

# GREENING SYSTEMS BY GREENING RELIGION

ECO-ISLAMIC VALUES AND WATER-ENERGY-NATURE NEXUS POLICIES IN KUWAIT

Ganga Shreedhar, Davide Contu, Patricia Freitag, Aseel Takshe and Susana Mourato

LSE

Middle East

entre

LSE Middle East Centre Kuwait Programme Paper Series | 24 | March 2024

#### About the Middle East Centre

The Middle East Centre builds on LSE's long engagement with the Middle East and provides a central hub for the wide range of research on the region carried out at LSE.

The Middle East Centre aims to enhance understanding and develop rigorous research on the societies, economies, politics and international relations of the region. The Centre promotes both specialised knowledge and public understanding of this crucial area, and has outstanding strengths in interdisciplinary research and in regional expertise. As one of the world's leading social science institutions, LSE comprises departments covering all branches of the social sciences. The Middle East Centre harnesses this expertise to promote innovative research and training on the region.

#### About the Kuwait Programme

The Kuwait Programme is a world-leading hub for research and expertise on Kuwait. It is the main conduit through which research on Kuwait at LSE is facilitated, expanded and promoted. The Programme is directed by Kuwait Professor Toby Dodge, and is based in the LSE Middle East Centre.



The Kuwait Programme is funded by the Kuwait Foundation for the Advancement of Sciences.





### Greening Systems by Greening Religion: Eco-Islamic Values and Water-Energy-Nature Nexus Policies in Kuwait

Ganga Shreedhar, Davide Contu, Patricia Freitag, Aseel Takshe and Susana Mourato

> LSE Middle East Centre Kuwait Programme Paper Series | 24 March 2024

#### About the Authors

Ganga Shreedhar is Assistant Professor in Behavioural Science in LSE's Department of Psychological and Behavioural Science and co-director of the MSc in Behavioural Science programme. She is an applied behavioural and experimental economist studying how to change human behaviour in ways that benefit people and the planet.

**Davide Contu** is Associate Professor and Associate Dean for Undergraduate Programs at the School of Management, Canadian University Dubai. He completed a PhD at LSE and now conducts research in applied economics and econometrics with a focus on environmental economics and choice modeling.

**Patricia Freitag** is an International Food Security Research Specialist. Her background is in development Ececonomics and political theory, having worked on projects across the world from Mexico to Nepal, her work focuses largely on Sub-Saharan Africa and the MENA region.

Aseel Takshe is Associate Professor in Environmental Management at Canadian University Dubai. She is the Acting Dean of the Faculty of Communication, Arts and Sciences. Her work focuses on the effects of interconnected public health challenges humans and the environment face and how to overcome them.

Susana Mourato is Professor of Environmental Economics, former Academic Director of LSE Summer School, and Associate of the Grantham Research Institute on Climate Change and the Environment. In 2021, she became the Vice President and Pro-Vice Chancellor (Research).

#### Abstract

The study examines public support for water-energy-nature (WEN) nexus policies in Kuwait, considering the interconnectedness of different natural resource sectors in addressing climate change and sustainability. While previous research has focused on technical aspects, little is known about public perceptions and willingness to adopt nexus policies. The study specifically explores the impact of moral incentives, specifically eco-Islamic values, on public support through an informational intervention.

Using a randomised controlled trial (RCT) embedded in a discrete choice experiment survey, the researchers engaged a nationally representative sample of Kuwaiti residents (n=431). Participants were assigned randomly to either an informational control group or a moral incentives treatment group that emphasised eco-Islamic values. In the subsequent discrete choice experiment, participants expressed their preferences regarding three WEN nexus policy attributes: reduced emissions through renewable energy transition, increased recycled water from wastewater reduction, and tree planting for nature conservation.

Results indicate that exposure to eco-Islamic values increased support for WEN nexus policies; however, while supportive, respondents do not seem willing to pay for them. These results highlight the importance of leveraging socio-cultural factors, such as religion, to promote public support for climate change action. By appealing to eco-Islamic values, policymakers can facilitate the greening of systems and ensure that religious beliefs contribute positively to efforts addressing climate change.

#### The Water-Energy-Nature Nexus in Kuwait

Over the past two decades, there has been a rapid growth in research and policy interest in factoring in interactions between energy, water, and natural resource systems and sectors when designing climate change policy (water-energy-food nexus).<sup>1</sup> The main arguments for adopting such 'nexus thinking' in climate policy is that it promotes policy coherence through identifying optimal policy mixes.<sup>2</sup> The Gulf Cooperation Council (GCC) countries present high per capita emissions and water use, facing substantial risks in a warming world, apart from increasingly extreme weather events like dust storms.<sup>3</sup> It has been observed that Kuwait has a particularly high water-related energy usage, mostly for desalination with only a small fraction used to pump groundwater, treat wastewater, and produce food.<sup>4</sup> There is a dominant focus on technical debates around interactions across parts of the nexus and how to better coordinate and optimise information and solutions across these. Yet, in comparison, the perceptions and political policy processes amongst different actors, including the public, are under-studied.<sup>5</sup> Transformations in renewable energy and water recycling infrastructure need to be accompanied by public demand for, and the use of, such services and goods. Oil-dependent countries, such as Kuwait, also see potential impacts on inflation associated with energy transitions.<sup>6</sup> The use of subsidies may partially explain the high residential water and energy consumption levels.<sup>7</sup> Emerging evidence also shows that there is possibly low public support for climate policies more broadly.<sup>8</sup>

To increase policy acceptability, scholars have called for informational and communication campaigns to clarify the importance of addressing climate change in a way that directly address public perceptions and values.<sup>9</sup> Therefore, it is also useful to study how to enhance support for WEN nexus policies in ways that take the socio-cultural context into account.

<sup>&</sup>lt;sup>1</sup> Sabrina S. G. Rothausen and Declan Conway, 'Greenhouse-Gas Emissions from Energy Use in the Sater Sector', *Nature Climate Change* 1/4 (2011) pp. 210–9; Felipe Melo et al., 'Adding Forests to the Water-Energy-Food Nexus', *Nature Sustainability* 4/2 (2021).

<sup>&</sup>lt;sup>2</sup> 'Advancing Knowledge of the Water-Energy Nexus in the GCC Countries', *World Bank Group* (2022). Available at: <u>https://www.worldbank.org/en/country/gcc/publication/advancing-knowledge-of-the-water-energy-nexus-in-the-gcc-countries</u> (accessed 30 January 2024).

<sup>&</sup>lt;sup>3</sup> Christian Siderius et al., 'Multi-Scale Analysis of the Water-Energy-Food Nexus in the Gulf Region', *Environmental Research Letters* 15/9 (2020).

<sup>&</sup>lt;sup>4</sup> Nina Weitz et al., 'Closing the Governance Gaps in the Water-Energy-Food Nexus: Insights from Integrative Governance', *Global Environmental Change* 45 (2017), pp. 165–73.

<sup>&</sup>lt;sup>5</sup> Paul Burstein, 'The Impact of Public Opinion on Public Policy: A Review and an Agenda', *Political Research Quarterly* 56/1 (2003), pp. 29–40.

<sup>&</sup>lt;sup>6</sup> Ali Aljamal, Mark Speece and Mohsen Bagnied, 'Understanding Resistance to Reductions in Water Subsidies in Kuwait', *Local Environment* 27/1 (2022), pp. 97–111.

 <sup>&</sup>lt;sup>7</sup> Ibrahim Alhumoud and Jasem Alhumoud, 'Economic Viability and Analysis of Wastewater Treatment Processes in Kuwait', *International Journal of Environment and Waste Management* 27/1 (2020), pp. 21–34.
<sup>8</sup> Christina Gravert and Ganga Shreedhar, 'Effective Carbon Taxes Need Green Nudges', *Nature Climate Change* 12/12 (2022), pp. 1073–4; Carla Rodriguez-Sanchez et al., 'How Trust and Emotions Influence Policy Acceptance: The Case of the Irish Water Charges', *British Journal of Social Psychology* 57/3 (2018) pp. 610–29.

<sup>&</sup>lt;sup>9</sup> Alice Larkin, Claire Hoolohan, and C. McLachlan, 'Embracing Context and Complexity to Address Environmental Challenges in the Water-Energy-Food Nexus', *Futures* 123 (2020).

This article examines public support for WEN nexus policies in Kuwait, examining whether leveraging moral incentives via an eco-Islamic message increases support for WEN policies, and the role of socio-religious identification and religiosity in moderating this. There is a rich emerging literature on the socio-psychological antecedents of climate policy support; these include the role of values, worldviews, policy perceptions, social and personal norms, environmental and climate concern and attitudes, political ideology, and ethnicity amongst others.<sup>10</sup>

In this study, a randomised controlled trial embedded in a discrete choice experiment (DCE) via an online survey (n=431) and focus group discussions were used for data-gathering. In the DCE, we assessed public support by estimating the willingness to pay for three main WEN nexus policy attributes: increasing the use of recycled wastewater for agricultural and industrial use; reducing CO2 emissions by increasing renewable solar energy production; and planting more trees for nature conservation. Before expressing their preferences in the DCE, participants were exposed to either a message about the importance of addressing climate change with or without an appeal to eco-Islamic values (i.e., either the control or the moral incentive treatment condition). To examine how social identification affects responses to this moral incentive treatment, we studied whether responses were moderated by two factors, namely, socio-cultural group membership (identifying as either Kuwaiti or non-Kuwaiti Muslim, as a non-Muslim, or non-religious) and self-reported religiosity.

There is a lack of research about whether the public is willing to support nexus thinking in climate policies and willingness to pay (WTP) for nexus policy elements. There is mixed and sparse evidence about the role of religion and moral incentives on climate policy support, and existing research largely comes from Western, educated, industrialised, rich, and democratic contexts like the US. The main aims of this article are as follows. First, to examine the Kuwaiti public's support for and WTP for WEN nexus policies. Second, to estimate the causal effect of leveraging moral incentives in informational appeals via appealing to eco-Islamic values. Third, to examine whether socio-religious identification through group membership, and religiosity, moderates the impact of the moral incentive treatment. The hypotheses are stated below:

H1: Exposure to moral incentives via eco-Islamic values message will increase public support and WTP for all nexus climate policy attributes.

H2: The effect of the eco-Islamic values message on public support and WTP will be moderated by socio-religious identification via group membership and religiosity.

To recruit participants and implement the survey, we worked with the market research company's online panel, Kantar. We prepared the survey in Qualtrics and shared the survey link. Upon completion of the survey, participants received points proportional to the length of the survey which they could then redeem for products. To be eligible to participate, participants had to be at least 18 years old and residents of Kuwait. The survey was made available in both English and Arabic.

<sup>&</sup>lt;sup>10</sup> Stefan Drews, Jeroen C. J. M. Van den Bergh, 'What Explains Public Support for Climate Policies? A Review of Empirical and Experimental Studies', *Climate Policy* 16/7 (2016), pp. 855–76.

We estimated the sample size based on three main factors: power analysis, participant availability and resource constraints. The power analysis was conducted on G\*Power and indicated that 694 participants were needed assuming a small-to-medium effect size of 0.25, 95 percent power and a one-tailed t-test with two independent groups.

The overarching rationale was that religious beliefs can impact preferences only when relevant sections of the text are made accessible and salient, and reinterpreted to relate directly to the issue and behaviour.11,<sup>11</sup> These particular texts were selected to instill the importance of climate change and environmental protection and nexus policy attributes more specifically. These aspects emerged as important themes in the focus groups, and related to global and specific moral prescriptions to address climate change.

We highlighted two quotes typifying the principle of *Khalifa*, which speaks to how Islam can conceptualise humans as vice-regents and guardians of the environment and our earth. We also mentioned that as vice-regents, we must act responsibly, and that the Hadith teaches humans to cultivate nature and not waste earth's resources. Referencing reducing waste related to reducing water and energy waste, both of which contribute to higher carbon emissions. Referencing cultivating and conserving nature, such as by planting trees, is a common feature of eco-Islamic initiatives.<sup>12</sup>

We were particularly concerned about payment and policy consequentiality. Hence, following the focus groups discussion, we decided to avoid a change in water and/or electricity bill as that could have generated a great deal of opposition from the respondents. Rather, we proposed an increase in overall household expenditure associated to the undertaking of the policy packages, such as increase in prices in the supply chain and reduction of subsidies.

The DCE design was initially prepared via orthogonal design, administered to 100 respondents, and then an efficient Bayesian design was prepared once the prior was obtained. Respondents were presented with a total of 6 choice tasks each, randomly picked from a total of possible 38 choice tasks. The designs were generated with the aid of the software NGENE.

<sup>&</sup>lt;sup>11</sup> Anders Biel and Andreas Nilsson, 'Religious Values and Environmental Concern: Harmony and Detachment', *Social Science Quarterly* 86/1 (2005), pp. 178–91; Jens Koehrsen, 'Muslims and Climate Change: How Islam, Muslim Organizations, and Religious Leaders Influence Climate Change Perceptions and Mitigation Activities', *Wiley Interdisciplinary Reviews: Climate Change* 12/3 (2021), p. 702.

<sup>&</sup>lt;sup>12</sup> Osamah Alsayegh, Nathalie Saker and Ayman Alqattan, 'Integrating Sustainable Energy Strategy with the Second Development Plan of Kuwait', *Renewable and Sustainable Energy Reviews* 82 (2018), pp. 3430–40; 'Climate Change 2022: Impacts, Adaptation and Vulnerability', *IPCC*. Available at: <u>https://www.ipcc.ch/report/ar6/wg2/</u> (accessed 10 November 2023).

| WEN Policy and Monetary Cost Attributes                                                     | Variable name  | Levels                                                                    |
|---------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------|
| Producing more recycled water for agriculture and industrial purposes (Water)               | Recycled water | 0%, 1%, 5%, 10% in three years compared to current levels                 |
| Reducing CO2 emissions from desalinisation<br>using more renewable energy<br>(Energy)       | Emission       | 0%, 1%, 5%, 10% in three years compared to current levels                 |
| Planting more trees to capture CO2 emissions and recharge groundwater (Nature conservation) | Trees          | No increase, 500, 1000, 2000 in three<br>years compared to current levels |
| Increase in annual household expenditure<br>(Monetary cost)                                 | Expenditure    | No change, 50, 100, 125, 150, 200<br>Kuwaiti Dinars (≈15, 30, 40, 60 USD) |

#### Table 1: Discrete Choice Experiment Attributes and Levels

#### Measured Variables

#### Main outcomes

We pre-registered that our main outcome would be the willingness to pay for the WEN nexus policy package. This metric would be derived from the choice experiments whose attributes and levels were presented above. WTP was estimated for the following: reducing CO2 emissions at a 1%, 5% or 10% level; producing more recycled water for agriculture and industrial purposes at an increase of 1%, 5%, or 10%; planting more trees to capture CO2 emissions and recharge groundwater at a rate of 500, 1,000, or 2,000 additional trees planted yearly. No significant WTP was found. Hence, we deviated from the pre-registration and focus on the total acceptability of any WEN nexus policy. This was measured by the number of times a given respondent selected the status quo option. In other words, they chose to reject any configuration of the nexus policy package. This variable ranged from a minimum of 0 to a maximum of 6, since participants faced 6 choice tasks. We also consider a binary variable taking value 1 when respondents selected the status quo at least once. Importantly, acceptability ought to be negatively correlated with the number of times respondents selects the status quo, as the greater the acceptance of the WEN nexus, the less often we expect respondents to select the status quo. This acceptability measure represents measures a broad acceptance of the nexus, rather than a WTP for specific attributes.

#### Moderators

The two moderators were socio-religious identification that measured whether participants identified as a member of a socio-religious group, and self-reported religiosity. Socio-religious identification was captured using a categorical variable coded as follows: 1=Muslim- Kuwaiti, 2=Muslim- Not Kuwaiti, 3=Other religion, 4=Not religious. Religiosity was measured with 4 items adapted from Dali et al.<sup>13</sup> Specifically, to measure climate change risk perception, we adapted three items modified from Lee et al.<sup>14</sup> In this report, we do not present robustness checks nor present latent class models or hybrid choice models applied to the DCE data.

#### Results

In total, 1073 participants successfully completed the survey. Based on the pre-registration, and after removing those failing the attention, seriousness, and manipulation checks, 431 participants remained.<sup>15</sup> 35.1 percent are Kuwaiti nationals (slightly greater than the population value of about 30 percent)<sup>16</sup> with the median age equal to 33, and maximum equal to 64 years old. The sample was broadly representative based on region, age, gender, and nationality. All in all, we found respondents to be mildly concerned about climate change, with an average of 3.7 out of 5.

Comparison tests of these observed attributes characteristics between the treatment and control groups indicate a significant difference in terms of age and share of Kuwaiti nationals – the treatment group presents younger respondents and more Kuwaiti nationals. At the same time, there are no significant differences in terms of gender, share of high income, share of low education. With regards to religious characteristics, the treatment group presents individuals with a greater score of religiosities; it has a greater share of Muslims whereas the share of not religious is similar. There was also little difference between the two groups regarding the average climate change risk perception.

<sup>&</sup>lt;sup>13</sup> We also collected data on other psychological factors after the treatment and DCE, which are not used in the current analyses, such as environmental values and attitudes.

<sup>&</sup>lt;sup>14</sup> Daniel McFadden and Kenneth Train, 'Mixed MNL Models for Discrete Response', *Journal of Applied Econometrics* 15/5 (2010), pp. 447–70.

<sup>&</sup>lt;sup>15</sup> 'Population, Male (% of Total Population) – Kuwait', *World Bank Open Data*. Available at: <u>https://data.</u> worldbank.org/indicator/SP.POP.TOTL.MA.ZS?locations=KW (accessed 7 November 2023).

<sup>&</sup>lt;sup>16</sup> Ibid.

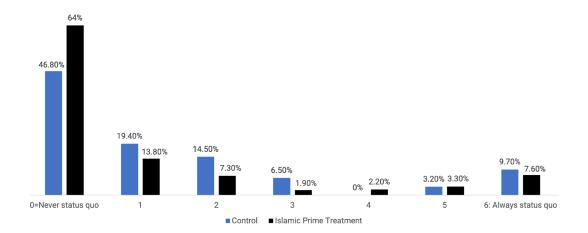
| Variable                | Treatment | Control | (Treatment<br>& Control) | P-Value | All   |
|-------------------------|-----------|---------|--------------------------|---------|-------|
| Age                     | 33.7      | 35.4    | 33.9                     | 0.07    | 32.6  |
| Kuwaiti                 | 36.8%     | 25.8%   | 35.3%                    | 0.04    | 39.5% |
| Women                   | 34.1%     | 27.8%   | 35.1%                    | 0.16    | 34.8% |
| Religiosity             | 4.23      | 3.78    | 4.17                     | 0.00    | 4.04  |
| Muslim Kuwaiti          | 27.1%     | 17.7%   | 25.7%                    | 0.05    | 30.6% |
| Muslim Not Kuwaiti      | 46.8%     | 33.8%   | 45.1%                    | 0.02    | 41.2% |
| Not Muslim              | 26%       | 48.3%   | 29.2%                    | 0.00    | 28.1% |
| Not religious           | 7.8%      | 8%      | 7.9%                     | 0.47    | 6.9%  |
| High level of income    | 19.7%     | 17.7%   | 19.4%                    | 0.35    | 29.6% |
| Low education           | 12.7%     | 17.7%   | 13.4%                    | 0.14    | 15.5% |
| Climate risk perception | 3.69      | 3.83    | 3.72                     | 0.13    | 3.59  |
| Sample size             | 369       | 62      | 431                      | /       | 1073  |

**Table 2: Descriptive Statistics by Treatment and Control Groups** 

Low education identifies respondents with high school or less. High income identifies respondents with stated 4000 KD income or higher. P-values refer to 2-tails T-test conducted to compare averages, 2-tails test of proportion to compare percentages between treatment and control group.

## Choosing the Status Quo From Discrete Choice Experiment Results

Before discussing the coefficients associated with the attributes, we focus on the analysis of the selection of the status quo option. Respondents who tend to repeatedly choose the status quo are taken to not support any combination of WEN nexus policies. Overall, 61% of the respondents never selected the status quo, and 8% always chose it. When comparing the number of times the status quo was chosen in the control versus treatment group (Figure 2), we find a significant association (Pearson Chi-2=12.9, p-value=0.04). Respondents in the treatment group never chose the status quo more frequently as opposed to the control group (64% versus 46.8%), thereby signaling a greater degree of acceptance of WEN policy amongst the treated respondents. In Table 3 we report the main reasons for selecting the status quo at least once.



#### Figure 2: Count of Status Quo Versus WEN Policy Package Choice (n=431)

#### Table 3: Reasons to Choose the Status Quo Option (n=431)

| Reason for Selecting Status Quo at Least Once                                                   |       |  |  |
|-------------------------------------------------------------------------------------------------|-------|--|--|
| You found the average expenditure increase too high                                             | 16.2% |  |  |
| You do not think that it is your responsibility to pay for climate and environmental policies   | 10.9% |  |  |
| You did not find the increase in average household expenditure from these policies was credible | 9%    |  |  |
| You did not find the options realistic                                                          | 8.3%  |  |  |
| You do not believe in climate change, so you did not support any of these policies              | 3.9%  |  |  |
| There is no need to invest in renewable energy in Kuwait                                        | 3.4%  |  |  |
| There is no need to plant more trees in Kuwait                                                  | 2.3%  |  |  |

Note: the shares are computed as count of answers over total respondents. Not all respondents selected the status quo so not all respondents answered this question.

Respondents found, overall, the survey to be policy-consequential. Only 4.6% stated that it was 'extremely unlikely' for the Kuwait government to enact policies that address climate change, water scarcity and nature conservation as described in this survey soon. In addition, only 8.5% would not expect policies addressing climate change, water scarcity and nature conservation, to influence household expenditures as described in this survey.

#### Lack of WTP: Choice Experiment Results

The coefficients associated to the choice experiments attributes are presented in Table 4. We first present a Random Parameters Logit (RPL) model without interactions (Model 1) and then a model where all the attributes are interacted with the treatment variable (Model 2). For both models we report mean and standard deviations of the coefficients, assumed to follow normal distributions.

| RPL Models                     | (1                   | 1)                  | (2)                 |                     |
|--------------------------------|----------------------|---------------------|---------------------|---------------------|
| RPL Models                     | Mean                 | S.D.                | Mean                | S.D.                |
| Status quo                     | -3.268***<br>(0.287) | 3.51***<br>(0.374)  | -2.06***<br>(0.483) | 2.34***<br>(0.414)  |
| Emissions reduction            | 1.107<br>(0.891)     | 1.68<br>(3.65)      | 1.712<br>(2.598)    | 2.02<br>(4.13)      |
| Recycled water                 | -0.277<br>(0.913)    | 3.28<br>(2.04)      | -1.293<br>(2.119)   | 0.730<br>(1.216)    |
| Planting more trees            | 0.033<br>(0.056)     | 0.477***<br>(0.112) | 0.040<br>(0.152)    | 0.482***<br>(0.114) |
| Annual Expenditure             | -0.44***<br>(0.124)  | 1.30***<br>(0.148)  | -0.537<br>(0.362)   | 1.28***<br>(0.158)  |
| Treatment*Status quo           |                      |                     | -2.06***<br>(0.483) | 2.88***<br>(0.453)  |
| Treatment*Emission reduction   |                      |                     | -0.628<br>(2.764)   | 0.028<br>(1.77)     |
| Treatment*Recycled water       |                      |                     | 1.220<br>(2.350)    | 3.64<br>(3.13)      |
| Treatment*Planting more trees  |                      |                     | -0.009<br>(0.164)   | 0.183<br>(0.269)    |
| Treatment*Expenditure increase |                      |                     | 0.086<br>(0.381)    | 0.36**<br>(0.197)   |
| Observations                   | 43                   | 31                  | 4:                  | 31                  |

#### **Table 4: Choice Experiments Results**

Notes: \*\*\*1% significance, \*\* 5% significance, \* 10% significance. Robust standard errors. The dependent variable is the choice of the option A, B, or Status Quo. Respondents were presented with 6 choice tasks randomly picked from a total of 38 possible choice tasks. For each attribute and interaction with the attribute, we assume a normal distribution, reporting the mean and standard deviation (S.D.). The status quo variable presents value one if the respondent selected the status quo in a given choice task, 0 otherwise. The levels of the attributes are as per Table 1, with the exception of the attributes trees and annual expenditure that were scaled down by 100 units in order to ensure convergence of the model (this only impacts the magnitude of the coefficients and it is of no concern when not discussing WTPs).

In both models we see a statistically significant and negative mean coefficient associated to the status quo variable, indicating that overall respondents were more likely to choose one of the options rather than the status quo. However, none of the characteristics associated with the WEN package appears to have been significantly valued by the respondents. This indicates that respondents support WEN policies, but do not display a particular preference for one of the attributes. In addition, whilst in model (1) we do find a statistically significant and negative coefficient associated with the potential increment in annual expenditure, this becomes not significant in model (2). This points towards the lack of willingness to pay for any of the elements. Hence, we cannot estimate whether the willingness to pay was affected by the treatment. However, we see that the choice of the status quo was indeed impacted: those who received the treatment were even less likely to choose the status quo. This finding supports our H1 hypothesis.

#### Effects of the Moral Incentive Treatment

Table 5 provides the results testing hypothesis H1, where the main outcome is the number of times the respondent chose the status quo. Ordinary Least Squares (OLS) Model 1, Poisson model 3 and Logit model 5 have no control variables, whereas Models 2, 4 and 6 have a full list of controls (to assess whether results are stable and robust). Across models, individuals appeared less likely to choose the status quo when exposed to the treatment. However, results are significant in this regard only when considering the Logit model. These results provide initial empirical support for hypothesis H1: informational interventions priming Islamic values can increase support for WEN nexus policies, by reducing support for the status quo.

We then examine the evidence for hypothesis H<sub>2</sub> by interacting the treatment indicator with religiosity and with socio-religious identification in Poisson regression models (Table 6). We do not find significant moderation effects of either religiosity and social identification when each is interacted separately with the treatment indicator (models 1 and 2) nor with three-way interaction between the moral incentive treatment, religiosity, and socio-religious identification (model 3). However, the treatment significantly reduced the likelihood of choosing the status quo among non-religious individuals who are otherwise more prone to reject WEN policies. It may be speculated that at least a portion of those who state to be non-religious are still respectful towards eco-Islamic values.

| Regression Models         | OLS<br>(1)         | 0LS<br>(2)           | Poisson<br>(3)     | Poisson<br>(4)       | Logit<br>(5)         | Logit<br>(6)         |
|---------------------------|--------------------|----------------------|--------------------|----------------------|----------------------|----------------------|
| Moral incentive treatment | -0.373°<br>(0.260) | -0.370°<br>(0.270)   | -0.305°<br>(0.193) | -0.306°<br>(0.209)   | -0.702***<br>(0.276) | -0.775***<br>(0.196) |
| Religiosity               |                    | -0.052<br>(0.070)    |                    | -0.054<br>(0.069)    |                      | -0.196**<br>(0.100)  |
| Non-Kuwaiti Muslim        |                    | 0.011<br>(0.231)     |                    | 0.015<br>(0.210)     |                      | -0.306<br>(0.267)    |
| Other religion            |                    | -0.185<br>(0.273)    |                    | -0.161<br>(0.262)    |                      | -0.498<br>(0346)     |
| Climate risk perception   |                    | -0.104<br>(0.096)    |                    | -0.101<br>(0.081)    |                      | -0.202*<br>(0.110)   |
| Age                       |                    | 0.007<br>(0.010)     |                    | 0.006<br>(0.008)     |                      | -0.007<br>(0.121)    |
| Female                    |                    | -0.296*<br>(0.172)   |                    | -0.288*<br>(0.175)   |                      | 0.072<br>(0.224)     |
| Low education             |                    | 0.266<br>(0.298)     |                    | 0.221<br>(0.229)     |                      | 0.172<br>(0.311)     |
| High income               |                    | -0.637***<br>(0.168) |                    | -0.779***<br>(0.214) |                      | -0.272<br>(0.289)    |
| Hawalli                   |                    | 0.025<br>(0.267)     |                    | 0.049<br>(0.248)     |                      | 0.077<br>(0.318)     |
| Farwaniya                 |                    | 0.345<br>(0.318)     |                    | 0.298<br>(0.263)     |                      | 0.404<br>(0.356)     |
| Ahmadi                    |                    | 0.168<br>(0.293)     |                    | 0.160<br>(0.267)     |                      | 0.407<br>(0.350)     |
| Capital                   |                    | -0.119<br>(0.286)    |                    | -0.144<br>(0.313)    |                      | 0.084<br>(0.359)     |
| Constant                  | 1.41***<br>(0.242) | 1.89***<br>(0.659)   | 0.350**<br>(0.170) | 0.831°<br>(0.554)    | 0.129<br>(0.254)     | 2.11***<br>(0.795)   |
| Observations              | 431                | 431                  | 431                | 431                  | 431                  | 431                  |
| R-Squared                 | 0.005              | 0.04                 |                    |                      | 0.011                | 0.035                |
| Controls                  | No                 | Yes                  | No                 | Yes                  | No                   | Yes                  |

## Table 5: Direct Effect of Moral Incentive Treatment on Likelihood of Choosing the Status-Quo

Notes: \*\*\*1% significance, \*\* 5% significance, \* 10% significance, \*15% significance (note: this level of significance is usually considered too low to infer a significant effect). A negative coefficient indicates a lower likelihood of choosing the status quo option (hence greater support for WEN-options). Robust standard errors. In models 5 and 6, the dependent variable is binary (0: never chosen status quo, 1: chosen status quo at least once).

## Table 6: Moderation Analyses of Social-Religious Identification and Religiosity on Likelihood of Choosing the Status-Quo

| RPL models                               | (1)               | (2)                | (3)                |
|------------------------------------------|-------------------|--------------------|--------------------|
| Moral incentive treatment = 1            | -0.228<br>(0.411) | -0.681*<br>(0.388) | 0.747<br>(0.918)   |
| Religiosity                              | 0.091<br>(0.099)  |                    | 0.257*<br>(0.134)  |
| Treatment*Religiosity                    | -0.028<br>(0.021) |                    | -0.338°<br>(0.213) |
| Non-Kuwaiti Muslim                       |                   | -0.506<br>(0.505)  | -0.497<br>(0.477)  |
| Other religion                           |                   | -0.205<br>(0.435)  | -0.056<br>(0.411)  |
| Not religious                            |                   | 0.077<br>(0.389)   | 1.00*<br>(0.588)   |
| Treatment*Non-Kuwaiti Muslim             |                   | 0.821°<br>(0.550)  | 0.326<br>(1.19)    |
| Treatment*Other religion                 |                   | 0.073<br>(0.532)   | -0.082<br>(1.03)   |
| Treatment*Non-Religious                  |                   | -0.138<br>(0.535)  | -1.41°<br>(0.908)  |
| Treatment*Non-Kuwaiti Muslim*Religiosity |                   |                    | 0.111<br>(0.249)   |
| Treatment*Other religion*Religiosity     |                   |                    | -0.016<br>(0.242)  |
| Constant                                 | 0.006<br>(0.341)  | 0.597*<br>(0.345)  | -0.479<br>(0.583)  |
| Observations                             | 431               | 431                | 431                |

Notes: \*\*\*1% significance, \*\* 5% significance, \* 10% significance, °15% significance (note: this level of significance is usually considered too low to infer a significant effect). A negative coefficient indicates a lower likelihood of choosing the status quo option (hence greater support for WEN-options). Robust standard errors.

#### Discussion and Conclusion

This paper examines the public willingness to support WEN nexus policies amongst a representative sample in Kuwait using a DCE and examines whether informational interventions priming eco-Islamic values can raise support for such policies. It addresses important gaps in the literature about the public support for systemic climate policies that simultaneously address the interactions arising from resource use across multiple sectors like energy, water, and nature. It also examines if greening religion through public-facing climate policy information can enhance support for such policy packages. This is especially important given debates around the importance of addressing WEN nexus while addressing climate change in under-studied contexts like the Middle East. Furthermore, eco-Islamic scholars have called for greater attention to study not only why we should take care of the environment and based on what principles, but how practicing Islam can guide climate-relevant behaviours.<sup>18</sup> However, there was no significant WTP for WEN policies overall. Public communications making salient eco-Islamic values, therefore, cannot in isolation overcome resistance.

There are many ways to build on this work and tackle current limitations. For example, this study focused on responses from a broadly representative sample of adults in Kuwait. However, it relies on a single country's data. Future work can examine whether results generalise to other countries and religions in the Middle East, as well as investigating whether and to what extent self-reported non-religious individuals can be still affected by religious values. In addition, variations of the manipulation check employed in this study should be considered to minimise the reduction of respondents in the control group. Whereas we embedded this informational intervention in a survey, future work can estimate how such interventions can play out in field settings and actual campaigns. To this extent, it can also examine whether there are any effects on actual climate behaviours, rather than policy support. Finally, within the WEN nexus and eco-Islamic values framework, it might be worth exploring how Islamic values may be influenced by Western secular values, for instance due to social media, distinguishing between idealisms and reality in self-reported information about religion and values.

<sup>&</sup>lt;sup>18</sup> Emilio Chuvieco, 'Religious Approaches to Water Management and Environmental Conservation', *Water Policy* 14 (2012), pp. 9–20.

#### LSE Middle East Centre Kuwait Programme Paper Series

Adeel, Muhammad and Alfahad, Reem, 'Towards an Equitable Transport System in Kuwait: Understanding the Social and Cultural Context of Transport Accessibility', *LSE Middle East Centre Kuwait Programme Paper Series* 14 (December 2021).

Alajmi, Bibi A., 'Kuwait's Readiness for the Knowledge-based Economy: an Exploratory Study', *LSE Middle East Centre Kuwait Programme Paper Series* 22 (November 2023).

Alhuwail, Dari, 'Uncovering Progress of Health Information Management Practices: Evidence from Kuwait's Public Healthcare System', *LSE Middle East Centre Kuwait Programme Paper Series* 7 (January 2021).

**Al-Sumait, Fahed and Navarro, Cristina,** 'Kuwait's Enduring Digital Divide: Socio-Demographic Characteristics Relative to ICT Access, Skills, and Outcomes', *LSE Middle East Centre Kuwait Programme Paper Series* 23 (December 2023).

Alibrahim, Abdullah, 'Noncommunicable Diseases and Risk of Hospitalisation in Kuwait: A Generalisable Approach Using the Population-Based World Health Survey', *LSE Middle East Centre Kuwait Programme Paper Series* 15 (November 2022).

AlMeraj, Zainab, 'Digital Accessability: Kuwait's Software Development Landscape', *LSE Middle East Centre Kuwait Programme Paper Series* 20 (September 2023).

Arman, Husam, Iammarino, Simona, Ibarra-Olivo, J. Eduardo and Lee, Neil, 'Breaking Out of the Innovation Trap? Towards Promoting Private R&D Investment in Kuwait', *LSE Middle East Centre Kuwait Programme Paper Serie* 9 (March 2021).

Atkinson, Giles and Gelan, Ayele, 'Sustainability, Natural Capital and Climate Change in Kuwait', LSE Middle East Centre Kuwait Programme Paper Series 12 (July 2021).

Gomes, Alexandra, Al-Ragam, Asseel and Alshalfan, Sharifa, 'Reclaiming Public Space in Kuwait's Residential Neighbourhoods: An Applied Policy-Oriented Approach', *LSE Middle East Centre Kuwait Programme Paper Series* 8 (March 2021).

Hertog, Steffen, 'Reforming Wealth Distribution in Kuwait: Estimating Costs and Impacts', *LSE Middle East Centre Kuwait Programme Paper Series* 5 (July 2020).

Kalaitzi, Athanasia S., Al-Awadhi, Ahmad, Al-Qudsi, Sulayman and Chamberlain, Trevor W., 'Export Diversification and Economic Growth in Kuwait: Evidence from Time Series and Field Survey Analyses', *LSE Middle East Centre Kuwait Programme Paper Serie* 16 (January 2023).

Kaya, Zeynep N., 'Women's Electoral Participation in Kuwait', *LSE Middle East Centre Kuwait Programme Paper Serie* 11 (June 2021).

**Lenze, Nele,** 'Beach Clean-Ups and Other Civic Engagement for the Protection of the Environment in Kuwait', *LSE Middle East Centre Kuwait Programme Paper Serie* 10 (April 2021).

**Mejias, Sam, Al-Nakib, Rania, al-Khonaini, Abdullah and Khazbak, Rana,**'Youth Citizenship Identities in Kuwait: The Role of Citizenship Education and the Kuwaiti *Diwaniya*', *LSE Middle East Centre Kuwait Programme Paper Series* 19 (September 2023).

Nikoloski, Zlatko, 'Determinants of Diabetes in Kuwait: Evidence from the World Health Survey', LSE Middle East Centre Kuwait Programme Paper Series 6 (August 2020).

**Ottesen, Andri, Banna, Sumayya, Alzougool, Basil and Damrah, Sadeq**, 'A Greener Kuwait: How Electric Vehicles Can Lower CO<sub>2</sub> Emissions', *LSE Middle East Centre Kuwait Programme Paper Series* 18 (August 2023).

Shahrokni, Nazanin and Sofos, Spyros A., 'Ecologies of Belonging and Exclusion in Urban Kuwait: Towards An Urban Co-Designed Approach', *LSE Middle East Centre Kuwait Programme Paper Series* 21 (October 2023).

Sharp, Deen S., Alshammari, Abrar and Hameed, Kanwal, 'The Quiet Emergency: Experiences and Understandings of Climate Change in Kuwait', *LSE Middle East Centre Kuwait Programme Paper Series* 13 (October 2021).

Young, Do and Bang Shin, Hyun, 'Locating the Housing Crisis in Kuwaiti State, Land and Society', *LSE Middle East Centre Kuwait Programme Paper Series* 17 (March 2023).

#### **Kuwait Programme**

Middle East Centre London School of Economics Houghton Street London, WC2A 2AE



The views and opinions expressed in this publication are those of the author(s) and do not necessarily represent Science (LSE) or the Middle East Centre. This document is issued on the understanding that if any extract is used, the author(s) and the LSE Middle East Centre should effort has been made to ensure the accuracy of the material in this paper, the author(s) and/or the LSE Middle East Centre will not be liable for any loss or damages incurred through the use of this paper.

The London School of Economics and Political Science holds the dual status of an exempt charity under Section 2 of the Charities Act 1993 (as a constituent part of the University of London), and a company limited by guarantee under the Companies Act 1985 (Registration no.

#### **Publications Editor** Amira Djuric

#### Cover Image

Two men passing by Fatima Mosque, Abdullah Al-Salem, Kuwait. © Robin Laurance / Alamy Stock Photo

lse.ac.uk/mec