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Abstract

Public acceptability is one of the main barriers to the implementation of carbon taxes. Qualitative evidence based on a sample of individuals interviewed in Geneva, Switzerland, shows that the general public would not tackle climate change as economists suggest. The gap concerns not only the choice of climate policy's instruments (i.e. pull versus push measures), but also its specific design in the case of carbon taxes. In this respect, the gap is driven by a diffused perception of environmental ineffectiveness of carbon taxes, which goes hand in hand with distrust in the government and a strong demand for earmarking carbon tax revenues for environmental purposes. Our empirical findings are consistent with the recent literature on the public's preferences on environmental policy design and provide new evidence for the need to reconsider the conventional approach to economic instruments and environmental tax reforms. Reducing resistance to the implementation of Pigouvian taxes cannot abstract from providing effective responses to the concerns emphasized by the general public.

Policy relevance

Policy design is key to improve acceptability of climate policy in general and of economic instruments in particular. Given the current understanding and perception of carbon taxes by the general public, there is a substantial trade-off between efficiency- and acceptability-enhancing use of revenues from carbon taxes. Earmarking revenues for environmental purposes clearly reduces perceived complexity and increases acceptability. The paper addresses this trade-off and, drawing on the Swiss experience, discusses how making financial and environmental benefits salient may improve the acceptability of carbon taxes. It also considers the implementation of climate policies directed towards voluntary efforts, which enjoy larger support by the general public.

Keywords

Climate policy; Carbon tax; Social responses; Public acceptability

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1 Introduction

Climate change is one of the most pressing issues of this century. International negotiations aim at stabilizing emissions at a level preventing severe changes in the climate system. However, they have generally failed to provide consistent and ambitious agreements. Unilateral initiatives have emerged in most developed countries, but the choice of instruments can be questioned from an economic perspective (cf. IPCC 2014; World Bank 2014). Following the IPCC (2014), we classify climate policy instruments in five categories. The first category encompasses the market-based approach, i.e. economic instruments such as taxes and emissions trading systems. In a pure theoretical world, carbon pricing would represent the first best policy (cf. Baumol and Oates, 1971). The second category refers to regulatory approaches (i.e. standards), which are still much diffused instruments of environmental policy, even though theoretically inferior to economic instruments. The remaining categories are represented by information policy (e.g. labels), public provision of goods and services (e.g. public transportation) and voluntary actions and agreements.

The evidence suggests that unilateral initiatives have often lacked to implement powerful instruments able to dramatically curb emissions, such as carbon taxes. When implemented, large exemptions hampered their effectiveness (Lin and Li, 2011; Baranzini and Carattini, 2014). In many other instances, governments preferred second-best policies such as subsidies for renewables and energy-saving measures, eventually leading to relatively high implicit carbon prices (see e.g. OECD 2013; Marcantonini and Ellerman 2014). The explanations of this pattern rely on the political economy of climate change mitigation.

We address this issue from a perspective of public acceptability. We follow a qualitative approach based on face-to-face interviews and ask to members of the general public what measures are necessary to reduce energy consumption and greenhouse gas emissions, what is the role of the public sector and the place for carbon taxes as a policy instrument. We carry out our interviews in Geneva, Switzerland. As other European countries, just after the ratification of the Kyoto Protocol, Switzerland attempted to implement an ambitious mitigation strategy relying on energy taxes. However, in 2000 three energy-tax proposals were rejected by the population in a public ballot (cf. Thalmann, 2004). Since then, Switzerland's climate policy, whose cornerstone is the 2001 CO_2 Act, relies mainly on a mix of policy instruments, including regulations, voluntary agreements (cf. Baranzini et al., 2004) and, by 2008, a carbon tax on heating fuels. The 2013 revision of the CO_2 Act increased the CO_2 tax rate and introduced several regulations, e.g. on imported cars. Political-economy aspects played a crucial role in shaping this path.

Our qualitative evidence suggests that the path followed by Switzerland and other similar countries is in line with the social perception of its population. This paper thus complements the recent literature on the public acceptability of mitigation policies (cf. e.g. Thalmann, 2004; Dresner et al., 2006a; Kallbekken and Sælen, 2011; Sælen and Kallbekken, 2011; Cherry et al., 2012; see also our companion paper Carattini and Baranzini, 2014). The remainder of the paper

is as follows: section 2 reviews the methodology, section 3 introduces the qualitative results, section 4 discusses them and draw policy implications, section 5 concludes.

2 Methodology

This qualitative study is based on a pre-tested semi-structured questionnaire with five face-to-face open questions to 38 individuals. The interviews last between 15 and 45 minutes, averaging about 30 minutes. For each general question, we conceive some possible follow-up questions (in parentheses below) to help people to elaborate their thoughts. The questionnaire is given as follows[1] :

1) By what means it is possible to reduce energy consumption?
(For businesses? For households?)

2) How can reductions in energy consumption be encouraged?
(Who would be the target? Has the public sector any role to play?)

3) Carbon taxes are often mentioned as a policy instrument to reduce energy consumption. Do you think that they are a good approach?
(What features would make them more acceptable to you?)

4) How should tax revenues be used?
(Here are three options: funding environmental projects; redistribution to most affected households; tax rebates for households and firms)

The design of the questionnaire relies on a series of classroom discussions and focus groups, organised prior to the qualitative survey. Participants involved were either "standard" undergraduate or part-time employed students. This first step provides a first sense of how big may be the gap between economists and the public on climate policy and contributes to structure the questionnaire. In particular, students tended to ignore the incentive effect of carbon taxes, despite having seen the concepts of price elasticity and externality in introductory microeconomics courses.

As shown by Table A.1, the sample of respondents is relatively heterogeneous. The sample is composed of individuals of all income classes and includes most age categories. Different job profiles are represented and a large majority of respondents are tenants, in line with the Swiss real-estate context. Though, given the small size typical of qualitative studies, there is no pretention of being representative of the underlying population. The interviews were analysed with RQDA software (Huang, 2012), a computer-assisted qualitative data analysis software.

3 Results

The questionnaire starts with a very general question on how to reduce energy consumption (for households and businesses). We observe a certain degree of consensus across individuals, as

[1]We do not discuss here an additional question asking for future energy price expectations, since beyond the scope of this paper (for more details, see Carattini and Baranzini, 2014).

most answers suggest voluntary measures such as energy-saving tips (cf. Table 1). In particular, use of public transportation and electric vehicles, adoption of energy-efficient lightning and appliances, reduced water consumption and preference for local food products are repeatedly mentioned as possible ways to reduce energy consumption. In general, respondents focus on household's activities, often drawing on their everyday experience, and show a marked preference for measures avoiding to waste energy and as such involving very limited costs for the agent (in terms of e.g. money, time, effort; cf. Steg and Vlek, 2009). For instance, several answers refer to overheating:

> 'In winter, at home, we could get a sweater and do not walk around barefoot. Decreasing the indoor temperature to 20°C or 19°C is perhaps not a big deal, but that effort made by all would have a positive impact, surely.' *[JRC1, male, 26]*

> For heating, he says that we should not adjust the temperature too high 'better to wear a sweater than heating up to 22°C.' *[KH4, male, 27]*

> 'At home, they could turn off the underfloor heating. In winter, we are burning!' *[LRG2, female, 32]*

We observe a similar approach on measures to reduce energy consumption by firms. Reducing printing and switching off lights and computers are recurrent eco-friendly suggestions, as well as promoting environmentally-aware behaviour within the firm. Here are some typical answers:

> She evokes the large corporations that leave all night long all office lights on. She is strongly against this kind of practice. She also thinks that department stores' luminous signboards could be turned off during the night. *[DM2, female, 65]*

> She replies that if companies made an effort with their incredible holiday decorations, it would already be a step forward. *[JRC2, female, 56]*

We emphasize that only in a few cases the public sector is taken into consideration. According to a few respondents, the government could give incentives to households and firms or apply directly some of the aforementioned tips to its own operations. Incentives are suggested under the form of subsidies (e.g. to public transportation) or energy taxes. Altogether, this may suggest that for the large majority of our interviewees the public sector should not take an active role to curb energy consumption in Switzerland. That is, emission abatements should mainly rely on private efforts. Since following our classroom discussions we were expecting this type of outcome, question 2 asks how to encourage energy consumption abatement, introducing explicitly the public sector.

As reported in Table 2, the government has a role to play according to the majority of respondents, but this is confined to awareness-raising and persuasion. This figure is consistent with answers to question 1. Indeed, respondents contend that the responsibility of the public sector is to stimulate voluntary efforts to reduce energy consumption, such as the ones discussed above. Hence, it seems that most respondents would like to see the public sector getting involved in promoting cooperation among individuals so to reduce energy consumption and contribute to climate change mitigation.

Measures	Household	Business	Public sector
Energy-saving tips			
Reduce heatconsumption	15	1	
Reduce air conditioning		2	
Reduce water consumption	12		
Turn off lights	12	10	
Use energy-efficient lighting	6	1	
Use bicycles	4	2	
Use public transports	13	2	
Pool cars	3		
Use hybrid/electric cars	3	1	
Turn off computers	1	7	
Turn off other electrical appliances	10		
Reduce street light intensity			2
Promote eco-friendly measures		6	2
Print less		5	
Sort waste	3	2	
Buy local food	4	1	
Buy A-label appliances	3		
Install efficient isolation	5	3	1
Install solar panels	6	2	
Install video-conference appliances		1	
Market instruments			
Reduce train fares			1
Increase flight prices			1
Introduce carbon taxes			2
Give tax credits conditional to energy efficiency investments			1
Total	100	46	10

Table 1: Number of times energy saving measures are mentioned (question 1)

'It [the government] has to inform the public. For instance, by publishing factsheets or through advertisements.' *[SB1, female, 46]*

'Children should be educated to this issue. And more: subsidizing organic farming and keep financing awareness-raising campaigns.' *[NB2, male, 23]*

'Raising awareness is important. That is the role of the public sector, there should be an ecological system to be proposed to everybody!' *[LRG1, female, 24]*

'It should raise awareness through awareness-raising campaigns showing the worldwide effects of energy, water, etc. overconsumption.' *[TDS1, male, 23]*

Again, a few respondents evoke that the government could implement economic instruments, but subsidies (in particular taking the form of tax rebates) are much more preferred than

Interventions	N
Awareness-raising and suasion	
Promoting energy savings	23
'Green schooling'	4
Promote renewables	3
Create new labels	1
Diffusing smart metering	1
Taxes	
Increasing prices (e.g. electricity, waste)	4
Subsidies	
Giving tax credits to green firms and households	11
Subsidizing public transports for low-income households	4
Subsidizing (very general)	2
Subsidizing efficient appliances	2
Subsidizing local food	1
Subsidizing homeowners to improve energy efficiency	1
Infrastructure	
Developing bikeways	1
Developing recycling facilities	1
No intervention	
No role to play	2

Table 2: Number of times government interventions were mentioned (question 2)

taxes, especially by those that did not consider the public sector in question 1. That is, only a very small minority thinks spontaneously of carbon taxes as a potential mean to tackle energy consumption and emissions. Those answers are to some extent coherent. They show that people are willing to undertake measures to reduce energy consumption either if these do not imply any cost or, if they do, provided that financial compensation (e.g. subsidies) is offered. From a political perspective, answers to this question seem backing up the choice done by many European governments to give priority to subsidies to e.g. energy-efficiency investments and renewable energy. The lack of support for carbon taxes comes as no surprise and analysing its determinants is one of the aims of this study. Question 3 thus explicitly proposes carbon taxes as a policy instrument and asks for the respondent's opinion on it.

We observe an important amount of discussion around this question. We cluster respondent's answers based on the following themes: perceived environmental effectiveness, trust in the government and distributional effects. Concerning perceived effectiveness, an important proportion of respondents raises serious doubts about the tax effectiveness. For them the tax would hardly reduce energy consumption:

> 'Taxing more? I do not know... [...] We are forced to consume, it is not with a tax that this is going to change.' *[DM1, male, 30]*

> The respondent claims he never thought that the simple fact of charging someone an additional tax would substantially affect his way of living and consuming. *[TDS2, male, 29]*

> 'I only see increased bills [...]. Though, why not, if it could incite the population to reduce energy consumption, but I do not really think so.' *[SB1, female, 46]*

The recurrence of the argument about the tax environmental (in-)effectiveness seems pointing to a widespread underestimation of carbon taxes. On top of that, we note that a few individuals claim that with a carbon tax they would face a motivational crowding-out, i.e. the tax would decrease their efforts to reduce energy consumption. Conceptually, this effect can be defined as the consequence of a behavioural reversal that intervenes when agents feel to be treated unfairly with respect to a moral decision between a "good" and a "bad" action. That is, the introduction of an instrument such as a tax would imply that "no behaviour is good enough not to be penalized" (Goeschl and Perino, 2012). With the words of Frey and Jegen (2001), the policy instrument either modifies the agent's preferences or the perception of her duty, her environment or herself.

> 'Energy taxes could end up discouraging efforts. [...] A system of sanctions would be fairer.' *[SB3, male, 57]*

> She saves energy already and there is no reason to tax current efforts. She would perceive it as unfair and instead of saving more she would do the opposite. This because her previous efforts would not be rewarded. *[TDS3, female, 53]*

> This would generate the opposite outcome since for those already saving energy this would be perceived as totally unfair as they already save energy. Thus, she would stop saving energy. Since be paying, better enjoying then. *[TDS4, female, 23]*

Albeit not referring to a potential crowding-out, another respondent underlines the unfairness (as she perceives it) of carbon taxation:

> Respondent says that it is not normal that the good citizen is not thanked for her efforts. And that she has to pay for bad citizens. A control of bad consumers should be established so to tax them further. *[KH2, female, 29]*

Twelve respondents express a lack of confidence in the government and policymakers. Some explicitly mention distrust, while others raise worries about the use of tax revenues. For some, carbon taxes are only a pretext to raise new fiscal revenues. That is, a Pigouvian tax simply hiding a Ramsey tax. In several cases, respondents state a need for transparency in the use of revenues, which may condition their support to the policy:

> He would like to know exactly what is done with the money. 'We need the federal agency in charge of this tax to provide us with all the information and explanations.' *[MG2, male, 31]*

> 'To accept [...] it would be necessary to know where tax revenues go.' *[TDS4, female, 35]*

> Yes, if this tax really contributes to specific projects. 'If it is just a pretext to make money, that is no good!' *[LRG4, male, 35]*

> 'The government says what you have to do and you do not really know where the money goes [...]. Perhaps the government one day will tax our own exhalation of CO_2 and discourage sports.' *[MG1, male, 25]*

Distrust in the government leads some individuals to ask for ex-ante earmarking already at this stage of the discussion:

> She would like to make sure that her money is really going to renewable energy projects. *[DM3, female, 30]*

> 'Yes, if the tax contributes to the development of renewable energy. However, we will never be sure...' *[LRG3, female, 30]*

Respondents tend to identify earmarking with the financing of environmental investments and in particular the development of renewable energy. We explore this issue more in detail while analysing question 4.

Distributional issues seem to be a concern for about half of the sample. Some respondents are simply worried about how the tax would hit the poorest households. Others propose possible solutions to overcome the regressive impact of carbon taxes (cf. Baranzini et al., 2000).

> 'Those with money will keep consuming. At the end of the day, we always hit those without it.' *[DM3, female, 30]*

> 'It is important not to penalize the poorest people.' *[NB1, male, 80]*

> 'The situation is already sufficiently difficult with respect to the current economic crisis. Paying an additional tax seems to me a bad idea, above all in time of crisis.' *[SB4, female, 46]*

> 'On the one hand, it would force people to get involved, but on the other it would be unfair for people who already face financial problems. However, applying a tax based on the situation of each household would be acceptable.' *[NB4, male, 23]*

> 'This tax should be proportional to income and consumption.' *[MG2, male, 31]*

Question 4 provides respondents with the possibility to define their preferred way of revenue recycling, i.e. how they would use the revenues from this hypothetical carbon tax. Although it is an open question and thus respondents can mention any kind of revenue recycling, we suggest three options:

1) Funding of environmental projects.

2) Redistribution to most affected households.

3) Tax rebates for households and firms.

Some respondents weigh all options and introduce new ones (e.g. development aid, education), but most of our sample focuses directly on the funding of environmental project. For them, there has to be a natural and logical link between the tax purpose and the use of revenues. A few individuals really struggle to conceive how revenues could be used for other purposes than the environment.

> 'It seems normal that revenues would be used in the energy domain.' *[SB3, male, 57]*

> 'It is clear that such tax has to provide funding to ecological projects, first of all because this is the denomination of the tax.' *[SC2, male, 30]*

> 'Tax revenues should definitely be used for environmental projects.' *[TDS4, female, 23]*

> 'Tax revenues should be used in the field of energy and the environment in general. It must be a closed circle. The tax has to pursue its target and allow things to improve.' *[MG3, male, 60]*

> 'It is an energy tax, so its revenues should be used to develop green technologies.' *[DM4, female, 34]*

> 'The money obtained would be invested in renewable energies and this would allow finding new efficient solutions. It would be getting two birds with a stone!' *[NB3, female, 20]*

The second recycling option targets the tax's distributional effects by redistributing income to the most disadvantaged households. Its reception is relatively lukewarm. Only few people particularly concerned by distributional effects believe that social cushioning is necessary:

> 'First of all, it is about benefiting the least-advantaged people.' *[NB1, male, 80]*

> 'Above all, it is necessary to help retired individuals that need to be kept warm.' *[TDS3, female, 53]*

Other respondents share the concern about the regressive impact of carbon taxes, but do not consider social cushioning as a viable option, due to its presumably large administrative burden. They thus seem to accept that carbon taxes would make some households relatively worse off:

> 'To me, it seems too complicated.' *[JRC1, male, 26]*

> 'Really too complex and hard to realize.' *[SB4, female, 46]*

> 'Such system should not cost more than it yields.' *[NB1, male, 80]*

These two types of answers represent however a minority. As discussed, for most respondents not using tax revenues for environmental purposes sounds inconceivable and groundless:

> 'So, we go nowhere! If we pay more and give back part to others, the money goes nowhere! The target would be to invest for the future. Otherwise, we are stuck with fossil energy!' *[LRG1, female, 24]*

> 'I do not see the link and I do not see why energy consumption would be used as a pretext to help the most affected households.' *[TDS1, male, 23]*

> 'If the revenues would be used for something different, the government would lose its credibility regarding how urgent the situation is. Actually, if it is so urgent and important to stop over-consuming, why should tax revenues be used for things other than saving the planet?! That is illogical.' *[TDS4, female, 23]*

Finally, a few argue that there is clearly no need for social cushioning as it would benefit those already milking the welfare system:

> 'It would be as always, with losers benefiting of these revenues.' *[DM1, male, 30]*

> 'There are already so many subsidies for poor people, and we should not mix up different problems.' *[MG1, male, 25]*

Mixed opinions are reported on the recycling option consisting in tax rebates for households and firms. The support it receives arguably results from the perceived necessity to introduce a system of bonuses rewarding those curbing their energy demand, rather than from the quest of a double dividend (except for respondent JRC1). This may explain the popularity of bonus-malus policies and is clearly in line with the most recurrent critiques from the general public to the Environmental Tax Reform (ETR, see below).

> 'Taxing is about making individuals aware of how dear is energy. This is to me the government's role, it could push it through the population by decreasing another tax.' *[JRC1, male, 26]*

> 'Using it as a bonus to reduce taxes to households and firms deserving it.' *[MG3, male, 60]*

> 'Households and firms that did an effort would deserve a tax rebate.' *[KH2, female, 29]*

> 'These revenues could actually allow to reduce taxes to those firms that get involved.' *[MG1, male, 25]*

For those that do not like this option the explanation may reside once again in the missing link between taxation and the use of revenues, i.e. why taxing here and giving back there. A compelling interpretation is that for respondents NB2 and NB4, carbon pricing should not only redirect consumption towards cleaner goods and services, but also reduce the overall level of consumption, eventually leading to some degrowth.

> 'Tax rebates do not make any sense. At the end, people could consume what they saved.' *[NB4, male, 23]*

> 'This would increase the purchasing power of households and the solution is actually reducing household's consumption.' *[NB2, male, 23]*

4 Discussion and policy implications

Our qualitative evidence tends to confirm prior findings in the literature. We observe a general resistance to public intervention (as in Cherry et al., 2012) with, if deemed necessary, a preference for pull (e.g. subsidies to public transportation) over push (e.g. carbon tax) measures. For most respondents, private efforts represent the main approach to climate change mitigation and their effectiveness can be improved by the public sector through increased information and communication. Most of these efforts may come at a limited (or even negative) cost. The literature refers to "efficiency behaviour", which implies that with little effort the current level of comfort can be generally maintained, but at a lower level of energy consumption. Efficiency behaviour is opposed to "curtailment behaviour", which implies a change in lifestyle. Curtailment actions (such as the implementation of carbon taxes) are therefore much less popular than those targeting efficiency behaviour (Steg et al., 2006). Indeed, our analysis shows that a large cloud darkens the sky of carbon taxes: perception of environmental ineffectiveness and distrust in the government's real purpose are in our view two sides of the same coin. It follows that respondents are generally disconcerted about the possibility of using the revenues of an environmental tax for something unrelated to the environment (i.e. "issue-linkage", cf. Kallbekken and Aasen, 2010; but also e.g. Beuermann and Santarius, 2006; Steg et al., 2006; Brannlund and Persson, 2012). In this sense, it is because the carbon tax is perceived as ineffective that fiscal revenues have to be used in the environmental domain, otherwise the government would be simply seen as collecting extra revenues. Indeed, no other forms of recycling receive a tangible support. Not even social cushioning: although some respondents acknowledge the need to offset the tax's distributional effects, it seems that the way of financing social cushioning should make abstraction of carbon tax revenues (as in Kallbekken and Aasen, 2010).

Hence, we observe a gap between what economic theory suggests both in terms of policy choice, i.e. first-best versus second-best policies, and policy design, i.e. efficient use of revenues (e.g. allocation to the general budget ensuring flexibility and thus funding of policies with the highest social return or direct reduction of distortionary taxes) versus earmarking for environmental purposes (cf. Kallbekken and Aasen, 2010). We put forward several complementary explanations to this gap.

First, people may interpret the lack of private efforts as the result of a lack of information, whereas for economists analyse it is simply the standard outcome of a prisoner's dilemma. The call of respondents for improved communication may however somehow meet the recent strand of research on (conditional) cooperation in global dilemmas, see e.g. Cialdini (2003); Nyborg et al. (2006); Schultz et al. (2007); Ostrom (2009); Carattini et al. (2013); Lindman et al. (2013); Allcott and Rogers (2014).

Second, while for economists, in the short run and under standard assumptions, subsidies and taxes are equivalent in terms of incentives, the former are clearly preferred by the public. This preference is very well documented in the literature. As remarked by Steg et al. (2006), pull measures are perceived as more acceptable and more effective than push measures, unless revenues are allocated for environmental purposes (cf. also Kallbekken and Aasen 2010). Non-coercive instruments that make pro-environmental behaviour less costly are more appealing and considered as more effective as they are really perceived as an incentive, whereas taxes are seen more as a disincentive (or punishment), which unsuccessfully try to change people's lifestyle (cf. Steg et al., 2006). That is, as stressed in Carattini and Baranzini (2014), perceived effectiveness

and acceptability go hand in hand. The same seems to apply to our findings. Indeed, our results point to a diffused underestimation of carbon taxes environmental effectiveness. Respondents do not expect carbon taxes to be effective and this does not seem to be related to the panoply of exceptions and exemptions of existing carbon taxes, but rather to either a misunderstanding of carbon taxes' incentive effect or to a perception of fully inelastic demand of fossil fuels[2]. Therefore, it comes as no surprise that people confound Pigouvian with Ramsey taxes (cf. Kallbekken et al., 2011; Brannlund and Persson, 2012) and ask for earmarking revenues for environmental purposes. How could they have any environmental effect otherwise? That is, absent any earmarking, carbon taxes are perceived as a mere pretext to increase fiscal revenues. It is striking to see that this finding reconciles with those of studies focusing on the ETRs, which are generally fiscally neutral. Hence, perceived ineffectiveness and distrust in the government do not create the best premises for the implementation of carbon (or energy) taxes and above all of more elaborated schemes such as the ETRs (cf. Beuermann and Santarius 2006; Clinch and Dunne 2006; Clinch et al. 2006; Deroubaix and Lévèque 2006; Dresner et al. 2006a; Dresner et al. 2006b; Klok et al. 2006). Earmarking for environmental purposes is shown to substantially increase acceptability of carbon taxes also in Kallbekken et al. (2011), Kallbekken and Sælen (2011), Sælen and Kallbekken (2011) and Carattini and Baranzini (2014).

From this discussion three policy implications follow. First, when designing climate policies, policymakers may want to consider to give up some of the potential efficiency gains and trade them for increased clarity and thus acceptability. This would imply to earmark a substantial part of the revenues for environmental purposes, thus renouncing to e.g. some reduction in distortionary taxes, which economists tend to consider as the most productive use of revenues. This makes sense, since the general public do not fully understand the rationale for such an "obscure" mechanism. In this point we therefore agree with Grubb et al. (2014): earmarking should no longer be a taboo for economists, at least as a short-term measure to channel political support towards first-best policies. As a result, the criterion of revenue neutrality would not be met. Again, from a political perspective this is no harm, since for the general public neutrality does not seem to be a necessary requirement to support carbon taxes. Though, one may argue that in the case of a real ballot lobbies would react differently depending on the way revenues are used. Yet, we argue that most lobbying usually come from energy-intensive industries which would lose anyway, if climate policy really aims at allocating resources more efficiently, regardless of the use of revenues.

Second, since people seem particularly sensitive to their own gains, it would be useful to design policies in a way that makes them salient for those that may enjoy them. Emphasizing financial gains may make revenue-neutral policies much more appealing to the general public, thus contributing to bridge the gap between it and economists. Policymakers may want to build on the example of bonus-malus policies. These policies enjoy a relatively large support, probably because they make more explicit which behaviour is profitable and which is punished (cf. e.g. Dresner et al. 2006b). However, policies redistributing revenues lump sum act in the same way: small polluters are rewarded whereas big polluters end up with a net loss. The problem is that

[2]In the lab experiment of Kallbekken et al. (2011) giving to participants explanations on how the tax works do not improve acceptability. The authors suggest that this may be a feature of lab experiments, since assessing pay-offs is relatively easier than in real life. Our classroom discussions with students trained in economics (amongst others) may suggest instead that providing information may not be enough to change deep understanding and perception of Pigouvian taxes. In the case of Switzerland, estimates for gasoline price elasticity of demand range from -0.09 in the short run to -0.34 in the long run, cf. Baranzini and Weber (2013).

this mechanism is not made salient. The case of the Swiss carbon tax is particularly revealing. We emphasize the following two related elements. First, the population is not fully aware of the existing carbon tax on heating fuels (only 40% of the sample are aware of it in Carattini and Baranzini 2014). Second, redistribution is not salient at all. Using figures for 2014, the amount redistributed lump-sum to Swiss residents is 52.50 Swiss francs (about 42€). To keep administrative costs low, this is done through the compulsory healthcare insurance. However, no particular explanation is given about this refund, which is introduced in small characters in the monthly healthcare bill (i.e. the full amount is divided by 12). Even though the Swiss CO_2 levy is not yet completely revenue neutral, up to one third of revenues being allocated to improvements in energy efficiency in buildings, this feature could be easily marketed as a tax threshold (cf. Pezzey and Jotzo 2013) and thus be associated to a right to pollute, which would equal the lump-sum transfer times the current tax rate. Furthermore, financial gains may come with benefits of environmental nature (cf. Carattini and Baranzini 2014). In this respect, we stress emphasize the role played by the trial period in demonstrating the benefits of the Stockholm congestion charge and thus contribute to the policy success when people went to vote (cf. Kallbekken and Sælen 2011).

Third, in a shorter horizon, policymakers may want to develop those policies promoting voluntary efforts, which clearly do not face issues of acceptability, and then from them move on to more stringent policies. Policies targeting voluntary efforts may not necessarily need to take place at the national level. Subnational and local actors, which likely enjoy more trust by communities, may be more effective in spurring cooperation (Catney et al. 2013; Tavoni 2013). As shown by Blumer et al. (2014) for Switzerland, local utilities can have an important role to play in reducing energy consumption, provided that they are given the right incentives. In this respect it is of particular interest the choice of some utilities in several Swiss cantons to set the green electric mix as the default option. Even though users are in most cases given the possibility to opt out and move back to the "grey" option (thus saving a couple of cents per kWh), the evidence available so far indicates that only a few households take this chance while the large majority remains with the new default product. Arguably, such bottom-up approach would be more a complement than a substitute to top-down carbon pricing.

5 Conclusion

In the context of environmental issues in general and of climate change mitigation in particular, it is well known that the patient tends not to follow the doctor's prescriptions (cf. Hahn 1989; Brannlund and Persson 2012). The main reasons behind the limited diffusion of first-best policies seem to be related to their unpopularity. For most of the general public in this qualitative study, mitigation should mainly rely on voluntary efforts and public policy, if any, should be limited to encourage them through information, suasion and education. Market instruments such as subsidies or tax rebates may enjoy some degree of support, but carbon taxes do it only in a very limited extent. We assess qualitatively the drivers of this lack of public support and find them especially in the underestimation of carbon taxes environmental effectiveness. Perceived ineffectiveness goes hand in hand with distrust in the government, which is considered as looking for additional fiscal revenues only. In the case carbon taxes were to be implemented, since people do not understand or believe in their incentive effect, they would have to respond to a strong demand for earmarking fiscal revenues for environmental

purposes. Indeed, most people believe that carbon taxes curb emissions only indirectly by generating revenues to be invested in the environmental realm.

In terms of climate policy, our analysis suggests that complex schemes may better leave the place for straightforward policies with tax revenues alimenting a visible green fund, albeit this implies renouncing to efficiency-enhancing redistribution and revenue neutrality. Second, the public should be given the time to experience or the information to evaluate policy's benefits. Third, policies promoting private efforts may be easily implemented (and appreciated) as they would not face the barriers that carbon taxes do. Such policies may however not be sufficient for high abatement targets and their cost-effectiveness has to be ensured.

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A Socio-demographic characteristics

ID	Length	Gender	Age	Postal code	Job profile	Income class	HC
DM1	28	M	30	1226	-	middle-low	tenant
DM2	32	F	65	1205	retiree	low	tenant
DM3	22	F	30	1226	worker	middle-high	-
DM4	28	F	34	1227	worker	middle-low	tenant
JRC1	27	M	26	1219	worker	middle-low	tenant
JRC2	24	F	56	1228	worker	middle-low	tenant
JRC3	23	M	29	1227	worker	low	tenant
KH1	25	M	25	1202	student	middle-low	tenant
KH2	30	F	29	1203	worker	middle-low	owner
KH3	25	M	25	1203	student	low	tenant
KH4	21	M	27	1290	worker	middle-low	tenant
LRG1	20	F	24	1226	student	low	tenant
LRG2	30	F	32	1227	worker	middle-high	tenant
LRG3	19	F	30	1227	worker	low	tenant
LRG4	40	M	35	1207	worker	middle-low	tenant
MG1	22	M	25	1207	worker	middle-low	tenant
MG2	24	M	31	1207	unemployed	middle-low	tenant
MG3	15	M	60	1207	retiree	middle-high	tenant
MG4	25	F	58	1207	retiree	middle-high	tenant
NB1	45	M	80	1228	retiree	middle-low	owner
NB2	45	M	23	1228	worker	middle-low	tenant
NB3	40	F	20	1227	student	middle-low	tenant
NB4	35	M	23	1205	student	low	tenant
PJB2	*NA*	M	22	1252	independent	low	tenant
PJB3	15	F	47	1206	independent	high	owner
PJB4	35	F	26	1227	student	low	tenant
SB1	20	F	46	1201	worker	middle-low	tenant
SB2	23	F	24	1202	worker	low	tenant
SB3	30	M	57	1201	worker	middle-high	tenant
SB4	25	F	46	1201	worker	middle-low	tenant
SC1	30	F	30	1227	independent	middle-high	tenant
SC2	25	M	30	1294	worker	low	owner
SC3	30	M	23	1255	student	high	owner
SC4	35	F	36	1292	manager	high	owner
TDS1	30	M	23	1205	student	middle-low	tenant
TDS2	35	M	29	1227	worker	middle-high	tenant
TDS3	35	F	53	1201	worker	middle-low	owner
TDS4	25	F	23	1227	student	middle-low	tenant

Note: Lenght of interview measured in minutes. HC stands for "housing contract".

Table A.1: Socio-demographic characteristics

Cahiers de recherche du Centre de Recherche Appliquée en Gestion (CRAG) de la Haute Ecole de Gestion - Genève

CRAG - Centre de Recherche Appliquée en Gestion
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