Appendix 5. Contributions of the resilience assessment to municipal planning

This table presents emergent themes of how the resilience assessment contributed to municipal planning and management at Eskilstuna municipality. Each theme is presented with examples from the interviews, observations and the survey to the workshop participants. Note that the themes are not disconnected, but rather influence each other in many ways. In the results section, these themes are clustered into three main categories of contributions. See also Sellberg (2013) for a more detailed description of the data analysis. (SEP=strategic environmental planner, SD=sustainable development.)

Table A5.1. Contributions of the resilience assessment in Eskilstuna to municipal planning, presented with examples.

Themes:	Examples:
1. Giving a mindset that assumes change, surprise and uncertainty	– The resilience assessment focuses more on what *could* happen, than on the normal state. (Survey) – The workshop was a systematic way of looking at: "if it all goes bad, what happens then?" Trying to prevent unwanted surprises, instead of just planning towards certain goals. The method can assess if the plans would function even if the future deviates from the plans. (Reflection round of the workshop)
2. Giving a dynamic perspective on systems and change	– 9 of 20 people in the survey wrote that thinking of thresholds was something new. – Identifying thresholds is new to comprehensive planning. (Interview spatial planner) – Resilience thinking adds a dynamic view of systems to e.g. Environmental Impact Assessment of the comprehensive plan. (Survey) – Resilience thinking highlighted both shocks and slow trends, which are less visible, but could be "ticking time-bombs". (Interviews with SEPs) – Historical discussion and discussion about system dynamics brought up slow factors that influence the state of a system, e.g. industrial culture and education levels in the employment group. (Observation of workshop)
3. Giving a broader systems perspective on the municipality and the municipal organization	– The workshop showed interconnections between the focal systems, e.g. water and food, and transports and food. It also showed connections across scales to the global threats and e.g. the food supply's dependence on the global system. (Observation of workshop) – The focus of the workshop was more on the geographical area of the municipality, rather than on the municipal services. (E.g. interview crisis manager)

Themes:	Examples:
	– The resilience assessment dealt with the underlying events, even though they might not have a direct effect on municipal services, rather than the secondary consequences of those events. (Interview crisis manager)
	– The workshop and a systems approach facilitated understanding of interactions and mutual dependencies between different parts of the municipality, and the interconnectedness of issues. This invites to cooperation, since we cannot solve an issue by ourselves, and motivates working together, towards common goals, or away from undesired trajectories. (Interviews SEP1, SEP3 and crisis manager)
4. Drawing attention to social-ecological integration	– Resilience thinking gives attention to the ecological dimension and the importance of biodiversity. But, it frames this as a critical part of peoples' welfare, by using concepts such as ecosystem services. (Interviews SEP1 and SEP2)
	– The workshop was used to frame both ecological and social issues of concern, e.g. unemployment. (Observations of process)
	– Working with a broad, and also historical, perspective indirectly leads to more understanding of our ecological dependence, since then the context of our current situation becomes clearer. (Interview SEP2)
	– Resilience thinking increases our understanding of how parts of the system interact, both in nature, but also between people, and help us prioritize what is important and not. (Interview SEP2)
5. Facilitating an integrated perspective	– "Resilience is not primarily an environmental tool, but a tool for man's ability to survive and adapt to have a good life" (Survey). Looking for consequences of global crises on economic and social systems was seen as very important too (Interviews SEPs).
	– It is difficult to avoid a broader discussion at a resilience assessment and a holistic perspective comes more automatically. (Interview SEP2)
	– Resilience has a broader scope than comprehensive planning, which focuses on land use. (Interview spatial planner)
	– Resilience thinking provides planners with concepts and models that connect different areas, which means better possibilities to find solutions with positive synergy effects. (Interview SEP2)
	– The workshop was training in thinking every part of SD (survey) and it lifted holistic thinking within SD because of discussing all the dimensions in an integrated manor (Interview SEP1).

Themes:	Examples:
6. Framing a discussion of planning for long-term (global) threats with many uncertainties	– A more holistic way of thinking, showing interconnections between different parts, leads to less risk of future threats falling in between responsibilities in the municipality. (Interview SEP1)
	– It was a new perspective for SD to look at focus areas in relation to long-term threats. (Survey and reflection session of workshop)
	– The workshop enabled a rare occasion to discuss these issues together and zoom out on the problem situation. (Interview Municipal Commissioner)
	– System dynamics helps visualizing the threats and their long-term consequences to society, as well as society's vulnerabilities. (E.g. Interview SEP3)
	– Threshold effects frame surprise and need to discuss worst-case scenarios and take drastic effects of crisis into account. Potential irreversibility of threshold effects framed a sense of urgency, especially for ecological changes (Interview SEP1). As one of the participants put it: "the ecological ball, it's on its way over" (Reflection session of workshop).
7. Providing a common language and a common tool/method	– System dynamics provided a common language to look at change in a new, more dynamic way and "strategies for resilience" was a new way of systematizing strategies and provided a new and common language to talk about different strategies. Part of the thinking is there already, but not with those labels. (Observations and interview crisis manager)
	– A broad concept that bridged different sectors makes it possible to engage people from many different perspectives. (Interview SEP3)
	– Talk on ecosystem services also gave new common concepts. (Observation of workshop and reflection session)
	– Strengthened the thinking of the municipality as a group with a shared goal by providing a common tool/method, which demands working across sectors (Reflection session of workshop), and could be applicable on all the different departments of the municipality (Interview crisis manager).
	– Resilience thinking provides a common language and mindset that could facilitate the discussion about sustainability and avoiding it to be watered down. (Interview SEP2)
8. Helping to explore consequences of crisis in the system	– The workshop was a free zone where you could think more wildly and freely, e.g. about consequences of climate change, or worst-case scenarios in general (Interview with SEP1). It also highlighted uncertainties regarding their consequences (Observation of workshop).
	– Historical discussion on past crises (e.g. oil crisis in the 70's) gave understanding of the current system's response to crisis. (Observation of workshop)
	– The exercise on consequences of threats gave a deeper exploration of potential consequences, both positive and negative and in different

Themes:	Examples:
	dimensions (social, ecological and economical) and generated new discussions on e.g. the impact of climate change on employment. (Observation of workshop and reflection session)
	– Discussion on system dynamics framed need to identify risks of unwanted threshold effects in society. (Survey and reflection session)
	– The resilience assessment is a systematic identification of vulnerabilities (survey) and a tool to think more long-term regarding the ecological dimension (reflection session of workshop), e.g. thinking about how ecosystem services would be impacted by crises (Observation of workshop).
9. Highlighting certain strategies	– Going through "strategies for resilience" meant identifying strategies with few existing actions, e.g. learning from crises and adaptive management, and identifying strategies that were only informal, e.g. learning from crises, social-ecological memory and local knowledge. (Workshop output)
	– "Strategies for resilience" highlighted new strategies to existing crisis management, e.g. transformability and nurturing diversity, especially ecological diversity. (Interview crisis manager)
	– Resilience thinking highlighted strategies of e.g. higher self-sufficiency and increasing local food production, better capacity to cope with (dramatic) change, more strategic foresight and better prevention of crisis, and planning to be able to deal with different scenarios. (Interviews SEPs)
10. One way of operationalizing SD	– The sustainability concept is like an umbrella and resilience is a tool, or an approach within that. (E.g. interviews SEPs)
	– You give a more concrete content to SD by going through the method with its different steps, ending in strategies. (Interview SEP1) The workshop meant working through it in more detail to explore what SD could mean.
	– Resilience thinking clarifies the meaning of SD, fills the SD concept with content, making it more comprehensible. (Interview SEP2)
	– One way of actually trying to translate SD without jumping down into the sector plans. (Interview SEP2)
	– The resilience assessment does not bring any new goals and does not decide what is desirable, but it could be used when planning to reach certain strategic goals in the municipality. (Observations and interview SEP3)
11. Clarifying a common goal picture	– The resilience assessment, and thinking of alternate regimes, facilitated a clarifying discussion about the desired state of the focal system, as well as the undesired. This facilitates the generation of a common, and clarified, long-term goal picture. (Observations of workshop and interview SEP3, SEP1)
	– Resilience thinking is one out of several things that would facilitate

Themes:	Examples:
	development of a vision of a more sustainable society. It might help us to see what the holistic picture could look like and how we should live within planetary boundaries. (Interview SEP1, SEP3)
	– The ideal of the resilient society is more about being resistant to change and being able to respond to changes rapidly if needed. (Interview SEP3)
	– A common knowledge/idea of which the most important thresholds are that we really should not pass, helps formulate the common picture of the goal, since then we have to stop before the thresholds. (Interview SEP3)
12. Helping to assess current work of the municipality relative to their SD goals	– A model/tool for analyzing and working with sustainability. (Survey)
	– The workshop highlighted interconnections between focus areas, e.g. when mapping consequences of threats connected to the focus area. This connected societal functions into a more holistic assessment. (Interview SEP2)
	– Getting a more holistic picture of the work of the municipality shows if some aspect is missing relative to the SD goals, and what type of threat that implies. A resilience assessment could be a tool to keep holistic perspective in planning when it comes to concrete decision-making, complementing e.g. Environmental Impact Assessments. (Interview SEP2)
	– "Strategies of resilience" was used as a framework to assess existing actions and identify prioritized areas for future actions. (Observation of workshop)
	– Resilience thinking could help assessing how far the municipality has reached relative to their SD goals, by assessing current measures and if they are enough. The focus is more on long-term goals, conditions for sustainability and planetary boundaries, than optimization of current processes. (Interview SEP2)
13. Providing new arguments for taking action	– Understanding how different parts cooperate and interact in e.g. social-ecological systems might also generate recognition of investments in measures that previously were seen as luxury, e.g. new investments in ecosystems to be able to fix other problems, since they support each other. (Interview SEP2)
	– (Scientifically) identified thresholds would be important basis for decision-making. If development is seen as steps with thresholds and alternate regimes, rather than linear trends that we could adapt to, that would be a strong argument for investing more resources in avoiding undesired states. Motivating measures that previously were seen as luxury. (Interview SEP1)
	– System dynamics could also highlight slow negative trends that could be ticking time bombs, such as a growing discontent because of segregation

Themes:	Examples:
	and eutrophication, providing stronger basis for taking action. (Interviews SEPs)
	– The image of the "resilient city" makes it more difficult to argue for Business-as-Usual. (Interview SEP3)
14. Facilitating transformation and innovation	– The workshop was partly about daring to think more freely, letting go of margins of expenditure, etc. Thinking more broadly than your own role, and about how we must act in a wider perspective. (Interview spatial planner)
	– Resilience thinking is a way of coping that bridges over to a more sustainable society, challenging old systems and old way of thinking and old paradigm of more extrinsic values that did not succeed to generate any real solutions anymore. The method could open up to slowly transitioning to a more sustainable society. (Interview SEP2)
	– System dynamics framed the transformation of the transport system in a new way, and subsequently showed some of the obstacles to transformation. (Observation of workshop)