



Paris-Charles de Gaulle © Groupe ADP

# THE REGENERATIVE POWER OF AIRPORT LANDSCAPE



JULY 2019





For Saint-Exupéry, “the airplane has unveiled for us the true face of the Earth”. In so doing, it allows us to see the airplane's own influence on the face of the Earth in the landscape transformed by airport development. Disruption of landforms, waterways and soil; loss of natural habitat, farmland and human settlements: every airport embodies the radical break with its surroundings required to create a separate landscape governed by aeronautical constraints.

Separate but not isolated: the airport exerts a continuous impact on its surroundings through stormwater discharge, airborne noise, greenhouse gas emissions, and resource consumption.

What if this transformed landscape becomes the vector to heal the disruption of airport development? Just as plants and animals regenerate tissues and limbs after a calamity, the airport landscape can, with proper attention, regenerate habitat and restore natural links with its surroundings.

‘Proper attention’ means a landscape strategy to re-integrate natural spaces and processes into the entire airport environment: to make the soil, air and water healthier; to increase biodiversity; to strengthen the autonomy of the airport in energy, water, food and waste cycles; to establish the resilience of the airport against climate change; and last but not least, to foster a sense of well-being for airport users, workers and neighbors.

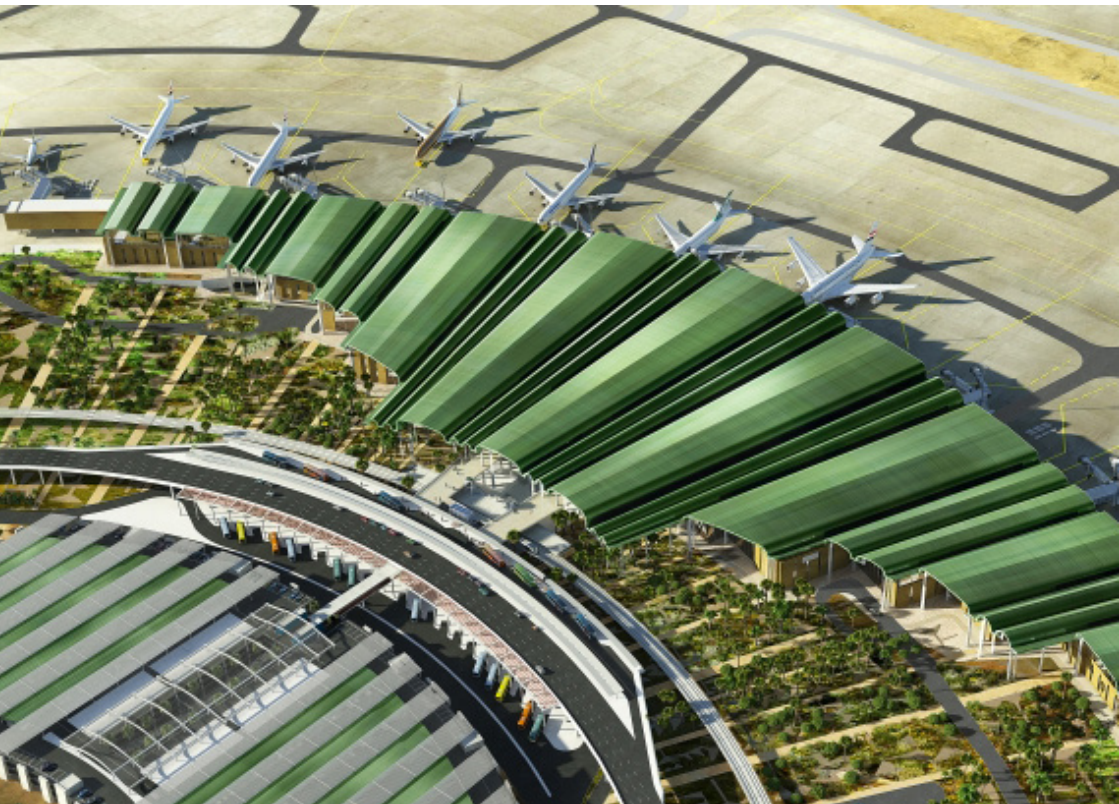
A landscape strategy can be part of a holistic approach to the airport ecosystem, adhered to by all airport actors, from designers to operators.

The tool of this strategy is all-embracing landscape design, deployed throughout the airport at all scales, from site infrastructure to intimate gardens.

Landscape design needs to be guided by a coherent vision for the airport site, and by a method of working that adheres to the prescription of Gilles Clément: “Do the most possible with nature, not against it.”

We will look at examples of airports that show how the promise of regenerative landscape can begin to be fulfilled:

Karbala ©ADPI et D-Paysage



## The place of an airport

First, a clear vision for the airport site that derives from a sense of place.

At Tribuvhan Airport in Kathmandu, the place is the jungle, and the landscape strategy of ADP Ingénierie and TN+ was simply to preserve the luxuriant ravines adjoining the new terminal. The landside is structured by an observatory terrace that allows contemplation of the jungle, the first view of Nepal for arriving travelers.

Oslo Airport defines itself as “the unique airport in the forest, where you roll your suitcases between pinetrees and lupins”. The strong initial vision of a forest habitat has nurtured the airport landscape as well as an ambitious program of environmental management in energy, water and waste.

In the project for Middle Euphrates Airport in Karbala by ADP Ingénierie and D Paysage, a desert identity springs from the “duality of contrasting landscapes ... with palm groves and dune-scapes”. This identity is combined with an airport-city setting inspired by the caravanserai, evoking travel, trade and hospitality in the desert.

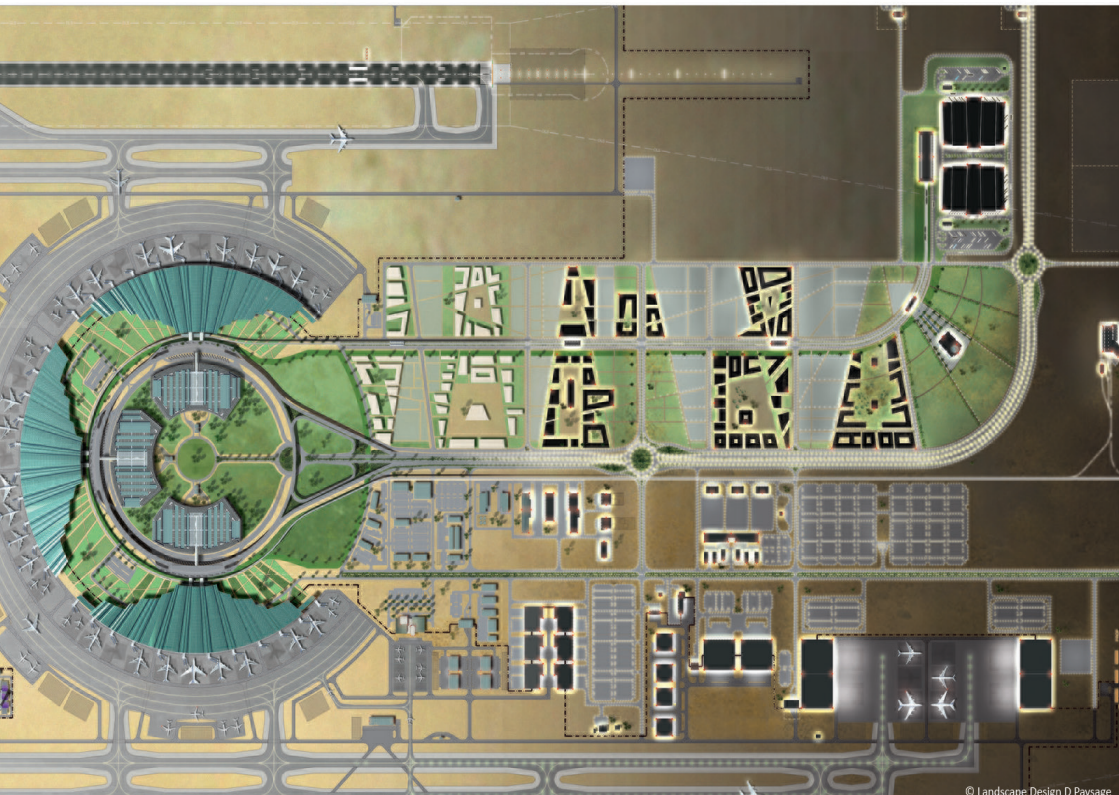
In each case, the landscape vision derives from what is inherent in the environment, thereby promoting the natural links between the airport and its surroundings.

### **Airport wilderness**



Restoration of habitat and re-connection with the surrounding environment are further promoted by the differentiated management of airside zones, which offers the potential for wilderness within the airport perimeter. As opposed to the conventional practice of cutting grass flush, less intensive mowing allows the grass monoculture to become a prairie ecosystem with a high level of biodiversity. This is demonstrated at Paris-Charles de Gaulle and Orly Airport, where field surveys have revealed thriving plant and insect habitats, including rare species.

Contrary to what we might expect, a natural airside landscape can present a reduced hazard to airport safety, although monitoring of certain species of fauna remains necessary. What may be most important about airports in this regard is their



size: the 600 square kilometers of airport land area in France are the equivalent of a large national park. On this scale, the protected airside prairie can support significant populations of flora and fauna to counter the increasing loss of species diversity and quantity, such as the current 'insect apocalypse'.

## Natural airport infrastructure

Doing the most possible with nature also applies to infrastructure, where natural processes can be integrated in the landscape to make a healthier environment and to strengthen airport autonomy and resilience.

Green infrastructure can be particularly effective in managing the massive amounts of runoff generated by an airport's paved surfaces in order to retain stormwater on site and to filter pollutants. On the landside, parking lots can incorporate permeable paving and bioswales, and planted retention basins will reduce discharge into the surrounding river systems. On the airside, constructed wetlands, such as those at Orly Airport, have proven their efficiency in filtering the polluted runoff from aircraft and runway de-icing operations.

Water -- as brought by rainfall, storm surges or rising sea levels -- can also be a threat to an airport's very existence, as shown by Typhoon Jebi hitting Kansai Airport in September 2018. For



Jeddah ©ADPI et TN PLUS



Schiphol airport ©Google Earth



Schiphol soundscape ©H+N+S Landscape Architects

the hundreds of airports built or planned on seacoasts, islands, floodplains and swamps, a natural approach to infrastructure could deliver a measure of resilience. Whereas Schiphol is a compelling example of the integration of airport and water in a totally constructed landscape, bio-engineering could offer the advantage of letting nature itself protect the airport. This approach can be seen in the mangrove regeneration proposals, such as Szövetség'39's CALTROPe, which could reinforce natural storm protection for coastal airports threatened by climate change.

In regard to noise, energy and food, landscape infrastructure can also have a significant role.

Witness Schiphol's soundscape park with its grassy ridges which deflect runway noise away from a residential neighbourhood.

And the inspiring energy and agricultural landscape at Cochin Airport, where a 20-hectare solar farm (producing over 100 percent of the airport's energy needs) is interwoven with an organic vegetable farm (producing over 80 tons per year).

## **Landscape for airport users**

Last but not least, a considered landscape can foster an environment of well-being for airport passengers, visitors, and staff.

Outdoors, extensive planting can transform the vast hardscape of parking lots and roadways, providing shade and visual delight, reducing the heat-island effect and filtering airborne pollutants. This is not an approach for the passenger terminal alone. Staff at all airport facilities, from cargo to catering, can benefit from hospitable outdoor spaces, such as the landscaped forecourt imagined for the cargo center at Paris-Charles de Gaulle.

Within the terminal, courtyard gardens offer a space of tranquility







to offset the pace of travel, bringing natural light and a preview of the local environment. Jakarta's Soekarno-Hatta Airport by ADP and Paul Andreu was a pioneer project in this way through its integration of tropical gardens; the terminal received the Aga Khan architectural award for its landscaping in particular.

Continuing in this tradition, ADP Ingénierie's new terminal at Jeddah-KAIA features a 2-hectare oasis by TN+ between the processor and concourses, and Beijing-Daxing Terminal 1 incorporates a garden at the end of each of its five piers.

## Conclusion

In a global context, airports will want to comply with environmental objectives as set out by international bodies such as the United Nations, through its Sustainable Development Goals, or countries such as France, whose Constitution will now call to "act for the preservation of the environment, for biological diversity, and against climate change". As we have seen, an effective landscape strategy can provide a direct path toward achieving these environmental goals in the airport sector.



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