WP6: Analysis of Environmental impacts (Partner DMU). The modification of barley to grow and obtain an optimal nutritional composition under elevated CO_2 levels is anticipated to have environmental consequences due to both changes in plant growth and competitiveness and 10 changes in water and nitrogen assimilation efficiency affecting the nutrient cycling. The impact assessment will be performed in greenhouse facilities where CO_2 levels and application of nutrients and water can be controlled. The assessment includes primary production, water and nutrient cycling and competition between crop and weeds. The tests include a comparison of conventional barley and GM-barley adapted to increased CO_2 levels grown under current CO_2 level and under the CO_2 level expected in the future. Lysimeter and isotope techniques will be used to quantify nutrient cycling of the systems.