Natural resource use efficiency issues in the dairy sector

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Working objectives:
- Share the same level of information
- Standardize methodologies when possible/tools
- Reduce confusion/speak with one voice
- Enable stakeholders to select and apply feasible solutions
Closing the efficiency gap

Prioritization at the right level

Anticipation of importance of areas of concern. The angles of the arrows show increasing importance over time (IDF Bulletin 436/2009 on Environmental/ Ecological Impact of the Dairy Sector)
The Global Dairy Agenda for Action
Sharing Best Practice globally

Geographical participation in the Green paper

405 case studies from 51 countries on the Green Paper
Examples of tackling the natural resource use efficiency within the dairy sector

- Understand diversity as the way forward
- The value of collective actions
  - Farmers learning from farmers
  - Whole dairy supply chain approach
  - Challenges of small holder dairy farmers
Fonterra Emissions Variation Assessment - New Zealand

- Before developing supplier extension programmes, Fonterra with AgResearch NZ analyzed a sample of 149 farms from 4 regions in New Zealand.

- Results indicate that large variations exist in (carbon) efficiencies between dairy farms.

- Variations are mainly due to different farm management and not to farm climate, soil or topographical conditions.

- A large potential exists to work with dairy farmers to reduce emissions while also improving farm economics through improvement of farm management.
The distribution of emissions intensities from a sample of New Zealand dairy farms

By assisting less efficient farmers to reduce their emissions to current average levels, and by helping average farmers adopt best practice, the average emissions per unit of milk supplied can be reduced by about 20 percent. This is without any change in technology.
DairyCo Business Groups – Great Britain

- DairyCo is Britain’s farmers’ levy body
- DairyCo Extension team of officers is an integral part of the DairyCo knowledge transfer team
- Different methods of communication are applied to empower farmers with up-to-date knowledge and research-based information to support them in making changes (e.g. impact groups, discussion groups, open meetings, monitor farms, grazing partners)
- Regional extension officers support and facilitate the DairyCo Business groups
  - Discussion groups are designed to tackle and resolve issues related to milk production and business performance
  - Farmers learning from other farmers is the key approach applied
Three core activities in the discussion group portfolio directly relate to the efficiency challenge:

- On-farm fertiliser and manure and slurry usage
- On-farm energy consumption
- On-farm water usage:

A simple assessment of water supply and usage will indicate whether it is worth addressing its management.

DairyCo's booklet *Effective use of water on dairy farms* helps to highlight where to start and how best to assess farm usage.

DairyCo’s *Full water audit pack* for further water usage assessment.
Helping hundreds of farmers to progress and make savings through a farmer focused and supportive environment with their peers:

- Improved milk quality and a potential increase in milk price
- Electricity contract changes
- Better slurry management on farm
- Better grass and forage management
- Reduction in mastitis
- Etc.
DairyCo Business Groups – Great Britain

DairyCo business-led discussion groups are a proven way of providing a mutually-supportive environment for farmers through which new developments can be shared and management changes implemented.

A 2010 survey shows just how influential this form of knowledge interaction can be in changing farmer views and ultimately practices (based on a 39% response rate n=136).
“Duurzame zuivelketen” – the Netherlands

- Nation-wide collaborative project
- The “Sustainable Dairy Chain” is an unique initiative in which the dairy industry (Dutch Dairy Organisation NZO) and dairy farmers (Dutch Confederation of Agriculture and Horticulture LTO Nederland) joined forces to make the Dutch dairy sector the world leader in sustainability

Importance of the Dutch dairy sector:
- Strong organised sector with a strong knowledge network
- Management of more than half of Dutch culture land
Strategy of the Sustainable Dairy Chain

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<tr>
<th>Stimulate innovation</th>
<th>Make knowledge and tools available</th>
<th>Monitor</th>
<th>Mandatory measures</th>
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- Communication to dairy farmer through dairy industry and LTO
- Dairy companies choose a strategy to realise the goals that fits them
Goals of the Sustainable Dairy Chain

Climate and energy
- 30% reduction of greenhouse gases in 2020 as compared to 1990, including climate-neutral growth
- 20% sustainable energy in 2020 and an energy-neutral dairy chain
- 2% energy efficiency per year

Animal health and animal welfare
- Reduction of antibiotic resistance. By 2013, antibiotic use back to 1999 level
- Increasing average life expectancy of cows, particularly by the strong reduction of mastitis and lameness
- By 2015 all housing fully sustainable

Grazing
- Maintain current level of outdoor grazing

Biodiversity and the environment
- 100% use of RTRS (round table on responsible soy) certified sustainable soy in 2015
- Actions and measures that (in)directly influence phosphate volume and emission of ammonia
- Improving biodiversity
“Duurzame zuivelketen” – the Netherlands

Figuur 6.2 Aan-, afvoer en overschot van fosfaat op een gemiddeld Nederlands melkveebedrijf (BINternet, 2011).

Report “Stand van zaken doelen Duurzame Zuivelketen”, 2012; www.duurzamezuivelketen.nl
“Duurzame zuivelketen” – the Netherlands

- FrieslandCampina: farmer’s scan on energy use enabling benchmarking between farmers (shared with other dairies), farmers’ study groups and knowledge exchange, grazing is being promoted financially
- CONO Kaasmaakers’ Caring Dairy programme with tools such as «Kringloop-Kompas» and «Koe-Kompas» tool
- «Melkveecafés» farmers learning from farmers – e.g. current topic of phosporus management and reduction: «Fosfaatcafé» and P-toets melkvee tool (WUR Livestock Research)
- Networking website «melkveeacademie.nl»
- Project «MIJN duurzaamheid»
- and other…

www.duurzamezuivelketen.nl
Granarolo African project

- A co-operative pilot project in the Njombe district of Tanzania since 2007
- Goal: develop a complete and sustainable model of a milk production chain around a dairy factory
- 2010: more than 962,000 liters of milk collected from 600/800 farmers depending on the season

www.granarolo.it/Sviluppo-sostenibile/Strategie/Progetti
Granarolo African project

- Transfer of the know-how: technical benefits for farmers and employees of the dairy thanks to the training by Granarolo experts
- Organisation of producers into more than 50 village producer groups
Farmers: main results

- The median increase in monthly zootechnical revenue, at 2011 prices, is 67.250 Sh (nearly 30 euros)
- +142% in revenue derived from zootechnical activity
- 71.5% of the total increase in revenue

- Mean increase in monthly total milk production per family/farm from 66 to 411 liters

- There is a statistically significant increase in the number of cows per family/farm (on average, from 0.59 to 1.84)

- There is a statistically significant increase in monthly per-cow milk production: on average, from 93.5 to 220 liters

www.granarolo.it/Sviluppo-sostenibile/Strategie/Progetti
Improving productivity and reducing emissions - India

- Actions undertaken by the National Dairy Development Board (www.nddb.org) within the National Dairy Plan
- India: 127 million adult breedable female buffaloes and cows largely fed agricultural by-products and residues. Little acreage is devoted to fodder cultivation.
- Some 70 million rural households are engaged in milk production, with a very high proportion being the small and marginal farmer and the landless.
- Milk animal holding is far more equitable than land holding.
Improving productivity and reducing emissions - India


The objectives: putting in place a scientific approach and systematic processes to put India on a path

- (i) To help increase the productivity of milk animals and thereby increase milk production to meet the rapidly growing demand for milk;
- (ii) To help provide rural milk producers with greater access to the organised milk processing sector.

Components:
1. Increasing productivity through scientific breeding and feeding
2. Promoting and strengthening village-based milk procurement systems
3. Project management and learning

Improving productivity and reducing emissions - India

- Ration balancing advisory services given to producers through specially developed computer software, based on available feed resources, resulting in production of more protein and less methane.

- Mineral mapping programme and area-specific mineral mixtures.

- Technology for enrichment and densification of crop residues with urea, molasses, mineral etc. is being promoted.

- Bypass fat and protein supplements which enable efficient use of protein meals and increasing daily milk yields.

- Fodder development programme: supply of good quality fodder seeds to farmers (high-yielding sugar beet, thorn-less cactus): more biomass and milk produced with less area.

- Production of high genetic merit bulls to improve feed conversion efficiency

In conclusion: what we learnt

- The efficiency gap may be large in any production system, independently of its geographical location

- The challenges and opportunities may not be the same in industrial type production systems in the developed countries and small holder type production systems in developing countries.

- Fruit-bearing actions can be taken to ensure sustainable livestock development, in particular if they are structured, collective and based on reliable information/science
Developing countries

- If “available technology is to be used to make producers more efficient”, ensure that the technology developed is largely applicable to all production systems in diverse geographical situations, incl. small holder systems.
- Very large number of producers are involved in livestock production. Their livestock production concerns are not just economic or technological but are related to subsistence livelihoods with serious social implications if disrupted.
- Purchasing power of consumers of livestock products is low and the optimum nutritional intake levels have still not been achieved.
- Examine whether small holder producers can afford the cost of technology developed in advanced nations.