Loses and wastes of the freshwater fish sector in Antananarivo, Madagascar

Significance of loss and wastes:
Due to global population growth, the reduction of losses and wastes is one of the major stakes for food security, environment and fight against poverty.

Aims:
- Identify the actors and the different stages (Fig. 2) of freshwater fish distribution in Antananarivo.
- Quantify for each type of actor the quantity purchased, sold, stocked, losses and wastes.
- Extrapolate these volumes to whole urban system and develop the map of fish distribution (Fig. 3).
- Characterize quality levels of freshwater fish.

Method:
For each actor of the sector, "Material Flow Analysis" method was used to quantify the followings items:
- Input or supplied quantities bought and consumed (Fig. 4).
- Quantity of lost material during processing (not considered as losses by the actors).
- Sold quantities, losses and wastes.
- Fate of unconsumed products.

Losses in quality and product value:
Fives ranges of quality (Fig. 5):
- Q1: Live fish
- Q2: Dead fresh fish
- Q3: Unsold fish, 1 day after capture
- Q4: Unsold fish, more than 2 days after capture, salted, dried or smoked
- Q5: Head and bones, still consumed in Madagascar
- Q6: Scales and viscera

Fig. 2: Freshwater fish distribution in Antananarivo

Fig. 3: Map of the official fish sector in Antananarivo (ton)

Fig. 4: Freshwater species in Antananarivo (left to right: Nile Tilapia, Common carp, Black Bass)

Fig. 5: Ranges of fish quality

Conclusion:
- Extracted volumes from official statistics (1.3 kg/capita/yr) are weak compared to this survey (11 kg/capita/yr) suggesting high contribution of informal distribution.
- Insignificant losses of fish products (qtty) for consumers. Even Q6 are used to feed pigs.
- Losses of quality and products value:
  - Q5+Q6: 51% of the production / Q3+Q4: 3% of the production

Perspective:
- Characterization of fish quality levels led to health quality improvement of fish products (HACCP and microbiology)

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