

# “Statistics on nitrogen input from livestock manure: Estimating availability and use”

## 30th November 2015, Kigali, Rwanda

**BAKUNDUKIZE Pamphile**  
**CARITAS DIOCESE KABGAYI**



The earth is warming

- Greenhouse gases in the Earth's atmosphere prevent heat from escaping the atmosphere
- Human caused greenhouse gas emissions account for much of the problem
  - Carbon Dioxide (CO<sub>2</sub>)
  - Methane (CH<sub>4</sub>)
  - Nitrous Oxide (N<sub>2</sub>O)

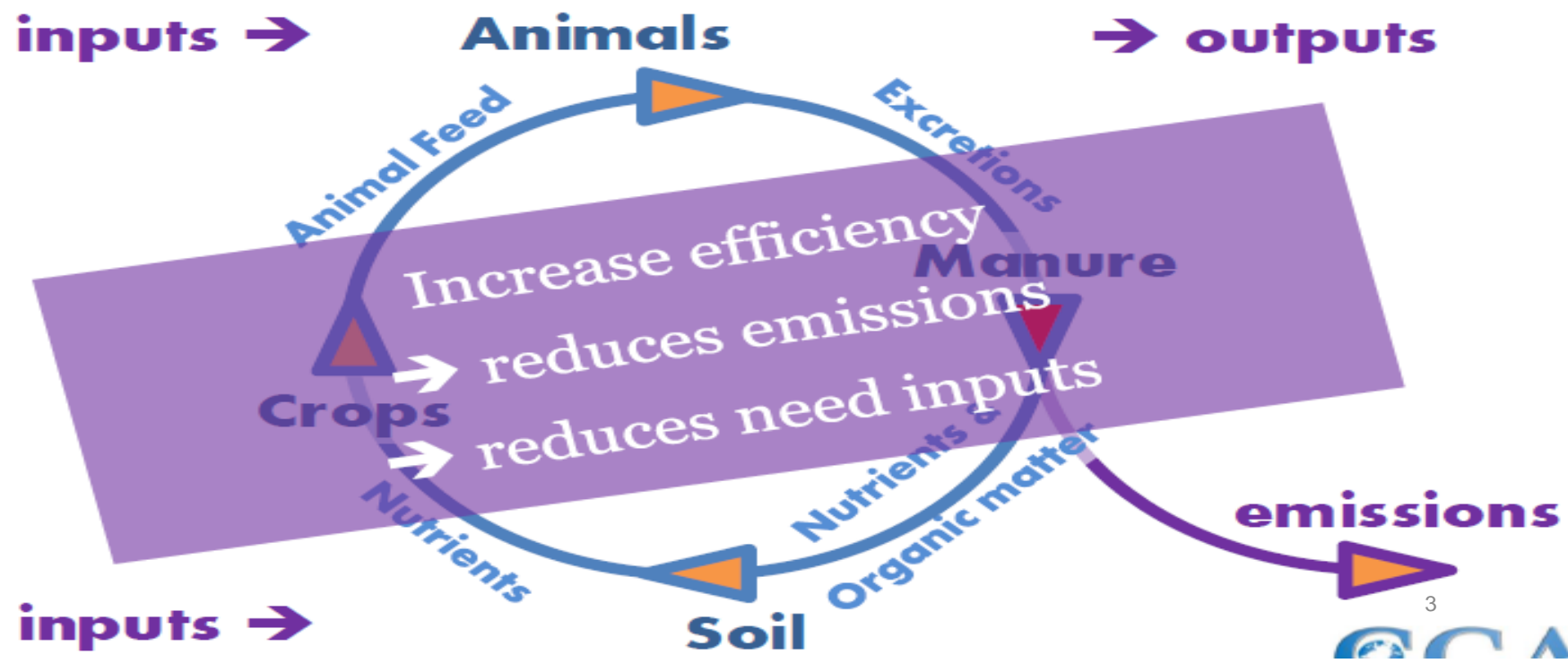




# MANURE IS NOT WASTE !!

**Manure MISMANAGEMENT is a WASTE !!!**

*→ a waste of valuable resources*



# Minerals



D  
U  
N  
G  
&  
U  
R  
I  
N  
E

$\text{CH}_4$  (methane)

Carbon (C)

Phosphorous (P)

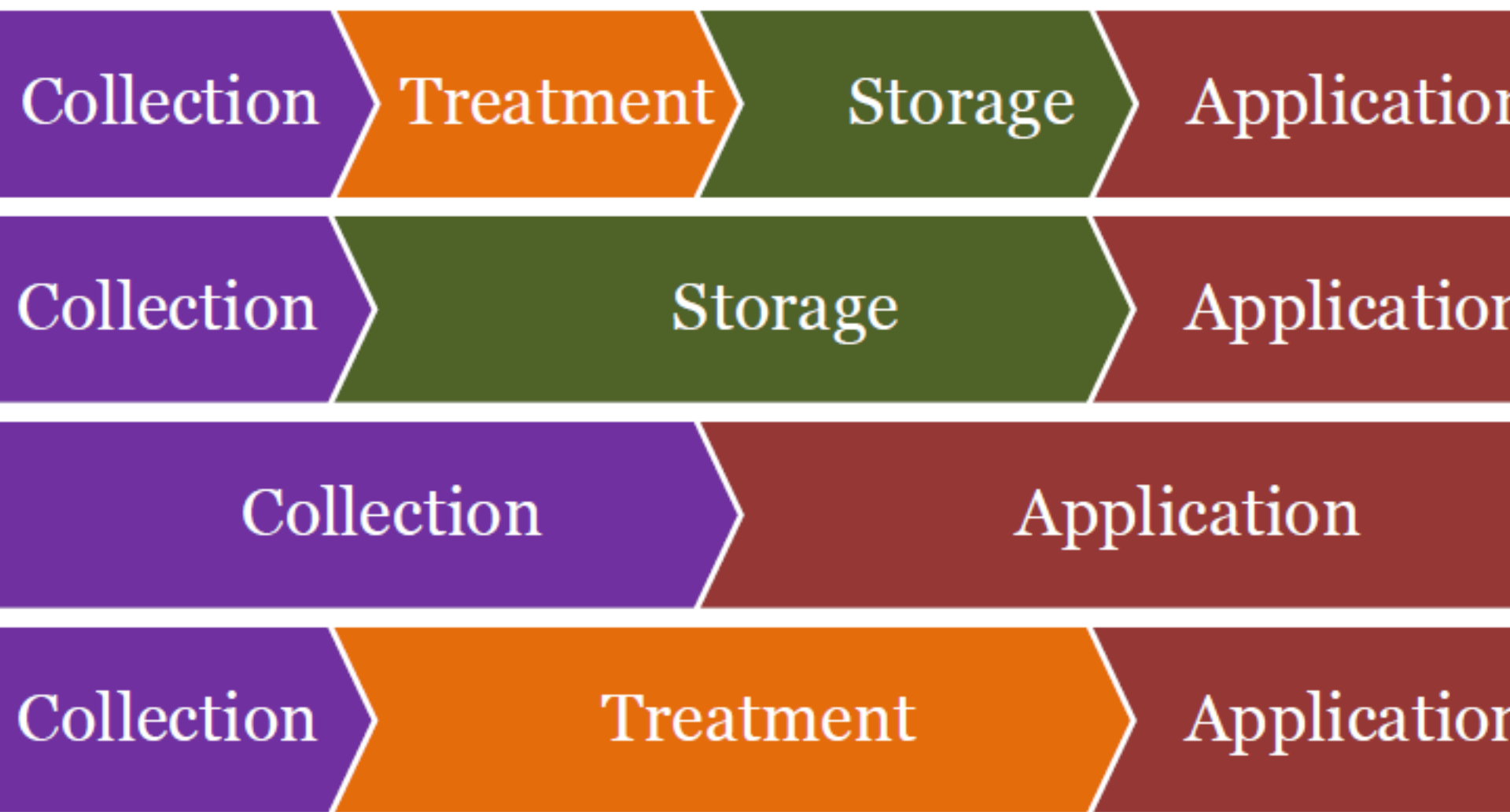
Potassium (K)

Nitrogen (N)



# Integrated Manure Management

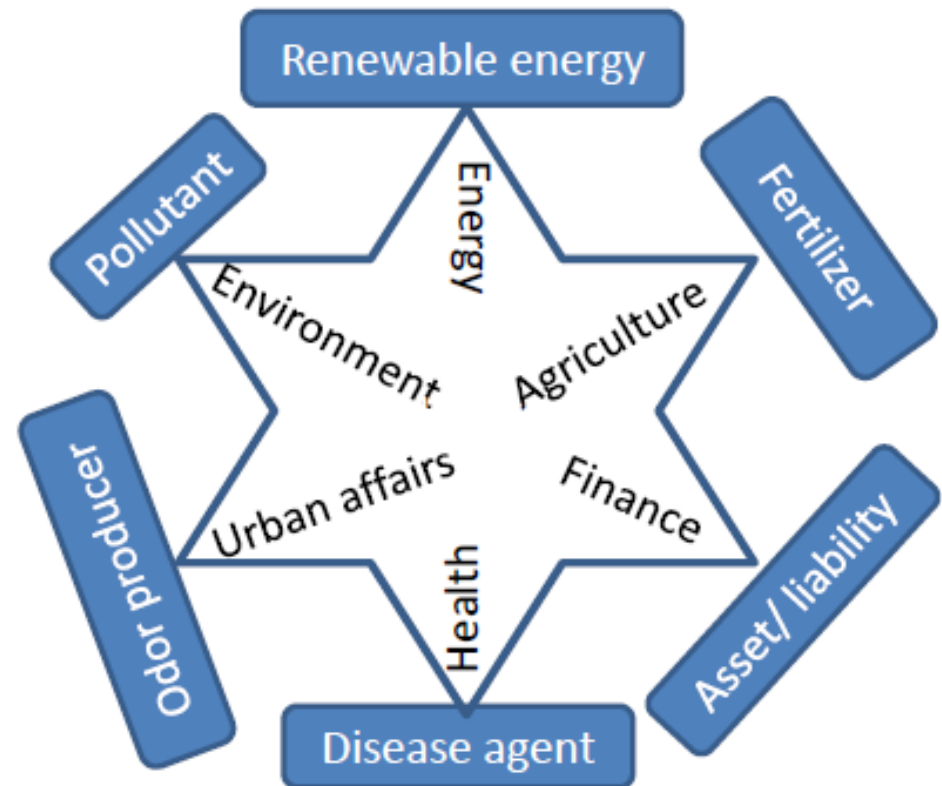
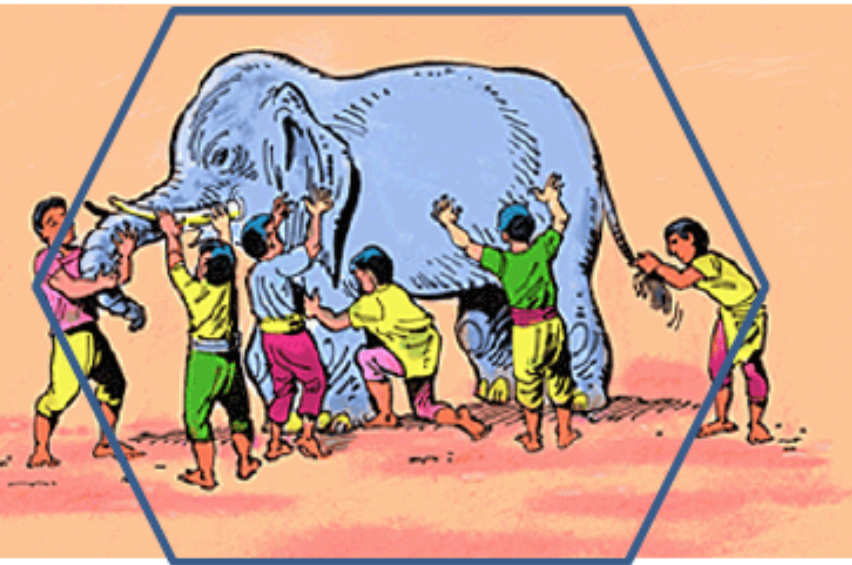
always site specific



# Working together is success

How can we succeed in future?

Six blind men: Mastering your area is not enough – working together → but with clear rules



## **Importance of the livestock sector in RWANDA and main animals.**

In Rwanda, agriculture contributes to 43% of GDP with livestock contributing 8.8%. The current livestock population consists of 991.697 cattle, 371.766 sheep, 1.270.903 goats, 211.918 pigs, 498.401 rabbits and 482.124 chicken (MINAGRI, 2003).

### **Main manure management systems in RWANDA**

- The Girinka program mandates a zero-grazing system. This is done for two reasons: i) to contain cow's manure for agriculture fertilizer; and ii) to reduce the potential contamination and tropical disease transmissions from open grazing . The recommended cattle housing design suggests open cattle sheds with roofing, sloping concrete floor, slurry pit, and manger. Although most beneficiaries kept their cows under cattle sheds (79%), many of these sheds were of poor quality construction materials based on field observations and focus group meetings held.

- To facilitate manure handling and transportation, Girinka beneficiaries primarily used tridents, hoes and baskets (51%, 24% and 47%, respectively). Even though tools were available and used by those who owned them, approximately 65% of farmers still used their hands to collect cow manure. The manure collection and preparation work took on average of 50 minutes per occasion, but the majority of farmers (81%) considered this task short or at least indifferent in terms of lost opportunities.
- Collected manure was mainly stored in over-ground piling or heaping (40%) or under-ground pit or ditch (59%). Both storage methods are considered as recommended management practices provided that optimal nitrogen (N) retention conditions are in place (i.e., a compacted, covered heap or pit to reduce ammonia volatilisation, and an impermeable floor to reducing nitrate leaching).
- Common waiting or maturing durations for stored manure are classified as follow: <1 month (9%), 1 to 2 months (32%), 3 to 4 months (30%), 5 to 6 months (17%) and >6 months (12%).



### Typical use of manure

Although the majority of beneficiaries are using manure on their fields, our data suggest that recommended management practices for collection, storage and application are not always being followed

### **Our collaboration with other government or international agencies, the private sector or academia on issues related to manure statistics**

We have started recently with collaboration of International Livestock research Institute (ILRI) but we still have a long way to go. Stakeholders consultation is being conducted in our intervention zone. However issues regarding biogas intensification is being enhanced through our projects for rural smallholders'farmers. We are running a program in Muhanga District regarding climate compatible development where activities regarding climate change resilience including manure management and reduction of short lived climate pollutants are tackled throughout 3 years. This is called Congo Nile Ridge foothills integrated environmental management project in Muhanga District, South province



## ***What are the main technical difficulties and data gaps encountered?***

- ✓ *There are no previous studies that have measured the knowledge, attitudes, and practices of Girinka beneficiaries concerning manure usage and its effect on soil fertility and crop yields.*
- ✓ *Weak farmers' organisations. Though one meets a number of farmers associations in the rural areas, these are usually small local associations with low capacity, being in human and financial resources as well as organisational capacity.*
- ✓ Limited diversification of animal husbandry. Livestock production has in the past emphasized cattle keeping ahead of other animals.
- ✓ Animal diseases including zoonoses. Rwanda is surrounded by four countries and there is a risk of epidemic diseases coming from neighbouring countries. Moreover, Umutara Province, which has the highest cattle population, is close to a National park with high risks of diseases from wild animals. The presence of diseases among livestock causes economic losses to farmers and the country and reduces the chances of trade in animals and animal by products. The incidence of most diseases including zoonoses not known,

## ***What are the main institutional difficulties encountered?***

- No manure management policy is in RWANDA. However, as we have green growth and climate resilience strategies, many aspects of short lived climate pollutants from dung and urine of animals are handled through this strategy*
- Inappropriate veterinary legislation. The laws on animal health are outdated and the penalties for breaking laws are ridiculously low. Hygienic procedures and practice in the processing and handling of animal by products is low especially in the rural areas where animal health workers may not reach.*
- Weak veterinary services delivery. There are few cadres of service providers in the livestock industry in the country.*
- Poor investment in livestock industry. Livestock farming especially among pastoralists is usually done with minimum inputs.*
- Inaccessibility of credit to small-scale farmers. There is very limited access to credit in the rural areas where majority of farmers operate. This hinders the adoption of improved farming technologies by the farmers as they have no money to invest in inputs and this results in poor animal production.*

***Inadequate linkage between research and extension to farmers. Until now, research has been conducted mostly in research stations without much impact on farming communities. The farmer continues to use unimproved methods of animal production and this does not result in the transfer of improved technologies from research stations to the farmer in order to boost stock development***

**- What steps are needed to improve your national statistics?**

- Making an umbrella of manure management at country level composed of Ministry of commerce and Industry, NGOs, Private Sector, Farmers Organisations, Development partners)
- Put in place a national manure management steering committee composed of:
  - ✓ Ministry of Agriculture ( for policy development and implementation, improvement of agricultural productivity, food security and livelihood)
  - ✓ Ministry of environment and natural resources (control pollution and GHG emissions, mitigating global warming and climate change)
  - ✓ Ministry of Energy (for efficient means of harnessing CH<sub>4</sub> as a source of real emissions)

- ✓ Ministry of health (for public health concern as regards to spread diseases, zoonotic diseases)
- ✓ Ministry of Finance (to coordinate policy formation and planning and resource mobilization).
- Enforcement of manure management act
- Multi-stakeholder approach to portray implementation
- Extension and training
- Monitoring and evaluation
- The following stakeholders should play the following roles:
  - ✓ Ministry of commerce and industry: should play the role of scale up efficient technology and application
  - ✓ NGOs should play the role of advocacy, awareness, resource mobilization and constructive engagement





*Thank you for your attention*

