

Agroecology as a pathway to build up sustainable food systems - experiences from the semiarid regions in Brazil, India and Senegal.



Sarah Schneider and Lorenz Bachmann

Contributions:

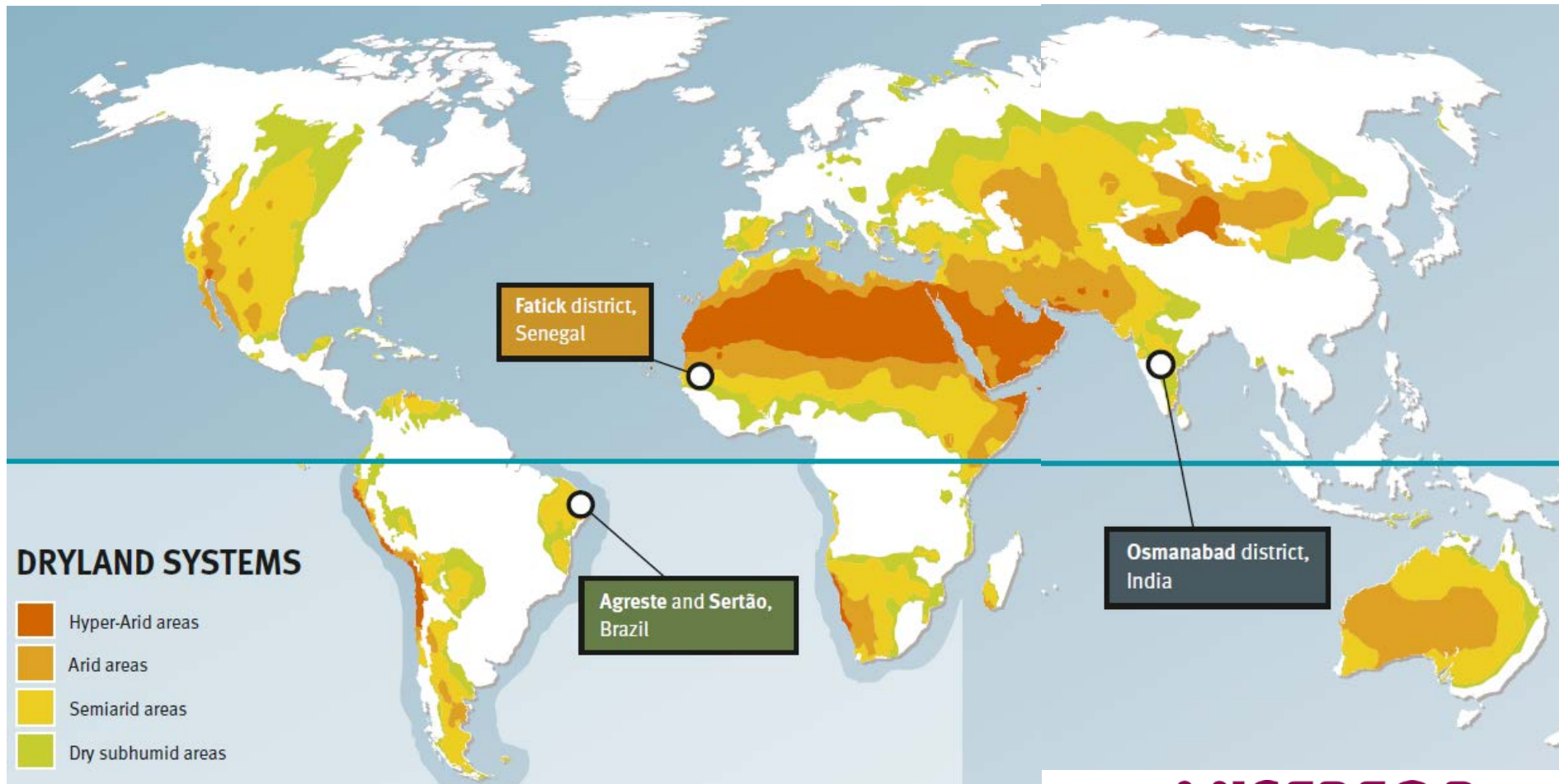
Sidy Seck, André Gonçalves and Phanipriya Nandul
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Research interest

- How does agroecology impact smallholder's income and livelihoods?
- What are the impacts on the families' dietary diversity and nutrition?
- How climate-resilient is the production system?
- Which social implications are promoted?

Case studies in semiarid regions of Brasil, Senegal and India



(Millenium Ecosystem Assessment)

Swayam Shiksan Prayog (SSP) - India

Situation:

Cash crops, drought, gender inequality,
malnutrition

Approach:

- Access to land for women (one-acre-model)
- Extension for agroecological practices & marketing
- Formation of women trainers and networks



Centro Sabiá (Brazil)

Situation:

- Drought, deforestation, „*fighting the drought*“ not successful

Approach:

- Agroforestry and „co-existence“ with the semiarid climate
- Integrated livestock
- Agroecological extension
- Support in marketing
- Access to public programs (Cisterns, public procurement)



Enda Pronat (Senegal)

Situation :

- Soil degradation and salinization, land grabbing, monocultures, deforestation

Approach:

- Securing land titles
- Natural regeneration
- Farmer field schools
- Agroecological extension (diversification, biomass recycling)



Methods and sampling

Country samples

Brazil
n = 419

Senegal
n = 370

India
n = 400

Study groups

Agroecology smallholder
farms

Reference farms
(conventional, without
extension service)

Methods

**Quantitative household
questionnaire**

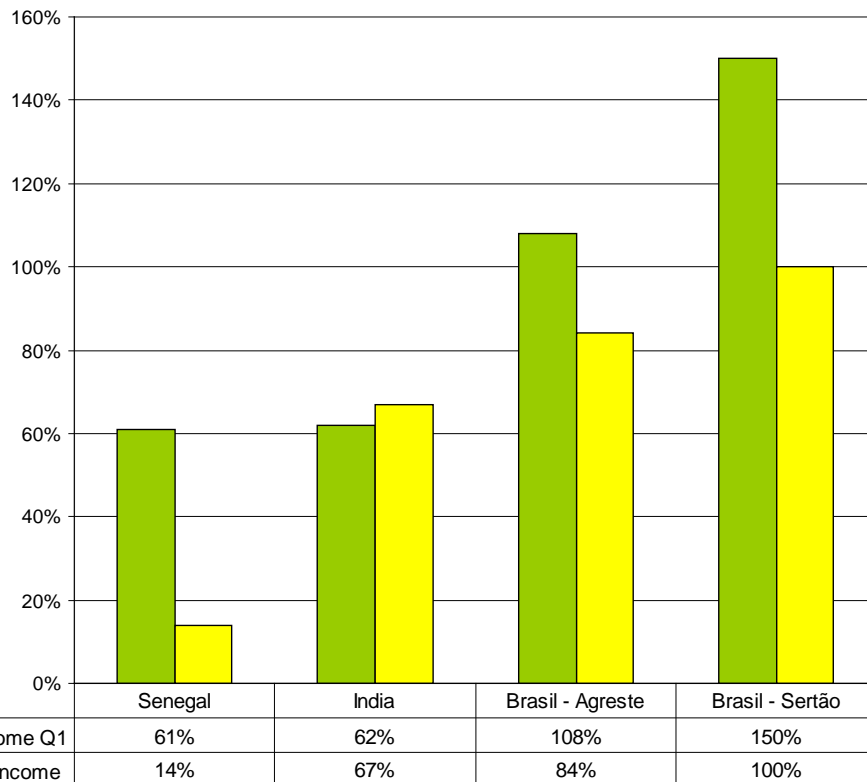
Group discussions with
women and men groups

In depths individual
interviews

Interviews with local
experts

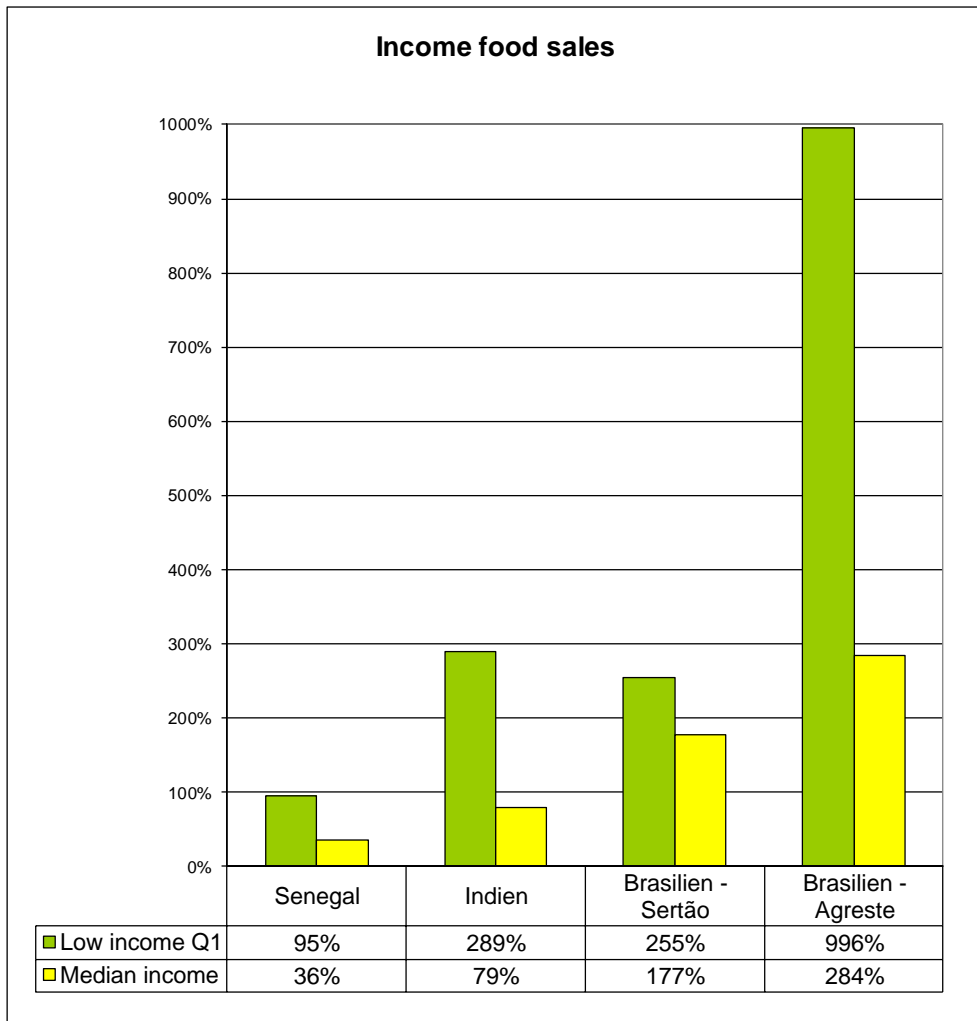
Advantage in subsistence food production

Value subsistence food



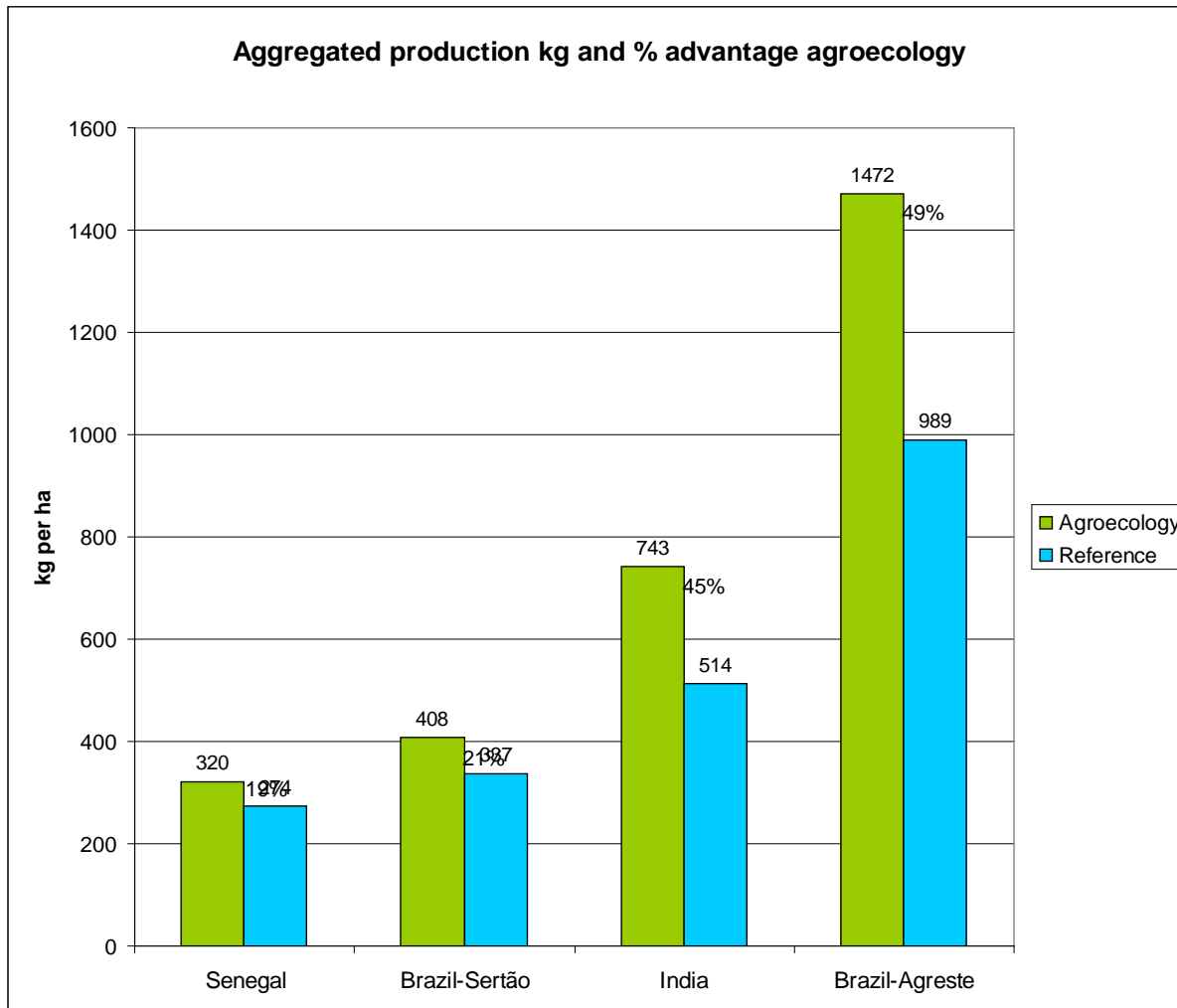
- Agroecology has a very strong positive impact on **poor** households (61-150%)
- Also on **median** income level the income advantage is very substantial and statistically significant (14-100%)
- Effects in Brasil are most pronounced (long-term effects).

Advantage value income from agricultural sales



- Agroecology enables in particular the poor households to sell more (+95-996%).
- Also on median income level the sales advantage is very substantial and statistically significant (36-284%).
- Effects in Brasil are most pronounced for the more humid location.

System productivity



- Aggregated production comprises in Senegal 4 crops, India 14 crops and Brazil all crops and livestock.
- Under semi-arid conditions total farm production is 19-45% better in the agro-ecological system.
- Under more humid conditions, the advantage increases to 49% (Brazil, Agreste).

Agroforestry takes long to establish



	4 years	11-20 years
Brazil-Sertão	8.125 R\$	18.047 R\$
Brazil-Agreste	19.433 R\$	56.483 R\$

But it pays out well in the medium to long term

Food and Nutrition during drought (India)

- Diets are more diverse & more farm food is eaten.
- More fresh vitamin rich food is eaten.
- But, due to drought, the majority of households need to resort to buying food. In particular the poorer household need to take out loans for food.

Figure 7: Percent of households in Indian case that purchase all food from the market

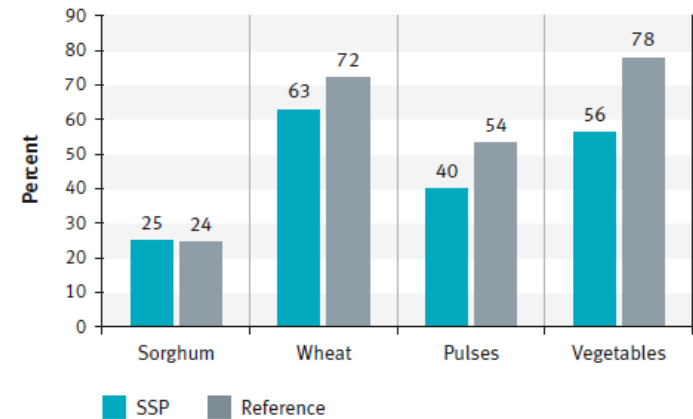


Table 7: Food consumption per person and recommended annual consumption in India

	Recommended annual consumption	Median household		Sufficiency vs. recommended consumption	
		Ref. kg (%)	AE kg (%)	Ref	AE
Cereals & Millets (kg)	149	98	106	66%	71%
Pulses and non-veg (kg)	30	11	18	37%	60%
Milk (L)	100	43	37	43%	37%
Vegetables (kg)	100	72	82	72%	82%

Conclusions

- **Agroecology is a very good pathway to build up sustainable food systems**
It has **statistical significant advantages** in many areas studied:
Household: Food production, nutrition security and household income.
Community: Resource exchanges, better cooperation, gender equality, biodiversity and climate resilience.
- **Agroecology should be taken up by more Donors and Governments to promote an inclusive rural development path.**

Thank you very much for your attention!

Contact:

Sarah.schneider@misereor.de

l.bachmann@gmx.de