

ECLAS Conference 2017 / Proceedings

Creation/Reaction/

University of Greenwich
Department of Architecture & Landscape
London UK

10th > 13th September 2017

University of Greenwich
Department of Architecture and Landscape
11 Stockwell Street
Greenwich
London SE10 9BD

First published in 2017

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ISBN 978-0-9935909-6-2

A digital version of this book is available for download at <https://eclas2017london.com>

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Role and practice of landscape architects engaged in the sustainable energy transition: New empirical findings from France and the Netherlands

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Keywords:

Energy transition, Landscape architects, France, Netherlands

Abstract

The transition to sustainable energy system has started to affect landscapes in many places, producing controversial debates and eventually facing local opposition. Landscape architects, among others, bringing both esthetical and environmental sustainable qualities, can have a central role in energy transition processes. This research examines landscape architects' involvement and design practice in the development of landscape projects that relate to energy transition. It compares France and the Netherlands: both have political agendas moving towards renewable and carbon-free energy sources.

Data is collected through online surveys sent to landscape architecture associations' members in France (FFP) and in the Netherlands (NVTL), in order to have a broad and representative sample. Results show that in both countries almost half of the respondents affirm to have been engaged in energy related projects. Another 15-20% sustain that they would like to develop this kind of project, illustrating an increasing awareness of the topic. Nevertheless, in the Netherlands, we witness a prevailing involvement in siting/design of renewable energy technologies and creation of long-term scenarios for energy transition. In France, however, we observe a different focus both on mobility and energy saving. Furthermore, a large group of respondents (30%), regardless of their nationality, referred to the presence of renewable energy technologies when they think of 'energy landscape', referring also to the problem of the poor landscape integration of these technologies.

The research reveals contrasting attitudes regarding energy transition and implications for landscape architects. Where the French currently do not seem to have a prominent role, their contribution is not explicit and valorized. Actually, they historically were involved with garden and park design. The Dutch ones, on the contrary, have been involved in the shaping of the land, regional and spatial planning for long.

Introduction

The ongoing energy transition need space [1] and it is generating landscape changes in many places [2]. Landscape architecture refers to a design category - landscape design and planning - that can have a central role in the transition processes, supporting decision-making and knowledge synthesis [3], thanks to the landscape's visible and invisible cultural and societal components. Indeed, landscape architects, urban planners and other environmental designers begin to embrace a conscious management of energy and other resources in their projects.

Meanwhile scientists and engineers are starting to perceive landscape architects as important participants in the planning, design and construction processes of cities and territories, not only related to parks and green spaces, similar to urban planners [4]. They should thus play an important role for developing sustainable landscapes [5]. More and more landscape architects are asked to bring both esthetical and environmental sustainable qualities to transition processes: essential elements of a "cadre de vie" [6]. Conversely, some researches explore the incorporation of renewable energy science principles in energy landscape design [7]. Furthermore, the European Community is engaged in energy transition process in order to transit from fossil fuels towards renewable and carbon-free sources. Among the European nations, France adopted the "*The energy transition for the green growth*" law in august 2015, and with the Netherlands and other nations subscribed the COP21 agreement.

Within this context, the main aim of this research is to explore the contribution of landscape architects to energy related projects in the energy transition framework and to highlight differences between France and the Netherlands. This comparison is believed to put in perspective the two approaches, highlighting similarities and differences, and enrich the current debate about planning and designing for the energy transition. The two nations have an important and long lasting tradition in landscape architecture [4,

8]. French landscape architecture, historically, was devoted to garden and park design [9]. However, gradually the role of landscape architects has broadened towards urban and public places, [10] also integrating “*le grand paysage*” [landscape at a large scale]. Dutch practices inspired the growing French landscape architects’ involvement at such a large scale, through the figure of Jacques Sgard, who studied the “Landschapsplannen” in the Netherlands in the 50’s before teaching and training a new generation of landscape architects. [11]

The design approach and designing process have historically participated in regional and spatial planning in the Netherlands [8]. Furthermore, Dutch landscape architecture is recognized as an example of the increasing importance of landscape architecture in strategic thinking of several environmental fields and they are more involved in energy transition issues. For instance, the Dutch *Ministry of Spatial Planning, Social Housing and Environment (VROM)* commissioned landscape architects for the redaction of an energy atlas to investigate spatial impacts of different technologies for electricity production at the national scale [12].

In this paper we conduct our analysis through the prospective of sustainable energy landscape, meaning a physical environment improving its energy system without compromising others aspect such as landscape quality, biodiversity or food production [13].

Material and Methods

In order to answer the central question an online questionnaire [14] has been sent to members of landscape architecture associations in France “*Fédération française du paysage*” (FFP) and in the Netherlands “*Nederlandse vereniging voor tuin en landschapsarchitectuur*” (NVTL). We chose these associations to collect broad and representative samples of the national landscape architects’ practice to investigate their involvement and contribution in energy related project and to question them about the “energy landscape” notion.

About 750 e-mail were sent to FFP members

in April 2016, and 208 to NVTL members in November 2016. The total number of answers were respectively 108 (14,4 %) and 35 (16,8%). The questionnaire was composed in French for FFP and in English for NVTL members and tested prior submission with a small sample of landscape architects to verify the understandability of the questions. The similar respond rates allows for the results to be compared. However, for some open questions we collected a larger variety of answer for the French case because of the higher number of answers.

Results of the online questionnaire with French and Dutch landscape architects

The first question about the involvement of landscape architects in energy related projects points out that more than a half of respondents (“yes often” and “yes sometimes”) in both countries affirm to have worked in this kind of project. Figure 1 shows that another 15-20% sustain that, even though it is not yet the case, they would like to develop this kind of project, illustrating an increasing awareness of the topic in the landscape architects communities. Furthermore, according to the answers, French landscape architects seem to work more often than Dutch do on energy related projects.

A more detailed insight about the topic is illustrated in Figure 2, providing an overview of the different kind of projects in which landscape architects are involved in the two nations. In both countries, at least one landscape architect affirms to have worked in the listed projects, but French mostly assert to develop “Energy saving in design process” (18,4%) and “Mobility” (16,6%). On the other hand, Dutch practitioners are more involved in “Long term scenario” (13,9%) and “Design of renewable energy production infrastructure” (11,9%). These different percentages suggest a different involvement in energy transition processes, in which French ones seem to work more about energy according to their personal desire, because even if they develop design strategies in order to save energy, for they think it is important to reduce energy input in a system, it is not an aspect that is commonly commissioned.

Figure 2: Comparison between French and Dutch answers

When the participants were asked in which territorial context they work on energy related projects (see figure 3), surprisingly no considerable differences are found: in both countries the answers are very similar for urban, rural and periurban areas. This is interesting because we expected a higher number of answers for urban and periurban areas in the Netherlands, considering the high population density that is characteristic for this Nation.

The inquiry also confirms that the design teams for energy related projects are multidisciplinary, as it is usual for planning and design disciplines, and landscape architects work together a broad range of disciplines (figure 4). The most quoted categories, collected through an open question, by both French and Dutch landscape architects is “engineer” (respectively 22 and 12 times), followed by the “bureau d’étude technique” [technical consulting office] (10 times) and “architect” (7 times) in France and “urban planners”(7 times) and “ecologists” (7 times) in the Netherlands. We observe a main collaboration with technical experts, according to the technological aspect that energy comprises and requires, both in terms of need and supply quantification and implementation of specific technologies, such as photovoltaics panels. However, landscape architects affirm also that they work with other spatial specialists, such as urban planners and architects that may complement the knowledge brought together, giving an insight about different scales (e.g. building) and about different topics. Interestingly, Dutch landscape architects enumerate 11 categories of other experts and French ones about 25, that is more than the double, but all these expertises are quoted not more than once or twice. This gap in the number of quoted disciplines could be due to the differences in the kind of developed projects or in the usual requirements of team expertise in the two nations, linked to the different extension (or comprehension) of presumed professional

skills of landscape architects in both national traditions. It may also simply result from the higher number of the FFP members answering the question (63) compared to the NVTL (22). In any case, we witness a great variety of experts, according to the great variety of the energy related projects, that are, just to quote some, technicians of wind turbines (e.g. wind turbine park), forest manager (e.g. wood energy project), agronomist (e.g. biomass production for energy).

Subsequently respondents were asked about the meaning of the notion of “energy landscape” through an open question to have a wider range of opinions. We analyzed the responses according to the four main groups developed by Stremke [15] to define the conceptual framework for the planning and design of sustainable energy landscape: sustainable technical criteria, socio-cultural criteria, economical criteria and environmental criteria. These categories are chosen to see what criteria are prominent or less prominent and if some criteria are grouped in the same answer, searching differences and similarities between the nations. For this question again, we collected a more varied and rich set of answers for the French case, probably because of the higher number of responses (96) compared to the Dutch ones (28).

Most of the responses highlight the presence of renewable energy production, both in France (30%) and in the Netherlands (46%), mentioning for example “*Parks of windmills in the North sea and solar energy on the roof*”(NL) and “*éoliennes, champ photovoltaïque*” [wind turbines, photovoltaic park] (FR). This shows that the technical criteria is the most discussed in the answers, even if not always linked to sustainability. Indeed “renewable” and “sustainable” are not synonymous, even if both notions are related [15].

In addition, from these data we observe that landscape architects mostly connect “energy landscape” to the ongoing transition process. Some answers also strengthen this link defining an “energy landscape” as “*Un paysage de transition énergétique qui produit de l’énergie*

de source renouvelable” [An energy transition landscape that produces energy from renewable source]. Only 2% of French respondents mentioned non-renewable energy sources production, quoting nuclear power plant, and none Dutch. This is not surprising considering the numerous nuclear plants existing in France. Concerning the socio-cultural criteria 14,4% of NVTL and 5% of FFP respondents refer to esthetics values linked to the visualization: *“un paysage qui met en scène les énergies renouvelables”* [A landscape that stages renewable energy] (FR) or *“A landscape wherein the maximal potential of available renewable energy sources is harvested and planned in a spatially attractive way”* (NL), where also the importance of the correct scale of integrating renewable energy technologies emerge in the Dutch examples: *“Wind energy makes a landscape when placed in a proper scale and measure”* (NL). The visual impact is indeed at the center of landscape architects practice, but data show it is more considered in the Netherlands. Nevertheless in both countries the poor spatial integration of renewable energy technologies is highlighted. For instance some state *“la pollution des éoliennes mal intégrées”* [the visual pollution of badly integrated wind turbines] (FR), or *“vast plots of sun collectors, which are not combined with anything else”* (NL). Only a few French Landscape architects (2%) relate to the socio cultural criteria/ inhabitants behavior suggesting the necessity of *“favoriser le développement de modes de vie éco-responsables”* [promoting the development of eco responsible life styles] and acceptability prior to a change in landscape. For a small number of French landscape architects (two), the notion of “energy landscape” is explicitly discussed in connection to economic criteria: one is mentioned in a general way as *“Structuration du paysage avec des considérations économiques en arrière-plan et des économies à faire”* [Structuring the landscape with economic considerations in the background and saving up]. The other respondent goes further, proposing solution for the land use competition: *“faire en sorte qu’un foncier, quand il n’a pas d’utilité (au-*

delà de l'usage donc) agricole ou sylvicole, puisse être productif [To ensure that a land, when it has no agricultural or forestry utility (beyond the use), can be productive]. This economic criteria is mentioned by one Dutch landscape architect who associates “energy landscape” to “circular economy”.

While only a few respondents mention economic criteria, several do refer to environmental criteria: 14,3% of Dutch and 9% of French respondents. Nevertheless, while Dutch refer mainly to “A self-sustainable landscape in which all energy is renewable, without the use of carbon-based energy” the FFP members also stress the importance of energy saving measures’ implementation: “*Aménager de manière à rendre l'espace moins énergivore*” [To plan in order to make an area less energy consuming] and one respondent also mentions the use of ecological materials.

Ultimately, concerning the notion of “energy landscape”, no one gives an answer recovering all the criteria of a sustainable energy landscape, but the French answers together arrive to define a more global and nuanced definition of energy compared to the Dutch, showing that even if the involvement in energy transition is different the topic is well known.

Landscape architect contribution and practice in energy transition

In this research, we investigate landscape architects’ involvement and contribution in energy related projects in the context of energy transition both in France and in the Netherlands. The research found that French landscape architects assert, in relative percentage proportion, to be more involved in energy related projects than the Dutch. Nevertheless, a study of company websites shows that only eight FFP members list energy-related projects. Moreover, when this is the case, it is merely for renewable technologies impact statement. This apparent contradiction could be explained by the transversality of energy topic, which could be integrated in projects in many different ways, even if the energetic topic is not the main focus. Therefore, it seems that French landscape architects integrate

energy aspects in projects that are not primarily focused on energy transition. On the contrary, Dutch company websites often have an “energy” specific project category, grouping a broader range of projects, such as renewable technology projects and long term scenarios, revealing their involvement in energy focused project.

This finding is also supported by the fact that French landscape architects develop mostly “energy saving measures” (energy saving in design process and mobility) compared to the Dutch ones, that are more involved in renewable energy production and global approach to energy transition (long term scenarios). Nevertheless, in France as in the Netherlands the largest group of respondents when asked about the notion of “energy landscape” stress renewable energy production. It may be because of this gap between what is perceived as important and what is mostly developed, that French landscape architects don’t feel to be much involved in energy transition processes. This attitude rises in several answers where is pointed out the need to *“faire appel à des paysagistes, seuls professionnels à être en mesure de proposer une vision globale et transversale”* [to hire landscape architects, the only professionals to be able to propose a global and transversal vision]. This ‘frustration’, which does not appear in Dutch answers, has also been expressed in several semi-structured interviews, developed with French landscape architects (those interviews will be dealt with in a different publication).

However, the improvement of energy sobriety, through energy saving measures, together with the improvement of energy efficiency and the development of renewable energy production are all important pillars for an effective energy transition process [16]. Even if energy saving is more difficult to visualize and exactly quantify, when referred to spatial strategies. Regarding sustainable energy transition, French landscape architects seems to be less directly involved, even if they wanted to. This desire and need is underlined by the redaction of two documents of methodological support and recommendations for implementing wind turbine [17] and

photovoltaic panels [18] by the “Paysagistes conseils de l’Etat” [Landscape architects State advisers].

The territorial dimension of this problem does not seem to be really taken into account by the majority of French landscape architects in their professional practices, even if some define the notion of “energy landscape” as “*un concept permettant d’intégrer l’énergie dans une démarche paysagère globale sur le territoire concerné*” [A concept allowing the integration of energy into a global landscape approach on a concerned territory]. From the questionnaire, Dutch landscape architects seem to be more involved in envisioning structural and strategic design for energy landscape. For example, a consortium including landscape architects is developing the “*National Perspective Energy and Space*” for the Netherlands to inform about sustainable energy transition, from a spatial perspective.

These differences could be due to historical variance in the role of landscape architects in the two nations, where in the Netherlands landscape architects are well recognized figures involved in the shaping of the land at regional scale for long.

Conclusion

For the French landscape architects, a prominent stake is to be identified as skilled and relevant professionals in the field of strategic planning - be it focused on energy issues or more general. For the moment, though some landscape architects are specially involved in strategic and urban planning, public institutions and commissioners generally direct their calls towards other professions, namely urban planners. The professional figure of “*paysagiste concepteur*” [Landscape architect designer] has been recognized in April 2017, as protected denomination by the *Ministry of Environment, Energy and Sea*. Such a recognition may help the profession to affirm its role in the field of strategic planning, but this shall deserve more targeted communication efforts. Such institutions as the Landscape and Energy Chair at the ENSP, together with the dissemination of local experiments linking landscape and energy

planning, may progressively affirm the role of landscape architects in energy planning. They still have to demonstrate that they can go beyond the landscape integration of energy transport or production technologies, designing qualitative spaces at a wider scale.

In the Netherlands landscape architects, that have for long been involved in regional planning, seem to continue this activity also in the energy transition framework, participating to the redaction of regional energy transition long terms scenarios. The next step for them has to be the concrete spatial implementation of these energy transition visions. Furthermore, Dutch landscape architects, which work more on renewable energy production, could explore more processes optimizing the use of energy or improving energy sobriety.

In both countries the rapid changes induced – and required – by the transition to a more sustainable society call for new skills. Landscape architects, able to conceive, design and produce livable and desirable environments, have to be in the vanguard among the numerous promoters and stakeholders of the present transitions towards sustainable energy landscapes.

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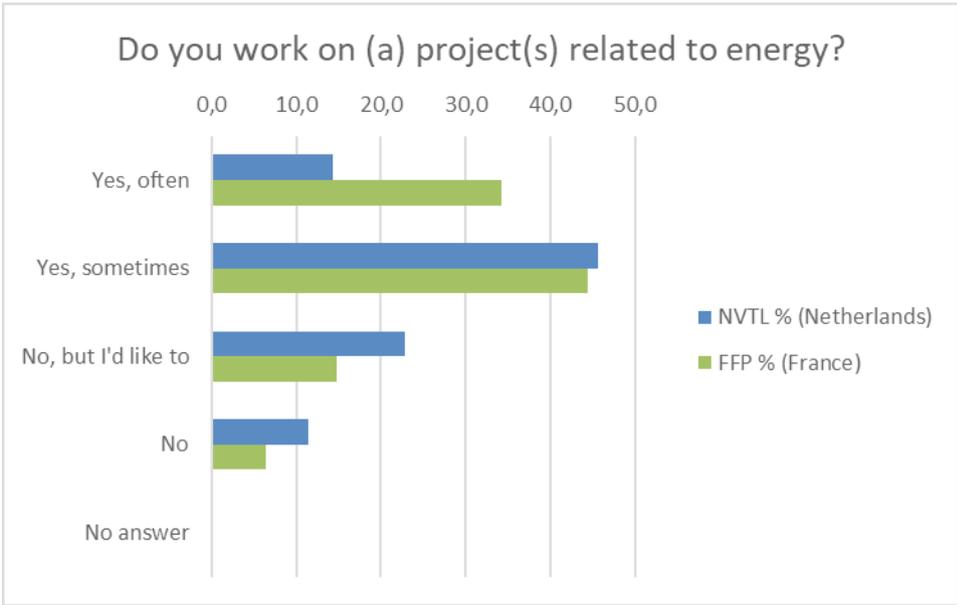
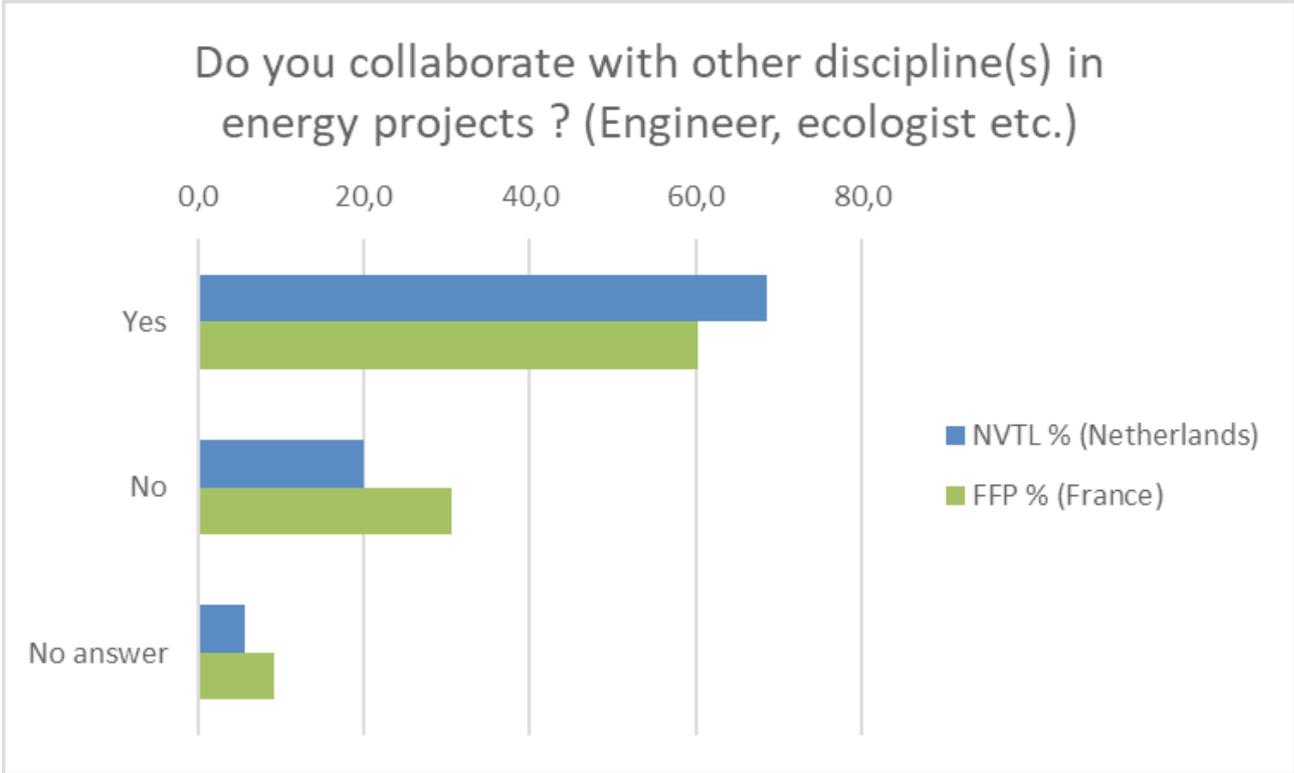


Figure 1 Comparison between French and Dutch answers



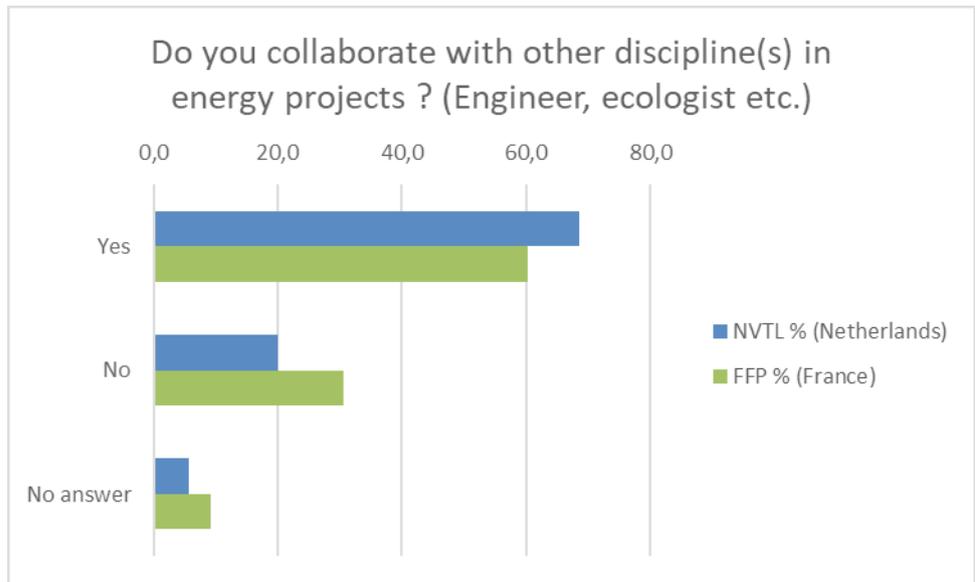


Figure 3: Comparison between French and Dutch answers

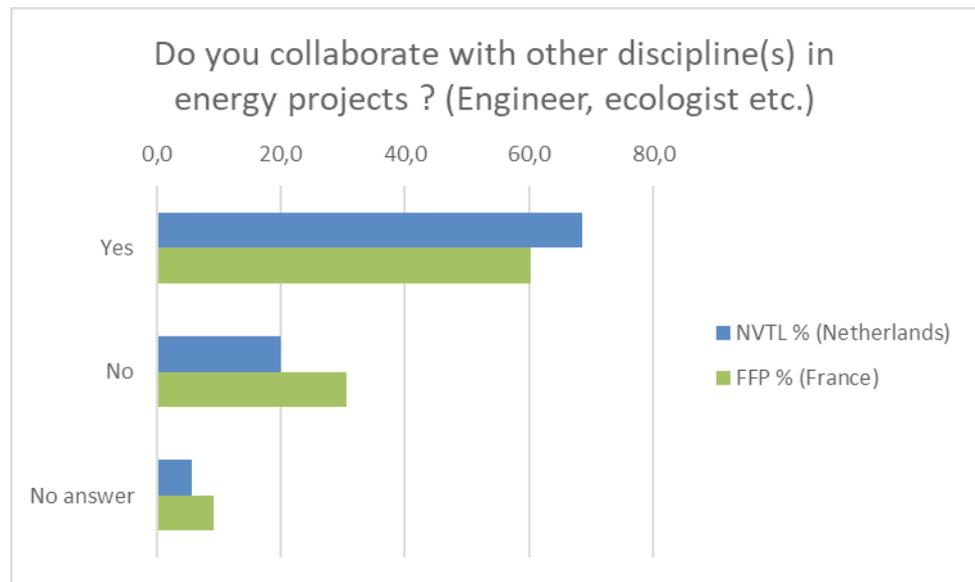


Figure 4: Comparison between French and Dutch answers