



SINGAPORE

DECISION SUPPORT FOR SUSTAINABLE, SMART AND RESILIENT DISTRICTS

EDF PROVIDES A 3D URBAN PLANNING PLATFORM ENABLING THE HOUSING AND DEVELOPMENT BOARD (HDB) OF SINGAPORE TO EVALUATE VARIOUS ENERGY STRATEGIES

EDF has developed a 3D urban simulation platform that is being used by the Housing and Development Board in Singapore to build investment scenarios around concepts like energy efficiency, renewable energy development, smart grids, greening and mobility and evaluate their impact on energy consumption, CO₂ emissions, the environment and costs.

INNOVATIONS

- ▶ The simulation tool brings decision support for the Singaporean authorities in several areas such as energy efficiency for cooling systems in buildings, integration of solar panels, green roof development and urban mobility.
- ▶ The 3D visualization interface links the outputs with a virtual representation of the urban project.
- ▶ This tool has been implemented for the residential district of Yuhua, Jurong East, Singapore.

Now the platform allows users to implement the simulation for any existing or new district of the City.

STAKEHOLDERS

- ▶ Housing and development Board (HDB), the governmental agency in charge of the public housing in Singapore (80% of Singaporean population).
- ▶ EDF, the world's leading electricity company, creator and developer of the EDF City Platform for urban planning.
- ▶ French expert societies in digital 3D: IGO, ON'X and Dassault Systemes for the development of visual interface.
- ▶ Veolia, for its expertise in water and waste treatment.

KEY FIGURES concerning the simulation tool:

- 500+ settings functions to describe the main urban sectors: energy, transport, water, waste
- 5-10 minutes run time for a simulation of a whole district
- 20-year forecast-based scenarios

IMPLEMENTATION

Our approach is a tailor-made collaboration with cities in 3 main phases.

- **Phase 1** : City's context statement through workshops with main stakeholders (public and private).
- **Phase 2** : Data collection (parameters and 3D data) and upload of the urban model in the EDF City Platform.
- **Phase 3** : Secured access to the EDF City Platform to client for scenario analysis, complemented with advices and recommendations from EDF experts.

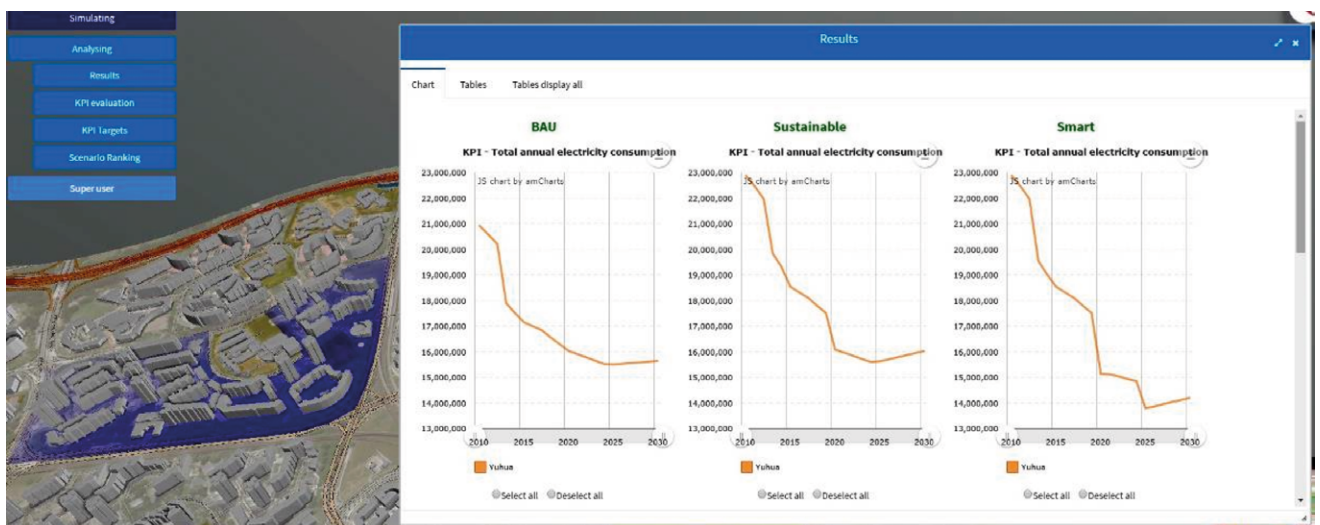
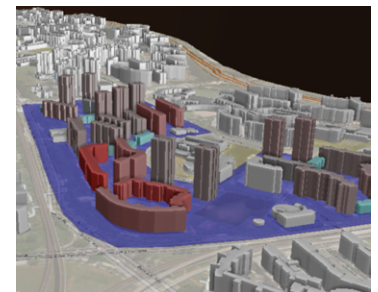
Dr Cheong Koon Hean,

Chief Executive Officer of HDB, june 2013

“ HDB is pleased to embark on this collaboration with EDF and Veolia to develop this new modelling tool. This is a sophisticated tool that simulate complex urban scenarios and help HDB planners analyze and determine the best combination of strategies using both design and technological solutions. Ultimately, it helps us create a better living environment that will benefit our residents. **”**

RESULTS

- /// A multi-sectorial diagnosis of a HDB district in Singapore which allowed to identify the priorities for refurbishment.
- /// The evaluation of the energy, economic and environmental impact of the HDB sustainability strategic plan and the best combination of initiatives.
- /// A secured access for HDB to a ground breaking tool allowing a 3D visualization of the city and the ability to conduct collaborative development of scenarios.



FINANCIAL ASPECTS OF THE OPERATION

- /// The value created by this approach is the ability to play with many investment scenarios and decide the most appropriate regarding cost and benefits. Compared to initial situation, it paved the way for a scenario enabling 30% of CO₂ emissions savings coupling PV on the most appropriate roofs, energy efficiency of air conditioning, public lighting and green roofs.