Received: 13 May 2023 | Revised: 21 October 2023 | Accepted: 25 October 2023

DOI: 10.1111/jac.12680

Journal of Agronomy and Crop Science WILEY

CLIMATE CHANGE

Saving the Vietnamese Mekong River Delta—People's attitudes, opinions and willingness to help

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Funding information
Bundesministerium für Bildung und Forschung, Grant/Award Number: 031B0724

Abstract

The unique nature and environment of the Vietnamese Mekong Delta as well as its agricultural production and its traditional lifestyle are endangered by a rising sea level and increasing salinization of the ground and surface water. This paper aims at the assessment of Vietnamese people's information on and attitudes towards these problems as well as their respective convictions and beliefs. Imbedded in an online survey with 2000 completed interviews we also conducted a Contingent Valuation study with which we want to assess people's willingness to contribute personally and financially to saving the Mekong Delta as an indication of the benefits they would expect from such a project. We interviewed three different groups of respondents, one of which lives directly in the Mekong Delta, a second lives outside the Delta, but close to it, that is in Ho Chi Minh City, and the third group lives far away from the Delta in Hanoi. With these three subsamples of respondents we wanted to capture not only the use benefits but also the nonuse benefits accruing from such a project. In the course of the interviews, we found that the Mekong Delta is of great interest and importance to all interviewees, no matter in which part of Vietnam they live. They were mostly well informed on the problems there and had strong opinions on the causes of these problems as well as on suitable strategies to fight them. In our Contingent Valuation study, we assessed the willingness of people at the different study sites to contribute financially to a hypothetical project for the preservation of the Mekong Delta and the socio-economic, attitudinal and psychological determinants of this willingness. Besides these empirical findings, we also obtained valuable insights regarding various methodological aspects of Contingent Valuation studies.

KEYWORDS
contingent valuation method, environmental valuation, life satisfaction, salinity stress, Vietnamese Mekong Delta

Key points

- Rice production in the Mekong Delta is threatened by increasing salinization of the ground and surface water.

- Online interviews with 2000 respondents from the Mekong Delta, Hanoi and Ho Chi Minh City about that problem.
- Contingent Valuation study to assess people's willingness to pay for the preservation of the Mekong Delta.
- Identification of several socio-demographic, attitudinal and psychological determinants of willingness to pay.

1 | INTRODUCTION

The Vietnamese Mekong Delta (VMD) is famous for its unique nature and biodiversity, but it is also of great importance for Vietnam's economy. It holds a huge number of endangered animal and plant species and offers a beautiful landscape with its paddy fields, mangrove forests in the coastal areas and submerged forests like the Melaleuca Forest in Tra Su. In Tra Su alone, there exist 140 species of plants, 13 aquatic species, over 70 species of birds, 11 species of mammals, 15 species of bats, 25 species of reptiles and frogs, 10 species of fish, etc.[1] These environmental highlights make the VMD a favourite destination for eco-tourism contributing to people's incomes in the Delta. Even more important from an economic point of view is the agricultural sector in the VMD. About 95% of Vietnam's rice exports and 50% of Vietnam's total rice production, 65% of Vietnamese aquaculture, 70% of fruit and 60% of exported fish come from here (cf. Vietnamese Government, 2017). Obviously, the VMD, which is also known as 'Vietnam's Rice Bowl' is of great ecological and economic importance for the whole of Vietnam.

Unfortunately, the VMD is endangered by growing salinization of the soil as well as of ground and surface water caused by climate change and the accompanying sea-level rise. This development is further intensified by the progressing reduction in the influx of fresh water from the Mekong River into the VMD caused by increased water extraction in the upstream area. Especially, the construction of hydroelectric power plants in the upper reaches of the Mekong River has caused a change in water flow, a reduction in the availability of sediments for agriculture and a deterioration of fisheries resources. This development has harsh consequences for the rice production in the VMD. Saltwater makes rice production more difficult and less profitable so that rice cultivation is declining in the Delta. As a consequence, rice scarcity is to be expected in the future, rice prices will rise and rice exports will plummet. The shrinking of the area covered with rice paddies impairs the beauty of the landscape in the VMD leading to a severe loss in aesthetic values.

Not only rice production but also various plant and animal species are endangered by the salinization, water pollution and the changing land use in the VMD. Many farmers have started shrimp farming because it is more profitable than rice farming and it is supported by the intrusion of salt water into the waterways in the Delta. As a consequence of this development, a steady stream of chemicals and antibiotics pollutes ground and surface water harming the aquatic ecosystems. The intensification of agriculture and the industrial development in the Delta, the construction of houses and infrastructure along the river and the canals accelerate the decline of environmental quality in the VMD and lead to increasing pollution, ecological imbalance, a reduction of the area of natural forests, especially mangrove forests and protection forests, thereby increasing the risk of erosion. Not only the economy and ecology of the VMD has suffered over the past years but also the traditional forms of social life in the Delta.

The Vietnamese government is aware of this negative development. It has developed different strategies to stop the continuing deterioration of the living conditions in the VMD. A realization of these plans would be rather costly and the question arises if these policy measures would be worthwhile from a welfare economic point of view, that is if the social benefits accruing from such measures would exceed the costs of their implementation. This question is relevant since in the end Vietnamese citizens from all over the country would have to pay for the recovery of the Delta through their general tax payments. Therefore, before such a public project is implemented it should be checked whether it would lead to a net increase in the well-being of the Vietnamese people, that is in social welfare, or not. In many countries, conducting a social cost–benefit analysis is mandatory for all public projects of greater economic significance (cf. e.g. the US Government's 'Executive Order 12866 of September 30, 1993, on Regulatory Planning and Review'[2]). While the costs of an environmental project are typically defined in monetary terms (wages, capital costs, materials costs, etc.) this is not the case for the benefits accruing from such a project, since 'goods' like clean air, biodiversity, beautiful landscape, etc. are not traded in markets and, consequently, have no market price for their valuation. Therefore, in cost–benefit analyses of environmental projects special methods have to be employed for the assessment of the social benefits in monetary terms. One of these methods is the contingent valuation method (CVM). It is an interview-based method for the assessment of people's willingness to pay (WTP) for the realization of a public project. In analogy to market goods, where we typically assume that the price consumers are willing to pay for such a good can be

[1] https://www.originvietnam.com/destination/vietnam/chau-doc/tra-su-melaleuca-forest.html.

[2] http://www.archives.gov/federal-register/executive-orders/pdf/12866.pdf.

interpreted as the monetary equivalent of the benefits or utility they expect from its consumption, we assume that people's WTP for the realization of a public project reflects the benefits they expect from it in monetary terms. These benefits determine their preferences for the public project under consideration.

There exists a vast body of literature on the situation in the Mekong Delta and on possibilities to improve it (for recent contributions see e.g. Eslami et al., 2021; Kaveney et al., 2023; Thanh et al., 2023). Also several Contingent Valuation studies to assess people's WTP for specific environmental improvements in the Delta like, for example groundwater protection (Vo & Khai, 2017), improvement of surface water quality (Khai, 2014), biodiversity protection (Khai & Yabe, 2014), reduction of risks from salinity intrusion (Khong et al., 2018) etc. have been conducted with local people. In this paper here, we want to set up a comprehensive picture of Vietnamese people's awareness of, interest in and attitude towards the overall situation in the VMD.

To this end, we conducted an opinion survey with ca. 2000 completed interviews in three different regions of Vietnam: in the Vietnamese Mekong Delta itself, in Ho Chi Minh City (HCMC), which is close to the VMD, but not part of it and in Hanoi. The guiding idea behind this choice is that environmental improvements in a certain area typically provide two different kinds of benefits or values for society depending on the time people spend on the respective project site and on the distance they live from it (cf. e.g. Bastien-Olvera & Moore, 2021). People living in the Mekong Delta would be directly affected by an environmental improvement programme in the VMD, which means that this programme would create so-called use values for them. Use values of environmental goods are values that accrue from a direct 'use' of these goods. People living on site benefit directly from a beautiful landscape, clean water, rich biodiversity, a preserved traditional lifestyle, etc. In the case of a VMD recovery programme, such benefits could be enjoyed primarily by people living permanently in the VMD, that is by VMD residents, who make the first category of our interviewees, but also at a lower degree by tourists or temporary visitors from HCMC, which is very close to the Delta. People living in Hanoi would not come for a weekend to the VMD, but possibly as tourists during their holidays. From these considerations, it follows that we can expect use values accruing from a VMD recovery programme to be highest for people living in the VMD, lower for people living outside but still close to the VMD, for example in HCMC, and lowest for people living far away from the VMD, where we chose Hanoi as an example.

In the context of environmental goods a second kind of benefits or values, the so-called nonuse values or benefits, has to be considered. These benefits are not related to a direct use of the environmental goods under discussion and are independent of being present on site. The pure existence of intact and beautiful nature in some part of their country can be important to people. For many people, it is also desirable that such natural assets are preserved for their children and grandchildren or even for themselves, in case they might want to visit the respective site later in their lives. These three categories of nonuse values of environmental goods, that is pure existence values, bequest values and option values, can be enjoyed by people living on site as well as by people living close to the site (e.g. in HCMC) or even far away (e.g. in Hanoi). These considerations explain our choice of the three study sites, which is different from other studies on this subject.

Based on our 2000 completed interviews, we wanted to find out we wanted to find out how informed these groups of interviewees are about the developments in the Delta and how interested they are in the matter. We also wanted to scrutinize their ideas about the causes of the environmental decay in the VMD and about possible measures to be taken by government to improve the situation. Besides appraising people's opinions and attitudes, we also wanted to assess their willingness to contribute personally and financially to a sustainable ecological, economic and social development in the Vietnamese Mekong Delta. For this purpose, we embedded a Contingent Valuation part in our survey where we asked people their willingness to contribute a certain amount of money in order to finance a government project for the ecological, economic and social recovery of the VMD. These WTP amounts can be interpreted as the monetary equivalent of the benefits they expect from such a project. As explained above, these benefits in monetary terms can then be compared to the project cost in order to decide if the project in question would be worthwhile implementing or not. For the results of a CVM study to be of any political significance, it is important that the respective study is based on solid theoretical and methodological grounds. In this paper, we explain the welfare theoretical basis of our CVM analysis and we discuss different methods of assessing people's WTP, that is different formats for the elicitation of respondents' WTP. The survey was conducted online since at the time face-to-face interviews were not possible in Vietnam due to the COVID-19 pandemic.

In our survey, we also asked questions regarding our respondents' socio-demographic data, opinions and attitudes as well as some questions regarding their psychological status, where we were especially interested in the differences between the three groups of interviewees. The data collected in this context helps us to identify the special characteristics of the potential winners and losers of the project, that is of those people who would benefit most or least from its realization. Therefore, our study provides information on the allocative as well as distributive aspects of a public project. This kind of information can be helpful for the government to decide if a certain project should be realized or not.

Unlike most other studies on the VMD, we approach the problem of saving it from further decay from different perspectives simultaneously. We learn about people's believes and attitudes towards this problem, their readiness to get personally involved in the solution of this problem, their social and psychological background and the importance of this background for their readiness to help. These different aspects are assessed for the three types of study sites separately as well as in aggregate form. The results of such a comprehensive study can support government's decision on the realization of public projects in the environmental sector.

In our study, we find that people in all three study sites were very well informed about the problems in the VMD and that they had rather clear ideas about the causes of these problems and about possible solutions. Our CVM analysis showed that respondents living in Hanoi stated the highest willingness to pay (567,265 VND per month for 5 years) for the practical implementation of a government programme for the preservation and sustainable development of the VMD in the future. The stated willingness to pay was lower for HCMC (444,991 VND) and lowest for respondents from the VMD (408,546 VND). Looking at the merged data across all study sites, we found that being a member of the Vietnamese Communist Party or being involved in the rice business in the VMD lead to a higher willingness to pay, while living in larger households had a negative effect on respondents' stated willingness to pay. Under methodological aspects, it showed that the trichotomous choice elicitation question format was well understood by respondents and lead to reasonable results. It turned out that the credibility of the project scenario offered in the questionnaire and project consequentiality both had a significant positive effect on stated willingness to pay across all study sites. From a psychological perspective, it was interesting that respondents with a high score on the Big Five character trait Openness to Experience stated a significantly higher willingness to pay for the preservation of the VMD and that this also holds for high scorers on the Perceived Life Satisfaction scale. Happy people and people who are open to new things are more willing to support a sustainable development of the VMD than others and they would benefit more from it.

The paper is organized as follows: in the next section, we explain the theoretical background of the Contingent Valuation Method in general as well as the details of our empirical study. The third section provides the results of our study, which will be discussed in Section 4. Section 5 contains our concluding remarks.

2 | MATERIALS AND METHODS

Before we come to the details of our CVM study, we will briefly explain its welfare theoretical background.

2.1 | Theoretical background

Based on neoclassical welfare economic theory, we assume that government maximizes the well-being of society in terms of a neoclassical social welfare function of the general form

$$W = w(U_1, U_2, \ldots, U_H) \text{ with } \partial w / \partial U_h > 0 (h = 1, 2, H), \quad (1)$$

where U_h describes the level of well-being or utility of an individual h (h=1, 2, H). Assuming a utilitarian form of the social welfare function $W = \sum_{h=1}^{H} U_h$ where all individuals are treated equally by government ($\partial w / \partial U_h \equiv 1; h = 1, 2, H$) we can express any change in social welfare ΔW as the sum of all individual utility changes:

$$\Delta W = \sum_{h=1}^{H} \Delta U_h = \sum_{h=1}^{H} (U_h^1 - U_h^0), \quad (2)$$

where U_h^1 is the new utility level of individual h after some policy measure (like the implementation of an environmental programme) has been conducted and U_h^0 is her initial utility level. A government project is considered socially advantageous if the sum of the social benefits it creates exceeds the project costs so that $\Delta W > 0$, that is if $\sum_{h=1}^{H} \Delta U_h > 0$. The welfare economic assessment of a public project depends then on the sum of the individual utility changes it causes.

An environmental project typically affects environmental quality, which is the same for all individuals and can be represented by a vector z of environmental quality indicators. It also influences the market consumption of individuals h, which we denote by a vector x^h representing the quantities of the market goods consumed by individual h. The goal of an environmental project is to increase environmental quality z. The consumption of market goods can be directly affected by environmental quality changes (e.g. air purifiers in case of air pollution, bottled water in case of contaminated tap water, etc.). It can also be indirectly affected if prices and disposable incomes change as a consequence of an environmental project that creates new jobs or has to be financed by increased or additional taxes or fees. If we keep all other things that might affect a household's well-being (like health, peace, the weather, etc.) constant for our model, we can express the level of well-being or utility of household h as a (strictly monotonically increasing) function of z and x, that is $U_h = u_h(x^h, z)$.

Assuming that individuals maximize their well-being as expressed by the direct utility functions $u_h(x^h, z)$ subject to their budget constraint $p \cdot x^h \leq I_h$, where p is a vector of market prices and I_h is individual h's income, we can express the maximum attainable utility as a function v of prices p, environmental quality z and individual income I_h. This leads us to the indirect utility function $v_h(p, z, I_h)$ according to

$$v_h(\boldsymbol{p}, \boldsymbol{z}, I_h) \equiv \max_{\boldsymbol{x_h}} u_h(\boldsymbol{x^h}, \boldsymbol{z}) \quad \text{s.t. } \boldsymbol{p} \cdot \boldsymbol{x^h} \leq I_h. \quad (3)$$

The indirect utility function is monotonically increasing in environmental quality z, monotonically decreasing in market prices p and strictly monotonically increasing in income I.

An increase in utility resulting from an increase in environmental quality from z^0 to z^1 can then be measured in monetary terms by the (maximum) amount of money an individual could give up in the new situation 1 without being worse off than in the initial situation 0:

$$v_h\left(\boldsymbol{p}, \boldsymbol{z^1}, I_h - \mathrm{WTP}_h^{01}\right) = v_h(\boldsymbol{p}, \boldsymbol{z^0}, I_h) = U_h^0, \quad (4)$$

where WTP_h^{01} is the individual's (maximum) willingness to pay for the respective environmental improvement. The superscripts 0 and 1 denote the situations before and after the project in question has been implemented, respectively. The sum of the WTP_h of all individuals h affected by a project is used as the monetary measure of the social benefits SB^{01} accruing from that project, that is

$$\mathrm{SB}^{01} = \sum_{h=1}^{H} \mathrm{WTP}_h^{01}, \quad (5)$$

which can be compared with the project costs. Using benefit transfer techniques these results gained for a specific study site can also be extrapolated to other sites or to a whole country (cf. e.g. Ahlheim et al., 2015).

2.2 | The Contingent Valuation Method

The empirical assessment of people's WTP for market goods is straightforward: if we can observe a consumer buying a certain commodity, we can conclude that the market price she pays is equal to her WTP for that commodity. Otherwise she would not buy it. A similar assessment method does not exist for public goods or common pool goods, which prevail in the environmental sector since no markets exist for such commodities. Therefore, we have to resort to other methods like the Contingent Valuation Method (CVM) in order to assess people's preferences for these goods. The CVM is based on personal interviews with a representative sample of all people or households affected by an environmental project and aims at the elicitation of their WTP for that project. Since real markets for environmental goods do not exist, one cannot observe consumers paying a certain price for them. Therefore, hypothetical markets for environmental goods or projects are constructed in a CVM interview where respondents' WTP is derived from their hypothetical demand behaviour in these markets. Obviously, the success of this method critically depends on the specific design and credibility of the hypothetical markets, since it aims at the assessment of stated WTP instead of revealed WTP like in the case of market goods. Ciriacy-Wantrup (1947) is considered the originator of the CVM idea, while the first practical attempt to determine the willingness to pay of individual households (for a recreation area) by a CVM survey is attributed to a study by Davis (1963). Since then a huge literature has developed on the Contingent Valuation Method (for an overview cf. e.g. Carson & Hanemann, 2005).

2.3 | The study

In spring 2022, the polling agency Rakuten Insights (https://insight.rakuten.com/), which has large panels of potential respondents in various Asian countries at its disposal, conducted about 2000 completed online interviews for us at three different study sites in Vietnam. As explained above, the first study site was the Mekong Delta itself (397 interviews), the second was Ho Chi Minh City (HCMC), which is close to the VMD, but not part of it (800 interviews) and the third was Hanoi (800 interviews).

The CVM interview we used in our study consisted of four main parts. In the first part interviewees were asked their main socio-economic characteristics like age, education, income and household size. In the second part they were asked about their prior knowledge (e.g. from personal experience, press reports, citizen forums, etc.) about the situation in the VMD. Then they were reminded of the beauty and ecological as well as economic importance of the VMD (using also pictures) in order to make them aware of what is at stake there. This illustration was followed by a careful description of the threats to the VMD from salinization and pollution of ground and surface water bodies. The third part of our questionnaire contained our project scenario which was to be valued in the CVM part of the study. Designing the project scenario is a major challenge of every CVM study since an environmental project that is only in the planning stage cannot be inspected or tested in person by the respondents of the questionnaire. The scenario should contain all relevant information about the project under consideration, but must not be too extensive, and, since it will be standardized, must be equally understandable for all groups of respondents, no matter what their educational background is. Focus group discussion, preliminary in-depth interviews with experts and with members of private households and several waves of pre-tests with randomly selected participants are necessary to design an applicable scenario. In our questionnaire, we used a short version of the information on the VMD described in the first section of this paper as a project scenario:

> In order to stop this negative development, scientists suggest the so-called "Mekong Delta Preservation Programme" (MDPP), which would be managed by a central government agency. It pursues among others the following goals: restraining salinization in the VMD, making rice production in the VMD attractive and profitable again, reducing the pollution of the environment, preserving and re-establishing social life in the rural areas of the VMD, modernizing agriculture in the VMD, providing agreeable living conditions in the VMD for future generations.

After the project scenario, the hypothetical market or payment scenario was communicated to the respondents. Here, it was explained that the proposed environmental project will incur costs, which in one way or other will have to be borne by the citizens affected by the project in question. In our study, we used the following text as a payment scenario:

> If the Mekong Delta Preservation Programme were realized in practice, this would increase government's cost considerably. In order to finance the MDPP, government would set up a so-called Mekong Delta Preservation Fund (MDP Fund), to which every household would have to contribute a fixed amount of money every month for five years. … With this survey, we want to scrutinize how much money Vietnamese households would be willing to contribute to such a fund in order to get the MDPP realized.

In the next step, we asked the elicitation question. Here, one wants to find out the maximum amount of money that respondents

would be willing to pay in order to get the environmental project in question realized. There exist various different elicitation question formats. The most popular format is the dichotomous choice (DC) format (or referendum format) where respondents are asked if they would vote for the realization of the project in question if they had to pay a given amount of money (the 'bid') in case the project was realized. The advantage of this format is that the cognitive demands on the participants are rather low because there are only two answering options, that is 'Yes' or 'No'. Participants should be well acquainted with this kind of decision from their everyday shopping experience where they also have the possibility to pay the price for a certain commodity or go without it. Different subsamples of respondents are confronted with different bids, which are determined on the basis of pre-tests and in-depth interviews before the main survey starts. From the answers to these elicitation questions which yield upper or lower bounds of the individual respondents' true WTP the mean WTP of the sample can be calculated. Multiplying it by the number of people affected by the project, one obtains the social benefits SB created by the project for society as a whole. The DC format is considered incentive compatible (Arrow et al., 1993; Carson & Groves, 2007) in the sense that it is in respondents' best interest to answer the WTP question truthfully.

In spite of its broadly discussed advantages (simplicity and incentive compatibility), experimental studies have suggested that DC-based CVM surveys tend to overestimate people's WTP (cf. e.g. Blaine et al., 2005, Cameron et al., 2002, Johannesson et al., 1998, Vossler & Holladay, 2018, Xu et al., 2006). Given this phenomenon, Brown et al. (1996) and Loomis et al. (1999) theorized that respondents to the DC format might be caught between two conflicting objectives whenever they support the public project in question in terms of content on the one hand, while the price they are asked to pay exceeds their true WTP, on the other. Loomis et al. (1999) explained that problem as follows: 'If individuals think the good is worthwhile, but only if provided at a price less than the bid amount, they must choose between providing an honest response (i.e., "No") and providing a response that indicates their support for providing the public good. Faced with this dilemma, some individuals may opt for a "Yes" response even at a bid amount in excess of their "true" WTP' (Loomis et al., 1999, p. 582). In this case, CVM results might be biased upwards. To tackle this problem of upward-biased WTP estimates caused by such acquiescence behaviour Loomis et al. (1999) suggested using the so-called Trichotomous Choice format (TC). It offers a third answering option: in addition to a plain 'Yes' or 'No' respondents can also choose the answer 'No, but if the amount was lower, my household would support the project in question'. This option allows respondents to express their positive attitude towards the environmental good as such, while rejecting the suggested bid. After we had positive experience with this format in another context (cf. Ahlheim et al., 2022) we decided to apply it also here.

Other variants of the DC format are the double-bounded DC format and the one-and-a-half-bounded DC format. With the standard single-bounded dichotomous choice elicitation question format a respondent is asked only one DC question, that is she is asked if she would vote for a certain project at a given price (bid). Her answer ('Yes' or 'No') provides either an upper bound or a lower bound to her true WTP. With the double-bounded DC format, respondents would be asked a follow-up elicitation question after the first answer. A 'Yes' answer would be followed by the same question with a higher bid and a 'No' answer would be followed by an elicitation question with a lower bid. Hanemann et al. (1991) show that the double-bounded dichotomous choice question format is statistically more efficient than the single-bounded format because it generates more information per interview. Compared to the single-bounded DC format, there is a consistent decline in covariance terms when using the double-bounded version. As a result, the confidence interval around the median WTP is tightened. Unfortunately, it turned out that studies using the double-bounded format systematically yielded lower average WTP amounts than studies for the valuation of the same public projects using the single-bounded format (cf. e.g. Deshazo, 2002, p. 361 or Hanemann et al., 1991, p. 1260/1261). One explanation for this phenomenon is that respondents who accepted the first bid consider this a 'deal' with the interviewer, so that the first bid constitutes a price anchor for them. Therefore, they are annoyed when they are asked if they also accepted a higher bid in the follow-up question. Consequently, they would answer 'No' to the follow-up question even if their true WTP were higher than the second bid (e.g. Deshazo, 2002, p. 366/367). This anchoring effect, that occurs only in the elicitation question sequence with ascending bids, might lead to a systematic underestimation of the social benefits accruing from a public project when the double-bounded dichotomous choice elicitation format is used. Consequently, deShazo (2002) suggests discarding the responses to the follow-up question from the data set whenever the first bid has been accepted. As Flachaire and Hollard (2006) demonstrate, this procedure yields the most efficient estimates in comparison to any other technique accounting for biasing effects in the double-bounded DC format. Although we had good experience with the deShazo format in another study (Ahlheim et al., 2010) we decided to use the TC format here, because the deShazo format does not address the dilemma faced by respondents who agree with the content of a public project but disagree with the bid.

The last part of our CVM questionnaire contained questions regarding respondents' psychological background. Here we tested for three psychological characteristics of respondents, namely Openness to Experience according to the Big Five inventory suggested by Paul T. Costa Jr. and Robert R. McCrae (see e.g. Costa & McCrae, 1992a, 1992b, 1997), the Light Triad (cf. Kaufman et al., 2019) and Purpose in Life (cf. e.g. Anderson et al., 2022; Ryff et al., 2010). Finally, we asked our respondents to mark on a 10-point scale the actual degree of their life satisfaction ('How satisfied are you today, all things considered, with your life?'). We wanted to use these items to characterize respondents from the different study sites. Furthermore, we also wanted to test for the influence of these characteristics on respondents' WTP for the Mekong Delta Preservation Programme (MDPP).

3 | RESULTS

In our questionnaire, we asked the socio-demographic questions in the very beginning because we used sex, age and the region where our respondents live as criteria for the stratification of our sample. The socio-demographic details of our samples at the different sites are presented in Table 1. It shows that at all three study sites we have nearly equal shares of male and female respondents, and the largest group of respondents is between 35 and 44 years old. Nearly 86% of all respondents are between 25 and 54 years old, only 6.6% are older. This age distribution is due to the fact that we conducted an online survey, where older people are typically underrepresented. The majority of respondents are married and the largest group lives in four-person households at all study sites, respectively. Looking at the educational level, occupational status and income, we find that the sample of people interviewed in our survey is not representative of the Vietnamese population in general. They are better educated and have higher incomes than average Vietnamese people. On average, nearly 78.8% of our respondents have a Bachelor's degree or higher, while this holds only for 10.2% of the overall population of age 25 or more (2019) in Vietnam.[3] The average disposable monthly income of our respondents' households in all three study sites taken together is about 29,660 thousand VND (1263 USD), while the average monthly per capita income in Vietnam is 5590.2 thousand VND (238 USD) in urban areas and 3481.5 thousand VND (148 USD) in rural areas (cf. General Statistics Office VN, 2021, p. 16). From these data, it becomes clear that our households were much better earning than average 'normal' households in Vietnam. This difference is because, due to the COVID-19 pandemic, we had to resort to an online survey, which naturally reaches better than average educated and earning people. Accordingly, only about 18% of our respondents ticked one of the options 'Finding it difficult' or 'Finding it very difficult' when asked 'How well would you say is your household managing financially these days?'. Comparing the three different study sites, we find that our respondents in Hanoi are better educated on average than respondents in HCMC who are better educated than respondents living in the Mekong Delta. The same ranking holds when looking at the household incomes of our respondents.

We wanted to find out how strongly people living directly in the VMD feel attached to the Delta and, therefore, asked the members of this subsample if they had ever considered leaving the Delta and if they had close friends there. Only 14% of the respondents stated that they often think about leaving the Delta while 57% stated that they had never thought about it. Accordingly, 80% of our respondents stated that most of their close friends live in the Delta. These results underline the strong attachment that local people feel to the VMD. When asked to choose three out of eight items, which best characterize the VMD the three most frequently named characteristics across the total sample were 'Rice Production' (31%), 'Waterway Network' (20%) and 'Mangrove Forests' (14%). On average across the three sites, about 32% of our respondents were members of the Vietnamese Communist Party (VCP). It is interesting that we find the highest VCP membership rate in HCMC (73.5%) and not in Hanoi (64.5%), where the Vietnamese government is located. In Hanoi the membership rate is even slightly lower than in the Delta (65%). The general expectation that the party membership rate decreases as the distance from the capital increases does not hold here, at least not for our respondents.

After we had briefly described the actual environmental, social and economic situation in the VMD, we asked respondents to name five (out of 11) potential causes of the increasing water scarcity and water pollution in the VMD which they think are most important. Here again, the answers were rather similar across all three study sites. Most respondents thought that 'Climate Change' (16.1%) is mainly responsible for the situation in the VMD, followed by 'The Construction of Dams and Hydroelectric Power Plants on the Upper Reaches of the Mekong' (12.9%), 'Sea Level Rise' (11.4%), 'Overextraction of Water from the Mekong River and Overexploitation of Groundwater Aquifers' (10.4%) and 'Insufficient Coordination of the Water Management in the VMD Between Local Politicians and Central Government' (8.5%). These results show that also people living outside the VMD are well informed about the situation in the VMD and its background. This suggests that their answers to our questions can be taken seriously.

Next, we asked respondents to mark the five most important policy measures out of 15 measures suggested in the MDPP as described in the project scenario of our questionnaire. The most frequently suggested policy measures were 'Restricting the Use of Pesticides and Fertilizer by Farmers' (11.8%), 'Fostering Sustainable Agriculture in the VMD' (12.2%), 'Promoting the Development of Climate Resilient Crop Varieties in Order to Secure Farmers' Incomes in the Future' (10.6%), 'Fostering Eco-tourism in the VMD in Order to Create New Incomes' (9.1%), 'Modernizing Agriculture in the VMD' (8.7%) and, equally important, 'Building Sluices, Weirs and Dykes for Agriculture' (7.8%).

In the following step, we wanted to learn more about people's ideas regarding a possible cooperation with other countries to solve the problems in the Delta. We confronted the respondents with three different statements, where they had the possibility to 'strongly disagree', 'disagree', 'agree' or 'strongly agree' plus a 'do not know' option on a 5-point Likert scale. The first statement aimed at the question if Vietnam will be able to solve its problems in the VMD alone:

> Vietnamese people are strong. We will be able to solve the water scarcity problems in the VMD alone without the help of other countries.

It turned out that 55.9% of all respondents agreed or strongly agreed with this statement, while 77.26% of the respondents agreed or strongly agreed with the statement.

[3]Cf. https://data.worldbank.org/indicator/SE.TER.CUAT.BA.ZS?locations=VN.

TABLE 1 Socio-demographic characteristics.

	HCMC	Hanoi	Mekong delta	All areas
Sample (*N*)	800	800	397	1997
Gender				
Female	48.9% (391)	51.1% (409)	50.4% (200)	50.1% (1000)
Male	51.1% (409)	48.9% (391)	49.6% (197)	49.9% (997)
Age groups				
Under 25	7.3% (58)	7.8% (62)	7.3% (29)	7.5% (149)
25–34	21.5% (172)	21.8% (174)	23.4% (93)	22.0% (439)
35–44	40.1% (321)	42.8% (342)	43.3% (172)	41.8% (835)
45–54	22% (176)	23.9% (191)	18.9% (75)	22.1% (442)
Above 55	9.1% (73)	3.9% (31)	7.1% (28)	6.6% (132)
Marital status				
Single	22.8% (182)	15.8% (126)	27.5% (109)	20.9% (417)
Married	73.5% (588)	81.5% (652)	67.0% (266)	75.4% (1506)
Divorced, sep. or widowed	3.8% (30)	2.8% (22)	5.5% (22)	3.7% (74)
Household size				
1	1.4% (11)	2.3% (18)	3.3% (13)	2.1% (42)
2	7.1% (57)	5.4% (43)	9.1% (36)	6.8% (136)
3	20.4% (163)	12.3% (98)	27.5% (109)	18.5% (370)
4	42.8% (342)	40.3% (402)	34.3% (136)	44.1% (880)
More than 4	28.4% (227)	29.9% (239)	25.9% (103)	28.5% (569)
Number of children				
0	23.6% (189)	14.6% (117)	27.7% (110)	20.8% (416)
1	29.1% (233)	20.5% (164)	34.8% (138)	26.8% (535)
2	42.8% (342)	58.3% (466)	33.2% (132)	47.1% (940)
3	3.6% (29)	6.1% (49)	2.5% (10)	4.4% (88)
More than 3	0.9% (7)	0.5% (4)	1.8% (7)	0.9% (18)
Education				
Secondary School or lower	0.9% (7)	1.3% (10)	3.3% (13)	1.5% (30)
High School	9.6% (77)	3.1% (25)	16.1% (64)	8.3% (166)
Professional School	3.3% (26)	2.1% (17)	6.0% (24)	3.3% (67)
College	9.1% (73)	7.1% (57)	8.1% (32)	8.1% (162)
Bachelor Degree	70.1% (561)	74.5% (596)	61.5% (244)	70.2% (1401)
Master Degree (or higher)	7.0% (56)	11.9% (95)	5.0% (20)	8.6% (171)
Occupation				
Employee gov. agency	9.4% (75)	15.9% (127)	16.1% (64)	13.3% (266)
Employee public institution	9.4% (75)	9.6% (77)	11.8% (47)	10.0% (199)
Employee private enterpr.	48.8% (390)	51.4% (411)	36.8% (146)	47.4% (947)
Self – employed	20.0% (160)	16.3% (130)	19.6% (78)	18.4% (368)
Trainee, student, pupil	3.9% (31)	2.6% (21)	5.3% (21)	3.7% (73)
Retiree	3.5% (28)	1.4% (11)	2.3% (9)	2.4% (48)
Looking for a job	3.3% (26)	1.8% (14)	4.5% (18)	2.9% (58)
Housewife, husband	1.9% (15)	1.1% (9)	3.5% (14)	1.9% (38)
Disposal income				
Less than 8 million	3.4% (27)	3.3% (26)	9.6% (38)	4.6% (91)
8 to less than 12 mill.	5.3% (42)	7.3% (58)	16.1% (64)	8.2% (164)

TABLE 1 (Continued)

	HCMC	Hanoi	Mekong delta	All areas
12 to less than 18 mill.	12.6% (101)	15.0% (120)	24.9% (99)	16.0% (320)
18 to less than 25 mill.	21.5% (172)	20.4% (163)	19.6% (78)	20.7% (413)
25 to less than 32 mill.	21.9% (175)	21.9% (175)	12.6% (50)	20.0% (400)
32 to less than 40 mill.	11.6% (93)	13.3% (106)	7.6% (30)	11.4% (229)
40 to less than 50 mill.	10.1% (81)	8.0% (64)	2.0% (8)	7.7% (153)
50 to less than 60 mill.	4.6% (37)	2.8% (22)	3.3% (13)	3.6% (72)
60 to less than 80 mill.	5.0% (40)	2.9% (23)	1.8% (7)	3.5% (70)
80 to less than 100 mill.	1.5% (12)	2.5% (20)	0.8% (3)	1.8% (35)
100 million or above	2.5% (20)	2.9% (23)	1.8% (7)	2.5% (50)
VCP Membership				
Yes	26.5% (212)	35.5% (284)	35.0% (139)	31.8% (635)
No	73.5% (588)	64.5% (516)	65.0% (258)	68.2% (1362)

TABLE 2 Distribution of TC answers for all sites merged.

	Bid (1000 VND)					
WTP answer	**30,000**	**100,000**	**200,000**	**400,000**	**600,000**	**Total**
No	11.57%	8.42%	9.32%	10.93%	11.25%	10.27%
No, but	20.57%	34.90%	35.90%	37.87%	41.25%	34.15%
Yes	67.86%	56.68%	54.78%	51.20%	47.50%	55.58%
Total	100%	100%	100%	100%	100%	100%

> The Vietnamese government should exert pressure on the upstream countries of the Greater Mekong Sub-Region to reduce their water extraction from the Mekong River.

The strongest support for this statement came from respondents from Hanoi (79.5%). This shows that people think Vietnam should seek cooperation with upstream countries from a position of strength. Nevertheless, 92.19% of the respondents agreed or strongly agreed with the statement that

> Vietnamese people will have to adapt their lifestyle and their economy to increasing water scarcity in the future. It is not realistic to expect other countries to change their behavior.

Obviously, our respondents are convinced that Vietnam itself must draw consequences from the current situation and initiate countermeasures.

The detailed description of the Mekong Delta Preservation Programme (MDPP) in our project scenario as cited in the previous section of this paper forms the basis for our elicitation question. In the questionnaire, the description of the project scenario is followed by the payment scenario, which has also been explained in in the previous section of this paper. After that, we proceeded with the following elicitation question in our questionnaire:

> Would your household support the implementation of the MDPP if it had to pay an amount of xxx VND into the MDP Fund every month for 5 years?
>
> Imagine that the quorum for the realization of the MDPP had nearly been reached and that everything depends now on your decision. That means that if you support the programme by answering "Yes," the programme will be realized and your household will have to pay the requested amount into the MDP Fund. If you do not answer "Yes," the MDPP will not be realized and you do not have to pay anything. (xxx = 30,000/100,000/200,000/400,000/600,000 VND).

Using the TC format, we offered three different answering options: 'Yes', 'No' and 'No, but my household would support the MDPP if the amount to be contributed were lower'. We also added 'Please note: the MDPP will be realized only if the overall sum of contributions to the MDP Fund will be sufficient to cover the cost of the MDPP' in order to emphasize the policy consequentiality of respondents' answers.

Table 2 shows the distribution of the answers to the elicitation question with the different bid amounts for the merged data of all study sites. We see that the share of 'Yes' answers decreases as the bid increases. This is what we would expect from economic theory, that is the demand function for the 'commodity' MDPP has a negative slope. This underlines the consistency of our data. It is

TABLE 3 Distribution of TC answers at the different sites.

	Bid					
WTP answer	30,000	100,000	200,000	400,000	600,000	Total
HCMC						
No	11.04%	6.49%	10.06%	10.97%	10.74%	9.88%
No, but	22.70%	35.71%	35.75%	40.00%	42.95%	35.25%
Yes	66.26%	57.80%	54.19%	49.03%	46.31%	54.87%
Total	100%	100%	100%	100%	100%	100%
Hanoi						
No	8.61%	4.29%	5.81%	10.67%	8.54%	7.50%
No, but	16.56%	35.58%	36.05%	33.33%	42.68%	33.13%
Yes	74.83%	60.13%	58.14%	56.00%	48.78%	59.37%
Total	100%	100%	100%	100%	100%	100%
Delta						
No	18.67%	19.54%	15.38%	11.43%	17.24%	16.62%
No, but	24.00%	32.18%	35.90%	42.86%	35.63%	34.01%
Yes	57.33%	48.28%	48.72%	45.71%	47.13%	49.37%
Total	100%	100%	100%	100%	100%	100%

interesting to note that the decrease in the demand for the MDPP with increasing price goes along with a compensating increase in the share of 'No, but' answers, while the share of 'No' answers stays more or less constant. This shows that the TC elicitation format offers a way out of the quandary in which respondents find themselves, whenever they appreciate a public project while they find the required bid too high. With the 'No, but' option they can answer the elicitation question truthfully, that is they can express their appreciation for a project without having to accept an excessive price. The findings of Cameron et al. (2002), Blaine et al. (2005) or Vossler and Holladay (2018) and others suggest that with the DC elicitation format we might have obtained exaggerated WTP statements in our interviews because some respondents would have answered 'Yes' to the elicitation question even though they would have considered the respective bid too high. This kind of bias would also exist with the double-bounded and the one-and-a-half-bounded version of the DC format. Table 3 shows the distribution of answers to the elicitation question at the different study sites. It turns out that the average acceptance rate over all bids is highest in Hanoi (59.37%) and lowest in the VMD (49.37%), while HCMC is somewhere in the middle (54.87%). This means that the average acceptance rate increases with the distance from the project side, that is from the VMD.

For the calculation of the WTP, we have to treat 'No, but' answers as 'No' answers since the WTP of respondents who answer 'No, but' is lower than the bid. This reduces our data to the DC format for the WTP calculation, for which we now can use the standard probit model, as suggested by Hanemann (1989) or Haab &and McConnell (2002, pp. 155 ff.). We assume that WTP can be modelled as a linear function

$$\mathrm{WTP}_h(\boldsymbol{y_h}, \varepsilon_h) = \beta \bullet \boldsymbol{y_h} + \varepsilon_h, \tag{6}$$

where y_h is the vector of explanatory variables for household h, β is the vector of the respective parameters and ε_h is the error term. We assume that a respondent in a CVM interview will answer 'Yes' if the bid that is suggested to her (i.e. bid_h) is not higher than her WTP. If we code her answer to the elicitation question as $a_h = 1$ for a 'Yes' answer (and $a_h = 0$ for a 'No' answer) we can express the probability to obtain a 'Yes' answer from respondent h by

$$\begin{aligned} \Pr(a_h = 1 | y_h) &= \Pr(\mathrm{WTP}_h \geq \mathrm{bid}_h) \\ &= \Pr(\beta \cdot y_h + \varepsilon_h \geq \mathrm{bid}_h) \\ &= \Pr(\varepsilon_h \geq \mathrm{bid}_h - \beta \cdot y_h) \end{aligned} \tag{7}$$

In our study, we used the 'probit' command in Stata to assess the parameters β. Table 4 shows the model we used to evaluate the merged data over all study sites and the respective regression results. The explanatory variables used in our regression analysis are explained in Table 5.

We had the following hypotheses regarding the impact of these variables on stated WTP or the probability that respondents accept a given bid:

- BID: The bid should have a negative effect on stated WTP since we assume that environmental quality is not a Giffen good, that is we assume that the respective demand function has a negative slope. It is plausible, that a higher price reduces the probability that a given commodity is bought at this price.
- FEMALE: Many studies show that women are more likely to engage in pro-environmental behaviour than men (cf. e.g. Shahzad et al., 2022). Therefore, we expected women to state a higher WTP for the MDPP than men.
- AGE: Young people are expected to show a higher willingness to personally support environmental issues (cf. e.g. De Araújo et al., 2022; Gomes et al., 2023).
- INCOME: According to consumer theory, the demand for a non-inferior commodity increases with income ceteris paribus.

TABLE 4 Probit model with merged data.

WTP – Response 'Yes'	Coefficient	SE
BID	−.001***	.000
FEMALE	.106	.069
AGE	.003	.003
INCOME	−.006	.016
HH_SIZE	−.087**	.035
CHILD	−.024	.076
REGION		
Delta	0 (base)	
HCMC	.182*	.094
Hanoi	.282***	.095
BREADWINNER	.198**	.092
RICEVMD	.439***	.077
PROJECT_CON	.334***	.044
CREDIBILITY	.127***	.030
VCP	.246***	.074
OPENNESS	.036***	.008
PLS	.162***	.021
CONS.	−4.165***	.330
Observations	1855	
Log likelihood	−978.54275	
BIC	2077.496	
MEAN WTP	513,019*** (21.86 USD)	

***$p < .01$, **$p < .05$, *$p < .1$.

Therefore, we expect the effect of income on WTP cet. par. to be positive.

- HH_SIZE: An increase in household size implies an increase in expenditures on necessities of life. That means that for given income money becomes 'scarcer' in a household so that less money is left for non-essential goods like environmental quality. Therefore, we expect a negative sign here.
- CHILD: Having children means that also future generations will benefit from environmental improvements. Therefore, we expect a positive sign here.
- REGION: People living in the Delta will benefit more than people in HCMC or Hanoi from the MDPP, because they will also enjoy use values of such a project, while people living outside the Delta will mostly enjoy nonuse benefits. Therefore, living in the Delta should have a positive effect on WTP for the MDPP as compared to living in Hanoi or HCMC. The fact, that incomes are higher on average in Hanoi and HCMC than in the Delta should have no effect since we control for income in our regression analysis.
- BREADWINNER: In most households, the breadwinner has the strongest influence on household spending. Other household members are more cautious when decisions regarding expenditures on commodities have to be made that do not belong to the household's usual consumption bundle. Therefore, we expect a positive sign here, since a contribution to the MDPP belongs to the extraordinary expenditures of a standard household.

TABLE 5 List of variables.

Variable	Type	Description
CONS.	Constant	Constant
WTP	Categorical ('Yes' = 1 and 'No' = 0)	Answer to TC question, 'No, but…' and 'No' as one category
BID	Continuous	Proposed amount in TC question
FEMALE	Dummy (Female = 1)	Gender of respondent
AGE	Continuous	Age of respondent
INCOME	Continuous	Disposal income
HH_SIZE	Continuous	Household size
CHILD	Dummy (Yes = 1)	Whether the household has children or not
REGION	Categorical	Study sites (HCMC, Hanoi and Delta)
BREADWINNER	Dummy (Yes = 1)	Whether the respondent is the main breadwinner of the family
RICEVMD	Dummy (Yes = 1)	Answer to the question: 'Is your household financially involved in rice production in the Mekong Delta?'
PROJECT_CON	Continuous	Project consequentiality
CREDIBILITY	Continuous	Belief of respondents about the credibility of the proposed project
VCP	Dummy (Yes = 1)	Whether the respondent is a member of the Vietnamese Communist Party
OPENNESS	Continuous	Sum of Openness score
PLS	Continuous	Life Satisfaction score

- RICEVMD: Households which are involved in the rice production in the VMD should have a higher interest in a sustainable development of the Delta, that is they should expect higher benefits from the MDPP than other households. Therefore, their WTP for the MDPP should be higher.
- PROJECT_CON: If respondents have the feeling that their answers have a positive influence on the implementation of the public project under discussion (project consequentiality) we expect them to agree to a higher contribution than respondents who think that their answers are of no importance, anyway. Therefore, we expect a positive effect here.
- CREDIBILITY: Respondents who answer 'likely' or 'rather likely' to the question 'How likely do you think it is that the proposed extent of the changes can actually be realized?' should state a higher WTP for the MDPP than respondents who do not believe that the project can be realized, anyway. Therefore, we expect a positive sign of this effect here.
- VCP: Based on identity economics and psychological identity theory we expect that members of the Vietnamese Communist Party (VCP) will identify themselves with the goals of the party and support any project that might be recommended by the party. Therefore, we expect a positive effect of VCP This expectation appears plausible from the perspective of identity economics (cf. Akerlof, 2016; Akerlof & Kranton, 2002, 2005, 2010). Studies in this field show that individuals' actions are driven by, among other things, their personal and social identities. Social identity includes membership in particular social groups, institutions or associations, where the group expects its members to behave according to the ideals of that group and to adopt what Akerlof (2016) calls 'we thinking' as 'a mode of thinking in which an individual takes a group's goals as his own' (Akerlof, 2016, p. 415). The Vietnamese Communist Party (VCP) is such a socially relevant group whose members are expected to behave according to the VCP's regulations. This includes, among other things, supporting the Vietnamese government's efforts to improve the state of the environment in Vietnam. Therefore, our working hypothesis is that party members would express a higher willingness to pay for the MDPP than other respondents.
- OPENNESS: 'Openness' or 'Openness to experience' is one of the so-called Big Five character traits first popularized by Paul T. Costa Jr. and Robert R. McCrae (cf. e.g. Costa & McCrae, 1992a, 1992b, 1997; McCrae & Costa, 1987, 1994, 1995; McCrae & John, 1992; McCrae et al., 1998). The Big Five inventory characterizes people's personalities by five character traits, the so-called domains, which are neuroticism, extraversion, agreeableness, conscientiousness and openness to experience. Each of these domains can be broken down into six subcategories, the so-called facets, which are typically assessed in personal interviews. The revised version of the original Big Five questionnaire, the so-called NEO-PI-R, consists of 240 questions. We were interested in the Openness character trait, which consists of the facets Openness to Fantasy, Aesthetics, Feelings, Actions, Ideas, and Values (cf. or Costa et al., 1991; McCrae, 1994, p. 257). 'Open people are characterized by an active pursuit of novelty', as McCrae (1994, p. 258) characterizes high scorers in this domain. Since the MDPP represents a new approach and a policy change to preserve the VMD it might be especially attractive to people who are 'open' in the Big Five sense. Therefore, we expected that high scorers on openness should state a higher WTP for the MDPP than others.
- PLS: Donating money for the recovery and preservation of the VMD represents some kind of charitable giving, which is typically associated with a higher degree of Perceived Life Satisfaction (PLS) or happiness (s. e.g. Kittiprapas, 2022; Zheng et al., 2021). Therefore, in our questionnaire we asked respondents to mark on a 10-point scale how satisfied they are with their lives ('How satisfied are you today, all things considered, with your life?'). Our hypothesis was that happy people state a higher WTP for the MDPP than other respondents.

Tables 4 and 7 show the results of our regression analysis, where Table 7 presents the regression results for the different study sites separately. As we expected from microeconomic consumption theory, the amount of the bid is negatively related to the probability that a respondent accepts the bid. This effect, which is significant for all sites except the VMD, is equivalent to a negative slope of the (pseudo-)demand function for the public good, that is the probability that a bid is rejected increases with the amount of the bid.

From Table 4 we can see that household size has a significant negative influence on WTP, that is on accepting a suggested bid. This is plausible since a higher number of household members means that the income situation of the household is more strained, so that less money is left for good causes like preserving the environment in the VMD.

Our regression analysis shows that living in Hanoi or HCMC has a significant positive effect on WTP as compared to living in the Mekong Delta. This result is also confirmed by the detailed regression analysis presented in Table 7, which shows the regression results for the three study sites separately. The mean WTP per month for 5 years across all study sites is 513,019 VND (21.86 USD). This amount seems to be rather high but considering that the respondents in our sample are richer than average Vietnamese citizens are, it is still plausible.

It is tempting to explain the difference in mean WTP between HCMC (*444,991 VND*), Hanoi (*567,265 VND*) and the VMD (*408,546 VND*) by the differences in average income between these study sites. However, this explanation is not satisfactory since (according to Table 6) average income of respondents from HCMC was higher than for respondents from Hanoi though mean WTP was higher for Hanoi residents than for respondents from HCMC. Furthermore, in our regression analysis we controlled for household income so that respondents with equal incomes stated a higher WTP if they were living in Hanoi than respondents from HCMC or the Delta. One possible explanation for the differences

TABLE 6 Household incomes in HCMC, Hanoi and the VMD.

City/region	Average monthly income per household (thousand VND)	Median monthly income per household (thousand VND)
HCMC	32,050 (1365 USD)	28,500 (1214 USD)
Hanoi	30,740 (1309 USD)	28,500 (1214 USD)
Mekong Delta	22,650 (965 USD)	15,000 (639 USD)
All study sites	29,660 (1263 USD)	28,500 (1214 USD)

TABLE 7 Probit model for HCMC—Hanoi—Mekong Delta.

	HCMC		Hanoi		Delta	
WTP – Response 'Yes'	Coefficient	SE	Coefficient	SE	Coefficient	SE
BID	−.001***	.000	−.001***	.000	−.000	.000
FEMALE	.311***	.110	−.084	.109	.079	.159
AGE	.009*	.005	.005	.006	−.016**	.008
INCOME	.001	.026	−.019	.026	.004	.037
HH_SIZE	−.046	.058	−.093	.058	−.138*	.075
CHILD	.062	.118	−.040	.131	−.188	.162
BREADWINNER	.277*	.150	.039	.157	.382**	.192
RICEVMD	.450***	.130	.578***	.128	.257	.158
PROJECT_CON	.364***	.072	.339***	.071	.343***	.101
CREDIBILITY	.121**	.047	.107**	.051	.221***	.065
VCP	.240*	.125	.316***	.119	.132	.158
OPENNESS	.033***	.012	.048***	.013	.019	.018
PLS	.175***	.036	.132***	.035	.176***	.042
CONS.	−4.7745***	.539	−3.749***	.514	−3.295***	.729
Observations	751		746		358	
Log likelihood	−395.262		−377.178		−191.848	
BIC	883.225		846.963		466.0246	
MEAN WTP	444,991*** VND (18,96 USD)		567,265*** VND (24,17 USD)		408,546 VND (17,41 USD)	

***$p < .01$, **$p < .05$, *$p < .1$.

in average WTP between the three study sites could be that according to Table 14 below 77.7% of respondents from Hanoi found it 'Very likely' or 'Rather likely' that the extent of the environmental changes promised in the MDPP project scenario can actually be realized, while this was the case for only 73.4% of respondents from HCMC and 68.8% from the VMD. Credibility of the project scenario has a positive significant effect on stated WTP as can be seen from Tables 4 and 7. Another possible explanation of the average WTP of Hanoi-based respondents being considerably higher than the WTP of respondents from the other study sites could be that the Vietnamese government is located in Hanoi and that this closeness to the seat of government has a positive effect on agreeing with suggested government policies.

Our regression analysis shows that being a member of the Vietnamese Communist Party VCP has a significant positive effect on WTP. This result is rather robust since it holds for our regression analyses with the data from Hanoi and HCMC (Table 7) and for the merged data set (Table 4). This result appears plausible from the perspective of identity economics (cf. Akerlof, 2016; Akerlof & Kranton, 2002, 2005, 2010) as explained above. Therefore, our working hypothesis was that party members, who made up 35.5% of our respondents from Hanoi, 35% of our respondents from the VMD and 26.5% of the respondents from HCMC would express a higher willingness to pay for the MDPP than other respondents. This hypothesis is now supported with high significance by our data in all of the regression models we calculated except the one for the Delta.

From Table 4, we see that if the main *breadwinner* of a household filled in the questionnaire this had a significant positive effect on the probability that a bid was accepted. This seems to confirm the general expectation that the breadwinner of a family feels more entitled to decide on how the household money should be spent than other household members and that, therefore, she is less cautious when making this decision. Being involved in the rice business in the VMD (variable: *RICEVMD*) has also a significant positive effect on WTP. This holds for people in Hanoi, where 32.9% of our respondents earn money from rice production in the VMD and in HCMC where this holds for 27.5%. In the Delta, nearly every second respondent (44.1%) is involved in the rice business; therefore, this is

not a distinguishing feature and does not lead to a statistically significant effect on WTP. From Table 7 we can see that women have a significantly higher WTP than men only in HCMC, while this effect is not significant at the other study sites. Age has a significant positive effect in HCMC and a significant negative significant effect on stated WTP in the Delta.

4 | DISCUSSION

The last section focused on the effect of respondents' given socio-economic characteristics on their willingness to contribute to the recovery and preservation of the VMD. In the section here, we want to learn more about the psychological background of their WTP decisions. This is about the influence of given character traits (like e.g. Openness to Experience) on their WTP decision on the one hand. These variables cannot be influenced by the design of the survey. On the other hand, we want to learn more about the influence of variables, which can be modified by the questionnaire design. This refers, for example to respondents' personal assessment of the decision-making situation in which they find themselves in a CVM interview. It also refers to variables like, for example the credibility of the scenarios, project consequentiality or payment consequentiality, which can be influenced through a suitable design of the CVM questionnaire. The influence of these variables on respondents' WTP statements are interesting from a methodological point of view in order to improve the design of future surveys. In this context, we are also interested in the cognitive background of respondents' WTP statements. What were they thinking about when answering the WTP question? What was their reaction to being confronted with the TC elicitation format? Which were their reasons for giving a certain answer ('Yes', 'No', 'No, but') here? From these results, we can learn about how to improve the performance of future CVM surveys.

We started by showing them a list of seven different options and asked them 'Which of the following items did you consider when making your payment decision? Please, choose the 3 most important items from the list below'. The answers are shown in Table 8. It says that 20.44% of all respondents thought about 'The current financial situation of my household', while 19.6% thought of 'The importance of the MDPP for future generations' and 18.75% considered 'The environmental benefits from the MDPP'. These statements are rather encouraging because they show that respondents obviously took the WTP decision seriously. They considered their financial situation, that is they considered if they really can afford the payment to which they are committing themselves, and they considered the benefits for which they are going to pay, that is the environmental benefits today and the benefits for future generations. This is exactly what one would expect of rational decision makers. It underlines the credibility of our data.

Also for methodological reasons we asked respondents about the reasons for their WTP decision, that is why they answered 'Yes', 'No, but' or 'No' to the elicitation question. This might help us to get a better understanding of their WTP decisions. The results are shown in Tables 9–11.

In Table 9, we see the reasons for 'Yes' answers. The most frequently named reason for 'Yes' answers (35% across all study sites) was 'I appreciate the MDPP and I think it is worth paying XXX VND per month'. This, again, supports the credibility of our results since this statement is exactly what one would expect to be a plausible reason for a 'Yes' answer that expresses a true appreciation of the MDPP. The second most frequent answer (24.1%) was 'I want to express my support for the MDPP though I find the contribution of XXX VND too high'. Respondents who ticked this answer obviously had not understood the idea of the 'No, but' option we had offered them in the questionnaire. A true 'Yes' answer requires that a respondent accept the project and the price she has to pay to get it realized. If she appreciates the project, but the price is higher than her true WTP she should choose the 'No, but' answer. If, instead, she answers 'Yes' in such a case the social value of the project will be overestimated. This is exactly the reason why the third answering option has been introduced in the TC format. Also respondents who chose the answer 'As a good citizen, I think it is my duty to support the MDPP' (21.1% of all 'Yes'-respondents) did not answer 'Yes' because the benefits they expect from the MDPP exceed the bid. Instead, they gave their answers to follow a social norm regarding the duties

TABLE 8 Considerations during WTP decision.

'Which of the following items did you consider when making your payment decision?'	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
The overall sum I would have to pay into the fund over the next 5 years	16.2	15.9	14.0	15.1
The current financial situation of my household	12.7	20.3	21.1	20.4
The environmental benefits from the MDPP	21.2	18.9	17.4	18.8
The importance of the MDPP for future generations	22.0	19.5	18.9	19.6
Other things I might be able to buy instead of contributing to the MDP Fund	6.7	7.4	8.1	7.0
I considered what other people might expect me to do	8.7	7.8	8.5	8.0
Political factors like corruption and transparency of the use of the MDP Fund	12.7	10.3	12.0	11.2

of a 'good citizen' which has nothing to do with the MDPP. This is, again, not what we want. From these results, we learn for future surveys that one must strictly rule out this kind of misunderstanding. This can be done by adding suitable remarks and appropriate guidance for answering the questionnaire. This requires thorough pretesting and conducting in-depth interviews in the face-to-face format before opening the main survey. Because of the COVID-19-related restrictions, this was not possible here.

The reasons for choosing the 'No, but' answering option are shown in Table 10. Nearly half of the 'No, but'-respondents (49.8%) gave this answer for exactly the 'right' reasons, i.e. the reasons why we had added this option to our questionnaire: 30% of the 'No, but'-respondents stated 'I wanted to express my support for the MDPP, although my household cannot afford to pay XXX VND per month for its implementation' while 19.8% stated 'I wanted to express that I find the MDPP useful, although it is not worth paying XXX VND per month'. The statement 'I think that "No, but …" is a politer way of saying "No"' shows that 19.3% of our respondents are nice people, but even nice people should say 'No' if they mean 'No'. The same holds for 14.4% of 'No, but'-respondents who again stated

TABLE 9 Reasons for 'Yes' answers.

'We would like to know more about the reasons why you answered "Yes". Which two statements from the following list best explain the reasons for your answer?'	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
I appreciate the MDPP and I think it is worth paying XXX VND per month.	35.1	36	35.5	35.5
I want to express my support for the MDPP though I find the contribution of XXX VND too high.	25.2	25.5	18.3	24.1
I find the contribution too high, but I do not believe that we will really have to pay anything at all in the end.	6.3	8.6	10.9	8.1
As a good citizen, I think it is my duty to support the MDPP.	21.1	20.3	23.2	21.1
I think my friends and family would expect me to support the MDPP.	1.8	1.7	3.3	2.0
I do not believe that the MDPP will be realized in the end. Therefore, my answer doesn't matter, anyway.	10.6	8.0	8.7	9.2

TABLE 10 Reasons for 'No, but' answers.

'Answering "No, but …" leads to a rejection of the MDP program, exactly like a "No" answer. Why did you answer "No, but …" instead of "No"? Which two statements from the following list best explain the reasons for your answer?'	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
I wanted to express that I find the MDPP useful, although it is not worth paying XXX VND per month.	21.9	18.4	17.8	19.8
I wanted to express my support for the MDPP, although my household cannot afford to pay XXX VND per month for its implementation.	27	32.3	31.3	30.0
I did not realize that 'No, but …' means also a rejection of the project.	8	7.6	5.2	7.3
As a good citizen, I think it is my duty to support the MDPP.	13.3	14.3	17	14.4
I think my friends and family would expect me to support the MDPP.	4.7	3.6	6.5	4.6
I think that 'No, but …' is a politer way of saying 'No'.	20.3	19.3	17.4	19.3
I think that if enough people give the 'No, but …' answer the MDPP might come at a lower price.	4.7	4.5	4.8	4.6

TABLE 11 Reasons for 'No' answers.

'We would like to know more about the reasons why you answered "No." Which two statements from the following list best explain the reasons for your answer?'	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
I don't think that the MDPP is really useful.	8.6	5.6	11.7	8.7
I find the MDPP useful, but I cannot afford any additional expenditures.	17.1	21.5	17.5	18.5
I find the MDPP useful, but the requested amount is too high.	11.4	8.4	10.8	10.4
I do not want to commit myself for a period of 5 years.	13.6	18.7	15.8	15.8
The MDPP is important, but I cannot tell how much money it is worth to me.	7.1	15	9.2	10.1
I find the MDPP useful, but I think the people in the VMD should be able to enjoy a sound environmental project without having to extra pay for it.	14.3	12.1	12.5	13.1
I think it is outrageous to ask people to pay XXX VND per month for 5 years. Therefore, I don't pay anything at all.	27.9	18.7	22.5	23.4

'As a good citizen, I think it is my duty to support the MDPP'. Having recognized this specific problem, one has to consider it in future surveys by making it very clear in the questionnaires that a good citizen does not automatically make a good respondent and that truthful answering is required here.

The reasons stated by our respondents for having answered 'No' to the elicitation question are shown in Table 11. They are mostly in accordance with the idea of the 'No' answering option in our survey design. Nevertheless, nearly 29% of our 'No'-respondents gave the typical reason that would have been appropriate for answering 'No, but' instead of 'No', that is 'I find the MDPP useful, but I cannot afford any additional expenditures' and 'I find the MDPP useful, but the requested amount is too high'. Again we learn that one must put special emphasis on explaining the idea of the 'No, but' option in future questionnaires to exclude such misunderstandings. The last two reasons for answering 'No' stated in Table 11 are typical protest statements, which, after all, justify a 'No'-answer. 23.4% of the 'No'-respondents stated 'I think it is outrageous to ask people to pay XXX VND per month for five years. Therefore, I don't pay anything at all'. They are annoyed by the bid, which they consider 'outrageous', and therefore they reject the whole package of MDPP plus the required payment. Possibly, they want to punish the interviewer by answering 'No' instead of 'No, but'. 13.1% of the 'No'-respondents stated 'I find the MDPP useful, but I think the people in the VMD should be able to enjoy a sound environmental project without having to extra pay for it'. This is a fundamental critique of the concept that the preservation of environmental quality is not free for citizens. This critique includes our MDPP offer but it is more general. In both cases the 'No' answer is justified.

Finally, we wanted to test for policy consequentiality and payment consequentiality. Therefore, we asked respondents 'To what degree do you believe that your responses will affect whether you will have to pay the additional cost if the MDPP is implemented?' (payment consequentiality) and 'To what degree do you believe that your responses will affect the implementation of the MDPP?' (policy consequentiality). The results are shown in Tables 12 and 13.

Table 12 shows that a vast majority of our respondents (84.7%) rather or even strongly believe in payment consequentiality, that is they believe that they will indeed have to pay the amount to which they have committed themselves. Respondents' trust in the decision mechanism, which we had explained to them before, is confirmed by their answers regarding policy consequentiality. As can be seen from Table 13, 84.8% of the respondents rather or strongly believe that their answers will have an influence on the probability that the MDPP will be implemented in practice. These strong results support the incentive compatibility of our questionnaire in the sense of Arrow et al. (1993). They suggest that respondents took the survey seriously because they believed that their answers would have consequences for them in the future. This speaks for the validity of our results in spite of the fact that we were not able to conduct our interviews face-to-face. The importance of consequentiality for CVM is discussed in much detail, for example in Vossler and Watson (2013) and Carson et al. (2014).

In this context, we also wanted to know to which extent our respondents believed that the environmental improvements that were promised in our scenario could indeed be realized, that is to which extent they believed that this programme is realistic and effective. The results as shown in Table 14 confirm the impression we got from the two previous questions. Again, a large majority of respondents (74.2%) stated that they find it likely or very likely that the programme when realized would be successful in the sense that 'the proposed extent of the changes can actually be realized'.

Taken together, these findings confirm the reliability of our results also under the aspect of incentive compatibility of our

TABLE 12 Belief in payment consequentiality.

To what degree do you believe that your responses will affect whether you will have to pay the additional cost if the MDPP is implemented?	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
I don't believe at all	1.8	1.1	1.8	1.5
I rather do not believe	8.3	7.3	8.1	7.8
I rather believe	52.4	50.9	46.3	50.6
I strongly believe	32.1	35.6	35.0	34.1
I don't know	5.5	5.1	8.8	6.0

TABLE 13 Belief in policy consequentiality.

'To what degree do you believe that your responses will affect the implementation of the MDPP?'	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
I don't believe at all	2.5	1.6	2.8	2.2
I rather do not believe	7.0	7.6	5.5	7.0
I rather believe	51.6	49.8	48.9	50.3
I strongly believe	34.4	35.0	33.8	34.5
I don't know	4.5	6.0	9.1	6.0

elicitation format. Vossler and Holladay (2018) identify the following conditions for incentive compatibility of CVM questionnaires: '(i) the participants care about the outcome; (ii) the authority can enforce payments by voters; (iii) the elicitation involves a yes or no vote on a single project, which relates to the implementation of a single possible policy that is identical to the project; and (iv) the probability that the proposed project is implemented is weakly monotonically increasing with the proportion of yes votes' (Vossler & Holladay, 2018, p.134). Condition (ii) refers to payment consequentiality, while condition (iv) refers to policy consequentiality. Both conditions are fulfilled in our study, as our results show. From the answers to our questions regarding the situation in the Delta, the causes of the environmental deterioration there and possible measures to improve the situation we can conclude that also condition (i) is fulfilled. Condition (iii) refers to the typical DC format, which implies that respondents have a discrete choice between 'Yes' and 'No' answers. This discrete choice format is also preserved in the TC format, which is an extended version of the DC format (cf. Loomis et al., 1999). For a thorough discussion of incentive compatibility of CVM elicitation formats, see also, for example Vossler et al. (2012), Czajkowski et al. (2017) or Zawojska et al. (2019).

From Tables 5 and 7, we learn that policy consequentiality has a highly significant positive effect on WTP and that this effect is robust in the sense that it is stable over all study sites. This means that believing in the importance of one's WTP answer for the realization of the MDPP increased respondents' willingness to accept the offered bid. The same holds for the credibility of project goals. Respondents who find it rather likely or very likely that 'the proposed extent of the changes can actually be realized' are more likely to accept the offered bid than others, that is believing in the promised improvements increases the WTP for the MDPP. These results are rather plausible.

In the final section of our questionnaire, we asked some questions regarding the psychological background of our respondents. Here we were interested in three different psychological concepts, which are interesting in themselves, but which might also have a positive influence on respondents' willingness to contribute to a public project. The first concept refers to one of the so-called Big Five character traits, that is 'Openness to Experience' or simply 'Openness' as explained above. The questions we asked to identify open respondents and the results (merged over all study sites) are shown in Table 15. They are a selection from the Big Five question catalogue for the Openness character trait suggested by John et al. in their Handbook of Personality (John et al., 2008, p. 157). The personal score of a respondent that entered the regression analysis was assessed by simply adding up her answers where a 'Strongly disagree' answer counted 1 point, 'Disagree' 2 points, etc. up to 'Strongly agree' answers which counted 5 points. For questions no. 7 and no. 9, which have a reverse (R) relation to Openness, the scale was reversed, that is a 'Strongly agree' answer scored 1 point, while a 'Strongly disagree' answer scored 5 points. It is interesting to see that only a very small minority of respondents disagreed or strongly

TABLE 14 Belief in the credibility of the MDPP.

'How likely do you think it is that the proposed extent of the changes can actually be realized?'	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
Very unlikely	5.8	3.8	7.1	5.2
Rather unlikely	18.1	17.3	20.9	18.3
Rather likely	44.0	41.3	38.8	41.9
Very likely	29.4	36.4	30.0	32.3
I don't know	2.8	1.4	3.3	2.3

TABLE 15 Openness to new experience.

'Here are a number of characteristics that may or may not apply to you. Please, indicate the extent to which you agree or disagree with that statement. I see myself as someone who …'	Strongly disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)
… is original, comes up with new ideas	3.0	6.1	43.2	37.0	10.8
… is curious about many different things	1.7	5.7	27.5	49.3	15.8
… is ingenious, a deep thinker	2.7	7.8	42.7	34.3	12.5
… has an active imagination	1.3	5.9	31.1	44.8	16.9
… is inventive	1.9	6.0	37.8	40.9	13.5
… values artistic, aesthetic experiences	1.4	6.4	32.4	42.5	17.4
… prefers work that is routine (R)	1.8	7.9	32.8	42.7	14.9
… likes to reflect, play with ideas	1.3	4.0	28.7	48.8	17.3
… has few artistic interests (R)	6.9	18.6	33.2	30.3	11.0
… is sophisticated in art, music, or literature	2.2	10.1	37.5	37.3	13.0

TABLE 16 Light triad.

'How much do you agree or disagree with the following statements'	Strongly disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)
I tend to see the best in people.	1.5	1.9	21.6	58.1	16.9
I tend to trust that other people will deal fairly with me.	2.4	8.2	29.9	45.2	14.2
I think people are mostly good.	2.2	7.0	24.9	48.2	17.7
I'm quick to forgive people who have hurt me.	2.0	7.0	28.4	46.1	16.6
I tend to admire others.	1.0	3.5	27.9	51.6	16.0
I tend to applaud the successes of other people.	0.8	2.7	23.4	53.9	19.2
I tend to treat others as valuable.	0.7	2.0	18.0	55.8	23.6
I enjoy listening to people from all walks of life.	0.7	2.1	18.2	53.4	25.6
I prefer honesty over charm.	0.8	2.2	17.1	50.6	29.2
I don't feel comfortable overtly manipulating people to do something I want.	2.9	7.9	34.4	39.9	15.0
I would like to be authentic even if it may damage my reputation.	0.9	3.7	24.9	48.9	21.6
When I talk to people, I am rarely thinking about what I want from them.	1.2	5.6	34.2	43.6	15.4

disagreed with the suggested statements. This shows that the vast majority of our respondents is open-minded and receptive to new ideas. From Tables 5 and 8 we learn that openness has a highly significant positive impact on WTP, that is on the probability that a suggested bid is accepted, in HCMC and in Hanoi and in all study sites taken together.

Another character trait we were interested in is the so-called 'light triad' which is the opposite of the much better-known 'dark triad'. The light triad characterizes pleasant and agreeable people. Kaufman et al. (2019) suggest a validated battery of questions, the Light Triad Scale (LTS), as a personality test for the Light Triad. They describe the Light Triad Scale as a 'measure of a loving and beneficent orientation toward others ("everyday saints") that consists of three facets: Kantianism (treating people as ends unto themselves), Humanism (valuing the dignity and worth of each individual), and Faith in Humanity (believing in the fundamental goodness of humans)' (Kaufman et al., 2019, p. 1). We used the validated 12-item version of the LTS as suggested by Kaufman et al. (2019, p. 9). Our results are shown in Table 16. Obviously, Vietnamese people living at our study sites are mostly pleasant people, 'everyday saints' in the sense of Kaufman et al. (2019), since only very few of them disagree or strongly disagree with the statements characterizing them as 'saints'. Including the Light Triad in our regression analysis did not lead to significant results.

This holds also for the third psychological concept we were interested in, that is 'Purpose in Life'. This concept is part of the determinants of psychological well-being as proposed by, for example Anderson et al. (2022), Ryff et al. (2010) or Ryff and Keyes (1995) and many others. The basic idea of this concept is that people who perceive a sense of purpose in their lives are happier than others. Therefore, purpose in life can be used as an indicator of people's life satisfaction. There exist many different psychometric scales to measure purpose in life in the context of life satisfaction like e.g. the Meaning in Life Questionnaire by Steger et al. (2006) (see also Morgan & Farsides, 2009). We decided to use a selection of questions from the psychological well-being scale developed by Ryff et al. (2010). This scale is also suggested on the Website of Stanford University as part of their so-called SPARQtools.[4] Our results are shown in Table 17.

Three of the six statements we chose are inversely related to the concept of Purpose in Life (no. 1, 3 and 4). In Table 17, it shows that our respondents obviously realized this inverse relationship since the respective rejection rates are much higher for these questions than for the others. This seems to indicate that respondents read and considered the statements in Table 17 carefully. The results suggest that a majority of our respondents perceive a purpose in their lives.

As explained above, we expected respondents with a high level of Perceived Life Satisfaction (PLS) to state a higher WTP for the MDPP than other Interviewees. Therefore, we asked them to mark on a 10-point scale: 'How satisfied are you today, all things considered, with your life?'. This is the standard happiness question as used in many surveys, among them the Socio-Economic Panel (SOEP) in Germany[5] or, on an international level, the World Happiness Report[6] or the OECD Happiness Index.[7]

[4]'SPARQtools are digital toolkits that translate research into user-friendly formats that practitioners and educators can use to sparq psychological, behavioural, and societal change' (http://sparqtools.org/mobility-measure/psychological-wellbeing-scale/).
[5]https://www.diw.de/de/diw_01.c.412809.de/sozio-oekonomisches_panel__soep.html.
[6]https://worldhappiness.report/ed/2023/.
[7]https://www.theglobaleconomy.com/rankings/happiness/OECD/.

TABLE 17 Purpose in life.

'How much do you agree or disagree with the following statements?'	Strongly disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)
I live life one day at a time and don't really think about the future. (R)	14.1	33.4	22.8	22.8	6.9
I have a sense of direction and purpose in life.	1.2	2.7	19.0	54.1	23.0
My daily activities often seem trivial and unimportant to me. (R)	6.1	26.4	34.3	23.2	10.1
I don't have a good sense of what it is I'm trying to accomplish in life. (R)	12.6	30.0	23.9	22.4	11.1
I enjoy making plans for the future and working to make them a reality.	0.9	3.1	22.4	51.4	22.2
Some people wander aimlessly through life, but I am not one of them.	2.5	5.0	21.5	49.3	21.8
I sometimes feel as if I've done all there is to do in life.	11.5	27.0	29.8	22.8	8.8

TABLE 18 Life satisfaction.

Life satisfaction (1 = not satisfied at all 10 = completely satisfied)	HCMC (%)	Hanoi (%)	Delta (%)	All (%)
1	0.3	0.4	2.5	0.75
2	0.6	0.5	0.8	0.60
3	0.8	0.6	1.0	0.75
4	2.9	3.0	3.0	2.95
5	9.0	7.4	10.1	8.56
6	9.9	9.9	10.3	9.96
7	21.3	21.9	18.1	20.88
8	27.0	25.0	23.4	25.49
9	13.8	17.0	13.1	14.92
10	14.6	14.4	17.6	15.12

Table 18 shows that for each study site the distribution of perceived life satisfaction is left-skewed with a peak at the relatively high PLS level 8. This indicates that our respondents in all study sites are relatively happy people. More than half of the respondents in every study site stated a PLS level of 8 or higher, which is remarkable. In the World Happiness Report 2023, Vietnam took rank 65 worldwide with an aggregate happiness score of only 5.76. This result is in line with our previous finding that our sample consists of respondents who are much better off than average Vietnamese people and, obviously, they are also happier.

The share of people who state relatively low PLS levels of 1 to 6 is systematically higher in the Mekong Delta than at the other study sites, which indicates a tendency that people living in the Delta are less satisfied with their lives than people in Hanoi or HCMC. This might be one of the reasons why many people have left the Delta for the big cities, especially for HCMC, over the past years. Tables 4 and 7 show that life satisfaction has a significant positive impact on respondents' WTP for the realization of the MDPP. Happy people seem to be more willing than others to support a good cause like the MDPP. This confirms the findings of Zheng et al. (2021), Kittiprapas (2022) and others.

In Table 19, we summarize the results of our regression analysis and compare them with our hypotheses.

5 | CONCLUSIONS

The study underlying this paper highlights the situation in the Vietnamese Mekong Delta from three different perspectives: the perspective of the local residents, of people living outside the VMD, but still close to it (i.e. in HCMC), and of people living far away in Hanoi. We found that people in all of these regions are fully aware of the threats to the environment and the economy in the VMD and that they are well informed about these problems. Obviously, the Mekong Delta with its unique nature, beautiful landscape and the still flourishing agricultural production has an iconic importance for people all over Vietnam. It turned out that our respondents have well-considered opinions about the causes of the problems in the VMD and that they have clear ideas about what should be done in order to improve the situation there.

The Contingent Valuation study embedded in our survey shows that our respondents are willing to contribute personally and financially to the preservation of the VMD. In this context, it has to be noted, that the sample of respondents that were interviewed online for our study by a polling agency comprised participants that are better educated, better earning and more satisfied with their lives than average people in Vietnam. As expected, it turned out that being a member of the Vietnamese Communist Party had

TABLE 19 Fulfilment of hypotheses.

Variable	Hypothesis: Sign of effect	Result
BID	<0	Significant negative effect in Hanoi and HCMC
FEMALE	>0	Significant (positive) effect in HCMC only
AGE	>0	Significant positive effect in HCMC, significant negative effect in the VMD, no significant effect in Hanoi
INCOME	>0	No significant effect
HH_SIZE	<0	Significant (negative) effect in the VMD only
CHILD	>0	No significant effect
REGION		Respondents from Hanoi and HCMC stated significantly higher WTP amounts than respondents from the VMD
BREADWINNER	>0	Significant positive effects in HCMC and in the VMD
RICEVMD	>0	Significant positive effect in Hanoi and HCMC
PROJECT_CON	>0	Significant positive effects at all study sites
CREDIBILITY	>0	Significant positive effects at all study sites
VCP	>0	Significant positive effects at Hanoi and HCMC
OPENNESS	>0	Significant positive effects at Hanoi and HCMC
PLS	>0	Significant positive effects at all study sites

a positive effect on respondents' stated willingness to contribute to the Mekong Delta Preservation Programme. This might be due to the social identity that derives from this membership. It is well known from psychology and identity theory that members of certain institutions (like political parties) form a common identity and feel obliged to follow the ideals of their institution also in their everyday lives and to obey their leaders. This implies supporting any activity suggested by government and its institutions. From our project scenario and the payment scenario, respondents will have got the impression that government supports the Mekong Delta Preservation Programme.

The answers to our psychological questions showed that the largest share of our respondents is open to new ideas in the sense of the Big Five inventory and that most of them are pleasant people ('everyday saints') in the sense of the Light Triad Scale. The results were not quite as clear-cut for the 'Purpose in Life' scale. Asking the 'perceived life satisfaction' question from the World Happiness Report, we found for all study sites relatively high scores of happiness for the respective populations. Our regression analysis showed that those respondents who were high scorers on the Openness scale agreed also to higher payments for the realization of the Mekong Delta Preservation Project. The analysis showed also that the level of happiness was positively related to stated willingness to pay for the Mekong Delta Preservation Project and that this relation was highly significant.

From a methodological perspective, we found that the Trichotomous Choice elicitation format performed well for the WTP question here, but that it is especially important to explain the additional answering option to the WTP question besides 'Yes' and 'No', that is the 'No, but' answering option, very clearly and precisely to respondents before they answer the WTP question. Otherwise, inconsistent answers to the WTP question have to be expected. Our study confirmed again the importance of implementing policy consequentiality very clearly through an appropriate wording of the questionnaire and of making sure that the description of the suggested project in the project scenario is credible for the respondents. This makes extensive face-to-face pretesting of the questionnaire, a sufficient number of in-depth interviews and focus group meetings in person before the main starts necessary.

Besides the methodological lessons with respect to future CVM studies, that can be learned from our analysis, the main political message accruing from our results is that any public investment in a more sustainable development of the economy and ecology of the Vietnamese Mekong Delta would be rewarding for the Vietnamese society as a whole. It showed that such investments would be of national and not only of local significance, since even people living as far away from the VMD as in Hanoi would receive considerable social benefits from such a project. This should encourage government to set up public programmes for a sustainable development in the Mekong Delta at a larger scale than in the past.

AUTHOR CONTRIBUTIONS

Michael Ahlheim: Conceptualization; methodology; investigation; visualization; project administration; resources; writing – review and editing; writing – original draft; funding acquisition. **Duy Thanh Vuong:** Conceptualization; methodology; investigation; visualization; writing – original draft; writing – review and editing.

ACKNOWLEDGEMENTS

This study was funded by the German Federal Ministry of Education and Research within the interdisciplinary joint German-Vietnamese research project 'Rice production caught between

salinity and drought – future options for sustainable use of water in the Mekong Delta region' (RiSaWa), (BMBF funding code: 031B0724). Open Access funding enabled and organized by Projekt DEAL.

CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT

Data are available from Prof. Dr. Michael Ahlheim University of Hohenheim Institute of Economics (520F) 70599 Stuttgart, Germany. E-Mail: ahlheim@uni-hohenheim.de.

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How to cite this article: Ahlheim, M., & Vuong, D. T. (2024). Saving the Vietnamese Mekong River Delta—People's attitudes, opinions and willingness to help. *Journal of Agronomy and Crop Science*, *210*, e12680. https://doi.org/10.1111/jac.12680