Impact of the input subsidy programme in Senegal. Insight from an ex-ante impact analysis and setting of an ex-post assessment

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The Input Subsidy programme in Senegal

European Commission

- In 2008, the Senegalese governenent launched an Input Subsidy Programme (ISP) to enhance farmer's access to agricultural inputs
- The budget gradually increased from 7 million to 76 million euros in 2018
- The ISP covers improved seeds and fertilizer. More recently, agricultural equipment is also concerned
- The programme is implemented on a very large scale and over a long period with about 50% of the market price subsidized
- It is officially not targeted to a specific farmer category (*Universal* targeting)

Pros and cons of the ISP

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- ISP addresses the problem of low affordability of inputs by reducing their cost for farmers
- However, the current design of the programme faces criticism from local stakeholders and development partners because of:
  - Lack of transparency to select the beneficiary of the ISP
  - Risk that subsidies are crowding-out the purchase of commercial inputs
  - Risk of leackage/diversion of the subsidized inputs (to non-targeted crops or farmers)
  - Delay in the delivery of the subsidized inputs to farmers
  - …

Ex-ante impact assessment of several scenarios related to the selection of the benficiaries

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- In collaboration with the EU Delegation in Senegal and ISRA, we achieved an ex-ante impact assessment of several scenarios related to farmer targeting of the ISP using a farm-househol model: FSSIM-Dev model
- FSSIM-Dev model is a farm-household model based on Mathematical Programming
- It simulates individual farmers under the hypothesis that each of them maximize his agricultural income under several contraints (land, labour, cash, etc.)

Application of FSSIM-Dev model to Senegal

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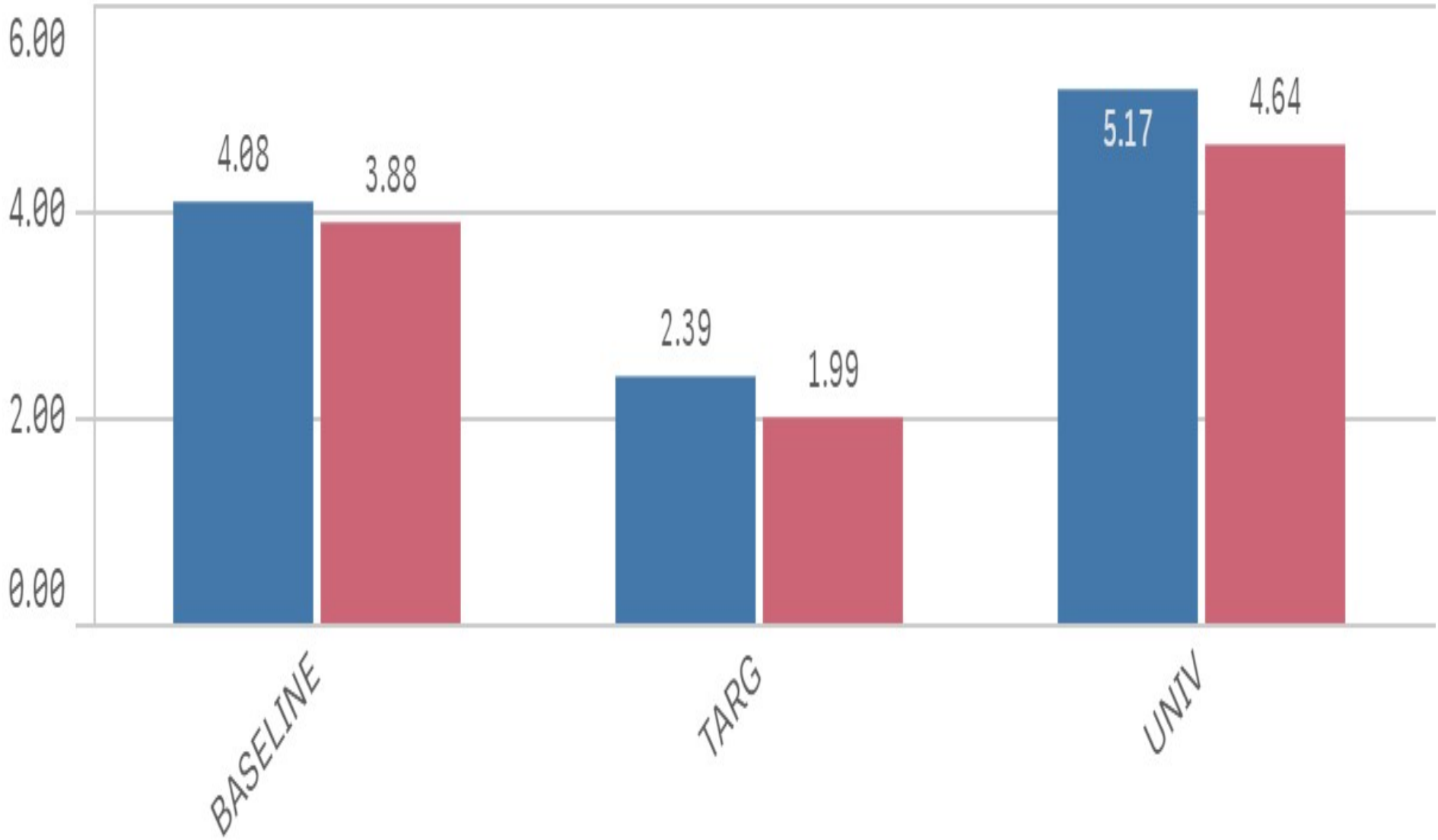
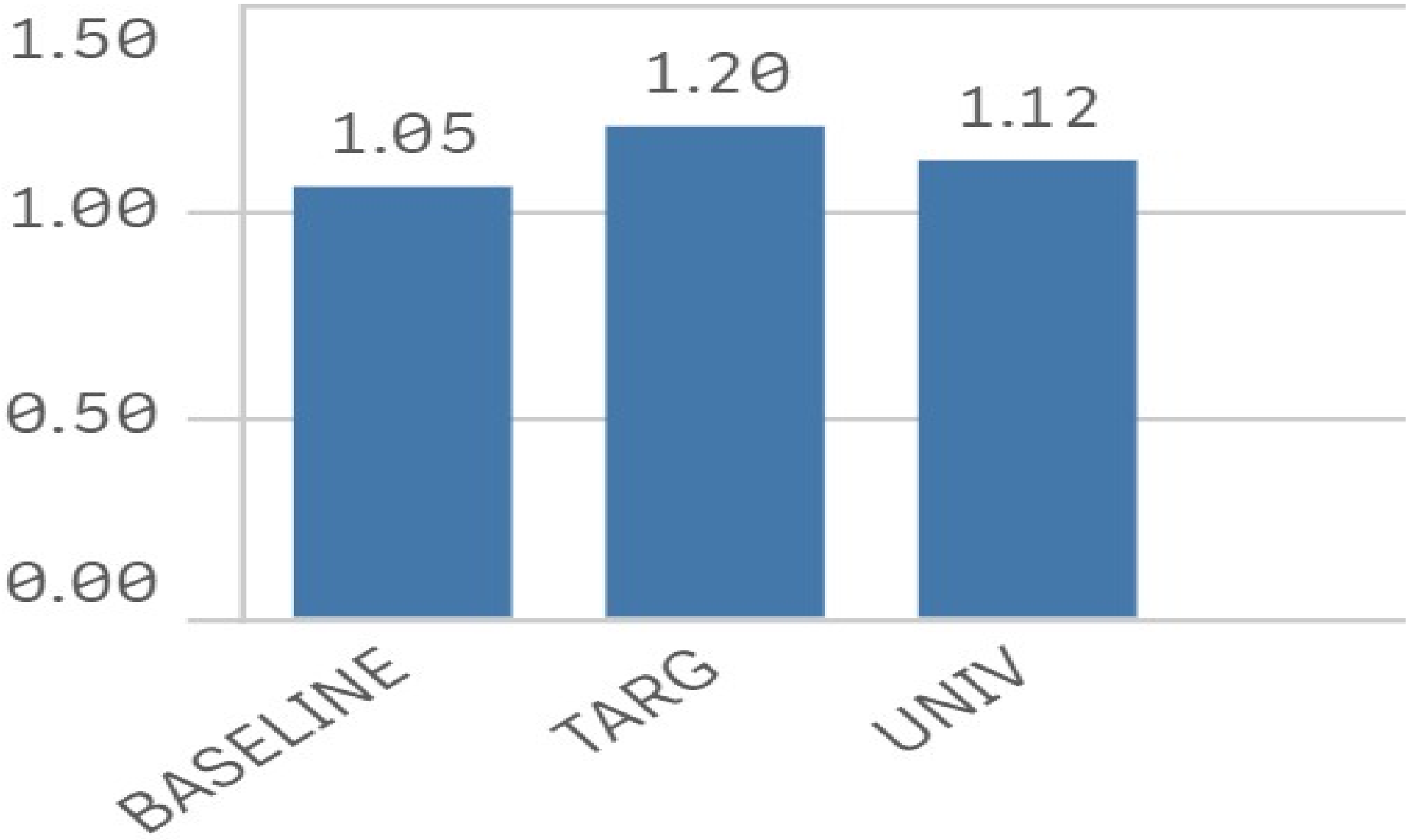
- Representative sample of smallholder farmers from a the survey ESPS achieved by the national statistical agency (ANSD) in 2011
- The survey covers all the regions of the country
- The model has been applied to the 2278 farmers of the survey
- Three basic scenarios have been simulated with the model (only for the fertilizers):
  - **ABOL**: All the fertilizer subsidies are supressed
  - **UNIV**: All the farmer can benefits from a subsidized fertilizer price (50% subsidy) up to 150 kg per farmer
  - **TARG**: only farmers with less than 5 hectares of land can benefits from a subsidized fertilizer price (50% subsidy) up to 150 kg per farmer

Results: Impacts on total income (for farmers) and total government costs (billion FCFA)



Results: Benefit/cost Ratio



Main conclusions of the ex-ante impact assessment

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- **Low economic impact** at the national level (<1%), but at the indiviual level, the effet could be more important (>50%)
- This low impact is largely explained by the fact that most of the farms **do not use fertilizer**, even at a subsidized price
- The impact may be more important in 2 regions: **Matam** and **Saint-Louis** (where irrigated land are the largest)
- The **smallest farms** and the ones **specializded in staple crops** are the most dependant from subsidized fertilizer.
- ISP **targeted to the smallest farms** seems to give the **highest** benefit/cost ratio

Ex-post assessment of the ISP

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- In September 2020, was launched a study to achieve the **ex-post assessment** of the ISP in Senegal with ISRA
- Quantitative survey in the 2 main bread-basket of Senegal (about 800 farmers will be interviewed)
- Main objectives of the ex-post assessment:
  - To have a better knowledge of the actual criteria used to target the beneficiary
  - To better know the actual impact of ISP on several indicators of farm performance (yield, income, etc.) and on other aspects of the ISP that cannot be studied with the model (cowding-out, etc.)
  - To refine FSSIM-Dev model with the newly collected data (crop-yield response function to nitrogen, etc.)

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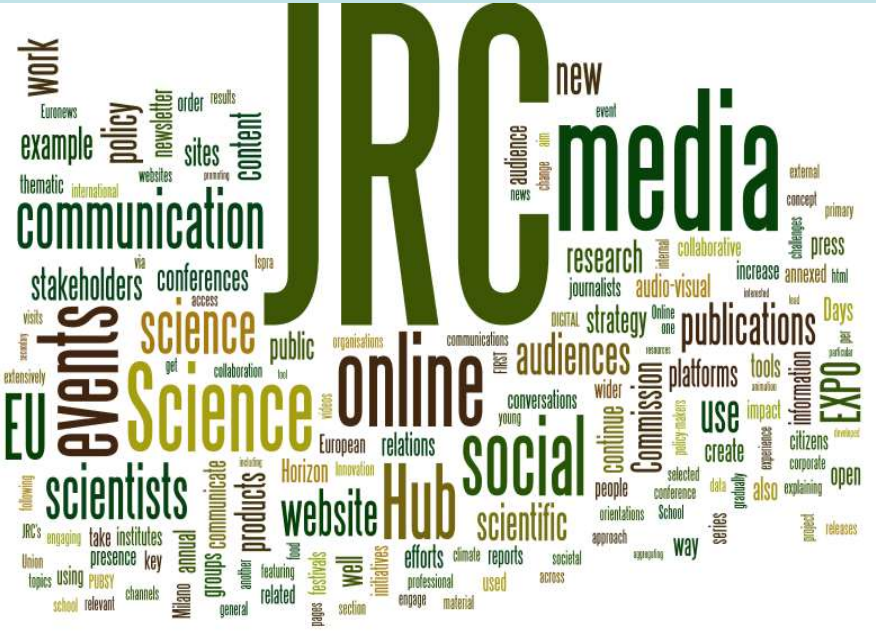


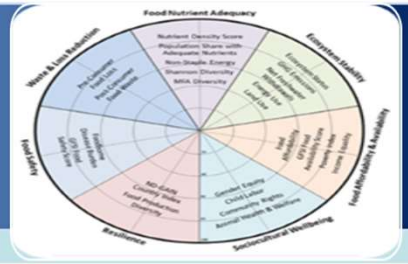
Thanks for your attention!

More information on the ex-ante impact study:

https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/subvention-des-intrants-agricoles-au-s-negal

Joint Research Centre

Overview on FSSIM-Dev (Farm System Simulator for Developing Economies)



OBJECTIVES & FEATURES

- Accurate analysis of **economic** & **nutritional** effects of agri-food policies
- Full **farm heterogeneity** (i.e. policy represent. & impacts)
- Capture **key features** of SSA (market imperfection, seasonality…)
- Flexibility in **aggregating results** by farm types, economic size, region and country

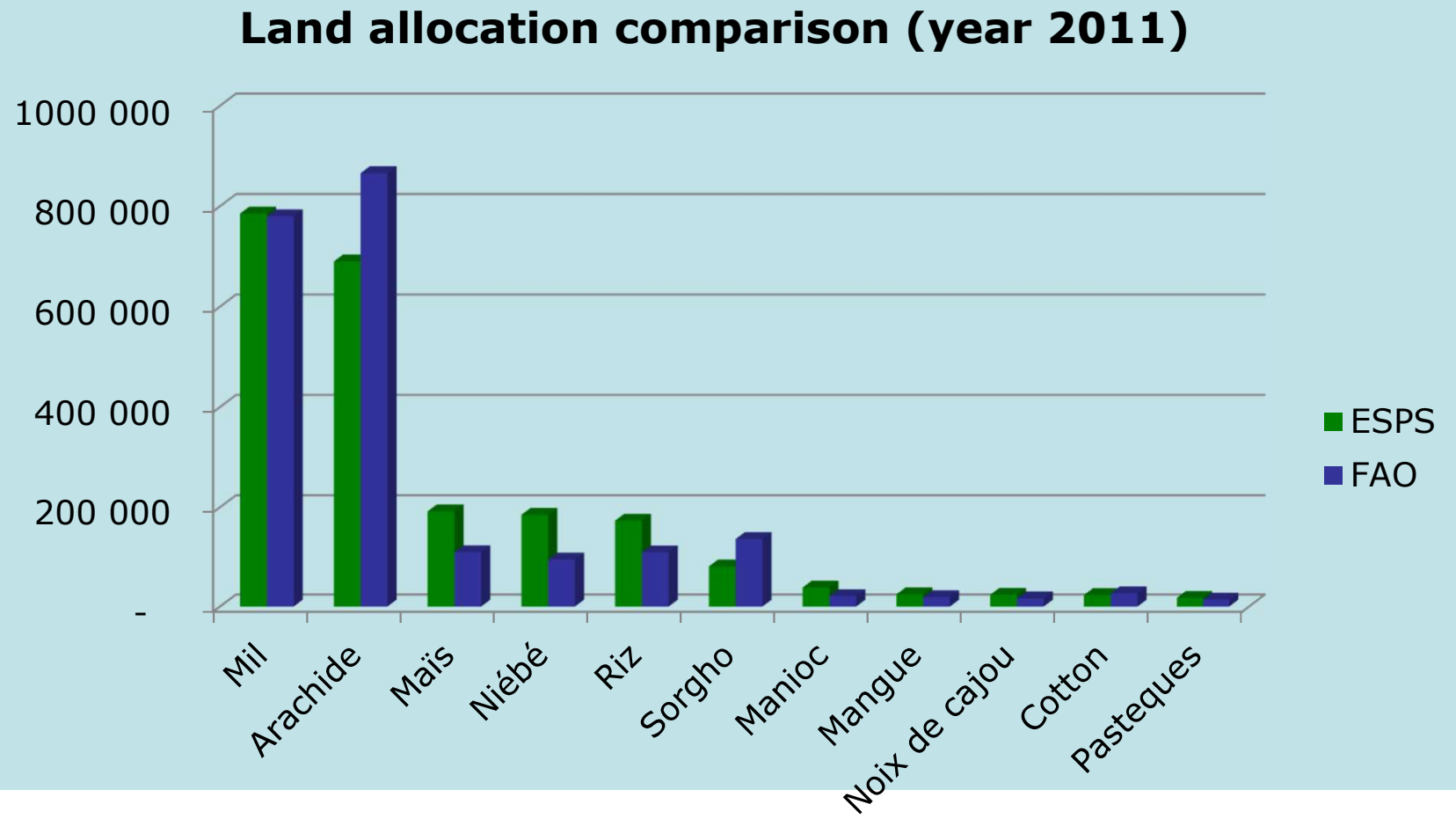
METHODS & DATA

- **Decision making tool** to generate scenarios analyses – *what if* – rather than to provide forecasts
- **Individual model** running for each single FH
- **Comparative static & non-linear** optimisation model
- Crops, livestock, household & consumption **data**

INDICATORS

- FH income
- Activity levels
- Production
- Consumption
- Land/labour use
- Input use
- Poverty level
- Nutrition
- Soil erosion
- GHG emission
- …

Comparison between FAO statistics and ESPS statistics used for the ex-ante impact assessment



Regional disparity in terms of crop allocation

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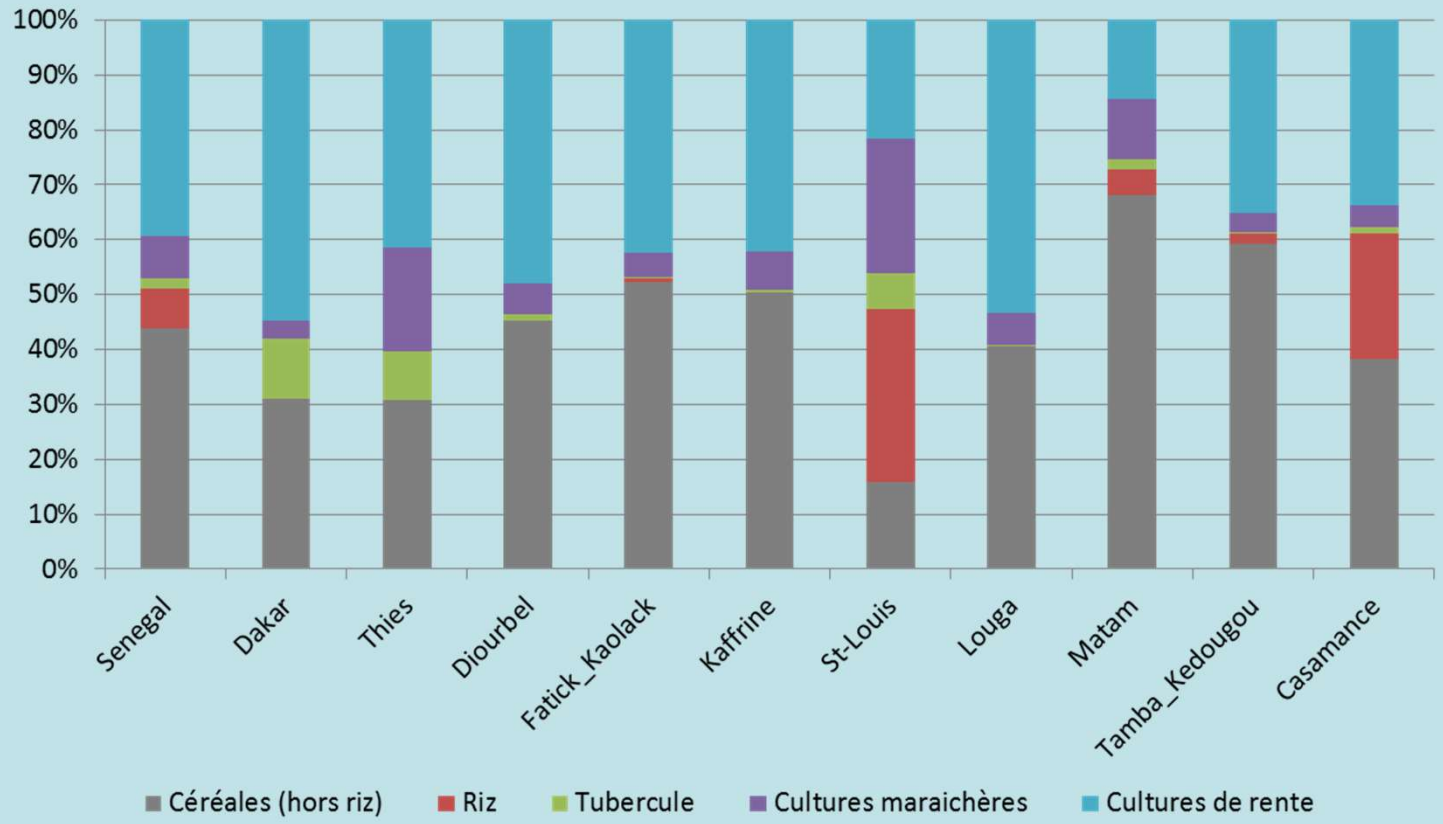

✓ Data give a coherent overview of the crop cultivated in each region