THE PURSUIT OF CARBON NEUTRALITY – DEFINING THE CONCEPT

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Carbon neutrality is a commonly used term to describe a situation where the observed action does not cause climate change. However, defining the term more carefully is necessary to avoid misunderstandings. In this connection, carbon neutrality has been interpreted as a concept which is not restricted to carbon emissions only. It has been defined as a state where the net emissions of the GHG emissions caused by humans are at zero carbon dioxide equivalents during a specific timeframe, usually a year. To avoid confusion, climate neutrality must be understood as a broader concept: a state where the net effect of human activity on climate change is at zero. Climate neutrality also includes all the effects caused by air pollution (aerosols) and variations in the degree of reflected solar radiation (albedo) caused by changes in land use.

Present knowledge suggests that preventing a dangerous change in global temperature requires action and division of the burden between countries so that the affluent countries are expected to deliver negative GHG net emissions by the end of this century. This can only be achieved if positive changes in land use (e.g. reforesting, carbon sequestration in wood) and land use practices (e.g. cultivating existing forests, increasing soil carbon storages) as well as carbon storage from bioenergy and biomass products are counted in. If and when the net GHG emissions from land use changes are included in the concept of carbon neutrality, a nation such as Finland could have a negative emissions balance, that is, be carbon negative. Carbon neutrality is therefore not a concept that would suffice as the target state of Finland's climate policy. If carbon neutrality and negativity are defined with natural scientific grounds, the target should be a carbon negative Finland.

Abiding by the rules of international GHG emission targets, states currently pursue carbon neutrality through managing state-specific emissions and acquiring emission allowances from other countries to offset emissions. Therefore the starting point for carbon offsets is the obligation to verify the additionality regarding the emission allowance. In other words, it must be confirmed that the money spent has resulted in an actual emission reduction compared to a situation where no money would have been spent on an emission allowance.

As land use issues are yet to be covered internationally by an emission reduction treaty for the post-Kyoto Protocol era (2020-), there are no reasons to tie the states' pursuit of carbon neutrality with the natural scientific concept of carbon neutrality. The starting point must come from emission reduction measures approved by the UN and an internationally approved carbon offset policy for state-external emission reductions. Incorporating carbon sinks connected to land use into the calculation rules of pursuing carbon neutrality can only be done, if it is possible to prove scientifically that the measures bring benefits into increasing carbon sinks, compared to a "business as usual" situation.

Municipalities and other in-state geographical areas have different calculation rules to pursue carbon neutrality and, as a result, the achieved emission reductions of different cities and areas are not directly comparable. Usually the starting point is to add up the emissions from one's own area and the indirect emissions from energy use and production. The latter means that a city may compensate for other emissions in its area if

the city produces surplus energy and the emissions from energy production are lower than the national averange. For instance, Copenhagen includes carbon offsets, such as increasing carbon sequestriation through reforestation, in its emission calculations. Presumably, no country has a policy for municipalities and geographical areas that includes the impact that changes in land use have on emissions. Also, the net emissions remainder of import and export in municipalities and other areas is ignored in the objective of carbon neutrality.

An international standard is required to pursue carbon neutrality in cities and other areas. However, such a standard will not be in the works for some time, which is why the avoidance of double counting, at least on a national level, must be included as an objective in the emission calculation principles of municipalities and other areas. For transparency, it is important to report the findings so that the direct and indirect emissions from non-land use changes, carbon offsets and possible carbon sinks associated with land use are presented separately. The inclusion of carbon sinks requires the same obligation to verify the results as the states' pursuit of carbon neutrality.