# Measuring the legitimacy of energy transition policy in the Netherlands[1]

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## Abstract

In line with the Paris Agreement, the Dutch Government aims to achieve 49% $CO_2$ emission reduction by 2030. The required energy transition will have a large impact on Dutch society. So, it is important that citizens and companies support and agree on the required policies. This paper explores the legitimacy of these policies and how to measure the degree of such legitimacy.

A survey among Dutch citizens and company representatives shows support for the emission reduction policy goals (input-legitimacy). We also explored support for two specific policy interventions (output legitimacy): 1) an 'in-home display', collectively paid for by all energy consumers, and 2) an in-home display that is paid for by the energy companies. Both interventions are supported by around 50% of the citizens and companies. We found strong correlations between underlying aspects of legitimacy (related to good governance criteria) and the overall support for the interventions. We also found that public support for a policy goal does not automatically result in support for the associated intervention. This emphasizes the importance of ex-ante testing of specific interventions to determine the level of public support, so that policy can become more effective and efficient.

## Keywords

legitimacy; public; support; interventions; governance; policymaker

## 1 Introduction

To contribute to limiting the effects of global warming as agreed on in Paris (2015), the Dutch Government formulated the firm policy goal of a 49% reduction in $CO_2$ emissions by 2030 and 85% by 2050, compared with 1990 levels (Klimaatberaad 2018). Research by PBL Netherlands Environmental Assessment Agency and the Netherlands Institute for Social Research (SCP) concluded that the energy transition needed to achieve those goals, would have a large impact on Dutch citizens (Vringer and van den Broek, 2016). Involvement, acceptance and participation of both citizens and companies are a prerequisite to achieving these policy goals. A large majority of the Dutch population considers sustainability to be important (e.g. MNP, 2007). However, this does not mean that people automatically will change their individual behaviour for the purpose of achieving these goals (e.g. Verbeek and Boelhouwer, 2010; MNP, 2007; Vringer et al., 2007; Vringer et al., 2017). In the case that individual behavior

does not directly leads to achieving a policy goal, legitimation for policy interventions[2] is required. However, this support for a particular policy goal not automatically leads to a general acceptance of the related policy interventions. For example, a large degree of public support for slower global population growth does not automatically imply the same level of support for the implementation of a one-child policy. This is, in essence, true for all types of policies. Differences between the level of support for a policy goal and that for the related intervention are generally found to be larger when any positive effects occur further into the future and/or if they have a less local impact (WRR, 2003). This is true for climate policies. An example would be the location of wind turbines or underground $CO_2$ storage nearby residential areas. If citizens oppose these specific policy interventions, the efficiency and effectiveness of that policy will decrease.

To make the Dutch energy transition policy more effective and efficient, information is required about its degree of legitimacy. In this paper, we explore, ex ante, the legitimacy of public policies aimed to accelerate and achieve the energy transition in the Netherlands. First, we look at the concept of policy legitimacy; then, a first attempt is made to measure the degree of legitimacy of policies addressing the energy transition in the Netherlands. We do this by answering the following questions in this paper: 1. Do Dutch citizens and companies support public policies aimed at the energy transition?; 2. Are there differences in the level of support by Dutch citizens and companies?; 3. Is there a relationship between the support of policy goals and that of their related policy interventions? And 4. What underlying aspects of legitimacy are contributing to the support for specific policy interventions?

## 2 Policy legitimacy

The literature provides many different definitions of policy legitimacy. In Weber's (1978) view, 'legitimacy is the acceptance of exercised power'. In other words, legitimacy is the general willingness to follow the commands of a ruler or ruling body. In the view of Montenegro de Wit and Iles (2016), legitimacy means that people accept 'something' (e.g. knowledge, social norms, habits or technologies), declare that 'something' as being credible and authoritative, and express that 'something' or apply it in practice.

Crabbé et al. (2006) state that public support is the often-used as a popular term for legitimacy. Besides a subjective view on legitimacy, they also discuss more objective elements, such as the legality of a policy goal or the effects of policy interventions related to that goal. The difference between Weber's subjective approach and the more objective approach by Crabbé et al. can be illustrated by going back in history, to Germany's Nazi regime. The Nazi regime could be considered legitimate, because the German population accepted its authority. But if we consider legitimacy to also include the respect of human rights, the Nazi regime could not be considered as legitimate.

Suchman distinguishes three different types of legitimacy: 1) pragmatic legitimacy, based on the self-interest of citizens or certain groups; 2) moral legitimacy, also known as normative legitimacy, which is based on 'doing the right thing'; 3) cognitive legitimacy, which is based on the acceptance or necessity of an intervention. In contrast to the first two types, dialogue (discursive evaluation) plays no role in cognitive legitimacy. These three forms of legitimacy presuppose that activities undertaken by an organization or society are worthy and appropriate within a system of social norms, values, beliefs and definitions (Suchman, 1995).

The Netherlands Institute for Social Research (SCP, 2017) describes the legitimacy of policy as the right to exercise power, including this being recognized by citizens. SCP (2017) argues that legitimate policy should first and foremost comply with certain external standards and/or social norms, achieve public objectives, take into account divergent views and interests of groups of citizens, be transparent and efficient and take liability fairly into account. The Netherlands Institute for Social Research (SCP, 2017) argues that legitimacy refers to the experiences of citizens. People must be willing to comply with legislation, being convinced that the policy is in line with their own moral standards and expect that the related interventions are applied lawfully. In this sense, legitimacy of policy is often linked to whether citizens believe that the related interventions will be effective, consider the outcomes and procedures of the policy to be fair and have confidence in the legislators and in those who are implementing the policy—whom they believe to have good intentions and be competent (SCP, 2017).

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[2] A policy intervention is not the same as a policy instrument. A policy instrument is e.g. tax, information or prohibition. A policy intervention is usually based on a policy instrument, but includes how the instrument is applied. For example, an additional tax of 25% on diesel oil sold, to be introduced on the 9th of December 2019.

Also Bokhorst (2014) uses a more broad definition of legitimacy. She mentions that legitimacy includes four dimensions: an ethical dimension (moral rights), a legal dimension (laws - formal rights), a political dimension (recognition from authorities) and a societal dimension (acceptance by the public).

We conclude that there are several approaches to policy legitimacy. It is also clear that, besides just the acceptance of policy and public support, more aspects play a role, such as the contribution to the policy goal and fitting within fundamental—moral—human rights. In addition, the literature often distinguishes between two sources of policy legitimacy, i.e. input and output legitimacy, and between two types of logic in policy-making. These are described below.

## 2.1 Input legitimacy and output legitimacy

Two sources of legitimation can be distinguished; legitimacy of the policy goals and that of the interventions to achieve these goals. Various authors, such as Hemerijck and Hazeu (2004), Kruitwagen et al. (2009) and the Netherlands Scientific Council for Government Policy (WRR, 2003), refer to the work by Scharpf (1999) regarding these two sources. Scharpf distinguishes input and output legitimacy of policy. Input legitimacy of policy concerns public support for the policy goals. This relates to whether the goals of, for example, the energy transition are supported by citizens. Policy goals usually result from a political normative process and they are based on shared values and norms (Hemerijck and Hazeu, 2004). However, public support for a policy goal (input legitimacy) does not automatically imply that the related interventions, intended to contribute to achieving that goal, are also supported (output legitimacy) (Scharpf, 1999). Public support for the energy transition, therefore, not automatically implies public support for replacing gas stoves with electric ones. This example illustrates that only input legitimacy is insufficient for achieving policy goals. The Netherlands Scientific Council for Government Policy (2003) puts it more strongly: 'No democracy can rely on only input legitimacy'. Public support for specific policy interventions is also necessary to achieve policy goals in a well-functioning democracy. This concerns the legitimacy of the chosen instrumentation (Kruitwagen et al., 2009; WRR, 2003). A similar distinction is also made by Wüstenhagen et al. (2007). Socio-political acceptance is similar to input legitimacy and concerns the public support and acceptance of a certain policy goal. Output legitimacy is comparable to community acceptance at the level of specific local interventions. The authors add a third form of citizen acceptance, namely that of market acceptance, which is the willingness of citizens to financially invest in order to achieve a particular policy goal.

## 2.2 Logic of policy-making

When policymakers develop a policy, they not only have to deal with questions of efficiency or effectiveness (consequences), but also with whether there will be sufficient public support (appropriateness). March and Olsen (1989) define two types of perspectives according to which policymakers develop policy interventions: the logic of consequence and the logic of appropriateness. They argue that rationality and utility maximisation are the basis of the logic of consequence. Following this logic, effectiveness and efficiency are the most important criteria when developing a policy. The logic of appropriateness is mainly about what is feasible or acceptable in a given situation. According to this logic, acceptance and public support are important criteria. Policymakers who are guided by the logic of appropriateness are goal seeking, while those who are guided by the logic of consequence are more goal realising (Hemerijck and Hazeu, 2004). Crabbé et al. (2006) relate the two types of logic to a classic dilemma of policymakers. Policymakers often have to choose between being decisive or being supported. Decisiveness is closely related to effectiveness and efficiency (the logic of consequence) and being supported is more related to contextual political-social aspects (logic of appropriateness). The description of legitimacy given by The Netherlands Institute for Social Research (SCP, 2017) fits into this classification, because it can be read as a combination of 'effective' (citizens think that the policy will be effective) and 'acceptable' (they consider the outcomes and procedures of the policy as justified and have confidence in the policymakers and the enforcing institutes).

Figure 1 shows how the input–output legitimacy perspective and the types of logic of the policy-making perspective relate to the policy process (from agenda setting to implementation).
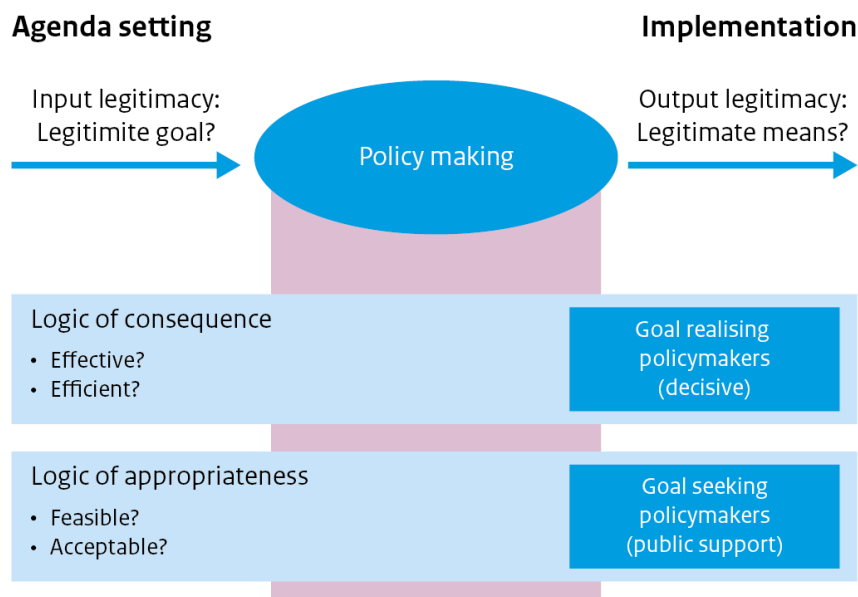
*Figure 1. A schematic of the perspectives on the legitimacy of policy.*

## 3 Methodology

As described above, policy legitimacy is not only based on efficiency and effectiveness (logic of consequence) but also contains elements of the logic of appropriateness. A proper ex-ante evaluation of policy legitimacy should include all these elements. The literature is ambiguous about which aspects can be attributed to the logic of appropriateness. Various publications link the logic of appropriateness either implicitly or explicitly to the criteria of good governance (Hemerijck and Hazeu, 2004; WRR, 2003; SCP, 2017; Gribnau, 2009). According to Hemerijck and Hazeu (2004) and the Netherlands Scientific Council for Government Policy (WRR, 2003) legitimate policy must comply with political and practical feasibility, social acceptability and be lawful. Gribnau (2009) explicitly links legitimacy with good governance. He argues that the contemporary legitimacy of government action is based not only on the law and principles of law, but also on proper conduct. We chose to measure the legitimacy of policy based on good governance criteria as elaborated by UNESCAP (2009) and mentioned by Crabbé et al., 2006): effective and efficient, following the rule of law, participatory, consensus-oriented, accountable, transparent, responsive, equitable and inclusive.

### 3.1 Operationalization and research design

We developed a questionnaire for citizens and company representatives to measure policy legitimacy. The questionnaire contains questions regarding input legitimacy and output legitimacy and is focused on the Dutch energy transition[3] that aims to achieve a 49% reduction in $CO_2$ emissions by 2030. The legitimacy of policy is measured by various indicators. Given the exploratory nature of this study, we chose a particular set of indicators to measure policy legitimacy, based on pragmatic considerations. Other studies could make other choices, in this respect.

We used four indicators, related to the good governance criteria, to measure input legitimacy: effectiveness, efficiency, orientation on consensus and accountability. These four indicators can be described as follows:

1.  Recognition of the problem. To what extent do citizens and companies recognize the problems to which policies offer a solution. This indicator is related to the good governance criterion of being 'consensus-

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[3] The questionnaire also focused on the transition to a circular economy. Those results are not presented in this paper.

oriented'. The respondents were asked to what extent they endorse causal relations which form the basis of policy interventions. Respondents were asked: 1) The climate changes as a result of global warming; 2) Sea levels are rising and weather conditions are becoming more extreme 3) We can reduce these effects by: saving energy, replacing oil, coal and natural gas with sustainable energy sources (such as solar and wind energy). Additionally they were asked whether they think that: a. The climate is changing? b. Climate change is being caused by humans?

2.    Judging the importance of solving the problem. The relative importance of solving a certain problem addressed by a policy is also related to the 'consensus-oriented' criterion of good governance. Is there general consensus about the policy goal being good for long-term sustainable development? To get an idea of this consensus, we measured the relative importance of nine societal issues, including those directly related to the energy transition. These issues were selected from a list of 64. We selected the nine issues that Dutch citizens prioritised, ranked from highly important to be solved to less important (Visser et al., 2007). We asked respondents to select three issues that in their view should receive more attention.

3.    Judgement of the extent to which the solutions elevated to policy objectives contribute to solving the problems. This indicator is related to the good governance criteria: 'effective' and 'efficient'. Respondents were asked to what extent they recognize the agent-target relationships that precede the interventions. They were asked whether or not they consider energy saving and the transition to sustainable energy to be important in limiting climate change.

4.    Who should be responsible for solving the problem, according to the citizens and company representatives? This indicator is related to the good governance criterion: 'accountability'. An organization is accountable to the person who is affected by its decisions. Respondents were asked which institutes / groups, including the government, should do more or less on energy saving and the transition to sustainable energy. If respondents would point to the government as being responsible, or if the institutes would not solve the problem by themselves, intervention by government would be considered legitimate.

Output legitimacy relates to specific policy interventions. Therefore, to measure output legitimacy, we presented respondents with two specific interventions. Subsequently, we asked them the following questions:

1.    Overall support for the intervention: 'Do you think that this intervention should be introduced in this way?' Answer categories: Yes, definitely; Yes, maybe; Neutral; No, maybe not; Definitely not and I don't know.

2.    Judgement on several underlying aspects concerning the public support of the intervention to get more grip on the overall level of support. In this case, we used the good governance criteria and additional conditions for legitimacy as mentioned by The Netherlands Institute for Social Research (SCP, 2017). We asked respondents: To what extent do you agree or disagree with the following statements concerning the intervention?
    1.    This intervention **helps** to decrease climate change and pollution (effective)
    2.    The **costs are limited** (efficient)
    3.    The **implementation** of this intervention **is in good hands** (consensus-oriented, responsive)
    4.    The **set-up** of the intervention **is in good hands** (consensus-oriented, responsive)
    5.    This intervention is **feasible** (effective)
    6.    This intervention is **straightforward** (transparent)
    7.    This intervention is **fair** (equitable and inclusive, following the rule of law)
    8.    This intervention **takes** the situation of **everybody into account** (participatory)

## 3.2 Case selection

To measure the output legitimacy we chose two interventions which are specific, easy to explain and to understand in order to avoid misunderstanding about the implications of the interventions. Also the two interventions should be not too controversial, because we would like to see small differences between them on several aspects. The two

interventions presented differed in who pays for the costs. The first intervention is: All households and companies would receive an in-home display (IHD), for which they would have to pay collectively (IHD-1). The second intervention differs from the first in that the energy suppliers would pay for the IHD (IHD-2). Respondents were asked whether the interventions should be executed as presented, thus measuring the overall support for the intervention (output legitimacy). They were also asked to score the eight underlying aspects concerning their support for the intervention, see above.

### 3.3 Data collection

We tested the questionnaire to check the questions on possible biases and whether the questions were understood as intended by the respondents. Eight respondents, selected by Kantar were professionally interviewed. The researchers observed the interviews from an adjacent room. Based on these test interviews, we made adjustments to the questionnaire.

In January 2018, an invitation to fill in the online survey was sent by e-mail to a sample of 1,700 citizens aged 18 and over, proportionally stratified according to gender, age, education level, household size and region. In addition, an invitation was send by e-mail to 3,200 company representatives (one per company).We exclusively invited owners, CEOs, financial directors, financial managers and general managers to participate in the study. The representatives were proportionately stratified according to economic sector and disproportionately stratified according to company size, to enable sufficient numbers of observations for larger companies. In this way all kinds of companies are approached, including small and medium-sized enterprises. The samples were selected by Kantar from the NIPObase Consumer and NIPObase business panel-, which cover all Dutch regions. In the event of non-response the consumers and company representatives got a reminder by e-mail.

The questionnaire was completed by 1,278 (75%) citizens and 833 (26%) company representatives. The average completion time was 9.3 minutes[4]. For the citizen survey, the response of younger people was lower than the response of older people. For the businesses survey, response and the size of the companies was not related. However, business sector and response was related: the response of respondents in the catering industry responded was less than average, while the response of respondents with a liberal profession responded was higher. Kantar, our fieldwork agency, produced a weighting factor to correct for this selective response in order to achieve nationally representative samples for citizens and companies. For a more detailed description and the full questionnaire, see Verhue and Mager (2018 (in Dutch)).

### 3.4 Data analysis

Most of the analyses are based on calculating of averages and establishing distributions of the given answers from the respondents, whereby citizens and companies are analyzed separately. If applicable we used a statistical test to establish the significance of differences found. If we deviate from establishing averages or distributions, we describe this in the results section below.

# 4 Results

In this section we discuss the input and output legitimacy for the Dutch energy transition and two specific interventions. Results are presented for citizens and companies to enable comparison between them. To show the extent to which support for a policy goal also means support for the related interventions, we show the relationship between input and output legitimacy on an individual level. In order to determine which aspects contribute to the overall support for an intervention, we explored the relationship between the support for interventions and the underlying aspects of this support for two specific interventions.

### 4.1 Input legitimacy of the energy transition

We use four indicators to explore the support for climate change policy goals (input legitimacy). The first indicator of input legitimacy concerns the extent to which citizens and companies recognise the problems to which a policy

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[4] Including the questions focused on the circular economy, which were similar to those about the energy transition.

must offer a solution. About 90% of citizens and companies were found to believe that the climate is definitely (65%) or maybe changing (25%) and about 85% think that human activities are definitely (50%) or perhaps the cause (35%) of this change. On the basis of these results, we conclude that a large majority of citizens and companies recognize climate change and the related human involvement as a problem.

The second indicator is people's judgment of the importance of solving problems related to climate change. To establish the relative importance of nine societal issues, including climate change, we asked the respondents to choose their three most important social issues out of a list of nine. The score is established by adding up the ' most important' votes. Both groups, companies and citizens, consider health care the most important social issue and culture and development cooperation the least important (see Figure 2)[5]. Of the nine issues, climate change is mentioned by slightly less than half of the respondents as one of the three most important problems. Thus, we conclude that climate change, which is directly linked to the energy transition, may not be considered to be the most important issue, but it is regarded as quite important.
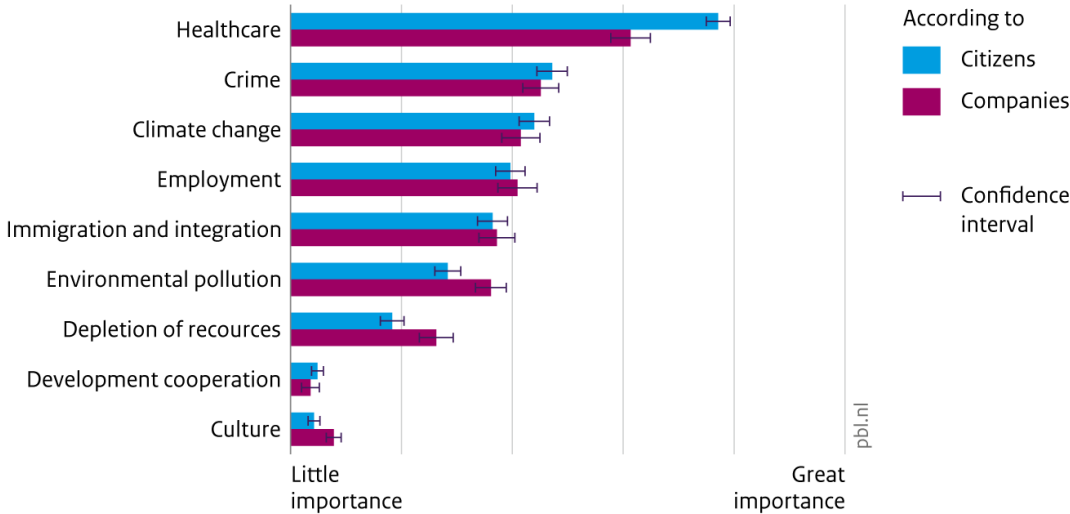


*Figure 2 Relative importance of nine societal issues, according to citizens (N=1,278) and companies (N=833)*

The third indicator concerns the extent to which solutions (elevated to policy objectives) are believed to contribute to solving problems related to climate change. Respondents were asked to what extent they recognized the agent-target relationship. Their responses indicated that they considered energy saving and the transition to sustainable energy to combat climate change to be important (average score of 8 on a scale from 1 (absolutely unimportant) to 10 (very important). We did find, however, that citizens valued the transition to sustainable energy a little more than they did energy saving. Nevertheless we can conclude that a large majority of citizens and companies endorse energy saving and the use of sustainable energy sources as solutions to combating climate change.

The fourth indicator concerns the parties citizens and companies believe to be responsible for solving the problem. Figure 3 shows that both citizens and companies believed that all mentioned parties should contribute more to achieve the goals of the energy transition. For Figure 3 we did an independent sample T-test (95% CI). The differences between citizens and compagnies are significant for the transport sector, NGOs and 'people like me / companies like mine'. Citizens, more often than companies, believe that they should contribute more themselves. However, we can conclude that both citizens and companies believe that all relevant parties, including the government, should increase their current efforts towards solving the problem of climate change.

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[5] The confidence intervals in Figure 2 are based on a bootstrap analysis, based on 100 bootstrap samples. To approach the 95% CI we took the 2*SD values.
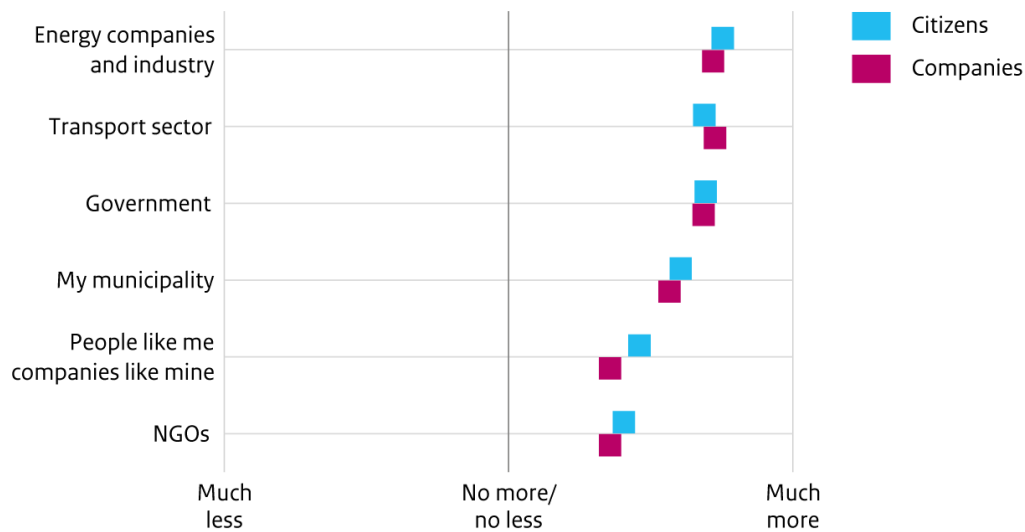
*Figure 3 Average answers by citizens (N=1,278) and companies (N=833) to the question: 'Who should do less/more to save energy and to achieve the transition to sustainable energy sources such as sun and wind?'*

Based on the results of the four indicators mentioned above, we found that there appears to be input legitimacy for Dutch climate policy by citizens and companies. Citizens and companies recognize climate change and the related human involvement as a problem. Also climate change, which is directly linked to the energy transition is regarded as a quite important societal issue. A large majority endorse energy saving and the use of sustainable energy sources as solutions to combating climate change. And both citizens and companies believe that the government should increase its efforts towards solving the problem of climate change.

### *4.2 Output legitimacy of some policy interventions*

To measure the output legitimacy as mentioned above we chose two interventions, see the section 'Case selection'. The first intervention is: All households and companies would receive an in-home display (IHD), for which they would have to pay collectively (IHD-1). The second intervention differs from the first in that the energy suppliers would pay for the IHD (IHD-2).

**Table 1. Citizen and company support (in %) for the two interventions, based on their answers to the question: 'Do you think that this intervention should be introduced in this way?' (citizens: N=1,278, companies N=833)**

|  | IHD-1 * | | IHD-2** | |
|---|---|---|---|---|
|  | citizens | companies | citizens | companies |
| Yes, definitely | 15 | 16 | 32 | 21 |
| Maybe Yes | 31 | 31 | 37 | 35 |
| Neutral | 19 | 22 | 14 | 22 |
| Maybe not | 9 | 7 | 5 | 7 |
| Definitely not | 24 | 23 | 11 | 14 |
| I do not know | 1 | 0 | 1 | 1 |

*IHD-1: Nationwide provision of in-home displays, all households and companies have to pay collectively.
**IHD-2: Same as IHD-1, but costs are paid by the energy companies.

Table 1 shows that citizens and companies both prefer the option where energy companies pay the costs of the in-home display (69%/56% support) over that in which the costs are collectively paid by all energy users (46%/47% support). The judgement on the underlying aspects concerning the general support for the two interventions is presented in Figure 4. The intervention variant in which the IHDs are paid for by the energy companies (IHD-2) received slightly more support from citizens than from companies[6]. For the option in which energy users collectively pay for the IHDs (IHD-1), we could only determine a difference in support on the aspects: 'it helps', 'costs' and 'taking everybody into account'[7].
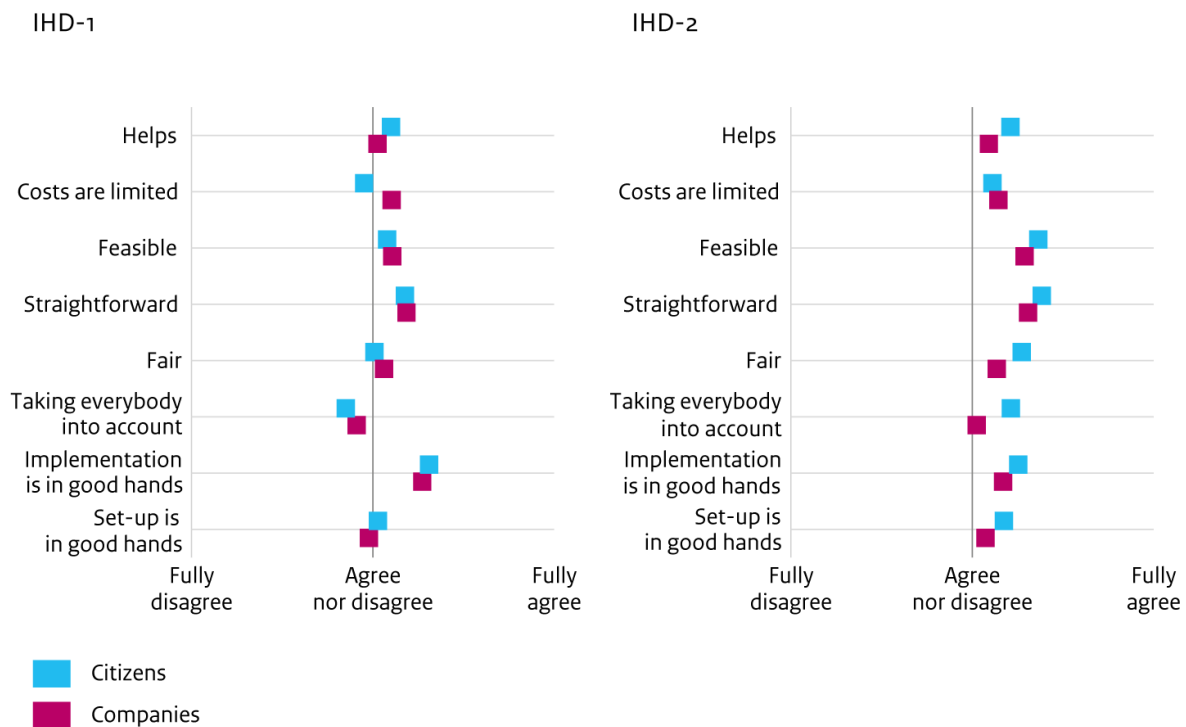


Figure 4. *The judgement about the underlying aspects of the general support for the two interventions to promote the energy transition. IHD-1: The IHDs are collectively paid for. IHD-2: The IHDs are paid for by the energy companies.* (citizens: N=1,278, companies N=833)

## 4.3 Relationship between the support for policy goals and for interventions

To answer the question about the extent to which people support a specific policy intervention if they also support the related policy goal, we examined the correlations between the support for both IHD interventions (output legitimacy) and the indicators for the policy goal support (input legitimacy). We found a certain level of correlation between support for the two interventions and the eleven sub-indicators of legitimacy. However, the explained variance is only limited. The *r* according to Spearman ranges between -0.18 and 0.16, largely with a p <0.01[8]. Then, the $r^2$ is maximally about 0.03, which can be interpreted as an explained variance of about 3%. The low correlations can be explained by results of earlier research (Mastop et al., 2014) that showed that if people support a goal this not automatically means that they also support the related interventions towards achieving that goal.

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[6] p < 0.01 for all aspects, except for 'feasible' p = 0.01 and costs p = 0.27.
[7] p is respectively 0.01, < 0.01 and 0.04
[8] From the 22 correlations, 21 were found to be significant.

### 4.4 Which aspects determine the support of an intervention?

Theoretically, the judgement by citizens or companies about the eight underlying aspects, as described earlier in this section, contributes to their overall support for an intervention. We examined the extent of the relationship for both interventions and found consistency between the overall support and the underlying aspects. The $r^2$ according to Spearman (explained variance) varies between 0.2 and 0.4 (p <0.01), see Figure 5. For both interventions, the 'fair' aspect is related most strongly to the overall support (average $r^2$=0.39. The average relationship between the overall support and the 'implementation' aspect was the weakest ($r^2 = 0.22$). The aspects 'it helps' (0.27), 'feasible' (0.31), 'straightforward' (0.27) and 'take everyone into account' (0.32), on average, explain the variance in the overall support to a larger extent than the 'costs are limited' aspects (0.26).
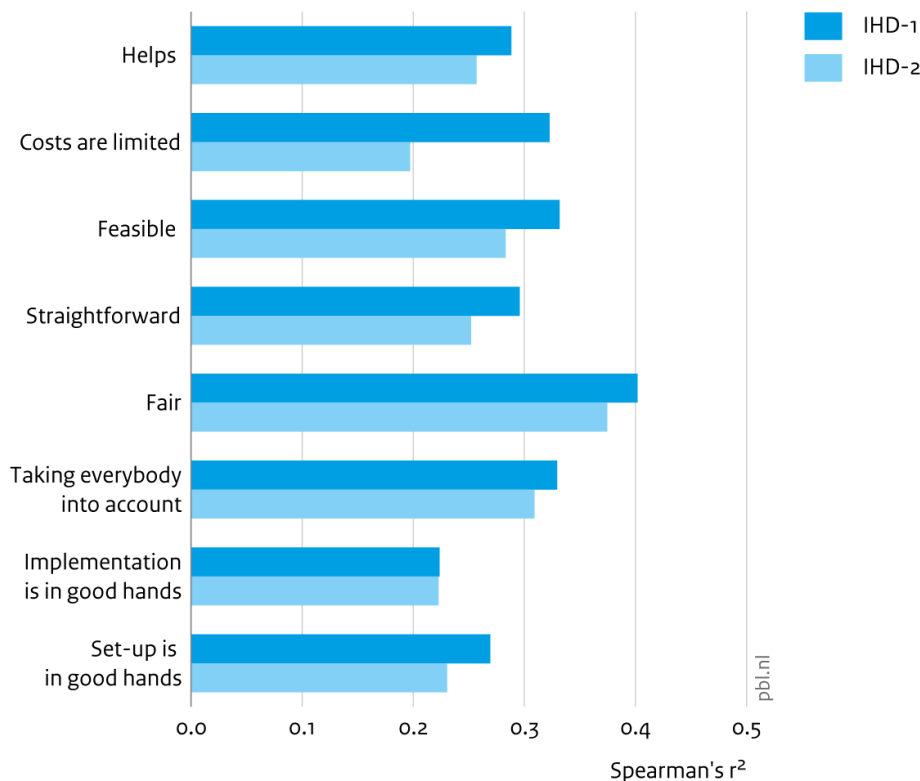


*Figure 5 Spearman's r² between the overall support of two interventions and the eight underlying aspects* (citizens: N=1,278, companies N=833)

## 5 Discussion

As mentioned above, there are many studies in which the legitimacy of policy is discussed and defined. There are also others who measured the legitimacy of (climate) policies (see e.g. Kronsell, 2013, Levi et al, 2009; Cashmore and Wejs, 2014; Weatherford, 1992). But they focus on quantifying a more general legitimacy on the level of government or project, not on the level of policy interventions. The contribution of this study is that we make a first attempt to measure the legitimacy of climate policy on intervention level and we based the measured aspects of legitimacy on the good governance criteria.

Because we made a first attempt to measure the degree of legitimacy of policy interventions, addressing the energy transition in the Netherlands, this study and the used method has its limitations and must be considered exploratory. This has its effects on our results and conclusions:

- We used only two simple policy interventions to test output legitimacy. These policy interventions had some limitations. Both policies were quite similar (i.e., all households and companies are involved so there are no distributional issues) and based on the idea that information about energy behavior leads to energy savings. The main differences is that either households and companies bear the costs

collectively (IHD-1) or the energy companies bear the costs (IHD-2), although, one could argue that in latter case, households and companies would still be paying, indirectly, for the in-home displays. Because, energy companies are expected to simply pass on these types of costs to their clients. Results can be expected to be different, if we were to present interventions that were more demanding on either citizens or companies with more direct effects on energy saving and/or with higher costs.

- For the operationalization of policy legitimation we have chosen a particular set of indicators which are connected with 'good governance criteria'. For this exploratory study the choice of indicators is also based on the pragmatic consideration: does it make sense for the respondents to get a certain question? An another selection of indicators could affect the results on a more detailed level. We recommend additional research on this aspect.

- We cannot make general statements about the importance of the explored aspects of legitimacy, due to the small number of policy interventions examined. However, we tested two more policy interventions focusing on the Dutch circular economy transition with the same method (see Vringer and Carabain, 2019)). Due to readability we do not present the results in this paper. However, the results regarding legitimacy for these additional two interventions do not affect the conclusions in this paper.

# 6 Conclusions and policy implications

The Dutch government aims to achieve a large reduction in $CO_2$ emissions by 2030. The required Dutch energy transition will have major consequences for Dutch citizens and companies. Therefore, it is important that the required policies are supported by these two groups in Dutch society. In this study, we made a first attempt to measure the degree of legitimacy of policies addressing the energy transition in the Netherlands. We distinguish two sources of legitimacy; 1. Input legitimacy (support for policy goals) and 2. Output legitimacy (support for the required interventions). In addition, we take into account two perspectives regarding policy design; the logic of consequence (effectiveness and efficiency) and the logic of appropriateness (what is feasible and/or appropriate).

Based on our first attempt to measure the degree of legitimacy of policies addressing the energy transition in the Netherlands and taking into account the limitations of this first attempt, we found that there appears to be input legitimacy for Dutch climate policy. Dutch citizens and companies support the Dutch government in its pursuit of an energy transition. Climate change is recognised as a relatively important societal issue. Citizens and companies consider the energy transition as a solution to those problems, to which intermediary solutions contribute, such as energy saving and the transition to sustainable energy. Finally, both citizens and companies believe that all relevant parties, including the Dutch government, have to increase their efforts to solve the problems related to climate change.

About half of the citizens and companies support the two examined interventions to stimulate the energy transition (1. In-home displays (IHDs) that are collectively paid for by all energy consumers, and 2. IHDs that are paid for by the energy companies). The results for the citizens and companies are quite similar, but citizens prefer the option whereby the energy companies pay the bill

Their overall support for the examined interventions is the strongest related to their judgement about the fairness of the intervention and least related to whether the implementation of the intervention is in good hands. It is remarkable that the cost aspect is less important than five of the eight examined aspects of support (i.e. it helps, costs are limited, implementation in good hands, set-up in good hands, feasible, straightforward, fair, and takes into account the situation of everyone). We found that all these aspects are related to the overall support for the examined interventions. The level of appreciation of the aspects differs per intervention.

We found a weak correlation between the overall support for the examined interventions (output legitimacy) and the support for the policy goals (input legitimacy). We conclude that support for the policy goals not automatically leads to support for the related interventions.

We recommend policy makers who are designing policy interventions to evaluate ex-ante these interventions to check on legitimacy of the interventions, in order for policies to be more effective and efficient. We also recommend to do more research on the operationalization of policy legitimation, including tests on much more (variations of) interventions.

## Acknowledgements

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