



Agri-Chains & Sustainable Development

Le Corum, Montpellier, 12-14 December 2016

Session 12 “Methods and challenges in assessing sustainability in agri-chains”

PRACTICAL ANALYSIS OF INCLUSIVE AND SUSTAINABLE VALUE CHAINS: THE CASE OF RICE VALUE CHAIN IN MALI

Doriane DESCLEE & Baudouin MICHEL
(coordination and Economical analysis)

Faycal BOUREIMA (environmental analysis)

Mamadou GOITA (social analysis)

Part I. : Methodological Support

1. Introduction and purpose

Methodological support

- Under the initiative of the EU – DEVCO and developed by a multi-disciplinary team of experts (CIRAD, ULG (Belgium)), development of a methodology to provide decision-makers evidence-based elements supported by indicators measured quantitatively (quantified metrics) or based on experts assessments allowing to assess a value chain sustainability and inclusiveness.
- Methodological tool for ex-ante and ex-post evaluation of value chains.
- “On field” tests on three different value chains in three different countries (Rice in Mali, Dairy in Colombia and Tomato in Rwanda).

Final objective

Informing on sustainability and inclusiveness objectives of value chain development will serve the EU international cooperation and development strategy as well as all interested decision-makers involved along the value chain.

Part II. : Practical Use

through the Analysis of the Rice Value Chain in Mali

Functional Analysis

Understanding products and functions, actors and activities, mapping and measuring flows and exchanges in the VC.
Distribution channels, coordination, organization, governance.

Sustainability and
Inclusiveness information

**Economic
Analysis**

**Social
Analysis**

**Environmental
Analysis**

**WHAT IS THE CONTRIBUTION OF THE VC TO
SUSTAINABLE ECONOMIC GROWTH?**

IS THIS ECONOMIC GROWTH INCLUSIVE?

IS THE VC SOCIALLY SUSTAINABLE?

IS THE VC ENVIRONMENTALLY SUSTAINABLE?

3 PILLARS/THEMATICS

4 GENERAL QUESTIONS

Part II.: Practical Use (Rice VC in Mali)

Functional Analysis : Assessed production systems

Irrigated rice



Flooded rice

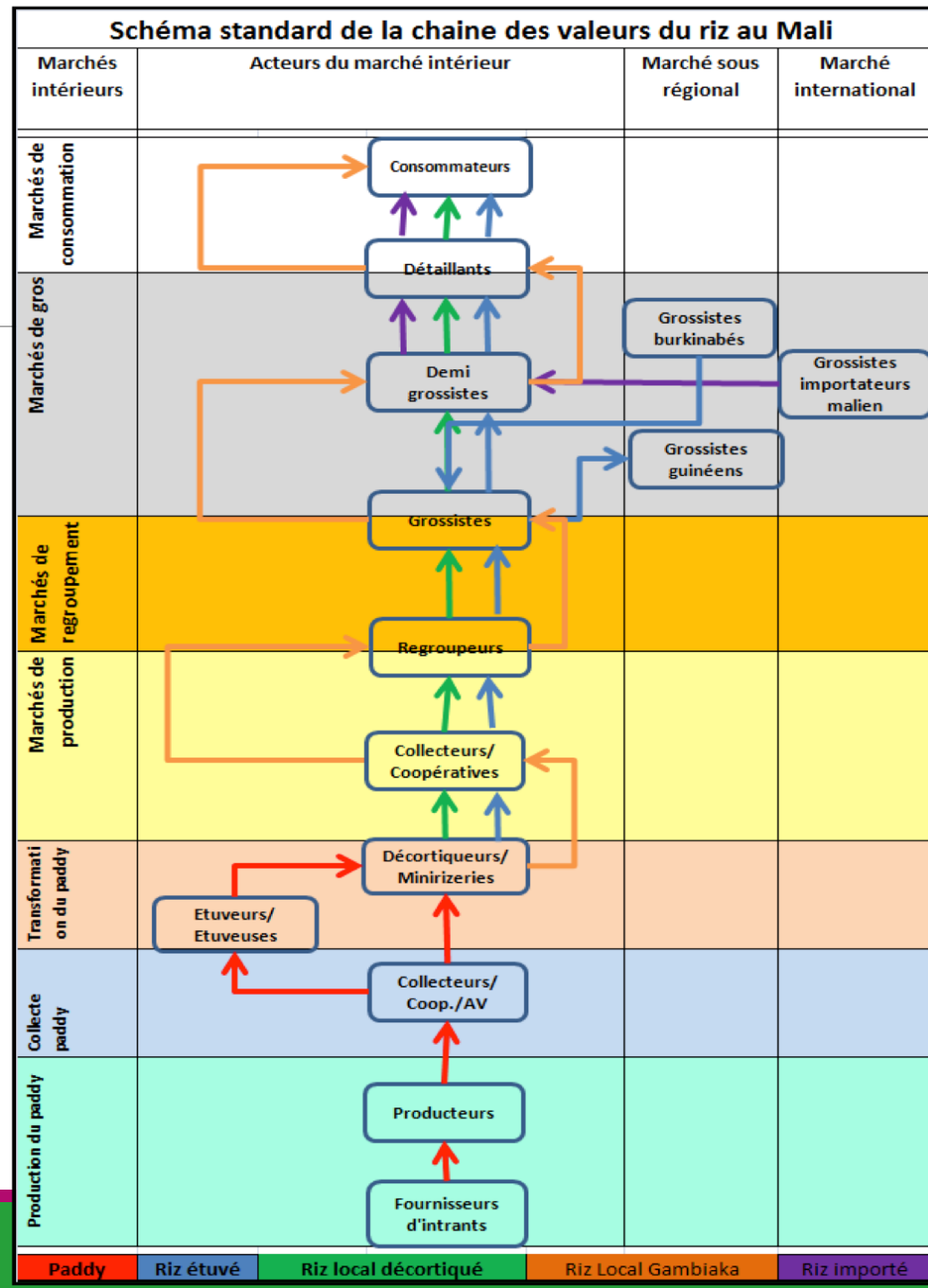


Rainfed rice



Part II.: Practical Use (Rice VC in Mali)

2. Functional Analysis



Part II.: Practical Use (Rice VC in Mali)

2. Functional Analysis : Conclusions

- The functional analysis shows a dynamic growing sector and reacting positively to market incentives.
- The horizontal coordination is well developed at the producer level, but vertical coordination is quite non-existent.
- Regional markets are partitioned according to the different production systems and areas.
- Wholesale importers have a dominant position in the market according to public authorities
- The state provides significant support to the sector.

Part II.: Practical Use (Rice VC in Mali)

3. Economic Analyses

WHAT IS THE CONTRIBUTION OF THE VC TO SUSTAINABLE ECONOMIC GROWTH?

CQ1.1	How sustainable are the VC activities for the entities involved in? The gross margin per hectare for producers (in total control of the water) : 221 050 FCFA per ha and increased from 2008 to 2012 (incentives support to rice production). The ratio cost / income is 0.208. Internal Rate of Return (IRR) per production system.
CQ1.2	What is the contribution of the VC to economic growth (to GDP)? The contribution of the rice value chain to GDP is significant and represents approximately 5% in value of the national GDP .
CQ1.3	What is the contribution of the VC to agriculture sector GDP? The rice value chain contributes about 10% in value to the agricultural GDP , a very significant contribution. The trend is increasing this value after the incentive program developed rice production from 2010, in response to the 2008 food crisis.

Part II.: Practical Use (Rice VC in Mali)

3. Economic Analyses

WHAT IS THE CONTRIBUTION OF THE VC TO SUSTAINABLE ECONOMIC GROWTH?

CQ1.4 What is the contribution to Public Funds?

The rice sector is strongly supported by **public funds** (ex. Subsidies to inputs, irrigation investments). Most of the specific expenses are related to agriculture input **subsidies** (37%) and **infrastructure support** (22%).

The budgeted expenditure allocated to agriculture and food are of the order of 13% of the Malian state budget (2013). The actual expenditure remain above the target of 10%.

CQ1.5 What is the contribution of the VC to the balance of trade and balance of payments?

Average rice **imports** from 2006 to 2012 : 16% of the rice production.

Current **exports** to neighboring countries are marginal. But potential for exports is real and confirmed.

The impact of the value chain on **the trade balance** via consumed imported inputs is not quantified.

The full **import substitution** is an achievable realistic goal.

Mali's rice sector has a proven **competitiveness**.

Part II.: Practical Use (Rice VC in Mali)

3. Economic Analyses

WHAT IS THE CONTRIBUTION OF THE VC TO SUSTAINABLE ECONOMIC GROWTH?

CQ1.6	<p>Is the VC economically sustainable at the international level?</p> <p>The value chain of rice in Mali, appears economically sustainable.</p> <p>The nominal protection coefficient observed from producers is 7%.</p> <p>The effective protection coefficient is of the same order of magnitude.</p> <p>The DRC (Domestic cost of resources) is always much less than 1 to about 0.5, (good competitiveness).</p> <p>Government grants have affected agricultural inputs and irrigation investments.</p> <p>Exemptions of regular importers of rights and duties.</p>
CQ1.7	<p>What are the risks for growth sustainability at the different levels of the VC?</p> <p>The significant part of the rice production is based on a production system involving the partial or total water control because of Water-related Risks (access and availability).</p> <p>Price risks, Pest risk, Grants Risks, etc. were analysed but are not significant.</p>

Part II.: Practical Use (Rice VC in Mali)

3. Economic Analyses

IS THIS ECONOMIC GROWTH INCLUSIVE?

CQ2.1 How is income distributed through the VC levels and actors?

The **distribution of the added value** is "reasonably" fair and balanced for producers. Significant changes in the share of value added accruing to producers due to the partitioning of production areas is observed.

CQ2.2 What is the impact of the governance systems on income distribution at various levels of the VC?

Oligopolistic position of wholesale importers
Exemptions from taxes and import duties
Lack of vertical coordination induces a lack of trust and indirectly increasing transaction costs.

CQ2.3 How is employment distributed in the value chain?

About 20% of 805,194 farms counted in Mali cultivate rice.
One Third of Mali population is directly or indirectly concerned
The rice sector is a high provider of **employment**.

Part II.: Practical Use (Rice VC in Mali)

3. Economic Analyses : CONCLUSIONS (1)

The rice industry is economically and globally sustainable, competitive and contribute to inclusive growth for the actors and even when the public support to the sector would decrease.

One third of Mali's population is directly affected by this value chain that distributes income in a reasonably fair manner.

Unfortunately, distortions are observed vertically and horizontally in the value chain. It has impacts on producers' incomes and increases transaction costs.

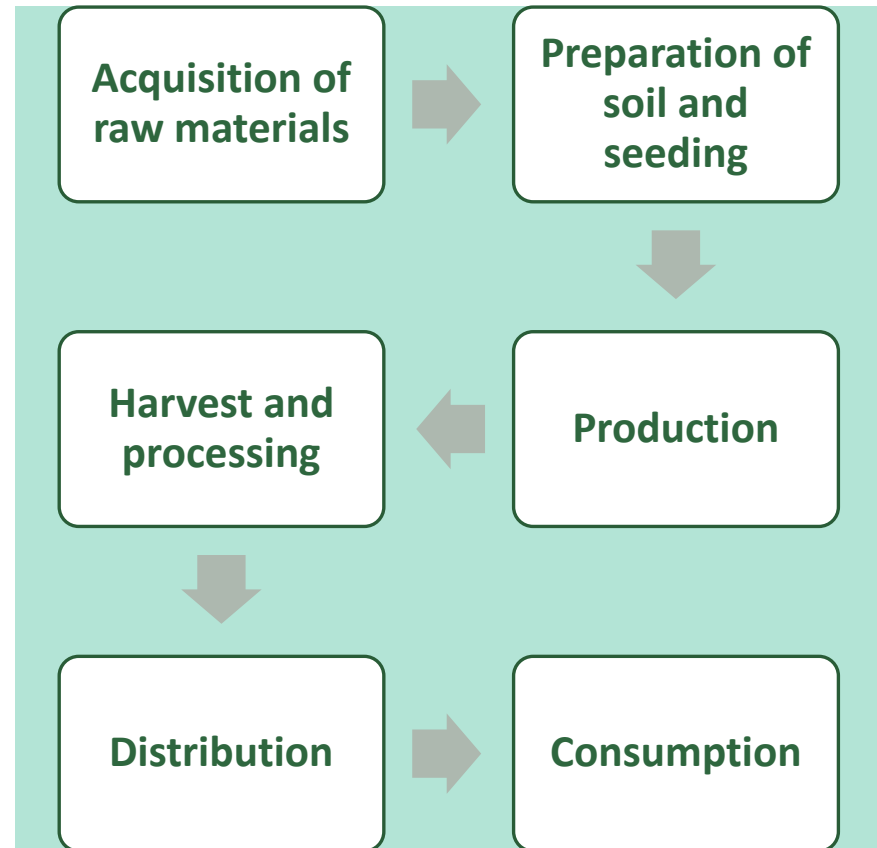
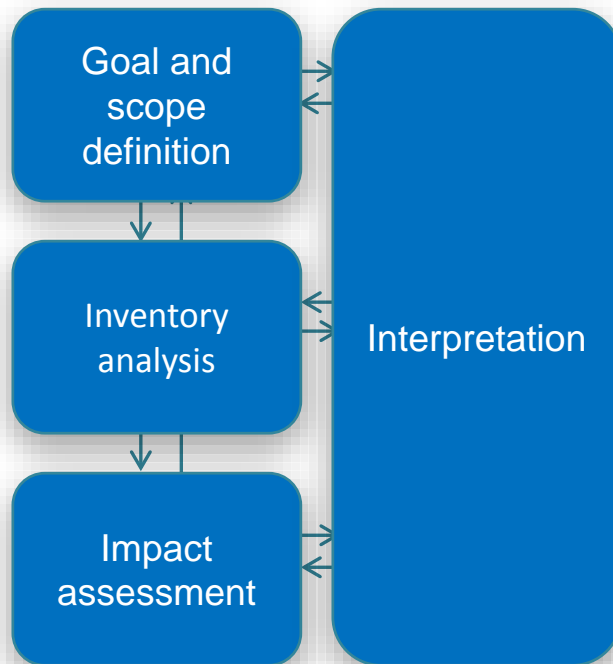
The dismantling of oligopolistic positions cartel of three main importers would allow a better market transparency and a better consistency of public policies to support the rice sector.

The main risk in the sector concerns the availability and long-term competitive uses of irrigation water.

Part II.: Practical Use (Rice VC in Mali)

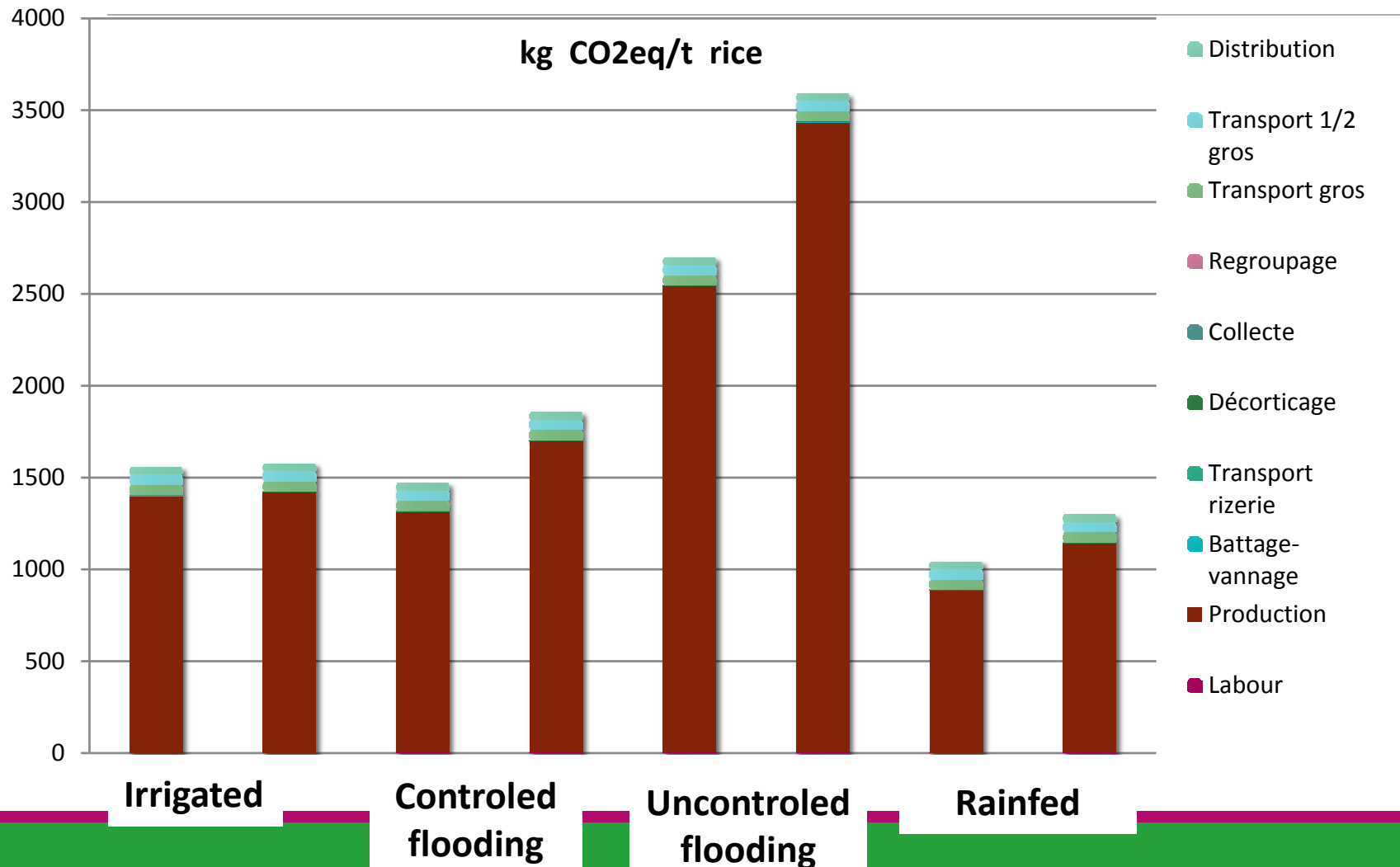
4. Environmental analysis: an input-output exercise

LCA: ISO 14040-14044



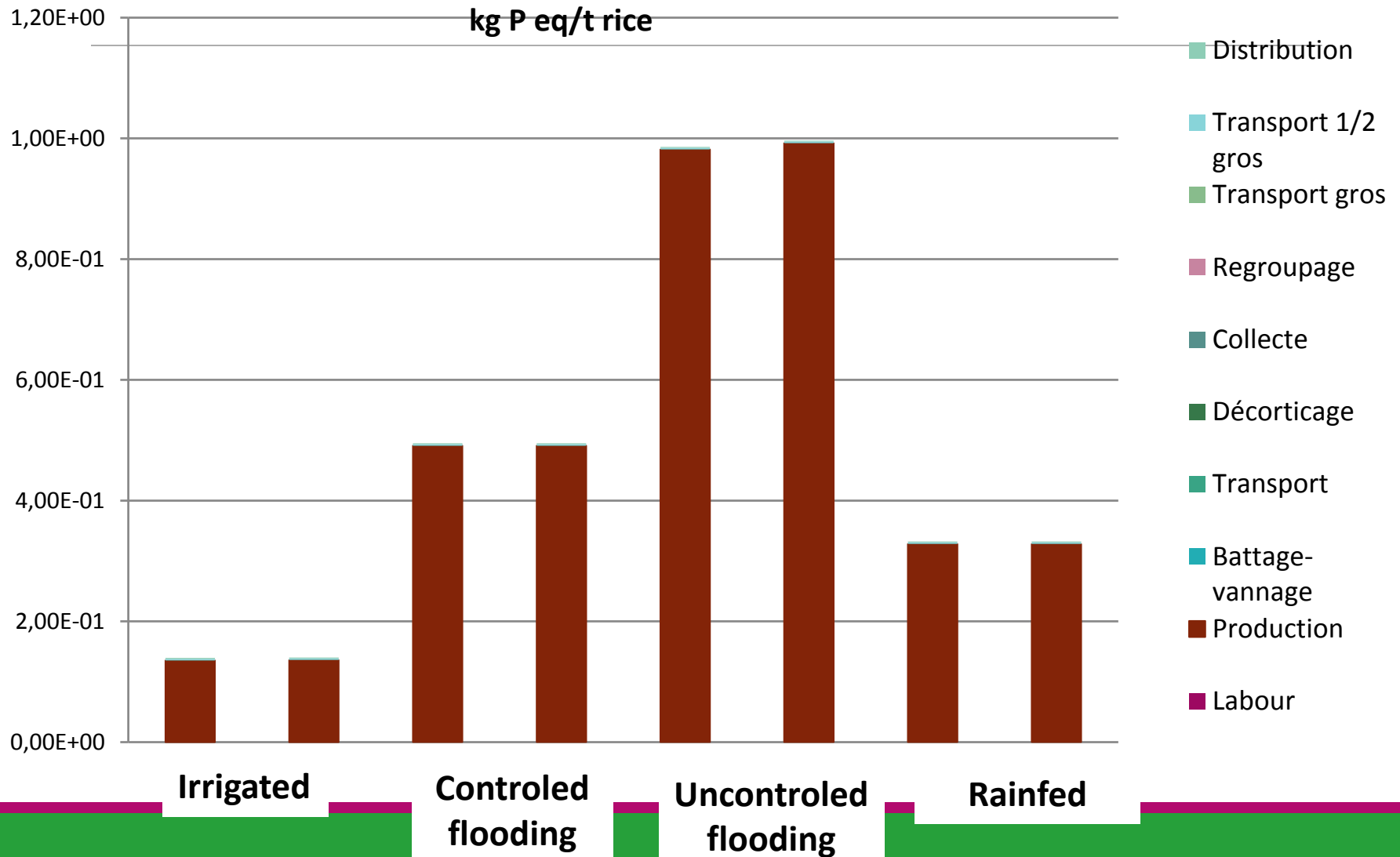
Human health-Ecosystems-Resources

4. Environmental analysis: Climate change-IPCC 2007



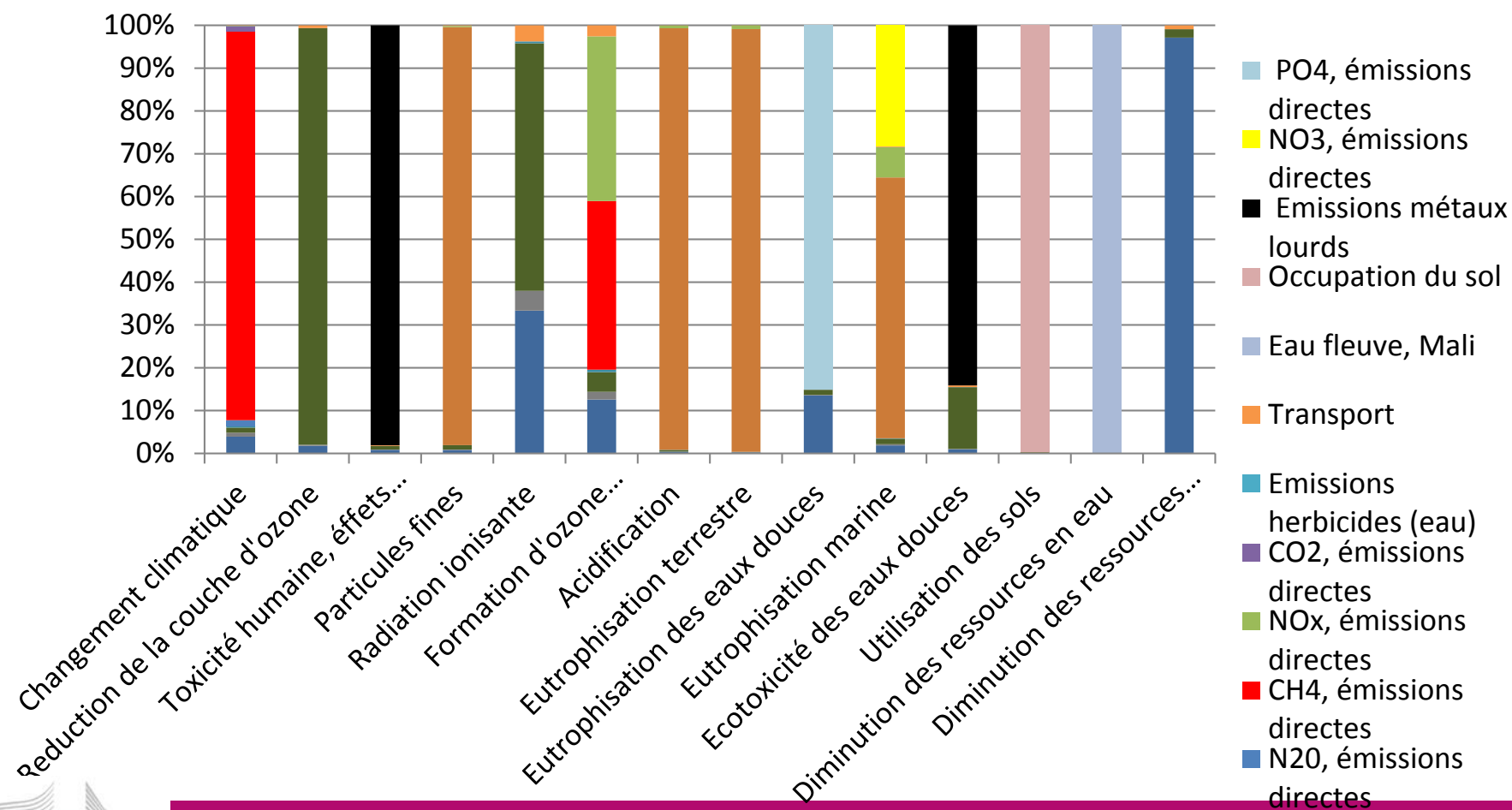
Part II.: Practical Use (Rice VC in Mali)

4. Environmental analysis: **Freshwater eutrophication**



Part II.: Practical Use (Rice VC in Mali)

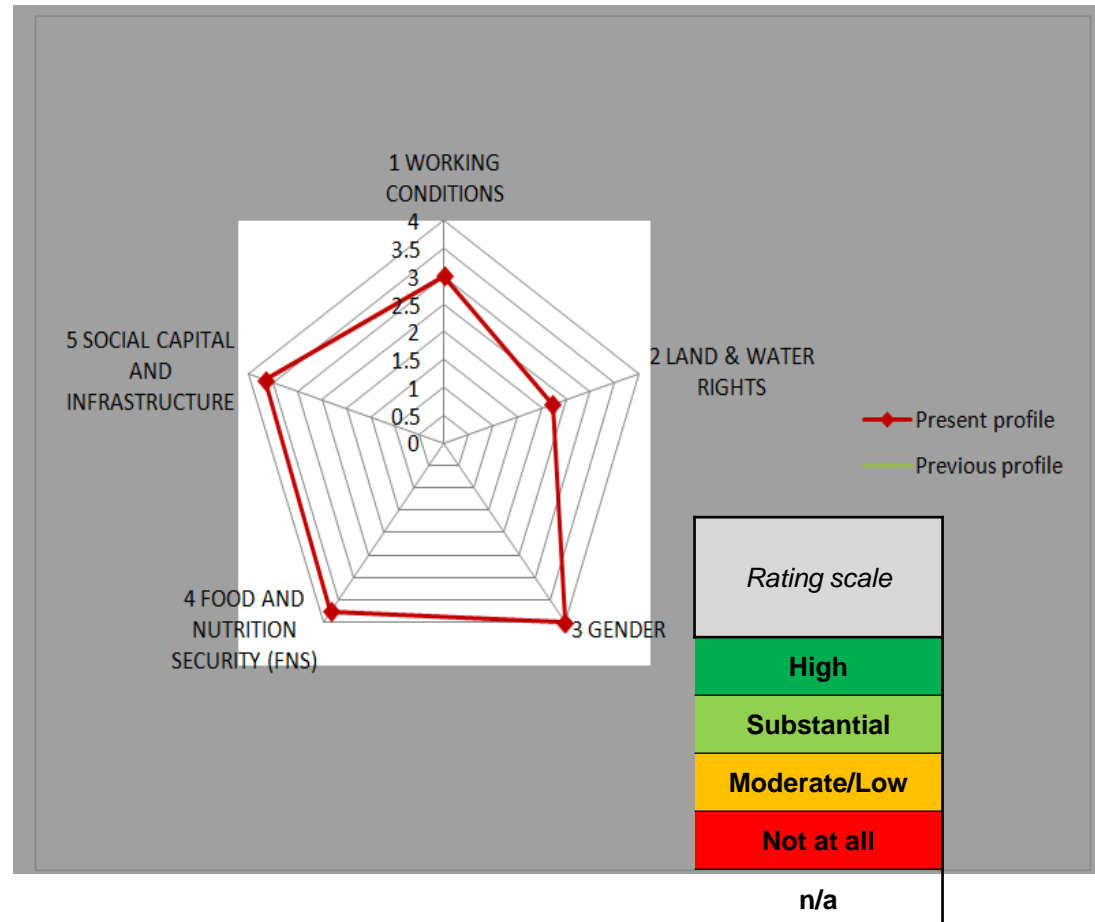
4. Environmental analysis: Contribution analysis: irrigated rice



Part II.: Practical Use (Rice VC in Mali)

4. Social analysis

- 55 questions on **working conditions, access to land and water, gender, food and nutrition security, social capital and infrastructure**
- ILO Core conventions; International Covenant on Economic, Social and Cultural Rights...etc



Part II.: Practical Use (Rice VC in Mali)

4. Social Analysis: Conclusions

- Gradual improvement of people's living conditions because of a better access to social infrastructures
- **Hotspot: access to land and water**-Significant work to secure the farms of smallholders is needed
- This pattern of land tenure insecurity, even if it is general to many other irrigated areas of Mali, remains an element to improve in the future.

Part III. : Conclusion

The tools developed and tested on the Rice value chain in Mali allowed:

- To assess the economic sustainability and inclusiveness of this VC,
- To assess the potential impacts of the VC on human health, the quality of ecosystems and the resource depletion,
- To assess the social sustainability of the VC (gender, food and nutrition, access to land and water, working conditions and social capital)?

→ YES

The methodological framework is robust and allows to take informed decision based on quantified metrics.

BUT challenging because it is data intensive, interdisciplinary, field constrained.