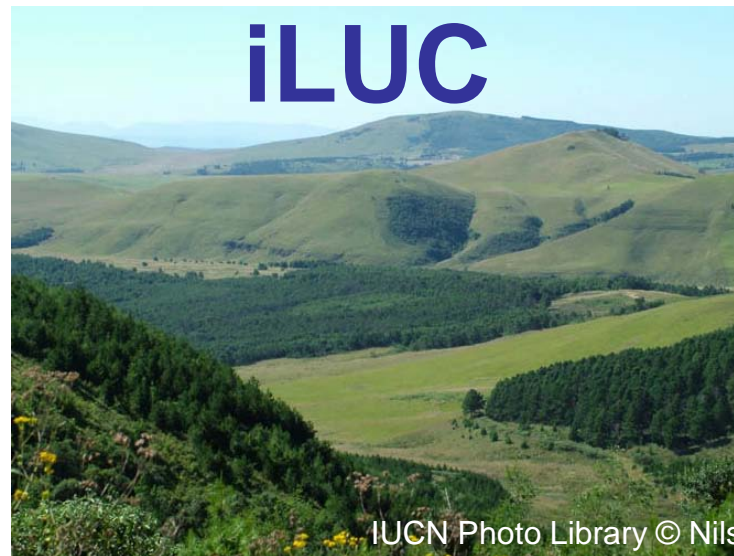




# Landscape planning as a means to reduce the risk of



Nadine McCormick  
International Union for Conservation of Nature  
[www.iucn.org/energy](http://www.iucn.org/energy)  
[Nadine.mccormick@iucn.org](mailto:Nadine.mccormick@iucn.org)



# What is indirect land use change?

*Leakage*

*Secondary*

*Indirect effects*

*Knock-on*

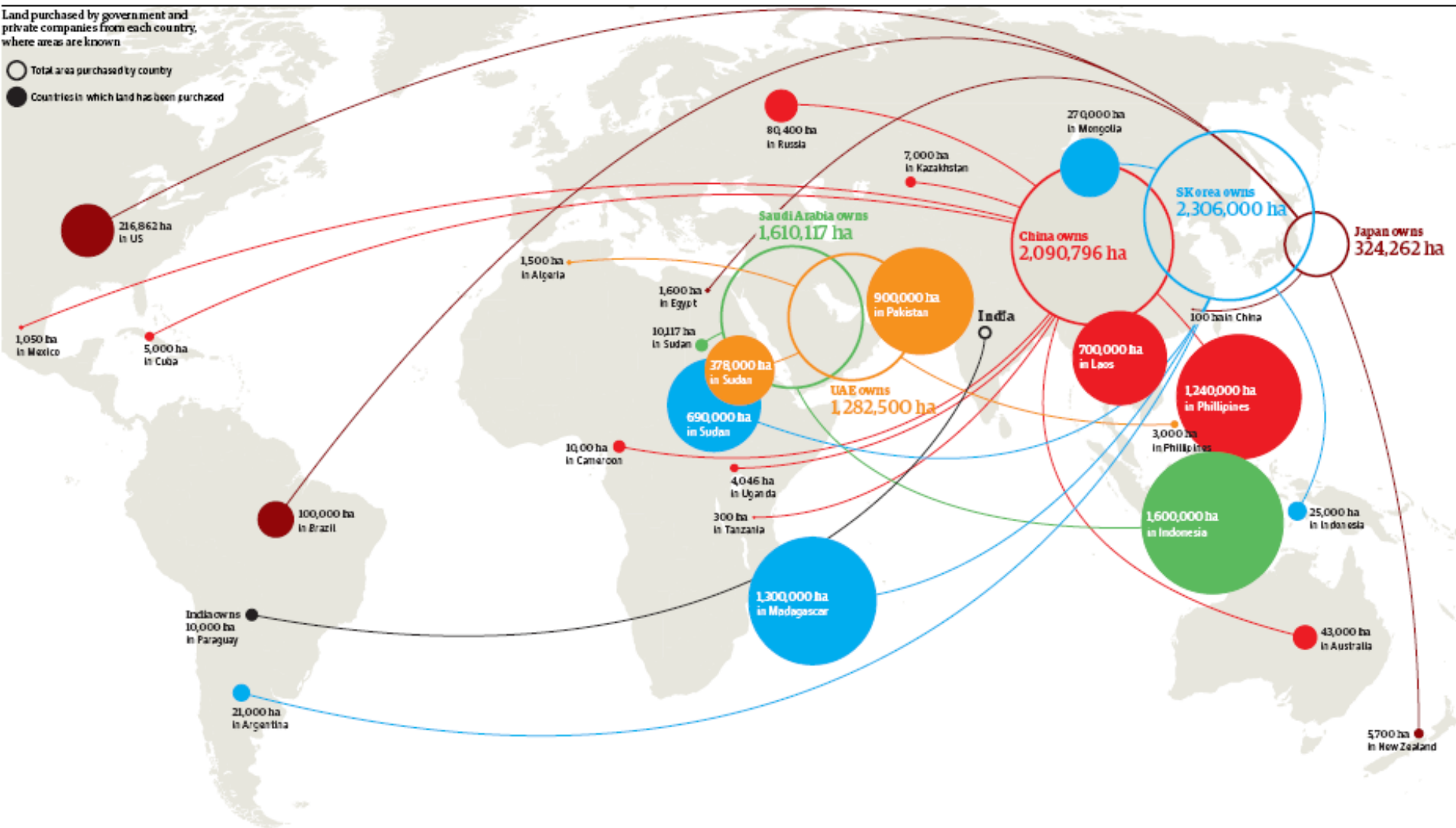
*Unintentional*

# How does iLUC arise?

## World land grab

Land purchased by government and private companies from each country, where areas are known

- Total area purchased by country
- Countries in which land has been purchased



SOURCE: IAN W. DODD

## Original Geographical Area

**Original (Displaced) Land Use**  
10,000 ha, Ag land,  
Commodity X production for **food market**

**New Land Use (Direct LUC caused by biofuel)**  
Commodity X production for **biofuels market**



## New Geographical Area

**New Land Use (Indirect LUC)**  
Ag land,  
**Commodity X production for food market**

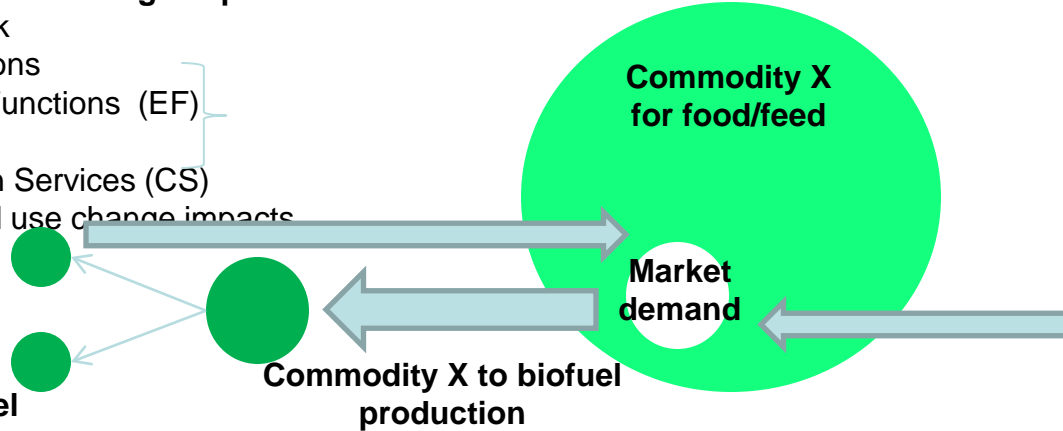
**Original Land Use**  
15,000 ha,  
**Rainforest**

### Direct Land Use Change Impacts

- Carbon Stock
  - GHG emissions
  - Ecosystem Functions (EF) Same
  - Conservation Services (CS)
- No direct land use change impacts

Meal

Oil for biofuel



### Indirect Land Use Change Impacts

- Loss of carbon stock (above and below ground)
- Increased GHG emissions from fertilizer use, other
- Loss of ecosystem functions and conservation services



Rainforest converted to ag land to replace the displaced food/feed crop

Factors influencing iLUC extent & impacts

Displaced commodity land use

Output per unit area (yield)

Market Demand

Co-products & waste

Difference in EF, CS, GHG emissions, and carbon stocks btw new and original land use

Potential iLUC Solutions / Mitigation

Use biofuel feedstock that does not require / requires little land

Intensification (yield increase)

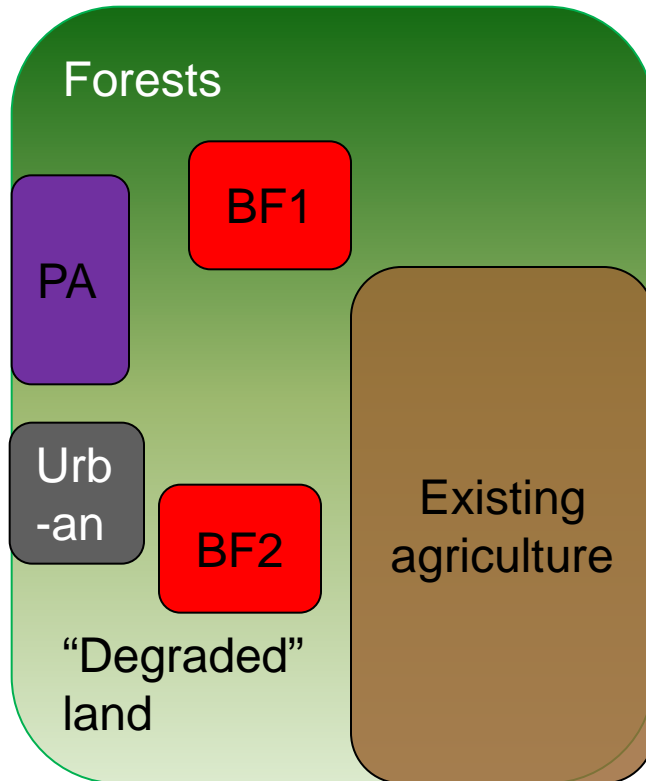
Reduce demand

Biofuel waste/co-products to reduce displaced commodity

Prevent any conversion of land with high C stocks, EF, CS



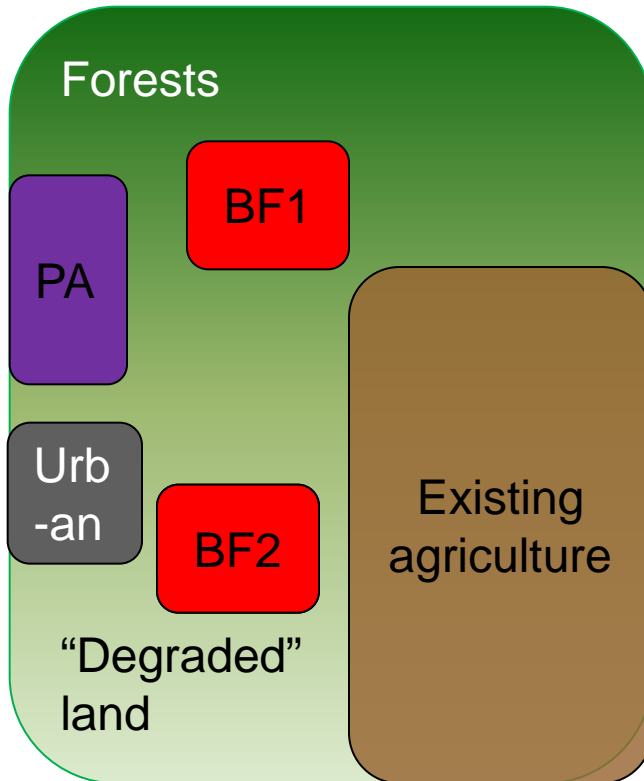
# What is iLUC?!?!



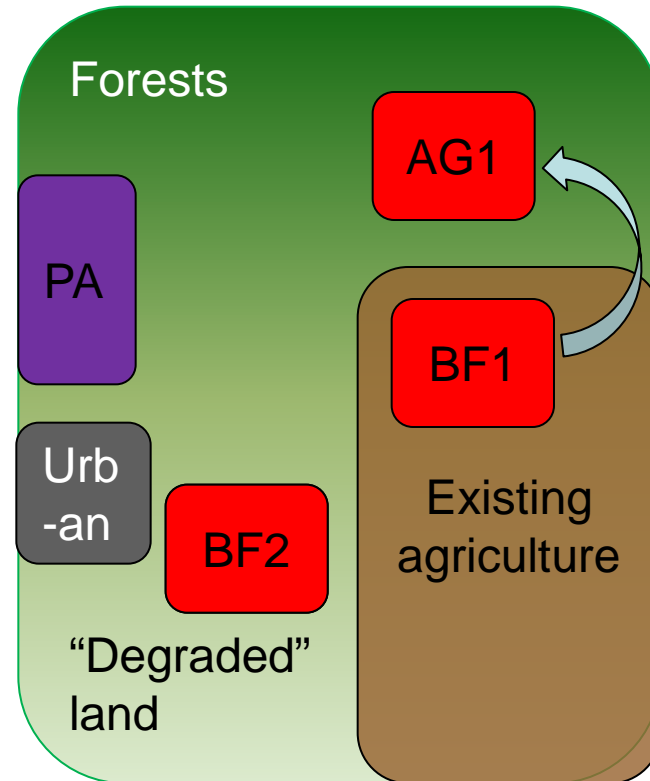
**Direct** land use change

*Based on Ecofys (2010)*

# What is iLUC?!?!



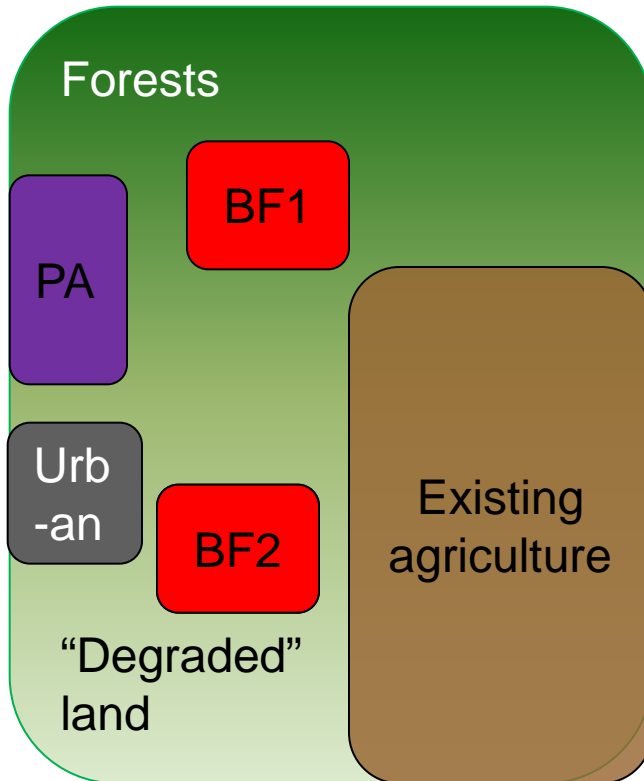
**Direct** land use change



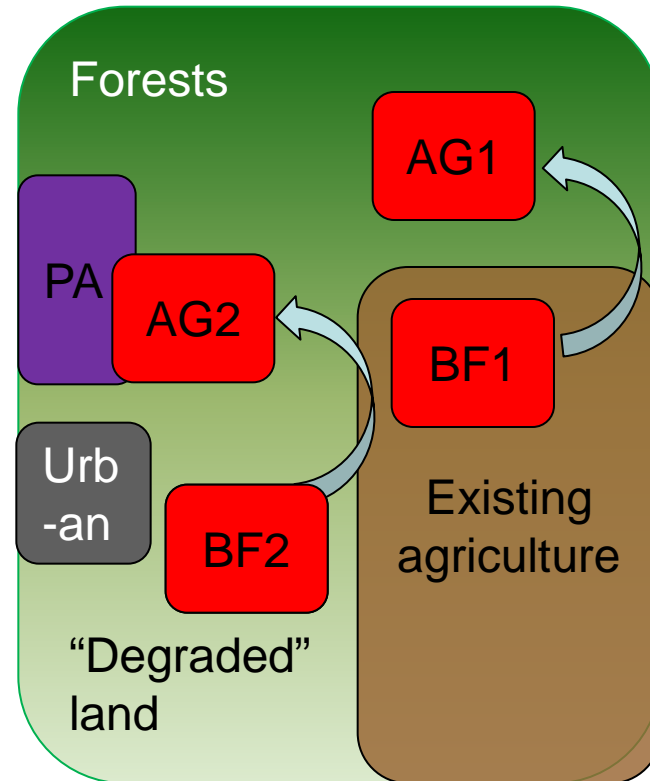
**Indirect** land use change

*Based on Ecofys (2010)*

# What is iLUC?!?!



**Direct** land use change

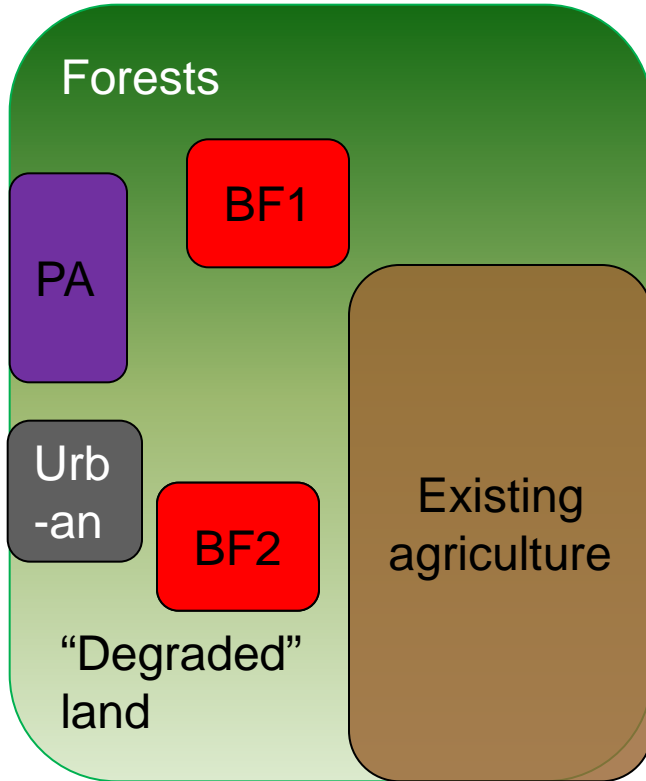


**Indirect** land use change

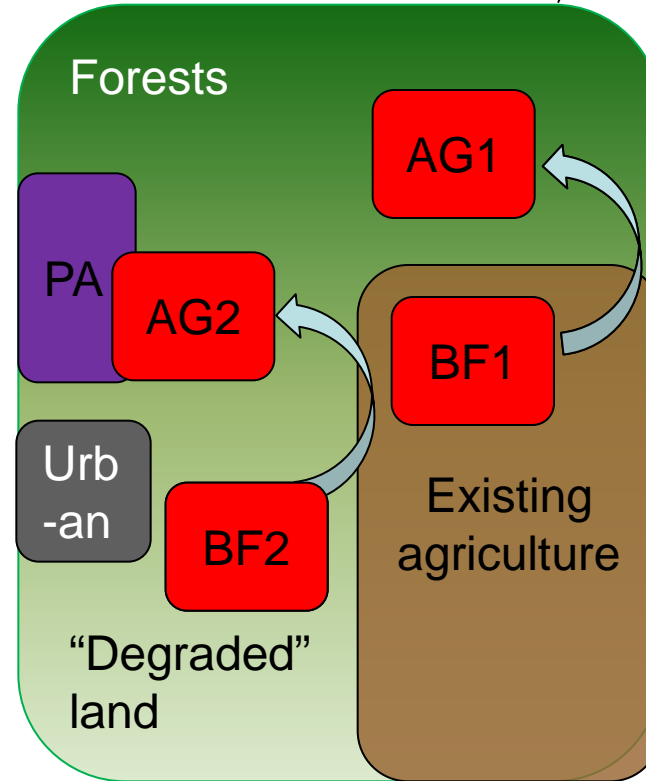
*Based on Ecofys (2010)*



# What is iLUC?!?!



**Direct** land use change



**Indirect** land use change

\*GHG emissions\*  
Environment (biodiversity & water)  
Social (food security & land rights)

*Based on Ecofys (2010)*





# How does iLUC arise?

- Land-based – Displacement of people who were previously using the land in some way
- Market-based – Increasing demand for agricultural commodities which must then be met by increased supply in global, regional or national markets



# What we know to manage iLUC

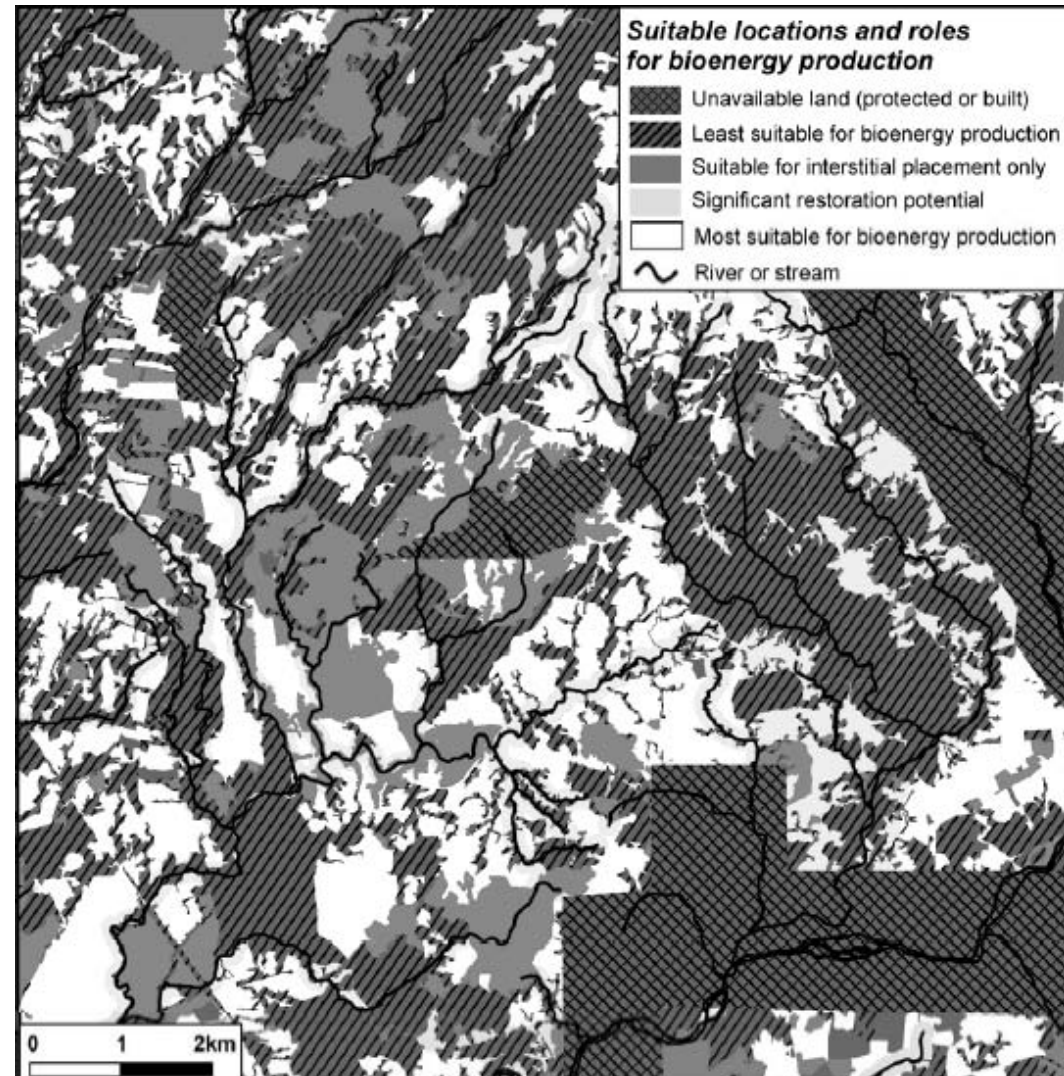
- in the case of displaced activities of local people
- Involve local stakeholders in landscape planning for feedstock production – participatory mapping
- Ensure local stakeholders derive benefits from biofuels markets that are at least as valuable as those foregone
- Identify locations for feedstock production with robust land tenure and governance regimes



# Landscape approach

- Participatory mapping with stakeholders
- Includes conservation and livelihood opportunity and risks

Ecoagriculture Partners  
(2009)





# What we know to manage iLUC

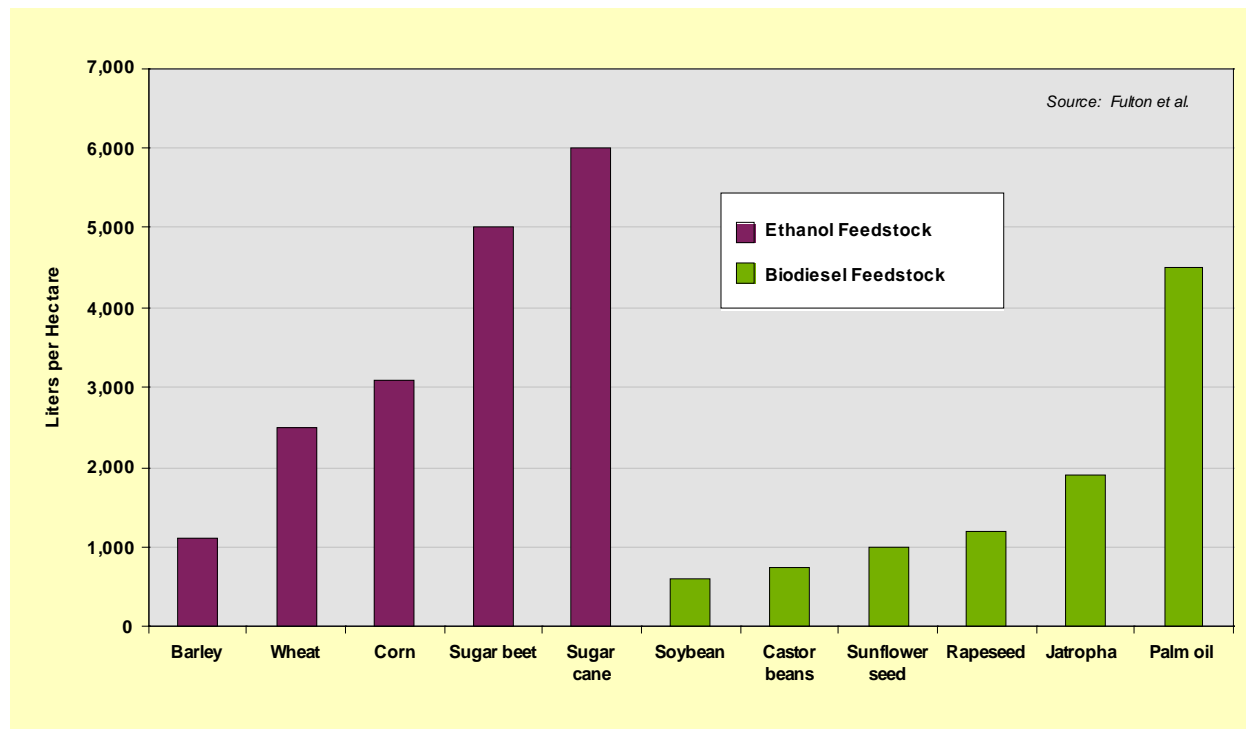
– in the case of commodity markets

- **The basic principle:** Increased demand will have to be met by increased supply.
- **The challenge:** Are there ways of increasing supply of agricultural commodities other than putting more land under till?
- **Some ideas**
  - Choose the right crops for the right places
  - Increase productivity of agricultural land – sustainably
  - Decrease waste in the supply chain of the commodity



# Choose the right crop...

- Look for high yield, low input opportunities (understanding market trade-offs)



- Advanced biofuels and “waste” streams too!



# Choose the right crop ... in the right place

- Cautiously promote land “not used” by local communities
- Operate in countries and regions with robust land tenure & access regimes
- Ideally use a landscape approach



# Increasing productivity

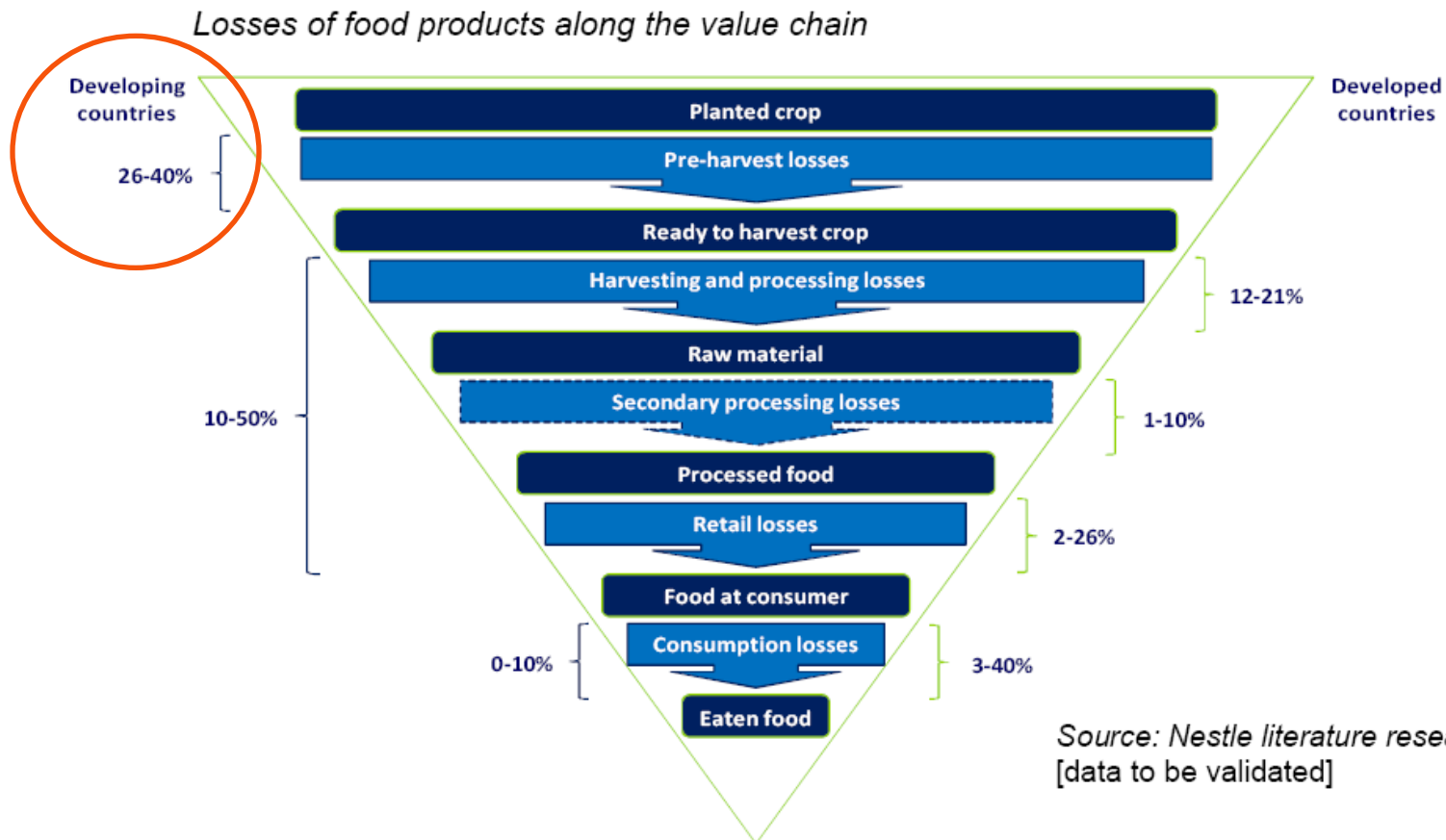
- Improve yields in ways which conserve biodiversity/reduce biodiversity loss and enhance livelihoods
- More effective use of inputs
- Maximise value derived in a landscape, e.g. land rotation combined with grazing
- The other RSB principles must be met.





# Decreasing waste

- Up to 50% of the food grown is lost or wasted

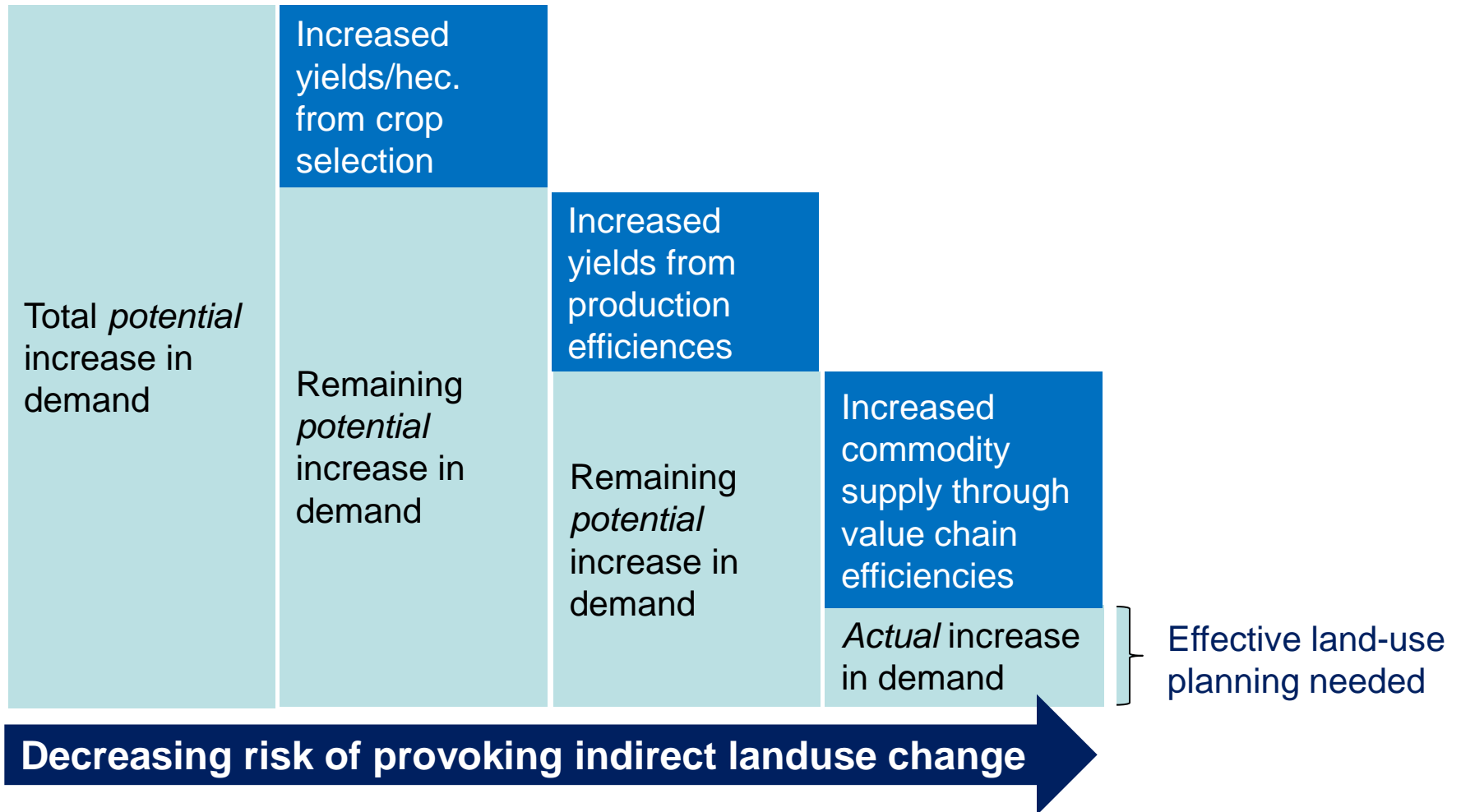






# Opportunities for Producers

to offset increases in demand...and mitigate iLUC





# What we already can do

## Producers

- Measure yields and what actually gets to market
- Measure the impact of your mitigation measures
- The RSB principles and criteria are a good place to start for defining good mitigation practices

## Governments

- Design policies which differentiate between practices
- Penalties can be an incentive to mitigate only if good mitigation practices can opt out of the penalty

## Roundtable on Sustainable Biofuels

- Certified biofuels should mitigate against iLUC risks to meet Principle 3 (GHG): *biofuels shall contribute to climate change mitigation by significantly reducing lifecycle GHG emissions as compared to fossil fuels*



# Final thoughts



- We may never be able to attribute iLUC to individual developments
- Ultimately, “indirect” LUC should not exist...IF land tenure and planning systems at the national and regional level are robust
- LUC is relevant for all land uses and change will always occur....
- ... a landscape approach can help to make sure it happens in ways that maximises society value in terms of GHG balances, biodiversity and development.