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荷兰海牙A4能源森林景观

A4 Energy Landscape in The Hague, the Netherlands

DE URBANISTEN城市研究和设计
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1. A4能源森林景观鸟瞰图 © DE URBANISTEN & Doepel Strijkers
1. The bird's eye view of the A4 energy landscape © DE URBANISTEN & Doepel Strijkers

摘要

在荷兰海牙，一座可持续能源森林将沿A4高速公路应运而生。它由一座新的城市生态森林、一排风力涡轮机、一座藻类农场和生物发电厂，以及一套利用废热的管道网络（此管道网络同时用作横跨公路的自行车系统）组成。这一项目为这条高速公路沿线未来的商业发展提供了肥沃的土地，并使之具有快速获得投资收益的潜能。

关键词

能源景观；新陈代谢；高速公路景观；可持续性

Abstract ...

A landscape for sustainable energy production along the A4 highway in The Hague, the Netherlands is proposed. It consists of a new urban biomass forest, lines of wind turbines, an algae farm and biomass plant, a network of pipes to reuse waste heat and that provides an excellent bicycle structure to cross the highway. It provides fertile ground for future business development along this main infrastructure and is a no-regret investment because of immediate revenue possibilities.

Key words ...

Energy Landscape; Metabolism; Highway Landscape; Sustainability

项目地址: 荷兰海牙市
项目面积: 14km²
项目委托: 海牙市政府
景观设计: DE URBANISTEN
首席设计师: Florian Boer, Dirk van Peijpe
项目负责人: Dirk van Peijpe
项目团队: Jens Jorritsma, Tim Peeters, Eduardo Marin
合作团队: Doepel Strijkers (建筑及顾问团队)
设计时间: 2012年

Location: The Hague, the Netherlands
Area (size): 14 km²
Client: City of The Hague
Landscape Architecture: DE URBANISTEN
Chief Designer: Florian Boer, Dirk van Peijpe
Project Leader: Dirk van Peijpe
Project Team: Jens Jorritsma, Tim Peeters, Eduardo Marin
Collaboration Team: Doepel Strijkers (Architecture and Advisory Team)
Design Period: 2012

2. 物质代谢/能量交换总体目标 © DE URBANISTEN & Doepel Strijkers
2. Ambitious aim of a complete metabolism / energy exchange © DE URBANISTEN & Doepel Strijkers

本项目是对荷兰海牙A4高速公路沿线的能源森林景观进行的一项探索性设计研究。海牙市期望在2040年实现气候中和的目标。与此同时，经济危机使A4高速公路沿线大规模的城市开发暂时搁置。如何在这样的背景下创造可行的“能源景观”？建设一座能够可持续地生产能源，并且为周边社区带来永久效益的能源森林景观，将成为海牙市一项“永不后悔”的投资。

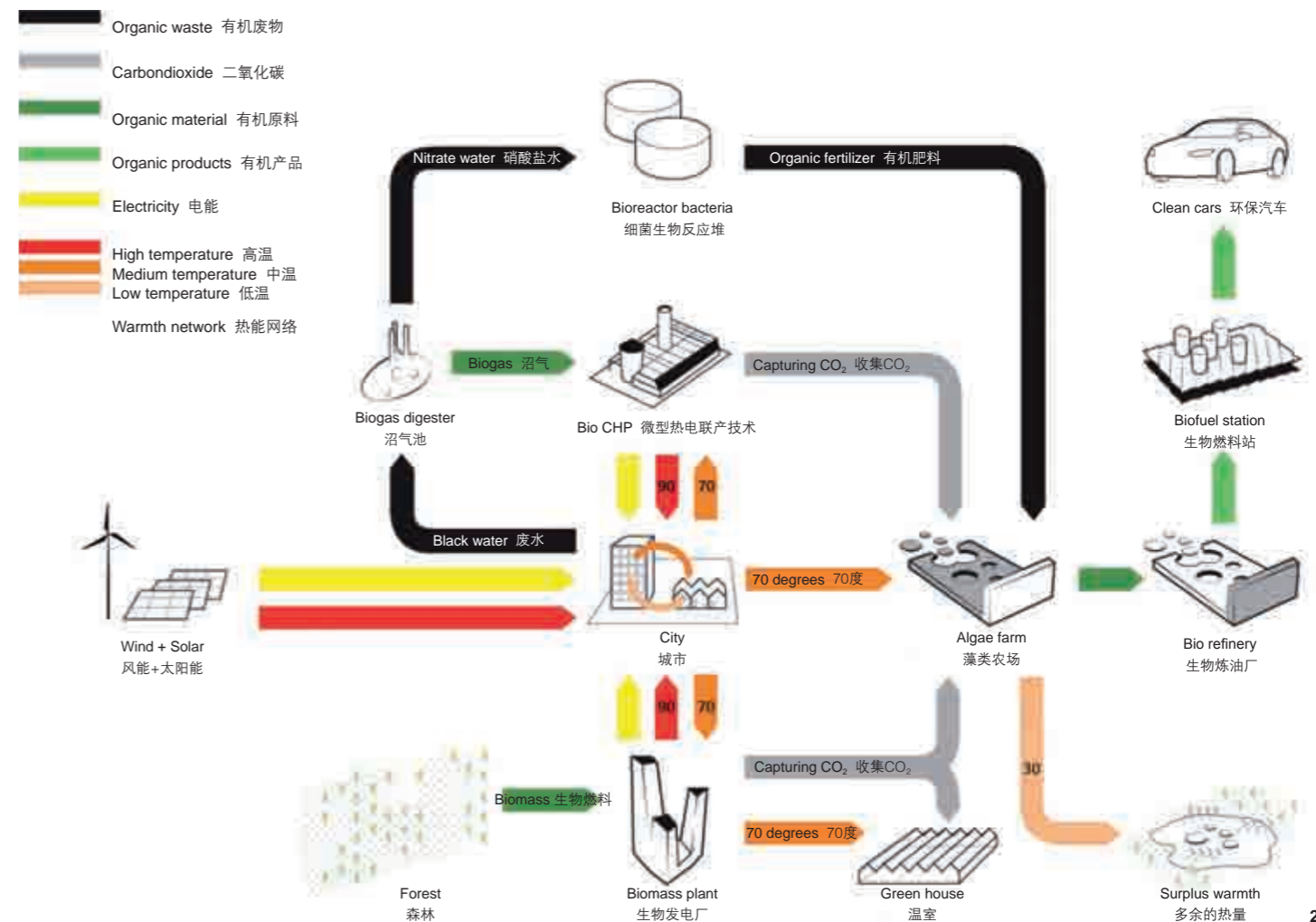
我们提出了一项将A4高速公路沿线的可持续能源生产与开发缓慢的城市森林——新海牙森林相结合的方案。这座新型森林延续并丰富了线性公园和具有海牙特色的“海岸线”森林的形态格局。我们从在A4高速公路沿线的可利用空间中种植杨属植物 (*Populus sp.*) 入手。随着岁月的流逝，森林将变得更加茂密，而生物多样性也将越来越丰富。这片森林使得公路所在区域逐渐从城市发展的一大障碍转变成

四通八达的公共空间，并吸引人们来此散步、驻足或通行。

该森林同时也为我们提供了解决能源问题的空间环境。在此，我们遵循了《鹿特丹能源方案与规划》(REAP)中的三项原则：减少能源需求；再利用剩余能量；生产可持续能源。以上这些原则都有助于A4能源森林的发展。

这片森林与在海牙市其他公园的林木一起，共同为一座小型能源发电厂提供了充足的生物燃料；以一种标志性结构的形式，将这片森林纳入更广阔的城市范围中。这座生物发电厂成为了一个新的能源循环系统的一部分。精心规划的“通向鹿特丹的主干道”被用来连接伊彭堡区域的供热网络与海牙市中心的供热网络，以使能源需求得到平衡。

在森林中，我们可以通过在精心选择的地点“种植”风力涡轮机来获得清洁能





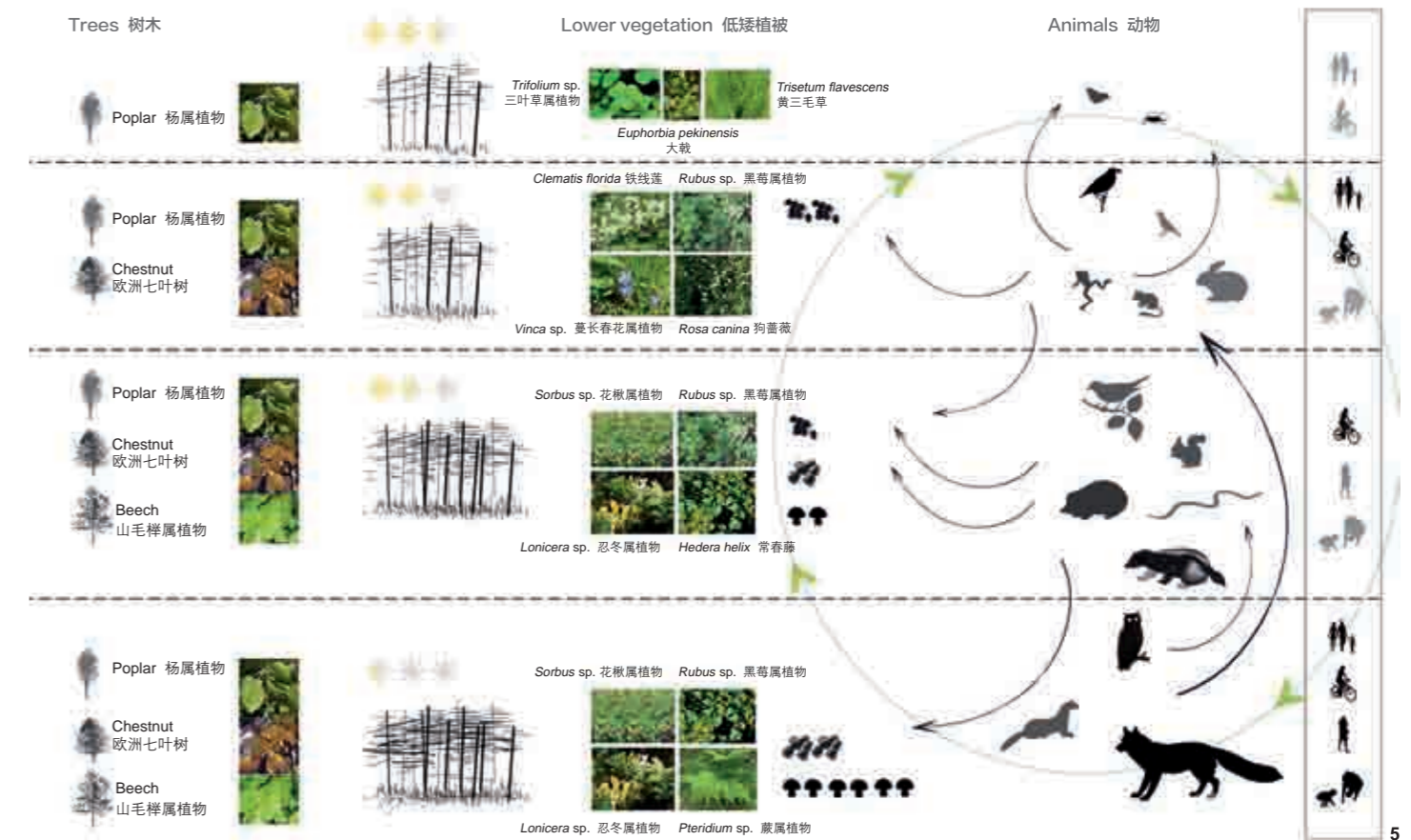
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源。此外，我们提议建立一个藻类农场，它可以借助该地区的营养物质、温暖的气候和二氧化碳进行藻类繁殖。这项生物燃料的生产过程可以在A4服务站进行展览。藻类农场产生的剩余热量还可为森林中的游泳池供暖。

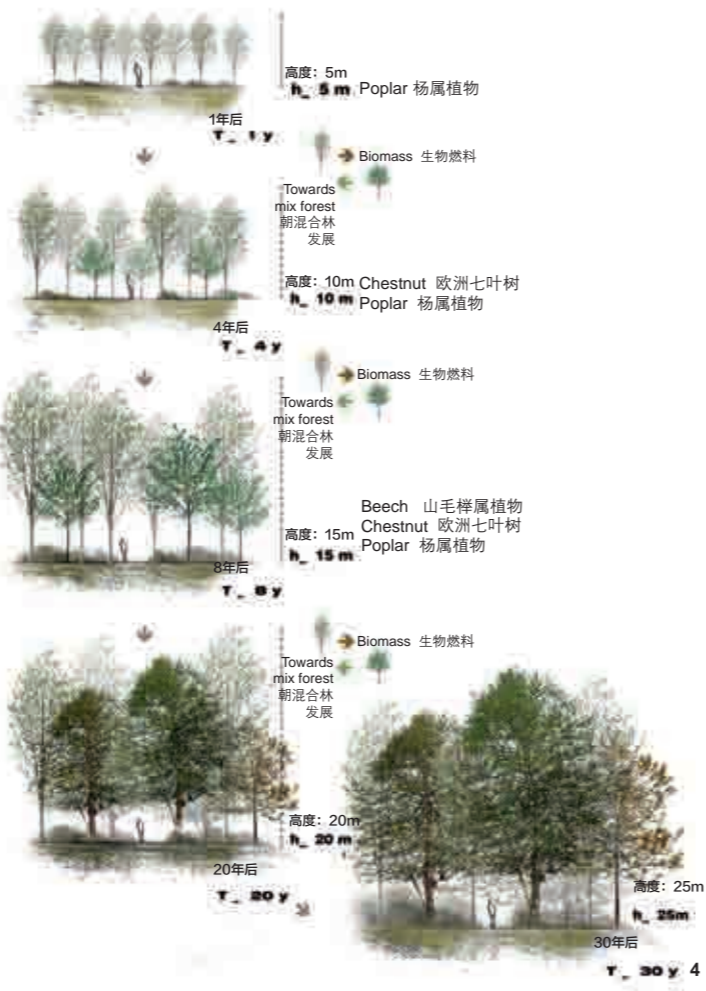
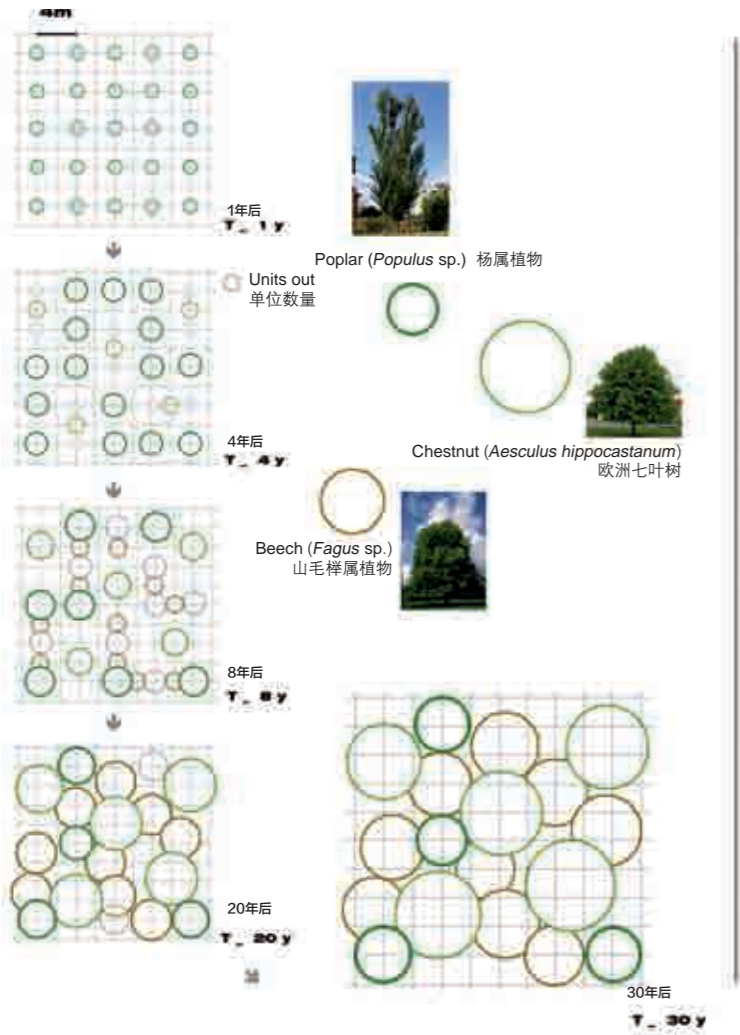
我们在整座森林中规划了更加密布和更具连续性的自行车网络与人行路线，使森林变得四通八达，并且与A4高速公路沿线周边的社区相互连接。我们充分利用这项基础设施得天独厚的地理优势，从而为私家车、公共交通和自行车提供了更为舒适的换乘站点。整个A4区将成为一座具有长期价值的、富有吸引力和生产力的城市森林。LAF

注释

本项目相关信息请参见www.urbanisten.nl/wp/?portfolio=energylan-dscape-a4。

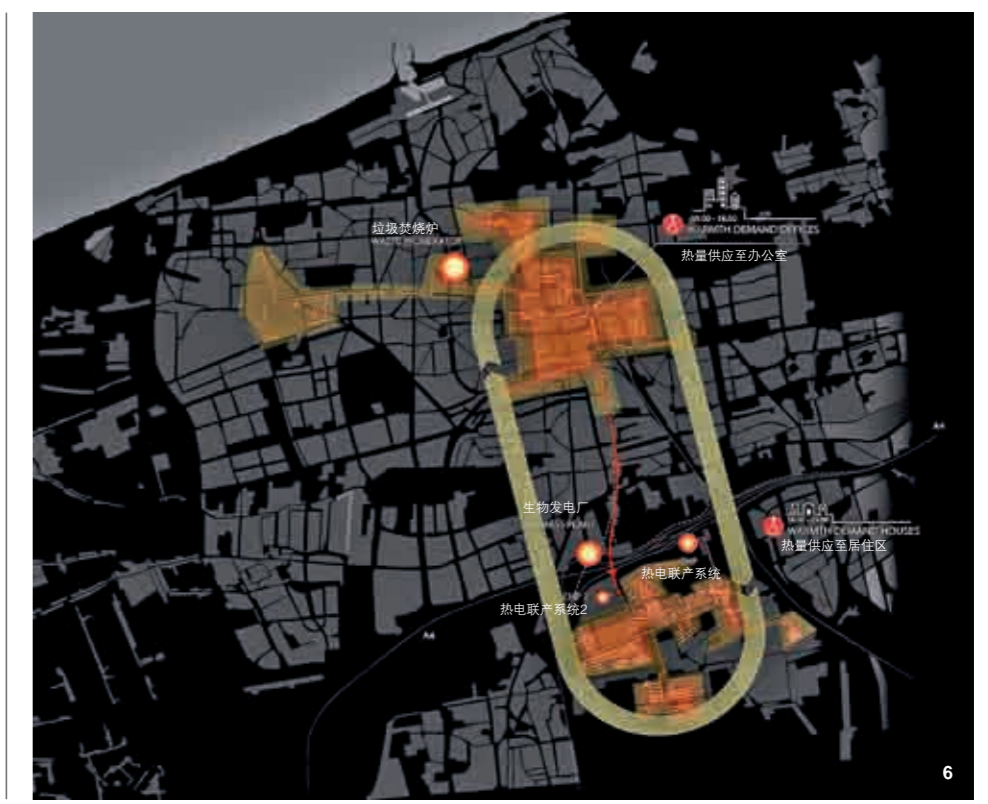


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This project is an explorative research by design for an energy landscape along the A4 highway in The Hague, the Netherlands. The city of The Hague wants to be climate neutral in 2040. At the same time, the economic crisis puts large scale urban development along the A4 on hold. How to create possibilities for an “energy landscape”

1. A4能源森林景观的总能量交换系统 © DE URBANISTEN & Doepel Strijkers
2. 未来30年的A4能源森林种植方案 © DE URBANISTEN & Doepel Strijkers
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6. The A4 forest planting scheme covers 30 years © DE URBANISTEN & Doepel Strijkers
7. The A4 forest biodiversity grows in time. © DE URBANISTEN & Doepel Strijkers
8. Heat exchange system between city center and suburb © DE URBANISTEN & Doepel Strijkers



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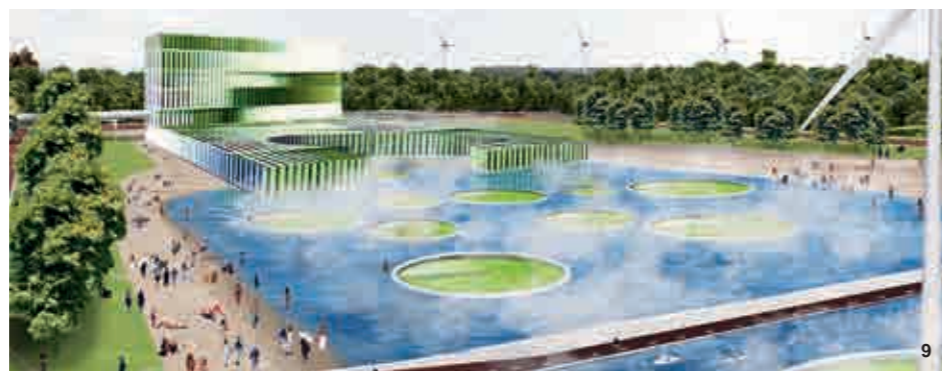
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in this context? A landscape that contributes to a sustainable energy production can be of a permanent value for the surrounding neighborhoods and is a no-regret investment for the city of The Hague.

We propose to combine a sustainable energy production along the A4 highway with the slow growth of an urban forest (Nieuw Haags Bos). This new forest follows and enriches the morphological pattern of linear parks and forests on the so called “strandwallen” that are characteristic for The Hague. We start with the planting of poplars (*Populus* sp.) on all areas that are available along the A4 highway. With the years the forest becomes more rich and bio diverse. Step by step the forest turns the A4-zone from a major barrier into a connecting public



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space that invites people to go for a stroll, to linger or to cross.

The forest is also the spatial context for our approach to energy. Here we applied three principles of *Rotterdam Energy Approach and Planning* (REAP): reduce energy demand; reuse surplus energy; produce sustainable energy. Each of these principles contributes to the development of the A4 energy forest.

The forest, together with the wood from other parks in The Hague, provides enough biomass for a small energy plant; an iconic structure that anchors the forest in the wider context. The biomass plant is plugged into a new energy loop. The planned “Rotterdamse Baan” is used to connect the district heating network of Ypenburg with that of the center of The Hague to balance energy demands.

In the forest we can harvest clean energy by “planting” wind turbines on well chosen places. We also propose an algae farm that uses nutrients, warmth and CO₂ from the area. The production of biofuel can be exposed at the A4-service station. The surplus of heat from the algae farm warms a pond for swimming in the forest.

Throughout the forest we make a more dense and continuous network of bicycle and pedestrian routes that make the area accessible and that connects to the surrounding neighborhoods along the A4 highway. The dominant position of infrastructure is used to make extra and more comfortable transfer points between car, public transport and bicycle. All together the A4-area can become an attractive and productive urban forest with long term value. **LAF**

NOTE

For more information please visit www.urbanisten.nl/wp/?portfolio=energylandscape-a4.



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- 7. A4能源森林将成为具有休闲娱乐潜力的场地。© DE URBANISTEN & Doepel Strijkers
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- 12. The interchange hub next to highway exit © DE URBANISTEN & Doepel Strijkers