

## **Manure Management Workshop**

### **Food and Agriculture Organisation Headquarters, Rome, Italy**

3 - 4 September 2012

## **Meeting Report**

The Manure Management Network (MMN) is one of the five research networks of the Livestock Research Group of the Global Research Alliance on agricultural greenhouse gases. The first meeting of this network was held in Rome, Italy from 3-4 September, 2012. The meeting was co-chaired by the Netherlands (Dr Paul Vriesekoop) and Vietnam (Dr La Van Kinh) as the country co-chairs of this network. In the first part of the workshop the actual and future position and activities of the MMN were leading in the program. In the second part of the workshop the connections between the Livestock Dialogue of the Food and Agriculture Organisation (FAO) and the MMN were discussed chaired by FAO (Dr Jeroen Dijkman). The agenda of the meeting is given in Appendix 1.

This report is a summary of key discussions, action points and outcomes from the meeting. Presentations are provided separately as PDFs and will be put on the Members website of the Global Research Alliance (The Alliance) together with this report.

The meeting was attended by 19 members (from 12 member countries) and two invited guests from FAO. The list of participants is shown in Appendix 2.

### **1. Summary of meeting outcomes**

The meeting achieved the following outcomes:

#### **Part 1: Action plan of the Manure Management Network (MMN) itself**

##### Most important issues

- Develop common guidelines for measuring emissions around manure management (total manure chain)
- Link external communication to food security; joint messaging to policy much more further than only reducing greenhouse gas emissions; activities of MMN have added value in terms of food security instead of food scarcity and high food prices because of the harvest uncertainty as a result of climate change

- Apply system approach; both in relation to the whole manure chain but also in relation to greenhouse gas emissions as part of N- and C cycle and recovery of other nutrients from manure

#### Actions to undertake the coming year

- Develop a best practice guide to measure emissions from manure in all stages of the manure chain (start with project description lead by Matt Smith, USA).
- Make a position paper and leaflet to be used for external communication dealing with goals, role, position/boundaries etc. (start with set up by Theun Vellinga, NL).
- Make a shopping list on practical mitigation options for farmers and policy; a kind of user guide building on such a guide in the UK and other countries; showing best practices of mitigation options that should have an economic evaluation (start with set up by Dave Chadwick, UK).

#### Organisation of the MMN

- Meet once a year; next in Dublin 2013 linked to GGAA.
- More use of Alliance website; active email; addresses of wider network of invited/ linked people to be circulated, organise web discussions.
- Try to involve the missing people from :  
China, Thailand, Korea, Brazil, Eastern Europe, Germany

### **Part 2: Action plan on the connections between Livestock Dialogue of FAO and the MMN**

One of the themes in the Global Agenda of Action of the **Livestock Dialogue** is reduced discharge of animal manure. The goal of this theme is: Reducing nutrient overload and greenhouse gas emissions through cost effective recycling and recovery of nutrients and energy contained in animal manure. The MMN agreed to cooperate with the Livestock Dialogue on this theme and to find the synergy. It was agreed to develop and execute a new joint working program: the Manure Management Improvement Program.

#### Actions on the Manure Management Improvement Program (MMIP)

The goal of this program is to improve food security and reduce environmental impact by better manure management.

The members of the MMN agreed to:

- Develop MMIP this year with members of the reduced discharge network and FAO; find partners and funding. The MMIP consists of two parts: the manure kiosk and pilot projects.
- Develop and implement a knowledge service project: **the manure kiosk**.  
This is an inventory of :

- Manure management practices in the field (mapping in GIS)
  - Policies, regulation and institutional frameworks (literature, mapping)
  - Current projects and technology (literature)
  - Mitigation options in relation to food security for policy and end users
- 12 countries will contribute already in 2013 to the preparation of the kiosk and have offered content (Switzerland, Vietnam, UK, Finland, Mexico, Canada, USA, France, Spain, Denmark, Japan, the Netherlands, probably China and Australia). But also other organisations have offered to contribute (FAO, CIRAD, EU project LEAD)
  - Develop and execute pilot **projects** to improve manure management. Stake holders and potential areas have to be identified to define improvement projects. Several members have already offered first ideas of possible pilot projects in China, SE Asia, Spain, Russia (and Baltic region) and in EU with farmers' network.

## 2. SUMMARY OF DISCUSSIONS

Monday September 3

### Session 1: Objectives, work to date and inventory of actual research

Chair: *Paul Vriesekoop*

#### 1.1 Welcome, opening and introductions

The co-chair welcomed attendees and opened the MMN meeting with a round able introduction of the participants.

#### **Objectives of the seminar:**

1. Share information between participants about the state of research and policy on manure management.
2. Define the strategy for the Manure Management Network within the Alliance and define what the added value will be and what the action plan is.
3. Introduce the Global Livestock Dialogue in general and the Reduced Discharge agenda specifically and find the connections with the Manure Management Network of the Alliance.
4. Build an action plan on the connections between the Livestock Dialogue and the Alliance.
5. Introduce the Manure Management Improvement Program and look for connections and support.

#### 1.2 Presentation by Paul Vriesekoop (NL) of the work to date

The presentation started with an overview of the place of the MMN within the Livestock Research Group and the Alliance. In the second part the history of the MMN was presented to show the members participating, actions and reports to the

LRG to date.

A copy of the presentation is given below; a PDF is placed on the Alliance website.

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## Work so far of the Manure Management group of the Global Research Alliance

Paul Vriesekoop  
Manure management workshop 3-5 September 2012,  
Rome, Italy

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## Content of presentation

- From GRA, Livestock Research Group to manure management group (MMG)
- 1,5 year of history of MMG without meeting but with members, stocktake and reports

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## Collective Vision of GRA

**Increase agriculture production with lower emissions**  
*Feeding the world while caring for the environment*

**Improve global cooperation in research**  
*Accelerate/strengthen knowledge and technology development that would not happen without the Alliance, with a common research agenda, joint capacity building*

**Work with farmers and partners to provide knowledge**  
*Develop relevant mitigation options while increasing the resilience of food production systems*

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## Members GRA



33 Countries are Members of the Global Research Alliance

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## Cross-cutting Groups

**Research**

**Livestock**

**Cropland**

**Paddy**

**Inventory and Measurement**

**Soil Carbon and Nitrogen Cycling**

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## Livestock Research Group

Co-chairs: Martin Scholten (Wageningen UR), Harry Clark (NZAGRC)

**Livestock Research Group**

Support: Jac Meijls (Wageningen), Victoria Hutton (NZAGRC), Andy Relling (NZAGRC)

**Ruminant Working Group**

Co-Leaders: Harry Clark (New Zealand) and Veronica Ciganda (Uruguay)

Members: All members of the LRG are also members of this working group.

Focus: Addressing emissions from housed and grazing ruminants (CH<sub>4</sub> from enteric fermentation, N<sub>2</sub>O from urine deposited on soils, and soil carbon stored under pastures and feed crops). Manure management issues are covered by the non-ruminant group.

**Non Ruminant Working Group**

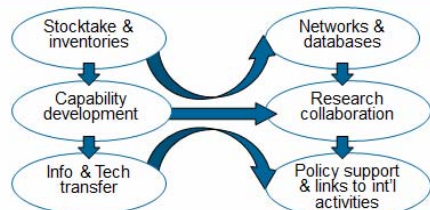
Co-Leaders: Paul Vriesekoop (The Netherlands) and La Van Kinh (Vietnam)

Participating countries: Colombia, China, Denmark, Finland, France, Germany, Japan, Korea, Malaysia, Mexico, the Netherlands, UK, USA and Vietnam

Focus: Manure management for both non-ruminants and ruminants. Manure is the biggest source of emissions from non-ruminants.

## From stocktake toward scientific support to policies

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Common understanding    Concerted actions

## Research Networks

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Accelerate research and science coordination in targeted areas

- Create dedicated global expert communities
- Enhance communication and collaboration
- Share knowledge and technologies
- Guide methods, tools and 'good practices'
- Develop capability

Rumen Microbial Genomics  
network meeting, NZ 2011

## Livestock – Research Networks

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### Rumen Microbial Genomics (RMG)

NZ lead with 40+ members; second meeting in June 2012 (France)

### Animal Selection Genetics and Genomics (ASGG)

NZ/Australia lead; 30+ members; 2nd meeting July 2012 (Australia)

### Feed and Nutrition

Switzerland lead with 20+ members; first meeting in September 2012 (Switzerland)

### Manure Management

The Netherlands lead with 17 members; first meeting in September in conjunction with Livestock Dialogue and FAO

### Animal Health and GHG intensity (under development)

UK lead; initial scoping meeting mid-June 2012 (Bangkok)

## Manure management group

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- Co-coordinator La Van Kinh Vietnam; start of group January 2011 via Internet
- 2011: stocktake LRG on headlines; reports in LRG meetings in March (Versailles) and November (Amsterdam)
- 2012: contribution to regional workshops of LRG in March (Thailand) and September/October (Kenia/Ghana); first meeting in Rome; reporting in LRG meeting in November (Uruguay)

## Slide Versailles meeting: What has been done?

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Stocktake delivery has been organised

4 times there has been e-mail contact with the participants on:

- > who will participate and what to do
- > reminder of the stocktake
- > reminder of the meeting in France and who would come and main line of thinking in the respective countries
- > sending of stocktake, selection of non-ruminants research, outline of a paper

## Slide Versailles meeting: Action plan

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Review the global stocktake

Discuss the outcome(s)

Organise a website discussion within the group

Work on an integrated paper with the whole group

Get fast growing non-ruminant production countries on board

Identify the new projects within the group and cross sell these

## Slide Amsterdam meeting: Conclusions stocktake

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Africa, W Asia, E Europe and S America are largely missing in the stock take

- Includes significant producers of poultry meat & pork

The stock take tends to be biased towards publicly-funded projects

- Easier to find

In both ruminants and non-ruminants, the emphasis is on emissions from stored manure

## Slide Amsterdam meeting Concluding Remarks Chadwick/Mosquera (1)

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Manure management major source of  $N_2O$  &  $CH_4$

Choice of system is a major influence; slurry vs FYM

Manure treatment can have a major effect

Emissions from spreading effected by: manure type, application method and timing

Important to consider impacts of management practices on whole system losses and 2<sup>o</sup> impacts

**Slide Amsterdam meeting**  
**Concluding Remarks**  
**Chadwick/Mosquera (2)**

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**Manure management offers an opportunity to reduce GHG emissions**  
**Efficient manure nutrient use**

- reduces reliance on 'bagged' fertilisers
- reduces energy in producing 'bagged' fertilisers
- reduces diesel use in applying fertilisers
- reduces direct and indirect N<sub>2</sub>O losses (less N applied)

**Biogas generation:**

- reduces CH<sub>4</sub> emissions from manure stores
- offsets fossil fuel use to generate electricity
- reduces organic matter to landfill

**Regional workshops of LRG**

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- SE-Asia in March: manure management important topic; cooperation with La Van Kinh Vietnam; presentations and report are available
- Kenya in September; Ghana in Oktober: program in development

### 1.3 Presentation by Julio Mosquera (NL) on the inventory of actual and planned research in Manure Management

In the last two months the members of the MMN were asked to answer four questions in a questionnaire. These concerned on-going research, planned new projects and suggestions for collaboration.

A copy of the presentation is given below; a PDF is placed on the Alliance website.

**Inventory research in manure management**

Manure Management workshop, Rome, 3-5 Sept. 2012  
 J. Mosquera



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WAGENINGEN UR

**Contents**

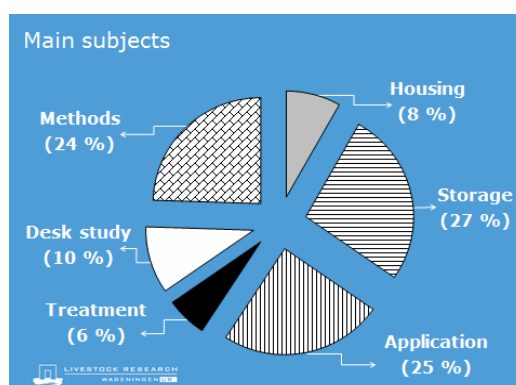
- On-going research and planned new projects
- Suggestions for collaboration
- Collaboration partners / countries

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**On-going research and planned new projects**

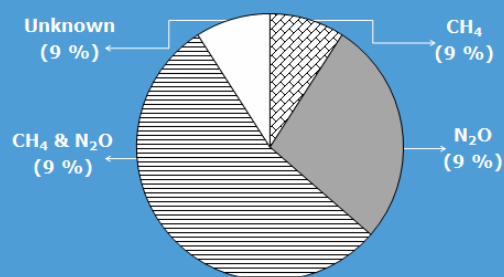
- 45 projects from 8 countries: UK, France, Finland, Denmark, The Netherlands, USA, Japan, Vietnam
- 39 projects from European countries
- Reactions from other European and non-European countries are necessary

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## Greenhouse gases



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## Suggestions for collaboration (networks)

- RAMIRAN
- FAO, ILRI
- BalticManure (Finland)
- GraceNet (USA)
- Learn (New Zealand)
- MonsoonAsia Agro-Environmental Research Consortium (Japan)
- Animal change FP7
- Livestock Dialogue (MMIP)

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## Suggestions for collaboration (subjects)

- Literature reviews
  - Manure management and GHG emissions
  - Measurement methods
  - Modelling
- Training/Regionally specific workshop's
- Harmonization measurement methods

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## Research Groups

- UK (Rothamsted Research (North Wyke), ADAS, AFBI, SAC, CEH, Univ. Aberdeen, Univ. East Anglia)
- Ireland (Teagasc)
- France (INRA, CEMAGREF/IRSTEA)
- Denmark (Aarhus University, Copenhagen University, University of Southern Denmark)
- Finland (Agri-Food Research MTT)
- Sweden (JTI)
- Germany (KTBL)
- Austria (University of Natural Resources and Life Sciences Vienna)
- The Netherlands (Wageningen UR Livestock Research)
- USA (USDA)
- Japan (National Institute for Agro-Environmental Sciences (NIAES))
- Vietnam (Institute of Agriculture Sciences from Southern Vietnam)

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Thank you



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**Session 2 Round table: Each country presents headlines of research and policy around manure management.**

Chair: *La Van Kinh*

In total twelve members/countries gave a presentation. These presentations are not shown here because of the length of this report. However a PDF of each presentation will be placed on the Alliance website.

- |                                      |   |         |
|--------------------------------------|---|---------|
| ➤ La Van Kinh                        | - | Vietnam |
| ➤ Matt Smith                         | - | USA     |
| ➤ Sergio Gomez Rosales               | - | Mexico  |
| ➤ Sari Luostarinen and Juna Gronroos | - | Finland |

- |                                     |   |                          |
|-------------------------------------|---|--------------------------|
| ➤ David Chadwick and Brian Chambers | - | UK                       |
| ➤ Soren Petersen                    | - | Denmark                  |
| ➤ Melynda Hassouna                  | - | France                   |
| ➤ Takashi Osada                     | - | Japan                    |
| ➤ Philippe Lecomte experiences      | - | CIRAD, France on African |
| ➤ Mike Teillet                      | - | Canada                   |
| ➤ Julio Mosquera                    | - | The Netherlands          |
| ➤ Agustin del Prado                 | - | Spain                    |

Tuesday September 4

### Session 3: Discussion on the future strategy of the MMN

Chair: *Paul Vriesekoop*

#### 3.1 Synthesis of the Session 2 round table

This session started with a presentation of Paul Vriesekoop with a reflection on and a summary of the contributions of the 12 countries in session 2.

Policy and regulations on manure management differ very strongly between countries. A lot of technical information on emissions was available and shared; however there was a great need on standardisation of measurement techniques.

A copy of the presentation is given below; a PDF is placed on the Alliance website.

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## Reflections on day 1.

Paul Vriesekoop  
 Manure management workshop 3-5 September 2012,  
Rome, Italy

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## Difference between countries

- Europe has more regulation and also stricter targets for mitigation of GHG
- Some other countries "copy" regulations without checking if these apply for their specific situation
- USA does not "want" to start anything on GHG regulation; if so it must come from private companies that react on NGO or consumer demands.
- African countries are mostly involved in trying to feed their people. GHG is not on the radar screen, more on closing cycles.

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## Policy implications

- Effectiveness of policy measures are not always clear because of a lack of control and/or enforcement of regulations
- Europe and Japan are moving fast and control and enforce
- European countries share information and work close together (Baltics)
- New technology is being developed fast.

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## Content

- A lot of emissions are measured, but not all are GHG
- Many presentations have a close link to NH3 and N2O emissions. Seems also very much linked to N-cycling.
- Methane is also important, but seems to have a lower status.
- P is also mentioned a lot.



## Measurement

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- There are a lot of data measured all over the world.
- We know that systems (in the broadest sense) and climate have impact.
- Emission factors are often estimated, but accurate?
- Measurements should be standardised to be able to evaluate and compare impact of possible mitigation option.
- Models are being developed and evaluated to predict emissions

## Manure chain

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- Many presentation follow the whole manure chain (Chadwick)
- Seems logical to take all steps into account
- Differences between slurry and FYM
- Composting in some countries is used
- Some ideas about using worms

## Information

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- Much information is shared
- Much information is available
- Many institutes are working on it and sometimes within a country it is difficult to coordinate and know who is doing what
- Also for people deep in the manure management some regulations were an eye opener
- Many countries can use the information to form policy options

## Strategy for MMG GRA

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- What can and should be the added value of the MMG of the GRA?
- What are the three most important issues we should work on?
- What are the most important actions we should undertake in the upcoming year?
- How should we organise ourselves (email, web discussion, physical meetings, etc)?
- How can we connect much more in the existing group?
- How can we expand the group? Which countries do we desperately miss?

## Some considerations

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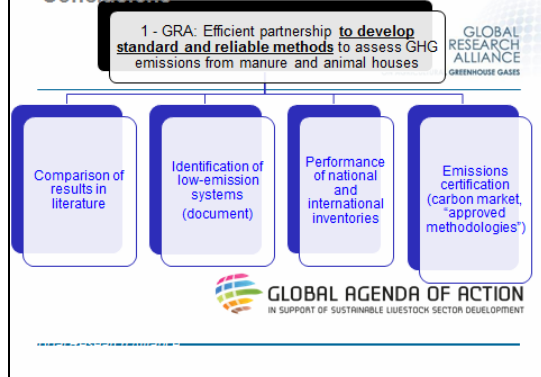
- Council wants to have more connection between research and policy and capacity building (Impact!!!)
- What about economics of proposed policy
- What about policy making effectiveness
- What about possibilities to have more common projects and go for funding
- What and how can the GRA help developing countries to improve the research on reducing GHG?

## Groups

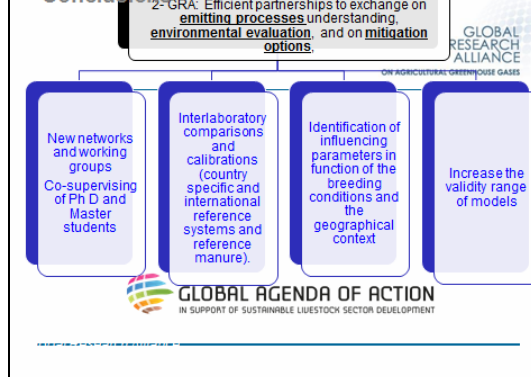
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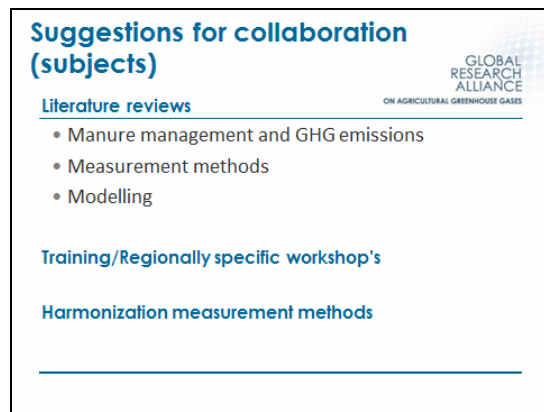
Group 1	Group 2	Group 3
Kinh	Fung	Matt
Sari	Juha	Sergio
David	Brian	Soren
Philippe	Takashi	Melynda
Mike	Paul	Theun
Jac	Jaap	Julio
Jeroen	Agustin	Gerda

## Conclusions



## Conclusions





### 3.2 Discussion on the future strategy of the MMN in three sub-networks

Three sub-networks were formed and each network should find an answer to three main questions:

- What can and should be the added value of the MMN of the Alliance?
- What are the three most important issues we should work on and what are the most important actions we should undertake in the upcoming year?
- How should we organise ourselves (email, web discussion, physical meetings, etc.) and how can we expand the network? (which countries should be encouraged to participate?)

### What can and should be the added value of the MMN of the Alliance?

#### **Network A**

- Direct contacts, exchange of information, feedback from experts,
- Exchange on methods in development; verification using wider sets of information
- More effective way of communication/lobby to policy;
- Learn from each other e.g. expand/extrapolate results from each other like the user guide

#### **Network B**

- Bridge between research and policy/end users
- Focus on greenhouse gases but awareness of system approach for whole manure chain and interactions with other nutrients and emissions
- Joint contribution to capacity building and knowledge transfer

#### **Network C**

- Awareness improvement; manure as a resource of nutrients and energy contributing to food security
- Develop messages for policy in relation to food security

- Apply system approach; greenhouse gas emissions as part of N and C cycle and recovery of other nutrients from manure

What are the three most important issues we should work on and what are the most important actions we should undertake in the upcoming year?

#### **Network A**

- Common guidelines for measuring emissions around manure management (total manure chain)
- Apply system approach which needs modelling; both in relation to the whole manure chain but also in relation to greenhouse gas emissions as part of N and C cycle and recovery of other nutrients from manure
- Contribution to capacity building and knowledge transfer
- Inclusion of economics; cost effective mitigation options

#### **Network B**

- Standardisation of techniques and transparency with the aim of adoption by others
- Not just measuring emissions but evaluation of cost effective measures
- Further develop user guides for end-users using international info
- Create bridges between developed and developing countries
- Look for funding for these and other meeting costs

#### **Network C**

- External communication linked to food security; joint messaging to policy much more further than only reducing greenhouse gas emissions; activities of MMN have added value in terms of food security with scarce resources.
- Manure management is part of the solution for food security, water use and energy use
- Internal communication within GRA
- Inclusion of economics

How should we organise ourselves and how can we expand the network? (which countries should be encouraged to participate?)

#### **Network A**

- Live meeting in workshops combined with other international meetings
- Look for funding for these and other meeting costs
- Clarify our role and position, inclusive of boundaries with other networks
- More participation of policy and industry
- Missing: China, Thailand, Korea, Brazil, Germany and Israel

#### **Network B**

- More use of Alliance website; active email; addresses of wider network of invited/linked people
- Start with live meetings

- Appoint one person as contact point per subtask
- Missing: China, Africa, Thailand, Korea, Malaysia, Brazil, Eastern Europe, Germany, India, NZ

## Network C

This item was not discussed.

### 3.3 Plenary discussion and conclusions on the future strategy of the MMN

*What can and should be the added value of the MMN of the Alliance?*

- Connection of people; exchange of information , feedback from experts
- Bridge between research and policy/end users
- Contribution to capacity building and knowledge transfer
- Awareness improvement; manure as a resource of nutrients and energy contributing to food security

*What are the three most important issues we should work on?*

- Develop common guidelines for measuring emissions around manure management (total manure chain)
- Link external communication to food security; joint messaging to policy much more further than only reducing greenhouse gas emissions; activities of MMN have added value in terms of food security instead of food scarcity and high food prices because of the harvest uncertainty as a result of climate change.
- Apply system approach; both in relation to the whole manure chain but also in relation to greenhouse gas emissions as part of N- and C cycle and recovery of other nutrients from manure (also P).

*What are the most important actions we should undertake in the upcoming year?*

- Develop a best practice guide to measure emissions from manure in all stages of the manure chain (start with project description lead by Matt Smith, USA)
- Make a position paper and leaflet to be used for external communication dealing with goals, role, position/boundaries etc. (start with set up by Theun Vellinga, NL)
- Make a shopping list on practical mitigation options for farmers and policy; a kind of user guide building on such a guide in the UK and other countries; showing best practices of mitigation options that should have an economic evaluation (start with set up by Dave Chadwick, UK)

*How should we organise ourselves and how can we expand the network?*

- Live meeting every year; next in Dublin 2013; one day linked to GGAA.
- More use of Alliance website; active email; addresses of wider network of invited/ linked people will be circulated, organise web discussions
- Try to involve the missing people from : China, Thailand, Korea, Brazil, Eastern Europe, Germany

## Session 4: Connections between Livestock Dialogue of FAO and the MMN

Chair: Jeroen Dijkman

### 4.1 Livestock Dialogue Introduction

This session started with a presentation by Jeroen Dijkman (FAO).

One of the themes in the Global Agenda of Action of the **Livestock Dialogue** is reduced discharge of animal manure. The goal of this theme is: Reducing nutrient overload and greenhouse gas emissions through cost effective recycling and recovery of nutrients and energy contained in animal manure.

A copy of the presentation is given below; a PDF is placed on the Alliance website.

**Current status**

GLOBAL AGENDA OF ACTION  
IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT

**The Agenda: What is new?**

- The thematic focus  
*On improving natural resource use efficiency*
- The action-orientation  
*Targeting change of practice*
- The multi-stakeholder engagement  
*Harnessing synergies*

**Origin and rationale**

- Multiple FAO and WB studies:
  - Long Shadow; Changing Landscape; Minding the Stock
- Request from COAG 2010 to explore with wide range of stakeholders
- Livestock's natural resource use quickly came into focus
  - land, water, energy, nutrients, climate change
- Huge improvements within reach
- Need to involve a wide range of stakeholders for a balanced approach

**The livestock sector today**

- Livestock sector uses/contributes
  - 26 % of all land for pastures
  - 35% of all arable land for feed
  - 58 % of anthrop. biomass appropriation for food
  - 8 % of all fresh water
  - Important share of GHG emissions
- 13 % of all dietary energy
- 25 % of all dietary energy
- 1.5% of world GDP
- Livelihood component 1 billion people

**... and the challenges**

- By 2050, 30 % more people
- 70 to 80 % more meat, milk and eggs
- Peak oil, peak phosphorus, peak land, peak water, etc.
- Even if no peak, rapid rise in cost of natural resources
- Important share of GHG emissions
- How to accommodate demand growth within a context of growing resource scarcity?

**Points of departure**

- Growing demand for livestock products needs to be accommodated within the context of finite resources
- Large efficiency gains are necessary and possible
- Agenda's focus on production but sustainable consumption important, too
- But also: social, economic and health advantages of livestock need to be captured
- Size and complexity of the task require multiple actions by multiple stakeholders

## Natural Resource Use Efficiency

- Rate of conversion of critical natural resources like land, water, nutrients and energy into livestock products and services, and emission intensity of greenhouse gases.
- Within this broad direction of improved efficiency of natural resource use, stakeholders identified three focus areas for initial attention:

## Livestock Sector Resource Use

Issue	Agenda response
Wide gap in resource use efficiency	<ul style="list-style-type: none"> <li>○ Closing the efficiency gap::</li> <li>○ Application of existing technology and institutional frameworks to generate large resource use efficiency, economic and social gains</li> </ul>
Large and unnecessary losses of nutrients and energy	<ul style="list-style-type: none"> <li>○ Towards zero discharge</li> <li>○ Reducing nutrient overload and greenhouse gas emissions through cost effective recycling and recovery of nutrients and energy contained in animal manure</li> </ul>
Untapped potential of grasslands	<ul style="list-style-type: none"> <li>○ Restoring value to grasslands</li> <li>○ Harnessing grass/rangeland's potential to contribute to environmental services and sustainable livelihoods</li> </ul>

## "The Agenda"

- Consensual
- Broad-based, voluntary informal stakeholder engagement
- Enhance resource use efficiency - Direction of change – No 'blame games'
- Science-based
- Action-oriented (joint and separate action)

## The Agenda's functions and scope

- The development "metrics" and supporting methodologies
- Local to global resource use assessments and perspective studies
- Support to capacity building for technology, institutional and policy development;
- Support to technology exchange through partnerships
- Piloting of novel approaches and support to investments;
- Sharing of information, broad stakeholder communication and outreach

## Who is involved and why?

- All sector stakeholders:
  - Public sector; private sector; research; civil society; producers; intergovernmental organizations,
- Value added:
  - Better access to knowledge and transmission
  - Shared understanding of issues and solutions to build consensus
  - Engage relevant actors for better decision-making and accelerated action
- For FAO:
  - Inform, guide and enrich FAO's inter-governmental processes

## Where do we stand now?

- Consensus reached about the nature of initiative and desired direction of change
- Consensus reached about three focus areas and initial work programme
- Strong buy-in from many stakeholders and joint messaging (e.g. in the run-up to Rio +20)
- Constituting meeting in Nairobi (January 2013)

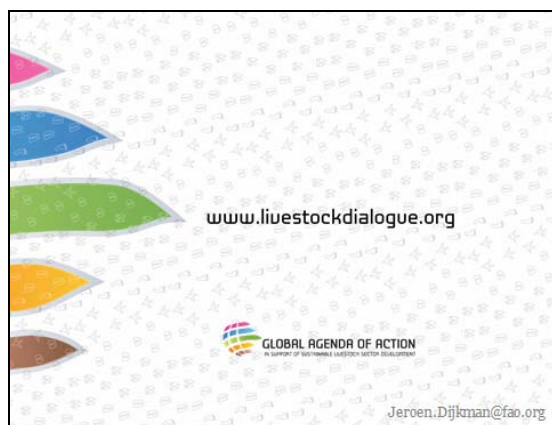
## Why it matters

- The thematic focus
  - Offers strong synergies between economic gains and environmental impact reduction
- The action-orientation (change in practice)
  - Build on the sense of urgency to put what we know into practice
- Value added of the multi-stakeholder engagement
  - Convergence of interests and action will translate into change of practices

## The GRA and the Agenda

- Mechanisms to harvest and share existing relevant knowledge bases?
- GRA 'service' role in addressing of research questions emerging through the Agenda programme?
- Potential to influence national research agendas?
- GRA expansion beyond GHG?



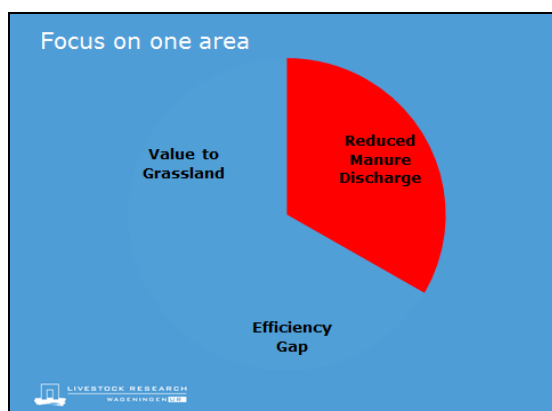
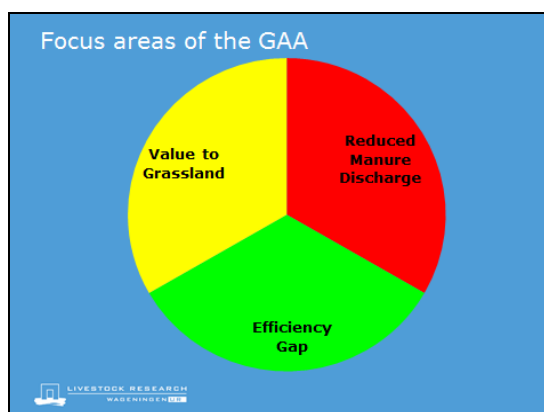


#### 4.2 Introduction of the Manure Management Improvement Program (MMIP) by Theun Vellinga (NL)

The goal of this program is to improve food security and reduce environmental impact by better manure management.

A copy of the presentation is given below; a PDF is placed on the GRA website.

The MMN agreed to cooperate with the Livestock Dialogue on this theme and to find the synergy. It was agreed to develop and execute this new joint working program MMIP.



- What is manure management?**
- Manure management pertains to all possible interventions along the chain;
- *starting with collection and storage and treatment;*
  - *dealing with transport;*
  - *ending with land application;*
  - *their interacting effects on utilization;*
  - *N, P, K, org matter, GHG, other emissions*

## The working program: Manure Management Improvement Program (MMIP):

### Strategic goal

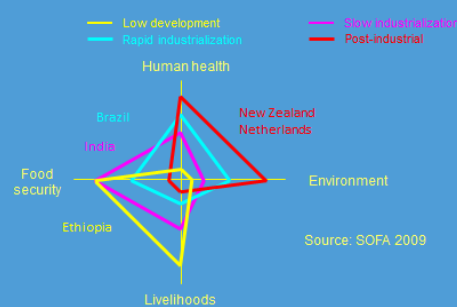
- Improved manure management to:
  - improve food security and
  - reduce environmental impact

### Operational goals

- Knowledge, inventory and dissemination
- Action plans /pilot projects development via public private cooperation
- Action plans /pilot projects execution via public private cooperation



## A shared interest with different priorities



## Knowledge: the manure kiosk (a service project)

- Inventory of
  - Manure management practices in the field (mapping in GIS)
  - Policies and institutional frameworks (literature, mapping)
  - Current projects and technology (literature)
- Brokering information
  - Link to Global Research Alliance
  - Match supply and demand
- Capacity building



## Pilot projects

- Identify potential areas and stakeholders to define improvement projects
- Projects can phase stages or focus on stages (depending on the local situation)
  - Starting/Increasing awareness
  - Identifying solution options
  - Realizing solution options
- Stakeholder involvement is essential
  - In kind, personal involvement
  - In cash, supporting investments and labour



## Stakeholders

- Private sector
  - Primary producers: Farmers
  - Suppliers: feed industry, trade
  - Processors: dairy and slaughter industries
  - Extension/service labs
  - Technical sector
- Public sector
- Civil Society
- Academia
- International Organizations



## The proposed time schedule

	2013		2014		2015		2016	
	I	II	I	II	I	II	I	II
Kiosk	X	X	X	X	X	X	X	X
Identification	X	X	X					
<u>Execution</u>								
Pilot A		X	X	X	X	X		
Pilot B			X	X	X	X	X	
Pilot C				X	X	X	X	X
Pilot D					X	X	X	X



## Projects costs and funding, so far

Who	What	For
Wageningen UR	300 k\$	Knowledge, mapping MM
Ministry Economic Affairs	180 k\$	Kiosk, identification, execution
FAO	In kind	Kiosk, mapping MM
...		Secretariat Livestock Dialogue

### Projects costs, rough assessment

What	How much
Kiosk	.8 M\$
Identification/definition	.5 M\$
Execution	4 M\$



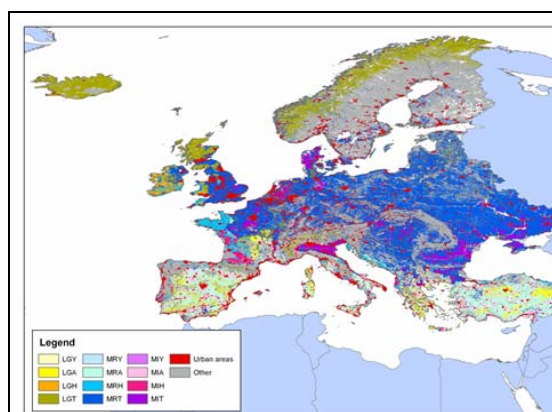
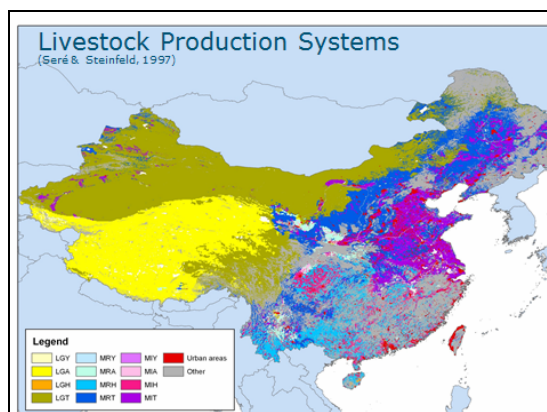
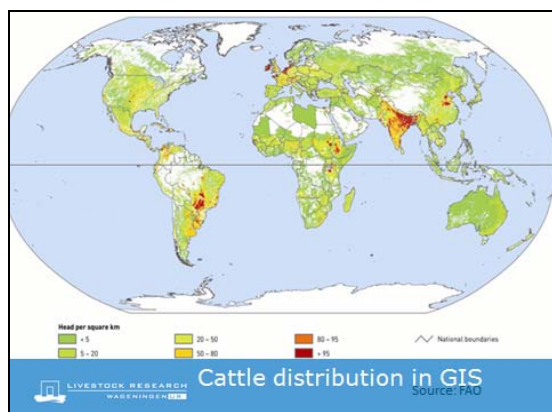
## Mapping Manure Management (M3)

- Global information on manure management is scarce
- Good manure management has a high potential in improving productivity and reduce emissions

Goals:

Why is manure managed in the way it is and what are the constraints for improvement





Current manure management maps (dairy)

Region	System	AEZ	MMSburned	MMSlagoon	MMSliquid	MMSsolid	MMSdrylot	MMSpasture	MMSdaily
CSA	Grass	Arid	0	0	0	0	25	75	0
CSA	Grass	Humid	0	0	0	0	25	75	0
CSA	Grass	Hyper Arid	0	0	0	0	25	75	0
CSA	Grass	Temperate/highlands	0	0	0	67	0	33	0
CSA	Mixed	Arid	0	0	0	0	50	50	0
CSA	Mixed	Humid	0	0	0	0	50	50	0
CSA	Mixed	Hyper Arid	0	0	0	0	50	50	0
CSA	Mixed	Temperate/highlands	0	0	0	67	0	33	0

**What do we want?**

- Find partners to jointly collect information
  - Common methods in data collection
  - Validate methods
  - Develop proxies as help to extrapolate
  - Extend to global scale
- Regions:
  - South-East Asia
  - Africa
  - Europe
  - North America
- Travel budget available

Dung is just as money:  
Accumulation causes problems, well spread it's a blessing

#### 4.3 Elaboration of and actions on the Manure Management Improvement Program (MMIP)

The members of the MMN agreed to:

- Develop MMIP this year with members of the reduced discharge network and FAO; identify potential partners and funding.  
The MMIP consists of two parts: the manure kiosk and pilot projects.
- Develop and implement a knowledge service project: **the manure kiosk**  
This is an inventory of :
  - Manure management practices in the field (mapping in GIS)
  - Policies, regulations and institutional frameworks (literature, mapping)

- Current projects and technology (literature)
- Mitigation options in relation to food security for policy and end users
- 12 countries will contribute already in 2013 with the preparation of the kiosk and have offered content:
  - Switzerland: inventory of management in practise
  - Vietnam: surveys in different regions available
  - UK: data available from England and Wales; probably maps on manure management of whole China can be used also if agreed by China (on-going project)
  - Finland: survey in 2012 on current management practices and information on manure management in the Baltic region
  - Mexico: information on nutrient balances (FAO-project)
  - Canada: data available at federal department of agriculture
  - USA: Gracenet and many factsheets on manure management
  - France: surveys available from chambers of agriculture and technical Institutes
  - Spain: inventories in different regions
  - Denmark: management info is gathered with annual statistics
  - Japan: inventory will start now
  - The Netherlands: national data available; extended with info from IP/OP project

But also other organisations have offered to contribute (FAO, CIRAD, EU project LEAD).

- Develop and execute pilot **projects** to improve manure management.

Stake holders and potential areas have to be identified to define improvement projects.

Several members have already offered first ideas of possible pilot projects in:

- China: regions of Beijing and Shanghai
- SE Asia: building on results of regional LRG workshop; central point in Korea; engaging Vietnam and Thailand
- Spain: building on a EU project with community farming
- Russia: region of Saint Petersburg (and Baltic region)

EU project with a network of farmers like Dairyman but focusing on aims of MMIP in the context of Horizon 2020.

#### 4.4 Action points

- The minutes of the meeting will be made asap by *Meijs* and will be send as draft to all participants
- These minutes and all presentations will be put on the website of the Alliance
- *Vellinga* will send an email to the participants concerning the building of the manure kiosk
- *Vriesekoop* will send an email to the participants with the mail addresses of the other invited people; an active link to Australia, Korea and China will be made asap
- *Dijkman* will put all members on the mailing list of the Global Agenda of Action
- *Vriesekoop* will be appointed as the representative of the Alliance in the Global Agenda of Action

- The results of the meeting will be reported in the next meeting of the LRG in Uruguay by *Vriesekoop*
- The project team of MMIP (*Vellinga, Schroder*) will further develop the proposal for MMIP this year together with Dijkman from FAO and all participants
- The effect of animal nutrition on manure is the starting point of the manure chain; it is not clear whether this topic is included in the Animal Nutrition Network; this will be checked with Kreutzer.

## **Appendix 1: Agenda Manure Management Workshop 3 – 4 September 2012, Rome.**

### **Venue: FAO Headquarters:**

Food and Agriculture Organization of the United Nations

Canada Meeting Room

Viale delle Terme di Caracalla, Rome

### **Monday September 3**

Chair: Paul Vriesekoop

- |               |   |
|---------------|---|
| 9.00 – 09.15  | Welcome, opening and introductions.   |
| 09.15 – 10.00 | Goals of the meeting and presentation by Paul Vriesekoop of the work to date.           |
| 10.00 – 10.30 | Results of the inventory of research in Manure Management (presentation Julio Mosquera) |
| 10.30 – 11.00 | Coffee.   |

Chair: La Van Kinh

- |               |   |
|---------------|---|
| 11.00 – 12.30 | Per country (30 min) headlines of research and policy in manure management. |
| 12.30 – 13.30 | Lunch.  |
| 13.30 – 15.00 | Continuation of headlines per country.                                      |
| 15.00 – 15.30 | Coffee.   |
| 15.30 – 18.00 | Continuation of headlines per country.                                      |
| 18.00         | Adjourn   |

### **Tuesday September 4**

Chair: Paul Vriesekoop

- |               |  |
|---------------|--|
| 9.00 – 10.30  | Synthesis of the inventarisation of Monday (presentation Paul Vriesekoop)<br>Discussion future strategy of Manure Management Network |
| 10.30 – 11.00 | Coffee.  |
| 11.00 – 12.30 | Continuation of discussing future strategy of Manure Management Network  |



12.30 – 13.30	Lunch.
Chair: Jeroen Dijkman	
13.30 – 15.00	Livestock Dialogue introduction by Jeroen Dijkman; work to date and introduction Manure Management Improvement Program (MMIP) with presentation by Theun Vellinga
15.00 – 15.30	Coffee.
15.30 – 17.30	Connections between Manure Management Network of GRA and Livestock Dialogue. Elaboration of MMIP and cooperation between Manure Management network of GRA and Livestock Dialogue.
17.30-18.00	Conclusions of the whole seminar
18.00	Adjourn

## **Appendix 2: List of participants**

<b>Name</b>	<b>Country</b>	<b>Organization</b>
La Van Kinh	Vietnam	Institute of Agricultural Sciences for Southern Vietnam
Le Dinh Fung	Vietnam	Hue University of Agriculture and Forestry
Matt Smith	USA	USDA
Sergio Gomez Rosales	Mexico	INIFAP
Saro Luostarinen	Finland	MTT
Juna Gronroos	Finland	MTT
David Chadwick	UK	Rothamsted
Brian Chambers	UK	ADAS
Soren Petersen	Denmark	Aarhus University
Melynda Hassouna	France	INRA
Takashi Osada	Japan	National Agriculture and Food Research Organisation
Philippe Lecomte	France	CIRAD
Jeroen Dijkman	Italy	FAO
Gerda Verburg	Italy	FAO
Mike Teillet	Canada	Manitoba Pork
Paul Vriesekoop	Netherlands	Wageningen UR
Theun Vellinga	Netherlands	Wageningen UR
Jac Meijs	Netherlands	Wageningen UR
Julio Mosquera	Netherlands	Wageningen UR
Jaap Schroder	Netherlands	Wageningen UR

Agustin del Prado

Spain

Basque centre for climate change