



A transdisciplinary approach to sustainable coastal management in North Brazil

The Mangrove Dynamics and Management Programme (MADAM)
1996-2005



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Moving towards transdisciplinarity MADAM 1996-2005

I Human-nature interactions in mangrove areas
Disciplinary understanding

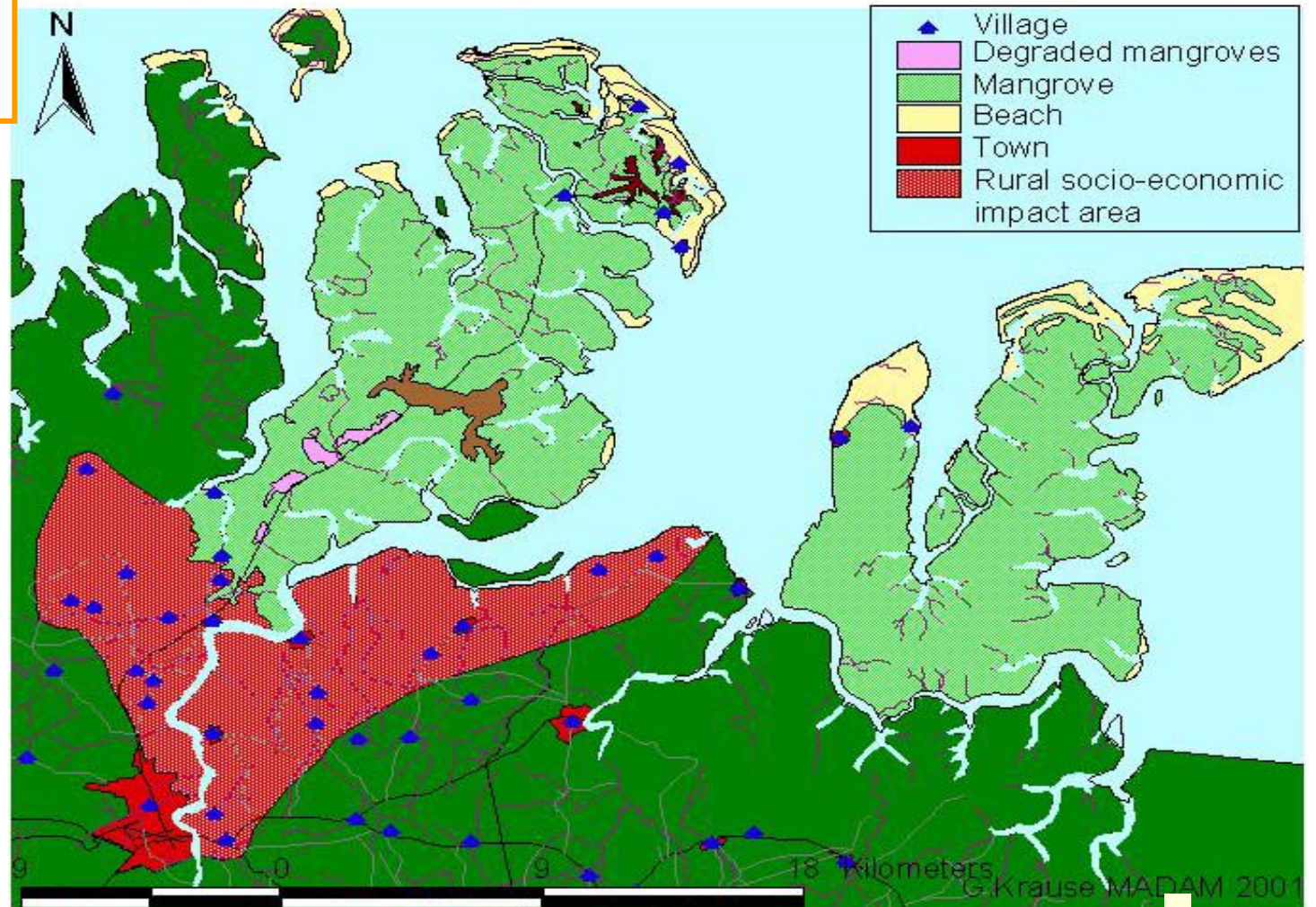


II Major issues in mangrove management
Interdisciplinary problem identification



III Research and public policies in mangrove management
Transdisciplinary policy analysis and capacitation

The North Brazil study area: A Social-ecological System





Socio-economic research MADAM 1996-2005



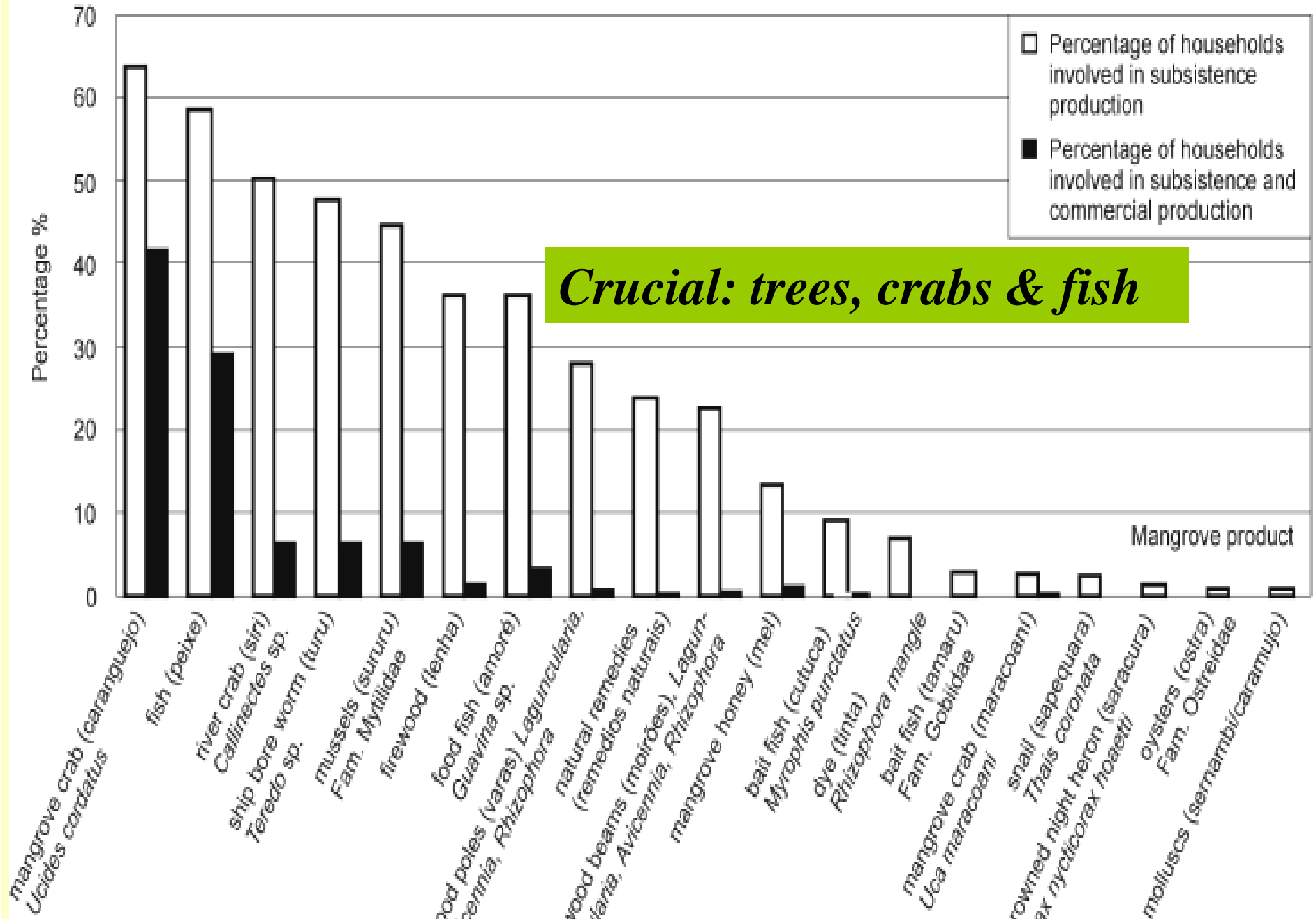
Phase I 1996-1999

Human-nature interactions in mangrove areas

Disciplinary systemic understanding



Ecosystem Uses





Socio-economic research MADAM 1996-2005



Phase II (1999-2002)

Major issues in mangrove management

Interdisciplinary problem identification and analysis



Mangrove trees

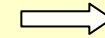


Mangrove trees

use of mangrove flora **illegal**

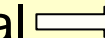
Reality:

- Large-scale commercial uses:
logging, leather tanning, brick kilns...



**Regional
Unsustainable,
predatory**

- Subsistence & small-scale sale:
fencing, fish traps, domestic cooking, charcoal
treating sails & nets...



**Local
sustainability-oriented**



Social energy

Illegality prevents effective local participation

Prohibiting local mangrove use: Sustainable?

Biological:

- decreases forest regeneration
- increases negative impact of logging

Economic: Resource wasted in...

- logging procedures
- transportation

Social: Rural households...

- ... forced into illegality
- ... alienated from laws and authorities

Logging workers ...

- ... without social rights
- ... dependent on "patrons"



Illegality impedes local monitoring and innovative local solutions

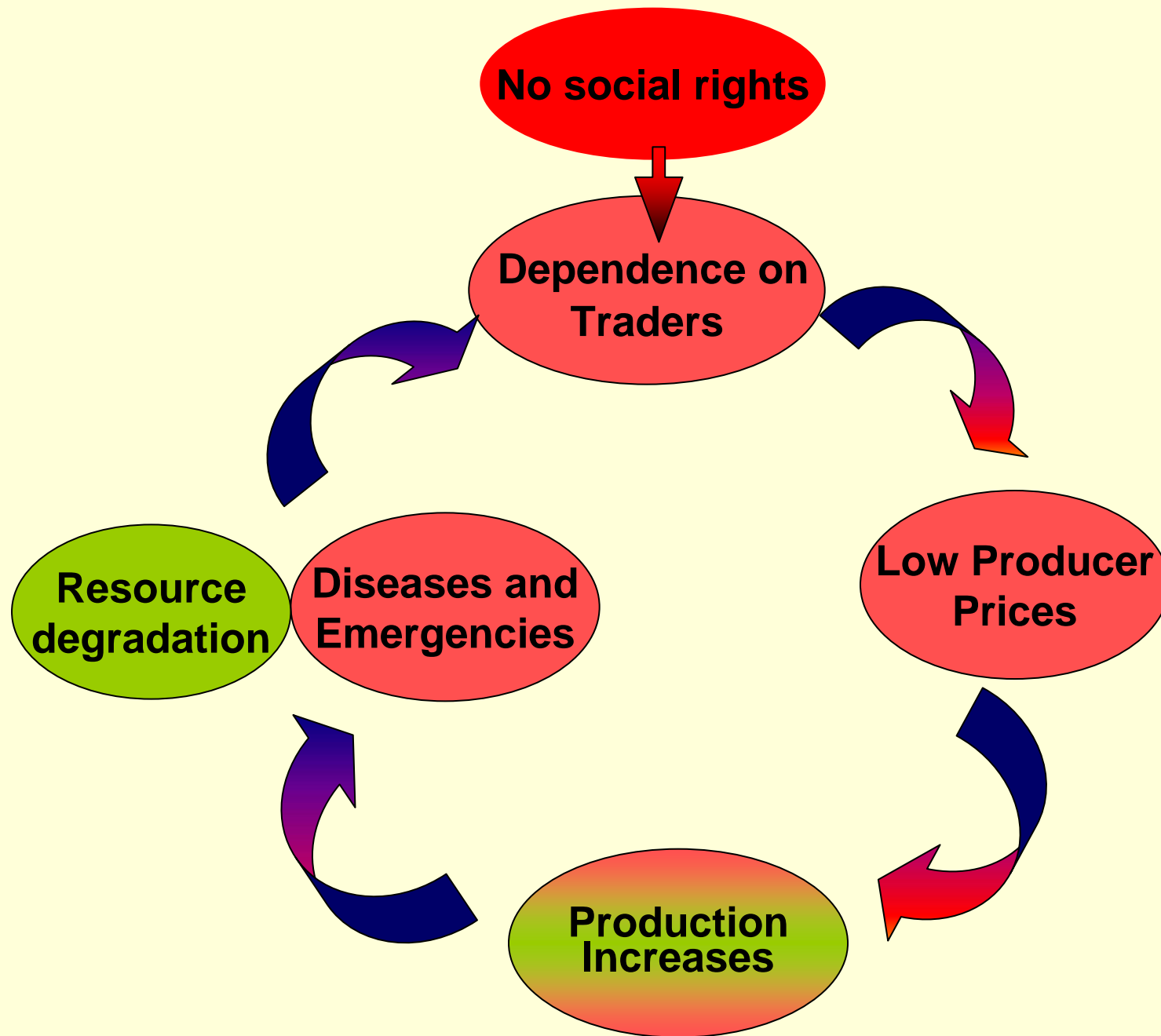
Mangrove crabs

Producers without social rights

- pensions
- sick pay
- territorial rights
- credit
- professional association
- political representation



Crab fishers: A vicious social-ecological cycle





Socio-economic research MADAM 1996-2005



Phase III 2002-2005

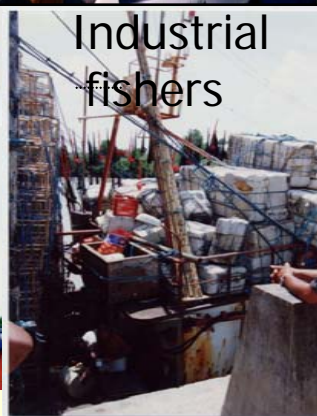
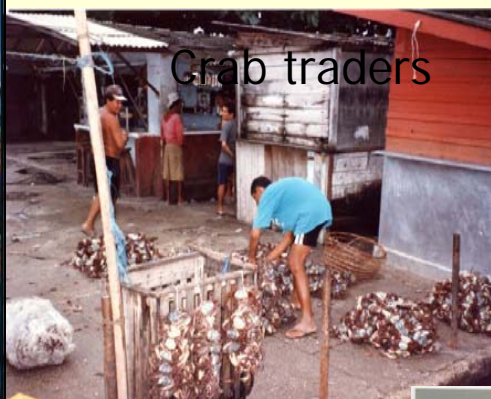
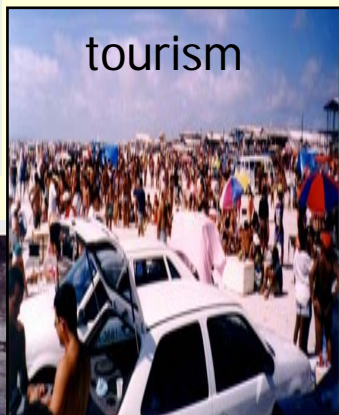
Research and public policies in mangrove management

Policy analysis and transdisciplinary capacitation



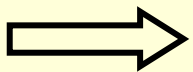


Transdisciplinarity?



Transdisciplinary capacitation

Regular, participatory collection and analysis of data relevant to stakeholders raises sustainability



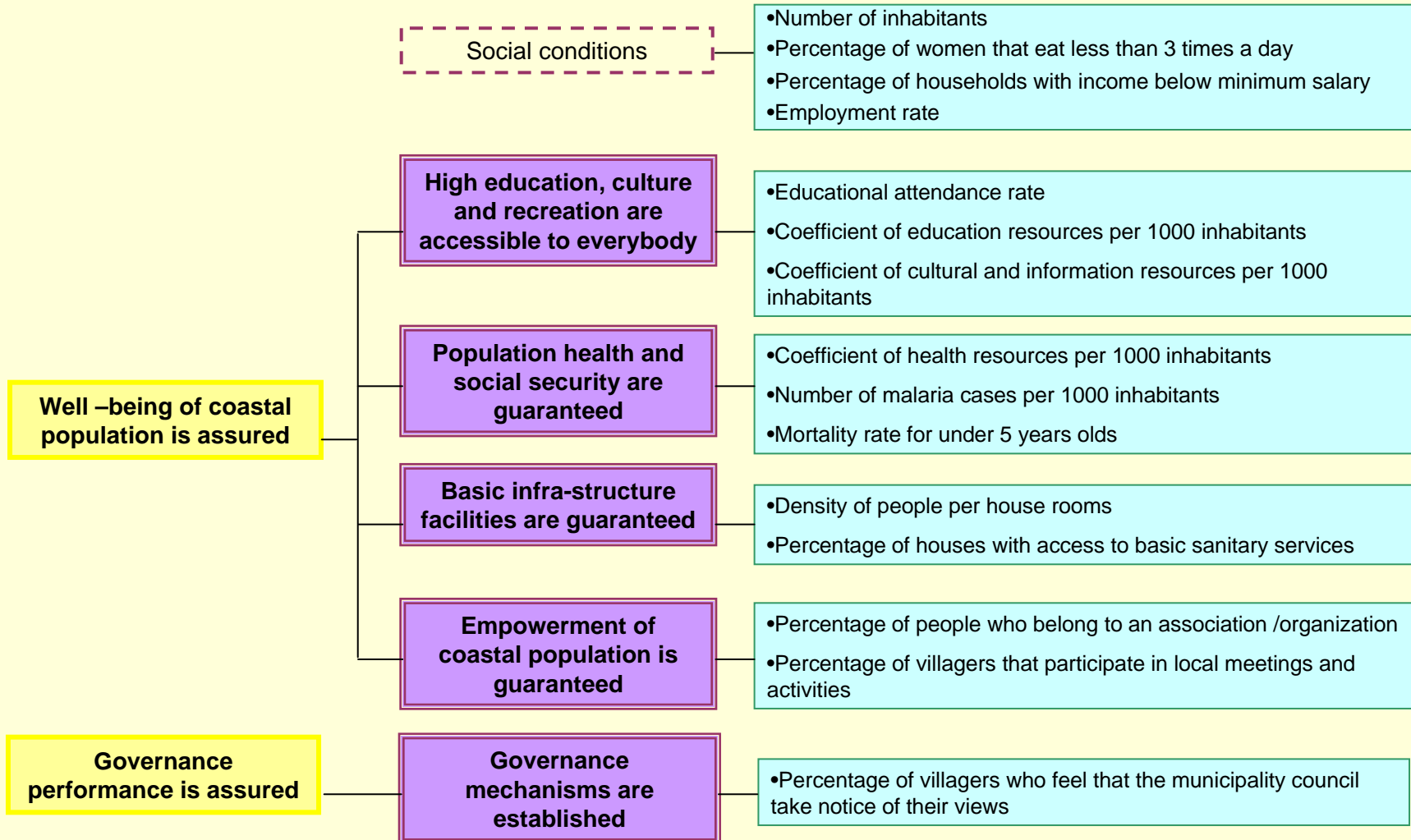
participation and indicator systems

Social indicators

Principle
(First level)

Criteria
(Second level)

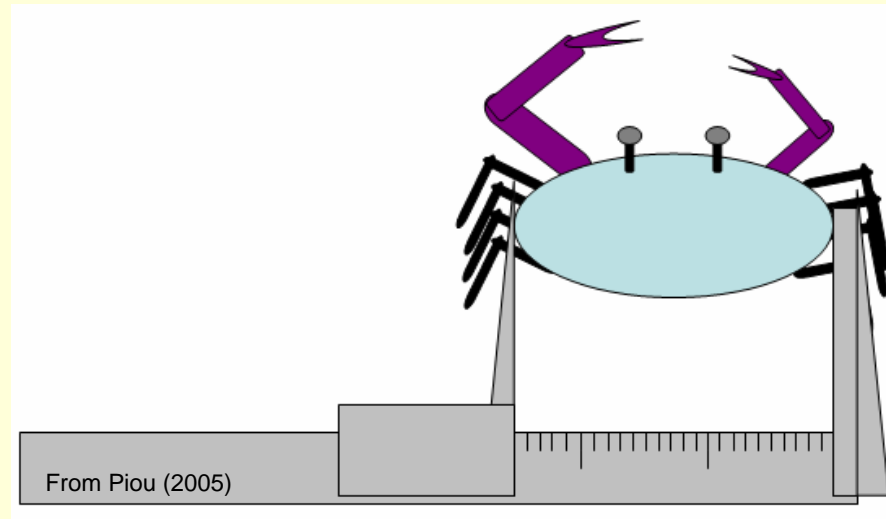
Indicator
(Third level)



Environmental indicators

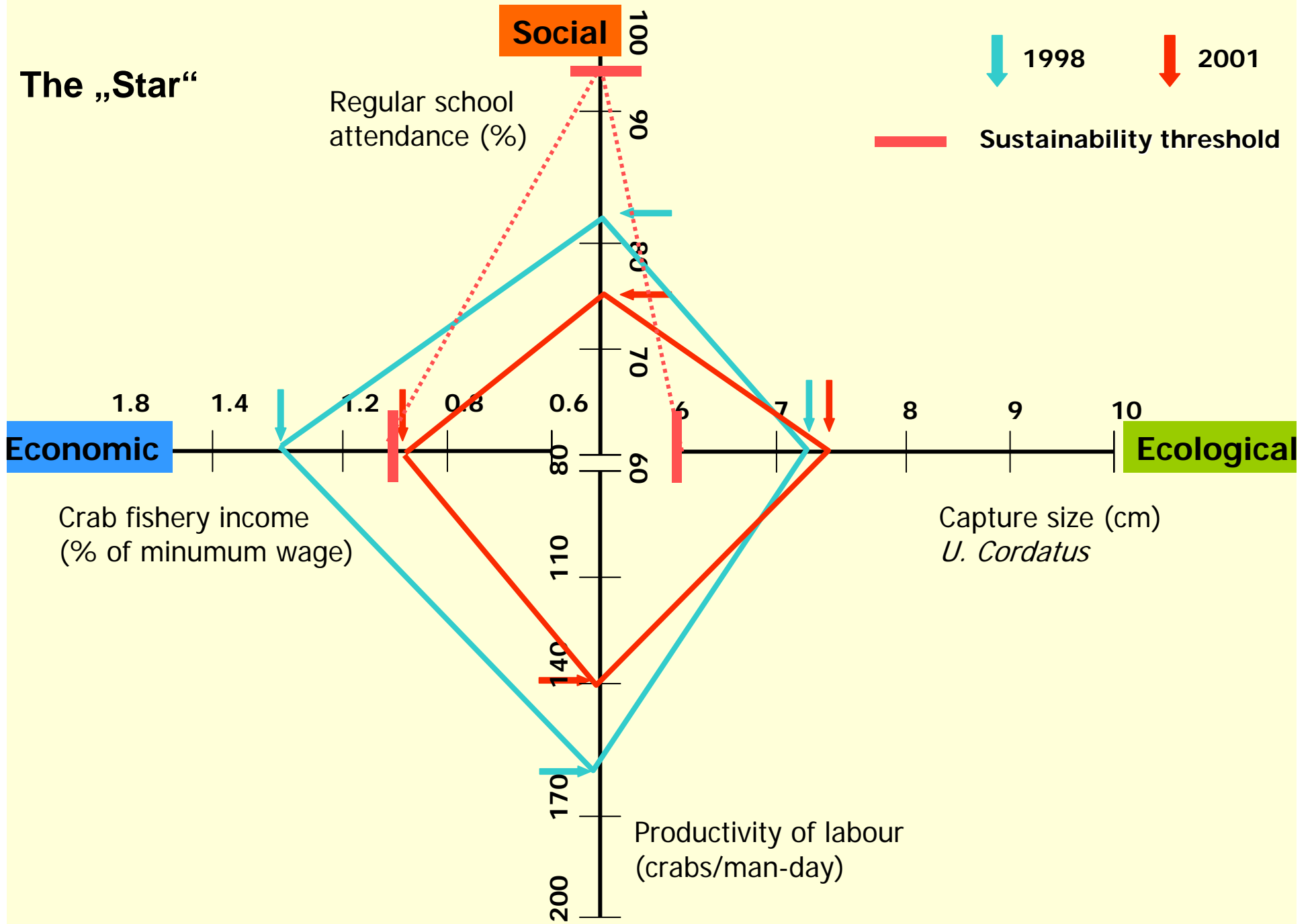
- Size of crab captured

Number of crabs captured of a specific size range.



The indicator gives information about the state of the resource in terms of commercial size variability.

The „Star“



Who monitors?

| Indicator | Village Assoc. | Students Schools | Health workers | Mangrove users |
|---|-------------------|---------------------|-------------------|-------------------|
| Number of inhabitants | | | ● | |
| % of women who eat less than 3 times a day | ● | | | |
| % households with income below minimum wage | | | | |
| Education attendance rate | | ● | ● | |
| Coefficient of cultural and information resources | ● | ● | | |
| Coefficient of health resources | | | ● | |
| Number of malaria cases | | | ● | |
| Mortality rate for under 5 year olds | | | ● | |
| % houses with access to basic sanitary services | ● | | | |
| % of people who belong to an association | ● | | | |
| % of villagers that participate in local meetings | ● | | | |
| % of villagers who feel that the municipal council take notice of their views | ● | ● | | |
| Land use changes over time | ● | ● | | |
| Dependence on mangrove products | | ● | | ● |
| Size of crabs captured | | ● | | ● |

Thank you



Generating transdisciplinary knowledge...