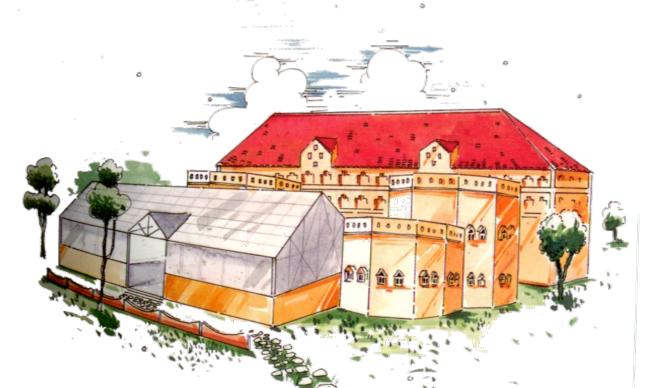
Bridging Science, Technology and Society: Practices of Transdisciplinary Implementation on Sustainability and Environmental Change in Future Asia:

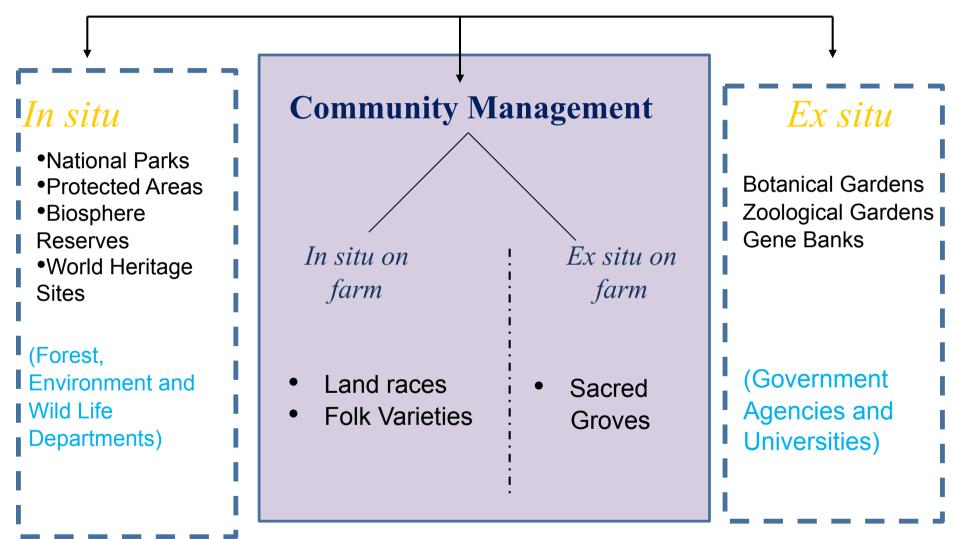
## Perspectives, Science Practices and Implementations of MSSRF



## M.S.SWAMINATHAN RESEARCH FOUNDATION

Centre for Research on Sustainable Agricultural and Rural Development

## **Integrated Gene Management**



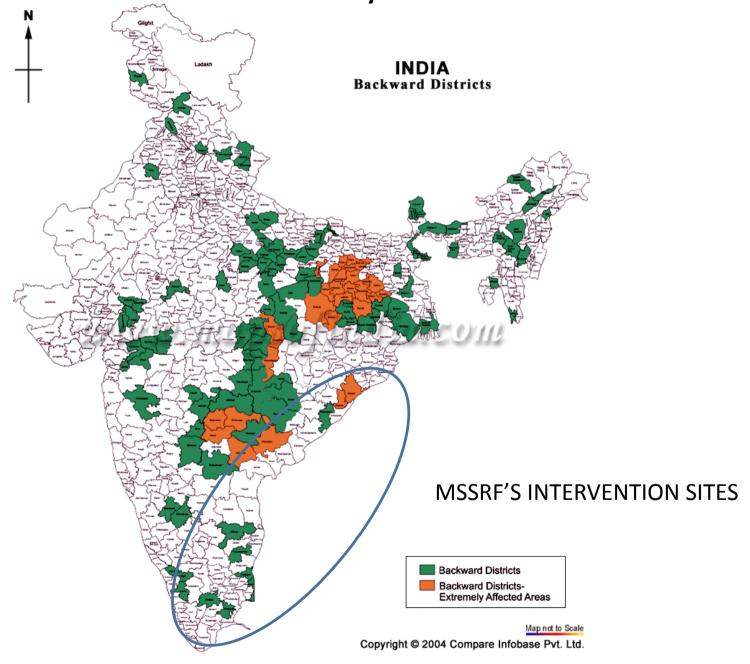
(Tribal and Rural Families managing the Socio-Ecological Production Landscapes)

## How much diversity preserved/nurtured in India?

Nr. species known in total (approx)	Nr. species domesti cated (approx)	Most important to global-level food supply	Nr. domestic breeds & varieties	Nr. domestic breeds & varieties at risk	Nr. domestic breeds & varieties extinct
PLANTS 17,000 320 species of wild relatives of crop plants	44	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	Many thousands Rice: 50,000 Sorghum: 5000 Mango:1000 Pepper: 500	1000's	Not known
MAMMALS 372	12	cattle, pigs	26 breeds of cattle, 40 of sheep, 20 of goats, 8 of camels, 6 of horses,8 buffalo	>500	Not known
BIRDS 1228	10	chickens	18 of poultry	>370	Not known

Source: (Kothari 1999).

## India's Economically backward districts



## Community Agrobiodiversity Centre FOR REVITALISATION OF COMMUNITY CONSERVATION SYSTEMS



### **SOCIETAL PRACTICE**

## TRANSDISCIPLINARY RESEARCH PROCESS

## **SCIENTIFIC PRACTICE**

# Societal problems •Everyday life relevant •Actor specific

Problem framing
Team Building

## **Scientific Problems**

Uncertainty
 Lack of Methods
 Disciplinary specialization
 Generalization

## Actor specific societal discourse

- Administration
  - •Institutions
    - •NGOs
- Corporations
- •Policies, Media

## PHASE B

PHASE A

Co-creation of Solution oriented transferable Knowledge

Actor 1

actor2

## **PHASE C**

(Re)Integration and application of created knowledge

## Scientific discourse

- •Institutions of higher education
- Non-university researchIndustrial research

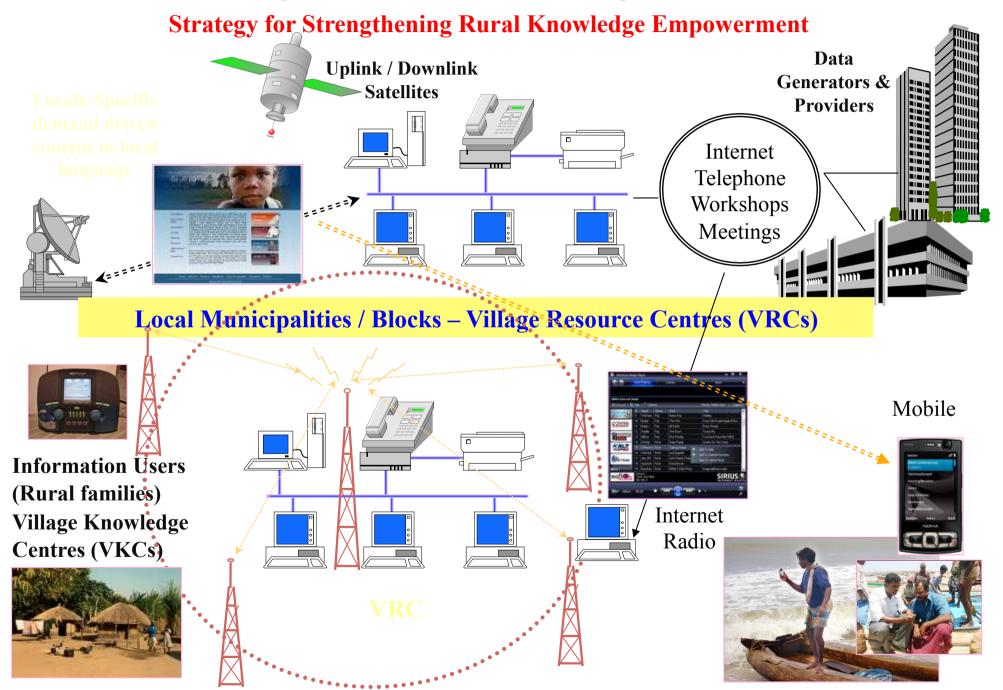
## Results relevant for scientific practices

- Generic insights
- •Methodical and theoriecal innovations
- New research questions

## Results useful for societal practice

- Strategies
- Concepts
- Measures
- Prototypes

## **Reaching the Unreached: Voicing the Voiceless**



## EXAMPLE P

## Leveraging Agriculture for Nutrition in South Asia-

## LANSA 2012-2018

Partnership: multi-institutional consortium partners from South Asia, UK and USA, Bangaladesh, Pakistan led by MSSRF

The LANSA consortium work to essentially address 4
Research Questions through frameworks for
comparative analysis of agricultural and social systems

- 1. How can south Asian agriculture and related policies and interventions be designed and implemented to increase their impacts on nutrition, especially nutrition status of children and adolescent girls?
- 2. How can systems of Innovation that better connect agriculture and nutrition be nurtured?
- 3. Can we strengthen existing pathways to women's empowerment and identify new ones within the food system?
- 4. How can appropriate pro-nutrition agricultural policy frameworks for fragile and conflict-affected contexts be assured?

## EXAMPLE Pai

## Alleviating Poverty and Malnutrition in Agrobiodiversity Hotspots: **APM** 2011-2014

Partnership: multi-institutional consortium: University of Alberta, Bioversity International and MSSRF

Implemented in three Agro-biodiversity Hotspots The innovative aspects:

- Research on an agricultural development strategy that integrates all local crop, livestock and other resources with concerted efforts on their concurrent conservation and sustainable use
- Research on participatory on-farm management
- Participatory approach to build leadership of local communities and grass root institutions, organizing women and men farmers into SHGs and Farmers Clubs
- Targeted interventions in addressing malnutrition through a malady-remedy paradigm that identifies major nutritional deficiencies
- High priority to social mobilization and empowerment of women to place them in driver's seat and energize efforts on alleviation of poverty and malnutrition.
- Participatory choice and adoption of gender sensitive and supportive technology and stress on TK, customs and practices

## EXAMPLE

## TRANSFORMATION KNOWLEDGE TOWARDS A GENDER-EQUITABLE SUSTAINABLE USE OF BIODIVERSITY (http://www.biodiva.uni-hannover.de/)

ersity, Germany and Implemented in Wayanad district with leadership of MSSRF-CAbC-GiZ & IFPRI as strategic partners

## ocietal problems

- •Loss of Rice-paddies
- Loss of employment
- Shortage of drinking water Hazardous pollution

## **Actor specific societal** discourse

- •PRIs favour profit cultivation
- Scanty support for Rice cult
  - NGOs Active
- Corporations: Not concerned
  - •Policies: Weak • Media: Active

## Results useful for societal practice

- •Strategies: Mass campaign •Cultural Significance
  - - •Legal
- •Rice cultivation with HYVs

## PHASE

## **Problem framing Team Building**

Land Use change cause severe negative externalities Scientists, Farmers, PRIs, Officials, Merchants, Women



## PHASE B

## Co-creation of Solution oriented transferable Knowledge

Study on Ecological, Economical and Social Dimensions in partnership with multi-stakeholders started in 2010

## **PHASE C**

(Re)Integration and application of created knowledge

Scenario workshops Policy Makers Meet-local, state and national

### **Scientific Problems**

- •Whether Rice fields contribute to water recharge, BD conservation, **Nutritional Security?**
- •How to approach the problem: What methods
  - •Ecologists alone?
- •Food Security car met if Economic security is achieved

## Scientific discourse

•Kerala Agricultural University •MSSRF

## **Results relevant for scientific** practices

- •Rice Fields are Vital at all the 3 pillars
- •A C4 Approach would help
  - Virtual Water study
- •Ground Water Recharge in relation with Wet paddies
- Nutrition contributions of Traditional Rice Varieties

Conceptual Model: Lang et al 2012

## Some Larger Questions

- 1. How to build new innovations by synergizing Traditional Knowledge and Modern Science and a Apply it in a larger scale?
- 2. How best Gender principles and Practices can be integrated in Sustainable development Actions?
- 3. What best Incentives can offer to the people to adopt a sustainable living?



## THANK YOU N. Anil Kumar anil@mssrf.res.in