

# Logistic aspects of algae cultivation

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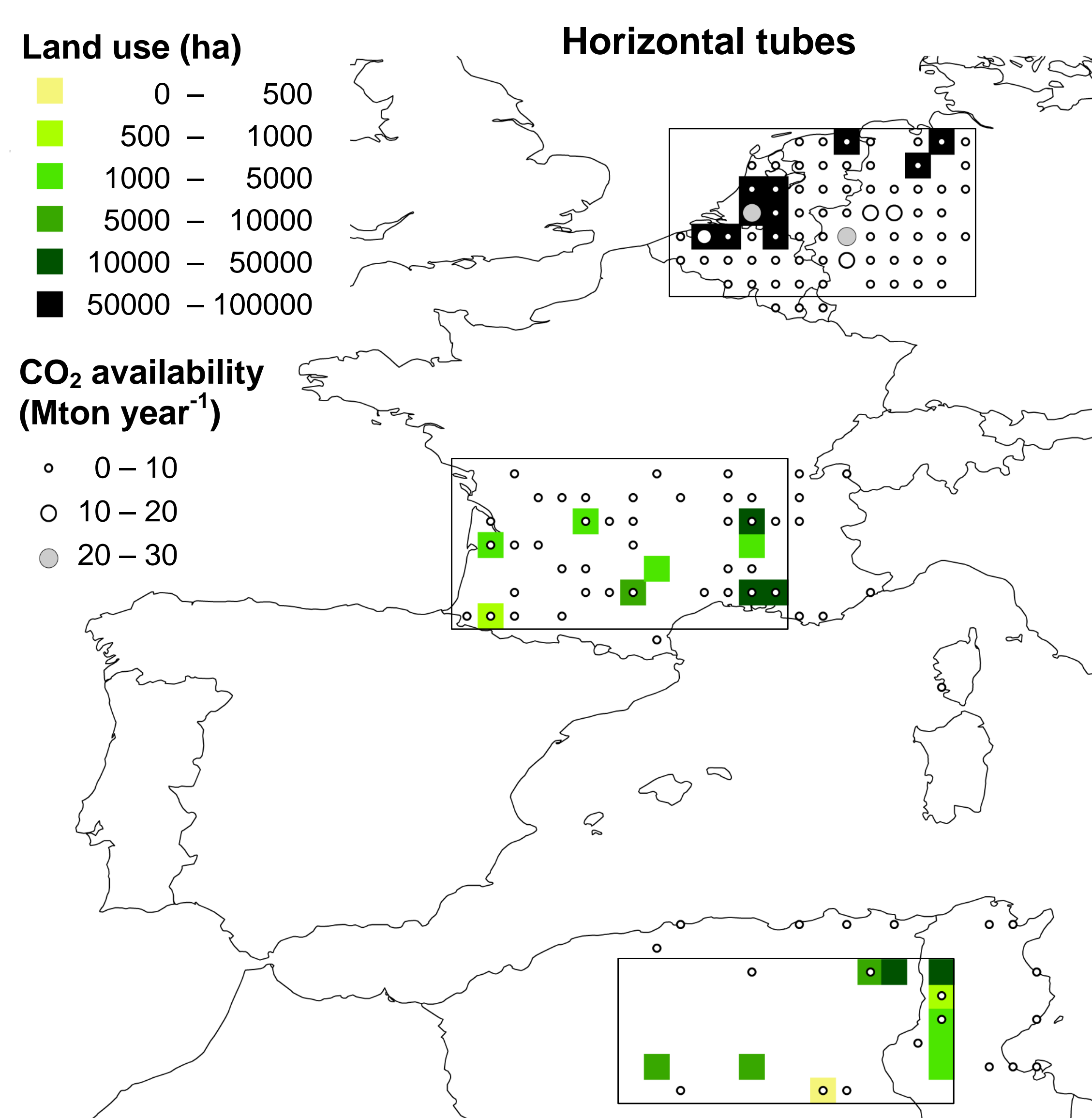
## Background

The performance of algae cultivation sites strongly depends on systems design and weather conditions [1-3]. However, also the availability of water, CO<sub>2</sub>, nutrients and land are essential to find the best locations.

## Aim

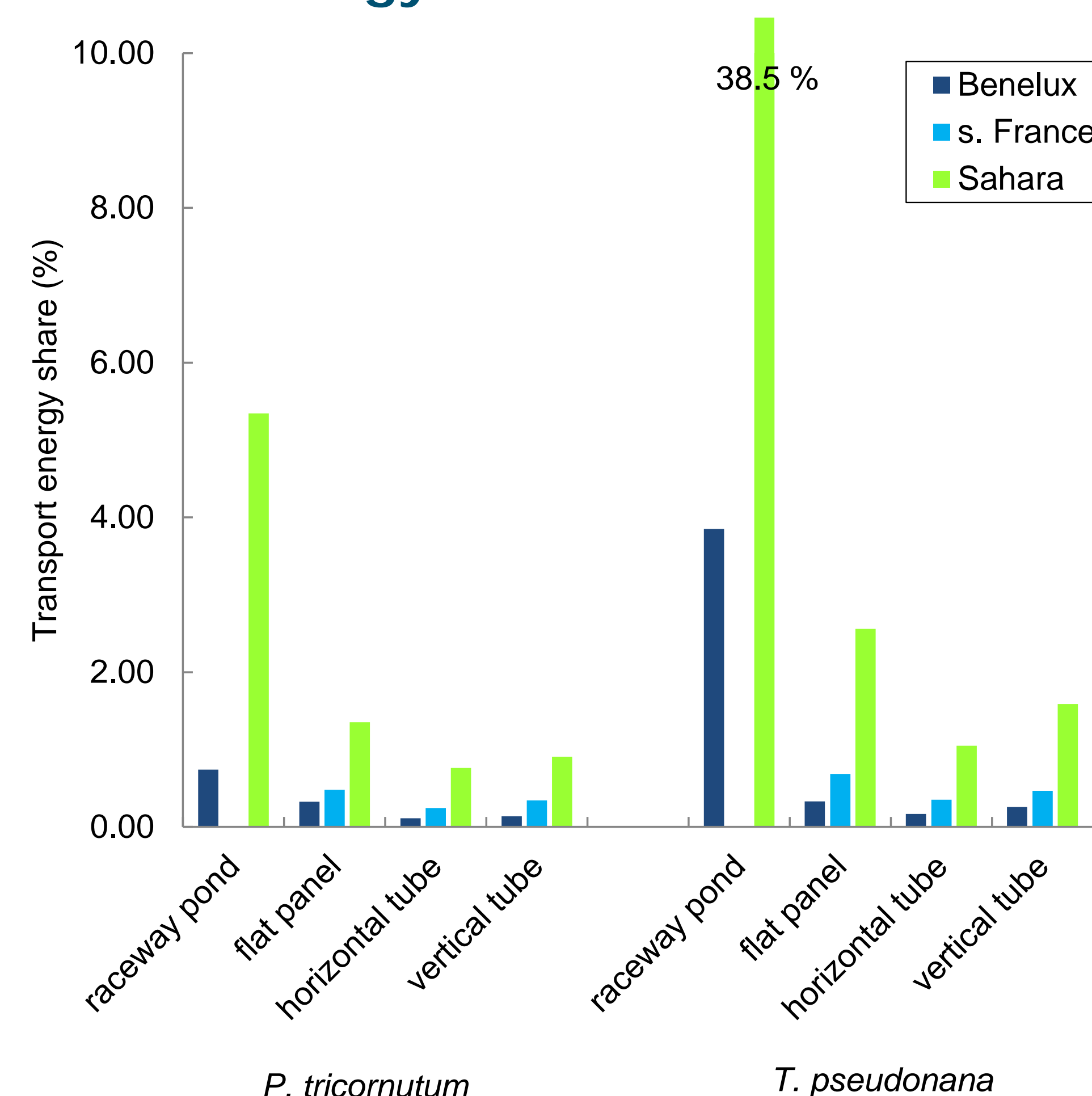
Study the **logistic aspects** of algae cultivation based on **current infrastructure**, for 3 regions: Benelux, southern France and the Sahara. Data on spatially-explicit supply of N and P is very limited, therefore focus is on **water** and **CO<sub>2</sub>**. Effect of algae productivity is further included through 4 reactor systems and 2 algae species.

## What are ideal locations for algae cultivation?



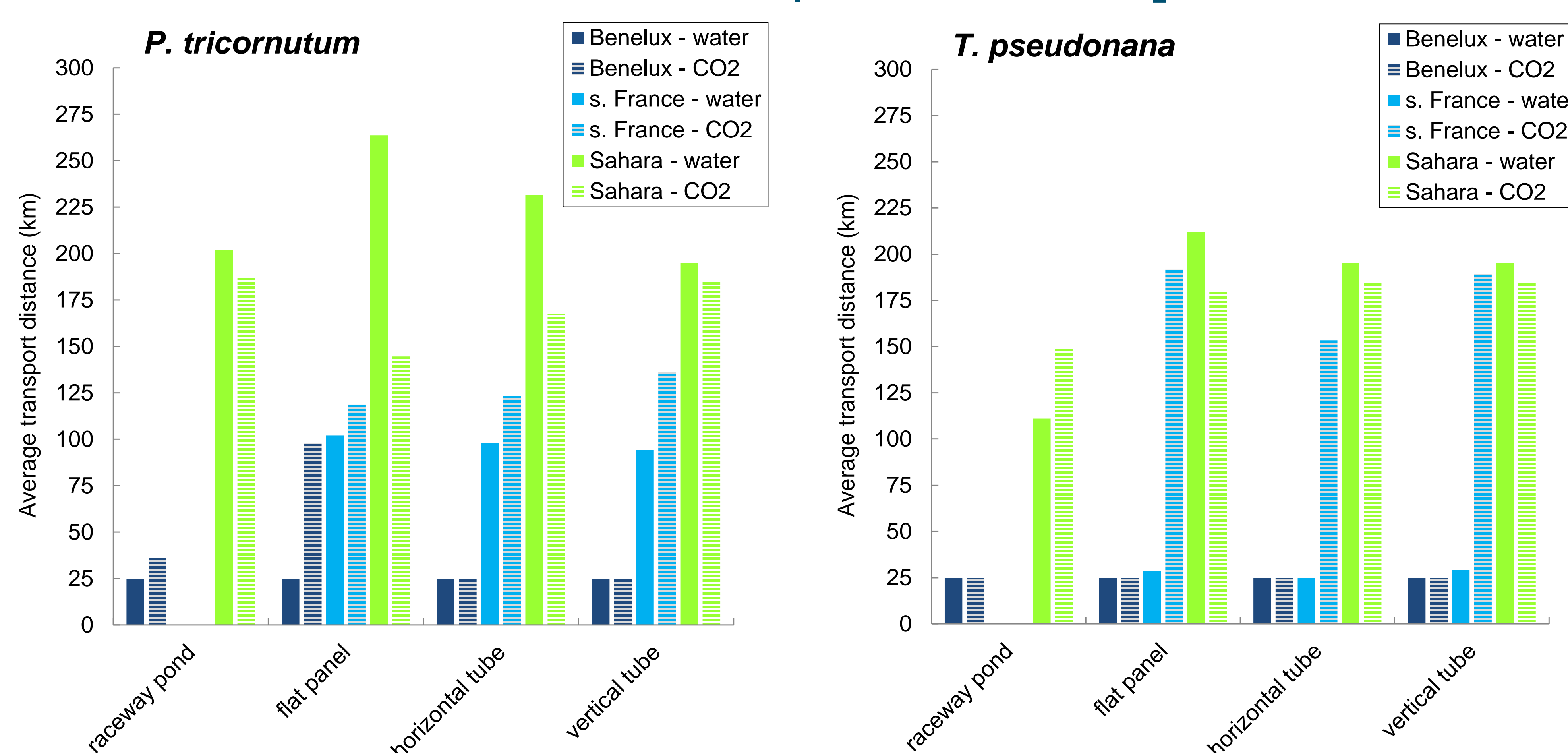
**Figure 1.** The allocation of algae cultivation sites with *P. tricornutum*, for horizontal tubes. The boxes indicate the area of each region considered for algae cultivation. Selection of grid cells for algae cultivation is indicated by the squares, also indicating the selected land-use of each grid cell. CO<sub>2</sub> availability from electricity plants is given by the circles.

## How much energy from the biomass for transport?



**Figure 2.** Transport energy share (%) compared to the energy contained in biomass.

## How far can we transport water and CO<sub>2</sub>?



**Figure 3.** Average transport distance (km) per supply point for water and CO<sub>2</sub>.

## Conclusions

- Energy consumption by cultivation supply **logistics** is a **small fraction** of the biomass energy
- Algae cultivation does **not** need to take place **in close proximity** to resource supplies
- Feasible (energy-wise) **transport distances** are **larger** than thought

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