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Measuring environmental benefits in competition cases – Note by Nadine Watson

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The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.

More documentation related to this discussion can be found at:
<https://www.oecd.org/daf/competition/environmental-considerations-in-competition-enforcement.htm>.

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Competition authorities are considering incorporating sustainability benefits in the assessment of co-operation and joint agreements. This requires recognising that: (i) sustainability can have both a use and a non-use value for consumers and (ii) much of the harm that unsustainable production imposes may occur out-of-market. Consumers may be willing to pay for products they know they will never consume for several reasons that have been extensively studied in environmental economics and these cannot be ignored. Similarly, the boundaries of the benefits that will be considered in the balancing exercise need to account for potential consumers who may be influenced by the new sustainable attributes and the increasing awareness of the negative externalities generated by unsustainable production. This note describes how the standards tools and procedures already used by competition authorities can be adapted to better quantify sustainability benefits. Survey based discrete choice experiments have become the dominant strategy in environmental economics to assess consumer willingness to pay for products that have both use and non-use values because they can overcome the inherent difficulty of measuring value when consumers are unaware of the environmental impact of their consumption and/or do not directly consume or experience the sustainable product.

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Executive Summary*

1. Competition authorities are considering what role they should play in promoting sustainability. In particular, where competitors need to cooperate or form joint agreements to improve the sustainability of their products, should competition authorities prohibit them from doing so if that co-operation would constrain competition and increase prices for consumers?

2. Assessing such trade-offs is not new for competition authorities. For example, the European Commission permits anti-competitive agreements that meet certain circumstances – as set out in the Treaty on the Functioning of the European Union, Article 101(3) – including increasing consumer welfare (i.e. that consumers are better off under the agreement, despite a reduction in competition). In most jurisdictions, the consumer welfare standard is central to authorities' assessments. The standard focuses attention on those affected by a potential agreement, and ensures that their interests are considered relying on an analysis of the amounts that consumers are willing to pay for changes in non-price factors, such as the quality of a product.

3. However, the consumer welfare standard faces two criticisms when applied to cases that offer sustainable benefits – or more precisely, cases that offer a reduction in the environmental harm that production processes impose. Firstly, based on their behaviour, consumers appear to value environmental benefits less than they should do, given the likely impact environmental damage will have on their future. On that basis, some would jettison willingness to pay analysis in favour of a paternalist approach (that assesses the objective impact sustainable production processes would have on consumers, independently of consumers' views). Secondly, some argue that assessing consumer welfare asks the wrong question. Sustainability – such as reducing climate change – benefits us all, and unsustainable production processes harm us all for the benefit of only a few. On that basis, they would replace the consumer welfare standard with a societal welfare standard.

4. This note draws on forty years of experience in environmental economics to demonstrate that competition authorities could (and, by their own guidelines, should) do more to promote sustainability under the current approach – regardless of one's views on the case for changes to that approach.

5. The problem with willingness to pay analysis is not that consumers undervalue sustainability. It is that standard methodologies – most of which are based on observing consumers' behaviour – often understate how much consumers actually value the environment. Environmental economists – such as those who valued the impact of the Exxon Valdez oil spill on the Alaskan Wilderness – have demonstrated that people value the environment in two ways: (i) use-value, such as the value of taking a stroll in the Alaskan wilderness; and (ii) passive value, which is the satisfaction one gets from knowing that wilderness will be preserved, independently of whether one ever intends to go or would even enjoy it if one did. The difficulty with measuring passive use is that, at best, most consumers have only a vague sense of the impact that their consumption has on the environment; for instance, someone might buy a bottle of

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detergent with little, if any understanding of its carbon footprint or quantity of microplastics that might end up in the ocean, let alone the incremental impact either has on the environment. Unlike other kinds of quality, such as the effectiveness of the detergent, consumers cannot learn what impact a product has on the environment by consuming it. For that reason, their actions understate how much they would value sustainable products. Consumers' apparent unwillingness to pay for environmental benefits is a flaw in methodology, not character.

6. In this note, I review the methodologies available to competition authorities when they analyse consumer welfare. I outline how accurately each method can assess the value consumers place in sustainability. It explains why discrete choice methods – a stated preference survey that informs respondents about the impact of their choices – best measure how much consumers actually value sustainability. Discrete choice methods have been applied robustly by environmental economists for decades and have already been applied in competition cases in other contexts.

7. It also sets out that, while there are good reasons to consider broadening whose welfare authorities consider in their assessments, authorities can already better promote sustainability by applying discrete choice methods designed to measure use and passive-use values within the current framework.

1. Introduction

8. It is now (nearly) universally accepted that climate change is a wicked problem; one for which a single solution does not exist and which requires the active involvement of all segments of society: governments, regulators, firms, and individuals.

9. Climate change is a problem generated by products and/or production processes that benefit few, but impose costs on society as a whole (e.g. by polluting the air, land, or water) – most of which has not enjoyed the benefits of consuming those products (e.g. non-consumers and future generations). Traditionally, government and regulators are expected to internalise those negative externalities through regulations (e.g. cap and trade) or taxes and subsidies (e.g. tax on electricity consumption and subsidies for solar panels). Within that framework, the competitive process is expected to operate unfettered – albeit with additional solutions that attempt to alter agents' behaviour by providing them with more information, for example through labelling requirements and other factors that 'nudge' consumers' preferences towards choices with fewer negative externalities.

10. Increasingly, firms and individuals are interested in providing and choosing sustainable products, reducing the externalities imposed on others without waiting for intervention. After years of gradual increases, consumer awareness of environmental issues heightened as a result of the pandemic. Recent surveys conducted around the world report a higher number of consumers who intend to adopt more sustainable behaviour, including changing their consumption habits.¹ As a result, many industries are facing greater incentives to transition towards more sustainable production and delivery. Businesses in the cosmetics and pharmaceutical industries, for example, are already responding to consumer demand for ethically sourced, natural products.² The relevance of environmental and social sustainability as a parameter of competition will continue to grow as more and more firms realise the importance of sustainability on brand equity and consumer purchase intentions (Akuturan, 2018^[1]).

11. In this context, competition authorities are considering what role competition plays in promoting sustainability³ and whether they need to (separately) incorporate it into their competitive assessments. In fact, many competition authorities have already started to consider how they can actively contribute to the fight against climate change and Executive Vice-President of the European Commission Vestager has urged competition enforcers to play their part. However, there is still an active debate on whether competition authorities can take sustainability into account when assessing the competitive impact of practices and transactions, and if so how. This debate is highly relevant in the EU, given the objective of becoming climate-neutral, with net-zero greenhouse gas emissions by 2050 as set out in Article 11 of the TFEU.

12. The crux of the discussion responds to a perceived tension between competition and sustainability. On the one hand, some academics, enforcers and practitioners consider that protecting effective competition is the best way to ensure that sustainable initiatives are promoted without any need to integrate sustainability benefits into competition enforcement (Schinkel and Treuten, 2021^[2]). On the other hand, competition law is seen by others as a potential impediment to more sustainable production processes, because sustainability initiatives that require co-operation or joint agreements between competitors may be considered a restriction to competition and thus prohibited by competition authorities.

13. In addition, there is a debate about how sustainability benefits could be taken into account. At the heart of competition authorities' current approach is the consumer welfare standard (see also (OECD,

2021⁽³⁾). Applying that approach to sustainability means that authorities would (a) consider whether the benefits to consumers of sustainability offset the negative impact of higher prices and (b) quantify those benefits considering how much consumers are willing to pay for them. In the context of sustainability, the suitability of both steps has been challenged. Firstly, rather than consider consumers' interests, some would consider societal welfare or treat sustainability as an additional and separate policy goal. Secondly, even if authorities consider consumer welfare, some would jettison WTP analysis, replacing that standard with a paternalist approach that conducts an assessment of the environmental benefits on some chosen target (e.g. health, climate change, etc.), independent of consumers' or society's willingness to pay (WTP) for them.⁴

14. This background note looks at the methodologies available to competition authorities to assess sustainability benefits – applying lessons from forty years of experience in environmental economics.⁵ In doing so, it dispels some of the perceived tensions between the competitive process and sustainability, and demonstrates that antitrust authorities can already better incorporate the benefits of sustainability into their assessments without having to depart from the consumer welfare standard relying on WTP analysis. However, they do need to adapt their methodologies to ensure that they accurately assess how much consumers are willing to pay for sustainable benefits. By adapting their methodologies, authorities would likely find that more agreements enhance consumers' net welfare than some people currently anticipate. In addition, current methodologies could be, and perhaps should be, adapted to measure the welfare of all those affected by a production process – not just those who enjoy the benefits of consuming a product without shouldering all the costs it imposes.

15. The remainder of this note briefly describes (i) the main challenges to incorporating the assessment of sustainability benefits in competition enforcement (Section 2.), (ii) the standard tools that can be used to quantify the sustainability benefit (or harm) of transactions and conducts (Section 3.), and (iii) additional factors that need to be considered when evaluating sustainability benefits (Section 4.). Section 5. concludes.

2. Challenges authorities face

16. Before delving into the issues surrounding quantification methodologies (in Section 3.), I briefly summarise the current balancing approach adopted by many agencies and comment on the particular challenges that arise when balancing anticompetitive effects and sustainability benefits.

2.1. Balancing potential anticompetitive effects and benefits

17. In some cases, authorities will face a trade-off between improving sustainability and protecting competition. On the one hand, if competitors agree to make their processes more sustainable that would benefit the environment, society, and consumers to some extent. On the other hand, sustainable products are likely to be more costly to produce, leading to higher prices. Agreements that seek to reduce the output of products that are harmful to the environment and/or exclude competitors that only sell the harmful products are also likely to raise prices. The intensity of competition can also decline as a result of agreements between rivals to jointly develop new “cleaner” products as this can reduce potential competition and constrain choice.

18. This type of trade-off is the standard one that competition authorities consider when assessing mergers and agreements. The key question is whether the harm caused by higher prices as a result of reduced competition can be offset by non-price improvements that consumers (and/or society as a whole) value more. In other cases, improvements could relate to better quality, in this case, they relate to sustainability. In other words, authorities must consider whether a specific trade-off increases consumers’ net welfare.

19. Competition authorities may permit anti-competitive agreements when the benefits for consumers outweigh the harm to competition. The current approach in the EU regarding the potential benefits of agreements (Article 101(3) of the TFEU), for instance, requires the following four cumulative conditions. The agreement must:

- Contribute to improve the production or distribution of goods or to promote technical or economic progress;
- Allow consumers a fair share of the resulting benefit;
- Not impose restrictions which are not indispensable to the attainment of the objectives, and
- Not eliminate competition with respect to a substantial part of the products in question.⁶

20. In the case of mergers, efficiencies can also offset all or part of any anticompetitive effects if they are verifiable, indispensable, merger-specific and benefit consumers in a timely manner.

21. The benefit to consumers is a crucial element of the analysis in both and requires two things:

- A reliable way to quantify benefits for consumers – often based on the amount consumers are willing to pay for improvements in the non-price attributes of a product; and
- A clear understanding of whose welfare is being considered and whose is excluded.

22. However, in the case of sustainability benefits, such assessments of consumer welfare, based on WTP, can be more challenging than for other types of efficiencies – or the outcomes of those assessments might strike us as unsatisfactory – because:

- the quantification of sustainability benefits/efficiencies, based on consumers' WTP for them, generally cannot rely on historical data or analogous situations without understating those benefits (or in some cases, overstating them); and
- much of the harm that unsustainable production imposes – and, therefore, the efficiencies that sustainability provides – are “out-of-market”: occurring at different moments in time⁷, and/or affecting different consumer groups or different geographic areas.

23. Given these inherent difficulties, it is possible that competition authorities' standard approach could prohibit agreements or mergers that either (a) benefit consumers, but consumers appear unwilling to pay for or (b) benefit society and the environment, but leave consumers worse off – or at least, are perceived to do so. That has motivated some to argue for a new approach.

- Competition authorities could adopt a paternalistic approach to consumer welfare, replacing analysis on what consumers preferences actually are, with analysis on what their preferences should be; for instance, replacing data on the amount consumers are willing to pay to achieve environmental benefits with an assessment of the costs those benefits would help them avoid in the future.
- Alternatively, some would broaden the scope of analysis from consumer welfare to societal welfare, reflecting the fact that sustainability – at least in cases such as climate change – affects everyone.

24. However, as discussed further in Section 3. , these challenges can be overcome or substantially mitigated within the current framework, if authorities adapt their quantification methodologies to ensure they accurately measure how much consumers are willing to pay for sustainable benefits.⁸

25. Regardless, antitrust authorities need to carefully consider:

- how to identify cases where the quantification of benefits is necessary;
- the relevance of passive use; and
- whether or not out-of-market benefits are to be contemplated.

2.2. When is quantification necessary?

26. In principle, there will always be some environmental impact that could be measured. All products have some impact on the environment and generally these externalities are not captured in the price of the products. In addition, consumers would generally have some opinion on that environmental impact – if they were aware of it – that authorities could measure.

27. However, this does not mean that all cases put before competition authorities require an assessment and quantification of sustainability benefits. The Guidelines of the Netherlands Authority for Consumers and Markets (ACM, 2020^[4]) suggest two conditions to identify cases where no quantification is needed because the benefit clearly outweighs the harm:

- when the undertakings have a limited combined market share; and
- the harm to competition is obviously smaller than the benefits.⁹

28. In essence, these conditions address cases where the impediment to the competitive process is limited. In these cases, the precise scale of benefits offered is irrelevant because the benefits easily offset the limited harm to consumers – indeed, there might not be any harm to offset. For example, this would be the case of an agreement between waste collection companies having a combined market share of 30%

to jointly optimise their routes so as to use waste collection vehicles more efficiently. According to the ACM the trade-off between the benefits and potential harm of this agreement are sufficiently clear that no further quantification is necessary. On the one hand, the demonstrable benefits of such an agreement, which include cost savings, the reduction of pollutant emissions and the reduction of traffic congestion, would be large and would benefit consumers directly through increased traffic safety and cleaner neighbourhoods. On the other hand, the likely harm from a restriction of competition would be small considering the limited combined market shares.¹⁰

29. At the other end of the spectrum, quantification is also likely to be unnecessary in cases where the sustainability benefits are clearly insufficient, are unsubstantiated, and/or the agreement or merger is dispensable to achieving the stated benefits.

30. These 'simple' cases should be uncontroversial, even without quantification. However, they might be difficult to identify prior to an initial assessment by authorities. One of the ACM's motivations for outlining these cases was to overcome a potential 'chilling' effect – where companies could collaborate without impeding competition, but chose not to as they feared prohibition and sanctions from competition authorities. In these cases, identification, rather than quantification, is the key issue. Greater transparency on when and how sustainability considerations will be given weight as a counterbalance to anti-competitive effects would reduce the risk of chilling private initiatives that could make strong contributions in terms of sustainability and climate change. Furthermore, as described in Section 4. , new tools and data currently being used to identify consumer trends, together with indicators of competition, could be used to screen cases based on the interest to consumers of the benefits at stake.

31. Cases falling between these two extremes in most cases would require a detailed assessment of the claimed sustainability goals and a quantification of benefits. In essence, these are cases where a detailed assessment could change an authority's decision – for example, from one that concludes an agreement reduces consumers' welfare to one that concludes it enhances welfare, or vice versa. Within these extremes, the assessment of the sustainability benefits will likely be easier for agreements and mergers whose rationale is related to climate change and sustainability as the benefits will likely be more clearly defined and the companies involved will likely already have a quantification of the effects on sustainability.

32. Cases where sustainability benefits could be decisive to the final outcome could be common. For example, in Bayer/Monsanto interested third parties contended that the Commission should assess the impact of the merger not only in terms of higher prices, loss of innovation and loss of product choice, but also in terms of loss of biodiversity.¹¹ An assessment of this impact could have had a repercussion on remedies. Similarly, in the opposite direction, in the 2013 attempted merger between UPS and TNT, the clear CO₂ emissions reductions in addition to the cost reductions accepted by the Commission could have been enough to offset the anticompetitive effects of the transaction (Claici and Lutz, 2021^[5]).

2.3. The challenge of quantifying passive value in WTP analysis

33. As mentioned above, competition authorities are used to analysing whether non-price factors can offset price rises caused by a reduction in competition. For instance, competition authorities consider whether increases in the quality of a product can offset increases in its price.¹²

34. The quantification of non-price benefits typically relies on WTP analysis – analysing the maximum amount that consumers would be willing to pay for something. That maximum is equivalent to the benefit it provides to consumers, after which they would be better off keeping their money. If the price consumers would be willing to pay for a specific increase in quality exceeds the likely price increase, then the proposed agreement is welfare enhancing. If it does not offset the price increase, it is not.

35. In principle, authorities can consider the benefits of sustainability – that is, the removal of environmental harms – in the same manner. To the extent that sustainability is an explicit attribute of the products and services object of competition enforcement, the tools and logic used in environmental economics allow authorities to quantify how much consumers are willing to pay for these attributes (i.e. how much more the sustainable product is worth to a consumer than an otherwise identical product that is not sustainably produced).

36. However, in practice, it is more challenging to measure how much consumers are willing to pay for sustainability than it is for traditional aspects of a product's quality. That is because sustainable products share a distinctive property of many environmental goods: consumers value their impact even though they do not directly or indirectly experience it. This feature, known as “passive-use” or “non-use” value, is the value consumers attach to a good or service that does not involve consumption.¹³ For example, a consumer might be willing to pay to protect a remote national park, even though he would never visit it, because he obtains satisfaction from the mere knowledge that the park exists and will continue to do so.

37. There are at least two reasons why consumers may be willing to pay for goods or services they know they will never consume.

- First, some consumers may value the preservation of the Amazon Rain Forest, for example, for its own sake. This is referred to as existence value (Krutilla, 1967^[6]). This value cannot be measured through actual purchasing decisions or market outcomes and it can also be completely independent from the use value. For a rainforest explorer, for example, the use and non-use values attached to the preservation of the Amazon Rain Forest, would be highly correlated, as he would attach a high value to both. In contrast, a retired worker in England could have a high non-use value and zero use value. In other words, direct and passive use values are not mutually exclusive.
- Second, some consumers may value the preservation of the Amazon Rain Forest in order to ensure that their children or grandchildren will be able to enjoy it. This is referred to as bequest value (Krutilla, 1967^[6]). The concern for future generations will be reflected in consumer preferences when consumers value a product or service simply because it will allow future generations to have access to a particular resource. Here again, the bequest value of a product or service is entirely independent of the use value.

38. Many traditional methodologies used to measure consumers' WTP will understate the passive value consumers place on sustainability. To weigh the impact that an agreement or merger will have on consumer welfare, authorities often rely on sales data or survey data from which they can infer consumers' preferences. That data typically only demonstrates what consumers are willing to pay *given what they know* about its impact on the environment. Data on the amounts that uninformed or misinformed consumers are willing to pay for sustainable benefits will understate the true value they place on sustainability, particularly where passive-use values are important.

39. When considering the direct benefits of consumption, we can normally assume that consumers are well informed. Even if that is not initially the case, consumer can learn the quality of a product through consumption. The same is not true for the passive value sustainability provides. A consumer might value protecting the environment (such as protecting the oceans from microplastics and reducing carbon emissions), but they might not know (a) to what extent a product harms the environment, (b) to what extent a more sustainable version of that product reduces that harm, or (c) what impact changing their consumption habits would have on the environment, let alone how much they would be willing to pay to secure that benefit. Furthermore, as passive value is disassociated from consumption, the impact of the product and the value they place on that impact is not something they can learn from experience.

40. Ignoring or understating these benefits – which are real and can be quantified – is arbitrary and contrary to standard practice in environmental economics where passive use value is considered when assessing policy decisions such as the delimitation of a natural habitat and when quantifying damages for example from oil spills.

41. This challenge is surmountable. As described in Section 3. , some common methodological tools can be adapted so that they capture passive value accurately. These techniques have been developed and refined in environmental economics over the last 40 years or so. Incorporating them into authorities existing analytical framework would be unproblematic.

2.4. The challenge of out-of-market efficiencies and in-market harms

42. How should authorities weigh sustainability gains that benefit everyone against price rises that affect only consumers?

43. Unlike most efficiency claims in agreements and mergers which primarily relate to improving the production or distribution of the specific products and services at issue, sustainability benefits extend beyond the boundaries of the relevant market where the transaction or agreement takes place. Reducing a product's carbon footprint or reducing the levels of microplastics it pours into the oceans benefits consumers and non-consumers alike.

44. Consumers will benefit from the use value of the product as well from the non-use value. This non-use value can be labelled the in-market passive value as it refers to the additional value a consumer of the product being analysed obtains from purchasing a product or service which is unrelated to his/her actual consumption. For example, a consumer may buy an electric car for both its (a) active value – speed, comfort, approving looks from friends and neighbours, and (b) passive value – the satisfaction obtained from benefiting the environment by reducing emissions.

45. Non consumers, in contrast, will only benefit from the non-use value. This non-use value can be labelled the out-of-market passive value as it corresponds to the value a non-consumer obtains from the sustainability benefits of products consumed by others. In the case of the electric car, it is the satisfaction that non-consumers obtain from the reduction in emissions.

46. Article 101(3) TFEU and analogous provisions in other jurisdictions require that consumers receive a “fair share” of the benefits, yet it does not specify whether these must necessarily be the same consumers affected by the price rise. Some argue that a literal interpretation of these provisions would allow including the benefits to a wider set of consumers including potential consumers (Dolmans, 2020^[77]). The universe of potential consumers could be larger than standard analysis contemplates given that uninterested consumers could be attracted by the sustainable attribute itself and could be influenced by the perception of what others are consuming, as discussed further in Section 3. . Both of these effects would expand the set of consumers that could benefit from the agreement much beyond current consumers.

3. Quantifying sustainability benefits

47. Quantification of sustainability benefits is difficult because it involves a prospective counterfactual analysis for which historical data may be of limited use. In addition, highly specialised technical expertise is likely to be required to comprehend the sustainability implications of the initiative being put forth and to separate likely benefits from misleading claims.¹⁴

48. However, these are the same type of difficulties competition authorities regularly face when assessing efficiencies from mergers and agreements. Thus, standard tools and procedures already used by competition authorities to measure the price and non-price effects of conducts and mergers can be deployed to:

- verify the evidence in support of the claimed benefits;
- quantify the value of in-market benefits, i.e. benefits to consumers in the relevant market; and
- assess the value of the out-of-market benefits.

49. Each of these are briefly discussed below, drawing on lessons from environmental economics to explain how adaptations to standard assessment tools would allow competition authorities to reliably assess sustainability benefits.

3.1. Verification of sustainability benefits

50. The first step in assessing whether sustainability benefits are able to counteract adverse effects on competition, is to determine whether the evidence provided is sufficient to substantiate that the claimed benefits are likely and realistic.

51. As in merger assessments, it must be possible to foresee a clearly identifiable positive impact in terms of sustainability objectives. However, in contrast to merger control requirements, these benefits may not materialise in the near future. Thus, the evidence provided must be sufficiently precise and persuasive to conclude that the environmental improvements will occur over a specified time horizon.

52. The evidence relevant for the assessment of the claimed environmental improvements will be similar to that used in merger control: internal documents, statements and calculations and expert studies on the expected benefits.¹⁵

53. The information provided in support of the magnitude, likelihood, and timing of the expected improvements in terms of environmental and sustainability goals will also be important for the quantification of benefits regardless of whether authorities choose to take a paternalist approach, or retain an assessment of the amounts consumers are willing to pay. In the former case, information on the expected improvements will represent the benefits weighed by authorities. In the latter case, this information will allow authorities to ensure that consumers understand and consider the relevant information when they assess how much they are willing to pay to acquire those benefits. As explained further below, vague and imprecise descriptions on those benefits will tend to reduce consumers' WTP (Carson and Czajkowski, 2014_[8]).

3.2. Quantification of WTP for sustainability

3.2.1. An overview of methods

54. The most commonly used methodologies to quantify the amounts that consumers are willing to pay for those benefits are:

- analyses of consumers' purchase decisions (i.e. revealed preference methods) and
- survey-based consumer preference models (i.e. stated preference methods).

55. Revealed preference methods infer the value consumers place on goods and services from their observed behaviour. They rely on historical and experimental data on consumers' consumption decisions.

56. These methods are less commonly used when assessing how much consumers are willing to pay for environmental benefits for two reasons. First, environmental benefits are not often traded, so there may not be data available to analyse. Second, even when data is available because the sustainable product is already traded in the market, WTP estimates will likely reveal consumers' lack of knowledge about environmental benefits, not their preference for them.

57. This second problem is particularly acute when assessing the benefits of product or attributes that do not require consumption as revealed preferences typically understate consumers' passive value for the reasons discussed in Section 2. . The impact of context, information and/or prevailing social norms on choices cannot be assessed using revealed preference methods. In addition, revealed preference methods can only inform on the WTP of current and past consumers. The WTP of potential consumers cannot be assessed. Ignoring passive use can severely undermine the accuracy of WTP estimates, especially in circumstances where passive and direct use values co-exist (Carson, 2012^[9]).

58. In environmental economics the most commonly used methodologies to quantify consumers' WTP for environmental benefits are survey-based consumer preference models (i.e. stated preference methods).

59. These standard tools have been used for over 40 years in the field of environmental economics to assess the value of public goods, to quantify environmental damages and to estimate the economic impact of climate change. The essential benefit of these methods is that they allow economists to assess the extent to which respondents are fully informed and therefore provide a reliable indication of the amounts they are willing to pay for environmental benefits. For example, after the Exxon Valdez oil spill in 1989, the state of Alaska commissioned a study to estimate the American public's WTP to avoid another similar environmental disaster. The results of the study based on passive use served as the basis of a settlement agreement in which Exxon agreed to pay the approximately USD 3 billion, triple the direct economic loss estimate of Exxon's experts (Carson et al., 2003^[10]). A panel led by Nobel Laureates Kenneth Arrow and Robert Solow, convened by the US government to assess the methodology used to measure passive use in this case, concluded that the stated preference methods employed produced reliable estimates (Arrow and al., 1993^[11]).

60. In addition, there are other methods employed in environmental economics that can be used to indirectly assess the benefit to consumers based on observed data. The main difference with the stated preference methods described above is that these approaches cannot reliably estimate total WTP including use and non-use values and cannot correct for potential biases that may arise due to framing or context effects, lack of information and the influence of existing social norms. The main advantage of these methods is that they do not require consumer surveys and thus may be less time intensive.

3.2.2. Stated preference methods

61. Stated preference methods are used to obtain individuals' preferences on attributes of goods and services using survey data. These methods are particularly relevant to measure the value consumers place on goods and services that do not yet exist and/or are never traded in the market. They are particularly useful to collect information on preferences regarding goods and services that are considerably different from what is currently observed or has been observed in the past.

62. In competition policy, stated preference methods are already widely used to understand the value to consumers of product quality improvements derived from mergers, product bundles, and the value to potential consumers of new products.¹⁶

63. Stated preference methods have been relied on to elicit non-use value information of cultural, environmental, health, and transportation goods and services. Typically, individuals are asked to choose amongst alternative hypothetical situations contingent on scenarios posed in the surveys. Despite criticisms and limitations discussed below, these methods have been found reliable enough to be used in the context of judicial and administrative proceedings (Arrow and al., 1993^[11]).

Discrete choice methods

64. There are many different ways to elicit preference information in stated preference methods. One of the most commonly used techniques are discrete choice experiments which collect information on consumer preferences through surveys that simulate purchasing decisions. The purchasing decisions usually consist of a choice made from a finite set of alternatives. Each alternative is defined by a set of attributes including price and quality aspects. Survey respondents are presented with a number of alternatives, each one described by a different combination of attributes, and they are asked to choose their preferred alternative.

65. Discrete choice experiments (also referred to as choice modelling) have the advantage of being consistent with economic demand theory and allowing a considerable amount of information to be gathered for each respondent. Results of discrete choice experiments have been used to assess public policy initiatives. The World Bank, for example, relied on survey-based estimates to obtain reasonable predictions of how many households in developing countries would connect to a new water system over a long-time horizon (World Bank, 1993^[12]). Choice modelling has also been used to value intellectual property rights, to estimate the demand for new services, to define relevant markets and to assess remedies in merger cases. Recently, this methodology has also been used to assess how much consumers value privacy (Lorenzo, Padilla and Requejo, 2020^[13]) (see Box 1).

Box 1. Value of privacy

The British Institute of International and Comparative Law recently commissioned a study to assess how much social network users value their data.

A sample of 1002 German residents, between the ages of 16 and 74, participated in the survey. Respondents were first asked a series of questions on their sociodemographic characteristics, their use of social networks and their knowledge of how social networks collect and use their data. Subsequently they were presented with alternative social network offers and asked to select their preferred choice. The figure below shows an example of the alternatives shown to respondents.

Example of discrete choice experiment used

Please, select the preferred option.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Source of collected data	1st-party 3rd-party Superprofile	1st-party -	1st-party -	1st-party 3rd-party -	Under this alternative the social network only collects the minimum amount of 1st-party data necessary to provide the service. Collected data are never used for targeted ads and collected data are never sold to third parties. NO monthly income under this alternative
Type of targeted ads	- Low quality	- Low quality	-	High quality -	
Type of data sold to 3rd parties	- Disaggregated data	-	- Disaggregated data	Aggregated data -	
Type of consent	- Opt-out	- Opt-out	Opt-in -	Opt-in -	
Monthly income for the user of the social network	10€	0€	20€	100€	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The study found that users of social media dislike targeted advertising, especially low quality ads. Over 90% of respondents required a positive monetary incentive to select a social network with low quality targeted ads (Alternative 1 in the figure above) over an alternative social network with untargeted advertising (Alternative 5 in the figure above).

Source: (Lorenzo, Padilla and Requejo, 2020)^[13]

66. The main limitations that have been identified with stated preference methods, which apply to discrete choice experiments, are:

- the difficulty of valuing unfamiliar attributes (such as pollution free cities);
- the influence of the elicitation method on consumer responses;
- the presence of behavioural effects (i.e. apparent lack of consistency between choice experiment responses and economic theory); and
- the difficulty of measuring passive-use values.

Unfamiliar attributes

67. Ideally, survey respondents fully understand the hypothetical situations they are asked to respond to in a discrete choice modelling experiment. While this may be fairly straightforward when choices refer to products and services consumers have experienced in the past, it is more difficult when choices involve different effects on the environment. Most people are unfamiliar with placing monetary values on environmental goods (which is why analyses will understate the value of sustainability to consumers unless that information is provided).

68. To address this issue, choice modelling experiments used in environmental economics are conducted in person and special attention is placed on ensuring that the respondent fully comprehends what they would and would not get in the different hypothetical scenarios (see Box 2). In addition, when the respondent concludes the choice experiment, open and close-ended questions are asked to ascertain how well they understood the scenarios.

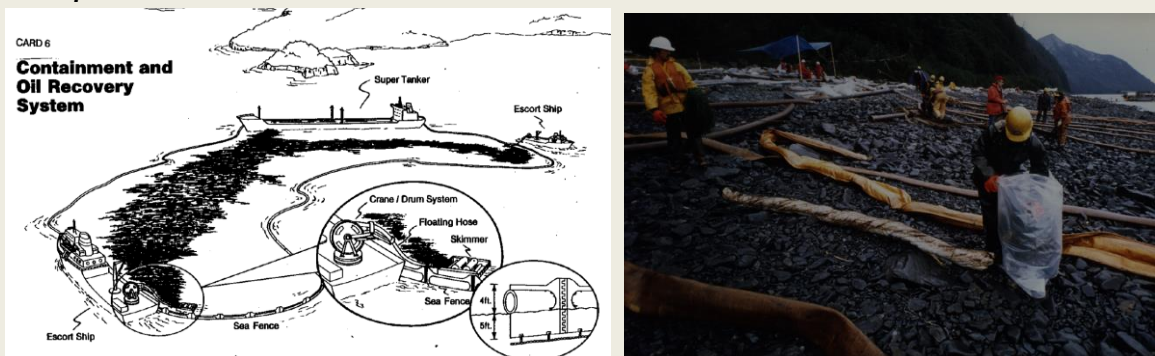
Box 2. Use of visual aids

The survey conducted to assess the American public's WTP to avoid an oil spill similar to that of Exxon Valdez was developed with the aid of focus groups, cognitive interviews, pre-tests and pilot studies.

Information was gathered from scientists and engineers to explain what the plan to avoid future oil spills would do in terms of the aspects the public cared about such as the wildlife and shoreline.

The background material was explained in a way that respondents without a high school degree could understand (see examples below). It was designed to maintain the respondents' interest and enhance their ability to comprehend the information received during the interview.

Example of visual aids used



Source: (Carson et al., 2003^[10])

69. In this context, it is particularly important to describe the hypothetical scenarios as precisely as possible avoiding vague terms – such as “green”, “bio-degradable”, or “fair”. The information gathered when verifying the claimed sustainability benefits can be of use in the design of the survey.

70. This process of informing survey respondents – and assessing their comprehension and biases (as described below) – is crucial to accurate quantification. If consumers do not fully comprehend the different impacts that more sustainable and less sustainable products offer, then their responses to the survey will be no more accurate than the revealed preferences of uninformed consumers (and possibly even less so, if they misstate their use value).

Elicitation method

71. The ways in which survey questions are asked have been shown to generate different answers. This has prompted some critics to assert that survey respondents do not have well defined preferences for non-market goods. However, the problem often lies with the survey design. (Carson and Groves, 2007^[14]) showed that consequential survey questions lead to responses consistent with economic theory.

72. When survey questions are inconsequential, any response is as good as any other because it cannot influence the respondent's utility (Carson and Czajkowski, 2014^[8]). Survey questions are consequential when respondents understand that their responses have a positive probability of influencing the actions of an agency (or firm) and respondents care about the outcomes. Presenting credible choice scenarios with a well-defined good and a coercive payment mechanism (e.g. a tax increase in the case of a public good or a price increase in the case of a good traded in the market), fosters careful decision making and have been found to produce results consistent with economic theory (Carson and Czajkowski, 2014^[8]) (see Box 3 .

Box 3. Consequential survey

The survey conducted in 1991 to assess damages in the Exxon Valdez case presented respondents with a situation comparable to that of Prince William Sound, Alaska in 1989. This was deemed more realistic than asking respondents to travel back in time.

Respondents were told that if no action was taken a similar event would definitely occur and the proposed escort ship program was described. Respondents were informed that the program would be funded by a one-time tax on the oil companies that take oil out of Alaska and that households like theirs would also pay a special one-time federal tax that would go into a Prince William Sound Protection Fund.

A referendum format was used to assess respondents' WTP to avoid another similar environmental disaster. First they were asked whether they would pay a given amount. Second, depending on the first response, the question was repeated with a higher or lower value. For example, if the first question was "would you pay USD 50 for X?" and the answer was Yes, then the follow-up question would be "would you pay USD 100?". If the answer to the first question was No then the follow-up question would be "would you pay USD 25?".(see survey question below).

Survey question used

In order to prevent damage to the area's natural environment from **another** spill, a special safety program has been proposed.

We are conducting this survey to find out whether this special program is worth anything to your household.

It is important to note that this program would **not** prevent damage from a spill anywhere else in the United States because the escort ships could only be used in Prince William Sound.

At present, government officials estimate the program will cost **your** household a total of **\$60**. You would pay this in a special one time charge in addition to your regular federal taxes. This money would **only** be used for the program to prevent damage from another large oil spill in Prince William Sound. **(PAUSE)**

If the program cost your household a total of **\$60** would you vote for the program or against it?

Source: (Carson et al., 2003_[10]).

Behavioural effects

73. Behavioural effects is the name given to possible explanations for choice modelling results which were thought to be at odds with standard neoclassical economic theory. However, some the allegedly odd results are consistent with economic theory and others are the result of poor survey design.

74. For example, critics of surveys refer to findings showing that the amounts people say they will contribute for an environmental goods are generally higher than what they actually contribute. This, as (Carson and Groves, 2007_[14]) showed, is not at odds with economic theory but instead is to be expected as it reflects free-riding behaviour. On that basis, it is not surprising that surveys tend to estimate prices for public goods that are higher than observed voluntary contributions for them.

75. Responses have also been found to vary depending on respondents understanding of the survey's objective. When respondents believe the survey is conducted for pricing purposes, they appear to be less

likely to buy at a given price than in actual market conditions. On the contrary, when respondents believe their responses will make a desired outcome more likely, the survey results tend to over-estimate the number of people who actually buy.

76. Deviations between survey and market behaviour are to be expected (for example, market prices will systematically understate the passive value of environmental benefits for the reasons stated above). However, the nature and direction of the bias can generally be inferred when individuals' incentives are understood. A case-by-case analysis is necessary to recognise when specific biases lead individuals to underestimate or overestimate the value of sustainability benefits. Examples of tools used to assess potential biases in WTP for sustainability benefits include testing alternative payment vehicles in a pilot phase (e.g. higher taxes and higher prices), conducting exit surveys to identify the presence of perceptual problems, and calibrating survey responses with revealed preference behaviour to correct for potential biases (see Box 4).¹⁷

Box 4. Minimizing perceptual errors

In the Exxon Valdez survey several steps were taken to minimise the possibility of respondent perceptual error:

- Focus groups and in-depth interviews were conducted to understand how people think about the goods offered.
- Mechanisms were designed to focus the respondents' attention on what they would and would not get if the program were implemented.
- During the survey respondents were asked open-and close-ended questions to assess how well they understood the survey.

With this information, researchers were able to identify the presence of perceptual problems and determine if and how they affected the results. The example below shows two of the questions asked after the WTP exercise to assess respondent beliefs regarding key elements of the different scenarios used in the WTP questions.

Question asked after the WTP exercise

B-7. If the escort ship program were put into operation, did you think it would be completely effective in preventing damage from another large oil spill?

YES 1 (B-9)
 NO 2 (B-8)
 NOT SURE 8 (B-8)

B-8. Did you think the program would reduce the damage from a large spill a great deal, a moderate amount, a little, or not at all?

GREAT DEAL 1
 MODERATE AMOUNT 2
 LITTLE 3

Source: (Carson et al., 2003_[10])

77. In sum, discrete choice experiments are a widely and well understood methodology to estimate the WTP for use and non-use values. These methods have been extensively used in competition enforcement and environmental economics and tools, tests and procedures have developed to minimise and address potential biases (Carson et al., 2003_[10]).

Capturing non-use values

78. As mentioned above, stated preference methods capture the value respondents attach to a product or service, irrespective of the motive. However, understanding how much of consumers' total value corresponds to use and passive-use is relevant in the context of prospective competition enforcement as each involve a different degree of uncertainty.

79. This has at least three implications with respect to the methods used to quantify sustainability benefits.

1. First, to ensure that respondents can properly assess both use and passive-use values, the survey design and implementation needs to be carefully planned. In particular, interviewers require training, respondents need to be well informed of the product or service being valued and of the potential sustainability implications of the alternative choices. Hypothetical bias can be a problem if product characteristics are vaguely described and implausible choices are presented.
2. Second, the survey can be designed and/or complemented to allow the quantification of the separate components of value. The precise way in which these can be separated will depend in part on the origin of the passive-use value (i.e. existence value, bequest value, or option value). Possible alternatives include:
 - Having respondents conduct the choice experiment under two scenarios, one in which the respondent is able to perceive the sustainability benefit directly and another in which he cannot, for example by varying the date when the benefits become effective
 - Collecting complementary sets of data, one using surveys to capture the total value and another based on revealed preference data to capture the use value (Carson et al., 2003_[10]).
3. Third, as explained further below, the representative sample of individuals selected to respond to the survey will need to include actual consumers, potential consumers and non-consumers of the products/goods object of the competitive assessment. This requires:
 - Identifying the target population including users and potential users.
 - Selecting a sample that is representative of the target population and large enough to provide robust results. The desired level of precision and testing requirements determine the required sample size (Carson and Hanemann, 2005_[15]). Larger samples will allow testing with subsamples and will minimise problems arising from selection bias.

3.2.3. Other approaches

80. Other approaches, such as field experiments, the travel cost method, hedonic pricing, and averting behaviour, can also be used to indirectly assess the benefit to consumers of products or services not traded directly. These methods – which are all revealed preference methods – uncover the implicit value of the non-traded product relying on data on products that are traded in the market (OECD, 2018_[16]).

81. The main advantage of these methods is that they do not require consumer surveys and thus are likely less time intensive. However, as explained below, they have the disadvantage of being unable to (i) separately assess use and non-use values and (ii) correct for potential biases that may arise due to framing, lack of information and/or the influence of existing social norms.

Field experiments

82. Field experiments provide an alternative approach to estimate WTP that is based on direct evidence on how consumers actually behave when they encounter products and services featuring sustainability attributes. They have long been used to estimate the causal effect of some action i.e. how outcomes differ when the action is taken versus when it is not taken.

83. Field experiments use control groups to solve the fundamental difficulty that arises when only one possible outcome is observed for each individual (either the action is taken, or it is not). The control group provides an approximation to what would have happened in an alternative universe where a different action is taken. So, although counterfactual outcomes cannot be observed, these can be inferred from the observed outcomes for other similar individuals who were not treated (Levitt and List, 2009^[17]).

84. There are three types of field experiments that differ in the way the evidence is gathered (Harrison and List, 2004^[18]):

- Artefactual experiments which mimic a lab experiment with participants selected from the market of interest.
- Framed field experiments where subjects know they are taking part in an experiment, they know their behaviour will be recorded and scrutinised, and are aware of the randomization used.
- Natural field experiments where subjects are unaware they are participants in an experiment.

85. Natural field experiments provide the most realistic alternative to stated preference methods as they combine the most attractive elements of the lab with a natural setting. Consumers are observed undertaking tasks they normally undertake and are unaware that they are being randomised into treatment and that their behaviour will be subsequently scrutinised.

86. Conducting a natural field experiment involves intervening in a real marketplace to modify one or more characteristics of the product being evaluated, and hence modifying an aspect of a consumer's purchase experience. Such experimental settings yield data on total sales and purchase frequency, which are used to infer the WTP for certain product features such as sustainability.¹⁸

87. The main problem with natural field experiments is that – like other revealed preference methods – they can reveal more about consumers' awareness than their preference. Although natural field experiments are possibly the most appropriate to address concerns regarding hypothetical bias, it is harder to extract passive-use value. If information on the environmental or sustainability benefits is limited or vague, then consumers will struggle to distinguish between solid and unsubstantiated claims.¹⁹ This raises the problem of trust. Trustworthiness is a key element consumers' WTP. Consumers that fear being duped will not pay as much for sustainable products.

88. These issues could be addressed by assessing participant awareness and providing them information. Often, these experiments are complemented with random intercept surveys to learn about consumer characteristics and purchase behaviour.²⁰ However, providing such information could undermine the benefit of using a field experiment in the first place, as the experiment ceases to be 'natural'.

89. Other limitations often mentioned regarding field experiments include small samples and the risk of generating misleading inference due to the increased scrutiny induced by the experiment. Natural field experiments are typically limited to a small number of respondents in a specific location and period of time, and this limits the extent to which results can be generalised (Andorfer and Liebe, 2012^[19]).

Box 5. Estimating WTP using a Field Experiment

Heinmueller and al. (2015_[20]) undertake experiments to investigate consumer demand and price elasticity for Fair-Trade coffee by changing the label and price of the relevant product.

This study manipulated the fair-trade certification and price for fair-trade coffee across 26 stores of a major US grocery chain. Two distinct experiments were undertaken. The first one, called the 'label experiment' involved attaching a 2-by-2- inch fair-trade label to bulk coffee bins of two fair-trade coffee brands in the stores assigned to the treatment. The fair-trade coffee bins in the control stores had a non-informative generic label attached to them (see illustration below).



For the second experiment, called the 'price experiment', prices of the fair-trade coffee were raised by \$1.00 in the treatment stores. The price for all other types of coffee stayed constant in the stores assigned to treatment. The prices were not altered in stores assigned to the control group. The price increase was accompanied by a Fair-trade label which read "A Fair Price to Support Fair Trade!" and coffee bins in the stores assigned to control group had a different fair-trade label - "Support Fair Trade!" (as shown in the illustration above).

In both experiments, consumers were not provided with any information to describe what production processes constituted Fair-Trade; consumers relied on their existing understanding.

The authors found that sales of the two most popular coffees rose by almost 10% when they carried a Fair-Trade label as compared to a generic placebo label. Demand for the higher-priced coffee remained steady when its price was raised by 8%, but demand for the lower-priced coffee was elastic: a 9% price increase led to a 30% decline in sales. The authors concluded that while consumers attach value to ethical sourcing, there is significant heterogeneity in WTP for it.

Travel cost methods

90. Travel cost analysis is a technique that can be used when a non-traded product (e.g. outdoor recreation) is enjoyed together with the consumption of a traded good (e.g. travel, accommodation, etc.). It has been used extensively to value natural resources such as forests, rivers and lakes (Parsons, 2003_[21]). In the context of assessing sustainability benefits, this method could be applied in cases where acquiring the sustainable product involves higher search and transaction costs as compared to the non-sustainable alternative.

91. The basic premise of this method is that time, travel expenses incurred by visitors and more generally any additional costs incurred, can be viewed as the price to access the non-traded good. In the case of recreational resources, data of different visitors with a varying number of trips and travel costs is combined to obtain the demand curve and infer the WTP. The total economic value of the recreational resource is obtained by multiplying the WTP estimate by the relevant population.

92. The main advantages of this method are: (i) it is relatively inexpensive to apply and (ii) the data is collected mainly through on-site questionnaires, which allow studies to rely on large sample sizes.

93. The methodology also has limitations, most importantly that it cannot be used to estimate non-use values and thus is likely to produce downward biased estimates of WTP. In addition, WTP estimates may be inaccurate because the travel cost method relies on:

- the assumption that the trip (or incurred search and transaction costs) is exclusively related to the product being analysed. In the case of a natural resource, for example, this method assumes that the only motive for the trip to this location is recreational and ignores that the trip may have multiple purposes. In the case of a sustainable product, this method would assume, for example, that the search cost incurred is attributable entirely to the search for an alternative to the non-sustainable product which may not be correct in all cases;
- a measure of travel, search and transaction costs that depends on the respondents' recollection and interpretation which is likely to introduce measurement error as it is difficult to ensure consistent respondents across all individuals surveyed;
- the use of on-site questionnaires which may introduce sample selection bias as it only includes individual who have actually travelled and/or incurred in the search and transaction costs.

Box 6. Value of recreational forests

Borzykowski, Baranzini and Maradan (2017^[22]) conducted a phone survey on 1200 adults living in Switzerland in November and December 2014. The sample was chosen to be representative of the Swiss population in terms of age, gender and geographic location. Prior to the call, respondents received a letter with information on Swiss forests and the proposed new recreation services.

Respondents were asked how often they visited each forest zone during the last 12 months and for each zone visited they were asked to provide information on distance, means of transport, number of accompanying persons, and duration of the visit.

The authors found, in line with the recent literature in Switzerland and Europe, a high WTP for all Swiss forests except those in urban areas. In particular for the Jura forests, they found a WTP below the forest management costs.

Based on these findings, the authors proposed that recreational forests with low WTP be turned to forest reserves to foster biodiversity, lower the costs of forest management, and increase the non-use and option values.

The authors caveat the results of the survey because responses to the off-site survey could be subject to strategic issues and incorrect recollection of travel costs.

Hedonic pricing

94. Hedonic methods, which have been used by academics and practitioners since the early seventies, allow the impact of quality improvements (or deteriorations) on prices to be estimated. Statistics offices around the world use them to construct quality-adjusted price indices which are particularly relevant in for IT products, housing and automobiles (Moulton, 1996^[23]).

95. Hedonic prices have also been used often to estimate the value of non-traded environmental goods. The intuition behind this methodology is that the price paid for the traded good reflects the WTP of all product attributes, including unobservable characteristics and non-market characteristics. For example, the value of a house may depend on the observed physical characteristics such as number of rooms, how close it is from a bus or metro station, and whether it has a garden or not. The value of the house may also depend on the air quality or noise levels in the surroundings.

96. Using available data on product prices and characteristics, the WTP for each attribute can be obtained using regression analysis,

97. The main advantage of this methodology is that it is not costly to implement as it relies on available data on prices and product attributes and standard regression tools. However, reliance on available pricing data implies that it can only be used to value the sustainability attributes of products already in the market. In addition, as all other revealed preference methods, it cannot properly capture the non-use value of these attributes.

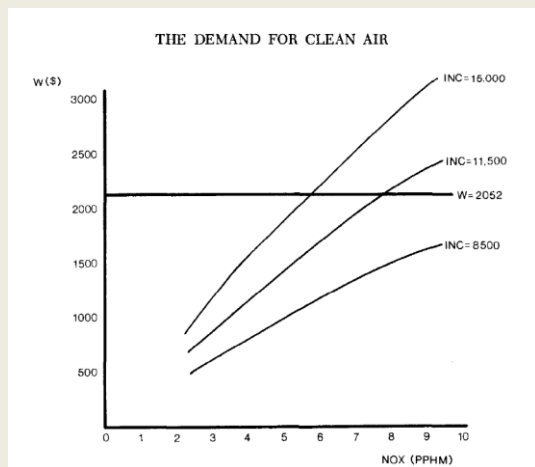
Box 7. Value of clean air

Using data for the Boston housing market, Harrison and Rubinfeld (1978^[24]) estimate the WTP for air quality improvements. They rely on reliable air pollution data and a large number of neighbourhood variables necessary to isolate the independent influence of air pollution.

They introduce air pollution as an attribute in a hedonic price equation. Using the results they estimate each household’s WTP for a marginal change in air pollution and they calculate the per household benefits of air pollution controls gradually introduced beginning in 1970:

The median value of owner-occupied homes was used as the dependent variable and the explanatory variable in the regression included neighbourhood characteristics, measures of accessibility variables, house characteristics and a measure of air pollution. Results (illustrated in the figure below) showed that the WTP was greater at higher pollution levels and increased with household income.

WTP estimates (vertical axis WTP (USD) and horizontal axis pollution level (nitrogen oxide concentration in pphm))



Averting behaviour and defensive expenditures method

98. Averting behaviour models rely on expenditures made to avoid an environmental bad to value the WTP of the non-market good.²¹ For example, individuals might install double-gazed windows to diminish the exposure to traffic noise. Such installation, substitute of a non-market good (freedom from noise disturbance) is a market good bought to mitigate the effect of a non-market bad. Similarly, to avoid air pollution, an individual can spend more time indoors (OECD, 2018^[16]).

99. As with the other methodologies described above, its main advantage is that it is not costly to implement. However, it can only be used to obtain WTP estimates for products already traded in the market

and existing abatement solutions. This implies that it is unfit for the type of prospective analysis likely to be required by competition authorities.

3.3. Whose welfare? Identifying individuals who could potentially benefit from sustainability attributes

100. Using the stated preference methods outlined above, competition authorities could establish to what extent (well informed) consumers are willing to pay more for sustainable products compared with an otherwise identical product that is less sustainable. In many cases, they would find some agreements that enhance consumers welfare that would have been rejected under previous assessment that wrongly understated consumers passive value.

101. However, assessments that only surveyed current consumers would still exclude out-of-market benefits that accrues to non-consumers. Whatever the analytic approach used to assess welfare, authorities still need to consider (i) *whom* to include in their definition of consumers, (ii) whether to include non-consumers (i.e. to assess societal welfare) and (iii) which non-consumers to include (e.g. in the electric car example potential consumers range from individuals who have considered or are considering purchasing a car to all individuals who use some mode of transportation).

102. If authorities sought to assess the benefits for non-consumers they could adapt the stated preference methodology in one of the following ways:

- Including potential and current consumers in the survey; and
- Adding non-consumers in same survey.

3.3.1. Including consumers and potential consumers in the same survey

103. In any competition case, the principle that consumers' welfare must be assessed is uncontroversial. However, in practice, it might not be clear who consumers are. Consumers are not just past customers, who purchased the product in question. Potential consumers could be relevant, especially when they may be influenced by the available choices and the choices of others. Some non-consumers may become consumers if one or more attributes of the good were changed. In addition, some non-consumers may become consumers depending on the perceived choices of others (Inderst, Rhiel and Thomas, 2021^[25]).²² For example, in a case involving electric cars, the target population would likely include users of all other modes of transportation as they are all potential car users, particularly in the context of increasing awareness of the impact of combustion vehicles on climate change.

3.3.2. Including non-consumers and consumers in the same survey

104. A survey that assesses the amounts that people are willing to pay for a sustainable consumer product asks respondents to evaluate a potential bundle comprising of at least two attributes in addition to price: (a) the product, such as a car, and (b) its impact on the environment.

105. For consumers (actual and potential), the choice is relatively straight forward. Their options will be variants of choosing for example between a more expensive sustainable car and a cheaper less sustainable car, so that the analysts can ascertain their WTP for each attribute.

106. However, for non-consumers the choices are different. They, in principle, would be willing to pay for the environmental benefit that results from making a car more sustainably, but they have no interest in purchasing a car.

107. The simple point is that the survey needs to have an option that represents all combinations of preferences, including those of non-consumers that value sustainability, but do not value the product in

question. The challenging point will be to find a mechanism for expressing that choice that is (a) consequential and (b) allows responses to vary depending on the choices of others. For example, in the ACM's Chicken for Tomorrow case, the choices of others were taken into account by informing respondents on whether a large or small number of Dutch consumers were purchasing the Better Life Chickens (Mulder and Zomer, 2017^[26]).²³

4. Further considerations

108. This section comments on some additional difficulties that may be encountered when attempting to incorporate sustainability benefits in the assessment of transactions and conducts.

4.1. Standard of proof

109. There is a general consensus that competition authorities set higher standards of proof for efficiencies than for harms. At the European Commission, for example, in over 30 years efficiencies have never been instrumental for a final merger clearance decision. Evidence put forth by the parties is often considered insufficient to demonstrate efficiencies and when efficiencies have been considered proven, the European Commission has questioned the benefit to consumers for lack of pass-through evidence.²⁴ This has happened even in cases involving variable cost efficiencies where according to economic theory pass through (a) happens automatically, to varying degrees but only under exceptional circumstances would they not be passed through; and (b) the demand conditions under which there is greater harm tend to be those under which there is greater pass through.

110. Adopting higher standards of proof for sustainability benefits than for harms from mergers and agreements will produce a chilling effect on private sector contributions to climate change.

4.2. Time frame of analysis

111. Competition authorities tend to look at a relatively short period when considering potential efficiencies. The European Commission considers, for instance, that *“in general, the longer the start of the efficiencies is projected into the future, the less probability the Commission may be able to assign to the efficiencies actually being brought about”* (EU, 2004^[27]) Horizontal Merger Guidelines para. 86).

112. A case-by-case analysis if the appropriate time frame to consider when assessing sustainability benefits will be required as the environmental benefits resulting from the implementation of new technologies and production processes may vary considerably from one product/service to another. Here too, internal documents and expert evidence can be particularly helpful to determine the relevant time dimensions.

4.3. Screening

113. The OECD (2018^[16]) emphasises the need for competition authorities to determine the relevant dimensions of competition based on characteristics that consumers value. A screening mechanism may be helpful to assess the relevance of sustainability as a dimension of competition since it is likely to vary across products and across geographies.

114. Opinion surveys and the analysis of social media engagement, news media coverage and available search data are useful tools in this respect.²⁵

5. Conclusion

115. There is an ongoing debate on whether competition authorities can take sustainability into account when assessing the competitive impact of practices and transactions, and if so how. Conceptually, sustainability can easily be integrated into competition enforcement to the extent that consumers are willing to pay for more sustainable products. Moreover, the methodologies already being used by competition authorities can be adapted to obtain reliable and complete estimates of consumers' WTP dispelling, at least in part, concerns regarding the role of competition authorities in promoting sustainability.

116. The focus of this note is on the methodologies available to competition authorities to assess sustainability benefits. The first part of the note identifies the main challenges to incorporating the assessment of sustainability benefits in competition enforcement. To assess whether agreements and mergers that foster sustainability benefit consumers, competition authorities will likely have to balance the harm caused by higher prices against the improvements in consumer welfare. This is the standard trade-off that competition authorities already consider which, in the case of sustainability, can be somewhat more difficult because (a) the non-use value of sustainable initiatives may be important and (b) much of the harm that unsustainable production imposes may occur out-of-market. Consumers may be willing to pay for goods or services they know they will never consume for several reasons that have been extensively studied in environmental economics and these cannot be ignored when assessing the improvements in consumer welfare. Similarly, the boundaries of the benefits that will be considered in the balancing exercise also need to be carefully considered as consumers outside the market may become actual or potential consumers in response to the sustainable attribute or to changes in the perception of what others are consuming. Both of these effects would expand the set of consumers that could benefit from the agreement much beyond current consumers.

117. The second part of this note describes ways in which the standards tools and procedures already used by competition authorities can be adapted to better quantify sustainability benefits. Survey based discrete choice experiments have become the dominant strategy in environmental economics to assess the WTP for products with both use and non-use values. These type of survey methods together with detailed objective information on the short-term costs and long-term benefits of the sustainability initiatives under scrutiny will allow a thorough assessment to determine whether:

- the benefits are real (verifiable); and
- the benefits outweigh the potential harm.

118. Although other methods are available, discrete choice experiments are an inherently more flexible tool because they can examine preferences for goods that are substantially different from what is currently observed or have been observed in the past. In addition, they are the only approach that can obtain an estimate of another distinctive property of many environmental goods—the passive use component of their economic value.

119. Competition authorities have already begun to consider sustainability matters in their enforcement practice. Incorporating in their analysis tools designed to include non-use values in the assessment of consumer welfare will allow a more accurate trade-off between harms and benefits. In cases involving non-use values, it is necessary to incorporate the non-use value in the assessment because not doing so implies placing a zero-value on aspects that consumers care about.

Endnotes

¹ See <https://www.bcg.com/en-gb/publications/2020/pandemic-is-heighteningenvironmental-awareness> and <https://www.gov.uk/government/statistics/the-people-and-nature-survey-for-englandadult-data>.

² The Economist Intelligence Unit (2021), “An Eco-wakening: measuring global awareness, engagement and action for nature”, p. 27.

³ Sustainability is a very broad term encompassing effects on the climate as well as on the environment in general.

⁴ Some argue that where a decision is particularly complex and requires technical knowledge, and/or large amounts of information, authorities can have advantages that could raise the well-being of all individuals (Stucke and Ezrachi, 2020_[41]).

⁵ The Netherlands Authority for Consumers and Markets (ACM) and the Hellenic Competition Commission (HCC) recently published a Technical report describing the tools available to estimate the benefits of sustainability (Inderst, Sartzetakis and Xepapadeas, 2021_[38]).

⁶ See Commission Guidelines on the application of Article 81(3) TFEU.

⁷ This is also an issue for fixed cost saving and dynamic efficiencies achieved through mergers or agreements. Contributions to economic performance from which consumers would benefit in the longer terms are not considered. See (OECD, 2012, p. 251_[29]).

⁸ Inderst and Thomas (2021) make a similar point when they describe the reflective WTP as a way of integrating the WTP of existing consumers and future generations.

⁹ (ACM, 2020_[4]), para. 46.

¹⁰ (ACM, 2020_[4]), example 3.

¹¹ See (EC, 2018_[30]) Bayer/Monsanto Decision, para. 3007.

¹² In Microsoft/ Yahoo Search Business for example the Commission's market investigation confirmed that the proposed transaction was perceived as having procompetitive effects. According to Microsoft, traffic volumes acquired through the merger would improve search results, increase user engagement and have a positive effect on advertisers' return on investment. The transaction was cleared unconditionally and the Commission did not adopt a final position on the potential beneficial nonprice effects.

¹³ Consumption here refers to all forms of directly experiencing a product.

¹⁴ Sustainability cannot be a cover for businesses to cartelise or otherwise engage in anti-competitive conduct (a conduct referred to as green washing).

¹⁵ (EU, 2004_[27]), Guidelines on the assessment of horizontal mergers under the Council Regulation on the control, [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205\(02\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52004XC0205(02)&from=EN).

¹⁶ This is often done in the fields of transportation and marketing.

¹⁷ See for example (EC, 2016_[32]) Case M.7758-Hutchinson 3G Italy/Wind/JV stated preference methods were used evaluate the effects on consumer welfare of network quality improvements (increased 4G coverage and download speeds) brought about by the transaction.

¹⁸ Numerous other parameters of interest besides WTP can be obtained in field experiments. For example, by changing the price of a product in an experimental setting, the demand curve can be estimated and by imposing further structure on choice sets, substitution effects can also be inferred (Hainmueller, Hopkins and Yamamoto, 2014_[33]).

¹⁹ The relevance of this issue seems to be confirmed by several studies. A field experiment conducted in a Belgian supermarket highlighted that the introduction of a new label with more integrated, standardised and easily interpretable environmental information led to significant increase in consumption (Vlaeminck, Jiang and Vranken, 2014_[34]).

²⁰ See for example (Arnot, Boxall and Cash, 2006_[36]) and (Heinmueller and al., 2015_[20]).

²¹ This approach resembles the travel cost method in that an amount spent on a traded good is used to value a non-traded good.

²² An important difference of surveys conducted in environmental economics with respect to surveys typically conducted by competition authorities in merger control is that the focus is not only on how much consumption responds to changes in prices (i.e. a movement along the demand curve) but also on the

response in terms of new consumers. Limiting the sample to current consumers is appropriate when the focus is entirely on movements along the demand curve. However, when interested in assess the impact on overall consumption, including new consumers, people who are not currently consumers also need to be included (**Carson and Hanemann, 2005**^[15]). The same applies when assessing sustainability.

²³ The survey was conducted through an online panel of households representative for the Dutch population. People who never bought or ate chicken meat were excluded from the survey.

²⁴ See for example, (EC, 2004^[39]), (EC, 2011^[40]).

²⁵ Google Trend data for example is being used in academic research to identify consumer attitudes and knowledge regarding natural, eco-friendly and certified sustainable products (Gwozdz, Resch and Thogersen, 2020^[37]).

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