**Climate and spatial planning**

**Abstract**

While climate adaptation is a key priority in spatial planning today, climate mitigation is often overlooked. However, there lies great potential in planning for mitigation and examining how CO2 emissions from cities can be reduced. This is an important step towards reaching current climate goals.

It is possible to significantly reduce urban CO2 emissions through spatial planning, but the opportunities to be gained remain unexplored and unrealised. Possible areas where effective measures can be taken include building construction and materials, housing types, utility planning, transportation and urban expansion. Adding carbon footprint to spatial planning is becoming a necessity in cities all over the world, and this is the focus of this brochure.

Spatial planning is complex and there are many things to consider; systems interfere with each other, and planning for one thing will affect other areas. A measure that positively impacts one area may weight negatively in another. It is necessary for urban planners, public officials, and policy makers alike to understand this and prioritize accordingly. If the best measures for climate mitigation compromise other qualities such as, say, building heritage or pedestrian connectivity, then they are not the best measures seen in a holistic perspective.

Fortunately, the opposite can occur. Measures taken in one sector can bring benefit to other sectors. This outcome can be planned for using holistic, cross-sector strategies to deliberately create multiple benefits. When mitigation is a key aim of spatial planning, challenges in many areas can be alleviated simultaneously ;congestion, outmoded infrastructure, air pollution, material shortage, disconnected communities and loss of biodiversity. Hence, planning for mitigation is not only a necessity in itself, but can create wider benefits affecting the whole system.

After a short introduction to the topic and to possible synergies and dilemmas, this brochure introduces selected areas where mitigation measures can be included in spatial planning to positively affect climate targets and action. For each area, an assessment is included highlighting the types and levels of impact to be gained. It shows that the Danish Planning Act provides a good base from which to implement effective climate measures. This means that it is possible for municipal planners to combine CO2 measures with spatial planning.

Specific cases are presented from cities where mitigation initiatives have been carried out. These cases serve as inspiration and evidence of the effectiveness of such measures.

For the larger cases, estimates are presented for the kind of reductions in CO2 emissions than can be expected . These are surprisingly difficult to ascertain – input from participating parties and knowledge in general is lacking.

It is difficult to present specific and accurate numbers for CO2 since they are usually not measured in physical planning and are calculated in different ways. The more detailed and precise CO2 calculations made, the more complex it gets. In some cases figures for indirect emissions or embodied CO2 are included, in others not. This leads to general difficulties in quantifying CO2 measures and climate planning.

Still, single measures cannot be viewed in isolation – as mentioned above, spatial planning is broadly connected, and one measure affects and is affected by other measures, creating cumulative effects. Further, climate planning cannot be placed in a single sector. Rather, it would be overarching for all sectors, with everyone working to realize climate goals.

In the process of developing this brochure, a meeting of 120 participants brought together municipal technical directors, spatial planners, and climate planners.

Six key recommendations are made, for municipalities working with climate in spatial planning.

* Ensure that city plans and climate plans work together
* Use existing urban areas
* Always consider densification
* Plan for larger, regional connections
* Combine traffic planning and urban planning
* Strengthen sustainable behavior

The brochure has been made collaboratively by four organizations – KTC (Association of Technical Directors in Danish Local Authorities), CONCITO – Denmark’s Green Think Tank, Gate21, and The Danish Town Planning Institute – with support from the philanthropic association Realdania.