

A Methodology to Construct Fictional Narratives for Economic Policy*

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Abstract

We propose a new methodology to systematically construct fictional narratives, that can help people to imagine consequences of future events, and measure how narratives impact beliefs. We construct two narratives that depict emotions expressed by a fictional protagonist in imaginary future, bleak due to climate change or energy dependence, and show experimentally that exposure to these narratives increases contributions in a Public Goods game, framed as payments towards the construction of new nuclear plant in the Netherlands. Our results suggest that fictional narratives can be used (and misused) as a tool of economic policy that allows conveying relevant information to people at times of crisis and emotional distress when abstract factual information can be difficult to process or comprehend.

Keywords: *narratives, cooperation, public goods, economic policy.*

*All mistakes are our own. We would like to thank the participants of the BEELab meeting at Maastricht University for valuable comments.

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1 Introduction

Complex societal issues such as climate change, pandemics, or demographic shifts pose the challenge for democracies to make and implement knowledge-based decisions that not everyone affected can equally understand. This problem cannot be addressed sufficiently by top-down governance or technological fixes but rather requires societal engagement. The reason is that, following the normative ideal of deliberative democracy, only those policies can claim validity to which all those potentially affected could agree [Habermas, 1992]. This presupposes a level of understanding of the issue at hand that increases with the complexity of arguments considered relevant and might not be always realistic in the new emerging contexts related to climate change, etc. In our view, using fictional narratives for policy can address both sides of the problem: the comprehension of arguments and their considered relevance for a policy issue.

That this is not only a theoretical problem becomes more clear when we consider how the trust in experts and authority—that is meant to compensate for the need for legitimizing decisions by outsourcing understanding to experts as a form of coping with complexity [Luhmann, 2000]—is more and more contested by concerns of strategic interests, identity politics, and an attention economy. In order to not exclude large swaths of the population with the ambition for rational argumentation, a radical understanding of deliberative democracy should not presuppose, but should rather deliberate about the form and relevance of arguments to be taken into account. This is where our perspective on narratives gets relevant for three reasons, namely (1) to give structure to a policy discourse regarding arguments considered relevant, (2) to aid the comprehension of arguments, or respectively “outsourcing understanding” to the narrator, and (3) to give a voice to people who lack communicative skills for rational argumentation, but instead express their expectations and concerns in narrative form.

Concerning the first point, it becomes clearer now with the advent of internet that more information cannot increase acceptance of unpopular decisions. The idea that people simply lack information disguises the often underlying value conflicts or ambiguous perspectives and can generally be considered outdated [Wynne, 1991]. People do not “assimilate, or experience science different from other elements of knowledge or judgment” (ibid.) and facts only matter within the frames and contexts that structure a policy discourse. That is why large parts of political communication are mainly about setting frames that stage evidence and authority in favor of preferred positions. To understand the role of narratives in public discourse, Roland Barthes [Barthes and Heath, 1977] suggested the homology that sentences become meaningful within a narrative, just as words make sense within a sentence. Understanding a policy discourse as the third level of meaning, therefore, means understanding the narratives that give it structure and make uttered claims relevant. Following this structuring idea, Hayden White examined how narrative structures assemble and give meaning to very heterogeneous historical sources [White, 1980]. Similarly, narratives about the future unfolding of present decisions assemble and give meaning to data and models [Roßmann, 2021]. Therefore, when a debate is less rooted in an evidence-seeking rational argumentation, examining underlying narratives can reveal conflicting perspectives or value preferences

and help people take a different perspective.

Engaging with narratives is often considered an alternative to rational arguments as narratives only “simulate” the experience of how facts might matter within a context instead of reasoning about their evidence or consistency [Oatley, 1999, Green, 2004]. Given that processing factual information often requires skills and background knowledge that only a small part of the population shares, the paradigm of “homo narrans” suggests that narrative understanding is more efficient, “natural,” and constitutes a socio-cultural prerequisite for being in a community [MacIntyre, 2007, Fisher, 1984, Bruner, 1990, Somers, 1994]. Therefore, it is no wonder that science communication extensively studied the application of narratives [Dahlstrom, 2014]. Instead of asking laypeople to trust experts, narrative comprehension comes one step closer to the ideal of universal understanding of the argument because it sheds light on why certain evidence and arguments might matter for certain values at stake. Moreover, awareness of co-existing narratives provides understanding of possible alternatives and prevents the danger of political tunnel visions that bypasses critical assessment.

The aim of this project is not only to test a tool for economic policy but also to better understand the role of narratives in personal psychology, formation of beliefs, and decision-making. Especially in policy-related fields, a hermeneutic of popular stories provides insights into how people make sense of policy or technology issues [Grunwald, 2020]. Thus, taking such stories seriously can help to include people who would have been otherwise excluded from a discourse that only relies on rational argumentation. Our approach also suggests that we should not think of narratives only as a medium to convey values into a rational deliberation but also as a tool for encouraging people to tell and listen to each other’s stories as part of empowerment and community creation. As Laurence Kirmayer (2002, p. 749) states, “the ethics of storytelling has its necessary counterpart in the ethics of listening, of witnessing and taking part in the creation of community through copresence.”

To discuss the use of narratives in economic policy, we distinguish the process of *democratic will-formation* from the subsequent *policy implementation*. This distinction is closely linked to the distinction of using narratives for *comprehension* or *persuasion*:

“Do I want to facilitate potential controversy through greater understanding or reduce potential controversy through greater acceptance? Can I justify manipulating my audience?”
[Dahlstrom and Ho, 2012, p. 610]

The will-formation calls for maximized mutual understanding of perspectives and arguments and requires generating attention to ongoing debates and decision points. Narrative comprehension can support democratic will-formation, for example, by making the relevance of technology for different lifeworlds better understood. But still, the selection and encouraged dissemination of popular narratives might exclude unpopular ones from the debate because medial space and peoples’ attention are limited. Besides, it remains an open question if co-existing narratives deepen or mediate value conflicts.

Reaching consensus or agreement with narrative persuasion stands against the ideal of deliberative democracy’s “unforced force of the better argument” – unless one understands narratives that aim at

comprehension as a means for including marginalized groups in an otherwise elitist discourse [Kohn, 2000]. An ethical perspective on means and action (deontology) might generally discourage the use of narratives due to the tenuous influence on people's deliberation and autonomy, especially when only selected arguments and value preferences are represented [Dahlstrom and Ho, 2012]. However, from the perspective of consequences (consequentialism), one can justify the use of narratives in will-formation by stating that the value of raising public awareness for a specific or a neglected perspective in debates, such as for example nuclear waste management, is greater than the independent will-formation [Smeddinck and Roßmann, 2022].

Narrative persuasion can also aid in implementing democratic decisions at lower costs. The greater good of a healthier or more sustainable behavior might justify using narratives with persuasive intention as a form of "governance," especially when actors with commercial interests dominate the arena. To better understand and assess cases when actors have ulterior motives or can use knowledge as power, virtue ethicists might call for more narrative literacy. This includes ways of how narratives disguise or selectively highlight information (framing), claim realism and relevance in their indices and references (authority), and bypass or trigger rational reflection (transportation). These three dimensions follow Aristotle's rhetorical trinity of logos, ethos, and pathos, and structure our approach to the purposeful construction of narratives for persuasion (see Section "Narrative construction").

In this study, we test experimentally whether narratives for persuasion can be useful for economic decision-making and policy. Specifically, we propose a scientific methodology to construct *fictional narratives* that can help people to better imagine contingent negative consequences that must be prevented. Alluding to the emotions of a fictional protagonist, who suffers from the imaginary negative consequences, can be a shortcut that could allow people to understand the real costs that they might incur due to the unfamiliar crisis that they have never encountered before. Despite the fact that actual information is seemingly "obfuscated" by the imaginary settings and feelings of the protagonist, this way of communication is much more natural and can potentially reach any human being quickly and efficiently. This is simply because fictional narratives directly tell people how they might feel in unknown circumstances without going through the intermediate steps of figuring this out from factual information that is often abstract and difficult to comprehend. When people are able to imagine how they might feel in case of a bad outcome or what adverse physical settings they might find themselves in, they can react adequately even if they got convinced by a fictional story.

Our methodology aims to construct such fictional stories, or narratives, that provide an emotionally appealing description of the potential consequences following a bad outcome—or unsuccessful attempts at fixing it—and describe the process of psychological change of a protagonist who has experienced these consequences. We hypothesize that such narratives can help people to imagine what *their situation* would be like and thus can allow them to make better decisions based on more realistic assessment of their own personal costs in case the bad outcome takes place.

To test this idea, we constructed two narratives related to the currently active discussion of the future of nuclear energy in the Netherlands. Given realistic assessment of the available alternatives and tak-

ing into account the possible environmental and societal consequences, the scientific expertise and the majority of Dutch citizens agree that nuclear energy is a good solution for the country. However, many people also voice concerns about various issues that, in their opinion, make nuclear energy unattractive. This setting provides a good testing ground for our methodology. The consequences of planning more nuclear plants are complex and highly uncertain. Thus, it is reasonable to believe that some people might be confused about this debate and that narratives can help them to make sense of some central issues at stake when people decide on the future of nuclear energy.

To test whether our narratives were successful at convincing people to accept nuclear energy as a viable solution, we compared the contributions in a Public Goods game [Isaac et al., 1994], framed as payments for constructing new nuclear plants, between subjects who were exposed to a narrative and a control group [Osborn et al., 2015, Hillenbrand and Verrina, 2022]. We found that both narratives significantly increased the contributions by 18%, thus validating our hypothesis and methodology.

2 Methods

The experiment was conducted in Dutch using the combination of a Qualtrics survey and subjects recruited at prolific.co. Overall, there were 450 participants, of whom 405 unique (45 subjects participated in two experimental sessions). Participants were recruited with one participation condition: Dutch as a first language. No pilot experiments were run or participants discarded.

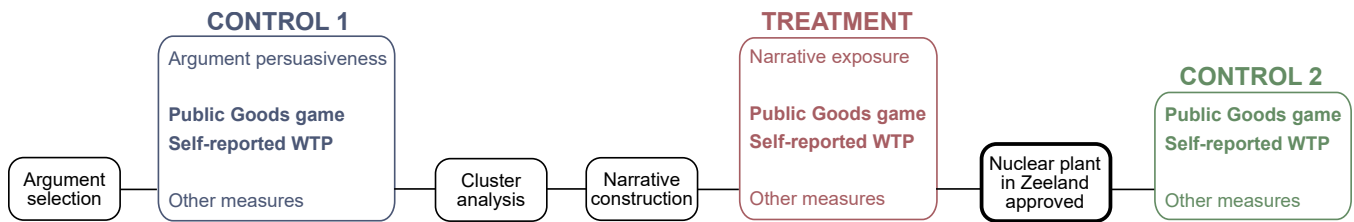


Figure 1: Timeline of the experiment from left to right and the point in time when the nuclear plant in Zeeland was approved by Dutch government.

Figure 1 shows the timeline of the experiment from left to right. Supplementary material S7 contains all instructions (for Dutch version see S8).

In the first step, we selected arguments related to nuclear energy that were collected from the most popular mass media [McCombs and Valenzuela, 2020]. We included articles on nuclear power published by major Dutch news broadcasters as well as those produced by Google searches on “Arguments against nuclear power” and “Arguments in favor of nuclear power.” We collected all proposed arguments from these articles, grouped them thematically to lower the number of arguments, and formulated core messages of each thematic group. Twelve final arguments resulted from this analysis (see survey questions in Supplementary material S7.1).

We used the twelve resulting arguments to evaluate their persuasiveness in Control 1, the first experiment with 150 subjects, where we also elicited subjects’ contributions in the Public Goods game framed

as paying taxes for building a new nuclear plant that leads to lower electricity prices for everyone (see Supplementary material S7.2 for instructions). We also measured *self-reported willingness to pay for nuclear energy* (Self-reported WTP or SWTP; see Supplementary material S7.3) that is a non-incentivized analog of contributions to public good that we also use to estimate the effect of narrative exposure.

In the next step, we used the data from Control 1 to construct narratives. First, we conducted cluster analysis and found two clusters of subjects different in terms of twelve dimensions of argument persuasiveness. Then, for each group we chose the most persuasive arguments (though, see Supplementary material S1.3 for details) and constructed two narratives that take into account the arguments chosen for each cluster.

In Treatment, we exposed 75 subjects to each narrative (150 subjects overall) and then elicited their contributions in the Public Goods game and their self-reported willingness to pay (along with other measures). These are our main variables of interest. Finally, we ran Control 2 (150 subjects), which was the same as Control 1 (with some minor differences in other measures). The goal of Control 2 was to make sure that any effect we observe between Control 1 and Treatment is not the result of some (unknown) trend in people's opinions or change in their preferences that could have resulted from some event that took place between measurements.

Finally, a major unexpected event related to nuclear energy in the Netherlands did in fact take place between Treatment and Control 2. The Dutch government—after a long public debate and years of planning—has approved the construction of nuclear power plants in Zeeland. This presented us with a perfect robustness check to test if this event had an effect on the contributions and views expressed by our subjects.

3 Narrative construction

This section outlines our method to translate arguments with persuasive intent into narrative form. We understand narrative as the feature of a discourse that represents a sequence of events (story) held together by the plot [Abbot, 2007]. Audiences understand narratives by following their instruction of what is (explicitly and implicitly) to be imagined and what is thus true in fiction [Walton, 1990, Roßmann, 2021]. Such instructed imagination *calibrates* what the audience imagines and therefore allows a group to explore and experience fictional worlds from the inside instead of only assessing the forms in the text from outside the fictional world. The focus on the plot is crucial for crafting a narrative, as it makes the uttered sentences cohere and (implicitly) calls for a (moral) response. In the words of William Labov [Labov, 1972], the response “So what?!” is an indication that narrative is not coherent.

A text instructs imagining a plot by representing certain events or actions as a deviation from normalcy that calls for a resolution.¹ To do so, the text engages the audience's ideas about routines, social

¹In terms of Gérard Genette's narrative triangle [Genette, 1980], narratologists distinguish the guided imagination practice as “narrative situation” from the set of instructions as “narrative discourse,” and situate the fictional setting, imagined characters, and their actions or concerning events in the “story world.”

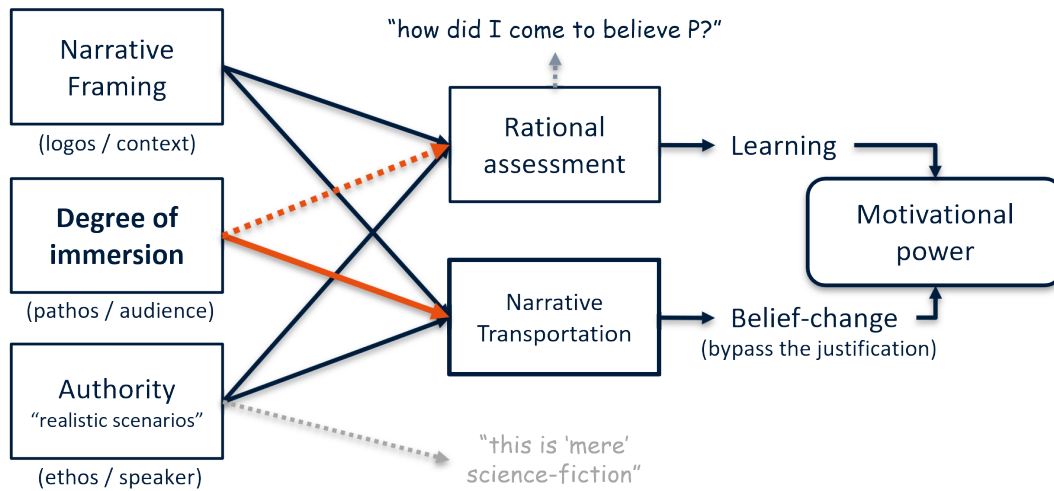


Figure 2: Three rhetorical dimensions of our study that decide about the deliberation or manipulation with narratives.

relationships, or relationships with technology, portrays them as what is normal, and incites imagining a deviation with meaningful consequences. When stories have closure, this emergent tension in the story is resolved by either restoring the old or suggesting a new normalcy. Thus, in order to write a narrative *about* nuclear power, features of nuclear power must not only be part of the setting or in a relationship to characters but they must be relevant for the plot.²

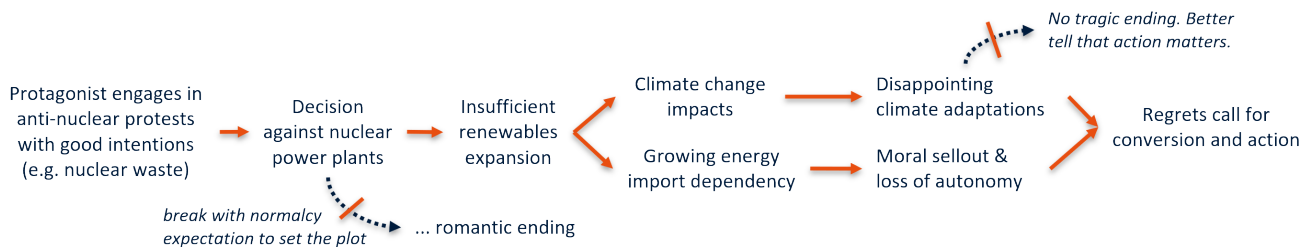


Figure 3: The two stories outline causal sequences of events. The stories end with a moral or policy implication but due to different arguments as represented in the plot.

Crafting a (technology) narrative is an iterative process on the level of the story (i.e. how emphasized technology features become crucial for the fictional course of action) and discourse (what words, voices, and other means suit to best tell this story for the audience). The process is iterative as characters and the setting define the story world and potential actions or events in the plot as well as provide the voice, authority, and sympathy for the author to speak to an audience. Iteration is also important to refine what information, e.g. about the protagonist or the setting, is explicit and what gaps are to be filled by the audience. The general implicit rule for engaging with narratives is to understand everything stated

²Likewise, there is an implicit convention in appreciating narratives to expect that any explicit detail matters for the overall plot or discourse that the story is considered to be part of [Barthes and Heath, 1977]. If you would, for example, make the protagonist a safety officer in a nuclear power plant or an opponent of nuclear power, the audience is encouraged to assume that this position or related stereotypes make a difference in the course of the story.

explicitly as being relevant for the overall plot and its consequent moral or policy implications. As outlined in Figure 2, we consider three dimensions for narrative design, namely the framing, immersion, and authority.

Narrative framing begins with deciding what the plot is about, or respectively what arguments or concepts to focus on. In our case, we followed the two clustered argument preferences and transformed them into causal sequences of events to make them matter (see Figure 3). While data or arguments can hardly sustain causal sequences in complex systems over long periods of time, they are central to narrative representations [Dahlstrom, 2015]. One could even argue that narrative is the only source for stating social causality over longer periods of time where fictional intentions, emotions, and motives determine the course of voluntary action and systems, power relations and networks the course of social action. Narrators can do this by controlling what's in the frame. As argued by Schellenberg and Journal of Philosophy Inc. [2013], imagination only affects behavior in relation to beliefs. Therefore, the narrative must provide indices to real-world settings or actions that the narrative simulates experiences about. Our narratives make use of a flashback to the real “anti-nuclear movement,” the slow expansion of renewable energy in Europe, and the Netherlands's beautiful landscape for rooting the audience's imagination.

To generate “fictions of authority” [Lanser, 1992], we use the voice and domain-specific authority of relatable stereotype characters that explain how the world works from their first-hand experience. Our protagonists are a teacher who knows and cares about the decline of values and a gardener who knows and cares about environmental devastation. In other cases, one might also draw on scientists, “white old men,” or “Silicon Valley visionaries” [Hilgartner, 2015] if the narrative does not aim to contest but exploit trust in such stereotypes. Other sources of authority are, of course, official documents or scientific references. The same is true for general manipulation factors. Studies in advertisement showed that perceived manipulative intention—as within one-sided instead of two-sided augmentations that communicate honesty, and further the considered inappropriateness of manipulative means—hinder persuasion [O'Keefe, 1999, Cohen et al., 2015]. Despite this, truth as personal relevance and truth as coherence within complex textual structures can be sufficient to claim authority for the narrative transportation pathways [Oatley, 1999].

The general idea of narrative transportation and immersion is to simulate experiences in a fictional world that change the appreciator's understanding of the real world. Steering the degree of immersion first and foremost depends on the text style and plot quality [Green, 2004]. Can the text instruct the audience imagine a fictional world that fosters inferences of beliefs about the appreciator's real environment? A simple generalized plot structure emerges by first establishing and then breaking with a normalcy expectation that calls for subsequent actions to be restored. In our stories, the insufficient expansion of renewable energy breaks with the established normalcy of not wanting nuclear power plants, which allows to represent counter-arguments and implies consequences the protagonist has to face: climate change and dependence on energy imports. Drawing from classical rhetoric, the text must appeal to the audience's emotions (pathos) and provide relatable characters to take perspective when they fear, fume, or suffer. This makes more clear that not only the story but also the discourse decides what counts

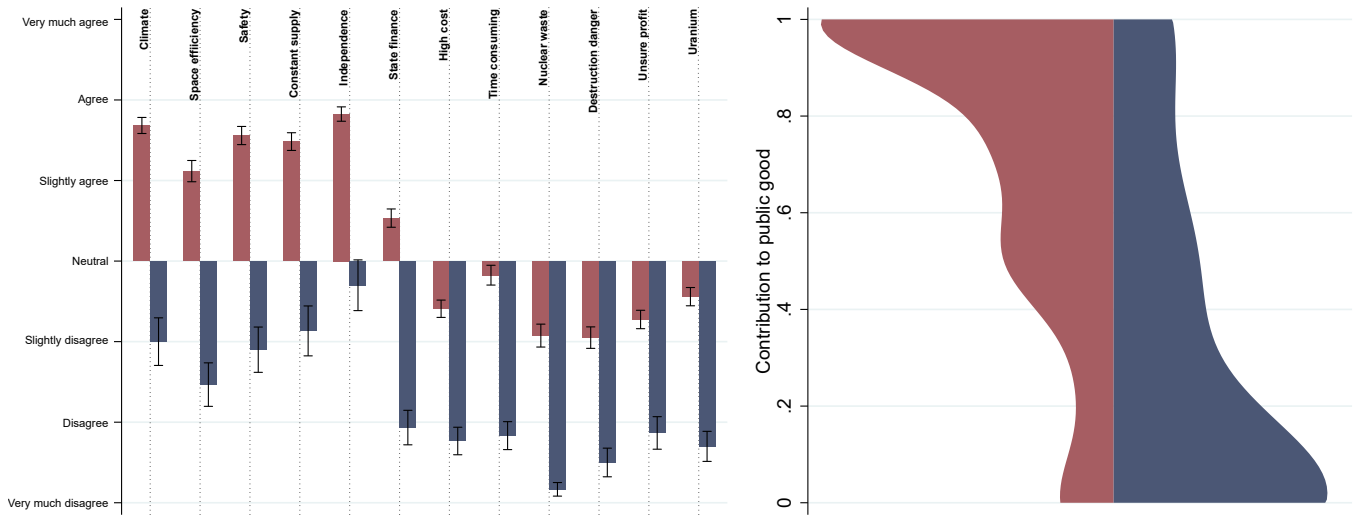


Figure 4: **Left Panel.** Average answers to Argument Persuasiveness questions in the two clusters of subjects from Control 1. Error bars stand for standard errors. See Supplementary material S7.1 for the descriptions of the questions. **Right Panel.** Distributions of contributions to public good in the two clusters.

as normal, how much attention or narrated time is spent on certain events, and how details are told to appeal to emotion. Finally, the text must avoid “immersive resistance” due to situations or events that readers just want to avoid imagining, such as rape or torture.

To determine the arguments about nuclear energy that should be used in the story, we analyze Argument Persuasiveness questions asked in Control 1 (based on Zhao et al. [2011]). We evaluate whether the statements related to 12 major topics of discussion around nuclear energy in the Netherlands (see Supplementary material S7.1) increase subjects’ willingness to pay together with others for it. An agreement to pay more, given an argument, signals that the subject considers the argument as positive and can be persuaded by it. Similarly, disagreement signals that the subject takes the argument as a negative and will not be persuaded.

The left panel of Figure 4 shows the average answers to Argument Persuasiveness questions in the two clusters of subjects in Control 1. The clusters were determined by the answers to 12 questions and the analysis summarized in Supplementary material S2. Notice that the averages are strikingly different in the two clusters. While in the red cluster (120 subjects), subjects have positive view on the first six arguments and somewhat negative on the last six, in the blue cluster (30 subjects) the average answers are rather negative almost everywhere. This presents the case of a minority (20%) that sees nuclear energy as not a very reasonable solution, a minority that does not share the majority’s views that nuclear energy is a viable solution due to at least first six arguments. This disagreement on nuclear energy issues also manifests itself in the contributions to public good. The right panel of Figure 4 shows the Gaussian-smoothed distributions of contributions in the two clusters. Most subjects in the majority red cluster contribute full amounts (average contribution 73%), whereas in the minority blue cluster most subjects contribute zero (average contribution 29%). The difference between the distributions is significant (rank-

sum test: $p < 0.0001$).

Given such a large disagreement between subjects in the two clusters, we decided to create two versions of the narrative structure designed to address the most persuasive arguments of each group. We chose argument Climate (“*More nuclear power will help us to meet the climate goals*”) for subjects in the red cluster and argument Independence (“*More nuclear power plants increase our independence from other nations for our energy needs*”) for subjects in the blue cluster as the most persuasive, main arguments. For each narrative, we chose three additional arguments out of which there was at least one positive and one negative. Supplementary material S7.3 details which phrases in the narratives correspond to which arguments. Notice that the choice of arguments for narratives does not have to follow the schema that we used. We chose the most persuasive arguments for our narratives to have the proof-of-the-concept, or to test if we can have an effect on public good contributions at all. However in practice, researchers can follow other methods and choose arguments that need to be addressed for some other reasons not related to their persuasive power.

4 Public good contributions

The main effect we study is the influence of narrative exposure on contributions to public good. Thus, in this section we compare contributions across experimental sessions. First, we consider the effect of the general narrative structure on contributions. To test that, we pool together the data for the two versions of the narrative that have the same structure but are different in specific details. The left panel of Figure 5 shows the average proportions of the endowments contributed (further *contributions to public good*) for all data in Control 1, Treatment, and Control 2. The averages are 0.65, 0.77, and 0.67 respectively. The average contributions in Treatment are 18% higher than in both controls, which is a significant increase (rank-sum test - Control 1: $p = .0103$; Control 2: $p = .0243$).

The right panel of Figure 5 shows the Gaussian-smoothed distributions of contributions in the three experimental sessions. Notice that the distributions in both controls are almost identical, which suggests that this is a good measure that is stable in time (at least in the context of nuclear energy) even despite the fact that between the two control sessions a significant change in the debate over nuclear energy had occurred (see below). Next, notice that in Treatment more subjects than in controls choose to contribute 100% of the endowment and fewer subjects choose to contribute smaller amounts. This suggests that the general narrative structure inspires subjects, who would contribute less without reading the narrative, to contribute full amounts. Both the increase in the proportions of subjects who contribute full amounts and the decrease in the proportions of subjects who contribute less are significantly different between Treatment and controls (see Supplementary material S4 for the analysis).

Next, we consider separately the effects of the two versions of the narrative. The analysis presented in Supplementary material S3 shows that the average contributions for Narratives 1 and 2 are almost identical and are significantly higher than in controls (in Control 1 at 5% level and at 10% level in Control 2). Similarly, the distributions of contributions for the two narratives are essentially the same. These

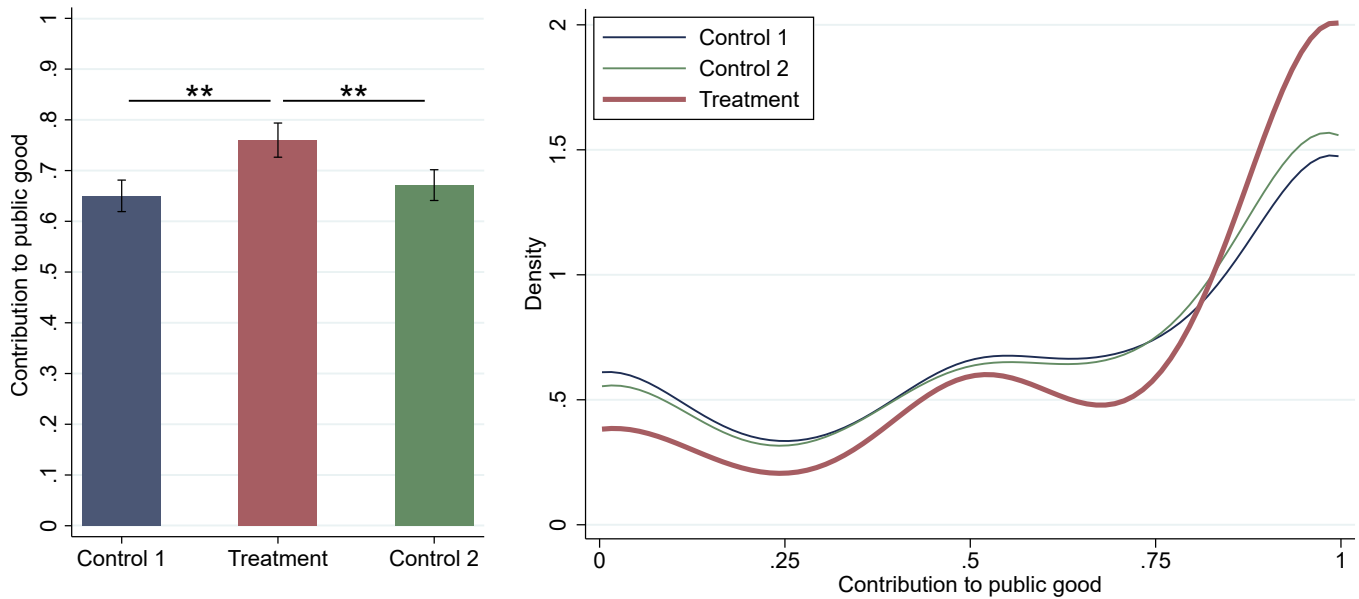


Figure 5: **Left Panel.** Average percentages of the endowment contributed to public good by experimental session (** - $p < 0.05$). **Right Panel.** Distributions of contributions to public good.

observations suggest that the specific details of the narratives exert much less effect on contributions than the general narrative structure. Even more interestingly, it seems that appealing to different arguments for nuclear energy in the two narratives had the same effect on subjects regardless of their views (otherwise we would not see the same distributions of contributions on the right panel of Figure 6 in Supplementary material S3).

5 Effectiveness of narratives

Despite the seeming irrelevance of the narrative details for the increased contributions to the public good on the population level, we find that some specific characteristics of the two narratives nonetheless did have differential effects on contributions. Though, these effects are not visible in the average contributions that are the same for the two narratives. So, we suggest that interpretations of these measures are used with caution.

We used five measures described in more detail in Supplementary material S7.4 to estimate how subjects perceived the narratives. Table 1 presents regression analyses of the effects of these measures on contributions. Notice that Congruence2, or agreement with the statement “*The story was about what I think is important in the nuclear power debate,*” had a significant positive impact on contributions in Narrative 1, whereas Manipulation, or agreement with the statement “*The person in the story comes across as manipulative,*” had a significant negative impact on contributions in Narrative 2.

The first effect suggests that some subjects liked Narrative 1 because it was about what they think is important and, as a result, contributed more to public good. The second effect suggests that some subjects found Narrative 2 manipulative and decreased their contributions.

	Narrative 1		Narrative 2	
Congruence2	.074** [.029]	.091*** [.030]	.083* [.042]	.048 [.033]
Manipulation	-.009 [.032]	-.016 [.033]	-.090** [.042]	-.068** [.033]
Congruence1	.018 [.020]		.011 [.022]	
Trust	-.033 [.044]		-.039 [.057]	
Identification	.045 [.028]		-.039 [.035]	
Constant	.356 [.272]	.374** [.178]	.953** [.360]	.728*** [.213]
N observations	56	56	49	49
R^2	.25	.19	.17	.14

Table 1: OLS robust regressions of contribution to public good on five measures of perception of a narrative. * - $p < 0.1$; ** - $p < 0.05$; *** - $p < 0.01$.

To summarize, the analysis of measures like these can provide additional information about the effectiveness of the constructed narratives and can help to check if a narrative is too manipulative or congruent with the current perception of the issue.

6 Self-reported willingness to pay

In some situations it is not feasible to test narratives with an incentivized tasks like the Public Goods game, but only with simple questions. To check if our methodology works with such measures, we elicited *self-reported willingness to pay* for nuclear energy on a 7-Likert scale (agree-disagree). The question we asked is the following: “*I want to help pay for the construction of more nuclear power plants in the Netherlands.*” The results for this measure reported in Supplementary material S5 are very similar to our analysis above: all main effects are the same. Though, the self-reported measures are more variable in time. This suggests nonetheless that simple questions can be used in practice to test the possible effect of narratives on economic behavior.

7 Additional checks

In this section, we discuss some additional results and checks that can be important when applying our methodology. First, we notice that 45 subjects who took part in both Control 1 and Treatment did not react to narratives as much as other subjects who have not participated in Control 1 (repeated subjects did not change their average contribution to public good after the exposure to a narrative). Supplementary material S6 provides the analysis. We conjecture (without evidence) that this difference with repeated subjects is due to the fact that they have chosen in the Public Goods game twice and might

have remembered what they chose before. Though, we still find that the same narrative characteristic (Congruence2) does influence the contributions to public good in the same way as for non-repeated subjects.

Second, we would like to emphasize that the Public Goods game in Control 1 was different from those in Treatment and Control 2. Specifically, in Control 1 subjects had endowment of 2 Euro, while in the other sessions the endowment was 1 Euro. This was done for the purpose of testing whether the amount of endowment matters for framed Public Goods games as this one. We found that the endowment had no effect on the results as the distributions of contributions in Control 1 and Control 2 are virtually identical (see Figure 4). This suggests that Public Goods games framed for specific topic are not sensitive to the size of the endowment (at least as long as it is not too large).

Third, we would like to mention that between Treatment and Control 2 a significant development in the nuclear energy debate in the Netherlands took place. The government agreed to build two new nuclear plants in Zeeland, thus resolving the debate in favor of supporters of nuclear energy. It is important to keep track of such events, as they might influence subjects' attitudes and willingness to pay. Interestingly, we find that contributions to public good did not change due to this event (see Figure 4). However, as we document in Supplementary material S5 the self-reported willingness to pay did change between the two controls. This suggests that events related to the narratives might change subjects' attitudes, though not all of them. We leave it to future research to understand this in more detail.

Fourth, we collected a lot of additional demographic information about our subjects including various measures of economic behavior. We found no significant effects of any demographic variables or other measures on contributions to public good, except for a slight effect of the propensity to follow norms that was measured using the task of [Kimbrough and Vostroknutov \[2018\]](#). We find that the measured propensity to follow norms positively correlates with the contributions to public good in both controls separately (Spearman's rank correlation: Control 1 - $\rho = .15$; $p = .0656$; Control 2 - $\rho = .17$; $p = 0.0367$) and together ($\rho = .16$; $p = 0.0063$). The correlation is not significant in Treatment, which suggests that subjects with low propensity to follow norms increase their contributions in Treatment in comparison to controls. Overall, the significant correlation in controls suggests that the behavior of subjects is driven by norms to some extent. We did not find a correlation of propensity to follow norms with the self-reported willingness to pay.

8 Nefarious purposes and accountability

We have shown that our methodology can be used to change people's behavior related to an economically important subject. But, a serious concern arises that narratives created by this method can be used for nefarious purposes and manipulation. This is a legitimate concern. However, we believe that our methodology is unlikely to be used this way for the following reasons. First, technologies for manipulating people's opinions and preferences using narratives already exist in abundance and are widely used. For example, emotionally loaded stories used in marketing and TV commercials are almost identical in

style to ours: they describe the feelings of fictional protagonists that inspire observers to buy certain products. Thus, anyone who wishes to create a narrative for nefarious purposes does not have to go through the complex method described here and can simply use more traditional means.

Second, our methodology was created with an idea that the construction of narratives for specific welfare-enhancing purposes can follow a transparent sequence of steps that everyone can verify. Indeed, all ingredients of the narratives that we created have a well-documented and well-defined reason that can be traced to the responses of subjects in Control 1 and the general purpose of the narrative being constructed. Thus, our method provides *accountability* for the created narratives that is crucial for using narratives as a tool of economic policy. If a public institution chooses to use a fictional narrative, it can provide a report in public access that documents how this narrative was created and what purposes it serves. Therefore, our methodology proposes a way how to deal with the problem of perception of *all narratives* as pursuing nefarious purposes. If people know that the narrative was created by a public institution for a specific welfare-enhancing purpose and this is verifiable, then they might actually trust such narratives more than those that were not created using scientific methodology. Overall, accountability and transparency proposed by our method can, in fact, help to fight misinformation rather than promulgate it.

9 Conclusion

In this study, we test a novel methodology that allows to construct fictional narratives targeted at a specific topic and a specific population. We show that the narratives we have constructed do increase contributions in the Public Goods game, specifically framed for the purpose, and also increase self-reported willingness to pay for nuclear energy in the Netherlands. We showcase several diagnostic tools that can be used to check how well a narrative was perceived and its various effects on behavior and beliefs.

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Supplementary material

S1 Narratives

S1.1 Narrative 1

A message from the future

We have known for a very long time that in order to avert global warming, we must cut our emissions. I did not see nuclear power to be a viable solution because of pending issues with its waste management. I must admit that I have personally fought against it for decades. Without a doubt, our efforts have had some results and we have successfully installed a lot of solar panels and wind turbines. If only the growth of our renewable energy sources had been adequate to shut down fossil fuel plants while maintaining a steady supply.

Now, 30 years later, I occasionally remember these times and start seeing things differently. When my kids and I bike in the tulip fields outside of town, they aren't exploring the lovely meadows of my youth. Nearby, where once was a beautiful lake, they only discover some dead trees, arid fields, and dirty trickles. I had been attempting to grow veggies next to our bike shed for a few years. It may seem sentimental, I wanted to instill in my children a little sense of kinship with our land and the natural world, just like my parents did. However, soon I gave up on this endeavor when it became clear that either it didn't rain at all during these scorching summers or that massive rains ruined a year's worth of labor. Everything in the garden died.

Personally, I have always fared well, and we have built up a certain prosperity. Of course, someplace had to provide the power for our cars, homes, and cities. It is only years later that I realize the extent of climate change when I see what's left of our gorgeous landscape. Technologies were available. But it's possible that we missed out on a safe and cleaner solution.

I regret much having underestimated how polluting our energy system was as I look back on my life. When we had the option, I regret that I was so stubborn and did not also consider nuclear plants for a reliable and secure energy source. I am sending you a message from the future: Do all in your power to avert climate change.

S1.2 Narrative 2

A message from the future

It was like an uneasy awakening when political dependencies put our homes' and companies' energy security at stake. Since there was a chance of a nuclear accident and the still unresolved waste management, I must acknowledge that I have spent decades opposing and fighting nuclear power. Additionally, nuclear power seemed to be no longer a viable option due to the rising affordability of renewable energy sources. If only the growth of our renewable energy sources had been adequate.

Now, 30 years later, I occasionally remember these times and start seeing things differently. In my profession, working with young adults, it is important to hold up and teach a hopeful and democratic prospect. But to be honest, this is getting more and more difficult. Some claim it began when we were given the option of freezing in the winter or making dubious bargains to secure electricity supplies. Of course, nobody wanted to wear caps and gloves at home in one's apartment. However, becoming more reliant on problematic dependencies to meet our unsaturable demand for steady energy turned out even worse. The result is seen every day in the news: Along the way, we have lost our credibility selling out more and more of our values. Our western values that united us – are they just empty phrases to

whitewash our Western lifestyle? We have become so dependent on imported gas, coal, and oil that our freedom is now torn between unpredictable weather and resource reliance.

I wish to maintain my optimism despite the difficulties, both for my pupils and for my friends and family. But it's possible that we overlooked the option for a reliable and independent solution, as technologies were available.

I greatly regret not realizing how delicate, and dependent our energy system was earlier in my life. When we had the option, I regret not also considering innovative nuclear plants as a way to reach our aspiration of independence. I am sending you a message from the future: Do not underestimate dependencies of a steady energy supply.

S1.3 Mapping of narrative structure and arguments

In this section, we describe the specific elements of the narratives that were constructed from the general narrative structure and the arguments chosen for each narrative. The narratives in S1.1 and S1.2 are color-coded to represent different elements of the design.

For the general narrative structure we chose the story of a middle-class Dutch individual in the future, who used to be a denier of benefits of nuclear energy, but 30 years later he regrets not having done more in the past. The parts of the narratives that reflect the setting and the character development along these general lines are coded in green. Note that the settings are deliberately chosen to feel familiar to Dutch people. The process of realization of past mistakes (not doing more about nuclear energy in the past) and consequent regret are expressed with emotional reactions of the protagonist.

The arguments chosen for the two narratives are coded in red (negative) and blue (positive). We chose to have both positive and negative arguments in each narrative because previous studies (e.g., O'Keefe, 1999, *Annals of the International Communication Association*, 22:1, 209-249) suggest that the mixture comes across as more persuasive than when only one-sided arguments are presented (which is seen as an attempt at manipulation). At least two positive and one opposing argument, with a minimum of four, were selected for inclusion in each narrative. This was done to ensure the balance across arguments. One positive argument was chosen as the central focus of each narrative.

For Narrative 1 that corresponds to the red cluster on Figure 4, we chose positive arguments Climate, Constant supply, and Safety, and negative argument Nuclear waste. The logic of choosing these arguments was the following. The three positive arguments are ranked as the most persuasive in terms of willingness to pay for nuclear energy (red cluster on the left panel of Figure 4) if we do not take into account Independence, which we use for the other narrative. The negative argument Nuclear waste was chosen as the one having the most negative effect on subjects' willingness to pay for nuclear energy to counterbalance the positive arguments.

For Narrative 2 corresponding to the blue cluster, we chose positive arguments Independence and Constant supply and negative arguments Destruction danger, Nuclear waste, and High cost. As before, Independence and Constant supply are the arguments that inspire the highest desire to pay for nuclear energy in the blue cluster (highest average values, see left panel of Figure 4). Similarly, Destruction danger and Nuclear waste are the arguments that people find the least persuasive in terms of paying for nuclear energy (roughly the least persuasive; we had to make some trade-offs).

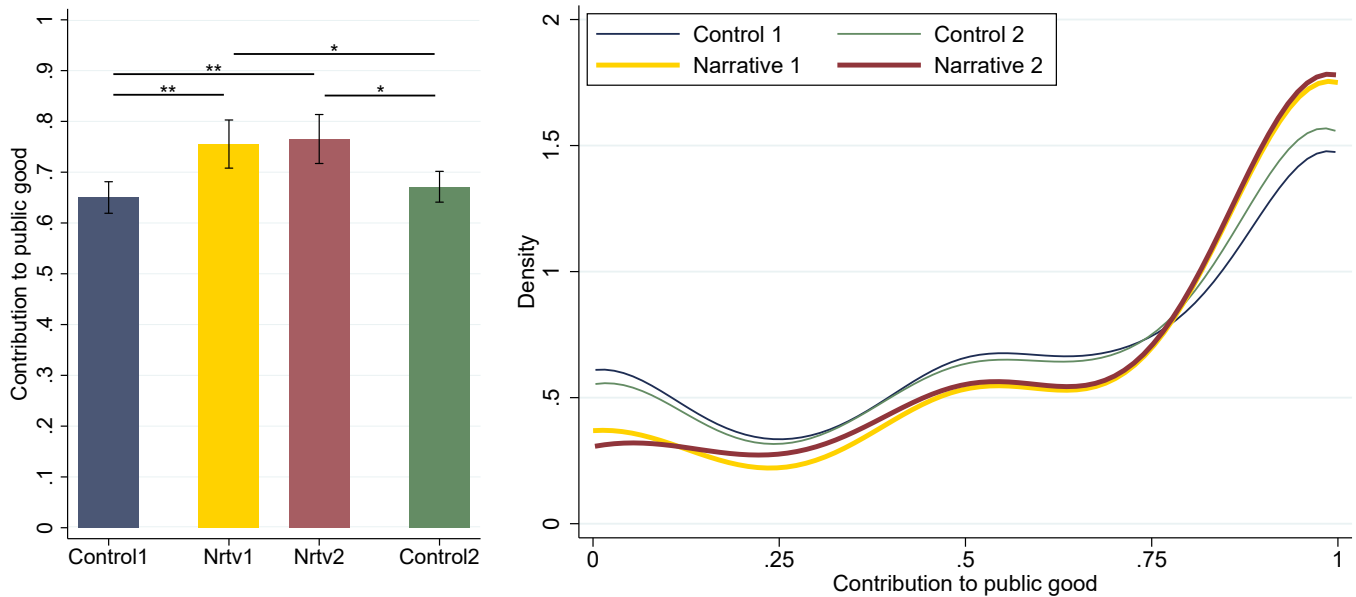


Figure 6: **Left Panel.** Average percentages of the endowment contributed to public good in Control 1, Control 2, and Treatment divided into Narrative 1 and Narrative 2 (* - $p < 0.1$; ** - $p < 0.05$). **Right Panel.** Distributions of contributions to public good.

S2 Details of cluster analysis

The optimal number of clusters was determined by employing the NbClust package in R, which uses a majority rule for 30 widely accepted tests (Charrad et al., 2014, *Journal of statistical software*, 61, 1-36). The optimal number of clusters for our dataset (Control 1) was two. Subsequently, the clusters were formed through K-means clustering.

S3 Analysis of the two narratives

The left panel of Figure 6 shows the contributions to public good in controls and separately for two Narratives presented in Treatment. The rank-sum tests between the contributions in Control 1 and the two narratives are significant at 5% ($p = .0489$ and $p = .0377$). The comparison of the contributions for each narrative with Control 2 are significant at 10% level ($p = .0715$ and $p = .0808$).

S4 Additional analysis of contributions

In the main text, we compared the distributions of contributions using non-parametric rank-sum tests that take into account whole distributions of variables. However, we also observed that the main shift in contributions in Treatment happened due to more subjects choosing full amounts to contribute. This suggests that we can run more detailed tests of the differences in contribution choices by looking at the proportions of subjects who choose certain amounts. For example, we can test if more subjects in Treatment chose full amount as compared to controls or some other proportion.

We define a dummy variable equal to 1 for subjects who made full contributions and 0 otherwise, and compare these variables across experimental sessions using one-sided binomial tests (we hypothesize that Treatment increases contributions). We find that the proportion of subjects who chose full amounts

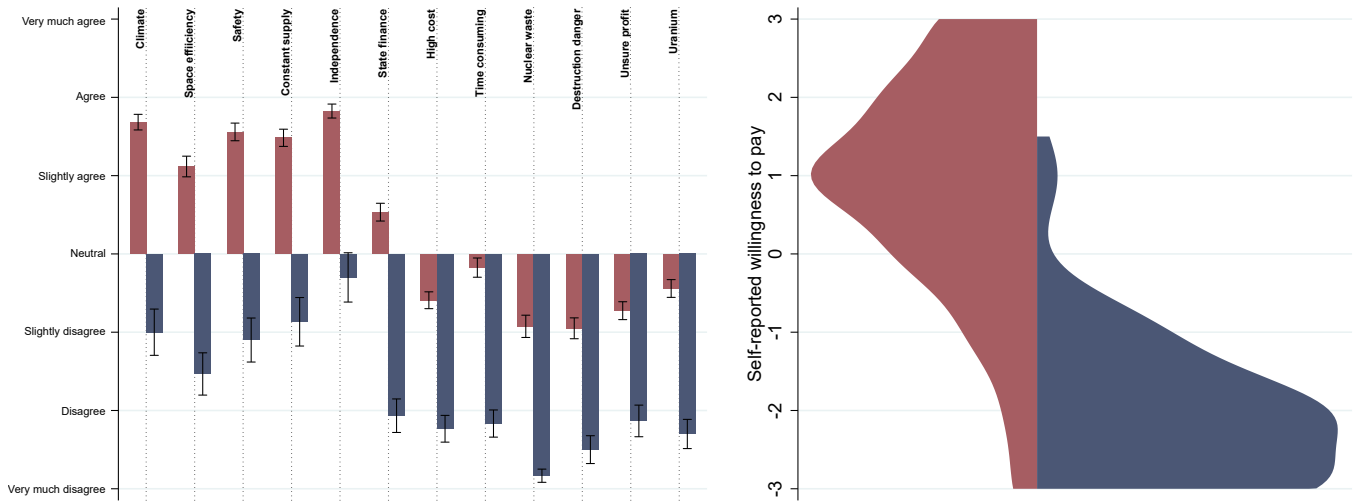


Figure 7: **Left Panel.** Average answers to Argument Persuasiveness questions in the two clusters of subjects from Control 1. Error bars stand for standard errors. See Supplementary material S7.1 for the descriptions of the questions. **Right Panel.** Distributions of self-reported willingness to pay in the two clusters.

is significantly different between Control 1 and Treatment ($p = .0068$), between Control 2 and Treatment ($p = .0068$), and between both controls and Treatment ($p = .0028$). These differences are also significant if we consider two narratives separately. For comparisons of either Control 1 or 2 with either Narrative 1 or 2 we get $p < 0.03$ (one-sided binomial tests, see also the right panel of Figure 6). This suggests that both narratives drive significantly more subjects to choose full contribution than in controls.

We can also run similar tests for subjects who chose less than full amount. We pool both control sessions and compare the proportions of subjects who chose contributions less than or equal to 0%, 25%, 50%, and 75% between pooled controls and Treatment. We find that the proportions of subjects are significantly lower in Treatment than in controls. The p -values for the four comparisons are respectively $p = .0635$, $p = .0424$, $p = .0468$, and $p = .0007$ (one-sided binomial tests). Thus, we can conclude that our narrative structure has driven a significant proportion of subjects from contributing lower amounts to contributing full amount.

S5 Self-reported willingness to pay

Here, we present the same analysis as in the main text, only for the self-reported willingness to pay (SWTP) instead of contributions to public good. It is important to check whether we get similar results with this measure, as it is often the case that incentivized tasks (like the Public Goods game) are not possible to run.

Figure 7 shows the argument persuasiveness graph on the left (copied from the main text) and the distributions of SWTP in the two clusters. The distributions are significantly different (rank-sum test: $p < 0.0001$). The average SWTP in the red cluster is 0.84 and in the blue cluster -2.13 . These results are in line with our findings for contributions to public good.

Next we focus on the comparisons of SWTP across experimental sessions. Figure 8 shows the same analysis as for the contributions. We see that SWTP in Control 1 is significantly different from Treatment (rank-sum test: $p = 0.0410$), and that no other comparisons are significant (the left panel of Figure 8). Notice that the two controls have rather different distributions of SWTP, and this is the reason why Treatment and Control 2 are not significantly different. We believe that the approval of new nuclear plants in Zeeland right before Control 2 might have to do with the change in Control 2 (though, we do not have evidence to support this claim).

The right panel of Figure 8 shows the distributions of SWTP in Control 1, 2, and Treatment. Here we observe an important difference from the analogous graph for contributions to public good. Notice that the narratives drive subjects to choose SWTP equal to 1 (slightly agree to pay), which is not the highest level possible as is the case with contributions. The distributions of SWTP in two controls look rather different, though not significantly different from each other.

When we compare the proportion of subjects who chose SWTP equal to 1 in different sessions, we find that one-sided binomial test between pooled controls and Treatment is significant ($p = 0.0412$). This means that a significantly higher proportion of subjects chooses SWTP equal to 1 in Treatment as compared with controls. The comparison of proportions between Control 1 and Treatment yields $p = 0.0562$ and between Control 2 and Treatment we get $p = 0.0712$.

Also notice that the proportion of subjects who choose the lowest possible level of SWTP (-3) did not change in Treatment. This suggests that the narratives did not manage to change the personal opinions of the most vehement opponents of nuclear energy, but they did change their contributions to public good (we know from Figure 5 that zero contributions decrease in Treatment).

Notice as well that the narratives did have an effect on other subjects with negative SWTP. We see that much fewer subjects choose SWTP equal to -2 or -1 in Treatment as compared to Control 1. To see if this effect is significant, we compare the proportions of subjects who chose negative SWTP across sessions. One-sided binomial test between Control 1 and Treatment gives a significant difference with $p = 0.0301$. This shows that significantly less subjects chose negative SWTP in Treatment than in Control 1. The same test for Control 2 is not significant.

Next, we look at the two versions of the narrative structure separately. Figure 9 shows the results. On the right panel, we can observe that the two narratives create a slightly different distributions of SWTP. Narrative 1 seems to drive more subjects to choose SWTP equal to 1 than Narrative 2, though this difference is not significant. We find that the difference in distributions is only significant at 10% level between Control 1 and Narrative 1 (rank-sum test: $p = 0.0886$, see also the left panel of Figure 9).

When we look at the proportions of subjects choosing SWTP equal to 1 across narratives and controls, we find the only significant difference between Control 1 and Narrative 1 (one-sided binomial test: $p = 0.0530$). This suggests that more subjects than in Control 1 choose SWTP equal to 1 after being treated with Narrative 1.

We find that the proportion of subjects who choose negative SWTP is significantly different between

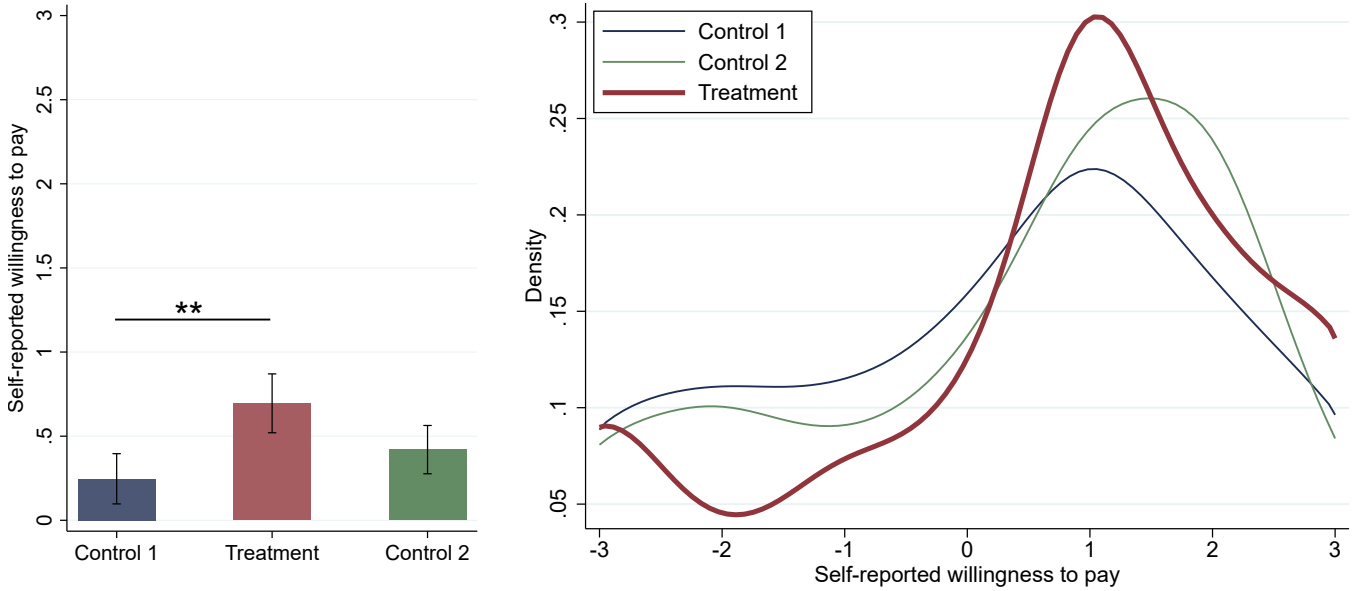


Figure 8: **Left Panel.** Average self-reported willingness to pay by experimental session (** - $p < 0.05$). **Right Panel.** Distributions of self-reported willingness to pay.

Control 1 and Narrative 1 (one-sided binomial test: $p = 0.0336$). This shows that Narrative 1 significantly decreases the proportion of subjects with negative SWTP. Most likely, these subjects start choosing SWTP equal to 1 or higher.

Finally, we analyze the effects of narrative characteristics on SWTP. Table 2 presents the analysis in the same format as in the main text for the contributions to public good.

	Narrative 1		Narrative 2	
Congruence2	.468*** [.128]	.575*** [.134]	.566** [.277]	.343* [.187]
Manipulation	.005 [.141]	-.081 [.145]	-.401** [.173]	-.348* [.183]
Congruence1	.151 [.117]		-.150 [.170]	
Trust	-.042 [.165]		-.066 [.265]	
Identification	.215 [.162]		-.210 [.267]	
Constant	-2.732** [1.262]	-1.750** [.846]	.892 [1.403]	.029 [1.034]
N observations	56	56	49	49
R^2	.39	.31	.23	.17

Table 2: OLS robust regressions of self-reported willingness to pay on five measures of perception of a narrative. * - $p < 0.1$; ** - $p < 0.05$; *** - $p < 0.01$.

We see that SWTP reacts to Narratives 1 and 2 in a way similar to contributions to public good. Specifically, in Narrative 1 subjects who find the narrative important (Congruence2), also choose higher SWTP. In Narrative 2, we observe the same negative effect of manipulation as with contributions. Thus, contributions to public good and SWTP are similarly affected by the details of each narrative.

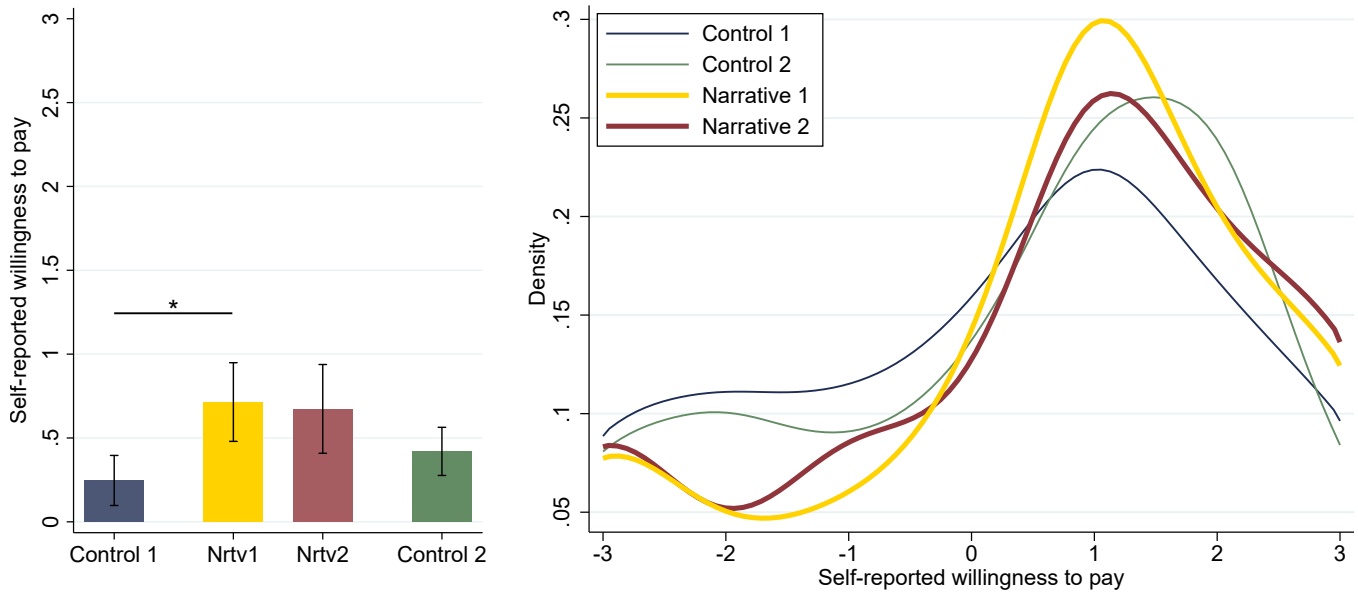


Figure 9: **Left Panel.** Average self-reported willingness to pay in Control 1, Control 2, and Treatment divided into Narrative 1 and 2 (* - $p < 0.1$). **Right Panel.** Distributions of self-reported willingness to pay.

S6 Repeated subjects

After we ran Control 1, we allowed subjects who took part in it to also participate in Treatment. The reason was to see the effect of being exposed to two experiments related to nuclear energy and whether participation in Control 1 had an effect on the behavior in Treatment.

Interestingly, we did find that 45 subjects who participated in both Control 1 and Treatment behaved differently. For example, these subjects did not significantly increase their contributions to public good in Treatment as compared to Control 1 (average contributions are .61 in Control 1 and 0.59 in Treatment). This may be so because subjects during Treatment remembered the amounts they contributed in Control 1. This is also suggested by the fact that we do find a significant effect of narrative characteristics on the contributions of repeated subjects. Specifically, the OLS robust regression of their contributions in Treatment on the five narrative characteristics (as in Table 1) gives a significant coefficient on Congruence2, similarly to our findings in the main text. This shows that some repeated subjects do respond to the congruence of the narratives and increase their contributions. However, such increase is not large enough to change the average contributions.

S7 Instructions (English translation)

S7.1 Argument persuasiveness

Please indicate how the statements below change your opinion about the following statement:

“I want to help pay for the construction of more nuclear power plants in the Netherlands.”

(very much disagree; disagree; slightly disagree; neutral/no effect; slightly agree; agree; very much agree)

Climate More nuclear power will help us to meet the climate goals

Space efficiency Nuclear power plants are more space efficient than other green power sources like wind and solar

Safety Nuclear power is safer than energy from coal; It causes fewer deaths per unit of energy produced

Constant supply Unlike solar panels and wind turbines, nuclear power plants deliver a constant, reliable amount of energy.

Independence More nuclear power plants increase our independence from other nations for our energy needs.

State finance New nuclear power plants will have to be partially financed by the state because private parties see it as a high-risk investment.

High cost Building new nuclear power plants is expensive, with many recent plants going over budget.

Time consumption Nuclear power plants take a long time to build, and their benefits come late.

Nuclear waste Nuclear energy production creates radioactive waste

Destruction danger A nuclear power plant might fail and cause much damage

Unsure profit It is unsure whether a new nuclear power plant will be profitable since it is uncertain what the energy prices will be when the plant becomes operational.

Uranium Uranium reserves are limited.

S7.2 Public Goods game

The Dutch government is planning to build new nuclear power plants. To make this possible, we will have to help pay for its construction together.

In the hypothetical scenario of this study, you have 1 Euro to divide between the following choices. Option 1: You keep the money yourself or Option 2: You use the money to help pay for the construction of nuclear power plants.

The money put into Option 2 by all survey participants will be pooled. This money will become worth 1.5 times more, after which the amount increased in value will be divided equally among all participants.

This mechanism mimics the following future scenario:

- Investing in Option 2 creates more nuclear power plants;
- This results in a lower energy bill;
- Thereby, there is a money saving that is equal for everyone.

The participants in this study are random people from the Netherlands.

Your income = (Money from Option 1) + (Money from Option 2 from all participants * 1.5) / (Number of participants)

Calculation example:

All participants (and you) choose Option 1 \Rightarrow Your income: 1 Euro

All participants (and you) choose Option 2 \Rightarrow Your income: 1.5 Euro

So your income from Option 2 depends on how much the other research participants invest in nuclear power plants.

The outcome of this assignment will be paid to you in cash.

Make the same choice you would make in real life.

S7.3 Self-reported willingness to pay

What is your opinion about the following statement?

I want to help pay for the construction of more nuclear power plants in the Netherlands. (Very much agree; Agree; Slightly agree; Neutral; slightly disagree; Disagree; Very much disagree)

S7.4 Narrative characteristics

(1: not at all, ..., 7: very much)

Congruence 1 The story was consistent with how I view nuclear power.

Congruence 2 The story was about what I think is important in the nuclear power debate.

Trust The person in the story comes across as a trustworthy and honest person.

Manipulation The person in the story comes across as manipulative.

Identification I could identify with the person in the story.

S7.5 Rule-following task

In this question you can earn an additional small amount of money. You will decide how to allocate 10 balls between two buckets, a yellow bucket and a red bucket. For each ball you put in the red bucket, you will receive 1 cent, and for each ball you put in the yellow bucket, you will receive 2 cents.

The rule is to put the balls in the blue bucket.

Your payment will be based on your decisions: it is the sum of payments from the red and yellow buckets. You can choose any allocation of the balls. Your decision will have no consequences except for the payment as described above.

S8 Instructions (Dutch original)

S8.1 Argument persuasiveness

Geef aan hoe de hieronder genoemde statements uw mening veranderen over de volgende stelling:

“Ik wil meebetalen aan de bouw van meer kerncentrales in Nederland.”

Climate Meer kernenergie zal ons helpen de klimaatdoelstellingen te halen

Space efficiency Kerncentrales zijn ruimte-efficiënter dan andere duurzame energiebronnen zoals wind- en zonne-energie.

Safety Kernenergie is veiliger dan energie uit steenkool; het veroorzaakt minder doden per eenheid aan geproduceerde energie.

Constant supply Kerncentrales produceren een constantere, en daarmee een meer betrouwbare, energietoevoer dan zonnepanelen en windmolens.

Independence Meer kerncentrales zorgen ervoor dat we minder afhankelijk zijn van andere landen voor onze energiebehoefte.

State finance Nieuwe kerncentrales zullen deels door de staat gefinancierd moeten worden, omdat private partijen het als een risicovolle investering zien.

High cost De bouw van nieuwe kerncentrales kost veel geld, en veel recente centrales overschrijden het budget.

Time consumption De bouw van kerncentrales neemt veel tijd in beslag, waardoor we pas ver in de toekomst (over 5-10 jaar) profijt ervan hebben.

Nuclear waste De productie van kernenergie veroorzaakt radioactief afval.

Destruction danger Een kerncentrale kan problemen krijgen en veel schade aanrichten.

Unsure profit Het is niet zeker of een nieuwe kerncentrale rendabel zal zijn aangezien het onzeker is hoe hoog de energieprijzen zullen zijn op het moment dat de centrale operationeel wordt.

Uranium Uraniumreserves zijn beperkt en kunnen opraken.

8.2 Public Goods game

Er wordt door de Nederlandse overheid plannen gemaakt om nieuwe kerncentrales te bouwen. Om dit mogelijk te maken zullen we samen moeten meebetalen aan de bouw hiervan.

In het hypothetische scenario van dit onderzoek heeft u 2 euro om te verdelen over de volgende keuzes. Optie 1: U houdt het geld zelf of Optie 2: U gebruikt het geld om mee te betalen aan de bouw van kerncentrales.

Het geld dat door alle onderzoeksdeelnemers in Optie 2 wordt gestopt zal worden samengevoegd. Dit geld wordt 1,5 keer meer waard, waarna het in waarde gestegen bedrag gelijk over alle deelnemers zal worden verdeeld.

Dit mechanisme bootst het volgende toekomstscenario na:

- Investeren in optie 2 zorgt voor meer kerncentrales.
- Dit veroorzaakt een lagere energierekening.
- Daarmee is er een geldbesparing die voor iedereen gelijk is.

De deelnemers uit dit onderzoek zijn willekeurige mensen uit Nederland.

$$\text{Uw inkomsten} = (\text{Geld uit Optie 1}) + (\text{Geld uit Optie 2 van alle deelnemers} * 1.5) / (\text{Aantal deelnemers})$$

Rekenvoorbeeld:

Alle deelnemers (en u) kiezen Optie 1 \Rightarrow Jouw inkomsten: 2,-

Alle deelnemers (en u) kiezen Optie 2 \Rightarrow Jouw inkomsten: 3,-

Uw inkomsten uit optie 2 zijn dus afhankelijk van hoeveel de andere onderzoeksdeelnemers investeren in kerncentrales.

De uitkomst van deze opdracht wordt aan u uitbetaald in geld.

Maak de keuze die u in het echte leven ook zou maken.

S8.3 Self-reported willingness to pay

Wat is uw mening over de volgende stelling?

Ik wil meebetalen aan de bouw van meer kerncentrales in Nederland. (Zeer oneens; Oneens; Beetje oneens; Neutraal; Beetje eens; Eens; Zeer eens)

S8.4 Narrative characteristics

(1: helemaal niet, ..., 7: heel erg)

Congruence 1 Het verhaal kwam overeen met hoe ik tegen kernenergie aankijk.

Congruence 2 Het verhaal ging over wat ik belangrijk vind in het kernenergie debat.

Trust De persoon in het verhaal komt over als een betrouwbaar en eerlijk persoon.

Manipulation De persoon in het verhaal komt manipulatief over.

Identification Ik kon mij identificeren met de persoon uit het verhaal.

S8.5 Rule-following task

Met deze vraag kunt u een klein extra bedrag verdienen. U beslist hoe u 10 ballen verdeelt over twee emmers, een gele emmer en een rode emmer. Voor elke bal die u in de rode emmer doet, krijgt u 1 cent, en voor elke bal die u in de gele emmer doet, krijgt u 2 cent.

De regel is om de ballen in de rode emmer te doen.

Uw betaling wordt gebaseerd op uw beslissing: het is de som van het geld dat u krijgt uit de rode en de gele emmer. U kunt elke verdeling van de ballen kiezen. Uw beslissing zal geen gevolgen hebben behalve de betaling zoals hierboven beschreven.

S9 Narratives (Dutch original)

S9.1 Narrative 1

Een boodschap uit de toekomst

We weten al heel lang dat we onze uitstoot moeten verminderen om de opwarming van de aarde tegen te gaan. Vroeger zag ik kernenergie niet als een realistische oplossing vanwege het nucleaire afvalprobleem. Ik geef toe dat ik me er persoonlijk tientallen jaren tegen heb verzet. Met succes installeerden we echter wel velen zonnepanelen en windturbines. Onze acties tegen klimaatverandering hebben effect gehad, zonder twijfel. Was de energie uit onze hernieuwbare bronnen maar consistent en genoeg geweest om alle kolencentrales te kunnen sluiten.

Nu, 30 jaar later, denk ik af en toe terug aan vroeger en kijk ik anders tegen de dingen aan. Wanneer mijn kinderen en ik nu door de polders fietsen, verkennen we niet meer de mooie tulpenvelden uit mijn jeugd. Hier vlakbij, waar ooit een prachtige plas was, ontdekken ze nu alleen wat dode bomen, dorre velden en vieze stroompjes. Ik probeer nu al een paar jaar groenten te kweken naast ons fietsenhok.

Het lijkt misschien sentimenteel, maar ik wilde mijn kinderen een beetje verbondenheid met ons land en de natuur bijbrengen, net zoals mijn ouders dat hebben gedaan. Maar ik heb het al snel opgegeven toen er duidelijk werd dat het ofwel helemaal niet regende tijdens de snikhete zomers ofwel dat massale regenval een jaar aan werk volledig wegspoelde. Alles in de tuin ging dood.

Persoonlijk heb ik altijd goed geboerd, en hebben we een zekere welvaart op kunnen bouwen. Natuurlijk moest de energie voor onze auto's, huizen en steden ergens vandaan komen. Als ik zie wat er nu nog maar over is van onze ooit zo prachtige natuur, besef ik me jaren later de schade die klimaatverandering heeft aangericht. Maar het is goed mogelijk dat we de optie voor een betrouwbare en onafhankelijke oplossing zijn mis gelopen, terwijl de technologie wel beschikbaar was.

Als ik terugkijk op mijn leven zie ik dat ons energiesysteem veel vervuilerder was dan ik eerst dacht. Ik heb er spijt van dat ik te koppig was. Toen we de keus hadden, wilde ik gewoon niet inzien dat kernenergie ook een betrouwbare en veilige energiebron was. Daarom stuur ik je een boodschap uit de toekomst: Doe er alles aan om klimaatverandering te voorkomen.

S9.2 Narrative 2

Een boodschap uit de toekomst

Het was een shock toen ik me realiseerde dat de energiezekerheid van onze huizen en bedrijven opeens op het spel stond door politieke afhankelijkheden. Door de kans op een kernramp en het onopgeloste probleem van kernafval, moet ik toegeven dat ik me tientallen jaren verzet heb tegen kernenergie. Bovendien leek kernenergie niet langer een haalbare optie doordat duurzame energie steeds goedkoper werd. Was de groei van duurzame energie maar genoeg geweest.

Nu, 30 jaar later, denk ik af en toe terug aan vroeger en kijk ik anders tegen de dingen aan. Binnen mijn werk met jongvolwassenen, is het belangrijk om een hoopvol en democratisch perspectief te schetsen. Maar eerlijk gezegd wordt dit steeds moeilijker. Sommigen beweren dat het allemaal begon toen we de keuze kregen tussen kou leiden in de winter of dubieuze deals sluiten om onze toegang tot energie zeker te stellen. Natuurlijk zat niemand erop te wachten om thuis mutsen en wanten te moeten dragen. Echter, door onze onverzadigbare vraag naar een constante energietoevoer werden we steeds afhankelijker van problematische partijen. Het resultaat is dagelijks in het nieuws te zien: Gaandeweg hebben we onze geloofwaardigheid verloren door steeds meer van onze waarden aan de kant te schuiven. Onze westerse waarden die ons verenigden - zijn dat slechts holle uitdrukkingen om onze Westerse levensstijl goed te praten? We zijn zo afhankelijk geworden van geïmporteerd gas, steenkool en olie dat onze vrijheid nu wordt ingeperkt door onvoorspelbaar weer en onze afhankelijkheid van grondstoffen.

Ik wil ondanks alle problemen vasthouden aan mijn optimisme voor zowel voor mijn leerlingen als voor mijn vrienden en familie. Maar het is goed mogelijk dat we de optie voor een betrouwbare en onafhankelijke oplossing zijn mis gelopen, terwijl de technologie wel beschikbaar was.

Als ik terugkijk op mijn leven zie ik dat ons energiesysteem veel kwetsbaarder en afhankelijk was dan ik eerst dacht. Ik heb er spijt van dat ik te koppig was. Toen we de keus hadden, wilde ik gewoon niet inzien dat innovatieve kerncentrales een manier zijn om onafhankelijker te worden. Daarom stuur ik je een boodschap uit de toekomst: Onderschat niet hoe afhankelijk wij zijn voor onze stabiele energievoorziening.