*HIA – Module 3*

Read the instructions and each question carefully and write your answer in the respective green box. **Remember to always cite your sources to the information you provide!** You’ll find a reference box after each answer box. Please use the Harvard referencing style.

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For this assignment you are supposed to reflect and replicate what you have learned about society and energy transition. Before you start this assignment, please read the papers in the study guide as well as chapt. 3,6 and 10 of the course literature.

1. What is NIMBY and why can that be a problem when building new renewable energy sources? What hinders citizens to take action in the energy transition and what can be done to encourage citizens according to Lennon, Dunphy and Sanvicente (2019). What role do energy communities play? Write ca. 500 (+/- 20%) words.

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| **Answer:** | NIMBY (Not In My Backyard) is an umbrella term for a wide category of local resistance behaviours against development of new infrastructure or transformations related among others to energy, industry, landscape changes etc. Of course in this context we focus on the NIMBYism against RES (renewable energy sources).  Lennon, Dunphy and Sanvicente (2019) discuss common motivations against renewable energy deployments. They point towards high local costs compared to perceived local benefits, inappropriate scale of development and limited citizen involvement in energy planning. That last point is echoed by Mulvaney (2020), citing Pasqualetti's (2011) research showing that participatory approaches including the communities in the decision process yield better results than the "decide-announce-defend" approach.  Large-scale projects, such as wind-farms create also negative side-effects such as (Lennon, Dunphy, Sanvicente 2019): - Detriments to human health; - Biodiversity loss, for instance due to bird collisions wind turbines (Mulvaney, 2020 citing Bernardino et al. 2018); - Landscape degradation; - Negative impact on tourism and property prices, though research shows that this effect can be only temporary and in the long run wind farms may have positive impact on property prices (Mulvaney 2020, citing Pasqualetti 2001);  Unfortunately in some cases, transition to renewable energy sources is disincentivized by the government, even when people are already motivated to undertake such change. We see an example in the "Sun Tax" implemented in Spain, creating a financial burden on citizens for consuming energy from their own solar panels (Patagonia, 2021). In other cases, the institutional set up may simply not be ready yet to empower energy communities (Magnusson and Palm, 2019).  RES projects can be also opposed by indigenous people when they feel their rights or their land are not respected. Native Americans have directed several lawsuits against solar developers building infrastructure over their sacred sites and burial grounds (Mulvaney 2020 citing Mulvaney 2019). Sámi people have been fighting wind farm plans on the areas traditionally used for reindeer herding, for example in Fosen, Norway. In 2021 (after the wind farms had been completed) the Supreme Court of Norway determined these projects to indeed violate the indigenous people's rights to enjoying their culture (Amnesty International, 2025).  Speaking of wind power, a commercial wind farm project described by Lennon, Dunphy and Sanvicente (2019) as PBM 2 in their study received the worst assessment out of 6 described business models. It failed to give control to the local community or encourage participation, didn't create benefits for the community and the generated wealth left the community to be accumulated by individuals at (inter-)national levels instead (Lennon, Dunphy, Sanvicente 2019).  Lennon, Dunphy and Sanvicente (2019) emphasize the importance of local participation and ownership, perception of fairness and trust towards the leaders of change. These are crucial not only to incentivize people to work together, but also to prevent conflicts and winners-losers situations from arising in the communities. From this point of view, the traditional distinction between customers and suppliers should be challenged in favour of more inclusive consideration of stakeholders.  A common thread between successful business models was feeding the profit back to the local community, for example providing free home insulation to the financially vulnerable members or insulation upgrades in public schools and hospitals (Lennon, Dunphy, Sanvicente 2019).  Finally, Lennon, Dunphy and Sanvicente (2019) point to the paradox in the facts that 1) energy is crucial to nearly every human activity and 2) people feel alienation and lack of agency in relation to energy systems. |

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| **References:** | Lennon, Dunphy, Sanvicente 2019  Mulvaney, 2020  Pasqualetti, 2011  Bernardino et al. 2018  Pasqualetti, 2001  Amnesty International, 2025  Patagonia, 2021  Magnusson and Palm, 2019 |

2. What makes the energy transition a wicked problem according to Köppel (2024) and how can we deal with these kinds of problems, according to De Tombe (2002)? Write ca. 500 (+/- 20%) words.

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| **Answer:** | Köppel (2024) provides 10 properties characterizing wicked problems. 5 of the proposed characteristics essentially state that wicked problems have extremely fuzzy definitions (no definitive formulation; no stopping rule; no test for solution; solutions are good-or-worse rather than true-or-false; every wicked problem is a symptom of another one). 4 properties concern the limited/not well defined methodology at our disposal (solutions are one-shot; each problem is unique; set of solutions is not described; nature of the solution depends on the interpretation of the problem). Finally, wicked problems place a huge responsibility on the planners, since the consequences of their actions will be borne by populations at regional, national or even continental level.  The statement that every wicked problem is a symptom of another problem (#7 in the list presented by Köppel, 2024) is interesting when taken to its logical conclusion. It implies that going up the chain of problems (that is, from symptoms to the underlying problems), we either 1) end up in a non-wicked problem, or 2) we find a circular dependency of wicked problems. Since option (1) is self-contradictory (because if a wicked problem was only a symptom of non-wicked problem, then it could be solved by resolving the underlying problem, which has a well-defined solution by the virtue of not being wicked), we are left with option (2). For example we can observe such circular causation between global warming and increased use of AC, in turn contributing more carbon emissions. The example provided by Köppel (2024) is the pair of problems: 1) adoption of small modular nuclear reactors and 2) management of nuclear waste.  To elaborate on another point, Köppel (2024) gives an example of how the interpretation of the problem determines the nature of the resolution: in 2011, Germany introduced an absolute upper limit on subsidized PV capacities of 52 GW. Amnesty International (2025) shows how indigenous people’s rights were neglected due to treating energy transformation solely as environmental problem and not paying enough attention to the social dimension.  Let us now move do De Tombe’s (2002) characterization of Complex Social Problems (CSP). While there is a large overlap between CSP and wicked problems, CSPs also emphasize political agendas, emotions, and variety of cultural traditions at play. De Tombe (2002) also points out that the group of actors working against the problem often changes during the process.  De Tombe (2002, citing De Tombe, 1994) proposes a 6-step COMPRAM method of dealing with CSPs, intended to be democratic, transparent and structured. According to this framework, the process should take 6 to 12 months, involve diverse teams and engage all actors from the very beginning. The 6 steps of COMPRAM are: 1) analyze and describe the problem by a team of neutral content experts; 2) analyze and describe the problem by different teams of actors; 3) find interventions by experts and actors together; 4) anticipate the societal reactions; 5) implement the interventions; 6) evaluate the changes. The problem is approached at 7 layers, split between 3 normal verbal language layers, 3 visual mental model layers, and mathematical language model layer (De Tombe, 2002).  Finally, De Tombe (2002) makes two important linguistic remarks. First, COMPRAM should be considered a framework, meaning that it is a high-level approach but the exact methodology must be determined separately for each scenario. The second, perhaps more important, note is to avoid the term ”problem solving” when talking about CSP, because problems of this class rarely get completely resolved. Instead, De Tombe (2002) suggests to speak of ”changing” the problem. |

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| **References:** | Köppel, 2024  De Tombe, 2002  De Tombe, 1994  Amnesty International, 2025 |

4. After what you have learned in Module 3, what do you think is society’s role in sustainable energy transition. You are asked to give your own opinion. You are of course allowed to refer to the course literature to strengthen your arguments and perspectives. Write ca. 500 (+/- 20%) words.

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| **Answer:** |  |

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| **AI**  **Declaration:** | (List all the generative AI tools used in this assignment, if you have used any, and the purpose for using it. If you have not used generative AI, you should say that) |