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Food loss assessment study on maize and rice value chains in the DR Congo – Recommended solutions and strategies

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ANNETTE²**

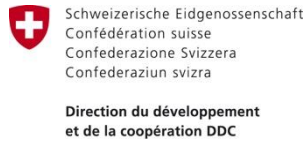
¹ Consultants : Democratic Republic of Congo

² UN Food Agriculture Organization

1st AFRICA POSTHARVEST CONGRESS & EXHIBITION
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Outline

- ❖ Context/ Rationale
- ❖ Study aim/ Methodology
- ❖ Study area
- ❖ Critical loss points (CLP)/ Results
- ❖ Gender dimensions
- ❖ Recommendations and strategies



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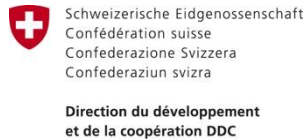


Context/ Rationale

- **Project title:** Mainstreaming food loss reduction initiatives for smallholders in food-deficit areas
- **UN's agencies:** FAO, WFP, IFAD based in Rome
- **Financial partner:** Swiss Agency for Development and Cooperation
- **Period of Study:** April 2015 (Kwilu) ; August-September 2015 (Kongo Central)
- **Reference policy:** Commitments taken by African Heads of State in Malabo, in 2014.
- **Study's regions:** Province of Kwilu (territories of Idiofa and Bulungu) and Province of Kongo Central (territories of Seke-Banza and Luozi)



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Aim of the study and methodology

- Quantify PHLs, identify their main causes and critical loss points.
- Identify measures to reduce PHLs and analyze their technical and socio-economic feasibility.
- Develop recommendations and strategies for PHL reduction.

Methodology:

FAO methodology “Food Loss Analysis: Causes and Solutions, Case Studies in the Small-scale Agriculture and Fisheries Subsectors”:

It combines different approaches (observations, interviews and group discussions, actual measurements and analyses).



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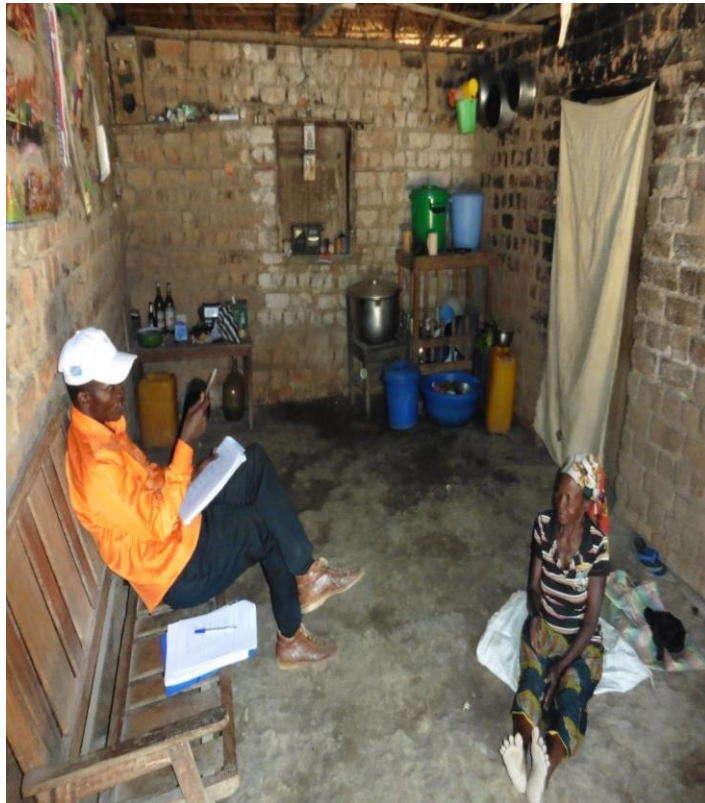


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Aim of the study and methodology



Interviews



Group discussions



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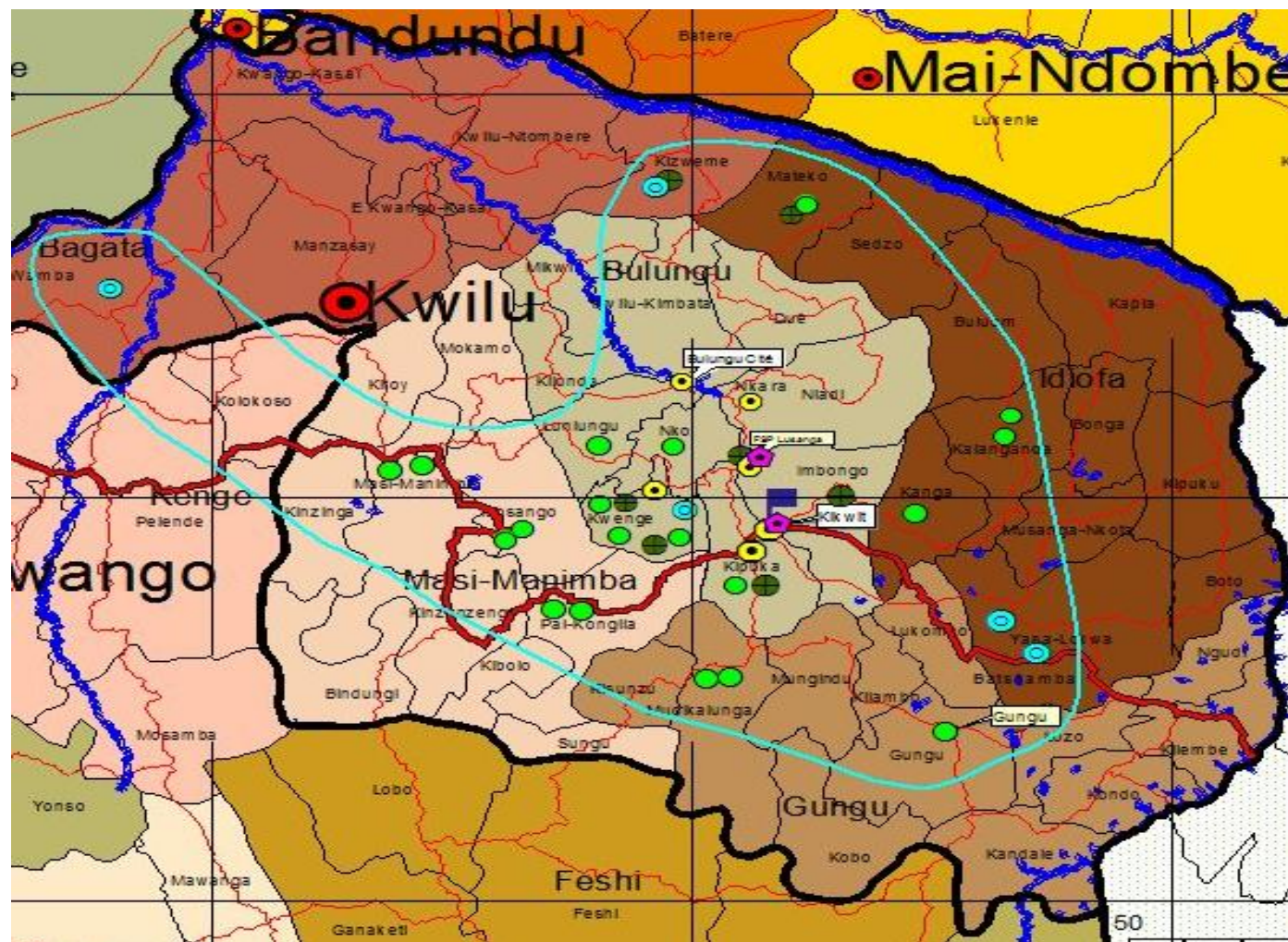
Study area

Democratic Republic of Congo



Study area

Province of Kwilu,
Territories of
Idiofa and
Bulungu





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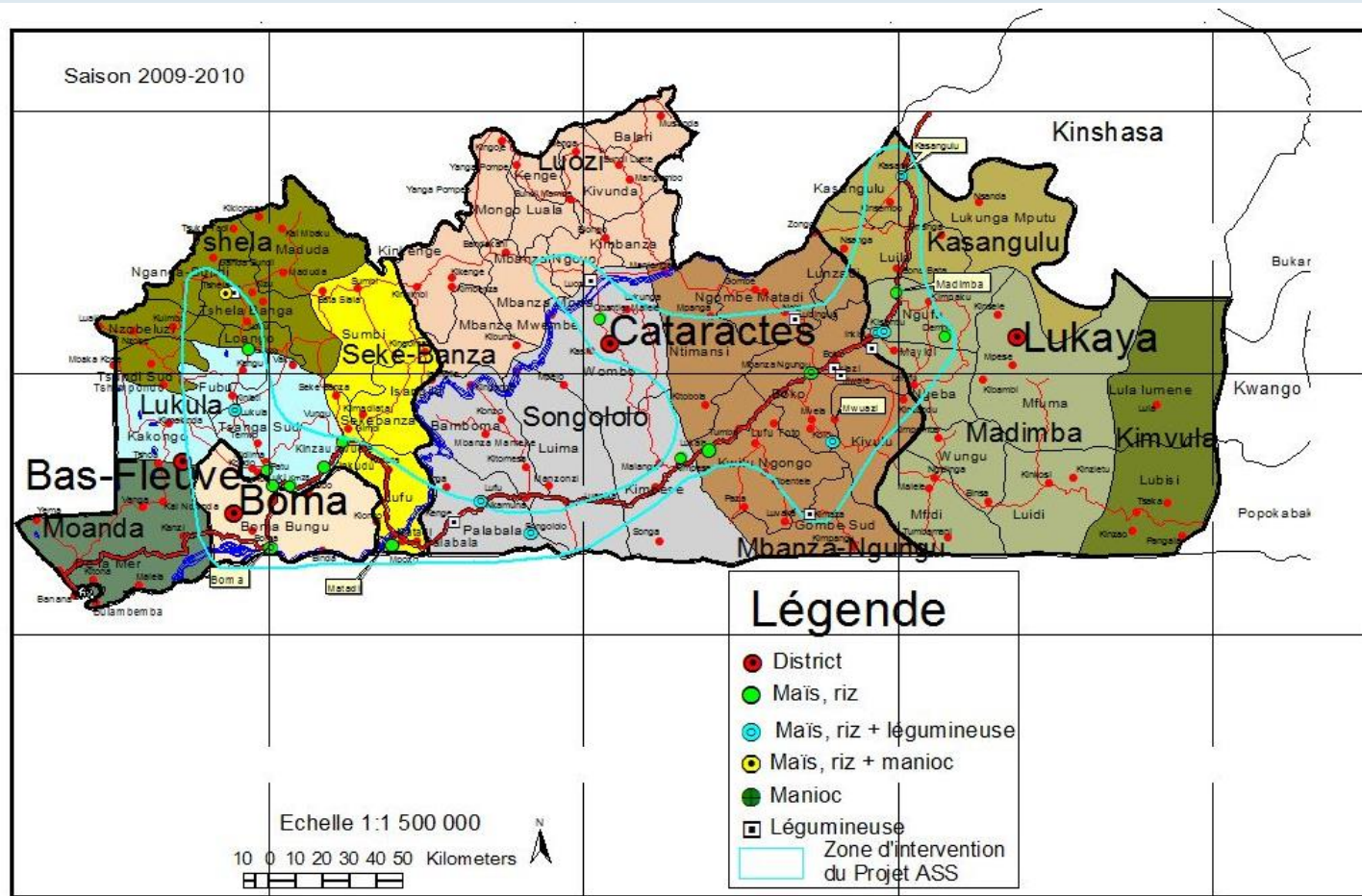
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Study area

**Province of
Kongo-
Central,
Territories of
Seke-Banza
and Luozi**





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Study area

Types of storage structures - Territories of Idiofa and Bulungu



Attic and straw attic



**Storage of corn
cobs in a kitchen**



**Ears of corn stored
in an attic**



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Study area

Types of storage structures - Territories of luozhi and Seke-banza



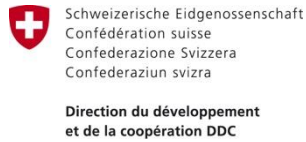
Storage of rice in a bedroom



Storage of rice in a room



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Critical loss points

Maize

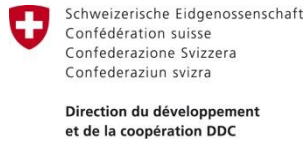
Drying, on-farm storage, storage at bulking depots, transport to terminal depots and storage at terminal depots

Rice

Harvesting, drying, on-farm storage



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Results (maize losses)

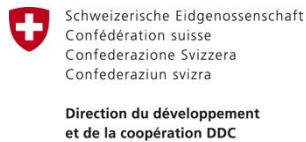
All along the chain, it is observed that the most important maize losses are attributed to insects, before those caused by molds. The alterations originate from the field.

Field drying

The long drying period (1.5 months) exposes the ears to bad weather and infestations.



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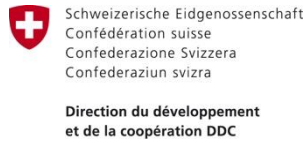
Results (maize losses)

On-farm storage

- Long storage (1 to 8 months) in precarious infrastructures
- Storage in traditional granaries, in-house, on bare ground, mats, racks, wooden crates, bags and baskets
- Do not protect against insects and rodents, moisture uptake often observed
- Quality losses: 5-23%



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Results

Storage in bulking depots

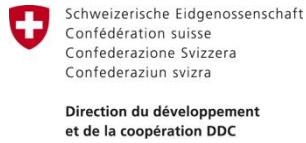
- 1 to 4 months
- Quality losses: 8-11% (before storage)

Weevils: 10% ; Molds: 5%

- Significant impact of losses on the product's market value (reduction of at least 10%)
- Causes of losses: insalubrity, absence of treatment, heat



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Results

Storage in terminal depots

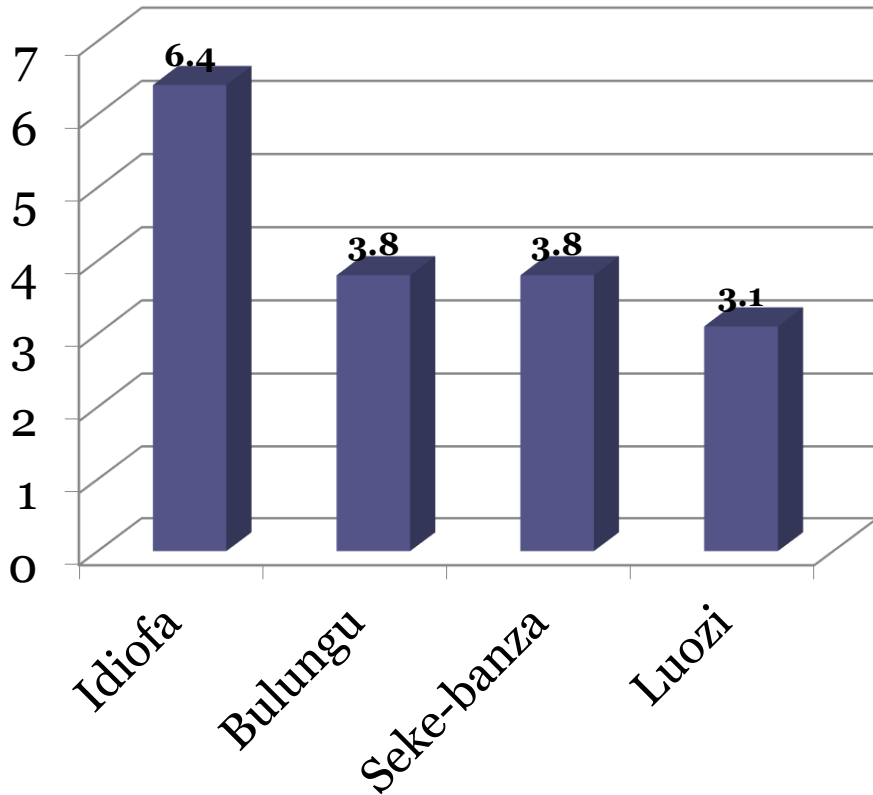
- Quality losses: 16-22%
- Proliferation of insects and mold if the product is not removed quickly
- Causes of losses: insalubrity, absence of treatment, heat,



Results

Sales in Kinshasa (retailing) – % quantity losses

Waste not recoverable



Quantitative losses after sieving and sorting: 3-6%

- Waste removed from the load after reprocessing
- Retailing



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Results (rice losses)

Harvest

- Non-observance of the agricultural calendar (early harvest), presence of birds and rodents in the field

Drying

- Panicles dried in the village in a rudimentary way, on racks or on the ground, without protection against poultry
- Humid weather

Threshing/winnowing

- Poor drying affects the effectiveness of shelling and promotes insect and mold infestation

On-farm storage

- Between 1 to 7 months in the farmers' storage structures before their evacuation to Kinshasa.
- Qualitative losses: 4 to 5% (mold: 3-4%, empty husks: 0.04-2%, insects: 0.2%).

Husking

- Level of broken rice: up to 80% (which will greatly reduce the market value)



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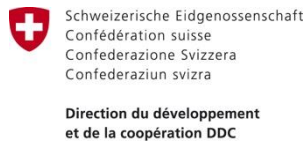
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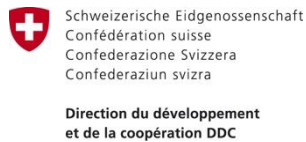
Gender dimensions



Women playing a key role in agriculture, especially in the activities associated with harvest and postharvest. Yet, they are not integrated into decision-making on post-harvest tasks; they suffer what they must do regardless of their condition. However, in some couples, they are associated and their suggestions are taken into account. They are essentially executors of decisions. This position demotivates them in some cases. Unable to react directly, they choose the path of silence.



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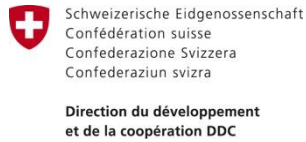
Gender dimensions



Results of recent study and experiences of project reveal that the food losses are specifically connected to the sociocultural problems and the disparities to the women as: (1) Men avoid the participation of women in meetings, considering themselves to be the only ones concerned with training and capacity building in post-harvest activities. (2) A number of women participate only at the insistence of the moderator at the focus group, because they are educated in the sense that they have no say in joint meetings.



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Recommendations

Training and capacity building: sensitization and training of extension agents, producers and other actors on:

- PHLs and their prevention
- Good harvest and post-harvest management practices

Reinforcement of public services in charge of training on PHM and in the monitoring and control of storage facilities

Improvement of storage facilities at farmers and bulking stages

Value chain development



Recommendations

Equipment	Unit cost (USD)	Lifespan (years)	Quantity	Yearly cost of investment (USD)	Yearly cost of operation (USD)	Total yearly cost (USD)
Metallic silos	200	20	1	10	2	12
Plastic silos	160	20	2	16	3.2	18.2
Plastic cans 25 litres	2,4	10	45	10.8	1.1	11.9
Plastic containers (touque) 200 litres	22	20	5	5,5	1.1	6.6
Hermetic bags 50 kg	2	2	20	20	2	22
Hermetic bags 100 kg	3	2	10	15	1.5	16.5
Allgate dryers	50	10	1	5	0.5	5.5
Collective shellers (1 for 30 households)	850	10	1	85	8.5	93.5
Cribs	3,5	10	1	0.35	0.035	0.385

- Value of maize production: approx. USD 250/year/producer.
- Value of husked rice production: approx. USD 850/year/producer.
- Average value of maize and rice losses in storage: approx. USD 50/year
- The metal silos and the shellers can be manufactured in Kinshasa. Plastic cans and films are sold in Kikwit, Matadi, Kimpese and Boma.



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Recommendations

Equipment	Current Practice	New Practice
Quantity of product	1368kg/year	1368 kg/year
Metallic silos		200
Allgate dryers		50
Collective shellers (1 for 50 households)		17
Cribs		3,5
Total investivment with metallic silos		270,5
Containers(20 sacks)	\$12,5	
Relative cost	\$12,5	\$270,5
EXPECTED BENEFITS		
% Losses	19,81%	2%
Amount for sale	1097kg	1340,64kg
Value by Kg	\$0,181	\$0,296
Total market value	\$198,56	\$397,27
Market value –recurring costs	\$108,56-\$12,5=\$186,06	\$207,27



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Photos of equipment

**Collective
sheller**



**Allgate
dryer**



Cans





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Photos of equipement



**Metal
silos**



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Thank you!