Building a Sustainable Airport
CPK Transport Hub
IATA WPS Chicago 2023

Antoinette Nassopoulos Erickson
Senior Partner

Foster + Partners
Foster and Partners 40 years of Airport Terminal Design

1980
- Stansted Airport
  UK 1981-1991
- HACTL Superterminal
  Chek Lap Kok
  Hong Kong 1992-1998
- Hong Kong International Airport
  Chek Lap Kok 1992-1998

1990
- Frankfurt T3 Masterplan
  Frankfurt, Germany 2004
- Thames Hub
  London, UK 2001 (Concept)

2000
- Heathrow Masterplan
  London, UK 2004 (-2005)

2010
- Heathrow Masterplan
  London, UK 2004 (-2005)
- JetBlue Terminal
  New York, USA 2004-2006
- JFK Vision Plan
  New York, USA 2016
- LAWA Vision Plan
  Los Angeles, USA 2017

2015
- Incheon Airport T2 Masterplan
  Korea 2006-2009
- Spaceport America
  New Mexico, USA 2006-2011
- Beijing International Airport
  Beijing, China 2003-2008
- Heathrow Terminal 2
  London, UK 2006
- BREAM Excellent

2020
- Queen Alia International Airport
  Amman, Jordan 2006-2013
- Kuwait International Airport
  Kuwait City, Kuwait 2010 (On site)
- AMAALA Airport
  Saudi Arabia 2020 -
- John F Kennedy International Airport Vision Plan
  New York, USA 2016
- Phnom Penh International Airport
  Phnom Penh, Cambodia 2019 -
- Marseille International Airport
  France 2016 -
- Phnom Penh International Airport
  Phnom Penh, Cambodia 2019 -
- Red Sea International Airport
  Saudi Arabia 2020 -
- Tocumen International Airport
  Panama City, Panama 2011 - 2019
- Phnom Penh International Airport
  Phnom Penh, Cambodia 2019 -
- Red Sea International Airport
  Saudi Arabia 2020 -
- AMAALA Airport
  Saudi Arabia 2020 -
IATA ADRM 12th Edition
Sustainability Chapter
Introduction | Environment and Health | Community and Social | Energy and Carbon | Green Mobility | Resources Management | Resiliency | Performance Management

Wellbeing | Community Impact | Energy + Carbon | Mobility + Connectivity | Resources | Water | Land + Ecology | Social Equity | Planning for Change | Feedback

Foster Responsibility Framework themes (2014)

Sustainable Development Goals (2015)

ADRM – IATA – 12th edition – Sustainability chapter
Centralny Port Komunikacyjny is a transfer hub planned in Poland between Warsaw and Łódź, to integrate air, rail and road transport, and includes:

- **Airport**: a modern greenfield airport planned in the heart of Poland and Central and Eastern Europe.
- **Railway**: a network of almost 2,000 km of railway lines, including high-speed lines.
- **Airport City**: the development of business, office, hotel, residential and leisure infrastructure.
<table>
<thead>
<tr>
<th>Year</th>
<th>Million passengers (capacity)</th>
<th>Runways</th>
<th>Air Traffic Movements (capacity)</th>
<th>Tonnes Cargo volume (capacity)</th>
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</thead>
<tbody>
<tr>
<td>2028</td>
<td>40</td>
<td>2</td>
<td>330,000</td>
<td>11M</td>
</tr>
<tr>
<td>2060</td>
<td>65+</td>
<td>3</td>
<td>450,000</td>
<td>18M</td>
</tr>
</tbody>
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CENTRAL AND EASTERN EUROPE MARKET

CPK as the gateway to CEE and the main hub transport centre for the region

Together with Poland's rail network, Rail Baltica and V4 HSR, providing future-fit connectivity to the region

CPK essentially complements the TEN-T network, as the multimodal heart of an integrated system

In line with six objectives of the EU Taxonomy, supported by green transport policy
Centralny Port Komunikacyjny
Integrated Transport Hub
Centralny Port Komunikacyjny
A seamless journey through an integrated transportation
Net Zero emissions from 2028
Significant share of zero-emission fleets, electric power and air-conditioning supply

Sustainable building construction Multimodal system of airport with the rail and road network vastly enhancing the short-time catchment area

Green transport
Reduction of domestic flights supported by convenient green transport connections

Airport Carbon Accreditation
>14-fold reduction in the number of people affected by aircraft noise compared to WAW airport

Buildings and infrastructure
to be certified at the high sustainability level according to the best world’s standards
CPK's Sustainable Development Strategy / key aspirations

CPK Sustainability Strategy / key aspirations

SUSTAINABLE DEVELOPMENT GOALS

1. NO POVERTY
2. ZERO HUNGER
3. GOOD HEALTH AND WELL-BEING
4. QUALITY EDUCATION
5. GENDER EQUALITY
6. CLEAN WATER AND SANITATION
7. AFFORDABLE AND CLEAN ENERGY
8. DECENT WORK AND ECONOMIC GROWTH
9. INDUSTRY, INNOVATION AND INFRASTRUCTURE
10. REDUCED INEQUALITIES
11. SUSTAINABLE CITIES AND COMMUNITIES
12. RESPONSIBLE CONSUMPTION AND PRODUCTION
13. CLIMATE ACTION
14. LIFE BELOW WATER
15. LIFE ON LAND
16. PEACE, JUSTICE AND STRONG INSTITUTIONS
17. PARTNERSHIPS FOR THE GOALS

CPK’s Sustainable Development Strategy

EU level + Country level Green Policies

Fit for 55
CPK’s Sustainable Development Strategy

Environment + Health
Community + Social
Energy + Carbon
Green Mobility
Resource Management
Resiliency
Performance Management

Net Zero Pathway
Carbon neutral
Healthy spaces
Environmentally conscious

CPK Sustainability Strategy / Key Aspirations

IATA ADRM 12: Sustainability Chapter

Centralny Port Komunikacyjny

Fit for 55

BREEAM®
Transition from fossil fuels towards all-electric from zero-emission electricity supplies

Increase energy efficiency + manage energy demands

Track and reduce Scope 1, 2, 3 GHG emissions

Implement a whole life carbon approach

Support innovation + SAFs

Utilise performance metrics to monitor + deliver continuous improvement

Resilient design meeting future challenges

Adoption of Whole Life Carbon Design Approach
Centralny Port Komunikacyjny
Decarbonisation Approach + Best Practice

Masterplan scale strategies

- Expandable District Scale Systems
- 5th Generation Energy Network
- Net-Zero ready buildings – Day-1
- On-site renewable generation technologies
- Targets built into airport city guidelines
- Plan incentives for SAF aircraft
- Multimodal hub

High performance buildings

- Whole life carbon
- Resilient design
- Optimisation of envelope
- Indoor environmental quality
- Enhancing user experience
Centralny Port Komunikacyjny
Decarbonisation Approach: Operational

Setting Building Specific KPIs
PTB EUI: <4 kWh/pax

Ambient Loop Energy Supply
All-electric: Geothermal + ASHP Energy supply
Renewable Energy: PV Array providing electrical supply

High performance envelope targets
Optimised façade + roof balancing daylight distribution + heat losses

Net Zero ready equipment selection
Electrical provision for remote and fixed stands
No on-site combustion and PPA agreements
Smart Building Strategy – optimising operations
Centralny Port Komunikacyjny

Decarbonisation Approach: Up Front Embodied Carbon

Upfront embodied carbon calculations – informing design

- Adaptable + flexible structures
- Modularisation + pre-fabrication

Lean design principles: material efficiency

- Use of natural materials
- Implement clean construction – monitor onsite activities

Early procurement / supply chain WLC development

Circular Economy approach – designed for disassembly
Centralny Port Komunikacyjny

**CPK Sustainability Strategy / Health + Wellbeing**

- **Wayfinding driven design for passengers**
- **Site-wide water-conscious approach**
- **Inclusive design at all scales and for all**
- **Healthy and restorative airport experience**
- **Biophilic design principles from arrival**
Centralny Port Komunikacyjny
CPK Sustainability Strategy / Health + Wellbeing

High-performance envelope for energy and daylight balance
Glare control <10% (ASE<sub>1000,250</sub>)
Average Daylight Illuminance ~300 lux*  

Minimise VOCs concentration <300 μg/m³

Optimal acoustic performance <55 dBA

Displacement ventilation to reduce draught risk close to facades

Views out and smooth wayfinding promote connection with outdoors, inclusivity and wellbeing

Views out

Enhanced fresh air ventilation rate 14 L/s/pax

Highly efficient air filtration systems <16 μg/m³ PM<sub>2.5</sub>

Biophilic interior design through shapes, material selection and greenery

*As per BREEAM compliance for specific regularly occupied spaces: at least 2000 h/year for >80% of the boundary area (BREEAM International, 2016)
Thank you

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