SFRAS Meeting Thematic Session - 14 May 2019

Hosted by FiBL in Frick

Webinar on Climate Resilient Agriculture & Rural Advisory Services

14/05/2019 from 9h45 – 11h30 AM CET

1) Four presentations from thematic experts on Climate Resilient Agriculture (CRA)

Judith Macchi
HEKS
Thematic advisor on Disaster Risk Reduction

Community-based approaches in Brazil

Frank Eyhorn
Helvetas
PhD in Environmental Sciences & expert on sustainable agriculture and market systems

Climate-resilient organic rice in India.

Adrian Müller
FiBL
PhD in natural sciences

How agroecology contributes to climate change adaptation and mitigation.

Sarah Mader
Swissaid
Responsible for Knowledge Management and thematic Advisor Agroecology

Climate and agroecolgoy project in Nicaragua.

2) Discussion along key questions:

- How can we use agroecology to enhance climate resilience?
- What opportunities and challenges does this offer for Rural Advisory Systems (RAS)?

Participate via Skype!

(If you don't have Skype for Business installed, open the link with any browser except Firefox)

Research Institute of Organic Agriculture FiBL
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How agroecology contributes to climate change adaptation and mitigation

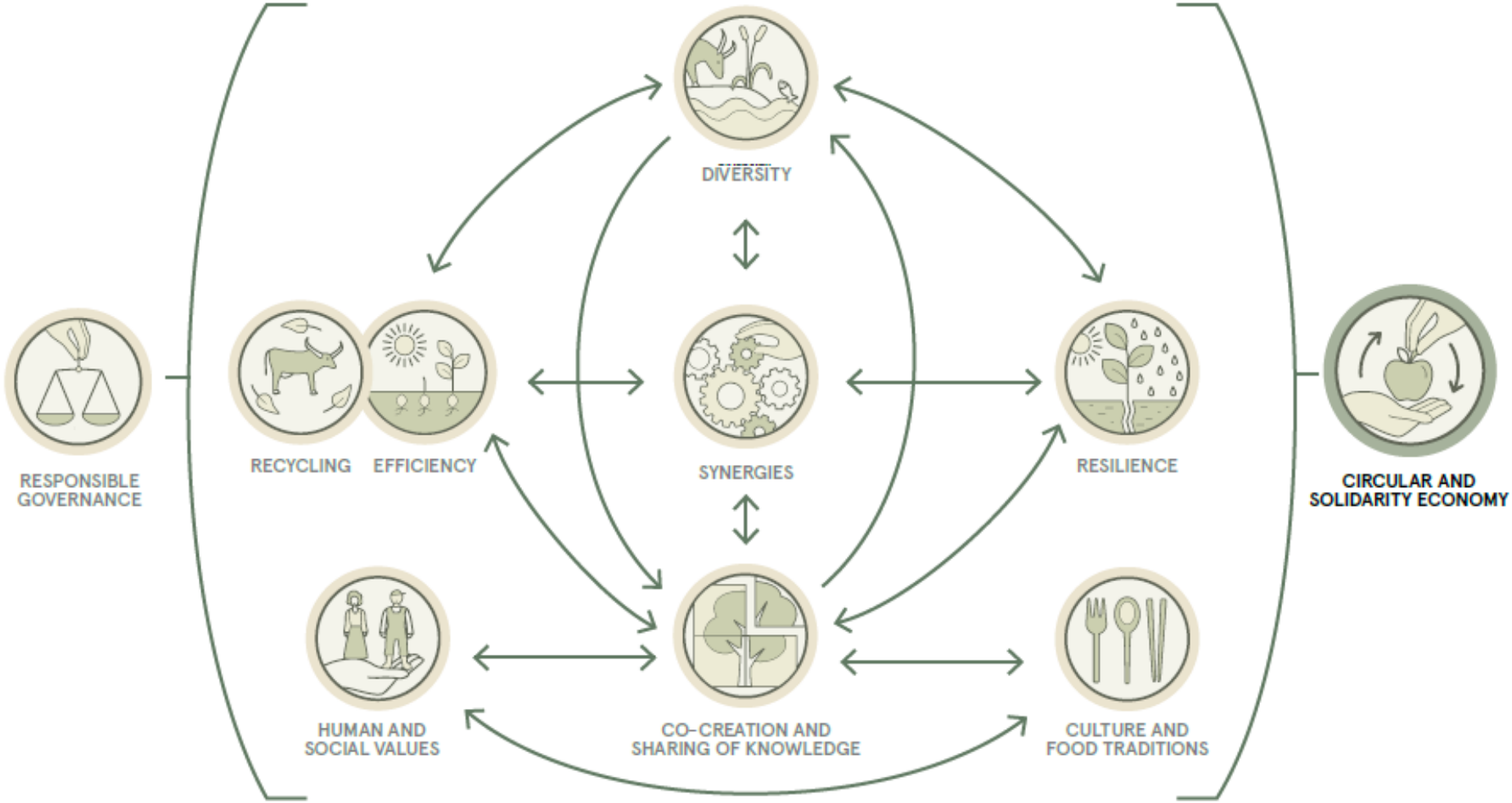
Adrian Müller adrian.mueller@fibl.org

Swiss Forum on Rural Advisory Services SFRAS Meeting: Climate Resilient Agriculture

FiBL, Frick, 14.5.2019

What is agroecology ?

The 10 elements of agroecology according to the FAO



The 10 Elements of Agroecology, FAO 2018

Compiling empirical evidence for the potential of agroecology to hedge against climate change (Biovision-FiBL-FAO)

A review/meta-analysis of

- **peer-reviewed literature** (E,SP,F,I,P) that
- **compares** an agroecological with some baseline situation and
- provides (quantitative or qualitative) **empirical evidence** for the relative performance of the two systems
- with regard to **climate change adaptation** and co-benefits thereof

Preliminary Findings I: Biased Case Studies

ELSEVIER

Agriculture, Ecosystems and Environment 93 (2002) 87–105

Agriculture Ecosystems & Environment

www.elsevier.com/locate/agee

Measuring farmers' agroecological resistance after Hurricane Mitch in Nicaragua: a case study in participatory, sustainable land management impact monitoring

Eric Holt-Giménez*

Department of Environmental Studies, 321 Natural Sciences 2, University of California, Santa Cruz, 1156 High Street, Santa Cruz, CA 95064, USA

Received 23 February 2001; received in revised form 15 October 2001; accepted 15 December 2001

Biased Case Studies

- no results on agroecology **in general**, only results on **very good** agroecology

- use those to learn on the factors of success – but **they may not relate to agroecology**

Preliminary Findings II: Central Role of External Finance, Rural Advisory Services, Institutions

Food Sec. (2017) 9:561–576
DOI 10.1007/s12571-017-0669-z

ORIGINAL PAPER

Impact of a participatory agroecological development project on household wealth and food security in Malawi

Joseph Kangmennaang[1] · Rachel Bezner Kerr[2] · Esther Lupafya[3] · Laifolo Dakishoni[3] · Mangani Katundu[4] · Isaac Luginaah[5]

Received: 11 January 2016 / Accepted: 2 March 2017 / Published online: 26 April 2017

Abstract This paper presents the impacts of a participatory ($\beta = -3.21$, $p = 0.01$) compared to non-participants, after

Central Role of External Finance, Rural Advisory Services, Institutions

- many results do not refer to agroecology but to **external finance, institutions, advisory services**

- again: use those to learn on the factors of success – but **they may not relate to agroecology**

Preliminary Findings III: Metaanalyses on the performance of agroecological practices and on the relevance of system characteristics

- Grassland biodiversity increases productivity
- Higher biodiversity similarly strongly influences total biomass production in natural ecosystems as climate variables or nutrient availability
- Organic agriculture shows lower pathogen and animal pest and higher weed infestation
- …

Isbell et al. 2015; Duffy et al. 2017; Muneret et al. 2018;

Knapp and Van der Hejden, Nature Communications 2018

nature COMMUNICATIONS

ARTICLE

DOI: 10.1038/s41467-018-05956-1 OPEN

A global meta-analysis of yield stability in organic and conservation agriculture

Samuel Knapp [1,2] & Marcel G.A. van der Heijden [1,3]

comparing 193 studies based on 2896 comparisons. Organic agriculture has, per unit yield, a significantly lower temporal stability (−15%) compared to conventional agriculture. Thus,

although organic farming promotes biodiversity and is generally more environmentally friendly, future efforts should focus on reducing its yield variability. Our analysis further indicates that the use of green manure and enhanced fertilisation can reduce the yield stability gap between organic and conventional agriculture. The temporal stability (−3%) of no-tillage does not differ significantly from those of conventional tillage indicating that a transition to no-tillage does not affect yield stability.

Metaanalyses on the performance of agroecological practices and on the relevance of system characteristics

- "Robust" results on **single practices and characteristics** and how they correlate to key performance or resilience indicators

- but **they may not directly reflect** the performance of **agroecology**

Resilience

Figure 9. **Working definition of resilience for SHARP**

For the purposes of this work we overcome these negative connotations by including notions of change or transformation as central to our definition of resilience, which we propose as: ***the ability of a system to recover, reorganise and evolve following external stresses and disturbances*** *(based on Adger, 2000; Carpenter et al. 2001; Gunderson and Holling, 2002; Walker et al. 2004).*

From SHARP - Self-evaluation and holistic assessment of climate resilience of farmers and pastoralists (FAO 2015)

- Can also have negative consequences: lock-in/resilience against beneficial changes
- Risk-averse understanding: avoiding bad outcomes is the primary goal
- How to measure and observe this?
  - indicators
  - proxies
  - time-scale

Take Home Messages

- Why do we look at this?
  - Policy demand for information on which agriculture to support for increased climate change adaptation and why!
  - Therefore we need to go beyond case studies

- Learn from performance of **good examples** of agroecology but beware of **biased case studies**

- Focus on the role and potential of institutions, RAS, finance

- Learn from meta-analyses: performance of **agroecological practices** and **single characteristics**

«Sempre Viva» flower picker communities become first Globally Important Agricultural Heritage System in Brazil

Land Governance as a mean to increase climate resilience

Judith Macchi, Advisor Climate Change Adaptation and Disaster Risk Reduction

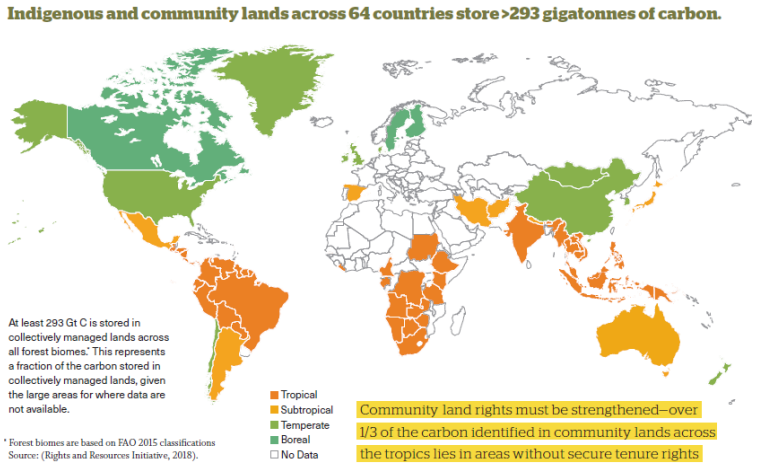
The Brazilian Cerrado

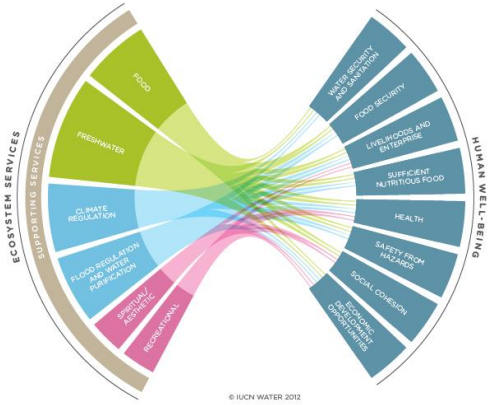
Sempre Viva Flower Picker Communities

Sempre Viva Flower Picker Communities

Common Land Use and its potential for CCA and CCM

- «… community-based approaches to land governance and forest management is one of the most urgent and effective steps we can take for climate protection, ecosystem resilience, and the protection of vulnerable front-line defenders.» **Missing Pathways to 1.5°C, CLARA 2018**
- “Ecosystem-based adaptation harnesses biodiversity and ecosystem services to increase resilience and reduce the vulnerability of human communities to climate change.” **Convention on Biological Diversity, 2010**





Globally Important Agricultural Heritage System - GIAHS

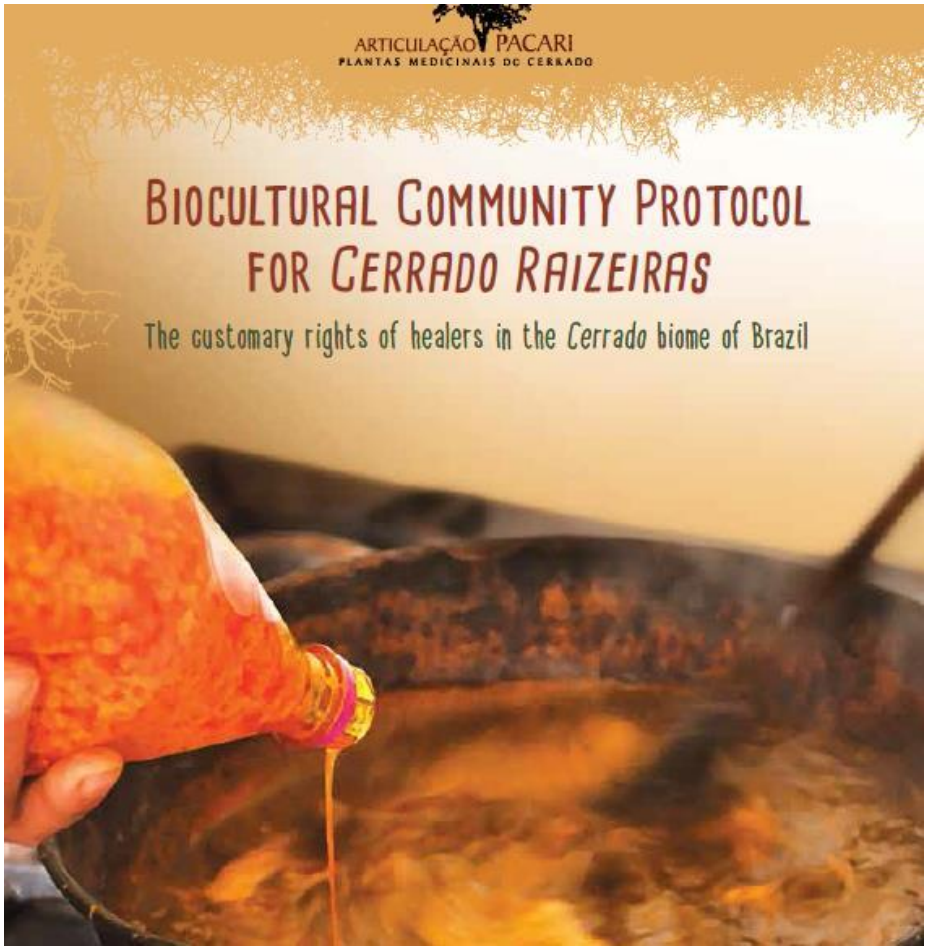
Globally Important Agricultural Heritage Systems" (GIAHS) are outstanding landscapes of aesthetic beauty that combine agricultural biodiversity, resilient ecosystems and a valuable cultural heritage (FAO)

http://www.fao.org/giahs/en/

Biodiversity Inventory of the Serra do Espinhaço

Biocultural Community Protocol

- A definition of the community, its leadership and decision making processes
- A description of community-based natural resource management systems, knowledge, innovations, and practices
- Ways of life, including the links between culture, spirituality, and customary laws and values;
- Rights, responsibilities, and duties of the community according to customary, national, and international law;
- Conditions set out by the community for granting access to their lands, resources and knowledge, such as procedures for Free, Prior and Informed Consent (FPIC) in line with the Nagoya Protocol of the CBD;



Lessons Learnt

- GIAHS process facilitated by HEKS has enormously strengthened the communities' identities and their understanding of their role, responsibilities and rights as a safeguard for the resilience of an ecosystem, which is of importance not only to them, but to the country as a whole
- The interest of the FAO to give an international label to the flower picker communities has increased their visibility and recognition; this might offer opportunities for the civil society to continue their work on sensitives issues like land governance and environmental protection even in times of shrinking space in Brazil
- The GIAHS process promotes knowledge management and transfer (between generations and regions) by documenting traditional agricultural management practices and their evolvement taking into account the importance of maintaining the resilience of the ecosystem
- With the GIAHS process, HEKS facilitated a multi-stakeholder dialogue (from local to international level) around the importance of conservation and sustainable management of ecosystem which enhances the climate resilience for a region and the nation as a whole, showing alternatives to further green grabbing or agro-industrial investments in the Cerrado

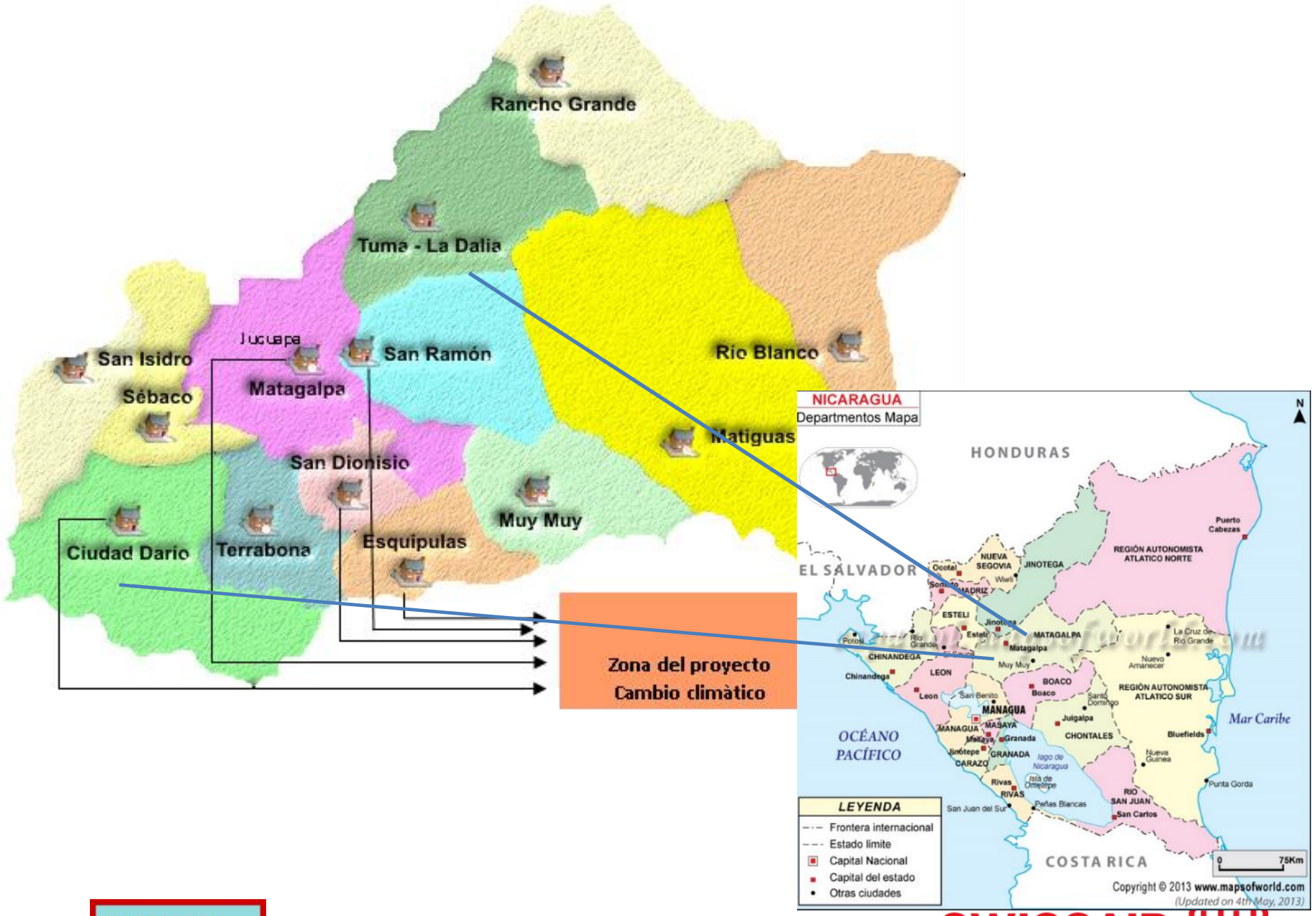
Thank you!

Reducing the climate vulnerability of rural families in Nicaragua

Sarah Mader, SWISSAID

SFRAS Meeting, 14 May 2019

SWISSAID



CHANGE
tomorrow today.

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Perception of climate change

- Heavy rainfall

  -> floods in valleys and erosion

  -> landslides on mountain slopes
- Drought

  -> loss and/or decrease of surface water flow and underground water sources

  -> fire
- Erratic rain periods, longer dry periods
- Higher temperature
- New pests and fungal infections

-> crop failure, less yield, food and income

CHANGE tomorrow today.

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Key problem, project objective, approach

Problem:

Lack of information and knowledge of farmers to adapt their production techniques to the changing climatic condition.

Project objective:

Reducing vulnerability of farmers and improving their climate resilience.

Strategy:

- Building on regular SWISSAID agroecological projects and experiences by adding new project components.

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Risk reduction and adaptation practices

- Diversification of production (2-4 additional crops)
- Crop rotation, soil conservation methods, mulching
- Production and application of organic pesticide and fertilizers
- Risk assessment, planning and implementation of adaptation and mitigation strategies by 5 municipalities
- Establishment of 50 weather stations on farmer trial plots
- Water harvesting and small irrigation systems
- Reforestation with native species
- Inventory, characterizing of local seed varieties, breeding, shifting to new stress (esp. drought) resistant crops and local varieties, seed exchange

CHANGE
tomorrow today.

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Sensitization and knowledge transfer

- General awareness campaigns on impacts of climate change and adaption strategies via radio, brochures, posters, in workshops/talk events, knowledge sharing events.
- Farmer led research and extension: Farmer promoters/champions at community level experiment with new practices on their own plot (lighthouse farms) and train/share experiences with other farmers.
- Technicians provide technical backstopping to farmer promoters on their plots and link with universities for scientific studies, analysis of data, validation of practices.

CHANGE
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Results at local and national level

- Reduced crop loss of participating farmers compared to neighbours cultivating conventionally
- Approx. 2,637 families apply agroecological practices on 3,700 ha -> estimated reduction of 14,800 t of C02 p.a. (factor of conversion 4/ton/ha/year)
- Co-financing of communal risk-preventive infrastructure projects by local governments
- National programme to promote local seeds and a law for the advancement of agroecology

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Key lessons learnt

- In areas more affected by climate change the adaption rate of new techniques is higher.
- Sharing practical experiences and innovations on “agroecological lighthouses” between farmers is an effective strategy and enhances the chance for adoption of new techniques.
- Youth play an important factor for change and can be effective promotors.
- A multi-stakeholder and a territorial approach lead to better results and should be strengthened.
- Sensitization through mass media is effective for the large public and policy makers.

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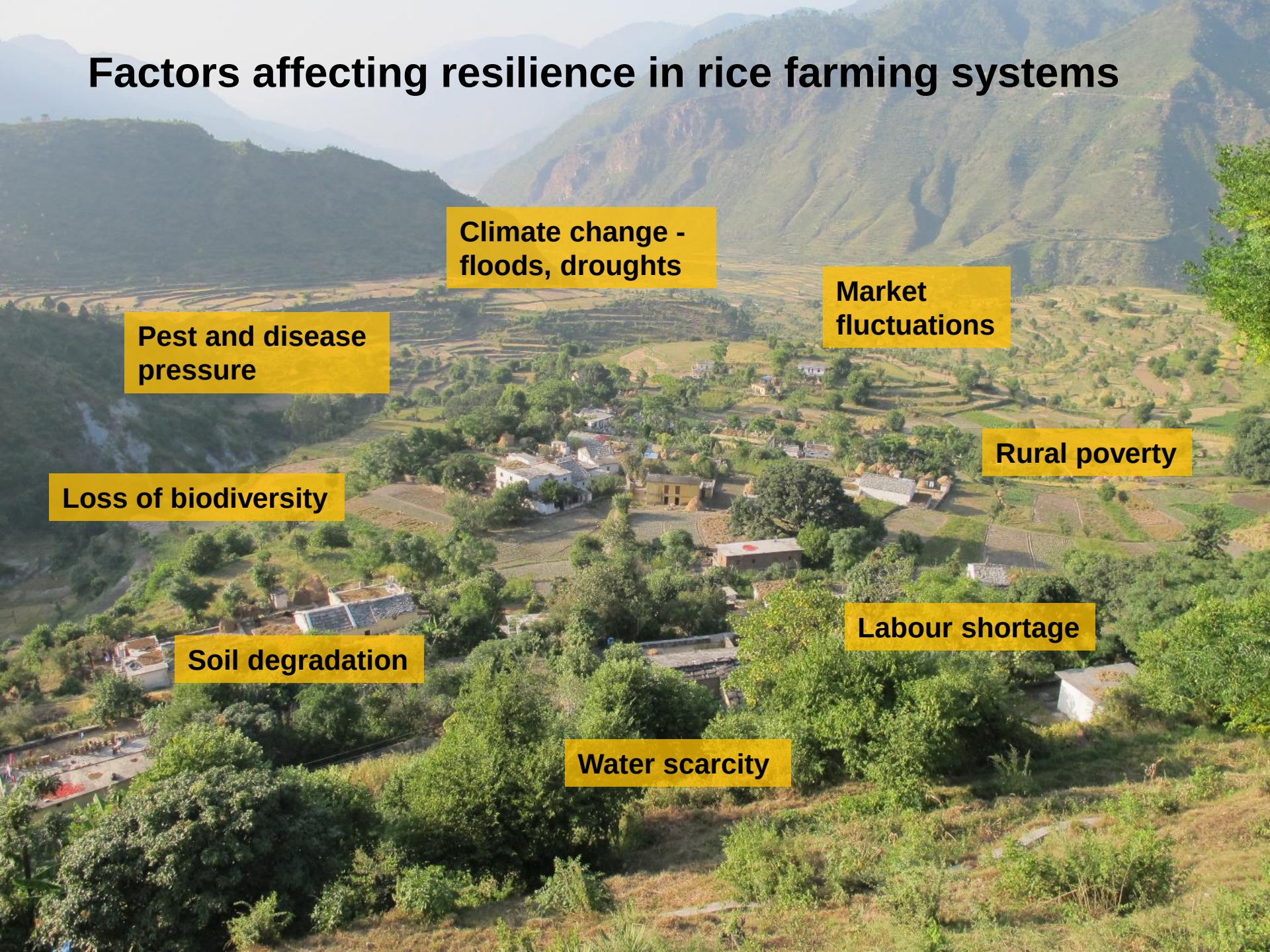
Swiss Intercooperation

Climate-resilient organic rice in India

Frank Eyhorn
Senior Advisor
Sustainable Agriculture
HELVETAS Swiss Intercooperation

Vice-President
IFOAM Organics International

Factors affecting resilience in rice farming systems



Organic rice project in India

HELVETAS Swiss Intercooperation

- Launched together with the Swiss retailer Coop in 2011
- Goal: Improve livelihoods, environmental sustainability, attractive product
- Traditional basmati rice varieties
- Rotation crops for domestic and export markets
- 2019: 3’000 farms, 200 villages

This project is supported by the Coop Sustainability Fund.

coop

REIS MÜHLE BRUNNEN

Fair Farming Foundation

NATURE BIO-FOODS LTD.

intercooperation

Organic Agriculture and Resilience

- Diverse agro-ecosystems, intercropping and crop rotation, animal husbandry
- Enhancing soil fertility and water retention, closing nutrient cycles
- Preventive pest and disease management; biocontrol
- Organized farmers, participatory technology development, joint investments
- Integrated value chains instead of spot market

➔ Diversity, Connectivity, Buffering Capacity, Redundancy, Transformability, Self-organization, Transparency

System of Rice Intensification (SRI)

HELVETAS
Swiss Intercooperation

- Single seedlings transplanted at early stage with wider spacing
- Alternate wetting and drying instead of continuous flooding
- Mechanic weeding with simple tool

➔ Less water input and greenhouse gas emissions

➔ More sturdy plants with more tillers, higher yield

➔ Less damage by pests and diseases, less lodging

➔ Less costs for seeds and weeding

Water stewardship

- Water stewardship at village level (Water & Environment Groups)
- Improvement of irrigation and drinking water infrastructure (joint investments)
- Water-efficient farming techniques
- Farm mechanization to improve water productivity and reduce labour input
- Facilitation and extension through female «Water friends» (Jalsakis)
- Policy dialogue at local, national and global level

The role of rural advisory systems

HELVETAS
Swiss Intercooperation

Company-run (Nature Bio-Foods)

- Seeds and biocontrol inputs
- Training, quality management
- Farm data collection and analysis

NGO / Project

- Initial trainings
- Technical advice
- Process facilitation

Farmer Organization (FFF)

- Lead farmers, f-2-f exchange
- Organic farmer groups
- Community initiatives

State-run (Dept., Univ.)

- Technical advice
- Applied research
- Schemes / programs

Some learnings regarding resilience

1. Applying organic principles makes food systems more resilient.
2. Adoption of organic practices mainly depends on profitability.
3. Water management, farm mechanization and market linkages are key.
4. RAS are effective and viable if integrated in value chains.

Discussion along key questions

1. How can we use agroecology to enhance climate resilience?

2. What opportunities and challenges does this offer for RAS?