

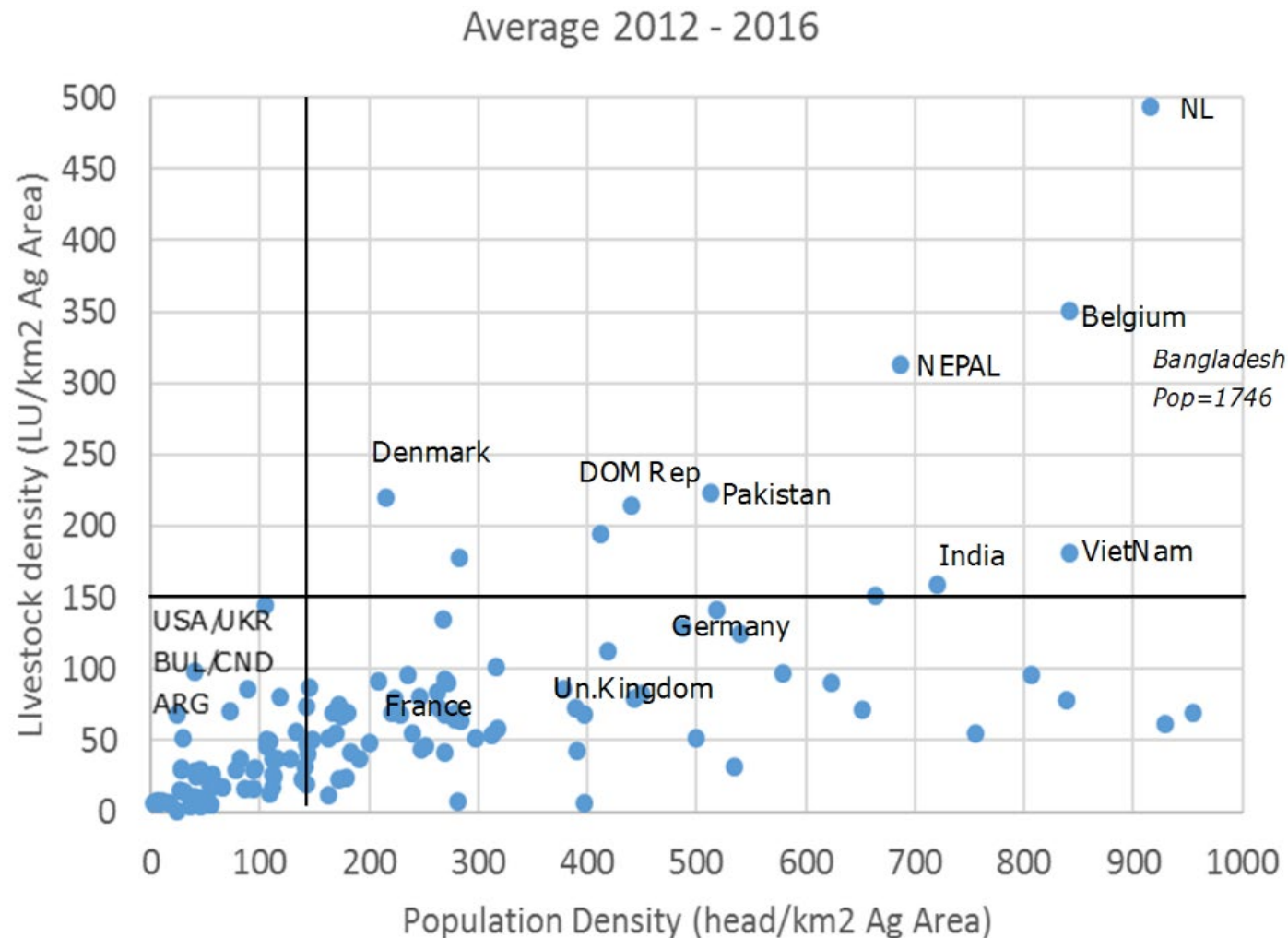
Towards circular agro-food systems

About rural sources and urban sinks

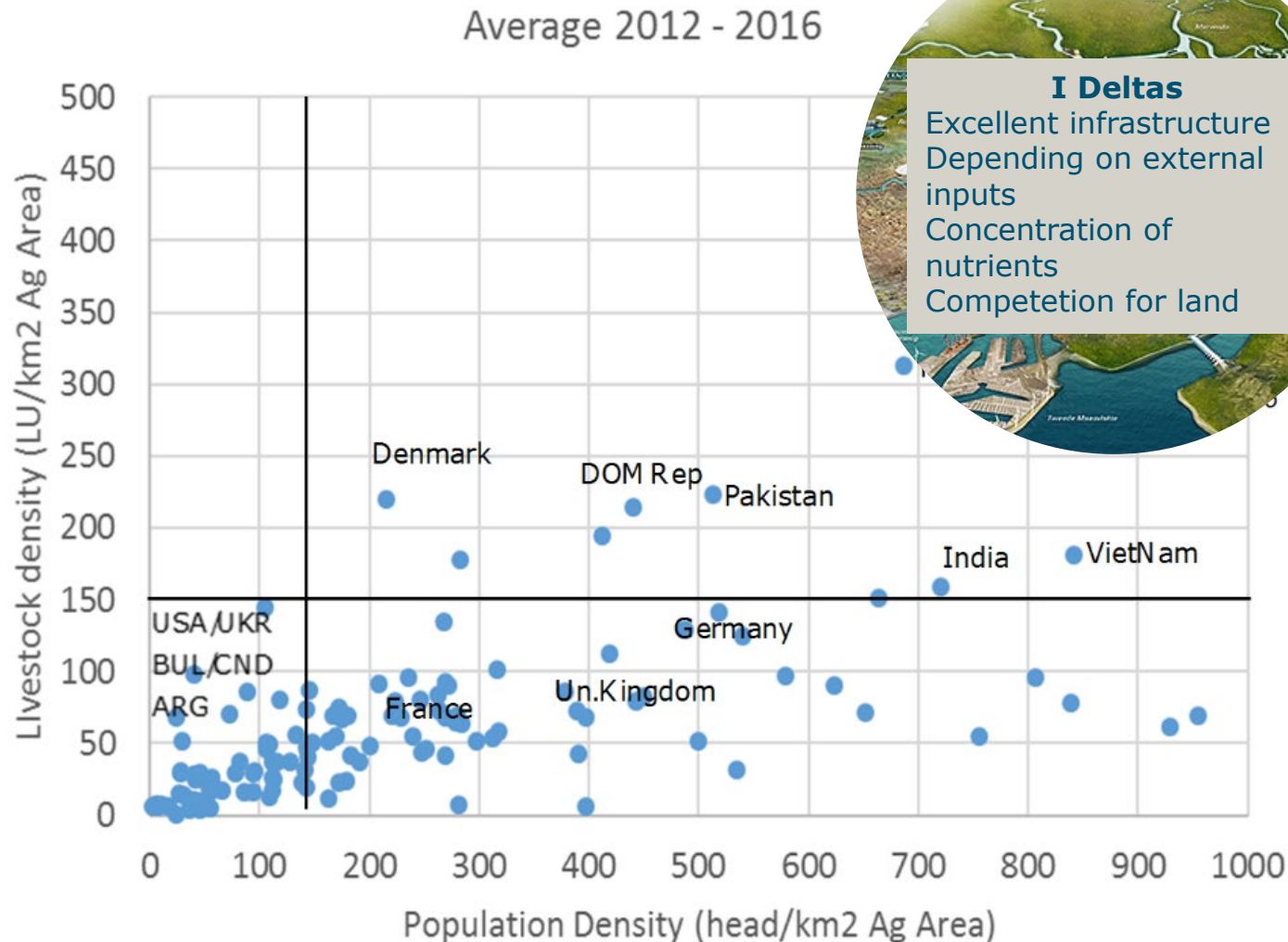
6 Sep 2019, Pieter de Wolf



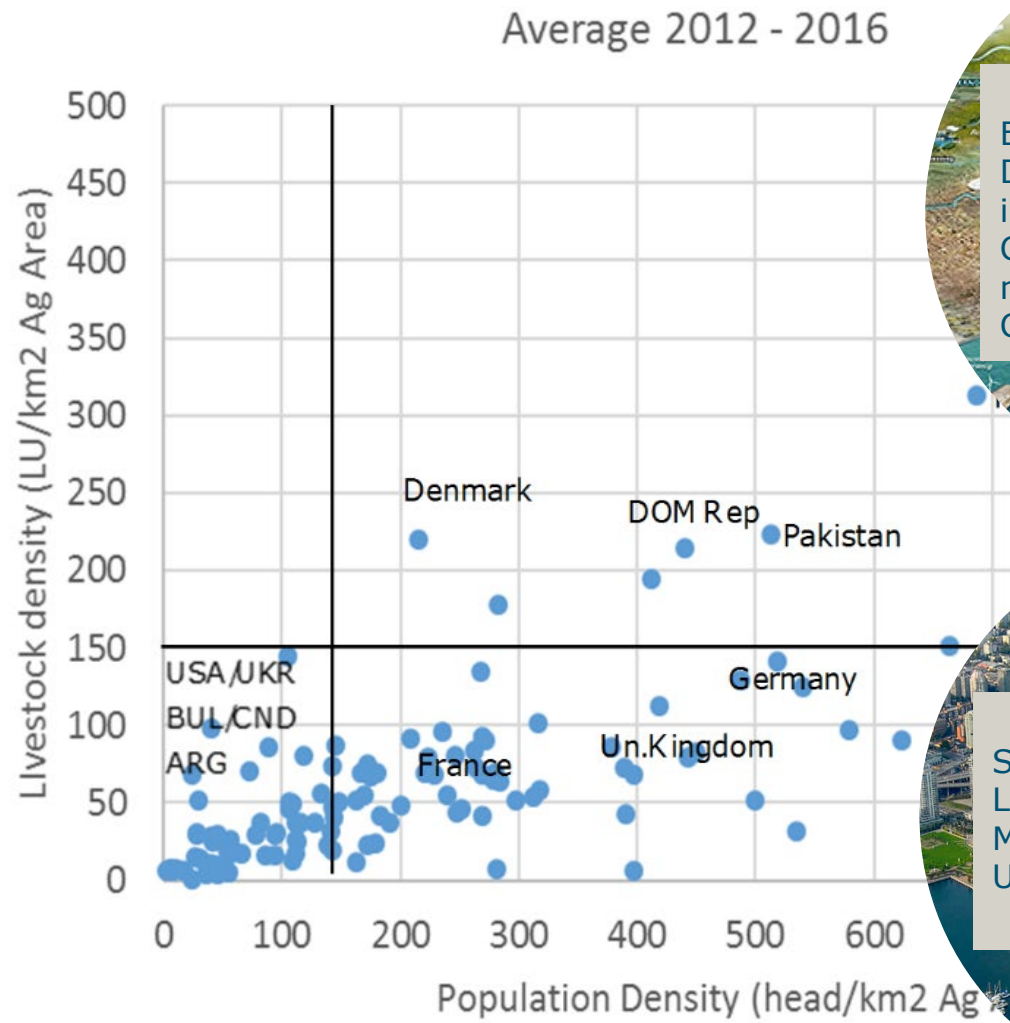
Population and livestock densities per country



Deltas: Countries with more animals than expected – based on population



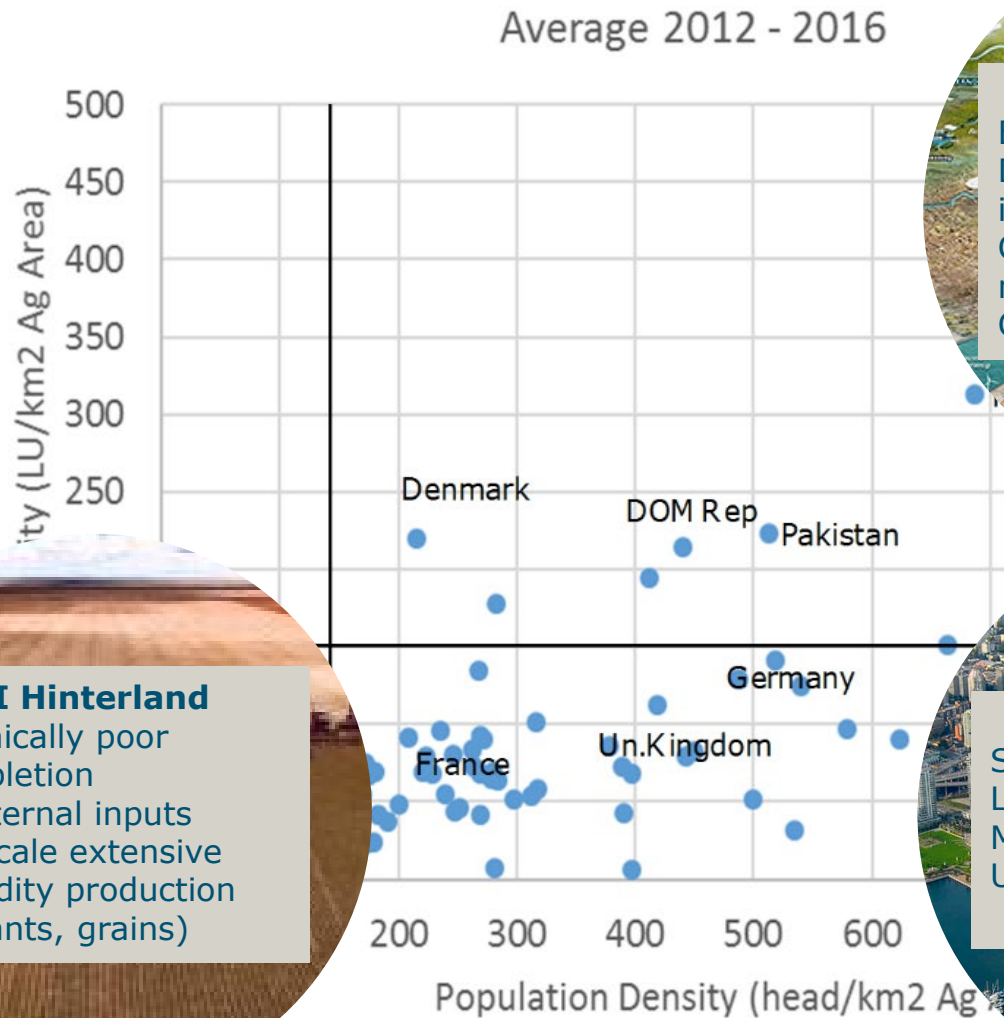
Metropolises: Countries with less animals than expected – based on population



I Deltas
Excellent infrastructure
Depending on external inputs
Concentration of nutrients
Competition for land

II Metropolises
Services economy
Land is very scarce
Minimal food production
Urban landscape

Hinterland: rural areas, mainly arable production



I Deltas

Excellent infrastructure
Depending on external inputs
Concentration of nutrients
Competition for land

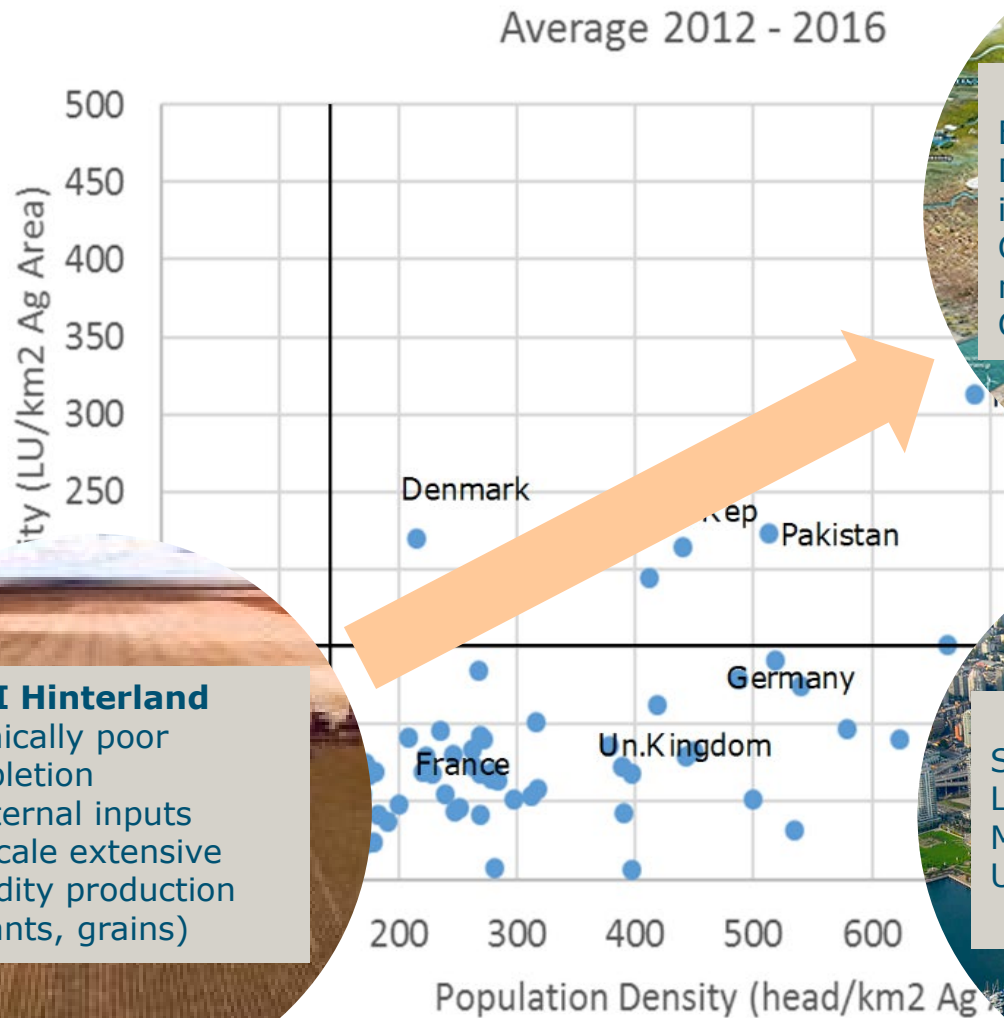
III Hinterland

Economically poor
Soil depletion
Low external inputs
Large scale extensive commodity production (ruminants, grains)

II Metropoles

Services economy
Land is very scarce
Minimal food production
Urban landscape

The problem: a source – sink relationship



III Hinterland

Economically poor
Soil depletion
Low external inputs
Large scale extensive commodity production (ruminants, grains)

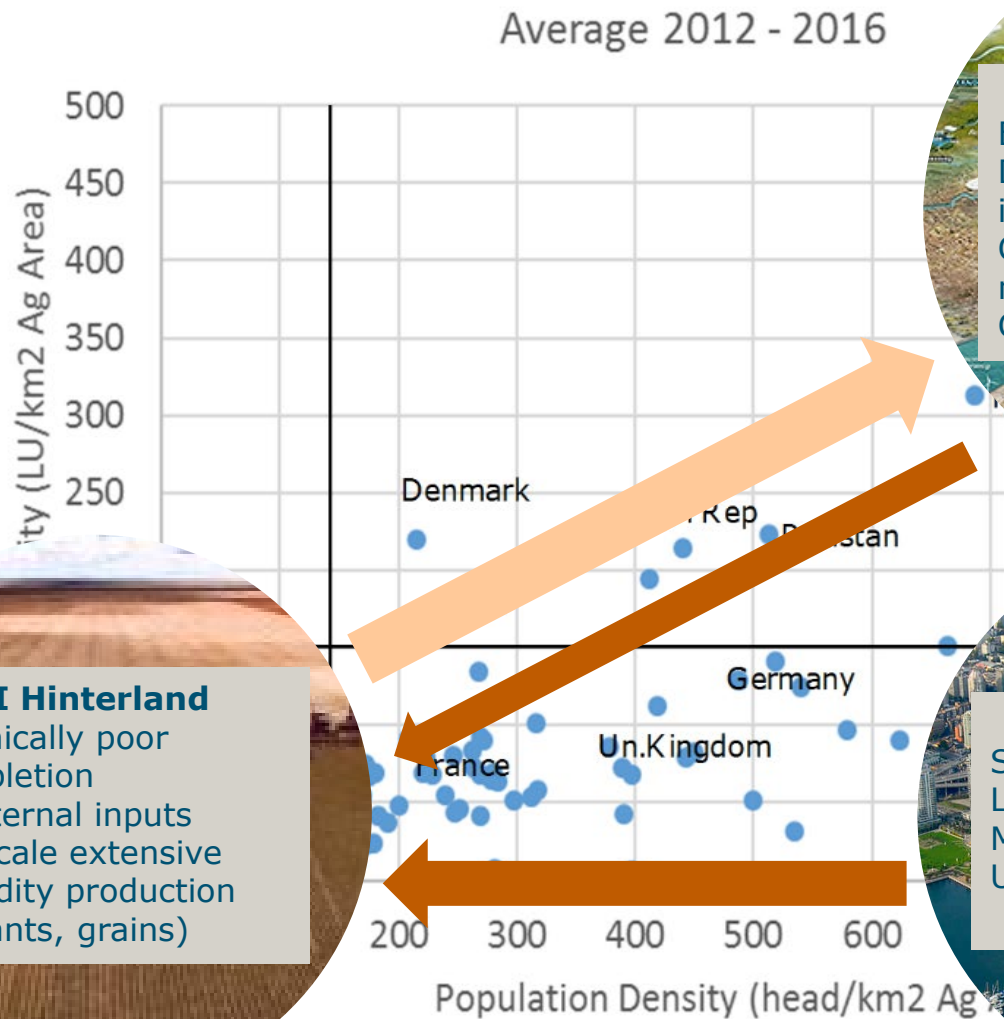
I Deltas

Excellent infrastructure
Depending on external inputs
Concentration of nutrients
Competition for land

II Metropoles

Services economy
Land is very scarce
Minimal food production
Urban landscape

Circular option 1 Return nutrients



I Deltas

Excellent infrastructure
Depending on external inputs
Concentration of nutrients
Competition for land

III Hinterland

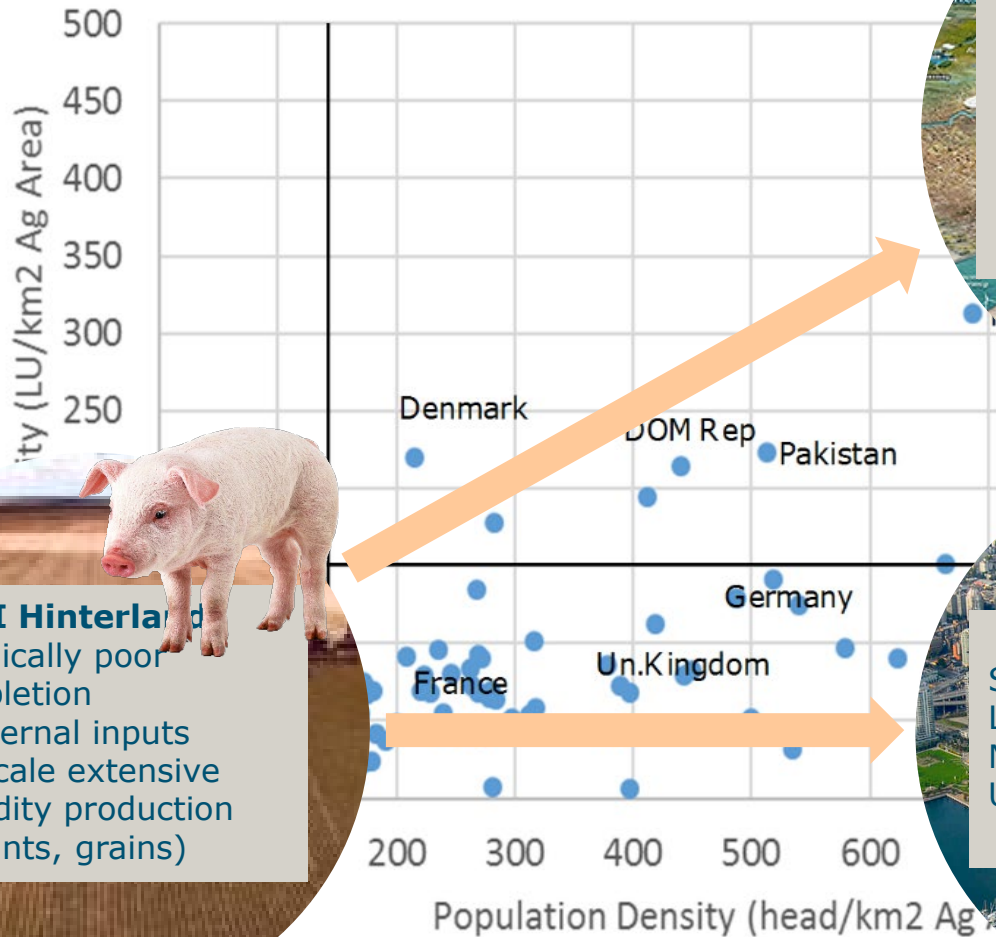
Economically poor
Soil depletion
Low external inputs
Large scale extensive commodity production (ruminants, grains)

II Metropolises

Services economy
Land is very scarce
Minimal food production
Urban landscape

Circular option 2 Move Livestock and export livestock products only

Average 2012 - 2016

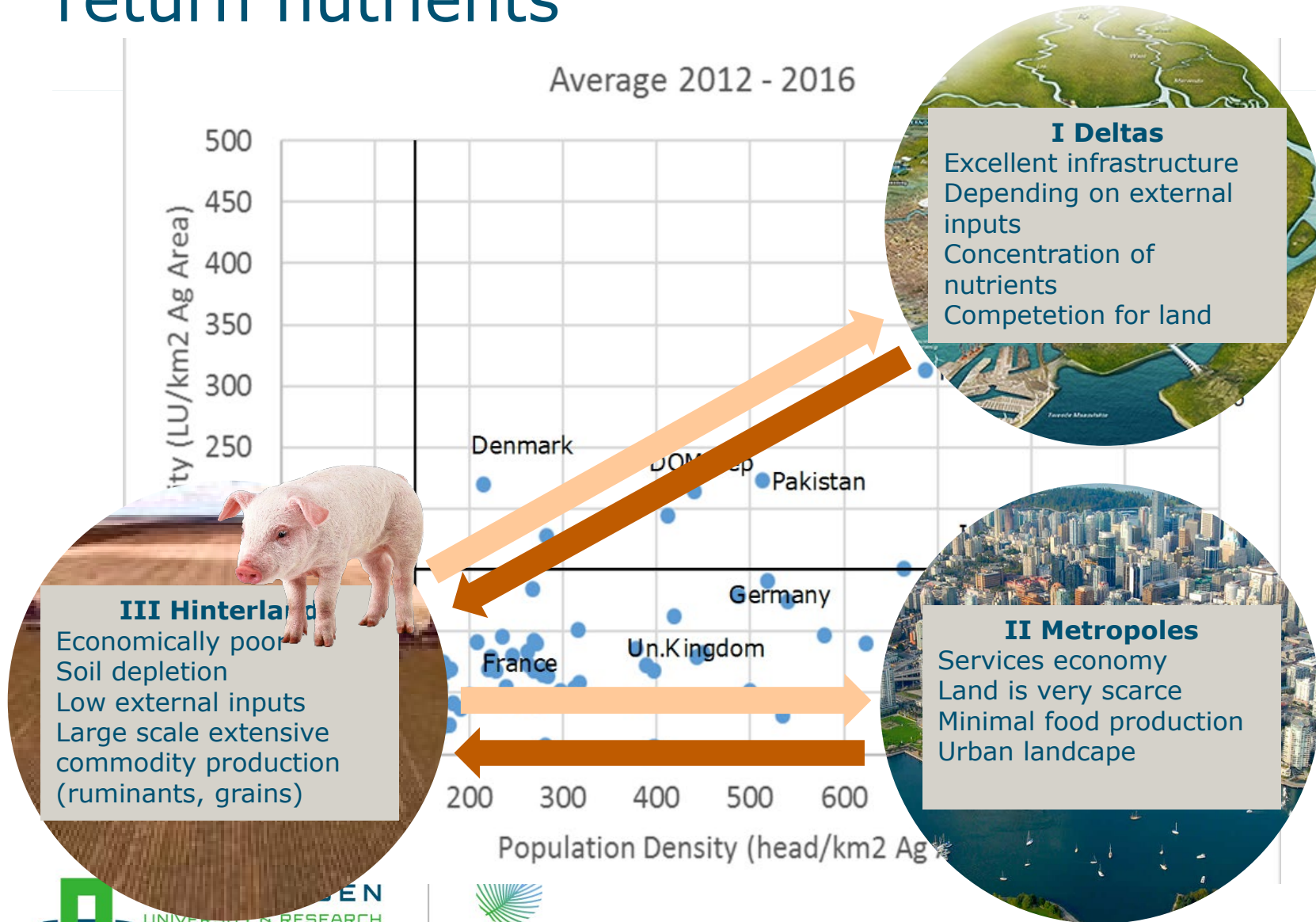


I Deltas
 Excellent infrastructure
 Depending on external inputs
 Concentration of nutrients
 Competition for land

III Hinterland
 Economically poor
 Soil depletion
 Low external inputs
 Large scale extensive commodity production (ruminants, grains)

II Metropoles
 Services economy
 Land is very scarce
 Minimal food production
 Urban landscape

Circular option 2 Move Livestock – also return nutrients





Both options are very challenging

- Technology, logistics and governance
- Path dependencies
- Strong drivers (urbanisation, economics)

- However: do we have another option, else than 'wait and see'?

Contact info

If you have any questions about this presentation, or if you are interested to discuss with the authors:

Pieter.dewolf@wur.nl



Wolf, P.L. de, D. Verstand, T. Vellinga en K.J. Poppe, 2018. Mest en Metropolen (*Manure and metropolies; pathways for circular nutrients*). WUR report 791, in Dutch. <http://edepot.wur.nl/478479>