Institution: London School of Economics and Political Science

Unit of Assessment: 32: Philosophy

Title of case study: Improving Dutch climate change and sustainability policies

1. Summary of the impact (indicative maximum 100 words)

LSE philosophers have encouraged the Dutch Government to approach sustainability and climate change through experimenting with behavioural policies (rather than through regulation and taxation) and through scenario-based planning (rather than through probabilistic approaches). LSE research on behavioral policies is reflected in a key recommendation to Government by the Dutch Council for the Environment and Infrastructure (RLI) which has affected the way in which behavioural policies concerning sustainability enter the public debate in the Netherlands. LSE research on scenario-based planning is reflected in the Royal Netherlands Meteorological Institute [KNMI] Advisory Board Report entitled "Towards the KNMI's13 Scenarios". The Delta Programme, which is geared towards climate change adaptation (flooding and freshwater) in the Dutch lowlands, has incorporated this scenario-based approach in their planning.

2. Underpinning research (indicative maximum 500 words)

Research Insights and Outputs:

Bovens' article [1] was the first to discuss Sunstein and Thaler's much acclaimed book *Nudge* (2008) within the framework of moral philosophy. He lays out a set of conditions on what constitutes a *Nudge* and examines the many variables that enter into determining the permissibility of a *Nudge*. For example, one should consider (i) whether particular *Nudges* respect reflective preferences; (ii) whether they infantilise the citizenry and hamper the opportunity to develop moral character; (iii) whether there is a democratic mandate for the policies in question; (iv) whether there is less or more urgency to the situation, (v) to what extent autonomy is respected; and (vi) whether they respect a requirement of transparency on governmental agency. Bovens [2] discusses the constraint of respect for autonomy in *Nudge* policies. Bovens [3] extends [1] and [2] to behavioural policies in the area of sustainability. He creates a taxonomy and constructs a database of behavioural policies in areas of sustainability, including recycling, food waste, domestic energy usage and transport. He lays out ethical constraints on the implementation of such policies, in particular, how to deal with (i) the imposition of new risks; (ii) threats to various vulnerable groups; and (iii) violations of privacy and truthfulness. This discussion leads to a number of recommendations concerning the duties of and caveats for government in instituting behavioural policies in the area of sustainability.

The LSE climate modelling group was formed in 2009 when Frigg and Leonard Smith (Director of the Centre for the Analysis of Time Series at LSE) started collaborating on a project about the epistemic warrant for climate predictions which would ground policy making in evidence. Political decisions have to be taken long before climate predictions become testable, and so we have to act on predictions before there is empirical evidence supporting them. This poses a special challenge to evidence-based policy making towards climate change.

Increasingly, climate predictions handed down to policy makers are fine-grained *probabilistic* predictions, specifying the probabilities that certain specific local events will occur. Using state of the art climate models, uncertainty about parameters and initial conditions is turned into outcome probabilities, and these probabilities are offered to policy makers and the general public as decision relevant information. The UK's climate policy is almost entirely based on such probabilities (generated by UKCP09), and there is an international trend towards adapting these probabilistic methods.

But is there epistemic warrant for such predictions? The project has studied the methodology behind such predictions and found that they lack robustness and can be seriously misleading in

policy making. In climate models two problems come together, viz. chaos and model error, with the consequence that probabilities in the model may have little connection with the real world. This conclusion is supported both (i) by arguments showing that probabilities are the wrong tool to capture uncertainties in climate models; and (ii) by simulations in a simple system where the mismatch between model-probabilities and the system's behaviour become easily palpable. Instead, it is recommended that (a) climate scientists use model-based reasoning to formulate different plausible *scenarios*; that (b) decisions about adaptation are taken on the basis of these scenarios; and that (c) information to the citizenry is disseminated in these terms [4, 5 and 6]. Bovens and Frigg are both members of LSE's Grantham Research Institute on Climate Change and the Environment, which in turn has fostered conversations and linkages between their research projects. Bovens' work on risk in the context of sustainability is informed by uncertainty management in policy making. Frigg's work on knowledge representation of climate change predictions securing optimal end-user uptake is informed by behavioural insights.

Key Researchers: Bovens has been at LSE since 2004; Frigg since 2003.

3. References to the research (indicative maximum of six references)

1. Bovens, L. 2008. 'The Ethics of Nudge' In: Till Grüne-Yanoff and S.O. Hansson *Preference Change: Approaches from Philosophy, Economics and Psychology*, Berlin and New York: Springer, Theory and Decision Library A, Chapter 10. pp. 207-220. http://www.bovens.org/TheEthicsFV.pdf

2. Bovens, L. 2013 'Why Couldn't I Be Nudged to Dislike a Big Mac?' *Journal of Medical Ethics*, 39(8), pp. 495-6. DOI:10.1136/medethics-2012-101110

3. Bovens, L. 2013 'The Responsibility of Government for Soft Sustainability Policies' RLI Publication. (web-published in August) (in Dutch, English translation available on request) http://www.rli.nl/sites/default/files/linkitfiles/essays_duurzame_gedragspatronen.pdf

4. Frigg,R., L. A. Smith and D. A. Stainforth (2013): 'The Myopia of Imperfect Climate Models: The Case of UKCP09', forthcoming in *Philosophy of Science* (Dec issue) Available from LSE on request. http://www.lse.ac.uk/CPNSS/pdf/UKCPPaper.pdf

5. Frigg, R., S. Bradley, R. L. Machete, and L. A. Smith (2013): 'Probabilistic Forecasting: Why Model Imperfection Is a Poison Pill', forthcoming in H. Anderson, D. Dieks, G. Wheeler, W. Gonzalez and T. Uebel (eds): *New Challenges to Philosophy of Science*. Berlin and New York: Springer. http://www.lse.ac.uk/CATS/Publications/Publications%20PDFs/ProbabilitisticForecastingWhyModelImperfectionisaPoisonPill.pdf

6. Frigg, R., S. Bradley, H. Du and L. A. Smith 'Laplace's Demon and Climate Change', Grantham Institute Discussion Papers, available at: http://www.lse.ac.uk/GranthamInstitute/publications/WorkingPapers/Papers/100-109/WP103-laplaces-demon-climate-change.pdf

Drafts of Frigg's work have been presented at conferences with practitioners and have been circulated since 2009. Frigg has had sustained discussions of his work with the KNMI Chief Scientist, Arthur Petersen, at the latter's request, since 2010. This is the basis of the impact.

Evidence of Quality: 2 and 4 are in highly ranked peer-reviewed journals. 1 and 5 are in books for a leading press. 3 is a commissioned piece and is currently published on the RLI website (forthcoming in hardcopy as an RLI publication). 6 is currently published on the Grantham website. Frigg's research was supported by the Munich Re Research Programme with a personal research grant (£32K) and is an integral part of a new three-year AHRC project entitled "Managing Severe Uncertainty" held in LSE Philosophy (2013-16, £725K).

4. Details of the impact (indicative maximum 750 words)

There is a political demand that policies are made transparent, but *Nudges* rely on less than fully rational decision-making and they work better when their implementation is not made fully transparent to the subjects. Bovens has argued that there is a difference between *type transparency* (i.e. transparency about the use of *Nudges* in policy making) and *token transparency* (i.e. transparency at the time of implementation of a particular *Nudge*). *Nudge* policies should be type transparent and though they need not be token transparent, they do need to be *in principle* token transparent—i.e. it should be *possible* for an attentive subject to recognise a *Nudge* at the time of implementation. This insight is taken up in a UK House of Lords *Behaviour Change Report* which cites Bovens' work [7] and in key RLI recommendations [8, 9].

In his RLI contribution, Bovens makes a range of specific recommendations which are reflected in the RLI's recommendations to the Dutch government: (i) behavioural policies should respect the private sphere and life-style of citizens, unless there is harm to others; (ii) behavioural policies that provide rewards for the targeted behaviour should make sure that the rewards are *in the same sphere* as the targeted behaviour to avoid charges of cynicism and manipulation; (iii) government should maximise the mitigation of new risks that are introduced due to the institution of behavioural policies; (iv) behavioural policies should reach vulnerable groups and not encourage segregation and stratification; (v) social advertisement should be truthful so as not to erode trust in government; (vi) behavioural policies should be seen as part of a mix of policies to encourage sustainability (including regulation); (vii) behavioural policies are best implemented at a local level; (viii) local initiatives must be carefully monitored: There should be a threat of regulation if partnerships with businesses fail and outputs should be measured so as to identify models of good practice. This contribution is included in a document containing three other academic contributions, an overview, and a set of policy recommendations by the RLI and was approved by the RLI in June 2013. The material has been communicated to Dutch policy makers and it is at the core of the RLI's advice [8, 9] to the Dutch government and parliament.

The Royal Netherlands Meteorological Institute (KNMI) advises the Dutch Government on the climate adaptation policy which is embodied in their Delta Programme [10]. In 2012, they published the "Advisory Board Report: KNMY'13 Scenarios". In 2011/2012, the Chief Scientist of the PBL Netherlands Environmental Assessment Agency, Professor Petersen, who is also a core member of the KNMI Advisory Board, approached the LSE Climate Modelling Group (CMG) for advice on what kinds of evidence should form the basis of future climate policy decisions. Should the KNMI follow recent trends and adopt a probabilistic approach, or should it follow a scenario-based approach? This issue is pressing in the UK as well, because the UK government has opted to endorse a probabilistic approach and funds a large scale project (UKCP09) that provides decision makers with fine-grained probabilistic forecasts for future values of a number of decision-relevant weather variables.

The LSE group's research shows that the scenario-based approach is preferable because probabilistic approaches make claims that are not warranted by the scientific evidence. Furthermore, the content of reports based on probabilistic approaches is conveyed to the citizens through the media in such a way that they do not become aware of the severity of the situation which leads to inaction among politicians and policy makers on the ground. Scenario-based approaches display both a higher level of scientific sincerity and accountability and warrant greater penetration to the citizen base.

Petersen has been affiliated with LSE as a Visiting Professor since 2009 [11]. Through his interaction with LSE CMG he has become convinced of the perils of probabilistic climate predictions and shares the group's rejection of such methods as a basis for decisions in public policy. He had a crucial influence on the contents of the Advisory Board Report [12]. He communicated the LSE CMG's critical outlook to the Board. Notwithstanding considerable pressure to adopt the now-fashionable probabilistic approach, KNMI has decided not to do so and its choice for a scenario-based approach permeates the document.

We do not pretend that there was a one-way street from the LSE CMG research over Peterson's

intervention to the KNMI's final position. Ideas are born and developed in context with mutual enrichment. But the import of the LSE CMG's work and Frigg's co-authored publications is substantial, as is clearly evidenced in the attached letter by Peterson [13].

Our work has had an impact on the terms of the debate and on the content of the advice to policy makers offered by the RLI [8 and 9] and the KNMI [13 and 14]. *Why does this impact matter?* First, RLI's recommendations set out the potential and moral scope of behavioural policies in the Netherlands, which has so far been relatively averse to such policies in comparison to, say, the UK and Germany. Such policies leave the choice set intact and hence respect freedom and they stimulate the search for creative local solutions, Second, LSE CMG's work, through the KNMI advice, counteracts a recent international trend towards probabilistic climate forecasting as a basis for policy making. This trend is worrisome because it is not supported by scientific evidence and hence erodes trust in science and because it adds needless and unwarranted complexity to the information provided to policy makers

5. Sources to corroborate the impact (indicative maximum of 10 references)

All Sources listed below can also be seen at: https://apps.lse.ac.uk/impact/case_study/view/79

7. Behaviour change. Science and Technology Committee. House of Lords. 11 July 2011. http://www.publications.parliament.uk/pa/ld201012/ldselect/ldsctech/179/17902.htm with references to Bovens' work in Chapters 2 and 6.

8. "Sustainable Behavioural Patterns" (in Dutch) RLI website describing the advisory project and introducing the studies. This website contains the link to Bovens' [3]. http://www.rli.nl/Werk-in-uitvoering/duurzame-gedragspatronen

9. "Behavioural knowledge in policy: What may and should the government do to stimulate more sustainable behaviour" (Confidential RLI document in Dutch; English translation of sections addressing Bovens' input available upon request)

10. The Delta Programme website: http://www.deltacommissaris.nl/english/topics/ The Decisions taken in the programme are based on its "Scenarios": http://www.deltacommissaris.nl/english/topics/delta_scenarios/ The website states explicitly that key parts of the programme were drawn up on the basis of the climate scenarios of the KNMI.

11. Petersen's entry on the LSE's website confirming his status as a visiting professor at LSE http://www2.lse.ac.uk/CATS/Whos%20Who/Visiting%20Professors%20and%20Fellows.aspx

12. The Advisory Board report: http://www.knmi.nl/klimaatscenarios/documents/AdvisoryBoard_report_towards_KNMI13.pdf The document contains extensive argumentation why the scenario-based approach is preferable to the probabilistic approach. This move is largely due to Peterson's presence in the board. https://apps.lse.ac.uk/impact/download/file/1611

13. Letter from Chief Scientist of the PBL Netherlands Environmental Assessment Agency, confirming the impact of the LSE climate modelling group. This source is confidential.

14. This website documents a conference in the Munich Re offices under the auspices of LSE Centre for Climate Change Economics and Policy with contributions by Frigg, Smith and Peterson. http://www.munichre.com/en/group/focus/climate_change/research/putting_knowledge_into_practice/default.aspx Source file: https://apps.lse.ac.uk/impact/download/file/1218