Agro-biodiversity & SEPL based Climate Change Adaptation
(the programme of MSSRF to achieve the Satoyama Vision)

Group 4: Discussion

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Discussion point 1: Activities implemented for each Priority Action

• Q. What kind of activities have the members implemented since joining IPSI that have addressed the Priority Actions?

Discussion point 2: Possible activities to further promote Priority Actions

• Q. How can each organization implement activities that address Priority Actions further, especially those that are less addressed?

Discussion point 3: Suggestions on the Plan of Action

• Q. Are there any suggestions on the current Plan of Action, especially on the Priority Actions?
Activities implemented for each Priority Action
What kind of activities have the members implemented since joining IPSI that have addressed the Priority Actions?

Internalized the concept of Satoyama and the approach in Achieving its VISION
SEPLS are the most dynamic elements of a bioregion and the most crucial domain for Food & Agriculture production.
Integrated Gene Management

**In situ**
- National Parks
- Protected Areas
- Biosphere Reserves
- World Heritage Sites

(Forest, Environment and Wild Life Departments)

**Community Conservation**

**In situ on farm**
- Land races
- Folk Varieties

(Tribal and Rural Families)

**Ex situ on farm**
- Sacred Groves

**Ex situ**
- Botanical Gardens
- Zoological Gardens
- Gene Banks

(Government Agencies and Universities)
## How much diversity preserved/nurtured in India?

<table>
<thead>
<tr>
<th></th>
<th>Nr. species known in total (approx)</th>
<th>Nr. species domesticated (approx)</th>
<th>Most important to global-level food supply</th>
<th>Nr. domestic breeds &amp; varieties</th>
<th>Nr. domestic breeds &amp; varieties at risk</th>
<th>Nr. domestic breeds &amp; varieties extinct</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLANTS</strong></td>
<td>17,000</td>
<td>44</td>
<td>Rice and, kodo millet, black gram, green gram and spices such as black pepper, turmeric, cardamom and ginger, and fruits such as, jack fruit and mango</td>
<td>Many thousands Rice: 50,000 Sorghum: 5000 Mango:1000 Pepper: 500</td>
<td>1000’s</td>
<td>Not known</td>
</tr>
<tr>
<td><strong>MAMMALS</strong></td>
<td>372</td>
<td>12</td>
<td>cattle, pigs</td>
<td>26 breeds of cattle, 40 of sheep, 20 of goats, 8 of camels, 6 of horses, 8 buffalo</td>
<td>&gt;500</td>
<td>Not known</td>
</tr>
<tr>
<td><strong>BIRDS</strong></td>
<td>1228</td>
<td>10</td>
<td>chickens</td>
<td>18 of poultry</td>
<td>&gt;370</td>
<td>Not known</td>
</tr>
</tbody>
</table>

Source: (Kothari 1999).
MSSRF’s INTERVENTIONS: How SEPLS concept integrated?

Dynamic conservation of Biodiversity

1. Mountain Area Ecosystems
   (wet and dry regions of India)
   • Community Gene-Seed-Grain Banks
   • Strengthening livelihoods of Tribal communities
   • Globally important agricultural heritage systems-Jeypore and Kuttanad
   • Conservation and Promotion of RET Plants and Wild Foods
   • Genetic and legal literacy

2. Mangrove Ecosystems
   (coastal regions)
   • Mangrove genetic resources conservation centres
   • Mangrove-fishery farming system
   • Conservation of coastal resources and livelihoods
How we have implement activities that address Priority Actions further, especially those that are less addressed?

**Facing the Impact of Climate Change**

- Warmer Temperature
- Drought
- Floods
- Sea level rise
- Higher CO2 in the atmosphere
- Alien invasive species
Neglected Crops: Genes for Coping with Climate Change

- Time-Tested production and income stability under marginal and high-risk farming
- Many crops are nutritionally rich to redress ‘hidden hunger’
- Neglect leading to loss of genetic diversity and associated traditional knowledge
- Opportunity to enhance sustainable income, food and nutritional security
Impact of higher temperature on Agriculture

- Water scarcity and frequency of drought will increase
- Rise in temperature could increase the risk of heat or drought stress to crops and livestock
- Length of the growing period (LGP) is likely to change
- Physiological development is accelerated which hastens maturation and reduces yields
- Increased night-time respiration reduces potential yield
Deepwater (floating) rice has three special adaptations:

i. ability to elongate with the rise of water levels;

ii. develop nodal tillers and roots from the upper nodes in the water

iii. the upward bending of the terminal part of the plant called 'kneeing' that keeps the reproductive parts above the water as flood water subsides.

Facing the challenge of Floods

Rice – Anchor of Food Security in an era of global warming
Gene Banks for a Warming Planet

Community Gene & Seed Banks

National Gene Bank

Svalbard (North Pole)
Global Seed Vault

Conservation continuum
MSSRF’s INTERVENTIONS: How SEPLS concept integrated?

Dynamic conservation of Biodiversity

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Interventions in three Agrobiodiversity and Poverty Hotspots of India

Odisha – Jeypore tracts
Tamil Nadu – Kolli Hills
Kerala-Wayanad district

on-farm and *in-situ* conservation of crop diversity and the socio-economically important wild plant species.
MSSRF’s COMMUNITY AGRO BIODIVERSITY CENTRE
<table>
<thead>
<tr>
<th>Tribe</th>
<th>District</th>
<th>Medicinal Plants used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhatra</td>
<td>Nawarangpur</td>
<td>81</td>
</tr>
<tr>
<td>Bhumia</td>
<td>Koraput</td>
<td>69</td>
</tr>
<tr>
<td>Bonda</td>
<td>Malkangiri</td>
<td>55</td>
</tr>
<tr>
<td>Gadaba</td>
<td>Koraput</td>
<td>83</td>
</tr>
<tr>
<td>Gond</td>
<td>Nawarangpur</td>
<td>67</td>
</tr>
<tr>
<td>Kandha</td>
<td>Koraput + Rayagada</td>
<td>124</td>
</tr>
<tr>
<td>Koya</td>
<td>Malkangiri</td>
<td>48</td>
</tr>
<tr>
<td>Paroja</td>
<td>Koraput</td>
<td>74</td>
</tr>
<tr>
<td>Saora</td>
<td>Rayagada</td>
<td>59</td>
</tr>
</tbody>
</table>

9 tribes | 4 districts | 660 MPs
Community Seed-Grain Bank
A platform for food & nutritional security

Features:
- Managed & maintained by Community
- Maintains local genetic diversity.
- Provides pure & quality seed
- Provides grains during emergencies.
- Assistance at low interest rate.
- Available at any time.

Community Food Security System

Grain Bank

Seed Bank
Focusing on Agrobiodiversity conservation for alleviating Malnutrition

- DIVERSITY OF TRADITIONAL RICE (26 varieties at on-farm)
- DIVERSITY OF LEGUMES (14 varieties at on-farm)
- DIVERSITY OF EDIBLE ROOTS & TUBERS (over 20 vars)
- DIVERSITY OF WILD YAM (Dioscorea) (ca-29 taxa)
- DIVERSITY OF CULTIVATED YAMS (15)
- DIVERSITY OF CUCURBITS (12)
- DIVERSITY OF BRINJALS (15)
- DIVERSITY OF LEAFY GREENS (>20)
- DIVERSITY OF BANANAS (18-20)
- DIVERSITY OF WILD EDIBLE FRUITS (>20)
- DIVERSITY OF BLACK PEPPER (15-20)
- DIVERSITY OF MUSHROOMS (>30)
Awards and Recognitions

• *Blue Plannet Prize for MSSRF in 1996* The integrated conservation efforts in biodiversity in participation with local communities paved the way for MSSRF to receive the Blue Planet Prize, the first and only institution in Asia to receive this prize and the Stockholm Challenge Award in 1996.

• *Equator Initiative Award for Koraput Tribal Community*

• *Genome Savior Community Award*

• *GIAHS recognition to Below Sea level Farming in Kuttanad*
Suggestions on the current Plan of Action, especially on the Priority Actions? Capacity building efforts in mainstreaming COMMUNITY SEED SYSTEM

1. **Branding and marketing “traditional seeds”** (as low carbon agriculture and food production entity for nutrient sensitive agriculture; stimulant for culture sensitive agriculture and food production; to support sustainable agriculture and enhance biodiversity values in agricultural landscapes.

2. Lobbying for a **Landscape approach** in Land use for food and agriculture production;

3. Optimising the use and deployment of **agricultural biodiversity** in production systems

4. **Synergizing the activities** of the actors working in Formal Seed System and Informal Seed System for sustainable food and agriculture production
Working with a C4 Approach in Satoyama-Satoumi Management

The first C stands for **Conservation**, which includes *in situ*, on farm and *ex-situ* methods and is the bottom line of all our actions. *(ON-FARM CONSERVATION OF DIVERSE GERMPLASM)*

The second C stands for **Cultivation** that promotes sustainable agricultural practices like Eco-agriculture or conservation farming; *(CULTIVATION OF MANY IMPORTANT SPECIES/VARS)*

The third C denotes **Consumption** aiming the literacy leading to sustainable consumption and access to and availability of rich dietary diversity. *(Promotion of NUTRITION GARDENS)*

The last C represents **Commercialization** symbolizing the economic security of those conservers, cultivators and consumers who involve in maintaining the C⁴ continuum through responsible way of buying and selling. *(MARKET DEVELOPMENT FOR TRADITIONALLY PRODUCED CROPS)*
Mainstream the SEPLS concept in the core of the core challenges of the present world: Climate resilience of agricultural landscapes and Malnutrition are two such challenges.

Issues could be addressed by such a move:

• **Improving resilience of the food production landscapes** through ecological intensification and maintenance of biodiversity in production system and thereby genetic diversity based climate adaptation approach in agriculture, and sustainable consumption (CBD plan);

• **Addressing Malnutrition** through availability, access and absorption of diverse foods and beverages to those vulnerable communities;

• **Enhancing Livelihood security** through sustainable income generation from SEPLS products and services.
Developing an appropriate Agriculture strategy based on the SATOYAMA CONCEPT to help:

Balancing the **high input/low diversity/industrial scale “western” agriculture** and **Low input/high diversity/smaller scale “traditional” agriculture**

Most of the poor and developing countries depend largely on small scale farming.

The small holders of China, India, Indonesia, Bangladesh and Viet Nam – Asia’s five most populated countries alone account for 300 million small farms out of the world’s 500 million such category of farms.

THANK YOU
Capacity development of the Key stakeholders in implementing the Satoyama Initiative

*Capacity development to achieve the three major Objectives of IPSI:*

- **Enhanced knowledge and understanding of SEPLS** by all key stakeholders and thereby better management of these systems;

- **Availability of Package of Solutions to all the key stakeholders** to address the direct and underlying causes for decline and loss of BES of SEPLS and thereby keeping sustainable these services;

- **Sustainable benefits** towards human well-being from SEPLS (long–term vision) and for Food, Nutrition, Health, Income and Livelihood security for the poor and vulnerable (short-term vision);
How to achieve these objectives?
by Mainstreaming the SEPLS concept
in the core of the core challenges of the present world:

Climate resilience of agricultural landscapes and Malnutrition are two such challenges

The Issues could be addressed by such a move

• Improving resilience of the food production landscapes through ecological intensification and maintenance of biodiversity in production system and thereby genetic diversity based climate adaptation approach in agriculture, and sustainable consumption (CBD plan);

• Addressing Malnutrition through availability, access and absorption of diverse foods and beverages to those vulnerable communities;

• Enhancing Livelihood security through sustainable income generation from SEPLS products and services.
1. What Capacities needed to mainstream SEPLS?
2. Whose capacities are more crucial to build to achieve these objectives? and
3. By what Approach/strategies and Methods?

Six Critical Human Groups

- Local Community Members (the stewards of SEPLS)
- SEPLS Specialists (including activists/scientists/NGOs)
- Government servants (key officials concerned with land use, climate risk management and food production)
- General Public
- Policy Makers
- Local leaders & celebrities

Some Ten crucial Systems and the institutions associated with them in Climate Adaptation, Food Production and Biodiversity governance.

1. Land Use Management system
2. Disaster Management system
3. Agricultural Research System
4. Forestry Research System
5. Wetland and Marine Research System
6. Heritage Conservation System (including TK and practices)
7. Biodiversity and IPR protection system
8. Sustainable Market Development System
9. Political and Governance System
10. Mass Media & Communication
Capacity Gaps in SATOYAMA mainstreaming

1. **Branding and marketing “SEPLS”** (as low carbon agriculture and food production tool; the place for nutrient sensitive agriculture; place for culture sensitive agriculture and food production; tool to support sustainable agriculture and enhance biodiversity values in agricultural landscapes. 

Satoyama/SEPLS could be the major tool to increase financial resources for achieving those biodiversity targets with regard to terrestrial and freshwater ecosystems);

2. Lobbying for a **Landscape/waterscape approach** in Land use/sea use planning for food and agriculture production;

3. Optimising the use and deployment of **agricultural biodiversity** in production systems

4. **Synergizing the activities** of a large number of actors working for sustainable food and agriculture production
The Approach: The approach should be different at different levels

Global: Tapping the full potential of the IPSI Platform; harnessing NDCs, SDGs and Nutrition movements like SUN, and linking with the relevant MEAS like CBD, UNFCC & ITPGRFA for raising FUNDS, encouraging INNOVATIONS, and transferring SCIENCE & TECHNOLOGIES (FIST approach);

Regional: Firstly, prioritization of target regions based on the criteria such as poverty, malnutrition and climate vulnerabilities: Africa; south Asia; Asia-pacific; Latin America; Least developed small island nations; secondly, using the regional forums –e.g. SAARC, African Regional Forum on SD; Latin American Regional Forum to introduce and integrate SEPLS at Bilateral or multi-lateral programs by twining developed and developing countries together.

National: Effective preparation and implementation (innovative, scientific & technology driven) of NBSAPS and SUSTAINABLE AGRICULTURE METHODS & PRACTICES

Local: Active Community Agro-Biodiversity Centres, and EMPOWERED democratically elected local self governments.
SUSTAINABLE FUNDING SUPPORT: Need exclusive Satoyama Development fund by Linking with Legally binding multilateral global mechanisms. BIODIVERSITY (Aichi Targets, CULTURE (UNESCO Cultural Heritage Convention), ITPGRFA, CLIMATE RELATED CONVENTIONS (INDCs/Green funds) and post 2015 AGENDA/SDGs

UNDP-The Biodiversity Finance Initiative (BIOFIN)

How to strengthen IPSI to achieve this goal? Need for SBSTA like body?
Need exclusive regional Satoyama Development Programs by establishing and sustainable regional forums for this purpose with well defined strategies for Providing FIST

• CBD-SATOYAMA INITIATIVE (IPSI)
• FAO-GIAHS
• Eco agriculture programmes
• Nutrition Initiatives
• Bio-cultural Diversity programmes
• Sustainable Agriculture programmes
• Climate Adaptation plans

How to strengthen IPSI to achieve this goal?

Some suggestions:
1. Strengthen the IPSI network on regional basis by identifying suitable mechanisms for taking up some collaborative programs
2. Commission a study to explore the opportunities and recommend feasible plan of actions and sustainable funding options?
3. ...
4. ...
Need to prepare efficiently the NBSAPS through partnership building with local communities and giving emphasis to COMMUNITY BIODIVERSITY MANAGEMENT. The IPSI member countries should have mechanism for mainstreaming the Satoyama concept into Food systems.

- CBD Obligations: Aichi Targets 4, 6, 7, 11, 13, 14, 15, 18 & 19
- Low carbon emission obligations: NDCs &
- National Adaptation Plans that countries are developing under UNFCCC
- SDG Obligations

How to strengthen IPSI to achieve this goal?

1. Organize national focal points and build their capacity towards this direction.
2. Organization of a SATOYAMA CORPS/VOLUNTEERS like RED CROSS Volunteers
3. Introduce SATOYAMA FELLOWSHIPS to do research in SEPLS
Need exclusive Local level Satoyama Development Programs

How to strengthen IPSI to achieve this goal?

1. Establishing Local level Resource Centres (Satoyama Centres) to support sustainable food production and agriculture
2. Learn from successful cases........