Defining the Metropolis

Association Deltametropolis
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What makes a big city a metropolis; its sublime location, its metro system, its inspiring history, its concentration of headquarters, its multicultural population, its exciting nightlife? The Metropolitan Program is a design research that investigates the development of the metropolis. By examining several aspects of development a metropolis, at an international, regional and local scale, Association Deltametropolis in collaboration with the universities situated in the Randstad acquires more insight into the possible further development of the Randstad.

More thinking about the further development of the Randstad, an urbanised area of 8 million inhabitants, form the appeal of a Metropolis is needed. The population growth of the Randstad is expected to occur by the immigration and migration of youngsters out of the periphery towards the city. For these groups employment, education, acquaintances and kindred spirits are the main reasons for staying. If the Randstad is to compete with other urban agglomerations, employment, housing and facilities must be of top reputation.

‘Defining the Metropolis’ researches the influence of global top urban programs on the development of urban agglomerations in the world. This publication is an update of primarily results of the project.

The research is based on the Index of Metropolitan Functions developed by the Federal Institute for Research on Building, Urban Affairs and Spatial Development. The Index of Metropolitan Functions defines five areas: politics, economy, science, transport and culture. The five areas of metropolitan functions are supported by indicators: specific urban programs. When allowed by available data, the global top list of these different urban programs are used.

Defining the Metropolis exist on the one hand of a quickscan of the distribution of the top urban programs in the world and on the other hand of the thirty largest (by population) urban agglomerations in the world in 2010 and 2025, valued by the presence of top urban programs.
The Index of Metropolitan Functions

1. Politics
   - national capitals,
   - offices of international organisations

2. Economy
   - headoffices of the top 500 world largest corporations (2010, revenues), source: CNN, money
   - top 20 stock exchanges in the world (2009, Market Capitalization, USD billions), source: World Federation of Exchanges

3. Science
   - top 200 universities in the world (2010, overall score), source: Times Higher Education
   - top 20 international congress cities (2009), source: International Congress and Convention Association
   - top 20 international congress countries (2009), source: International Congress and Convention Association
   - top 50 countries with patent grants relative to the population

4. Transport
   - top 30 airports by passenger traffic (2008, passengers), source: Airports Council International
   - top 50 airroutines by passenger traffic (2010 seats per month), source: Centre for Asia Pacific Aviation
   - top 30 airports for cargo (2009, Metric Tonnes), source: Airports Council International
   - top 30 world ports by container traffic (2008, TEUs - Twenty-Foot Equivalent Units), source: American Association of Port Authorities

5. Culture
   - top 100 most visited museums in the world, source: The Art Newspaper Annual Reports (http://www.theartnewspaper.com/)
   - number of Olympic Games, World Championship Football and World Exhibitions, source: Wikipedia
1. Politics

Political stability
There is a clear north-south division in the transcontinental organisations. On the Southern Hemisphere there is a group of 77, a loose coalition of developing nations, designed to promote its members’ collective economic interests and create an enhanced joint negotiating capacity within the United Nations. On the Northern Hemisphere there are the Organization for Security and Co-operation in Europe (OSCE), the world’s largest security-oriented intergovernmental organization, and the North Atlantic Treaty Organization (NATO), an intergovernmental military alliance between North America and different countries of Europe. Both organisations are a result of World War II and the Cold War. Their head offices are situated in Europe.

Econimical stability
Almost every country in the world is a member of the IMF, an organization formed with a stated objective of stabilizing international exchange rates and facilitating development through the enforcement of liberalising economic policies on other countries as a condition for loans, restructuring or aid. Two thirds of all the countries in the world are a member of the World Trade Organisation (WTO), which intends to supervise and liberalize international trade. The G20 economies comprise 85% of global gross national product and 80% of world trade. Most of these countries also belong to the Bank of International Settlements, which “fosters international monetary and financial cooperation and serves as a bank for central banks.”

Generally speaking, the Western World (North America, Europe, Japan and Australia) is a member of the Organisation for Economic Co-operation and Development (OECD), a forum of countries committed to democracy and the market economy, providing a platform to compare policy experiences, seeking answers to common problems, identifying good practices, and co-ordinating domestic and international policies of its members. Specific for oil, there is the Organization of the Petroleum Exporting Countries (OPEC), of whom half of the participating countries also are part of the largest exporting countries in the world (export relative to population). The head offices of most of these organizations are located in Europe.
Top urban programs in the world
2. Economics

Worldtrade
South-America is mainly an exporting continent (export relative to population) and the United States is the main importer of the world. Asia, the Middle-East and Europe have a mix of importing and exporting countries. The European Union is the biggest exporter of the world.

East-Asia has the highest concentrations of harbours and cargo airports in the world. Northwest-Europe has a concentration of medium-sized harbours and cargo airports. America has mostly cargo airports, situated more inland, which form concentrated points of cargo transport. The main stock exchanges are located in the proximity of the big international cargo hubs.

Old economy, new economy
The head offices of the world largest corporations are in Northwest-Europe (concentrated in Paris and London), North-America (concentrated in New York and San Francisco) and Northwest-Asia (concentrated in Beijing and Tokio). The 3 stock exchanges situated in New York, make New York the most important financial centre in the world. In Europe and East Asia the stock exchanges are spread over different cities. Only New York, Tokio and Northwest-Europe have is a concentration of both the worlds largest corporations and the worlds most important stock exchanges.

The metropolitan economies in Northeast-Asia, India, East-Europe and North-Africa are marked by a strong growth in income and employment during the crisis years between 2007 and 2010. The metropolitan economies in Latin-America and Oceania performed average. The metropolitan economies surrounding the high developed economies of New York and Northwest-Europe show a lesser decrease in income and unemployment than high developed economies.

Economic and monetary unions
The Eurozone, as a large economic and monetary union, is unique in the world. In the coming decades more economical and monetary unions will be formed in Africa (the participating countries sometimes even overlap), South-America and Southwest-Asia. Potential economic and monetary Unions are located in North-America, the Middle-East and Oceania.
Top urban programs in the world
3. Science

Knowledge development regarding knowledge distribution
The top 50 universities in the world are concentrated on the East and West Coast of the USA, around Chicago, in Northwest Europe (mainly London, Paris and Switzerland) and spread over East-Asia and Southeast-Oceania. The countries where the most international congresses take place, are mainly countries with top universities. When specifically looking at cities with the highest concentration of international congresses, it shows that these are not the cities with the top universities.

Knowledge development
The 50 countries top with the highest amount of patent grants relative to the population are situated in North-America, the European Union, Russia and some East-European countries, Japan, South-Korea, Malaysia, Australia and New Zealand. Except China, all countries with top universities are also in the top 50 of countries with the highest amount of patent grants relative to population.
Top urban programs in the world
4. Transport

Passenger traffic
USA has many passenger airports, spread over the country. Between the big cities on the East and West Coast there is a strong air connection. In East-Asia and Oceania air traffic is concentrated between the big cities. These have the largest airports for passenger traffic in Asia.

The largest airports for passenger traffic in Europe are concentrated in Northwest-Europe and in Madrid and Rome. London-New York is the only transcontinental flight in the top 50 passenger flights.

Cargo traffic
East-Asia has the highest concentrations of harbours and cargo airports in the world. Northwest-Europe has a concentration of medium-sized harbours and cargo airports. America has mostly cargo airports, situated more inland, which form concentrated points of cargo transport.
Top urban programs in the world
5. Culture

Cultural topfacilities and international touristic toplocations
A concentration of top museums, opera and concert halls are situated in the European Union and the East Coast of the USA. These facilities are strongly connected to Western Culture, so it is not surprising that there are no concentrations in Asia, except from Japan.
The cities, which are mostly visited by international visitors are located in Europe and the east coast of Asia.

Sporting events
Countries in North-, South-America and Europe have organised, some even more then once, the World Championship Football. Since 2002 the World Championship Football is heading East (Japan, South-Korea and Russia) and South (South-Africa). The Olympic Summer and Winter Games have taken place in Europe, the USA, West-Russia, Northeast Asia and Australia.
At times the World Championship, organised by a country, and the Olympic Games, organised by a city, take place in one country within a couple of years.
Top urban programs in the world
1. Top 30 urban agglomerations between 1950 and 2025.

The average annual growth of the top 30 urban agglomerations between 1950 and 2025 has an upward trend until 2000. Looking at the separate urban agglomerations there are two peaks visible, one in the period 1960-80 and one in the period 1990-2005. The period between 1960-80: Cities in Latin-America (Sao Paulo, Buenos Aires, Rio de Janeiro, Mexico City, Bogota), Northeast-Asia (Tokio, Osaka-Kobe en Seoul), West Coast of USA (Los Angeles-Long Beach-Santa Ana) and Paris have the largest annual growth. After 1985 most of these cities have had an annual growth lower than the average growth. After 2015 all of these cities will have an annual growth lower than the average growth.

The period between 1990-2005: Cities in East-China (Shangai, Beijing, Shenzen, Guangzhou, Hong Kong), West-America (New York-Newark and Chicago) and Europe (London and Moscow) have the largest annual growth. After 2025 these cities grow less strong and after 2025 they are all below the average of the top 30. Cities in West-Asia (New Delhi, Dhaka, Mumbai, Karachi and Calcutta) have had a strong growth since 1985. Around 2000 there is a peak, then a decline for a decade and from 2010 on their annual growth rises again far above the average annual growth.

The top 30 urban agglomerations have known a distinctive geographical shift between 1950 and 2025:

<table>
<thead>
<tr>
<th>Region</th>
<th>1950</th>
<th>2000</th>
<th>2025</th>
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</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1</td>
<td>2</td>
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<td>Asia</td>
<td>7</td>
<td>16</td>
<td>15</td>
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<td>Europe</td>
<td>11</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Latin-America</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>North-America</td>
<td>7</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Highest population in top 30</td>
<td>12,34 million</td>
<td>34,45 million</td>
<td>37,09 million</td>
</tr>
<tr>
<td>Lowest population in top 30</td>
<td>1,76 million</td>
<td>6,67 million</td>
<td>9,94 million</td>
</tr>
</tbody>
</table>

Top urban programs in cities

Type 1

Type 2

Type 3

Type 4
2. Population and urban programs

As a basis for further research, the 30 largest urban agglomerations in the world in 2010 and in 2025 were used. This resulted in a list of 33 urban agglomerations. Out of the annual growth of these 33 urban agglomerations, 4 types can be distinguished. The 4 types each define a different phase of the growth (by population) of a city.

Type 1: The annual growth of the urban agglomeration is increasing between 2000-25 and it is around the average annual growth of all the urban agglomerations.

Type 2: The annual growth of the urban agglomeration is increasing between 2000-25 and it is higher than the average annual growth of all the urban agglomerations.

Type 3: The annual growth of the urban agglomeration is decreasing between 2000-25 and it was at its peak between 1985-2000.

Type 4: The annual growth of the urban agglomeration is decreasing between 2000-25 and it was at its peak between 1955-1985.

The size of the population of the urban agglomeration (all the urban agglomerations have at least 6.7 million inhabitants) has no real influence on the presence of global top facilities, but there is a correlation between the growing phase of an urban agglomeration and the presence of global top facilities. Urban agglomerations in the first phase have a national or international political centre and have a top traffic infrastructure. In the second phase top economic facilities are added. In phases 3 and 4 cities start to score on all the metropolitan functions. Science and culture mostly develop together.
3. The urban agglomerations in the world

The European urban agglomerations have a high rate of top facilities and a low number of inhabitants.
The North-American urban agglomerations have a high rate of top facilities and a medium to low number of inhabitants.
The Latin-American urban agglomerations have a low rate of top facilities and a mix of high and low number of inhabitants.
The East Asian urban agglomerations have a mix of low and medium rate of top facilities and a mix of low and high number of inhabitants.
The Southwest Asian urban agglomerations have a low rate of top facilities and a mix of medium and high number of inhabitants.
The African urban agglomerations have a low rate of top facilities and a low number of inhabitants.
Top urban programs in cities