





## What to do with manure in the BSR (Overview)

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 Conference  
 27.8.2013

Baltic Sea Region  
 Programme 2007-2013  The project is partly financed by the European Union  
 European Regional Development Fund





## Baltic Manure – turning Manure Problems into Business Opportunities

*Baltic Forum for Innovative Technologies for  
Sustainable Manure Handling  
(EUSBSR Flagship project)*

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## Baltic Manure in a Nutshell

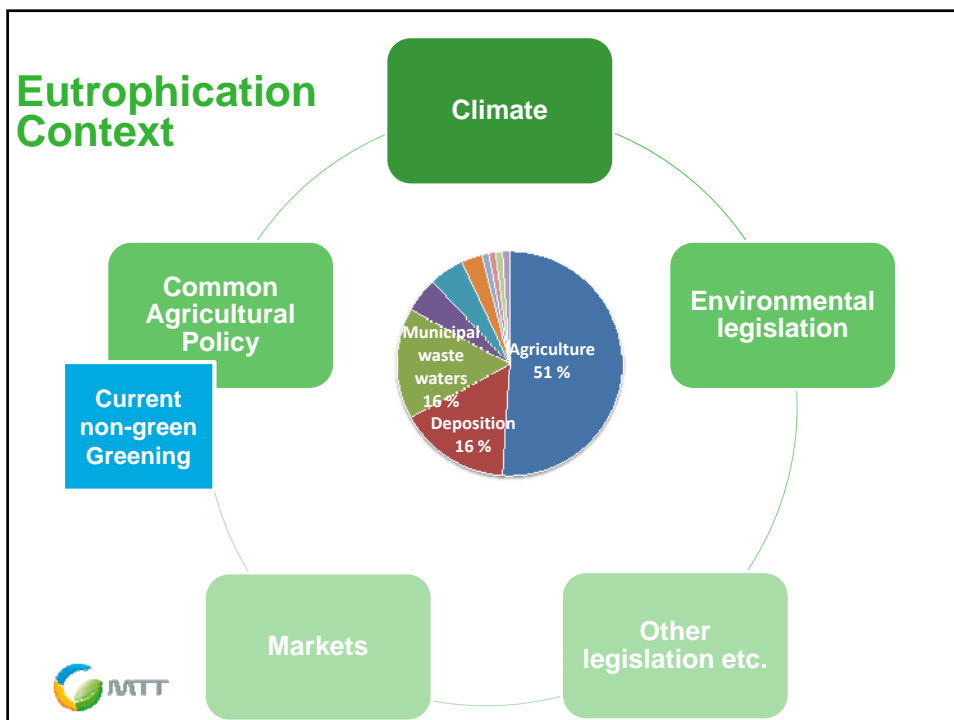
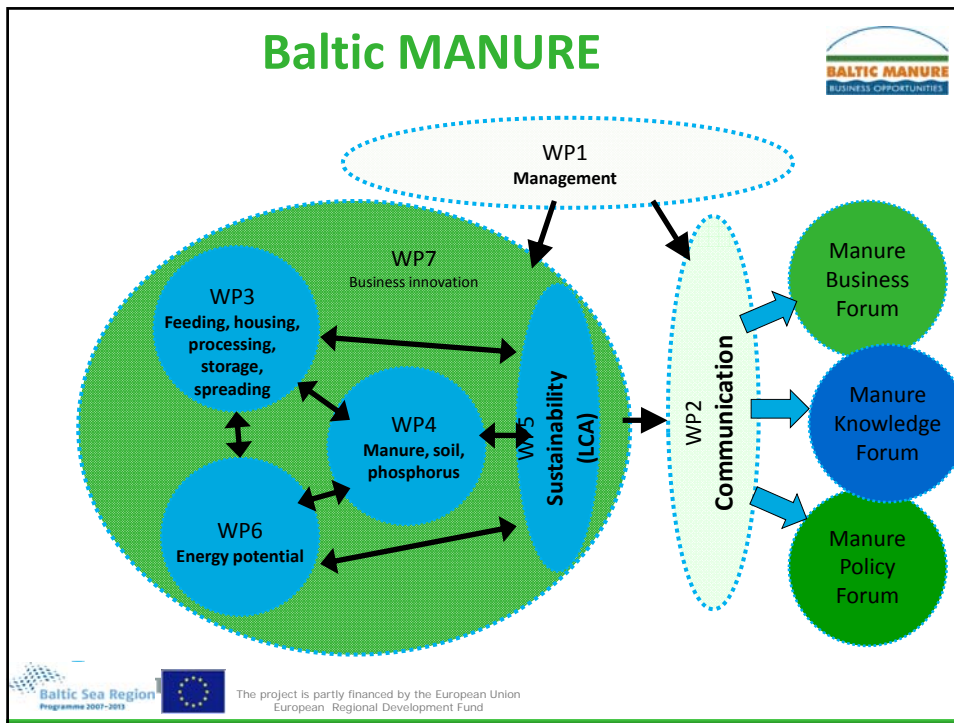
- **Baltic Manure**
  - is turning manure problems into business opportunities
  - improves knowledge about manure handling and use
  - stimulates technology development and marketing
  - gives policy recommendations
  - is the forum to bring together all stakeholders to improve manure handling and use
- Baltic Manure contributes to the overall strategic goal of the programme:
  - to make the Baltic Sea Region an attractive place to invest, work and live in



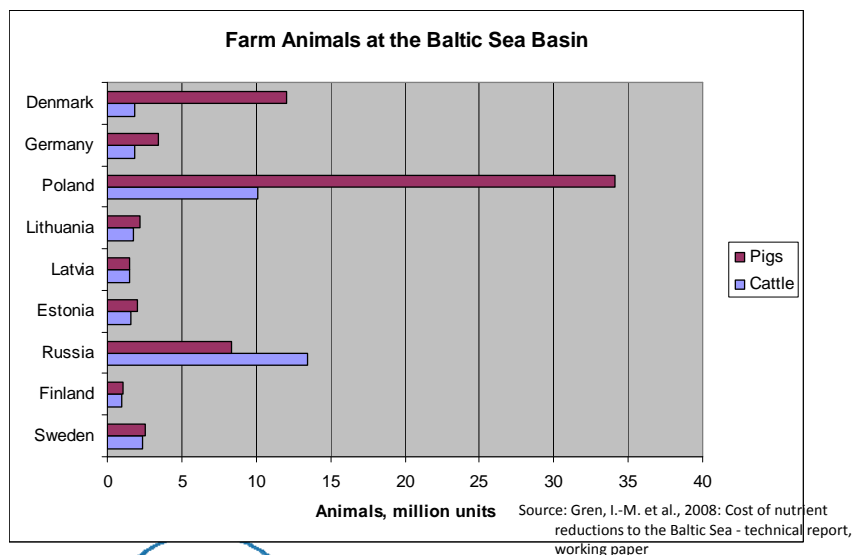
## 18 Partners

Total project budget: 3.7 million €  
Duration 2010 - 2013





## Nutrients, animal production and manure



Part-financed by the European Union  
(European Regional Development Fund and  
European Neighbourhood and Partnership Instrument)



## Baltic Manure from Baltic Animals

- The Baltic Sea Basin is an area of intensive, and intensifying agricultural production.
  - 36 million units of cattle,
  - 67 million units of pigs, and
  - 190 million units of poultry in the region. (Gren, I.-M. et al., 2008: Cost of nutrient reductions to the Baltic Sea - technical report).
- Environmental problems and water eutrophication caused by manure based nutrient surplus in some regions.



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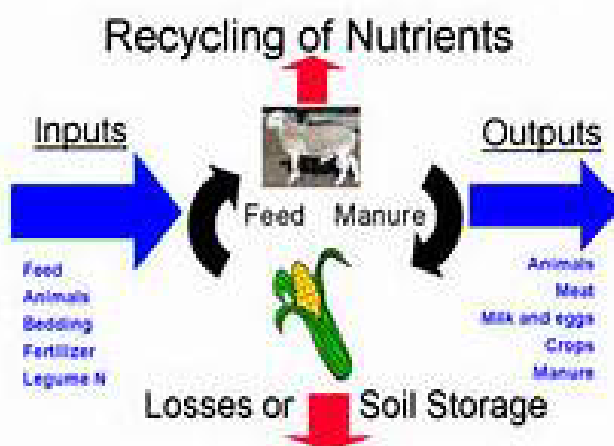


## Baltic Manure and Baltic Nutrients

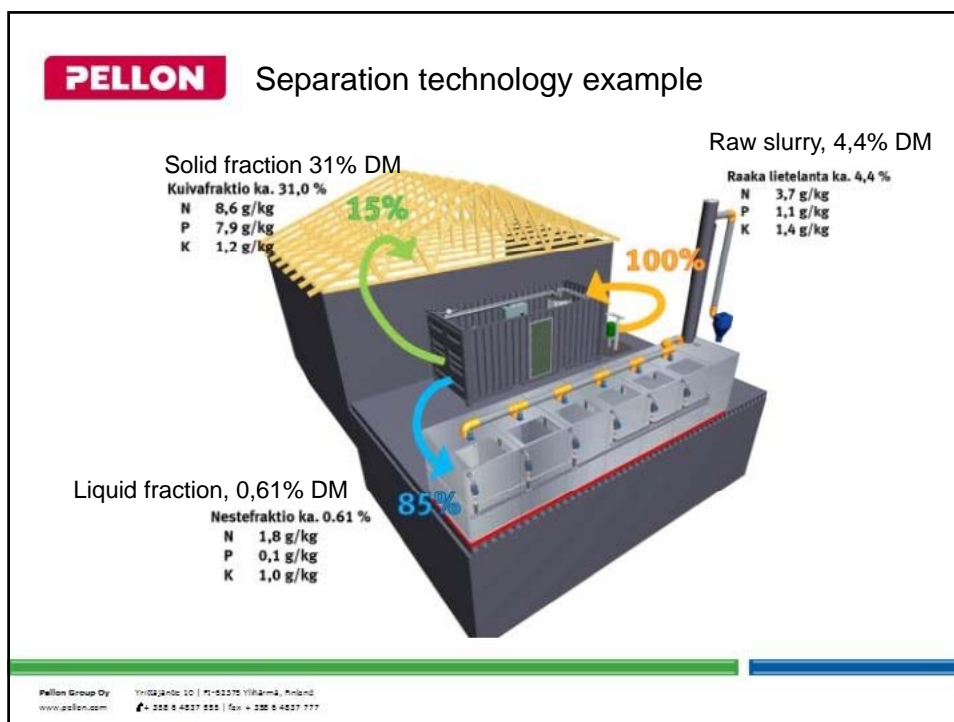
- Manure nutrient value > 1 540 million €
  - 981 000 ton of Nitrogen x 1 €/kg = 980 million €
  - 281 000 ton of Phosphorus x 2,0 €/kg = 560 million €  
(BalticSea2020 report "best available technologies for manure treatment").
- 31 million ha -> 37 kg N and 9 kg P /ha agricultural land
  - Evenly distributed there would be no problem
  - Hot Spots around areas of high density animal units
- Imports of feed call for exports of manure/nutrients to obtain local nutrient balance
  - Animal production based on local feed differs from animal production based on imported feed



## Nutrient balance in animal production - basics







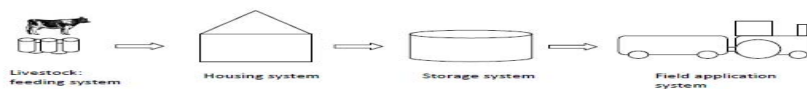
### Example – slurry from 1 000 fattening pigs (Pellon separation technology)

Manure or fraction	Volume m3	N kg	P kg	Spreading area needed, ha	Applied amount, m3/ha	Criteria for applied amount
Raw slurry	2 000	7 400	2 200	<b>147</b>	14	P 15 kg/ha
Liquid fraction	1 750	3 151	175	<b>18,5</b>	94	N 170 kg/ha
Solid fraction	250	2 145	1 970	<b>18,2</b>	14	P 36 kg/ha every 3 year = P 108 kg/ha



## Guidelines Baltic Manure (WP3):

### Manure value chain - Benefit/Euro



FEEDING	HOUSING	PROCESSING	STORAGE	APPLICATION
Feeding strategies	Controlling water use	Energy recovery	Sufficient storage volume	Knowing the nutrients
Phase feeding	Removing frequently	Separation liquid-solids	Covering the storage	Making a fertilizer plan
Nutrient balanced feeding	Cooling the channels	Further processing (fertilizer product)	Checking for leaks	Timing and precision application
P and N optimisation and Phytase use	Keeping urine and faeces apart			Low emission technologies (injection, acidification...)

**Next Step: to expand the nutrient recirculation from Manure to all recyclable nutrient resources.**

**Example: Nutrients from different raw materials in Finland**

Raw materials	P	N
Manure	72 %	78 %
Biowaste and side products from food and feed industry	14 %	14 %
Municipal biowaste	3 %	5 %
Municipal sludge	12 %	4 %
Total	100 %	100 %
Total, t/a	24 100	128 100



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**Thank You!**

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