vivapolis
Powered by French creativity

SHANGHAI LINGANG,
OPTIMIZING LOCAL ENERGY SYSTEMS FOR A LOW CARBON URBAN DISTRICT

EDF, IN PARTNERSHIP WITH URBAN PLANNERS, PROPOSES AN INNOVATIVE SIMULATION TOOL FOR SUSTAINABLE ENERGY PLANNING

EDF created a decision making tool, which helps local players to plan and design an energy system of their urban project: it's a 3D web-platform, which offers the possibility to build various energy scenarios at the early stage of a project and to evaluate quickly their impact on costs and benefits.

Thanks to this innovative approach, EDF group, in partnership with the Chinese urban planning institute Tongji UPDI (Shanghai) and the French architecture studio AUC, won in 2014 the first prize of a competition for the development of the new district of Lingang in Shanghai.

By enabling to reduce CO_2 emissions and electricity peak load by 50%, the solutions advocated by EDF's tool perfectly match the specific low carbon challenges of this district.

INNOVATIONS

- The Lingang project is really innovative as energy planning is integrated since the early phase of an urban project; it is the first time that this approach has been implemented in China.
- Moreover, EDF's customized 3D tool can be adapted to adapt to each cities' specific local challenges, while using mature and economically viable technologies and energy solutions.

STAKEHOLDERS

- EDF's proposal was done in partnership with the French architecture studio AUC, specialized in urban projects (Lyon Part-Dieu, Grand Paris, Bruxelles 2040…), and Tongji Urban Planning Design Institute (UPDI), a Chinese institute of the Tongji University College of Architecture and Urban Planning.
- The clients are the Shanghai Zhangjiang Development Company along with China Investment Development are in charge of Lingang's development.

KEY DATA

- 50% of CO_2 reduction
- 50% of electricity peak load reduction
- 10% reduction on consumer's energy bill
- 100% of the energy produced locally

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'ENVIRONNEMENT, DE L'ÉNERGIE ET DE LA MER
MINISTÈRE DU LOGEMENT ET DE L'HABITAT DURABLE

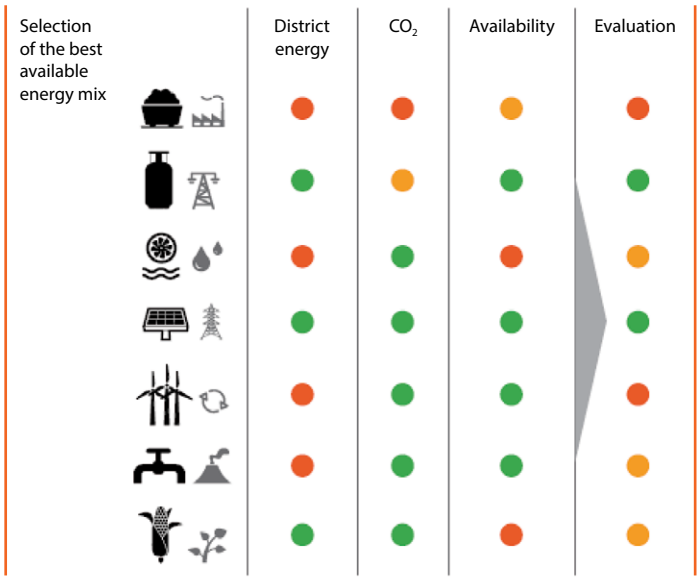
IMPLEMENTATION

▶ The Lingang District is one of Shanghai's nine satellite towns, located 70 km away of the city's center. In order to obtain innovative and low carbon urban design proposals for the development of this new green-field site, real-estate developers launched an International Competition of Conceptual Urban Design, in July 2014. The proposed solution needed to address two specific local energy challenges: CO_2 emissions reduction and energy demand optimization.

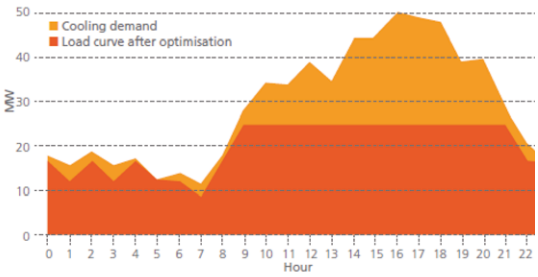
▶ The Sino-French team made up of EDF, Tongji UPDI and the AUC won the competition in November 2014. The initial development of Lingang's district has been started on a 1 km² section in 2016, then to be extended to a larger Comprehensive Zone of 42 km².

Mrs. Wang Jingxia, President of the jury and former president of CAUPD (China Academy of Urban Planning Design)

"Integrating an energy planning in the early phase of urban design has never been brought up before in China. For this outstanding proposal, the energy planning is its most original and innovative part."



Estimation and localisation of heat-cold and electricity demand for buildings (snapshot during a winter's day)



Reduction by half of the electricity peak load (example of summer peak)

RESULTS

/// EDF's final proposal proved the added value of integrating energy planning early on in urban development. Thanks to its tool, EDF enabled to draw a district design that allows:

- to cut planned CO_2 emissions and electricity peak loads by half,
- to produce 100% of the district's energy locally,
- to reduce the energy bill for residents by 10%.

FINANCIAL ASPECT OF THE OPERATION

/// The added value of this approach is clearly to pave the way for local low carbon solutions, demonstrating that the mitigation of CO_2 emissions can be cost effective.
Integrating energy and CO_2 emissions at the very beginning of urban planning allows to find innovative and efficient energy solutions.

TONGJI URBAN PLANNING DESIGN INSTITUTE

Contact:
Lydie SARTOUT, VP International Marketing of EDF Group, lydie.sartout@edf.fr