



# Biofuel Production and Consumption in the European Union: an Analysis of Potential Side Effects

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## Introduction

Given the need for a more sustainable production of energy and transportation, the EU has set high ambitions with respect to fossil fuel replacement by biomass. Questions have been raised with respect to the ability of the EU to produce the required biomass and potential side effects that may appear. According to the EU, there is sufficient capacity to produce a considerable amount of the required feedstocks in 2020.

## Side effects

In order to check what types of side effects may be expected, this poster calculates alternative ways to produce the feedstocks before analysing their potential effect on competition for food, loss of nature areas and biodiversity and increased demand for water. As there is no generally accepted method for the measurement of potential side effects, we will make a first, general, assessment based on expert judgement.

## Approach

Using EU scenarios for biofuel production feedstock requirements were calculated for 2020. Next, four scenarios were determined for feedstock production: cultivation of land currently in the Set Aside programme (SA), Yield Increase on agricultural land (YI), Improved Conversion technology (IC) and Area Expansion outside agricultural area (AE). Each of them then was evaluated with respect to amount of feedstocks produced by 2020 and potential side effects this could have.

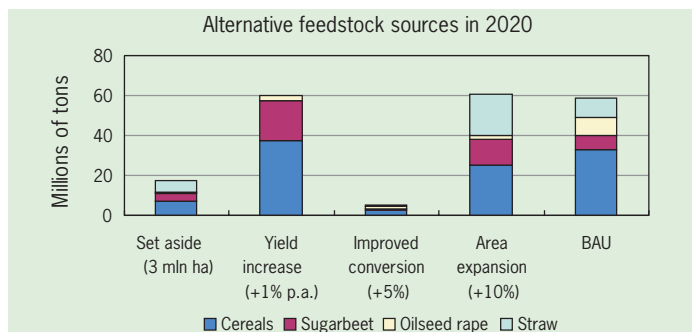


Figure 1. Alternative sources of feedstocks for domestic EU biofuel production.

Source	Competition for food	Competition for land	Biodiversity loss	Water use
Set aside area	Green	Green	Orange	Green
Yield increase	Green	Green	Green	Green
Improved conversion	Green	Green	Green	Green
Area expansion	Green	Yellow	Yellow	Yellow
- EU	Green	Orange	Orange	Orange
- Africa	Green	Red	Red	Red
- Far east	Green	Red	Red	Red
- Brazil	Green	Red	Red	Red

Figure 2. Side effects for each type of biomass production.

## Results

Highest production potential (60 Mton) has been found for YI and AE, followed by SA (close to 20 Mton). Cereals dominate in most scenarios, especially in YI. Straw is only of importance in AE. Potential side effects of the scenarios are presented in Figure 2. Best options with respect to potential competition for food and land are YI, SA and IC. Biodiversity Loss is minimized in the SA and YI; increase water use in SA. AE, especially outside the EU, appears to be the least desirable option with respect to potential biodiversity and nature loss and increased demand for water. Effects on energy efficiency largely remain to be determined. Positive effects may appear in YI but this remains to be determined.

## Discussion and conclusion

- Four scenarios for feedstock production were presented. Each has different perspectives with respect to potential production and side effects.
- Most favourable scenario with respect to potential side effects is IC, followed by Yland SA. AE is the least favourable scenario.
- The analysis remains rather general due to the fact that no local data are used to determine actual production and conversion levels. Using such data would drastically increase realistic value of the analysis. It is recommended that realistic calculations are made at local or regional level to generate more precise information on potential side effects of biofuel feedstock production.