Participatory Action Research for Ecologically Sound Development in a Tribal Region of Gujarat

"FENAIMATA JAIV-SHRISTI MANDAL VIKAS"

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HABITAT

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1. BACKGROUND:

'Ecological' relates to the interrelationships of organisms and with their environment. The science of Ecology is the study of how organisms interact with each other and with their physical environment. An Ecosystem refers to communities of organisms and their physical environment that interact as a unit. An ecologically sound ecosystem provides better-sustainable life suppot system which integrates all the related livelihoods of local communities (agriculture, animal husbandry, NTFP based, etc.).

Major ecological and livelihood research studies are done in isolation. It is very necessary to assess interlinkages as livelihoods are depending on ecological status of the particular region. There is no linkage between university, research institutions, NGOs, Govt dept and local community in research, hence many gaps remain in the final findings which can not provide sound strategy. Also major research studies are grant/fund based, such grant and profit motive research can not reach on ground as 'neutrality' is fund based and not based on ground reality and historical development which are prominent factors of ecological changes and hence can not solve the problem on ground.

Modern research ignored the historical indigenous knowledge system and language diversity. All the local words can not be translated with the same understanding otherwise it looses its meaning therefore many words of local language system can not be translated into English, which is the need of modern research to express and share their findings. So it is important to use 'local words' having deep meaning of worldwide importance. The author has experienced the global importance of local indigenous knowledge and language in Finland. The country uses its own language in their research and actions.

In the process of the work of the author, a community based research institute 'HABITAT' came into existence to incorporate the indigenous knowledge of community with their prime participation in research, trainings, capapcity building, implementation, model development and extension in different ecosystems so that the local knowledge leaders can play pivotal roles with their sound ecological knowledge but having no formal degrees.

HABITAT[*]:

It's a community based research and training institute having strong rapport with different local communities. It works with three major actions (1) development of hands on

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experience, (2) training & capacity building for sound implementation & model development, (3) extension of action research in selected ecosystems in India

Activities of HABITAT:

Agroforestry & Agroecology, biodiversity assessment & conservation; Creation of People's Biodiversity Register & CFR for conservation & management of biodiversity through community participation; biodiversity related social aspects of traditional knowledge & livelihood issues; Food & Nutrition security through wild edible plants & nutrition sensitive ecological farming; Applied Plant Taxonomy, ecological indicators, ecosystems assessment & Climate change; Natural Resource Management (NRM), PAs & WLS conflict studies, Mangrove assessment, Marine biodiversity assessment; Medicinal plants-Natural products, biodiversity heritage site; Ayurved; Land assessment for Wastelands & Pasture Development, GIS & Resource Mapping, herbarium development & management; landscape architect for Arboretum development; Environment Impact assessment of Clean development mechanism projects; Environment Education programme with children, women & different Socio-economic groups to explore & share action research and to prepare participatory scientific management strategy.

Key findings so far:

- The strong contribution of wild edible plants is not considered in food & nutrition security
- More than 180 indegous plant species can be easily incorporated in agroforestry in arid and semi arid regions, which can increase productivity and production
- Contribution of fallow pasture areas and wastelands are not taken seriously in production assessment and hence remain without proper management
- There is no indigenous seed bank at regional level to improve organic cultivation practices and save genepool
- There is no fodder bank at regional level to support livestock of non-grazing areas
- Need to finalise a very sound strategy on local natural resources based improved livelihood development to involve rural and tribal youth to conseve and manage local natural resources
- Ecological issues regarding community forest rights are not addressed properly so need to develop a participatory ecologically sound CFR having democratic process
- All the PBRs developed so far have no concrete ecological strategy for conservation and community involvement

- Require biomass based energy generation programmes in tribal & rural villages
- Require decentralized model of CDM projects for energy generation
- Flora-Fauna and their relation with community life is explored in different regions, mentioned in the below table.

Flora-Fauna & their role in community life						
Resource Area	**Flora Sp.**	**Fauna Sp.**	**Plants used by local community**			
			Wild Edible	**Medicine**	**NTFP**	**Fodder**
Agriculture fields Chhogala, Gunja, Mavli, Kada, Kheralu, Jhadol, Dungarpur, Visnagar, Nakalank, Kanthariya, Ghaghret	**91**	**>140**	**104**	**67**	**3**	**41**
Fences of agriculture fields Chhogala, Gunja, Mavli, Kada, Kheralu, Visnagar, Jhadol, Upli Sigri, Undarada	**189**	**>90**	**62**	**76**	**31**	**32**
Forest Jessore & Balaram WLS, Polo, Kawant, Naswadi, Taranga, Kuvarsi-Danta, Shamlaji-Sabarkantha, Pavagadh, Sitamata & Mount Abu WLS	**972**	**>735**	**398**	**438**	**127**	**94**
Corridors between forest & villages Balaram WLS, Chitrasani-Palanpur, Zer Dhareshwar-Vijaynagar, Undapani-Bhiloda, Devas, Pachmadhi	**476**	**>570**	**194**	**297**	**98**	**58**
Wilderness / Village outskirts Vadnagar, Ishwariya, Lakhabaval, Gunja, Jhadol, Gogunda, Valam, Udalpur, Valasana, Vadgam, Thalota, Mandropur, Nakalank	**269**	**>300**	**137**	**174**	**53**	**49**
Common Property Resources						
Pastures Kachchh, Tharad, Idar, Indore, Kota, Mangroves	**268**	**>180**	**79**	**163**	**41**	**52**
River banks, rivers, lakes Narmada circumambulation, Tapi, Banas, Jaisamand	**329**	**>400**	**91**	**168**	**82**	**71**

Sea shores, Sea Jamnagar, Chorwad, Kodinar, Pirotan Island, Navinal Island, Nana Layja, Okha, Surat, Mota Layja, Shravan Kavadiya	**>294**	**>300**	**81**	**74**	**42**	**48**
Hillocks Taranga, Southern Aravallis-Rajasthan, Jhadol, Pavagadh, Shoolpaneshwar	**>349**	**>200**	**160**	**127**	**72**	**48**
Waste lands North Gujarat, Vadodara, Saurashtra	**192**	**>200**	**76**	**71**	**37**	**69**
Total	**1087**	**>900**	**387**	**483**	**241**	**167**

The above table shows the potential of ecological research for better natural resource based developmental model. Therefor a tribal community based organization Aadivasi Jan-Utthan Trust (AAJ) was selected for action research extension model development in Kawant block of District Chhota Udepur of Gujarat.

Aadivasi Jan-Utthan Trust (AAJ):

AAJ is working for last 30 years in more than 60 tribal villages of their region and they could solve many social problems from their practices successfully. Since they themselves are tribal so they have better understanding of all historical, social, economical, ecological changes happened in the region along with the Narmada Dam issue. AAJ runs an Ashramshala (residencial school) of more than 270 tribal children from tribal villages of Gujarat, MP and Maharashtra. This young strength has proven their ability to play a crucial role in extension of research through environment education programme.

Activities undertaken with AAJ:

The work started with ecological and biodiversity assessment of the region. The findings of the study were shared with AAJ members and they could understand the hidden changes

going on in their ecosystem. AAJ helped to share the findings and needed strategy with other villages. This resulted in the selection of Ucheda village as the centre of the whole strategy. A continous social process started with complete participation of local community in Ucheda. The different aspects of local ecosystem and its wealth were discussed with community through different activities. it was decided by the villagers to proceed for ecologically sound CFR and integrated development plan for their forest resources in which Fenaimata is the biggest biodiversity hotspot along with Bhandan and Rongiyo hills at the bank of River Heran (one of the channel to River Narmada). Since there are other villages also have right on these forest resources and Fenaimata is culturally also very important in the region, the villagers of Ucheda suggested the name of this ongoing work – 'Fenaimata Jaiv-Shrishti Mandal Vikas'.

Future action plan:

1. AAJ:

The ongoing action research - "Fenaimata Jaiv-Shrishti Mandal Vikas" has very clear indications of the correct path of social process, natural resource profile and current status along with the historic review from community, community's present agenda & perceptions, community's future agenda regarding their own forests and other natural resources, active involvement of all the sections of people at each every level of diffent process (children, youth, women, farmers, pastoralists, forestdwellers, etc.), etc.

The future action plan for AAJ is to develop an integrated natural resource centred overall development plan not only for the Ucheda village, but its environ in 'whole' (along with all forest transects, ecological studies, biodiversity assessment and the detail report in local language-Gujarati by the local tribal para-researchers (Nandibhai & Ditliben) of phase – 1). This developmental plan process will also develop an ecologically sound 'CFR' & PBR, a comprehensive natural rerource profile and a model tobe an epicenter for the extention of this process in other adjoining villages.

- Continuation of activities, survey & assessment
- Jungle safari with children & youth
- Phyto-Nutrition forest journey with women to celebrate their forgotten Wild healthy recipes

- Spiritual Tourism plan with youth
- Local Seed bank finalization (at AAJ)
- 2 more monthly reports to be prepared by PR fellows
- Finalization of SE Dev Plan & CFR Application
- Preparation for January Gramsabha & forest festival
- Invitations to all related communities, persons, Dept. & org. for the event
- **Forest festival:**
  - To celebrate their Natural resources, forgotten best practices, traditional recipes, traditional knowledge, indigenous science, natural crafts, cultural heritage
- **Gramsabha :**
  - Sharing & finalization of final report of PR fellows, Sustainable Ecological Dev. Plan & CFR application with Ucheda Jaiv Srusti Mandal
  - Different segments application finalization (pasture, NTFP value addition, Agro-outlets, women, etc.)
  - Submission of Dev proposals to Govt.

2. Other regions:

- Ground operation starting with available resources in different regions of the country (mentioned in below table).
- Community-Conservation Database finalization to replicate the process in other villages & regions

State	Region	Area
Gujarat	Coastal regions	Kachchh & Saurashtra
	Southern Aravallis	North Gujarat region
Rajasthan	Southern Aravallis	Panarva, Ambavi
	Northern Aravallis	Alwar, Sariska TR
	Vindhyan	Kota
Madhya Pradesh		Burhanpur
Jharkhand	Latehar	Betla TR
Orissa		Keonjhar
Telangana & Andhra	Dandakaranya	Chatti
Jammu & Kashmir	Pir Panjal range	Tosha Maidan

2. FENAIMATA JAIV-SHRISTI MANDAL VIKAS

Goal:

To develop a model for ecologically sustainable development in Chhota Udepur tribal region, this will have relevance for other experiments across the country.

Objectives:

1. To provide a vision of sustainable development to community based on the concrete natural and human resources available with the community by effectively using the provisions of law and funds/resources available with the local community including Govt. schemes etc.
2. To engage all the sections of the tribal society including children, youth, women and elders as change makers in the community with a view to understand how this can be made possible in reality.

Major agendas for the proposed region:

1. Understanding the real & sustainable natural resources (at landscape level) based development parameters and programmes in the region required by the community and overall ecosystem.
2. Preparing a model plan for ecologically sound CFR in Chhota Udepur (Annexure 1: region detail) region through a continuous process of community participation including the final submission and acceptance by the Gram Sabha.
3. Sharing the sustainable natural resources based developmental parameters, programmes and the CFR model plan (describing priority sites and strategies for claim of forest rights, biodiversity conservation and habitat protection) with the government for proper implementation.
4. Application of an innovative and concrete EEP methodology as per the field requirement, during the process as applicable for all the different social sections mentioned above (see annexure 1).

5. Expanding participatory action research based activities on 'Natural resource appreciation, conservation, governance & management' to other regions by developing training modules (which can be applied by the community itself in future).
6. Study of ongoing ecological changes and their effect on forest resources; How people of different socioeconomic groups view these changes and the driving forces behind these changes.
7. Preparation of a Qualitative forest resource profile of the region and establish a resource information, collection and management system especially sensitive to the needs of local community and capable of handling disaggregated, local information
8. Dialogue facilitation- propagation of appropriate species in the region consistent wih local ecological and livelihood conditions so that such species can give better economic benefits and also provide positive association with the local flora. This will help to restore many such NTFP providing species which are decreased or disappearing in the region like, *Buchnania lanzan* (Charoli).

Strategies and Approach

For preparation of natural resources based sustainable developmental plan & the model CFR, the details described here, will be applied in the field to document traditional knowledge of the local communities regarding all natural resources, medicinal plants, forestry, agro-diversity, wildlife, landscape diversity & water resources, cultural dimensions & biodiversity, sacred elements, etc. in the project area because of its multiplicity of groups and varied interests.

Following are the major activities will be carried out simultaneously:

- Identification of local forest resource hotspots
- Field visits in selected forest areas & villages, ecological transects
- Sensitization of local people about CFR and their relevance
- Establishment of local forest resource centre (at Bhekhadiya & Ucheda)

- Collection of data through different activities (EEP modules*), literature surveys, individual & group interviews, forest transects and resource mapping with local community, habitat identification & assessment, etc.
- Sharing with different stake holders
- Sharing of primary results in Gram Sabha
- Quantitative analysis of data and finalization of CFR
- Submission of CFR by the local village commttee

Time frame:

1. Model CFR plan September to December 2017.
2. Facilitating process of approval of CFR and engagement with government January 2018 – December 2018.
3. Development of action research based training modules for Natural resource appreciation, governance and management January 2018 - December 2019.
4. Follow up on self application by the community. January 2020 – December 2020.
5. Critical engagement in other regions of the country where related processes have matured January 2018 – December 2020.

EXPECTED OUTCOMES- FENAIMATA JAIV-SHRISTI MANDAL

- Final CFR
- Ecological profile of the region
- Natural resource use profile of the area
- Qualitative biodiversity profile of the area
- Food web analysis of the area (impacts of outer forces, new livelihood dimensions, agro-diversity, water resource and aquatic biodiversity)

* EEP modules: there are several activities in different modules for active community participation of all sections, livelihoods, gender and agegroups. For more details on EEP modules: leenapanchi@gmail.com

- Rare & threatened biodiversity components including some simple ecological indicators of the area
- GIS domain Biodiversity and Ecological database. User free for community and easy to handle & implement by local governance body
- Assessment of ecological conflicts and their solution (territories, water resources, food resources, habitat alteration / loss, etc.)
- Local social entrepreneurs possibilities regarding wild plants based food, NTFPs and medicinal plants based practices for local people's livelihood generation
- Landscape level assessment (the larger area connecting other NGOs or bodies)

This action research will help in understanding of Intellectual Property Rights (IPRs) issues, environmental policies and Biodiversity Act & FRA analysis.

Annexure:1 Study region*

1. Field Observations:

With the help of the local tribal organization Adivasi Jan Uthan Trust (AAJ), Bhekhadiya, Kawant), some forest areas were selected to do detailed study on the basis of forest resources used by the local communities and their views about their rights and responsibilities towards the resources.

Social concerns and Absence of CFR:

The primary study assessment of the region has revealed many ground realities. There are continuous changes going on in the ecosystems and also alteration in habitat is affecting negatively on the species association. Production from NTFPs has decreased and due to this community has shifted their interest from forest produce to high input agriculture, which is in general reducing/ damaging the overall productivity. In many areas people have cleaned the tree cover for cultivation which has resulted in massive soil erosion as all the parts of the landscapes are not suitable for agriculture. Despite knowing the effects, such visible changes are ignored by the community due to a process of alienation from the habitat as a result of ownership being in the hands of external forces.

From the discussion and resource assessment with community, it was cameout that there is no proper awareness and understanding about CFR among the community. They are aware about IFR but regarding CFR they have no clear perspective. As per the Govt record, there is not a single CFR claim passed from this tribal dominant district. Whatever claims have been submitted and passed from the region are CR only (walking tracts, grazing patch, cremation ground, etc.).

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* Extracts from 3 studies:
(1) Study on Implication of Forest Rights Act (FRA) in the context of sustainability of the forest resources on one hand and right of the individuals and communities under the act on the other, special reference to the implementation of Community rights (2010),
(2) Ecological Landscapes & FRA: BIODIVERSITY & ECOLOGICAL CONCERNS (2014)
(3) FRA implementation in Gujarat Status of CFR in Chhota Udepur District:
A primary assessment for preparation of Ecologically sound CFR (2017)

It is very necessary to do concrete work on CFR in the district. Since the community has great experience of community-forest-conservation, they can play a very crucial role to save and protect their own resources and thus enhance their forest centered life and livelihoods.

Changes in Ecosystem functioning:

It was observed that many parameters are playing a role in changes in ecosystem functioning. Ecosystems are sensitive to changes in the number and kinds of species found in their communities. Because species can vary dramatically in their contribution to ecosystem functioning, the identity of the species present in a community is important.

Declining species richness can lead to deterioration in overall levels of ecosystem functioning. Loss of functional groups or reductions in the number of species that occupy a particular level in the food web (grazers, browsers, predators, decomposers) can also cause a decline in ecosystem functioning.

Plant species, which are not "economically important" from the classical forest management point of view, as well as "weeds", which are present at one or more stages of succession enhance nutrient cycling, act as biological dams following disturbance, provide unique habitat and food for animals, and modulate fire severity.

The detailed account on the flora and fauna of Kawant region is given in Annexure 1 & 2 respectively. Each component of floral and faunal diversity has its own importance in forest ecosystem at large. Each one is unique in terms of primary colonizers, secondary colonizers, eco-services, functions, in succession process, etc.

Negative changes in Forest based Economy of Kawant region

Minor forest products (MFPs) refer to a wide array of economic or subsistence materials that come from forests, excluding timber. There are many kinds of animal and plant resources that are derived from forests, including fruits, nuts, mushrooms, essential oils, medicinal products, herbs and spices, dyes, resins, and animal products such as honey and wild game in the region.

MFPs are important parts of the biodiversity and are considered as component of livelihoods in terms of their economic, social and ecological value. As history shows, local communities have used these resources for food security and trade for centuries.

As a result of the population growth and shrinking of the forest area, the pressure upon the existing forest and pasture is being increasing. Indiscriminate collection of MFPs is not only a cause but undaunted regulatory procedure or recognized management practices has threatened the survival of some species and reduced the quality and quantity of MFPs in forests.

Some economically important MFPs of the area are mentioned in the Annexure 3. It is very necessary to do comprehensive action research on MFPs of the area to strengthen and sustain the local economy other than agriculture and animal husbandry.

Impacts of new species & status of Forest resources

It is found that in remote tribal village outskirts areas, cash-pole species including some alien species are under plantation especially in the private lands. Instead of indigenous species, large scale plantation of *Eucalyptus* sp. is going on in the tribal village area of Bhekadiya in Kawant.

There are such other alien species increasing and affecting negatively to the local vegetation and species association. This will affect the richness and diversity of economically important NTFPs of the region in long term, which is one of the prominent sources of the tribal livelihoods. It is very necessary to dialogue with the local community regarding the long term impacts of introduced – new species in local vegetation.

Annexure-2: Environment Education Programme (EEP)

The main objective of this programme is to create awareness about the environment among all the social groups to ensure the sincerity of future environment conservation groups within those communities. The main focus of environment education is to give young generation a deeper understanding about situation in which they live. Not only must they become informed about the environment-related issues and problems of their communities; they must also be able to analyze and evaluate the situation in order to resolve it. To achieve this, the programme module is based on the three common aspects:

- **Learning *about* the environment**
- **Learning *through* the environment**, by a systematic exploration of elements of different environment through a variety of activities
- **Learning *for* the environment**, by developing a genuine concern for and sensitivity towards its protection and preservation

Activities:

The activities incorporated the following elements, and asked for the different sections of the community to demonstrate their own knowledge of their surrounding environment and its intricacies through their own creative means.

- Concept and meaning of environment & Ecology
- Components of environment, Ecology & Biodiversity
- Natural resources – Water (surface, ground), Soil (agri fields, forest), Mountains, landscapes
- Flora & Fauna identification
- Food-chain & Food-web understanding (elements, cycles, balance, niche, etc.)
- Biodiversity of different habitats

- Agriculture: Agrodiversity, indigenous seeds, pollinators, biological pest controllers, biological soil engineers, Millet conservation, sustainable practices, changing scenario, threats, conservation options at local level, etc.
- Current environmental concerns and the relationship between man and nature, including traditional conservation systems
- Ecology, ecosystem services, Ecological indicators, Ecological audits
- Sustainable development measures

The different activities that cover the above aspects:

1) **Water wonders**
    - **Water cycle game**: understanding about the water cycle through seeds, stones, etc. (the sun, evaporation, condensation, precipitation, groundwater, transpiration), role of plants in water cycle; vegetation and other ground cover help to arrest soil erosion; water flowing through the ground is cleaned as it travels. Impacts of change in water table on vegetation.
    - **Foreigner in Water**: To observe and understand the affect of adding a foreign substance in a water (salt, uncooked grain, soil, Henna crushed leaves, *Butea* crushed flowers, plastic bag/cup, seeds, feather, stone, etc. Significance: observing, describing, predicting, hypothesizing, characterization of foreign substance, understanding pollution/ change of water quality
    - **Safe Water Yield – Reservoir clay model:** to demonstrate how reservoirs can augment and provide an adequate water supply. To identify the phases of the hydrologic cycle; identify and understand how the cycle affects a watershed; interpret the model of Watershed; Demonstrate stream-flow; return flows and augmentation
    - **Water friends:** identification of insects, birds as indicators to understand the water quality and availability. Identification of plants for water purification, water storage and small water check-bunds, plants to slow evapotranspiration from surface waterbody.
    - **Small Water structure model**: small water harvesting structures in village areas

- **Water profile and watershed mapping:** making water resource profile of the area (natural waterbodies, handpumps, anicuts, nallas, etc.) and mapping of water points of the watershed.

2) **Biodiversity game**:
   - **Significance:** To understand the community's knowledge of the local flora and fauna species, and to facilitate sharing of knowledge through generations.

3) **Agricultural Seed Display (*Beej Mela*):**
   - **Significance:** To encourage familiarity with indigenous agricultural seeds. To gauge the assortment of indigenous seeds possessed by local farmers. Seed bank creation with different Millets, associated other crops and plants

4) **Millet Puzzle games:**
   - **Significance:** Indigenous millet variety identification and collection.

5) **Millet based Craft:**
   - **Significance:** Mass level awareness through Millet based crafts, paintings, useful articles (made by children and women) display in Gramsabha, nature centers, workshops

6) **Indigenous Breed Display (*Pashu Mela*):**
   - **Significance:** To encourage familiarity with different indigenous breeds. To understand the management of natural resources for fodder requirement.

7) **Jungle Shala/ Pasture Safari**
   - Trekking and stay in nearby forest areas/ Grazing areas to understand and realize the connection between forest and village agriculture, animal husbandry, food web trend, species diversity & association, habitat diversity, health of local ecosystems, important eco-service providers [like pollinators (insects, birds), biological pest controls (spiders, dragonflies), seed dispersal agents], Health & nutrition security, etc.

8) **Children Library:**
   - Jeens (hand written postcard size booklets), herbarium, seed display in school library for day to day learning and sharing for children

9) **Visual identification through pictorial charts, seeds, feathers, etc.:**

- **Significance:** To determine the awareness of children below the age of 7 or 8 years about their surrounding environment.

10) Clay model:

- **Significance:** To determine the children's understanding of the ecosystem as it integrates human and natural elements, and to further their understanding with regards to interventional programmes for conservation awareness.

11) Jewelry-making:

- **Significance:** To help the children appreciate the environment as beautiful and enjoyable, and to relate the environment to symbols of cultural significance. To encourage learning through the identification of the plants, seeds, feathers, stones, etc. used in jewelry making.

12) Slide Presentation:

- **Significance:** To familiarize city children with the local wildlife, agriculture and to foster their compassion towards the environment, from which they otherwise live quite removed.

13) Fabric painting:

- **Significance:** To understand the children's representation of their own environment at vast platform.

14) Skit/ Mime/ Bhavai:

- **Significance:** To help the children realize the destruction of their village forests, agriculture systems, pasture systems and stimulate creative responses to this problem (skits like, '*Dungaro rade chhe*', '*Zaad vinanu jivan*', '*Gaamnu Paadar eklu re*' '*Apna beej apnu jeevan*', '*Chaki lai jowar no dano'*, '*Chhuti gaya mara beej*', '*Ek Vandara ni atmakatha*', etc).

15) Drawing and Essay writing competition

- **Significance of drawing & essay writing competition**: To determine how much children know about their surrounding forests, agriculture fields, pasture lands and other resources, especially their understanding of the meanings, condition, and uses of these environmental elements, historical and current scenario.

16) Combination of old knowledge and New technology:

- The youth will learn some new tools (GPS, Camera, Computer) to make their own knowledge bank so that they can update their village resources for better management plan of the region.

17) **Traditional Recipe Programme and Recipe books (Taste from wild):**

- **Significance:** To collectively retain information about the importance, use, and nutritional value of local species and varieties of plants, information that is becoming lost with the elder generation. Documentation of traditional recipes in book or booklet forms by local school children

Participants

EEP activities can be conducted with any social group: children, women, farmers, shepherds, fishermen, village elders, local governance bodies. Environmental education is a continuous learning process; each group in society has both experiences worth sharing and the potential to learn new information. The most important goal of these activities is the transfer of knowledge between successor generations (the new generation and future conservators).