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# 能源景观计划

## Energy Landscape Plans

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**摘要:** 响应绿色增长法案 (于 2015 年在法国投票通过) 的能源转型, 预示着后石油时代计划的来临和向法国新能源模型的迈进。由环境、能源和海洋部推出的创建“绿色增长积极能源区域” (涉及 212 个微区) 是已经采取的诸多行动之一。另一方面, 该部门正在开展“景观计划” (与 50 个小区域有关), 鼓励地区通过景观规划和工程从事可持续发展。这两种政策工具之间尚不存在关联。然而, 凡尔赛国立高等风景园林学院风景园林和能源主席则反对这种 (认为二者不存在关联的) 看法。事实上, 它们至少有相同目标: 为更好的生活而协调文化、生态、经济和社会领域。学校研究这一问题的工作室全力以赴反映能源专业利益相关者、地区代表和风景园林师的情况。以不同地区 (阿基坦地区, 勃艮第地区, 北部) 的工作室为研究基础, 年轻的风景园林师证明能源转型的成功不仅仅依赖于技术计划, 还依赖于连接社会转型和空间规划的集成观念。

**关键词:** 风景园林; 景观计划; 能源景观计划; 风景园林和能源主席; 能源转型; 积极能源领域; 能源转型的景观; 景观法国政策

**Abstract:** In France, the Energy transition for the green growth law, voted in 2015, heralds a plan for the post-oil era and a step towards a new French energy model. One of the actions already taken is the creation of "positive-energy regions for green growth" [territoires à énergie positive pour la croissance verte- TEPCV] (concerning 212 micro-regions), launched by the Ministry of Environment, Energy and the Sea. The same Ministry is on the other hand developing "Landscape Plans" [plans de paysage] (concerning 50 micro-regions), which encourage regions to engage in sustainable development through landscape planning and projects. Connections between both of these policy instruments are yet still inexistent. But the Landscape Architecture and Energy Chair of the Ecole nationale supérieure de paysage de Versailles bet the opposite. Actually, it could bring to the same goal at least: harmonizing cultural, ecological, economic and social fields for a better living. The studios driven at school on the subject stretch the reflection for energy professional stakeholders, regional representatives and landscapes architects. Based on studios in different regions (Aquitaine region, Bourgogne region, North), young landscape architects demonstrate that succeeding in the energy transition relies not only on a technologic plan but also on an integrating concept, linking social transition and spatial planning.

**Key words:** Landscape Architecture; Landscape Plans; Energy Landscape Plans; Landscape Architecture and Energy Chair; Energy Transition; Positive Energy Territories ; Landscape of Energy Transition; Landscape French Policy;

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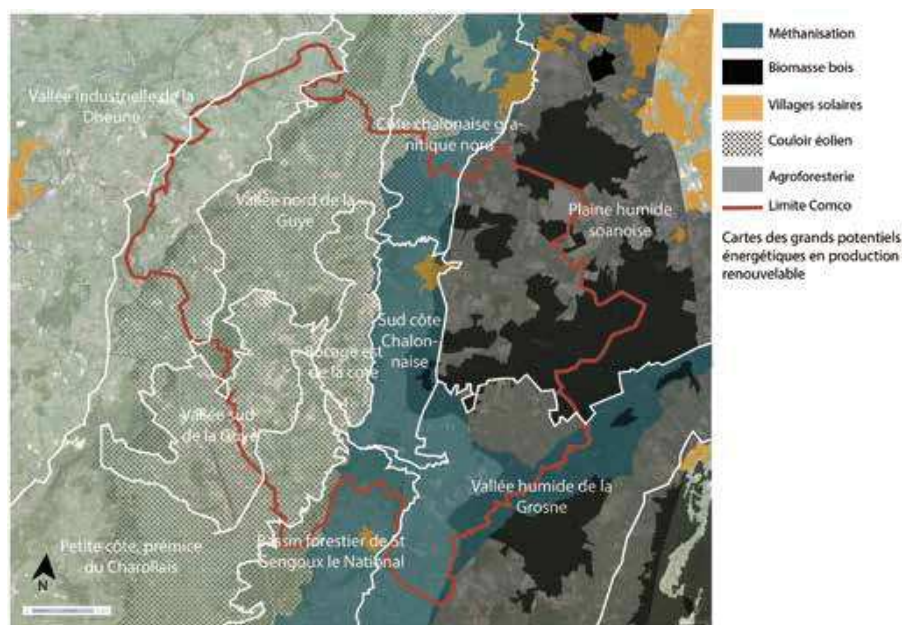
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1 表示市镇社区的景观和能源单元的地图分析（来源：勃艮第 ERDF 工作室，市镇社区，风景园林和能源协会，ENSP，2015 - 2016）

Cartographic approach of landscape and energy units of the community of communes (source : Studio ERDF Burgundy, community of communes, Landscape architecture and energy chair, ENSP, 2015-2016)

## 1 支持空间规划和能源转型的分离政策

在法国，景观规划的发展方法已经通过风景园林领域的专业实践在过去的 25 年得到检验。景观规划引导民选代表和他们的合作伙伴去思考景观，去设计未来的景观环境，目的是创造渴望的而不是强加的风景。这些规划依赖共同判断，它们确定高品质景观目标（如在欧洲景观公约 1 中预期的这些目标<sup>①</sup>2006 年在法国得到采用），并制定社区规模的行动计划，这能带来一个在（公共的或社区间的）城市化立法框架中的团体组织和一套运行方式。他们无自我监管也没有绑定价值观，但在社区之间的尺度下一般由地方政府自由执行。

景观规划受到方法学的指导，它自 20 世

纪开始由国家发起，由环境、能源和海洋部发布。<sup>②</sup>2014 年，在景观政策重启的框架之内，由候选地方政府赠予财政支持，环境、能源和海洋部再次启动了这项计划。2015 至 2016 年，历经候选者相隔一年的两次呼吁之后，约 50 个地区生成了景观规划。

在能源领域，自 2015 年以来该部门一直支持当地政府参与“为绿色增长的积极能源区域”，以提升当地在国家、欧洲和全球范围内能源转型和应对气候变化的成就。这一举措也使得地区和社区间的组织详细阐述他们切实可行的能源转型计划。

目前这两种方法即使出自同一部门，互相之间也没有联系。景观规划忽视或低估了

能源转型问题；TEPCV 则累积不系统的行动，没有景观连贯性追求。此外，这两种方法获得的支持不平衡：50 个地方政府的每个景观计划可以收到 30 000 欧的资助，而 212 个地方政府的每个 TEPCV 项目则能接收 500 000 欧的资助。

在法国，将可再生能源和景观完全结合<sup>③</sup>看起来仍然至关重要。能源格局问题不仅仅有关山脊上的风力涡轮机或屋顶上的太阳能电池板所带来的影响。这个影响作为显著减轻能源问题的主要方法在法国占据主导地位；甚至由于 1976 年 7 月 10 日制定的有关保护自然的法案的制定在 40 年来成为了惯例，这项法案开创了“影响评估”。这会影响到一切，不论是能源专业的利益相关者和风景园林师，还是民选代表和公民：都囿于过分简单化的辩论而不能主导连贯的和能被接受的项目。近年来，在法国乡村出现了激烈对抗，骤然打破了村庄的社会团结，这种对抗甚至在小地区，在“赞成者”和“反对者”之间，仅仅围绕风力涡轮机项目就会展开。<sup>④</sup>就好像在其影响下只要风力涡轮机一出现能源转型问题就会减小似的。就好像景观是我们能估量其影响并判断其可接受度的永恒固定场景一样。这种过分简单化的无效率思考方式持续激增，带来不尽人意的扩展，如“对抗性措施”希冀减弱这些显著的损害。

## 2 关注能源和景观转型的新举措

风景园林和能源协会，2015 年创建于凡尔赛国立高等风景园林学院（ENSP）<sup>⑤</sup>，力求从根本上更新景观与能源之间的联系。特别的是，它建立的理论认为景观规划方法可以作为在地区上实现能源转型的工具。为这个目的，协会在 2015 - 2016 年间与它的合作伙伴在不同地区发起了一项行动研究项目：

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2 由木质植物围绕的 Messey-sur-Grosne 村中心的透视图 (来源: 勃艮第 ERDF 工作室, 市镇社区 Sud Côte Chalonnaise, 风景园林和能源协会, ENSP, 2015 - 2016)

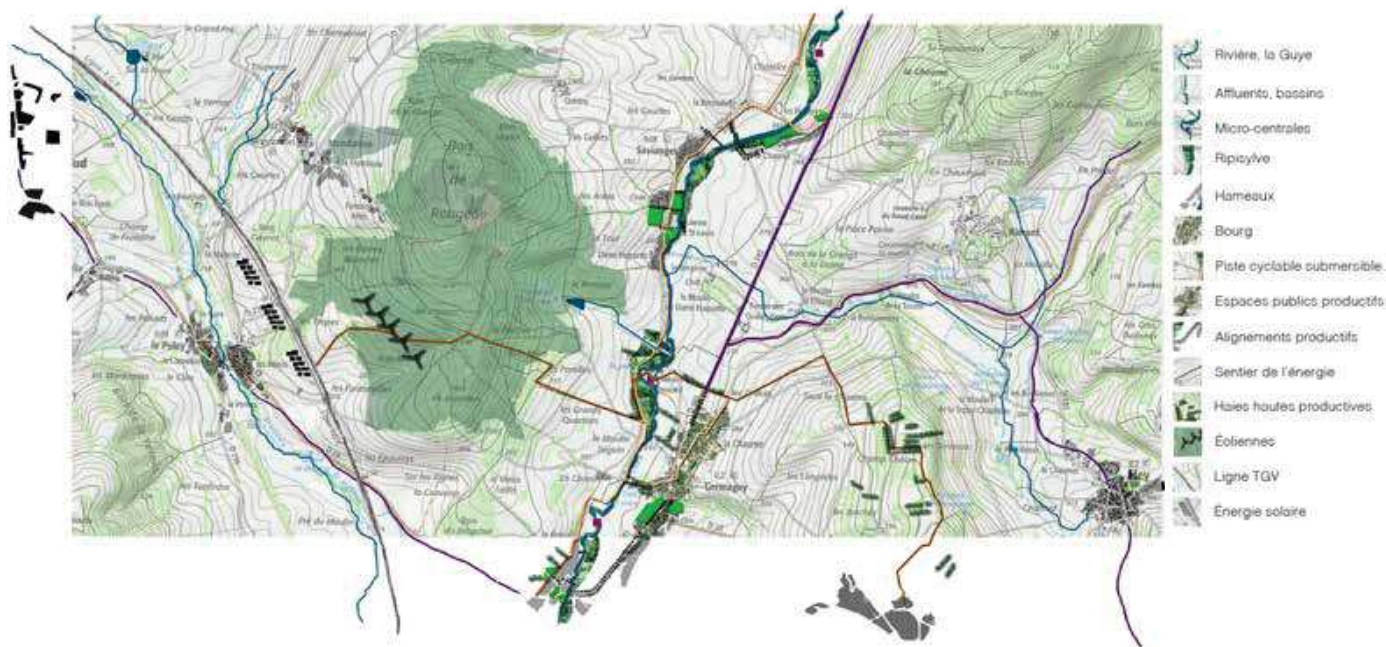
Proposal of a perspective for a new village centrality at Messey-sur-Grosne, around its wood-fired plant (source : Studio ERDF Burgundy, community of communes Sud Côte Chalonnaise, Landscape architecture and energy chair, ENSP, 2015-2016)

3 在高速列车的斜坡上装配线性太阳能电场的原理 (TGV) (来源: 勃艮第 ERDF 工作室, 市镇社区 Sud Côte Chalonnaise, 风景园林和能源协会, ENSP, 2015 - 2016)

Installation principle for a linear solar farm on slopes of the high speed train (TGV) (source : Studio ERDF Burgundy, community of communes Sud Côte Chalonnaise, Landscape architecture and energy chair, ENSP, 2015-2016)

4 Guye Valley 能源景观规划图 (来源: 勃艮第 ERDF 工作室, 市镇社区 Sud Côte Chalonnaise, 风景园林和能源协会, ENSP, 2015 - 2016)

Energy landscape plan for the Guye Valley (source : Studio ERDF Burgundy, community of communes Sud Côte Chalonnaise, Landscape architecture and energy chair, ENSP, 2015-2016)



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5-1



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5.1- 5.2 规划图和透视图：电线被构想为城市景观组成的网格（来源：RTE 工作室，风景园林和能源协会，ENSP，2015 - 2016）

Plan & perspective: an electric line conceived as a grid of urban landscape composition (source : Studio RTE Yvelines, Landscape architecture and energy chair, ENSP, 2015-2016)

一篇关注里昂城市西部外围区域的硕士论文；一个研究农村地区失去动力的研究生工作室；另一个在勃艮第研究在传统农村地区的研究生工作室；<sup>⑥</sup> 在阿尔卑斯省 d'Azur 地区（滨海阿尔卑斯省）自然公园举办的一个研讨会，其目标是在变电站用可再生能源振兴落后地区。

其他 3 个工作室于 2016-2017 年着手展开工作，在勃艮第（Pays du Grand Autunois，索恩 - 卢瓦尔省），海滨地区（Pays de Retz，大西洋卢瓦尔省），以及法国北部（Communauté de communes du canton de Fruges，加来海峡省，由 ENEDIS 赞助）；还成立了 1 个工作组，其目标是构建方法论，他们自身结构聚集涉及能源转型的风景园林和能源主体：ENSP 的景观和能源协会，后石油集团，源于能源积极地区方法的能源转型网络，以及特别地通过开发和促进使得化石燃料退出历史舞台的协会。

### 3 从这些经验中我们能学习到什么 这些最初的实验已至少带来 4 点经验。

#### 3.1 景观多样性和能源混合的良性循环

景观规划方法总是基于承认环境、土地、风景以及地区最早文化财富的多样性（图 1）。这个多样性课题需要高度重视能源转型。景观为地区带来能源转型以扩大解决方案的范围，采用的方法是细致地调整解决方案以适应与反思多样性有关的微局部潜力。景观越多样，在地区尺度就能实现越多的能源混合。我们可以给出一些已经领先的工作室的例子：由于微型水力发电装置的存在，我们可以轻松地看到河的边缘；通过引入甲烷厂的方式恢复和重证木结构；山脊通过向下轻盈树立的风车得以强调；交互甲烷中心描绘村庄的边缘（图 2）；用发展能源作物的方式重新开发未开垦

的山谷；在曝光良好的斜坡上建立太阳能发电厂为铁路线提供能源（图 3）；将市场园艺温室调整为太阳能农场……

维护或甚至恢复或重建景观多样性，意味着保护和增加可再生资源的潜力以利于能源混合。相反，通过良性循环，多样化的能源意味着明确地区景观多样性，带来理解和增强它的机会（图 4）。研究甚至认为可以将这个过程合二为一：如此一来，为了生物质需求而加强木结构，增大了感知景观中风车装置的可接受程度。

这样，景观方法更新可再生能源发展的视角：和我们以前的想法相反，这种方法发展多元化且尺度适中的当地项目，而这些项目比去区域化的、置于生活环境之外的大工厂更容易得到推广，也更容易获得民选代表和当地居民的资金支持。

### 3.2 景观规划实现能源节制的意义

能源节制是转型的重要组成部分。最完善的情况是若想摆脱对化石燃料的依赖，唯一的途径是生产可再生能源；首先要实现能源消耗减半。这一切都说明了，不仅是我们的生存环境必须发展，我们的生活方式也要随之发展。怎样以和谐和高效的方式实现能源节制原则？如何为雄心壮志给予功能和形式？

一般情况下，景观规划不是由涵盖了所有规划事项的程序来实现的。房屋景观、活动景观、农业景观、移动性景观和遗产景观（自然和文化）：所有这些都受能源节制的影响。景观项目方式将这些整合在空间化思想的连贯性中，可以通过更协调、更有效和节约的方式实现所有这些活动（图 5.1-5.2）。工作室的项目与再生能源发展相关联，在节能能源使用方面提出了许多建议。我们可以挑选出一些例子：

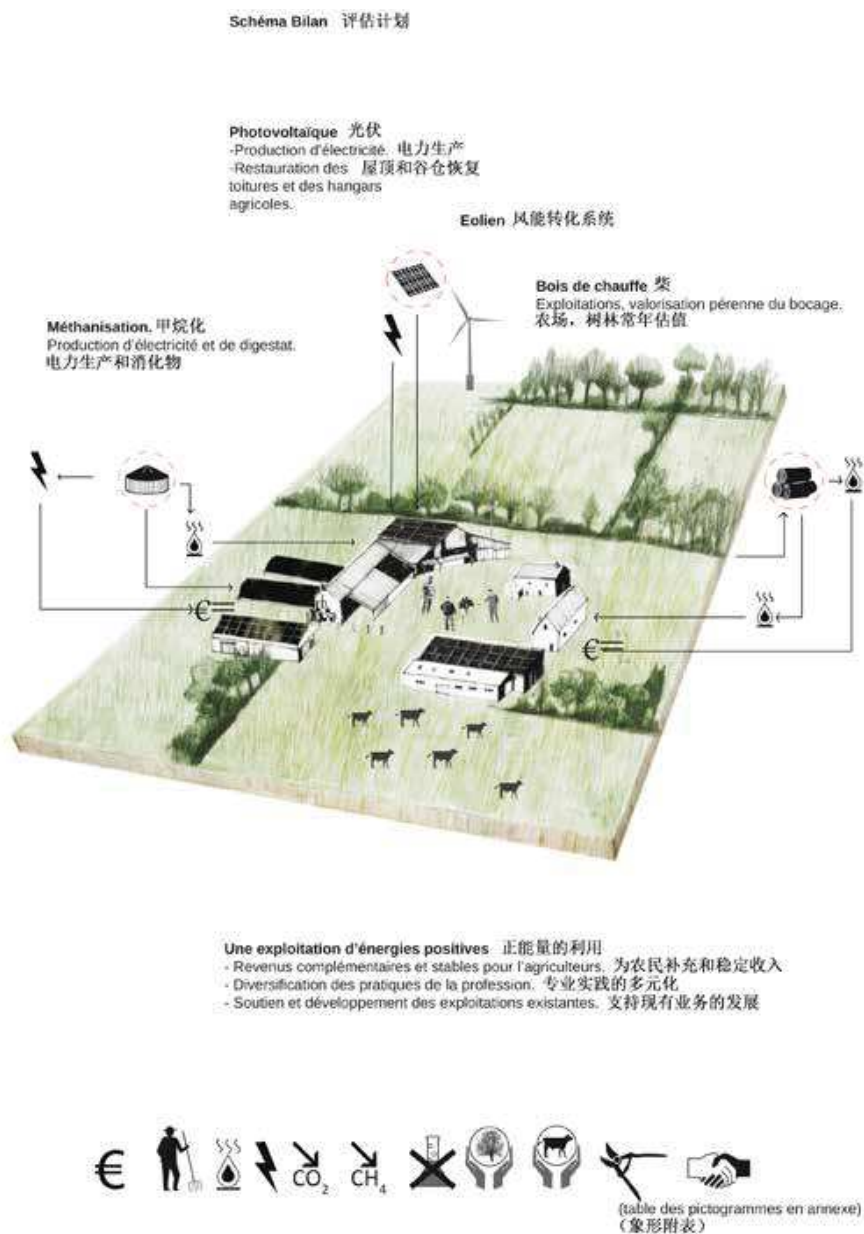
发展软质运输限制了私家车的使用，灌木篱墙易于可利用生物质的生产，还易于打通能源探索之路；

村中心的集约化限制了城市扩张，建设燃木厂及其供热管网；由于在城镇和农业的交接处的城市边缘的能源规划，当地农业和设施得到发展，限制市场运输，鼓励建设甲烷厂、由废热发电增温的商品园艺大棚、能源作物和直销处。

最后是一些此前已经列举到的案例，即通过使用太阳能光伏电站限制空间消耗：在勃艮第高速铁路轨道经过的山坡上，或在德蒙杜里昂或 Préalpes d'Azur 的商品园艺大棚里。

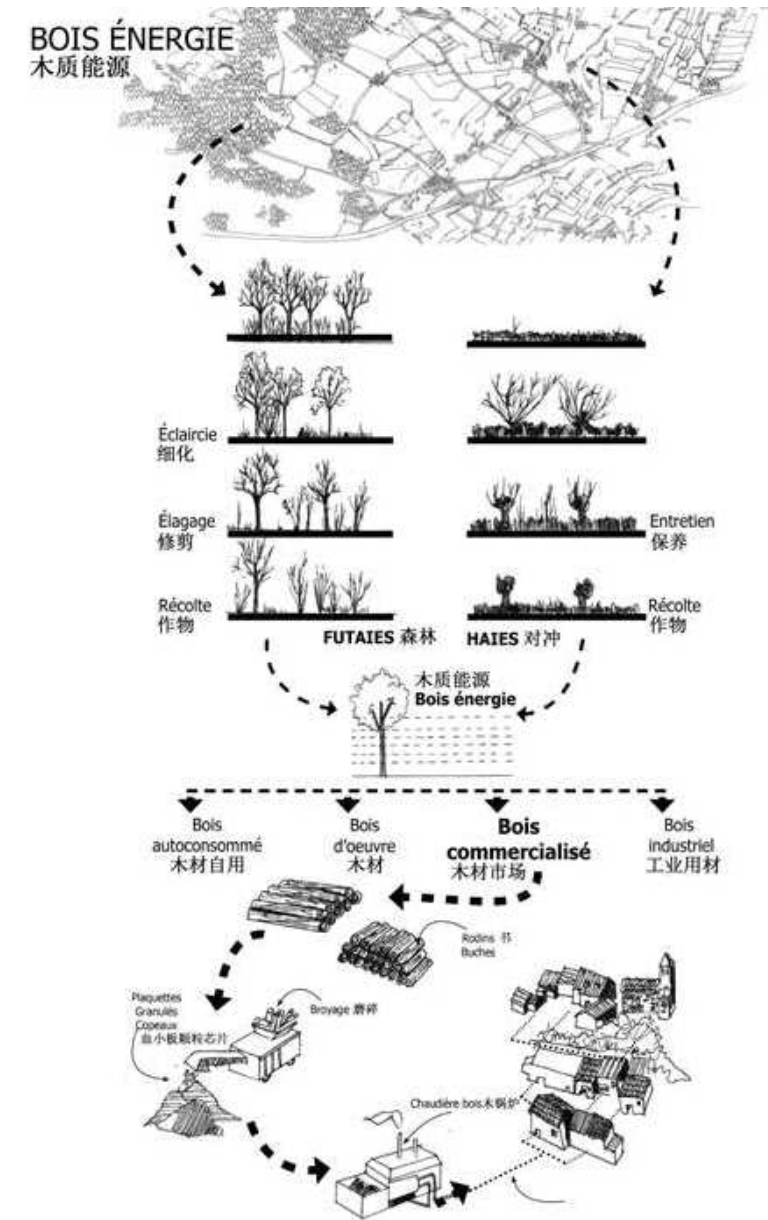
### 3.3 农业和林业部门的关键作用

城市边缘区和农村的研究地区，都强调了农业和林业领域在能源转型中的重要作用。在景观方面，农民塑造和管理空间的关键部



6 Thouarsais 农村的积极能源农场绘图（来源：Thouarsais 工作室，风景园林和能源协会，ENSP，2014 - 2015）

Mapping of positive energy farm in the Thouarsais countryside (source: Studio Pays Thouarsais, Landscape architecture and energy chair, ENSP, 2014-2015)



7 这张图展示木材供应链的技术运作及其区域景观影响  
(来源：勃艮第 ERDF 工作室，市镇社区 Sud Cote  
Chalonnaise，风景园林和能源协会，ENSP，2015 -  
2016)

Sheet example setting out the technical functioning of  
the wood supply chain and its incidences on the territory  
landscape (source : Studio ERDF Burgundy, community  
of communes Sud Côte Chalonnaise, Landscape  
architecture and energy chair, ENSP, 2015-2016)

分。他们还主导着发展可再生能源所需要的区域，即土地和农业建筑（图6）。此外，农业生产的残余生物质由供给能源再生价值链（电能、热能）的资源（木材，有机废弃物）（图7）组成。一些农民选择将主要精力集中到这些新作物产量上，潜在的提出了能源自主权和粮食主权之间的战略选择问题。最后，农民和相关土地所有者通过使用高压线路来维护他们土地的方式参与到能源运输中。在城市或城市边缘区域，农业受到呼唤，以进入并重启回收利用、新陈代谢和区域生态学的良性循环，消耗但也以互补的方式生产能源、废物和空间。

3.4 通过景观的做法的转型期社会接纳  
迄今为止，景观大部分时间都是非政府组织保护以风力涡轮机为主的可再生能源开发的工具。形成的景观工程方法的驱动力允许将景观铸成适于民主对话的工具。尤其是这一点对工作室最有启发：他们已重新开放专业人士、民选代表和居民之间的富饶的辩论田。他们创造专业的分区空间，没有疏解问题与选择的复杂度，相反地，他们提出来源于景观抱负的启发性指导方针；他们可以通过鼓励图解表达的建议促进理解，从而激发行行动欲望。学校的工作室是具有前瞻性的，事实是这些辩论毫无疑问没有评价学生所提建议的责任。很明显，能源问题与扩大的生活问题有关，能源问题通过风景园林干预（住房、迁移、活动、农业、自然和文化遗产，还有用途、拨款和文化表征）得以讨论并给出观点，而没有孤立成为仅仅将冲突作为目标的争论的核心。7 将作为关系的景观<sup>⑦</sup>置于反思的中心，没有分开主题，复杂性得到假设并将它自己置于更具建设性的辩论中。这是一场集体智慧的冒险。



#### 4 结论：双重横向的关键社会挑战

“为了能源转型的景观规划”本身将不会有任何调整价值：尤其是在法国，一些人会因为其被法律标识的弱点而对它感到气馁。鉴于“风景”和“能源转型”的双重性质，它似乎是在规划方面优良载体。

它是对话工具：即使最初没有很好理解景观主题这个概念，结果也证明景观主题是规划和能源领域的有效手段，栖息地、公共和私人空间、经济和旅游活动、文化、生态、交通运输和流动性等这些主题在交汇时会忽视对方。

它是民主对话的完美工具：因为在所有领域中，能源转型是技术层面上的，如果拒绝“非专家”参与（图8）就有可能损害民主对话。相反，景观不是过于专业的学科：每个人都有表达他/她想法的能力。即使最初敏感规模会有些吓人：在笛卡尔的故乡，理性就是女王，法国人没有合理表达想法的文化；横向和互补性这两个概念的结合能让对话的起源更富饶。（图9.1、9.2和9.3）。

它是做政治决策的工具：对于当选代表来说，它以景观为基础，是潜在的综合工具也更加合法，包含文化共同、跨越式经济、社会和环境。它是实现可持续发展原则的工具，还是应对能源问题的战略力量，在那些没有景观能源问题的地方由欧洲国家和全球雄心率领（图10）。

它是完整的工具：它涉及所有空间、所有规模和所有规划技术；在监管领域和操作方式方面均有延伸。

最后它是一个新型工具：它没有阻止针对空间规划和能源的辩论，却以公开辩论为目标。它不仅是科学和技术，还是明智的和文化的。它通过提出超越股东的私人利益并运营合成（图11）的价值来帮助解决矛盾问题。



8

8 基于泰勒斯定理，在景观中对电源塔进行敏感性评价的简单工具（来源：Avelin-Gavrelle line RTE 工作室，风景园林和能源协会，ENSP，2015 - 2016）

Simple instruments for sensitive evaluation of the power-line tower in the landscape, based on Thales' s theorem (source: Studio RTE Avelin-Gavrelle line, Landscape architecture and energy chair, ENSP, 2015-2016)

如果这些为了能源转型的前瞻性景观规划方法能自证，如果环境、能源和海洋部确认并支持这种创新方法，将有一项艰巨任务向景观设计师敞开怀抱。在法国，随着生物多样性、自然和景观恢复法案于2016年8月8日颁布，这一专业领域的特殊性最终在2016年夏天得

到认可。<sup>⑧</sup> 越过标题和公认，为能源转型而开展的景观规划将尽可能为社会涉及公共利益的专业领域带来机遇，这项规划位列于最重要的和最具战略性的那些属于能源转型与绿色增长的内容之中。



9-1



9-3

## 1 Disconnected policies supporting spatial planning and energy transition

In France, the development approach of landscape plans has been tested for the past 25 years by professional practices in landscape architecture. Landscape plans led the elected representatives and their partners to think landscape, to project their future landscape environment in order to create desired landscapes instead of imposed ones. They rely on a common diagnostic, they identify quality landscape objectives (like these expected in the European Landscape Convention <sup>①</sup> adopted in France in 2006), and develop a programme of actions at intercommunal scale which can lead to an incorporation in the urbanism legislative framework (communal or intercommunal) and to an operational way. They have neither themselves regulatory nor binding value, but are freely implemented by local authorities, in general at intercommunal scales.

Initiated by the State since the beginning of the 1990's, landscape plans have been subject of methodologic guides, published by the Ministry of environment, energy and the Sea. <sup>②</sup> In 2014, within the framework of a landscape policy relaunch, the Ministry of environment, energy and the Sea has reactivated the implementation of these plans by a financial support granted to candidate local authorities. After two calls of candidature launched one year apart, landscape plans were generated for about fifty territories in 2015-2016.

Alongside, in the energy area, the Ministry supports since 2015 local authorities which have been involved in the "positive energy territories for green growth", in order to enhance locally the achievement of the objectives regarding energy



9-2

9.1 -9.3 针对工作室作品的讨论：景观设计方法和其工具可以在能源转型和公民参与的过程中获得一致（来源：工作室 RTE Avelin-Gavrelle line, 风景园林和能源协会, ENSP, 2014-2015）

Debates about studio' s productions : landscape architecture approach and its tools could favorise concert process on energy transition and the citizen involvement (source : Studio RTE Avelin-Gavrelle line, Landscape architecture and energy chair, ENSP, 2014-2015)



transition and combating climate change, at national, European and global scales. This leads territories, also inter-communal bodies, to elaborate their programme of action giving practical shape to energy transition.

At the present time, both approaches, even if emanating from the same Ministry, are not linked. Landscapes plans, ignore or underestimate the energy transition issue; TEPCV cumulate disconnected actions, without ambition of landscape coherence. Furthermore, both tools are supported in an imbalanced way: 50 local authorities receiving 30 000€ for each landscape plans, and 212 local authorities receiving 500 000€ for each TEPCV.

It seems yet essential, in the French context, to link thoroughly and on a renewable way energy matters and landscape ones.<sup>③</sup> Energy landscape issue is not only about impacts of wind turbines on a ridge or solar panels on rooftops. This matter of impacts, a dramatically reducing approach, is however dominant in France; it is even institutionalized for 40 years by the Act of 10 July 1976 on the protection of nature, which has instituted the "impact assessments". This affects everything, both energy professional stakeholders and landscape architects, both elected representatives and citizens: all are trapped in simplistic debates, unable to lead coherent and accepted projects. In recent years, passionate confrontations have taken place in French countryside, catastrophically breaking the social unity of villages, even full micro-regions, between "pro" and "anti", around only wind turbine project.<sup>④</sup> As if energy transition issue was reduced to the presence of wind turbines according to

## COMPLÉMENTARITÉ PAYSAGÈRE 景观的互补性

### \* Principe: 原则:

Les mesures paysagères en faveur de l'implantation d'une énergie renouvelable favorise l'implantation d'une autre énergie renouvelable et son insertion paysagère.

支持某种可再生能源设施的景观措施，需要同时支持另一种可再生能源设施植入景观

### \* Exemple de complémentarité paysagère: le cas du grand éolien et du bois chauffage.

景观互补性的相关案例：大型风能转化和木材采暖的情况



La complémentarité paysagère dépend de raisons paysagères d'implantation spécifique au territoire de la CCSV (cf. enjeux p 62).

Le bois de chauffage est l'occasion de mettre en place un système de gestion et la valorisation des haies bocagères. La couronne bocagère qui fait ainsi le tour des hameaux doit se densifier. Jouer sur la proximité du bocage par rapport aux habitations devient un moyen de jouer sur la distance d'implantation du grand éolien.

景观互补性有赖于那些CCSV地区所独有的景观原因。新案为建立一个管理系统和绿篱稳定机制提供了机会。

### Etat existant 现有的状态

-Un bocage dégradé à reconstruire. 恢复已经退化的柯林  
-La distance entre les lieux d'habitations et l'éolienne est calculée de manière à ce que, depuis les habitations, les dimensions de l'éolienne apparaissent du même ordre de grandeur que celles de la végétation des haies bocagères les plus proches.  
住宅与风力涡轮机之间距离的计算方式是：从住宅往外看，风力涡轮机与距离住宅最近之绿篱的大小一样



### +15 ans 15年后

-Restauration, entretien et exploitation du bocage. 恢复、维护和利用花草背景  
-Plantation, augmentation du linéaire de haies bocagères. 种植园增加线性绿篱  
-Changement des rapports de proportions entre l'infrastructure et la haie. 基础设施与绿篱之间的等比变化



### +30 ans 30年后

-L'expansion et la densification du bocage rend possible l'implantation d'une nouvelle éolienne. 花草背景的扩大和增密使得安装一个新风力发电厂成为可能  
-L'entretien du bocage est une condition essentielle pour l'essor de l'éolien et l'intégration de l'infrastructure. 花草背景的维护对于风能开发与基础设施整合至关重要



10 大型景观风力涡轮机、木质植物和生物质供热设备之间的景观互补性绘图（来源：工作室支付 Thouarsais, 风景园林和能源协会, ENSP, 2014 - 2015）

Mapping of landscape complementarity between large wind turbines and wood-fired plant and biomass heating plant (source : Studio Pays Thouarsais, Landscape architecture and energy chair, ENSP, 2014-2015)

their impacts. As if landscape was a scene fixed for eternity on which we could measure impacts and judge of their acceptability. This simplistic and inefficient way of thinking carry on prolife rate, inventing unsatisfactory extensions like "countervailing measures" supposed to attenuate these famous damages.

## 2 Emerging initiatives to think the energy and landscape transition

The Landscape architecture and energy chair, created in 2015 at the Higher National School of Landscape Architecture in Versailles [Ecole nationale supérieure de paysage de Versailles – ENSP]<sup>⑤</sup>, strives to fundamentally renew landscape-energy links. Especially, it theorizes that landscape plan approaches could be the tools of the energy transition implementation on territories. It had initiated in 2015-2016 with its partners an action-research project to this end on various territories:

A master thesis on the West peripheral area of the city of Lyon (COL - communauté de l'ouest Lyonnais),

A post-master studio on a rural territory in a losing steam (Thouarsais, département des Deux-Sèvres)<sup>⑥</sup>,

Another post-master studio in Burgundy, on a Heritage rural territory (Communauté de communes Sud Côte Chalonnaise, supported by a partnership ENSP-ENEDIS<sup>⑦</sup>),

A workshop, implemented in the Pré-Alpes d'Azur Regional Nature Park (Alpes Maritimes), where the objective was to revitalize the left behind area thanks to a substation linked on renewable energies.

Three others studios undertake for 2016-2017, in Burgundy (Pays du Grand Autunois, Saône-et-Loire), in a seaside area (Pays de Retz, Loire-Atlantique) and in the North of France (Communauté de communes du canton de Fruges, Pas-de-Calais, supported by ENEDIS).

Alongside, a working group has been set up to build the methodology, gathering landscape architects and energy actors involved in energy transition through their own structures : beside the landscape and energy chair of the ENSP, the Post Petroleum Collective [collectif Paysages de l'Après-Pétrole – PAP], the energy transition network, from which is coming the energy positive territory approach [le CLER], and the association which develops and promotes in particular a fossil fuel exit scenario [négaWatt].

## 3 What we learn from these experiences

At least, already four lessons emerge from theses first experiments.

### 3.1 The virtuous circle of landscape diversity and of energy mix

Landscape plan approach is always based on the acknowledgement of the diversity of the environments, the terroirs, the landscapes, first cultural wealth of a territory (fig.1). This issue of diversity takes a major importance with the energy transition. Energy transition anchorage on territories by landscape invite to expand the range of solutions by adjusting them finely to micro-local potentialities linked with this reconsidered diversity. The more landscape diversity there is, the more the energy mix can be materialized on local scale. The more the energy mix is materialized, the more

landscape diversity is expressed. We could give some examples from these studios already lead:

A edge of a river is given to browse and see thanks to micro-hydro power plant,

A drawing of a wooded frame is revitalized and requalified by the setting up of a methanisation plant

A ridge is underlined by a windmill line set up lightly downwards,

A edge of a village is drawing by a mutualised methanisation centre (fig.2),

Uncultivated dales are reopened by energy crop development,

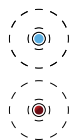
A railway line is received solar plants on its well exposed slopes (fig.3),

Market gardening greenhouses are adapted to be as well solar farms...

Then, asserting landscape diversity or even redialing it, recovering it or reinventing it, means preserve and increase the potential of renewable resources in favour of the energy mix. Conversely, by a virtuous circle, diversifying energy sources means asserting landscape diversity of a territory, making the opportunity to read it and reinforce it (fig.4). Studies even expect that process can be combined: thus reinforcing the wooded frame for biomass needs increase the acceptable potential of windmill installation in the perceived landscape.

In this way, landscape approach renews perspectives of renewable energy development: contrary to what we might think a priori, it invites to develop local projects, diversified and of moderate size, more easily promoted and appropriated by elected representatives and local population than big plants deterritorialized and positioned outside of the living environment.

## POTENTIEL D'ÉNERGIE



Déchets organiques générés par les centres urbains



Toutes activités agricoles (lisières, toiture de bâtiments, biomasse,...)

Boisements

Biomasse à développer

## INTENTIONS DE PROJET

Créer des liaisons de qualité entre les espaces urbains et leurs lisières

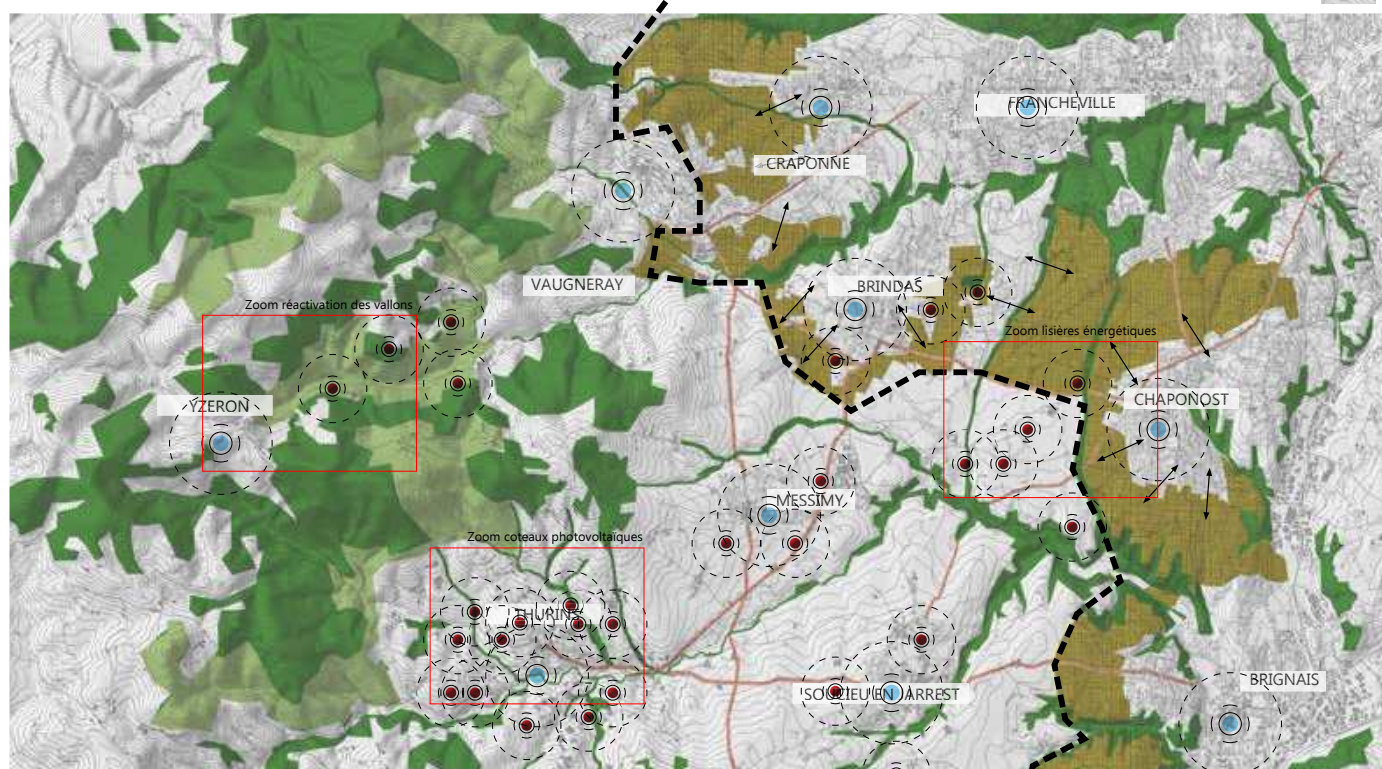
Aménager des mobilités douces

Épaissir la trame verte

Réactiver les vallons enrichis

Créer des lisières urbaines énergétiques

Encourager la transition énergétique support de l'activité agricole



11

### 3.2 The sense of landscape plan to achieve energy sobriety

Energy sobriety is an essential component of the transition. The most completed scenario are considering that the exit of fossil fuel dependency could exist by the only way of renewable energy production; it consists firstly by halving our energy

consumption (scenario négaWatt). All this to say that not only our living environment must evolve, but with it, our way of life. How could be achieve the energy sobriety principle in a harmonic and efficient way on territories? How to give sense and forms to that vast ambition?

In general, landscape plan is not achieved by a programme of action covering all matters

of planning. Housing landscapes, landscapes of activities, agricultural landscapes, landscapes of mobilities and heritage landscapes (natural and cultural): all of these are affected by energy sobriety. Landscape project approach, combining them in a same coherence of spatialized thinking, could materialize all these actions not only in a harmonizing way but also in a more efficient and

11 在里昂城西部边缘拍摄能源景观规划效果 (来源: 通过风景园林工程实现能源转型, 雷米 Serris 硕士论文, Syndicat de l'Ouest Lyonnais, 风景园林和能源协会, ENSP, 2015-2016)

Extract of energy landscape plan on the west edge of Lyon city (source: "energy transition by landscape architecture project", Rémi Serris master's thesis, Syndicat de l'Ouest Lyonnais, Landscape architecture and energy chair, ENSP, 2015-2016)



thrifter way (fig.5.1. and fig.5.2.). Projects offering in the studios associate to renewable development multiples proposals for action in favor of sobriety. We could pick out some examples:

Development of soft traffics limiting private car usage, supporting by a net of hedgerows to an easily exploitable biomass production, or permitting a path of energy discovery,

Intensification of a village center limiting urban sprawl, supporting the setup of wood-fired plant and its heating network,

Promotion for a local agricultural and amenities limiting market transportations, thanks to energy planning of urban edges in the interface town/ agriculture, welcoming a methanisation plant, market gardening greenhouses warming by cogeneration, energy crop and direct point of sell.

Lastly, these examples have been evoked before, limiting space consumption while allowing solar photovoltaic plant: on the slopes of the TGV railway in Burgundy or on market gardening greenhouses in the Monts du Lyonnais or in the Préalpes d'Azur.

### 3.3 Key roles of agriculture and forestry sector

Studied territories, both peri-urban or rural, well highlight the major role that agricultural and forestry areas have to play in energy transition. In terms of landscape, farmers shape and manage the essential part of space. They also have the dominant part of necessary areas for developing renewable energy, on the ground and on farm buildings (fig.6). Furthermore, the residual biomass of agricultural production constitutes a resource (wood, organic wastes) (fig.7) to feed energy

renewable value chains (electricity, heat). Some farmers make the selection to concentrate their activity on these new crop production, potentially raising questions on strategic choices between energy autonomy and food sovereignty. Finally, farmers and concerned landowners participate to energy transportation by maintaining their plots under high voltage lines. In an urban or peri-urban situation, agriculture is called to enter and redial virtuous circle for recycling, metabolism and territorial ecology, consuming but also producing energy, waste, space in complementary ways.

### 3.4 Social acceptance of the transition by landscape approach

To date, landscape has most of the time been brandished by NGO's as a protection tool against renewable energy development, primarily wind turbines. Making a driving force of the landscape project approach permits to mould it into an instrument for the democratic dialogue. It is on that point especially that studios were the most enlightening: they have reopened and have made rich and fertile debates possible, involving professionals, elected representatives and inhabitants. They created spaces for professional decompartmentalisation; they have not evacuated the complexity of the issues and choices but rather the contrary, they made enlightening guidelines from the landscape ambition; they have facilitated understanding of the proposals by graphic representations encouraging then the desire to act. With these school studios on a forward-looking character, these debates are doubtless by the fact they cover student proposals with no obligation assessments. It is obvious that energy issues,

connected to enlarged life issues, through the intervention of landscape architecture (housing, mobilities, activities, agriculture, natural and cultural heritages, but also uses, appropriations and cultural representations) could be discussed and put into perspective, without being isolated and becoming bones of contention as a merely conflict object. Placing landscape as relation <sup>⑦</sup> at the heart of reflection, without separated topics, the complexity is assumed and put itself at the service of more constructive debates. That is the gamble of collective intelligence.

## 4 Conclusion: a double transversality crucial societal challenges

A "landscape plan for energy transition" will not have itself any regulating value: it could discourage to some people its weakness, particularly in a French context, marked by laws. In this transversal nature doubly transversal, given by "landscape" and "energy transition", it appears as vector of virtue in planning terms:

It is a dialogue instrument: the landscape subject, even if not really well understanding at the beginning, is proving to be an effective means to gather planning and energy sectors, each one ignoring the other at the meeting points of energy, habitats, public and private spaces, economic and touristic activities, culture and ecology, transportations and mobilities;

It is a full- instrument for democratic dialogue: as in all fields, energy transition is carrying a technical dimension which could harm to democratic dialogue if is excluded "non expert" participation (fig 8). As a counterpoint, landscape is not an excessively specialist subject: each one

has the capacity to express him/herself on it. Even if sensitive dimensions could frighten at the beginning: at Descartes's country, where reason is queen, French people do not have the culture for sensible expression; the wedding of these two concepts transversals and complementarity could be the origin of a dialogue more fertile (fig. 9.1. & 9.2. & 9.3.).

It is a decision making political instrument: for the elected representative, it is potentially a synthesis tool, it is all the more legitimate that it is based on landscape, including a cultural common, crossing economic, social and environmental. A tool for materialized sustainable development principles, but also with the strategic force of the energy issues, leading by national European, and worldwide ambitions, which do not have the landscape energy issue (fig.10).

It is a complete tool: it concerns all space, all scales, and all planning techniques; it finds extensions both in the regulatory field than in the operational way.

At least it is an innovant instrument: it does not confiscate debates on spatial planning and energy but aim the goal to get it on the table. It is not only scientific and technique but also sensible and cultural. It facilitates contradictory issue resolution by proposing value which transcend the private interests of shareholders and operate the synthesis (fig.11).

If these forward-looking approaches by landscape plans for the energy transition proved themselves, and if the Ministry of environment, energy and the Sea validate and support this innovative approach, a huge undertaking will be opened to landscape architects. In France, the

specificity of this professional field was at the end recognized during summer of 2016, with the enactment to the Law of the 8th August 2016 for the recovery of biodiversity, nature and landscapes.<sup>⑥</sup> Landscape plans for energy transition will provide an opportunity, beyond titles and recognitions, to put as a main societal concern this professional field of public interest, amongst the most crucial and strategic ones: these of energy transition and green growth.

#### Notes:

①欧洲景观公约对风景园林的约定 在 2000 年发表。

The European Landscape Convention Convention européenne du paysage was launch in 2000.

②“指导计划的地貌、宪章和合同”，伯特兰·佛兰（Bertrand Follea），全国土地清算和环境委员会，2001 年，“景观的计划框架内采取行动：生命、生态、可持续发展与能源”，2015。

"Guide des plans de paysage, des chartes et des contrats", Bertrand Folléa, Ministère de l' aménagement du territoire et de l' environnement, 2001 ; "Le plan de paysage : agir pour le cadre de vie", Ministère de l'écologie, du développement durable et de l'énergie, 2015

③奥地·麦池和瑞吉斯（Odile Marcel and Régis Ambroise），整治景观，2015 年。CLM 出版社。

Odile Marcel and Régis Ambroise, Aménager Les Paysages de L' après-Pétrole, CLM editions, 2015.

④阿·纳·达（Alain Nadaï），“规划”，“选址”和“风能在当地的接纳：一些法国案例”，2007 年，<http://dx.doi.org.sci-hub.ac/10.1016/j.enpol.2006.12.003>。

Alain Nadaï, "Planning", "siting" and the Local Acceptance of Wind Power: Some Lessons from the French Case," 2007, <http://dx.doi.org.sci-hub.ac/10.1016/j.enpol.2006.12.003>.

⑤风景园林和能源协会在法国凡尔赛国立高等园林学院由塞格琳·罗雅尔（Ségolène Royal）创立，环境和能源部，2015 年 4 月 7 日。由学校校长文森特·皮文图（Vincent Piveteau）负责，伯特兰·佛兰（Bertrand Follea）管理。Rte 作为创始合伙人提供支持。

The landscape architecture and energy chair was installed at the Higher National School of Landscape Architecture at Versailles by Ségolène Royal, Ministry of environment and energy fields, on 2015, April 07th. The school principal, Vincent Piveteau, put in charge Bertrand Folléa to manage it. The chair is supported by Rte (Réseau pour le transport

de l' électricité), founding partner.

⑥ ENEDIS, 以前是 ERDF: 负责能源分配的法国公众组织。ENEDIS, previously ERDF : French public organization for energy distribution.

⑦风景作为关系，伯特兰·佛兰，地貌北纬 21 度 (2012 年)，国立高等风景园林学院出版社

"Le paysage comme relation", Bertrand Folléa, Les Carnets du paysage n ° 21 (2012), Actes Sud et Ecole nationale supérieure du paysage

⑧第 174 号法律 2016 年 8 月 8 日 2016-1087 卡松生物多样性、自然和景观：“只有可使用《设计者》在行使专业学位范围，出具认可的培训机构的条件，通过规定的惩罚性质的具体培训文化、科学和技术设计景观”。

Article 174 de la LOI n° 2016-1087 du 8 août 2016 pour la reconquête de la biodiversité, de la nature et des paysages : "Seuls peuvent utiliser le titre « paysagistes concepteurs », dans le cadre de leur exercice professionnel, les personnes titulaires d'un diplôme, délivré par un établissement de formation agréé dans des conditions fixées par voie réglementaire, sanctionnant une formation spécifique de caractère culturel, scientifique et technique à la conception paysagère".