Transitions Pathways and Risk Analysis for Climate Change Mitigation and Adaptation Strategies

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TRANSITION PATHWAYS AND RISK ANALYSIS FOR CLIMATE CHANGE POLICIES

Low Carbon Transition Pathways

In the LIVESTOCK sector

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'Assessing mitigation pathway risk and uncertainty: case studies in the Netherlands, Kenya and Chile'

18th November 2016 @ COP22, Marrakech

A Low Carbon Transition in the Dutch Livestock Sector

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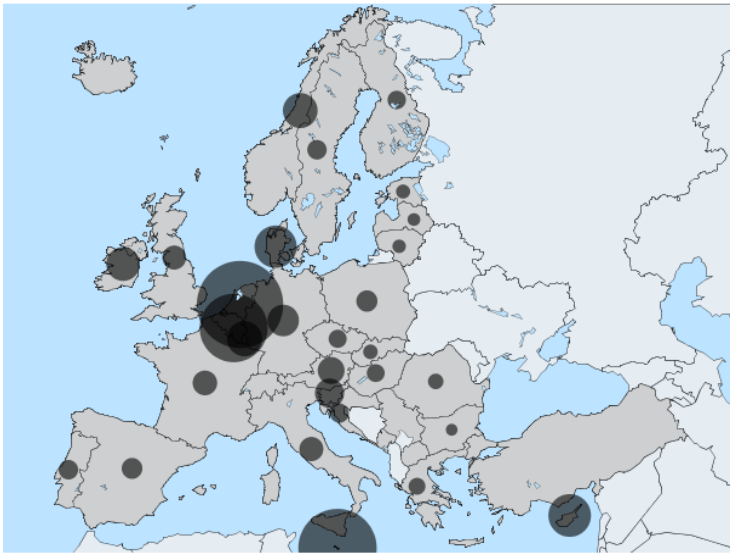
Agricultural sector in the Netherlands

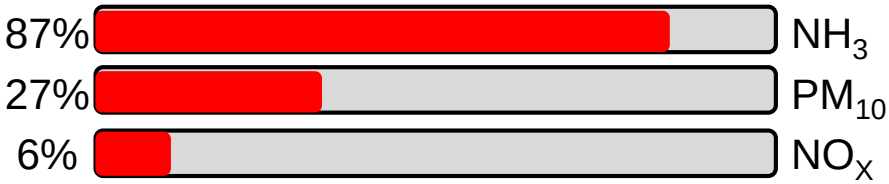
- 2nd agriculture exporter in the world (in EUR)
- 4th milk producer in EU (7th herd size)
- Largest veal producer in EU
- 5th largest pig herd in EU



**Livestock densities in EU in 2013 (in LSU / ha)*
Source: Eurostat

Livestock sector - ISSUES

- Nutrient accumulation (manure)
- 'Mega-stables', Animal-human health
- Low milk & meat prices



Note: emissions percentages are share of national total emissions of that particular pollutant

Transition options for the Dutch Livestock sector (2030)

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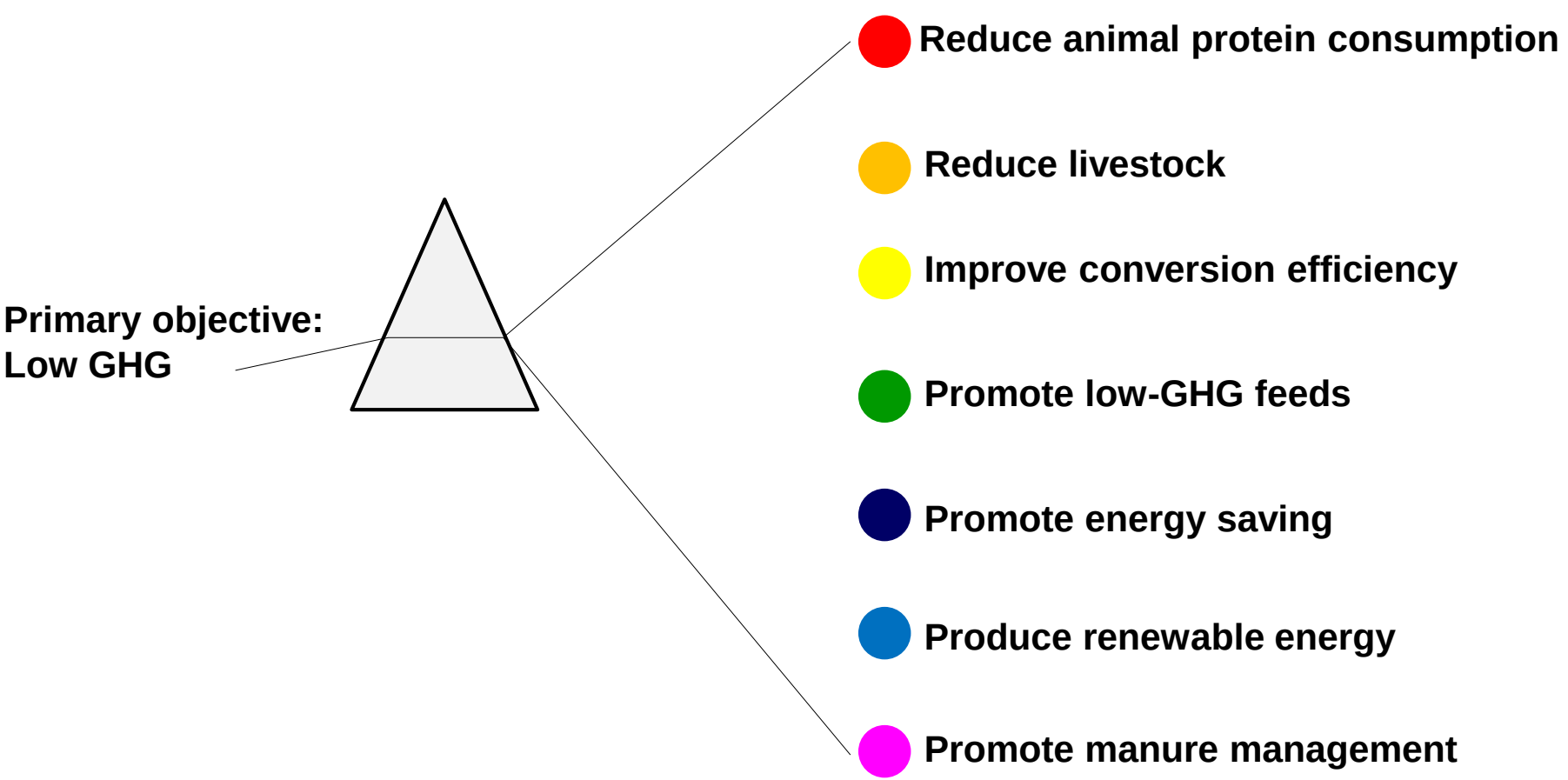
Low Carbon Transition Pathways



IDEA REFERENCE: PINK FLOYD

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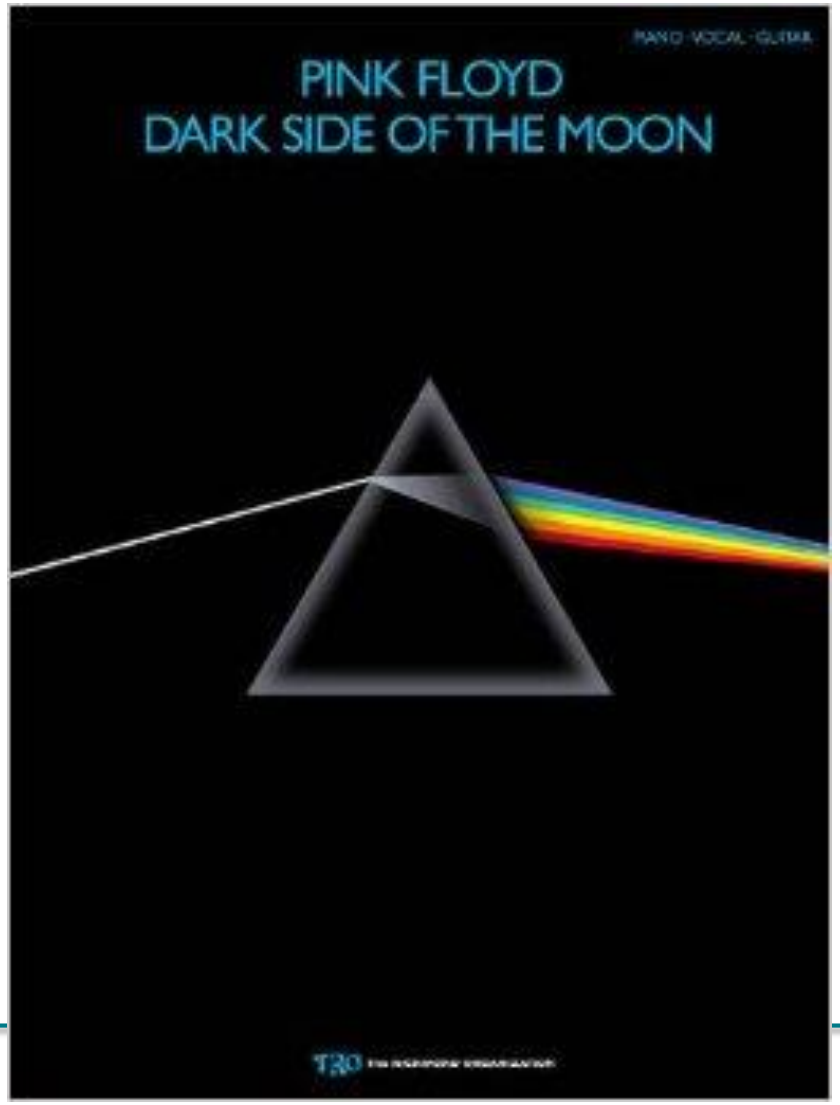

We need Multi-purpose Pathways!!

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Observation

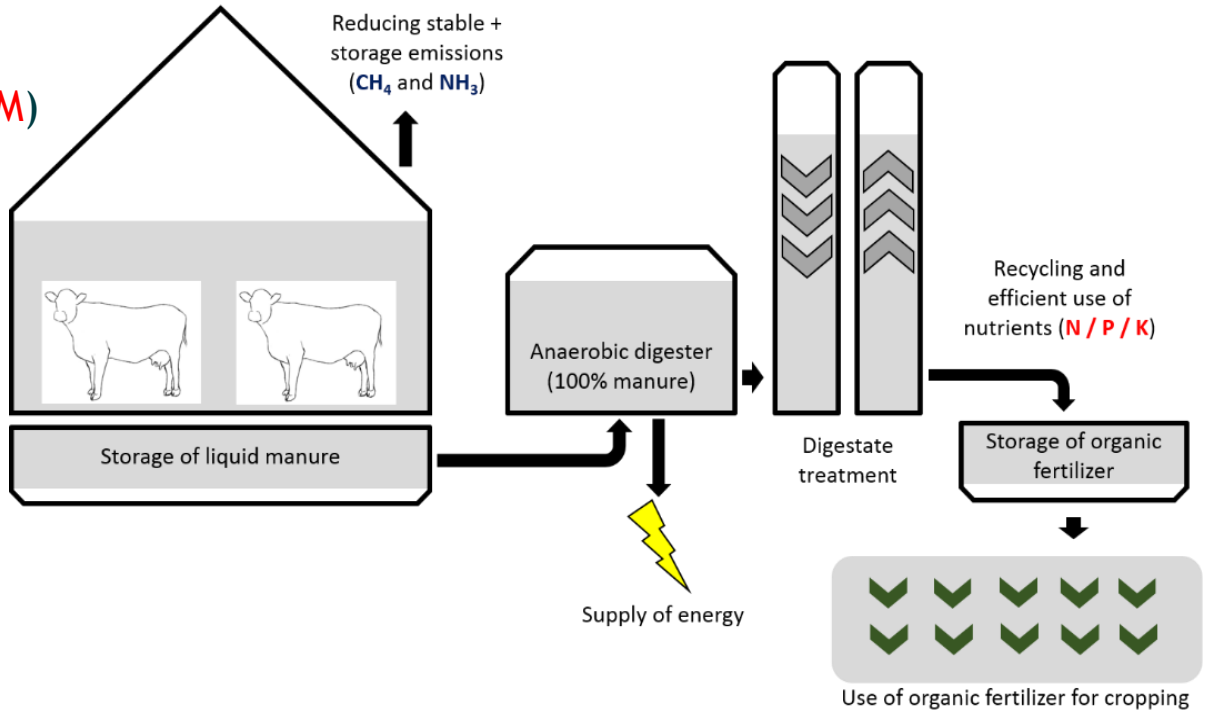
NOT all pathways target multiple objectives at the same time

Case study focus on 2 pathways

- Reduction Livestock (RL)
- Integrated Man. Mngmt (IMM)

Goal

- Maximize SYNERGIES
- Minimize TRADE-OFFS



Impact 2 Pathways at National Level
RL vs. IMM

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2030 GHG targets

- GHG (non-ETS sectors) = -35% (2005)
- CH_4 (national) = -33% (2005)

RL - requires 37,5% reduction of cattle

2.500.000	1.500.000

IMM - requires

Cattle manure

51.8 mln. ton

≈ 10.000 farm-scale plants

CAPEX
≈ 5,2 bln. EUR

Pig manure

11.6 mln. ton

≈ 60 industrial scale plants

CAPEX
≈ 0,6 bln. EUR

Assessing side-effects of 2 pathways environment

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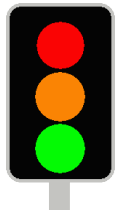

Contribution to target	IMM	RL
Renewable energy		
PJ	+	0
GHG emission reduction		
CH_4 – enteric fermentation	0	+*
CH_4 – manure management	+	+*
CO_2 – avoidance of fossil fuel	+	0
Ammonia emissions		
Stables & storage	+	+
Application to soil	0	+
Nutrient excretion		
Nitrates (N)	0	+
Phosphates (P)	0	+

* Leakage?

Assessing side-effects of 2 pathways socio-economic & other

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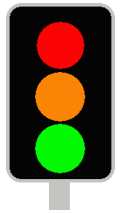

Possible side-effects	IMM	RL
Domestic availability of 'cheap' soil nutrients	-	-
Animal health – air quality	+	0
Animal health – use of antibiotics	+	+*
Animal welfare – grazing time (cattle only)	+ / -	+ / -
Animal welfare – stable space	+	0
Human health	+	+*
International competitiveness livestock sector	-	-
Impact on GDP	+ / -	-
Employment	+	-

* Leakage?

Modelling Livestock Pathways

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Role of modelling:

1. Assess effect of pathway at national scale
2. Quantify (yet) (un)known side-effects
3. Reducing risks & uncertainties for stakeholders

Modelling in this case study:

- Macro-econometric Energy-Environment- Economy model - E3ME
- Modelling scenarios and comparing them with a selected reference
- Scenarios are what-if stories and developed with stakeholders
- Outputs to inform policy and industry stakeholders

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QUESTIONS TO AUDIENCE?

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Is it ok if we:

- Swap GHG emission reduction for lower GDP (growth)?
- Improve animal welfare but reduce local air quality?
- Jeopardize food security to meet national environmental goals?

Which side-effects did we miss?

Other effects to consider for livestock sector in 1) emerging economies and 2) LDCs?

THANK YOU FOR YOUR ATTENTION

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Handout with more background information on this case study is available on:

http://jin.ngo/8-events/162-transrisk-cop22

http://cdn.jin.ngo/images/jin/publications/JIQ_Special_COP22_TRANSrisk_livestock_pathways.pdf

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