Spatial technology for conservation and sustainable development of biodiversity

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BAIF Development Research Foundation

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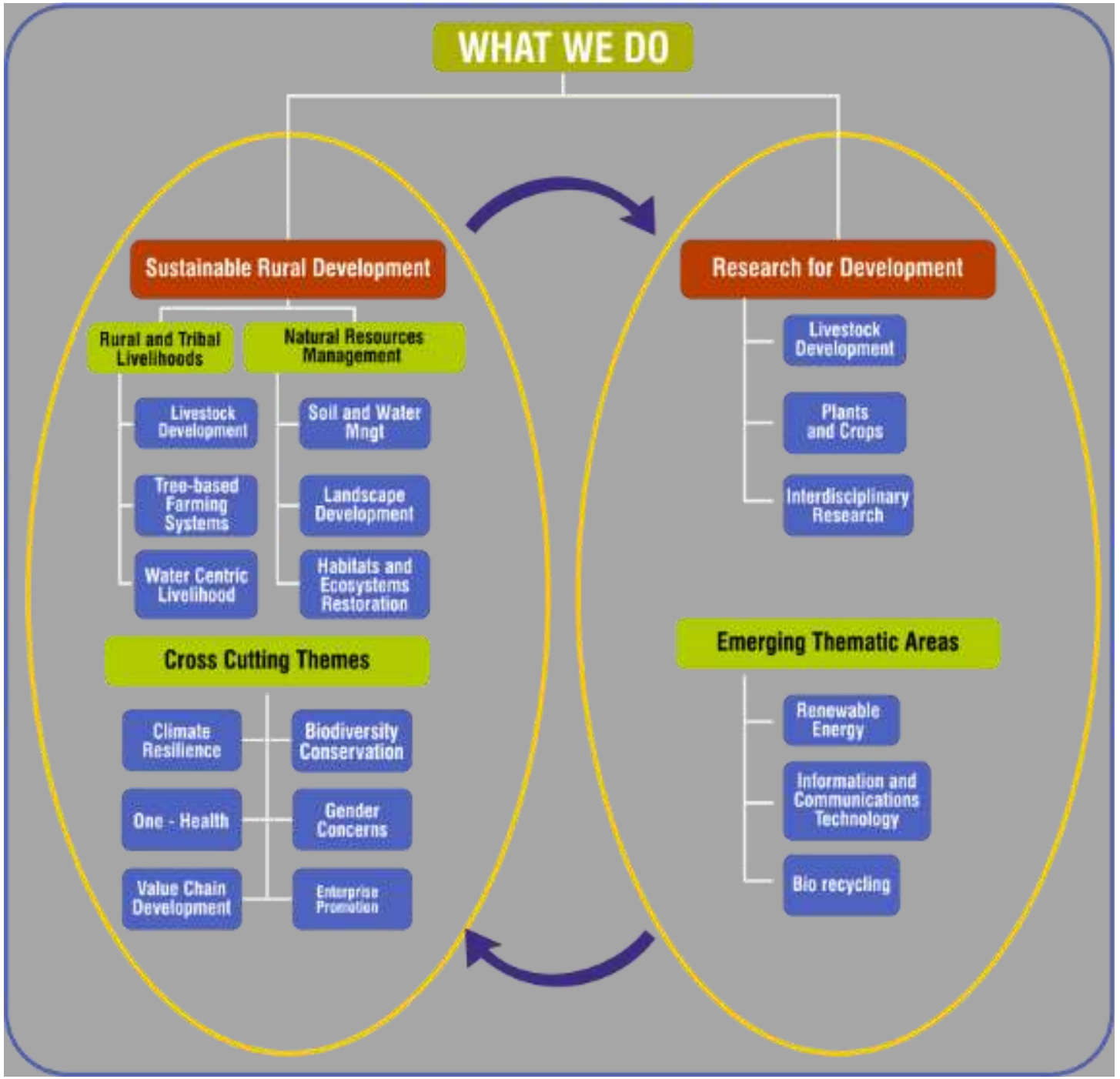
BAIF's Mission is to create opportunities of gainful self-employment for the rural families, especially disadvantaged sections, ensuring sustainable livelihood, enriched environment, improved quality of life and good human values.

This is being achieved through development research, effective use of local resources, extension of appropriate technologies and upgradation of skills and capabilities with community participation.

- BAIF's programmes are spread out in different states of India covering different ecosystems, agro-climatic zones and communities.
- The BAIF Programmes are in the form of a nexus between various rural development initiatives and a strong applied research programme.
- Sustainable Rural Development through generating rural livelihoods and through management of natural resources: this is achieved through various core thematic area programmes and various cross-cutting components.
- Research for Development: to study contexts and develop appropriate technologies and solutions for rural development.
- BAIF Team also works on various emerging thematic areas and these programmes are then mainstreamed.

13 States	318 Districts	1,64,835 Villages	53,93,223 Families

BAIF's Programme Coverage



Spatial technology for various programs

- Locations of Cattle development centers (CDCs): Planning of projects, linkages
- Spring / Watershed development: Drainage lines, planning of structures, soil conservation interventions, impact assessment
- Agri-horti-forestry (Wadi): Planning, impact assessment
- Agriculture: Irrigation management, area delineation
- Baseline studies
- Site selection, documentation

Maharashtra Gene Bank Programme (MGBP)

- Document, validate and propagate successful community-driven practices of conservation of biodiversity
- 5 research institutions and 15 NGOs across Maharashtra
- Seven broad thematic areas related to conservation: forests, grasslands, agricultural ecosystems, livestock, wetlands and freshwater ecosystems, conservation management, and information management.
- Funding by Rajiv Gandhi Science & Technology Commission (Government of Maharashtra)

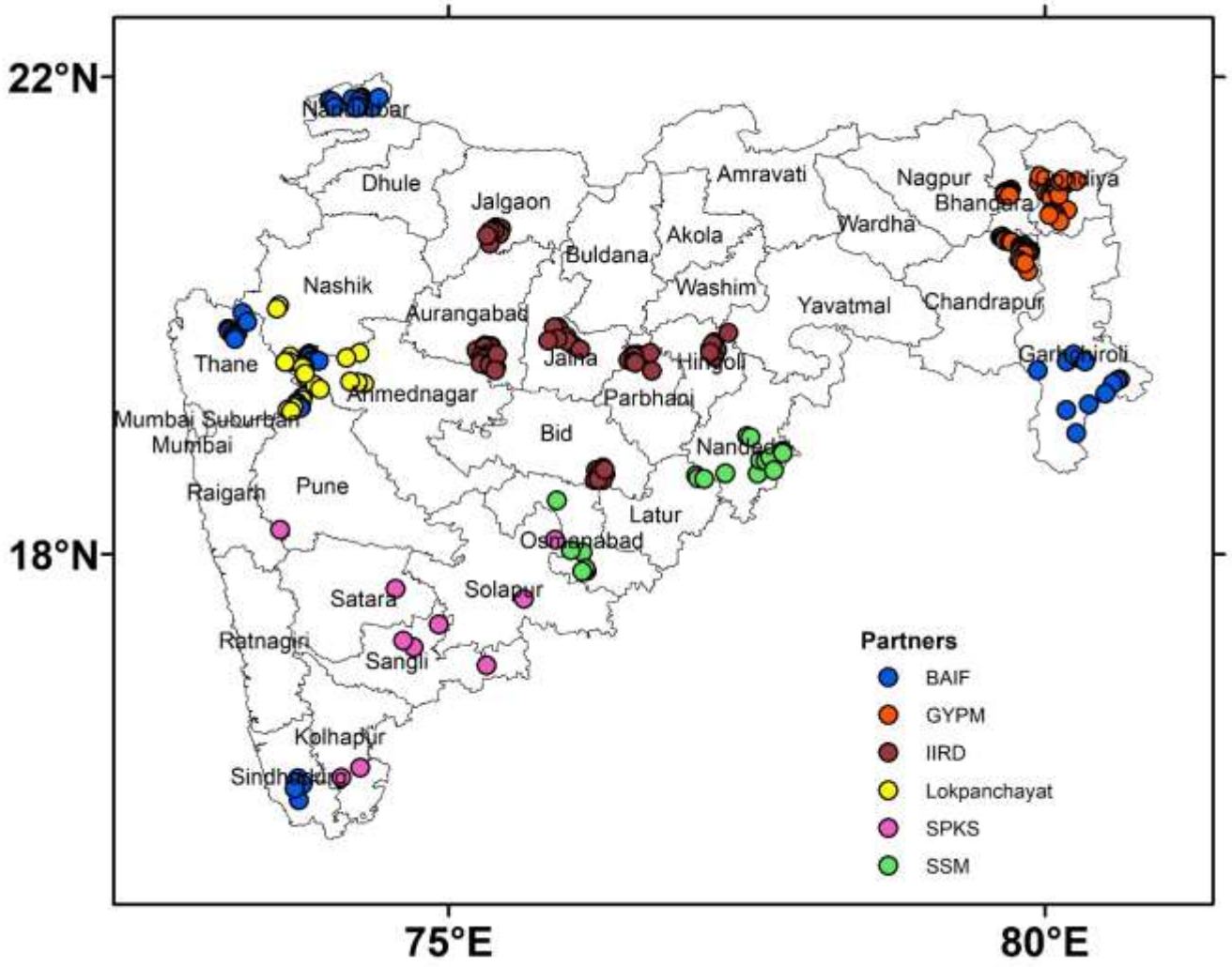
MGBP Project objectives:

- To design and undertake detailed participatory appraisals for diverse crops, trees and livestock genetic resources that exists in diverse agro climatic zones in the state.
- To plan and introduce activities for region wise insitu conservation, domestication revival and management of selected local crops, regionally important breeds of cow, goat and local poultry and NTFP (Non Timber Forest Produce)
- To plan and initiate activities for habitat conservation on common and private lands including eco-restoration process along with soil and water conservation measures and better land use planning
- To plan and initiate activities for building motivation of local communities to participate and manage the program

Theme wise: Spatial and attribute data

Forests	• Tapu sites, Sites of trees with special characteristics • Species name (scientific, local), part used, specific use, density
Grasslands	• Grassland sites • Fodder species, depending animals, use of these animals, milk production, abundance of species, ownership of area
Agriculture	• Seed banks, Villages, in-situ conservation sites, agro-climatic zones • Species (accession), local and scientific names, seasons, morphological characters, traditional use, medicinal properties, storage systems
Livestock	• Migration pattern, Villages • Breeds (Species), Breeder profile, characteristics of elite animals, Milk production
Wetlands and freshwater ecosystems	• Lakes • Water availability in different seasons, Plant, fish, and birds species, Water quality, irrigation, restoration
Conservation management	• Conservation area • Species, efforts taken

Agriculture theme: Villages selected by various partners under MGBP



In situ conservation centres

Jawhar Rice(105) & Millets(10)

Etapalli Rice centre(67)

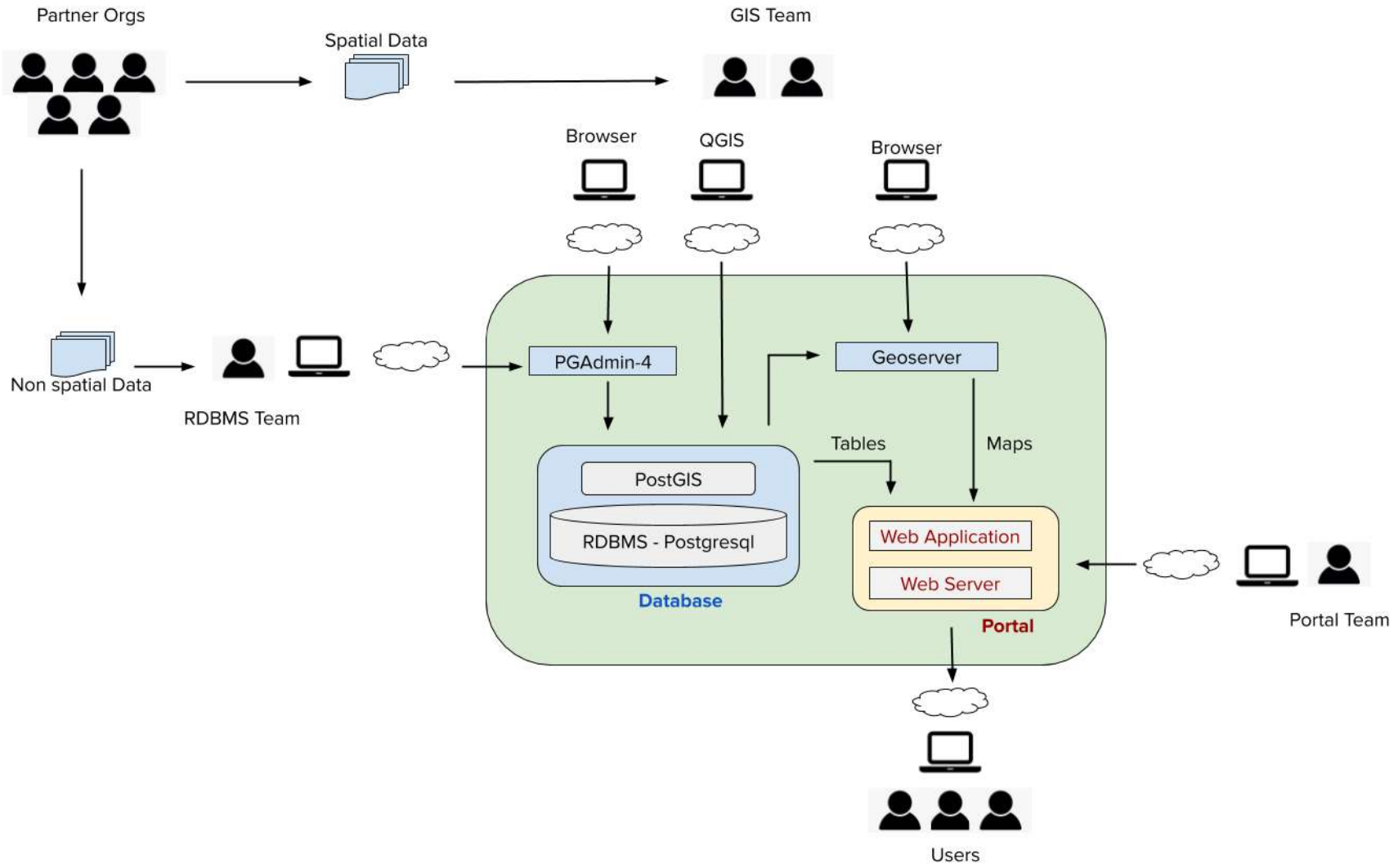
Shiroshi(46)

Valvanda(59)

Vegetable and beans diversity


Abhay
Shepu
Hawari
Dangar
Mathi
Dhavla Hulaga
Gebra Hulga
Gavran Kavli
Jawas
Kali Chawali
Ambedi
Kateri Bhendi
Gavran wangi
Gavthi Bhopala
Lal Chawli
Kala watana
Dhauli Chawli
Gavthi Mung
Gavthi Harbhara
Gavran Kakadi
Chandan Batawa
Ghosali
Shravan Ghevda
Gavthi masur
Black Horse-Gram
Tambli Chawli
Dhauli Tur
Watana Ghevda
Gavthi Gawar
God Wal
Safed Ghevda
Patadya Ghevda
Gabra Ghevda
Butka Ghevda (Red)
Butaka Ghevda (Black)
Faras wal
Hirva Lahab Ghevda
Hirva Akhud Ghevda
Tamda Wal
Patadya wal
Lal Shiracha Ghevda
Butka Safed

Architecture of database



MGB Portal Server Architecture - 0.1

Users of the platform:

User		Data	
Group	**Specific Type**	**Preferred Format**	**What data**
On Field	Farmer Gram Panchayat Development Individual Development Organisation Dependent Community Rural banks Small/Rural businessman	. Easy Search and display . Location based search . Season based search . Non-technical language . Automatic suggestions	. Commercially beneficial crops, trees etc. . Health wise beneficial crops, trees etc. . Suitable species for specific: location season soil and ecosystem etc.
Research	Student Teacher Researcher Environmentalist Educationist Research Institute Academic Institute	. Easy search . Detailed scientific information page for a species . Downloadable data sets . Map visualisations . Reports . Articles . White papers . Research papers	. All data points - downloadable for further analysis . Individual species details information page . Specific links to other credible and useful sources like - IBP, wiki etc from individual species page.
Decision Makers	Government agency Funding agency Advocacy group Development Organisation Industry and Corporate CSR	. Analysis and Reports . Downloadable data sets	. All data points - downloadable for further analysis . Location based analysis and summary . Species based analysis and summary
Data Uploaders	Partner Organisations Indvidual - scientific orientation Individual - lay person	. Easy, Minimalist, Intutive upload interface . View, modify, download self uploaded content. . Bulk data upload feature . Helpers while uploading - validation, duplication detection, suggestions etc.	

Salient features of the platform

- Crowd sourcing: participation by remote local communities
- Opensource platform
- One biodiversity platform : for forests, grasslands, agricultural ecosystems, livestock, wetlands and freshwater ecosystems, conservation management
- Wide use: on field, research, decision and policy making

MGBP : SDGs

Income though local resources

- Value addition, Product development
- NTFP
- Market linkages, FPOs
- livelihood through MGNREGA and other schemes

Sustainable increase in food production

- Increase in yield of grains, wild vegetable, fisheries, milk production, SRI,
- **996** accessions of 22 focused crops, 91 wild edible plant
- Nutritional security by introducing kitchen garden
- Nutritional products

Healthy and nutritious food

- Traditional crops having medicinal properties
- Organic farming
- Health checking programmes for Women-Children

MGBP : SDGs

Participation of women in activities

- Female centric activities
- Women SHGs
- Role of women in decision making

Income resources in villages

- Increase in farming, fisheries activities
- Alternate income sources
- Reduced migration

Sustainable village communities

- Community level seed production
- Strengthening the links between people and their environment
- Participatory varietal selection involving local community for identification and genetic improvement of locally suitable crop diversity

MGBP : SDGs

Climate resilient activities

- Promotion of climate resilient crop diversity
- Afforestation and reforestation for Carbon sequestration
- Sustainable use of forest produce (NTFP)
- Improved management of grasslands
- Protected areas to maintain the local conditions
- Local techniques for conservation of grains

Management of fresh water tanks

- Restoration of tanks
- Ban the use of machineries for desiltation
- Conserving fish migration routes
- Fishing cooperative society for managing fishing in the tanks

Sustainable land management

- Conservation of indigenous species
- Forest and ecosystem management
- Community protected areas

Future prospectus

- Agriculture land mapping, crop health, production projections
- Forest vigor
- Planning of future activities of conservation: Site selection
- Policy advisory for vulnerable areas
- Market linkages

Thank you

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