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Public and private responsibilities for climate adaptation

A legal-administrative analysis and a first assessment

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Knowledge for Climate

Main findings

About the research project

Climate change related risks encompass an intensification of extreme weather events, such as fluvial and pluvial flooding, droughts, and heat stress. In order to avoid or reduce the risk of societal disruption as a consequence of these events, *adaptation* to climate change is considered necessary. This means that measures need to be implemented in order to avoid future disasters such as floods and/or to limit their consequences. Adaptation measures may address *exposure* to climate risks*, vulnerability* to these risks*,* and the *recovery* after the occurrence of extreme weather events caused by climate change. Exposure-related adaptation measures aim to reduce the chance of being confronted with climate impacts, such as locational choice of vulnerable objects or forms of land use. Vulnerability-related measures aim to reduce the consequences of climate impacts, e.g. equipping hospitals with emergency generators. Recovery-related measures involve repair, clean-up and continuation of services after a climate change event.

An important issue related to adaptation to climate change concerns responsibilities for the above adaptation measures. In this research project, we systematically identified and assessed the legal responsibilities for adaptation in a number of critical and vulnerable sectors. The assessment was based on the criteria of *completeness, transparency, legitimacy,* and *expected effectiveness*. Completeness addresses the extent to which responsibilities for exposure-, vulnerability-, and recovery-related adaptation measures are explicitly assigned in legislation or in other documents that possess a formal status. Transparency refers to the extent to which responsible actors are informed about their responsibilities and those of others. Legitimacy is defined as the extent to which the division of responsibilities is considered reasonable and acceptable by those who are held responsible and accountable; this will be related to the perceived balance between benefits and costs and the perceived relation between responsibilities and available competences and resources (also compared to other actors). Finally, expected effectiveness refers to the extent to which those who bear responsibilities for adaptation are expected to implement adaptation measures in such ways that climate risks are reduced to acceptable levels.

The following (sub)sectors were focused on:

- ICT: internet, and datacentres in particular.
- Energy: local electricity distribution (management of local distribution networks that connect electricity power plants and households, companies, and other bodies).
- Transport and infrastructure: inland navigation (in particular international freight transport from the port of Rotterdam to Germany and elsewhere) and evacuation routes and evacuations from densely populated areas.
- Health: access to independent living elderly in the case of heat stress.

The research is primarily based on Dutch legislation that is currently in force. Ongoing or planned reforms in legislation and policy could only be included in the research to a limited extent, as their contents and implementation are usually not clear yet. The assessment of formal responsibilities was based on both primary and secondary data sources (i.e., interviews and focusgroup sessions, and desk research and two workshops that were organised in an earlier stage, respectively). The research project is exploratory and does not pretend to provide a comprehensive picture of reality. For instance, we assess the *expected* effectiveness of responsibilities for climate adaptation, in the absence of evidence about practical experiences and examples.

General findings and recommendations

Based on an analysis of (sub) sector relevant legislation we conclude that responsibilities are almost or fully *complete* and *transparent*. For instance, it is clear that locational choices have to be made by the companies at issue, and have to be approved of by municipalities. However, the legislation does not specify that *climate risks* should be explicitly considered in the locational choice. The involved responsibilities therefore are characterised by a large degree of freedom. Also in the other sub sectors, responsibilities for climate adaptation are relatively implicit; usually these are part of more general responsibilities and not explicitly mentioned in legislation. This implies that the implementation of adaptation measures depends largely on the awareness and sense of urgency of climate risks by the actors involved. The research project shows that the responsibilities that are assigned to public and private actors are generally considered legitimate.

The main bottlenecks are expected in terms of *effectiveness*. Here, distinction should be made between the *expected effectiveness* ('on paper') and the *actual effectiveness.* Between the two, a gap may exist: our conclusion that responsibilities for climate adaptation are exhaustively assigned to actors does not guarantee that this will result in the implementation of adaptation measures by these actors. Important issues here are the implicit character of formal responsibilities for climate adaptation and the associated freedom in acting upon these responsibilities.

Below the four main conclusions are summarised that are expected to negatively influence the expected effectiveness of current divisions of responsibilities for climate adaptation. Each conclusion is followed by a recommendation. It should be stressed here that the conclusions do not apply equally to the (sub) sectors that were analysed and assessed; the conclusions are general in nature and go beyond individual (sub) sectors.

Conclusion 1: Climate risks are not explicitly addressed in legislation, and in practice, are usually not explicitly.

Legislation applicable to the (sub) sectors that we analysed and assessed does not explicitly specify responsibilities for *climate risks*. In practice, these risks do not play a large role, although there seems to be a growing awareness in the (sub) sectors that were focused upon in this research project. It seems that awareness of climate risks mainly concerns the average climate scenarios and not the

extreme climate scenarios. Although the chance of these extreme scenarios is small, their impact is expected to be large.

Recommendation 1: Raise awareness of climate change and its consequences and monitor the sector specific consequences of climate change. Specify, where necessary, climate risks in legislation.
Because of considerable room for improvement of awareness of climate risks, we advise to communicate climate risks in sector- and area specific ways. Awareness of climate risks namely is a precondition for considering the urgency of these risks and the implementation of adaptation measures. In the inventory of sector- and area-specific climate risks, also attention should be paid to *practical experiences* in order to validate and refine our conclusions. Coordinate these inventories with the Security Regions ('veiligheidsregio's') – important administrative bodies for risk management. A regular update of the climate risk assessments that were recently conducted is desirable, in order to be timely prepared for these risks and to maintain a sense of urgency of these risks among actors involved. The explicit specification of climate risks in sectoral legislation or, for extreme situations, in the Security Regions Act, can promote both awareness of climate risks and the implementation of adaptation measures.

Conclusion 2: Cascade-effects require extra attention as compared to sectoral climate risks.
Cascade effects – effects or damage as a consequence of climate risks that emerge because disruption in one sector affects the functioning of one or multiple other sectors – are not mentioned in legislation, either. Moreover, awareness of cascade effects seems to be even lower than awareness of direct climate risks. The recent climate risks assessments however conclude that cascade effects are among the most urgent climate change related risks.

Recommendation 2: Assign a central role to cascade effects in the National Adaptation Strategy.
We advise that cascade effects are given a central role in the National Adaptation Strategy. The development and implementation of adaptation plans could take place by means of sector- or area-based dialogues with stakeholders. If considered necessary because of the urgency of cascade effects, the responsibility for these effects could be specified in the legislation at issue.

Conclusion 3: To the extent that climate change risks are anticipated and acted upon, the emphasis seems to be on vulnerability- en recovery-related measures, and not or to a far lesser extent, on exposure-related measures.
In cases where measures were considered or taken to reduce risks related to extreme weather events (in the light of climate change, or in general), these measures seem primarily vulnerability- en recovery-related. Exposure to climate risks generally seems to be taken for granted, which implies that opportunities are missed to influence this exposure. As a consequence, possibilities for effective adaptation are under-utilised.

Recommendation 3: Require the systematic analysis and assessment of climate adaptation measures.
Although exposure-related adaptation measures are not always possible or desirable (think of sunk investments in infrastructure and cost-benefit considerations), this does not mean such measures should not be explicitly considered and compared to vulnerability- and recovery-related measures. We therefore advise that exposure-, vulnerability-, and recovery-related measures (as such and as specific combinations) are systematically identified and assessed. This could take place in the dialogues we advised as part of Conclusion 1. Monitoring of these analyses and assessments (by Departments that are responsible for the sector at issue, or, alternatively, by one Department (e.g., the Department of Security and Justice or the Department of Infrastructure and the Environment)) is desirable, also in the light of the risk of cascade effects. Again, if considered necessary, the responsibilities for the systematic analysis and assessment of potential climate adaptation measures can be specified in the relevant legislation.

Conclusion 4: Awareness of climate risks among Dutch residents and small companies and institutions is insufficient.
In our first conclusion we stated that there is a growing awareness of climate risks. However, this is not the same for all actors involved. Awareness seems to be found primarily among large companies in the (sub) sectors that we analysed. Residents and small companies and institutions, in contrast, seem to be insufficiently aware of climate risks, as well as of their responsibilities for anticipating and mitigating these risks. This is problematic, in particular in the case of critical infrastructures, such as electricity and ICT, in the light of a growing dependence on these infrastructures and the increased reliance on the self-sufficiency of these actors.

Recommendation 4: Conduct research into the awareness of climate risks among residents and small companies and institutions, as well as into their awareness of their own responsibilities. If necessary, offer these actors prospects for action.
For a better understanding of the awareness of residents and small companies and institutions of both climate risks and their own responsibilities, additional research is required. We advise that this type of research becomes part of the National Adaptation Strategy. In the case our finding of insufficient awareness among these actors is confirmed, communication and the development of prospects for action is important. Central government should play an initiating role here.

This research project focused on a selection of (sub) sectors. We recommend that our conclusions are tested and validated for a broader set of (sub) sectors where substantial climate risks are expected, either directly or via cascade effects.