??

THANK YOU