

## **NTNU, TRONDHEIM**

Norges teknisk-naturvitenskapelige universitet

Institutt for sosiologi og statsvitenskap

### **EXAM IN POL1003 SPRING 2017 THE POLITICS OF THE ENVIRONMENT, ENERGY AND RESOURCE-MANAGEMENT**

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#### **ENGLISH**

The candidate must answer all ten questions. In the grading, the answers for each task will count equally for the final grade of the exam. Please note that all tasks should be answered relatively shortly.

- 1. What is the tragedy of the commons? When is its application useful and not so useful?**
- 1. Hva er allmenningens tragedie (the tragedy of the commons)? Når er den relevant og når er den mindre relevant?**
- 1. Kva er allmenningas tragedie (the tragedy of the commons)? Når er den relevant og når er den mindre relevant?**

All students should be able to give a rough description of what the tragedy of the commons is (TOTC), and how it is relevant for environmental politics. TOTC is an economics theory by Garrett Hardin, who argues that rational individuals act according to their own narrow self-interest, and behave contrary to the group's long-term interests by extracting more than collectively optimal from a resource, as this is rational at the individual level. The consequence of this individual behavior at the aggregate level is that common resources are depleted. The most popular example used by Hardin is the idea that when herders are to put their own cattle on the village commons, they recognize that putting an extra sheep on to the field will benefit their self-interest, while the costs in

terms of overgrazing are shared among all the peasants that use the commons. This logic makes all peasants put extra cattle on the field, ultimately leading to the depletion of the commons.

“Commons” within the environmental area include all resources that are not regulated by private property or the state. Prominent examples are the atmosphere, oceans, rivers and so on. Suggested mechanisms to control TOTC are privatization or point out a “manager” that allocates the resource which often means national or international institutions. The students who point out that this problem is particularly severe in the climate change debate, should be given extra credit for this. Those who bring in Ostrom’s (1990) criticism of the traditional application of the TOTC to local level overuse of resources where she points out that there are plenty of real-life examples where commons are managed in a sustainable manner, should be given extra credit for this.

Extra credit should also be given to those that point out that the TOTC can be placed within the survivalist discourse/Limits and survival discourse by Dryzek (2013). Those that also connect it to what Adger et al. (2001) define as the Global Environmental Management discourse should be awarded for this.

- 2. Present the main features of what Dryzek refers to as the discourse of economic rationalism.**
- 2. Beskriv hovedtrekkene i det Dryzek kaller den økonomisk-rasjonelle diskursen.**
- 2. Beskriv hovudtrekka i det Dryzek kallar den økonomisk-rasjonelle diskursen.**

Economic rationalism (ER) is covered in Dryzek (2013) chapter 4. Most students should know that ER is a problem-solving discourse belonging to the broader category of “Environmental problem solving” alongside Administrative rationalism and Democratic pragmatism. It recognizes that environmental problems exist, and argues that the solution to these lies within the existing capitalist system. Thus, it is prosaic (the problems can be solved using existing measures) and reformist (holds that sufficient adjustments can be made within the status-quo framework of current industrial society). Most students should also know that ER is pro-market and employs market mechanisms to solve environmental problems. Better students will say that ER is skeptical towards the state, but recognizes that markets in environmental goods do not exist and therefore the state needs to create the market for markets in environmental goods. This is done in particular through the specification and enforcement of property rights in order for markets to function, as privatization solves ‘The tragedy of the commons’. Students should know that the ‘Polluters pay’-principle originally belongs to the ER discourse. Some students may also mention that ER has other market-mechanisms than privatization, such as selling off pollution rights, green taxes, and product information for consumers for ‘green consumerism’.

Decent answers should include that the basic entities of ER are Homo economicus – producers and consumers; Markets, prices, and property, and a minimum government. Natural resources and their limits exist, and they must therefore be regulated, but only as they serve human needs. The better answers will discuss the ambivalence of ER towards the state. Students should also know about the core assumptions of the discourse: Competition, not cooperation; some hierarchy needed, some benignity among experts needed; anthropocentric – nature to serve homo economicus. Students should also know the basic agents and their motives: humans seen as individuals with material self-interest; no active citizens, but the experts’ role is ambivalent. Key metaphors and rhetoric of the discourse: it is quite mechanistic – the world works as a machine, but needs maintenance.

Furthermore, when the state has provided the marketplace, then it should retreat: ER is anti-command and control, and favor rather free/freedom of markets when competently designed. Horror stories of government controls which produces perverse outcomes are quite common within ER.

Some students will also know that ER has been popular since the liberalization of the 1980s and its regulatory policy instruments are still dominant, but that it has not changed institutions. Those who point to that it can look a bit like Prometheanism, but is critically different in recognizing environmental problems, should be rewarded for this.

Extra credit should be given to students who point out the weaknesses with ER's instruments: Offset markets have no guarantees; Too low taxes will not limit pollution; that there is an ideological resistance to homo economicus; and that the ER worldview implicitly denies complexity.

- 3. What is net negative emissions?**
- 3. Hva er netto negative utslipp?**
- 3. Kva er netto negative utslepp?**

This is a slightly tougher task than question #1 (TOTC) and # 2 (Administrative Rationalism) which the weakest answers will probably not give a proper answer to. All that get credit from this should say something along the definition of Fuss et al. (2014: 850), that net negative CO<sub>2</sub> emissions is "the deliberate removal of CO<sub>2</sub> from the atmosphere by human intervention". To get average credits for this, students should provide some overview of some of the most prominent examples of this, in particular Bioenergy with Carbon Capture and Storage (BECCS) which assumes the use of carbon neutral bioenergy (the same amount of GHG-emissions is sequestered by biomass regrowth as is burned generating energy) with the additional aspect of the emissions from the burning of biomass being captured and stored in geological or ocean repositories. Those who add that this also provide much-needed energy should be given extra credit for this. Other ways to do this is through afforestation and reforestation, and more into the future, direct air capture and increased soil carbon storage. The very best students will point to that BECCS is particularly popular since it in contrast to afforestation and increased soil carbon storage is not associated with a saturation of CO<sub>2</sub> removal over time and that it is much less vulnerable to disturbance of the carbon stocks.

Those who give further information on the heavy reliance of the use of Net Negative Emissions in most Integrated Assessment Models of the Intergovernmental Panel on Climate Change (IPCC) scenarios that are consistent with reaching the 2°C target by more than 50% chance, should be given extra credit for this. The very best students will then go on to criticize the hazard of relying so heavily on technology which is mostly at the theoretical or experimental stage and which only has a very few examples of being rolled out in practice. Those who point out that BECCS is (i) still under development and the technology can therefore not be taken for granted; (ii) that it is currently very costly and that it is not certain that technological advances will make it cost-effective in the future; and (iii) that land-requirements and other social and political aspects may also serve as stumbling blocks to its successful implementation should be awarded for this.

- 4. Explain the EU's primary energy security concerns.**
- 4. Forklar EUs hovedfokus når det gjelder energisikkerhet.**
- 4. Forklar EUs hovedfokus når det gjeld energitryggleik.**

All students are expected to know that EU is a net energy importer, primarily of oil and gas. Following this, they should also be able to say that the EU is primarily concerned with security of supply, in line with the dominant view in industrialized countries. Students should be credited for defining security of supply, which entails the concern of energy-importing countries of whether they will have a secure and stable delivery of energy resources at reasonable and predictable prices to run their industrial economy uninterrupted.

The better answers should then move on to discuss EU's challenge with (i) the lack of internal coherence and coordination within the EU and different member states' different energy policies and strategies; (ii) the role of Russia as a core energy exporter to EU and the difficulties in trading in strategic resources with a revisionist great power. Students that provide examples of differences between EU countries and their relation to Russia should be awarded extra.

- 5. How does the Global Environmental Management discourse's explanation of desertification fit with recent research on the Sahel?**
- 5. Hvordan forklarer den såkalt Global Environmental Management-diskursen forørkning og hvordan passer dette med nyere forskning på Sahel?**
- 5. Korleis forklarer den såkalla Global Environmental Management-diskursen forørkning og korleis passar dette med nyare forskning på Sahel?**

This question is a bit tricky and requires that the students have read both the article by Adger et al. (2001) and the one by Herrman and Sop (2016). Good answers should be able to say that Global Environmental Management (GEM) is a discourse which takes the notion of environmental crises in the Global South for granted and is in general quite pessimistic – these crises are severe and will have serious socio-economic and political consequences in developing countries. It takes the processes of deforestation and desertification for granted and has a very general explanation of it.

Most students should know that this is a Western-centric and technocentric view of environmental problems in the Global South. More developed answers will say that the model builds on a neo-Malthusian understanding of resource degradation, by which the local population (primarily farmers and herders) in LDCs are seen as the villains causing desertification through over-exploitation of fragile lands, deforestation, and over-grazing of their herds. Combating population growth in LDCs is therefore of great concerns to GEM. The victims in the GEM discourse are the very same farmers and smallholders of the Global South. Enter the heroes in the GEM discourse, which are scientific experts (primarily from the Global North) with blueprint solutions to combat desertification through controlling the acts of local farmers and herders. Good answers will point to UNEP as being one important proponent of GEM.

The best students will then go on to address the weaknesses of GEM when it comes to understand the extent and extension of desert land in the Sahel. First, new research has undermined the idea of human-induced desertification as drylands are seen as far more resilient than the neo-Malthusian theory assumes. Second, the main explanatory variable of vegetation cover, its reduction and recovery, in Sahel is rainfall, not local overgrazing. Very good answers also say that the re-greening

of the Sahel is not uniform, as slower-growing vegetation such as tress has not recovered to the same extent. Extra credit should be given to those who identify GEM as a convenient explanation for colonial and post-colonial authorities, several international aid donors, and some scientists. In cases where GEM has been implemented, the losers have been local farmers and herders.

- 6. Why is it hard to implement international climate politics according to Hovi, Sprinz and Underdal (2009)?**
- 6. Hvorfor er det vanskelig å implementere internasjonal klimapolitikk ifølge Hovi, Sprinz og Underdal (2009)?**
- 6. Kvikfor er det vanskeleg å implementere internasjonal klimapolitikk ifølgje Hovi, Sprinz og Underdal (2009)?**

Three main factors are brought forward by the authors:

Time inconsistency: Main point: Optimal choices at one point in time may not be optimal in the future. Reduction of GHG today will not bring profit for several generations, but it will be quite costly today. A range of other and competing problems are likely to arise over that period of time, such as economic crisis or poverty reduction. Main problem: Need to change the current fossil fuel based economy with a low GHG economy.

Domestic politics: Main point: National governments will be skeptical to tie themselves to enforcing costly long-term environmental policies adopted at the international level. Main problem: Multiple governments will be in power, and will ultimately be most concerned with their own survival. A government will (a) more preoccupied with short term consequences, and (b) more cautious in adopting policies that are perceived to impose costs on, or run counter to the values of, its own core constituency.

International anarchy: Main point: Reduction of GHG emissions benefits all countries (it is a collective good). Main problem: To provide collective goods give incentives for free-riding. The global commons problem means that climate change cannot be linked to emissions from a specific country.

Extra credit should be given to those that emphasize the interplay between these factors. Good student's will also go on to say something on how these factors have worked in practice to undermine an effective international climate regime. The very best students will also give examples of measures to reduce the malignancy of these problems: time inconsistency (eliminate alternative options; tying hands; rational ignorance); domestic politics (tangible benefits to specific sectors; conform to core ethical principles; early warning mechanisms and consensual knowledge base; enhance capacity of IPCC and the like; keep the problem on the agenda); anarchy (intensify targets; internationally harmonized domestic tax; imposing emissions-reducing technology standards)

- 7. How has the relationship between states and oil companies varied over time internationally?**
- 7. Hvordan har forholdet mellom stater og oljeselskap variert over tid internasjonalt?**
- 7. Korleis har forholdet mellom statar og oljeselskap variert over tid internasjonalt?**

This is mainly a descriptive assignment building mainly on Claes (2011) but Fermann (2009) also contains some of this. The students are expected to provide a brief overview of the modern history of oil from the end of WW1 to 1971 starting with the Sykes-Picot line, and extended to include the US with the so-called Red Line agreement in 1928 and the long domination of the Seven Sisters; followed by the rise of the OPEC in 1971 causing higher taxes on oil and seeing nationalization of oil companies, in turn causing increased oil prices which lasted to roughly 1986/mid1980s when the oil industry was less profitable and there was more of an alignment of interest between companies in exporting and importing countries; and the final phase 2003-2010 with the rise of new forms of cooperation between states and companies, not least national oil companies from importing states that engage in foreign extraction and are much less constrained by the profit imperative than other companies that go outside their country's boundaries to extract oil. The best answers will discuss the changes in the company-company, state-state and state-company relations over time and tie these to major world events and dynamics such as the break-up of the Ottoman empire, the British Navy's switch from coal to oil, the carving up of the Mid-East, the post-World War II industrial boom, and its slow-down from the late 1970s onwards, before it picks up again in the early 2000s with the rise of BRIC countries in particular China, and political shifts in the greater Mid-East during the 1970s. Those who describe the current situation with a more diverse set of players and how that is likely to reduce collective action in the future, should be awarded for this. The very best students will also describe how the strong role of states in the oil market affects the price and other market dynamics.

8. Discuss the statement: The 2011 nuclear disaster in Fukushima has been good for Japanese renewable energy policy.
8. Diskuter påstanden: Atomkatastrofen i Fukushima i 2011 har vært gunstig for japansk fornybar energipolitikk.
8. Diskuter påstanden: Atomkatastrofa i Fukushima i 2011 har vore gunstig for japansk fornybar energipolitikk.

#### Answer guide

The short answer: Yes, it has been good for Japanese renewable energy policy. With Fukushima, almost 30% of the electricity production was lost overnight, and this had to be replaced somehow. Renewable energy was part of the answer. Consequence; the capacity of solar PV increased from 3.6GW in 2010 (the year before Fukushima) to more than 40GW in 2016. Annual installations increased from less than 1GW to up to 9-10GW.

BUT: What is also very evident is that solar and wind has developed very differently since Fukushima. Wind power installations since 2011 have actually fallen compared to wind power installations before 2011, and in one of the post-Fukushima years, 100 times more solar capacity was installed than wind power capacity (the two had been equal as late as 2008). Thus, is it possible that Fukushima has had completely different effects on wind and solar? The likely answer is yes. Fukushima led to the Japanese Diet [parliament] implemented a Feed-in Tariff (FIT) for both solar and wind (in 2009 a FIT for solar only had been implemented, and it had already led to solar installations increasing somewhat). It was slightly more beneficial for solar than for wind, but it was

really quite generous for both renewables. There is very little doubt that the FiT has driven massive solar growth. The question is why it has not done so for wind. And the probable answer is 1) a vested interest answer and 2) a structural answer (and the two are kind of linked). First, the opposition from the utilities were much stronger against wind than against solar, and METI (the most important part of the government bureaucracy) actively supported solar, but did not care about wind). Solar was one of METI's success stories (METI creating a growth industry for the future), and thus there is a commitment to solar from METI. Thus, METI has successfully broken down the resistance of the utilities on solar in a way they never bothered trying with respect to wind. Second, a lot of the solar capacity is installed directly on buildings (residential and industry). These buildings are almost always already connected to the electric grid. Thus, in many ways, the utilities have no choice but to accept solar. But wind turbines are not. They are set up in faraway and windy places, where there is often only weak grid connections. Maybe the grid is not even built. Thus, someone needs to pay for the connection, and the utilities do not like to do this, as they are then essentially paying for a competing electricity producer to be allowed onto "their" grid. Thus, a FiT is good also for wind, not just for solar, but only if it is also combined with laws and regulations that mandate the utilities to connect the wind power to the grid. In many countries, renewable energy has so-called priority access to the grid. Japan does not have this. And because wind power has fewer supporters in the bureaucracy and stronger opponents in the electric utilities, it has not succeeded in getting priority access to the grid. Thus, for wind power, Fukushima will not be very beneficial if the main tangible benefit from it is the FiT.

(Also, there are practical reasons. Japan is densely populated, and it is easier to expand solar than it is wind since solar often goes on already existing rooftops and thus does not require extra space, but this only accounts for a little bit of the difference in success between solar and wind since 2011. And Japan has also introduced fairly extensive environmental impact regulations, which means that wind power development has been slowed down temporarily, but this also explains only a small part of the divergence between wind and solar post-2011.)

A good answer also reflects a little on why Fukushima has been good for renewable energy, beyond the simple fact that Japan lost a lot of capacity and needed alternatives to replace it, and it would be natural then to look at the same reasons why solar and wind have been treated so differently. In other words, something along the lines that for four decades, Japanese energy policy had been gridlocked, with virtually no change, because of the close relations between policymakers (METI and the LDP) and the industry (electric utilities and nuclear). Fukushima made this relationship, and the negative consequences of it, very obvious: Namely, an industry without control or governmental oversight (in principle nuclear was regulated, but for all practical purposes it regulated itself). Thus, after Fukushima, it became very clear that Japanese vested energy interests had been too strong, and that Japan needed to find other energy solutions. It broke down much of the power in the iron triangle of Japanese energy policy (METI, LDP, energy industries). Public opinion supported renewable energy, METI started supporting renewable energy far more wholeheartedly, and it became very clear that renewable energy now became part of the established energy solutions for

the future rather than just experimental and small-scale solutions for wealthy people and environmentalists.

And finally, the students should also be aware that nothing lasts forever. Which means that even if the old energy interests were clearly weakened by Fukushima, the nuclear industry is working hard to regain part of its old position. The present Japanese government is quite pro-nuclear, and wants to phase nuclear back in once a number of new safety regulations have been fulfilled. This, in combination with the fact that the FiT is becoming very expensive means that we cannot know for sure if Fukushima permanently changed Japanese renewable energy policy or if it only opened a temporary window. Chances are that some changes are permanent whereas others are subject to political fights and vested interest battles over the years to come. It has shaken up energy policy in a country where it had been completely gridlocked for 40 years, and this is a good thing almost no matter how one looks at it, but it is hard to know if the effects will last forever.