



# Prevention of indirect land use change: Policy and governance options

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## ILUC

Increased demand for biofuels over the past decade has led to close scrutiny of the risks and benefits of their feedstock production. The debate has focused particularly on the concept of **Indirect Land Use Change (ILUC)**.

ILUC happens when **food crops are displaced or diverted to biofuels** while demand for food remains constant, and/or when a biofuel mandate results in high crop prices that incentivize crop production elsewhere.

The **risk of ILUC** has so far been analyzed using aggregated, global economic models. Various studies have come to (largely) varying results (Figure 1). In addition, modeling studies have paid limited attention to measures that can counteract displacement, such as improved agricultural efficiency.

## ILUC prevention

Because ILUC is the direct land use change (LUC) of another activity, ILUC can be mitigated or even prevented when taking a **sustainable approach to all crop production** (whether for food, feed, fiber or fuel purposes). This was done in the *ILUC prevention* project (Textbox 1), where key ILUC prevention measures (e.g. above-baseline yield increases and cultivation of currently under-utilized land) were assessed for their potential to produce additional biofuel feedstock with low risk of causing ILUC. Here, policy and governance options for ILUC prevention from this project are presented.

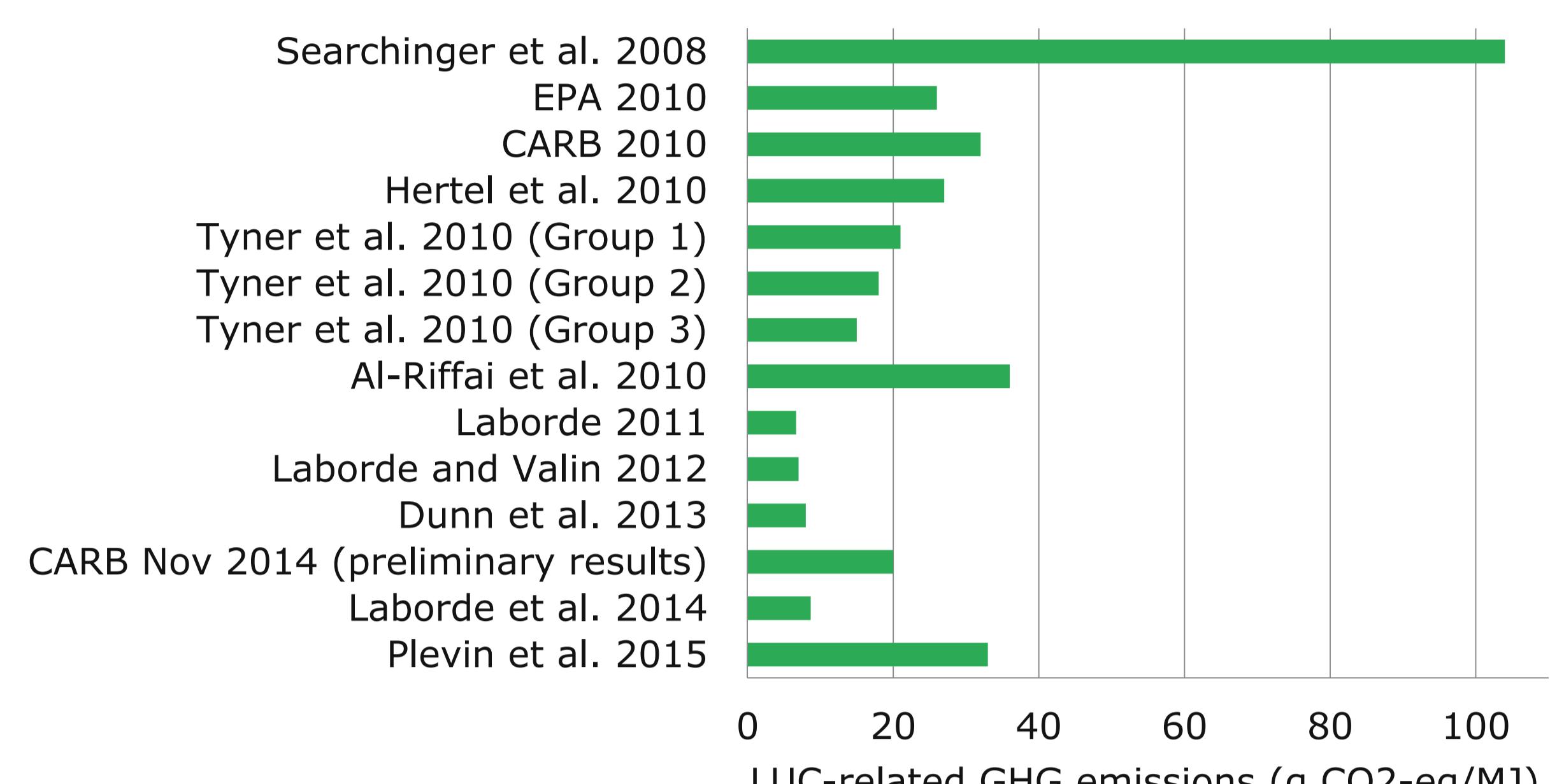


Figure 1: Overview of GHG emissions from (direct and indirect) land use change of corn ethanol determined in the literature (30 year allocation period)

## General governing framework

ILUC is a consequence of the interconnected nature of the biofuel and agricultural sectors. As a result, a governing framework for ILUC mitigation needs to take a broader and more **integrated perspective** that addresses all land use. We propose here a multi-step framework based on regional assessment of the low-ILUC-risk potential of biofuel production (Figure 2).

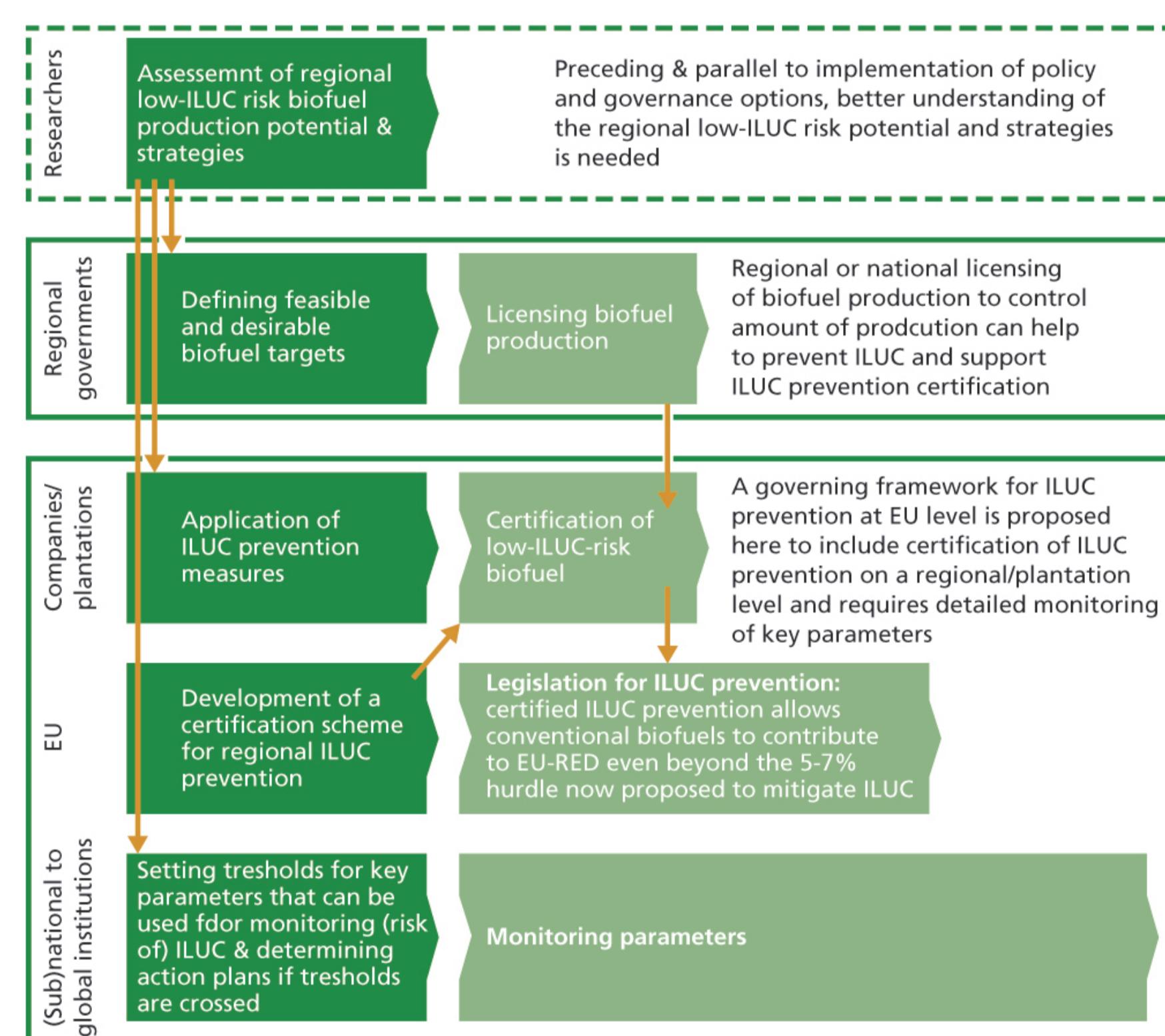


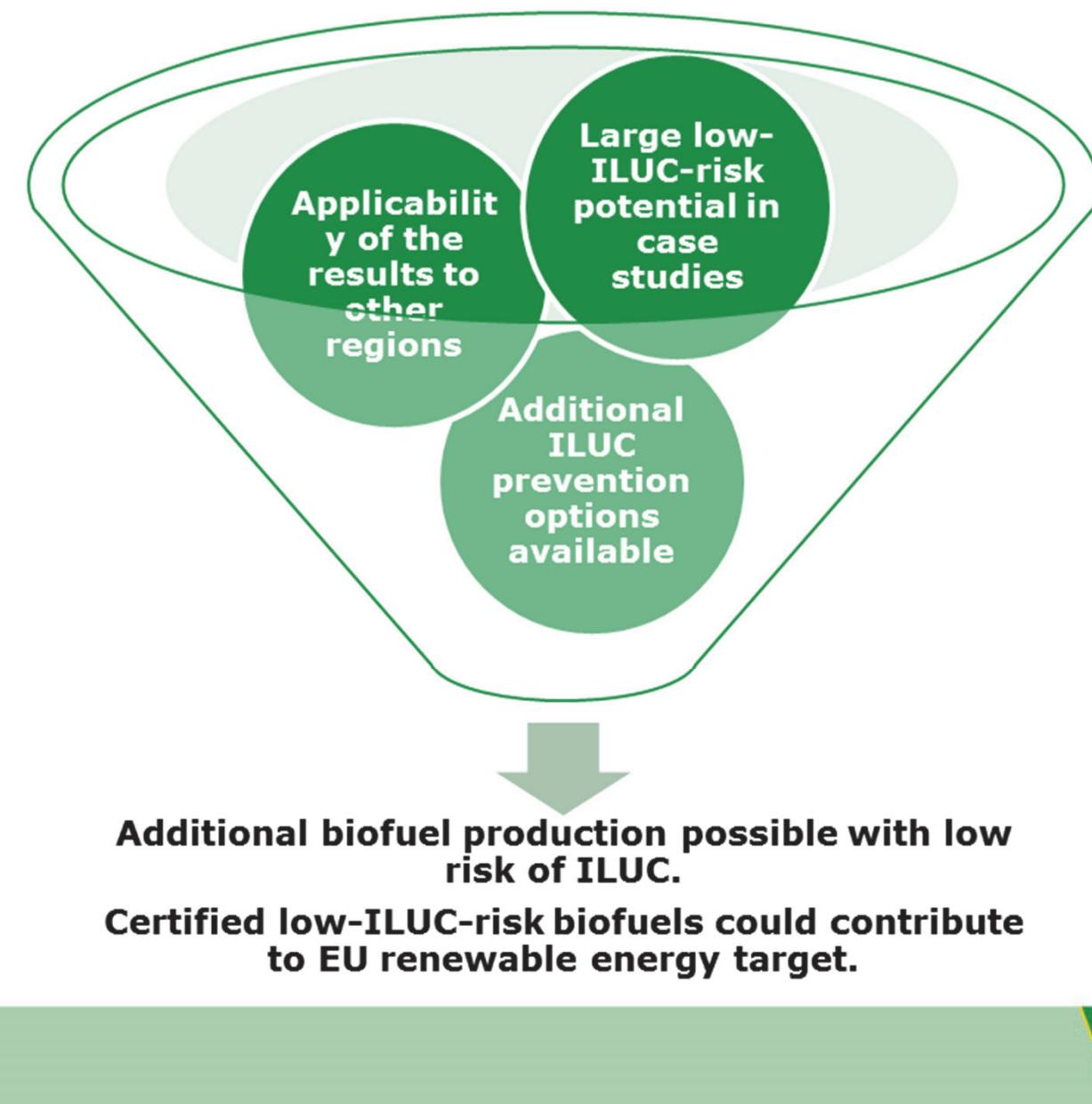
Figure 2: Multi-step governing framework for ILUC prevention

## Monitoring

The case study assessments indicated that data availability and quality need to be improved. This is important for reducing uncertainties in the low-ILUC-risk potential and for monitoring the implementation of ILUC prevention measures and the risk of ILUC. The key parameters that require improvement in data and that are useful for monitoring are presented in Table 2. For monitoring to be useful and effective in mitigating ILUC, it is important to set thresholds for the key parameters used in monitoring (the risk of) ILUC and to determine action plans for the event that thresholds are crossed. This is a topic for future research

Table 2: Key parameters for monitoring risk of ILUC

Key parameters	Purpose for monitoring
Land use and land cover (remote sensing supplemented with field verification), land ownership	What land use change is taking place and where? Is expansion taking place? And if so, where? Are under-utilized lands taken into production? How much under-utilized land is still available? Who owns the land and how is that changing?
Agricultural production volume	What crops are produced and at what quantity? Is production developing as projected?
Trade volumes	No major increase in imports of agricultural products or processed goods? Decrease in soy and other feed imports?
Food prices	What are absolute and relative (comparing different crops) food prices?



## Textbox 1: ILUC prevention project

The *ILUC prevention* project aimed at providing insights into how ILUC risks can be mitigated, how this can be quantified, and how this may be regulated. The core concept underlying this project is a regional approach that presumes that indirect land use change can be prevented if at least the projected regional increase in production due to the biofuel mandate can be covered in that region without diverting other production. Four regional case studies were investigated (Figure 3)



For more information about the *ILUC prevention* project, scan the QR code or go to [www.geo.uu.nl/iluc](http://www.geo.uu.nl/iluc)



## Conclusions and recommendations

Implementing the measures proposed in this study, certifying low-ILUC-risk biofuel production and allowing its contribution to the renewable energy target is proposed here as the key option to mitigate ILUC. For this, a **sustainable approach to all crop production for food, feed, fiber and fuel purposes is crucial**.

**Substantial investment** in the agricultural sector is essential to realize the low-ILUC-risk potential of biofuels as estimated in this study as well as to strengthen and enforce land use policies.

The project's key recommendations to prevent ILUC and to promote sustainable production practices for all crops are:

- **Increase productivity and resource efficiency** in the agricultural sector in a sustainable manner;
- **Support and incentivize production on currently under-utilized land**; and
- **Implement land zoning that excludes high carbon stock**, high conservation value and important ecosystem service areas from conversion to any agricultural use and incentivize forest maintenance.