UN HABITAT
FOR A BETTER URBAN FUTURE

Measuring the Livability of Cities

Approaches, Experiences and Lessons

The City Prosperity Index

CPI

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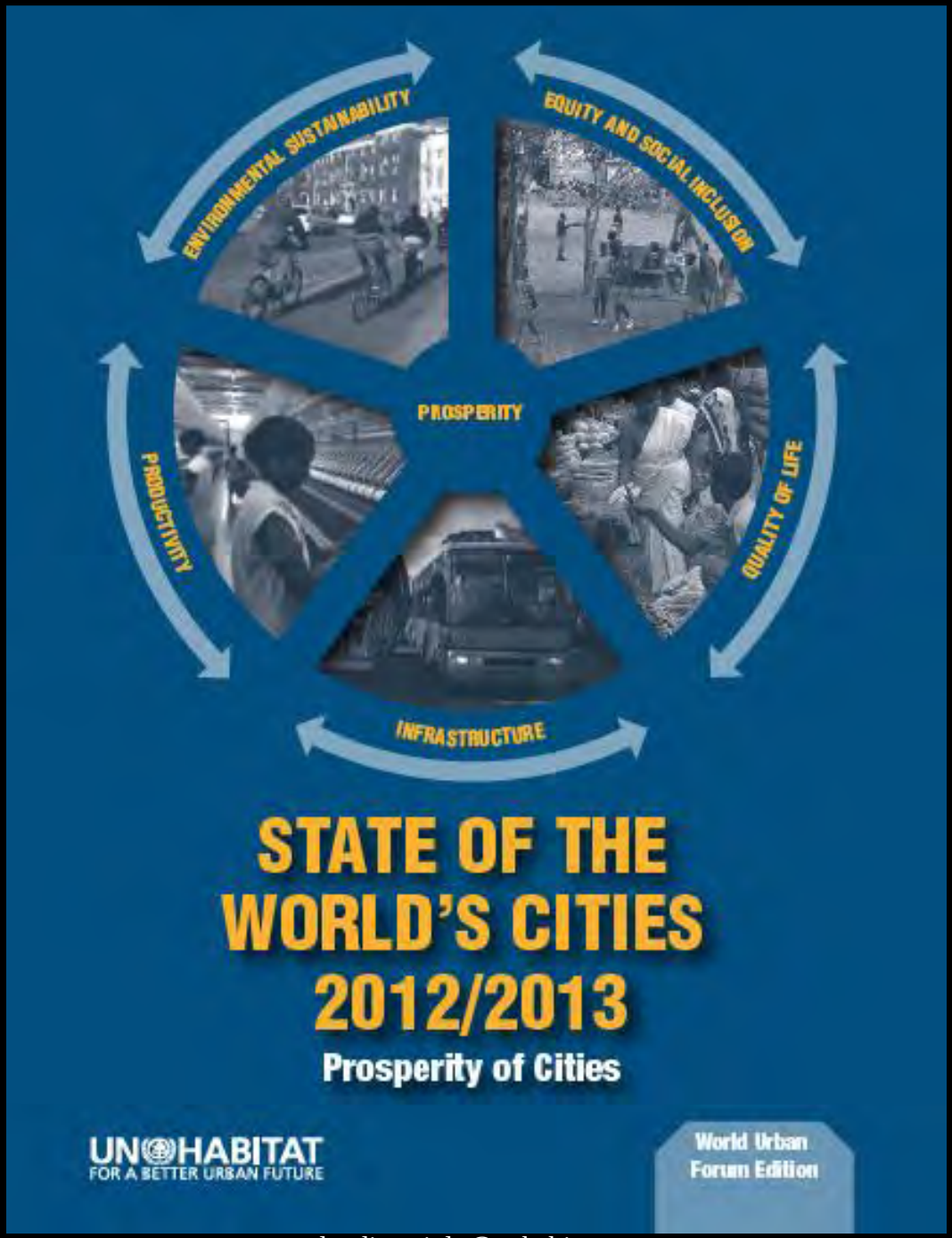
ENVIRONMENTAL SUSTAINABILITY
EQUITY AND SOCIAL INCLUSION
PROSPERITY
PRODUCTIVITY
QUALITY OF LIFE
INFRASTRUCTURE
STATE OF THE WORLD'S CITIES 2012/2013
Prosperity of Cities
UN HABITAT
FOR A BETTER URBAN FUTURE
World Urban Forum Edition

7.

Understanding the Notion of Prosperity:

the economy of scale and the comparative advantages of urban agglomeration generate wealth and if managed adequately also prosperity and broader accessibility to public services.

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Measuring Prosperity

- What gets measured, gets done!
- Measuring a society's overall well being cannot be limited to GDP-gross domestic product (a country's total production of goods and services)
- **Intangible dimensions (something relevant to our life in the city needs to get measured as well):** quality of life, happiness, feeling safe and secure, sense of belonging, identify with place, freedom of choice, having a say in the future of my city and neighborhood, feeling respected and empowered

Source: SWCR 2012.

PROSPERITY: Seeking a common understanding

1. Enhance the public realm, expand public goods and consolidate rights to the 'commons'.
2. Safeguard public goods and collective interests to ensure development of today does not jeopardize the opportunities of future generations.
3. Prosperity is about things going well for all of us, going well being a common human concern
4. It is about our well being
5. Not only measuring the GDP growth, the GDP per capita growth
6. It is more than only economics

Source: SWCR 2012.

PROSPERITY: Seeking a common understanding

Having a say in the future of one's city and neighborhood;

Belonging to a thriving community

Having access to resources and opportunities to realize one's dream

A prosperous life includes non-material and non-tangible dimensions:

Living in dignity in a city that respects diversity and does not discriminate or segregate.

Living in an environmentally sound and sustainable living conditions

Having one's right recognized, protected and fulfilled

Source: SWCR 2012.

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3. Having access to resources and opportunities to realize one's dream
4. Having one's right recognized, protected and fulfilled
5. Living in an environmentally sound and sustainable living conditions
6. Living in dignity in a city that respects diversity and does not discriminate or segregate.

Source: SWCR 2012.

SEEKING THE MEANING OF PROSPERITY:

1. Life satisfaction remaining unchanged in spite of economic growth
2. Declining percentage of people ‘feeling happy’ in spite of increasing real incomes
3. Happiness Paradox or Easterlin Paradox (Richard Easterlin) empirically demonstrated leading countries to seek for alternative indicators to measure societal progress
4. Contrasting to cities seeking cardinal indicators and hard metrics including inflation rates, GDP, FDI
5. More attention to residents’ perceptions, customers’ satisfaction

Source: SWCR 2012.

The UN-Habitat City Prosperity Index

- Cities can take different paths to prosperity.
- UN-Habitat views development as a non-linear, non-sequential and complex process and recognizes that development paths are differentiated and unique.
- Still, actions and policies implemented by governments to increase prosperity and the outcomes of these policies can be measured to provide an indication of how solid or weak are the factors of prosperity available to any individual urban area.

Source: SWCR 2012.

Expanding Prosperity for All Citizens

- **City is a Human Construct**
- Human interventions enable cities to enhance their potential as engines of today's and tomorrow's **prosperity**.
- Well-managed urbanization stands out as the new comparative advantage in the 21st century
- Thus a city well managed and well planned with thrive.
- Government policies, corporate strategies, human capital, capital investments, strategic decisions, all impact on cities and therefore on its ability to generate prosperity and wealth for its inhabitants.

Source: SWCR 2012.

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One fundamental question: how do we measure the performance of cities and the outcome of public policies?

São Paulo

Seeking Attributes of Prosperity in Cities

UN-Habitat undertook a perception survey amongst local experts in 50 cities in the world (2011)

In comparison to productivity, quality of life and infrastructure, municipal authorities perceive equity and environmental sustainability as least important.

Survey:
Governments should adopt policies in areas like affordable public transport, well-planned public spaces, sports, recreational facilities, security, safety and LED

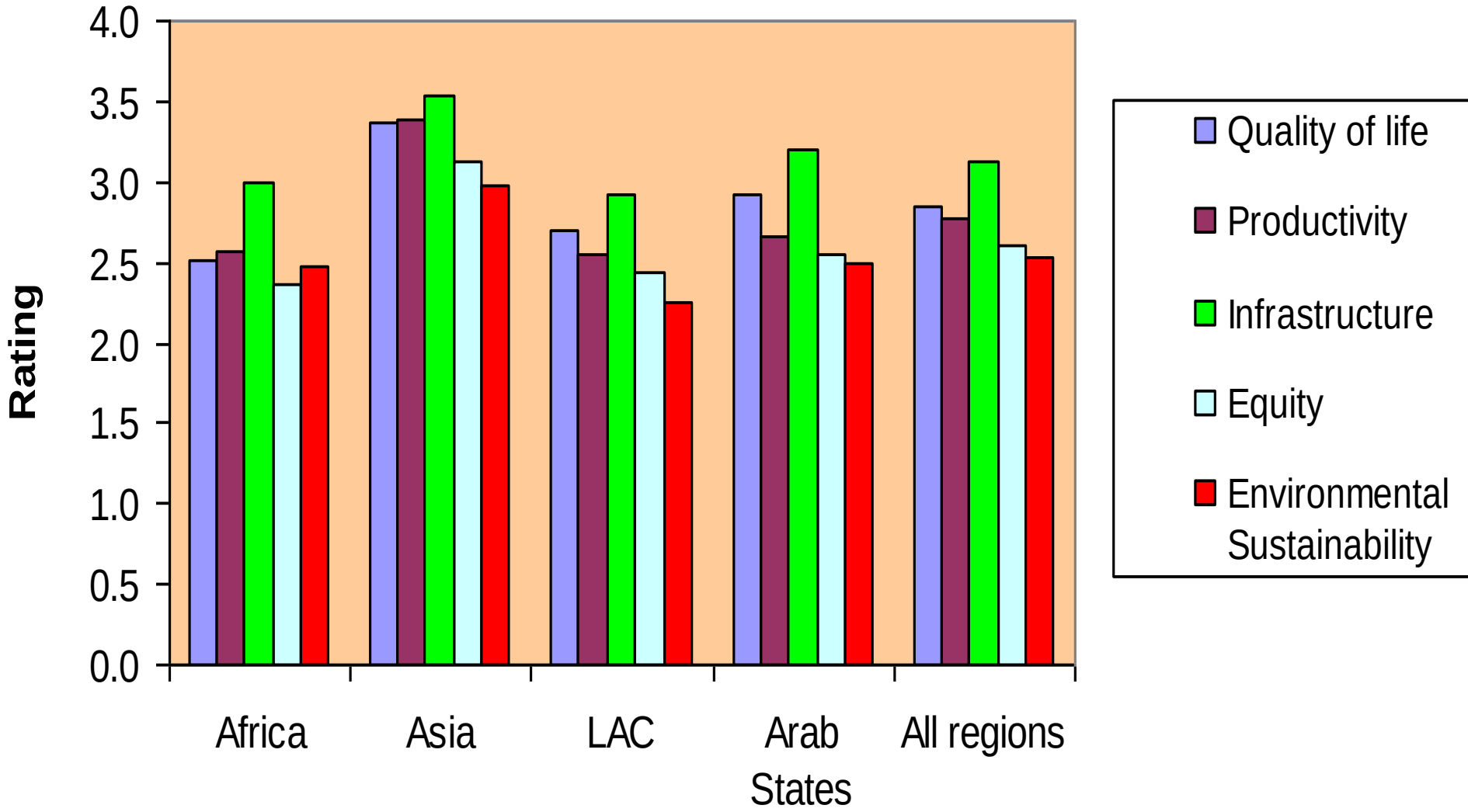
This suggests that city authorities must pay more attention to the equity dimension of prosperity in response to residents' concerns.

Source: SWCR 2012.

What attribute makes a difference in achieving prosperity?

Survey Outcome

Source: SWCR 2012.

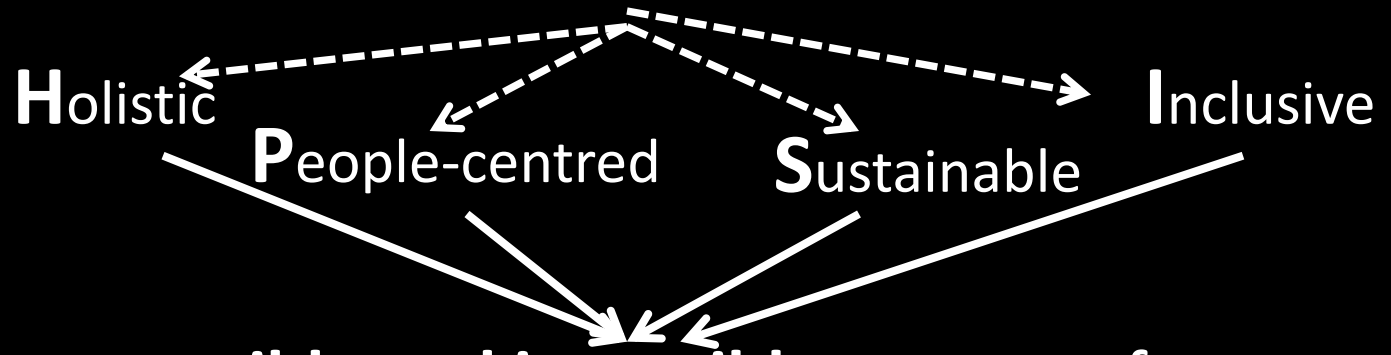


Defining a Prosperous City

Source: SWCR 2012.

1. **Productivity:**	Contributes to economic growth, generates income, provide decent jobs and equal opportunities…
2. **Infrastructure development**	Provides adequate infrastructure in order to enhance mobility, productivity, mobility and connectivity…
3. **Quality of Life**	Enhances of the use of public space in order to increase community cohesion, civic identity…
4. **Equity and Social inclusion**	Ensures the equitable distribution and redistribution of the benefits of a prosperous city, reduces incidence of poverty and slums…
5. **Environmental sustainability**	Values the protection of the urban environment while ensuring growth…

TRANSFORMATIVE CHANGE



1. Integrates **tangible and intangible** aspects of prosperity
2. Responds to the inefficient, unsustainable forms and functionalities of the city of the previous century.

1. Resilient to cope with adverse forces and externalities
2. Public spaces, social diversity and environmental sustainability
3. Harmony and well-being
4. Controlling its ecological footprint
5. Greater heterogeneity and functionality: mix land use, social mix, mixed economic basis
6. Creative spaces

The City of the 21st Century

- More Compact Form
- Balance lower Energy Costs
- Greater Heterogeneity and Functionality
- Safeguards against New Risks
- Higher Provision of Public Goods
- More 'Human Scale'

- ✓ Stimulates local job creation
- ✓ Reduces disaster risks and vulnerabilities
- ✓ Build resilience to adverse forces of nature
- ✓ Creates harmony between the different dimensions of prosperity
- ✓ Recognizes the importance of public spaces.

8.

Measuring Prosperity (the first generation):

Defining the fundamental elements that help cities to become more prosperous and generate the benefits of urbanisation.

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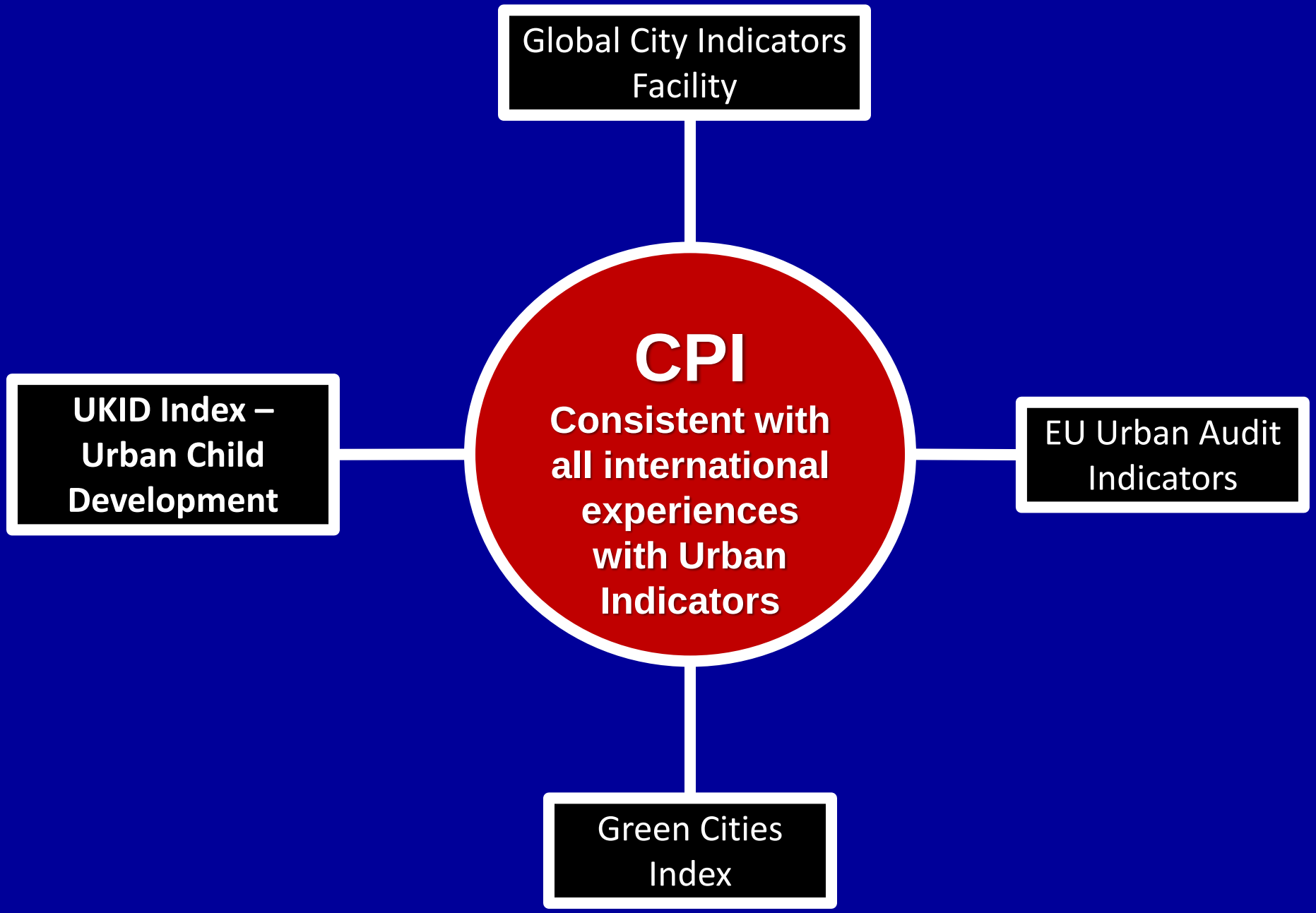
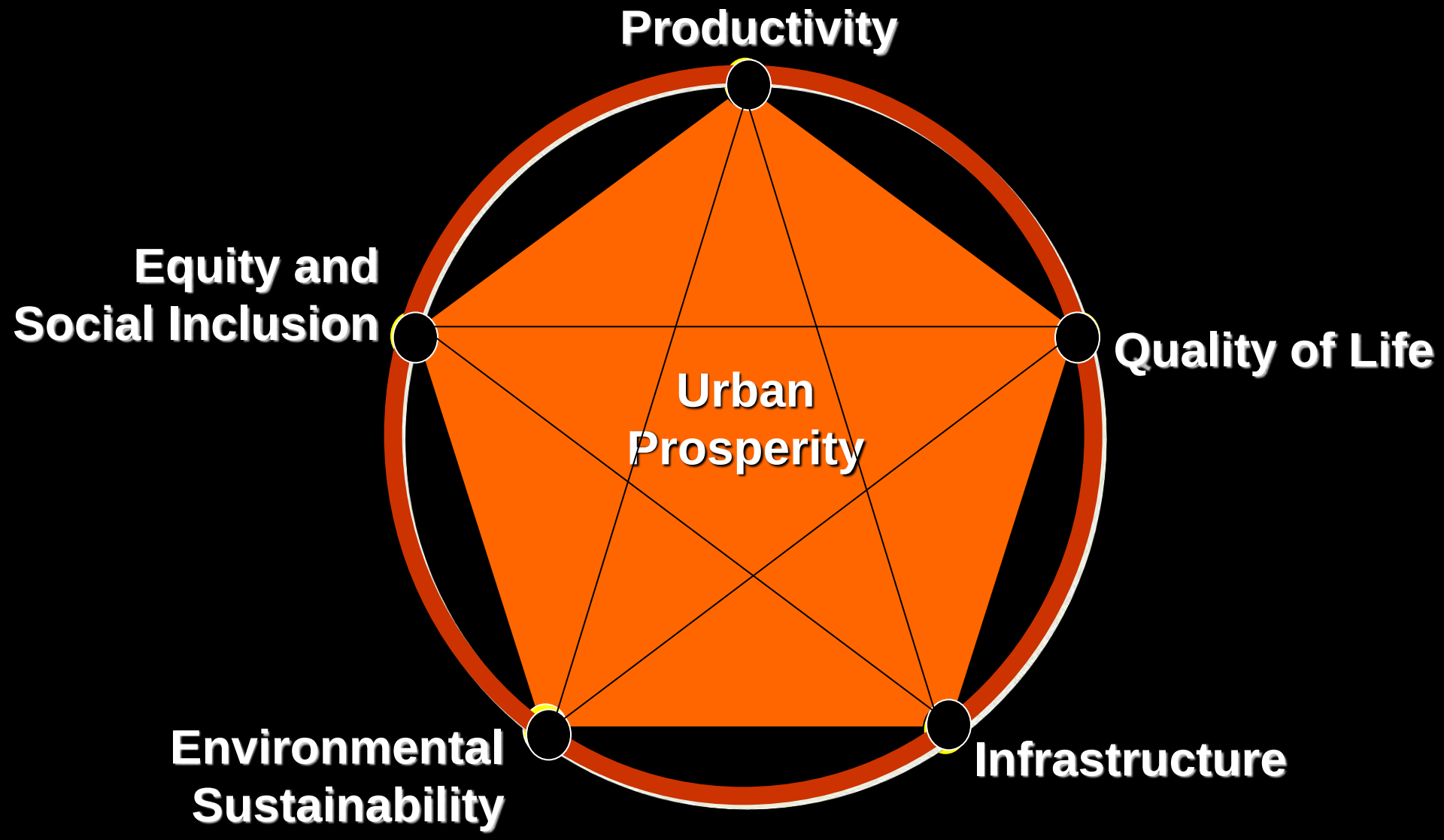
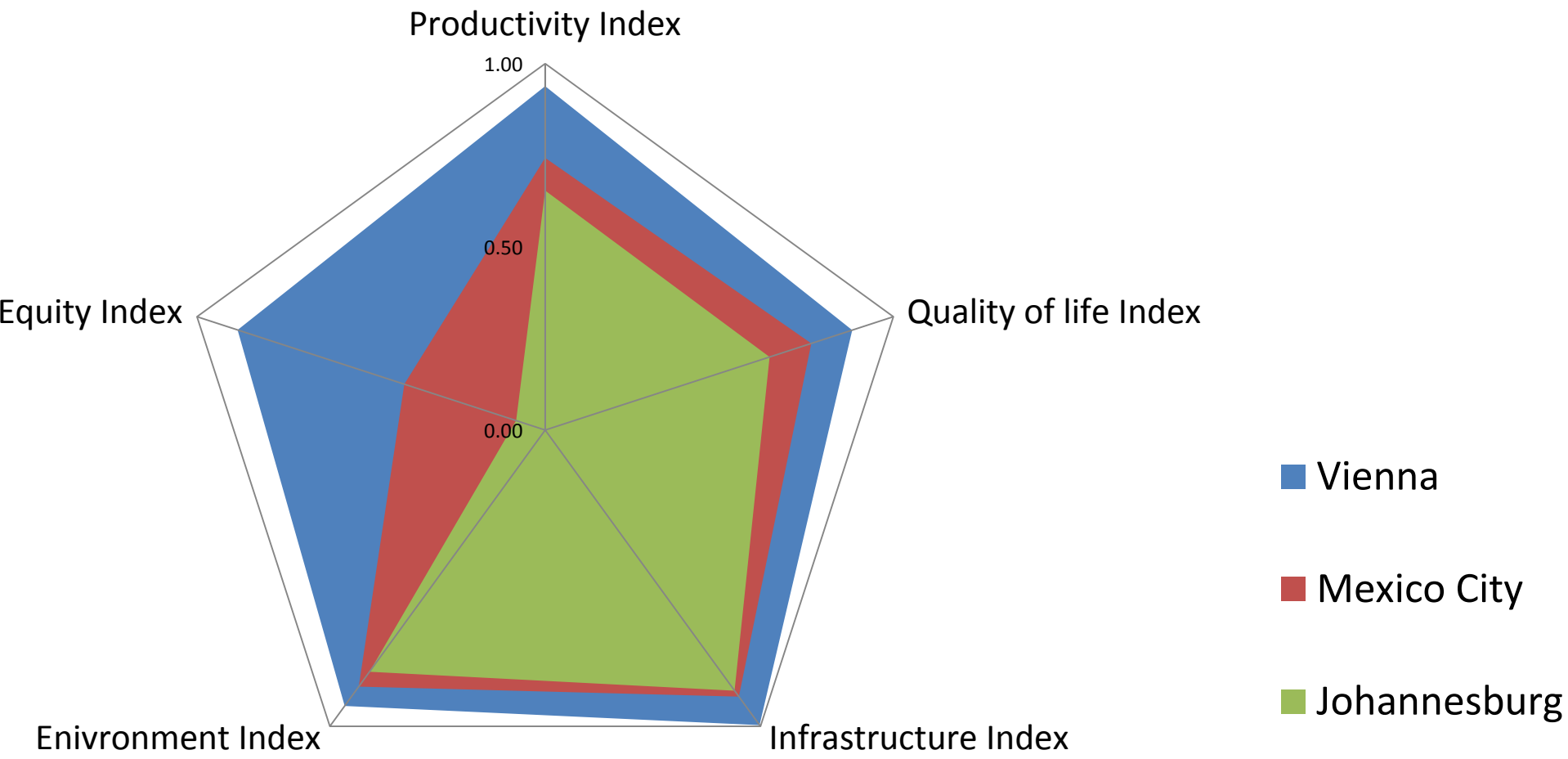
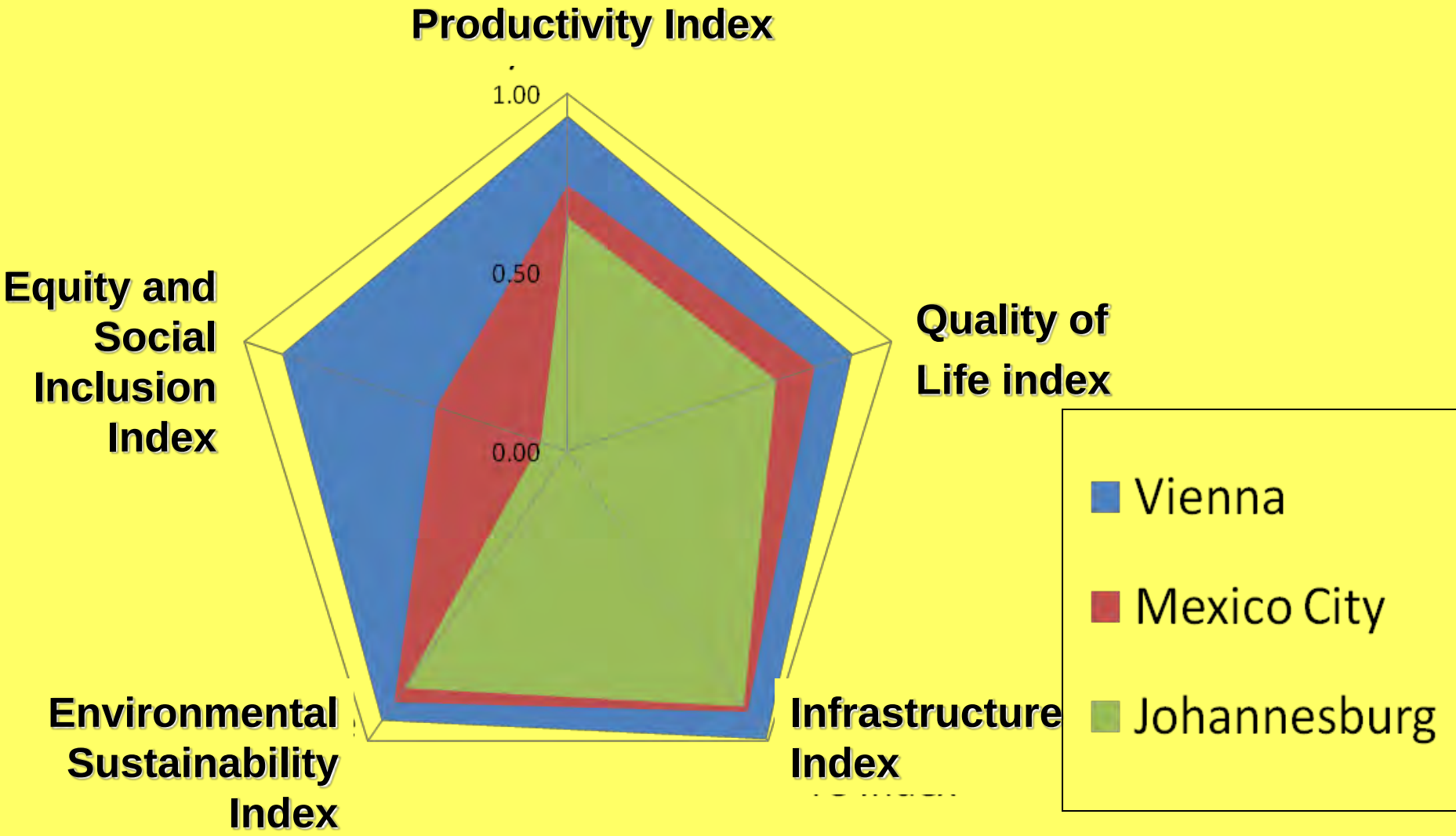

Global City Indicators Facility
CPI
Consistent with all international experiences with Urban Indicators
UKID Index – Urban Child Development
EU Urban Audit Indicators
Green Cities Index

The Five 'Spokes' of Urban Prosperity

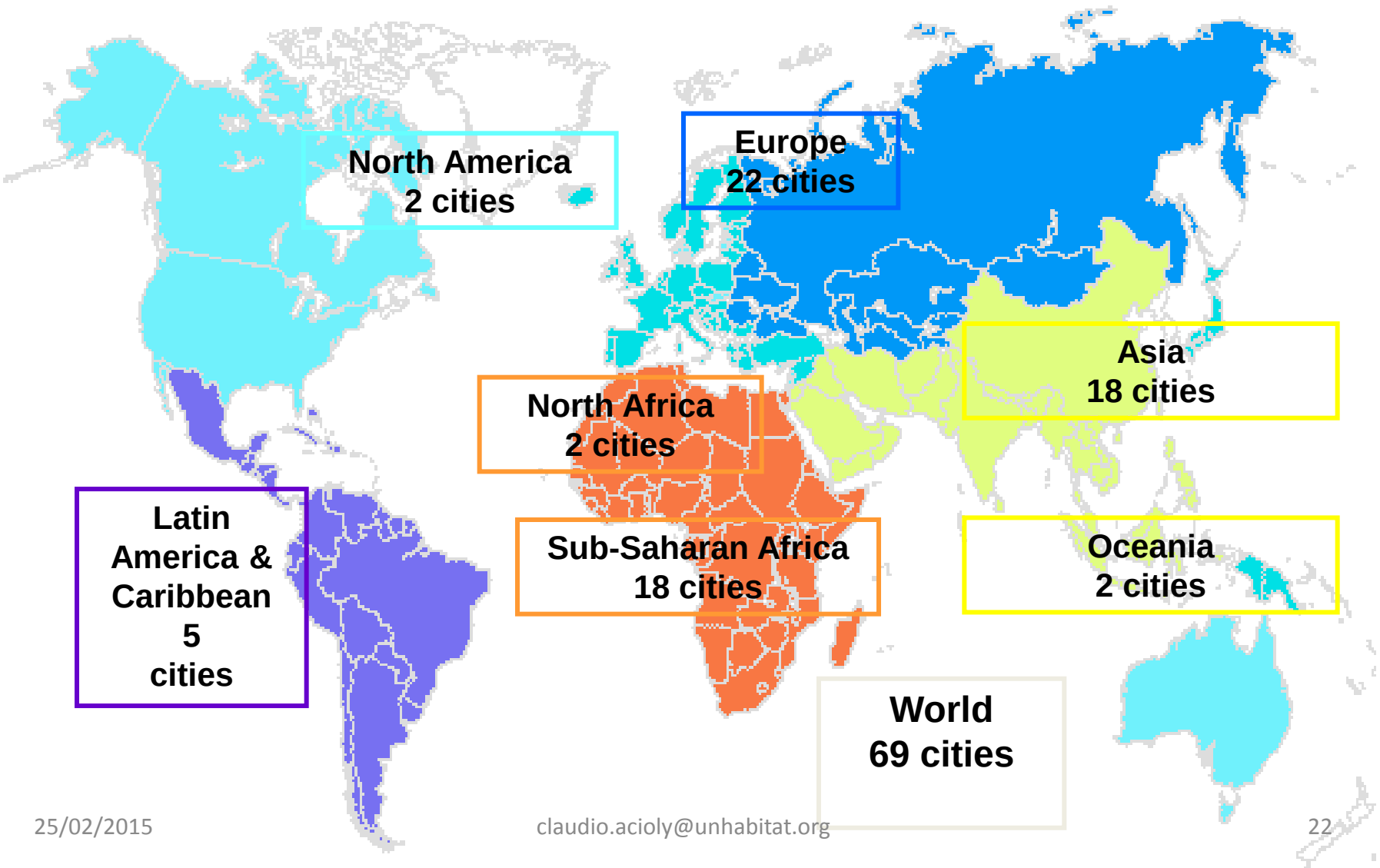


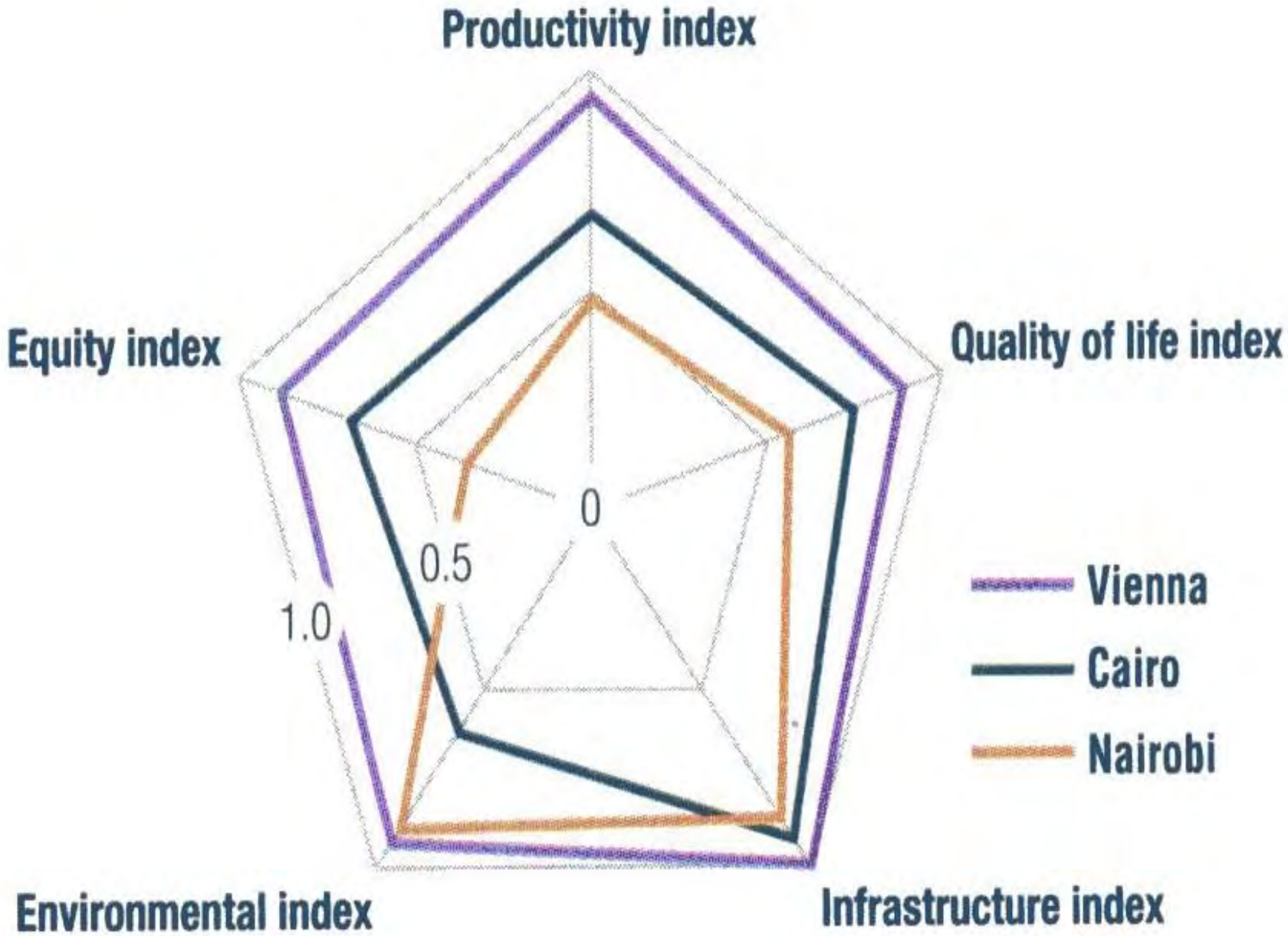

Productivity Index
1.00
0.50
0.00
Quality of life Index
Infrastructure Index
Enivronment Index
Equity Index
Vienna
Mexico City
Johannesburg

Visualizing Prosperity:



Global estimation of CPI of 69 cities published to date




Productivity index
Equity index
Quality of life index
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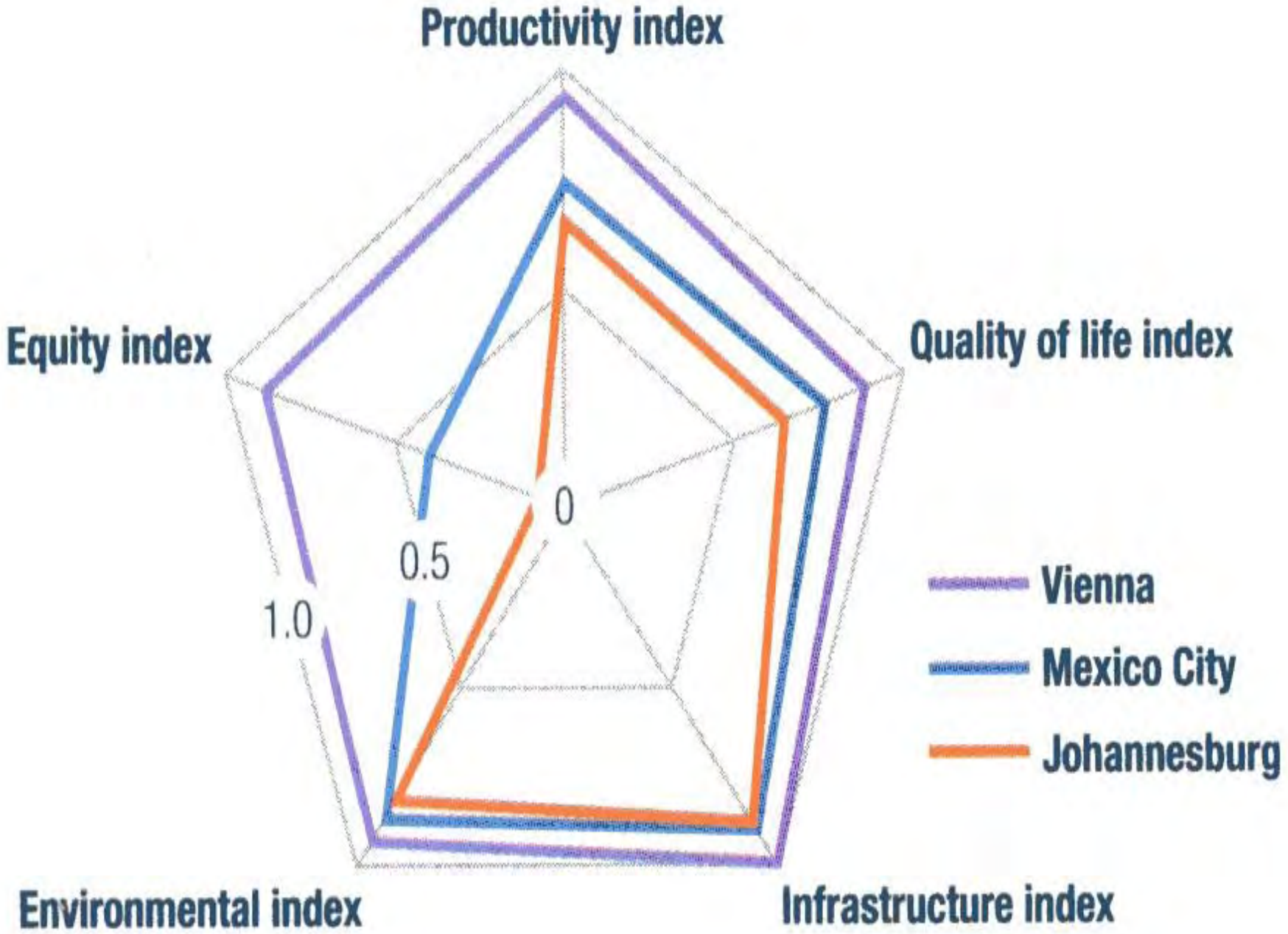
Vienna
Cairo
Nairobi
Environmental index
Infrastructure index


Productivity index
Quality of life index
Infrastructure index
Environmental index
Equity index
0
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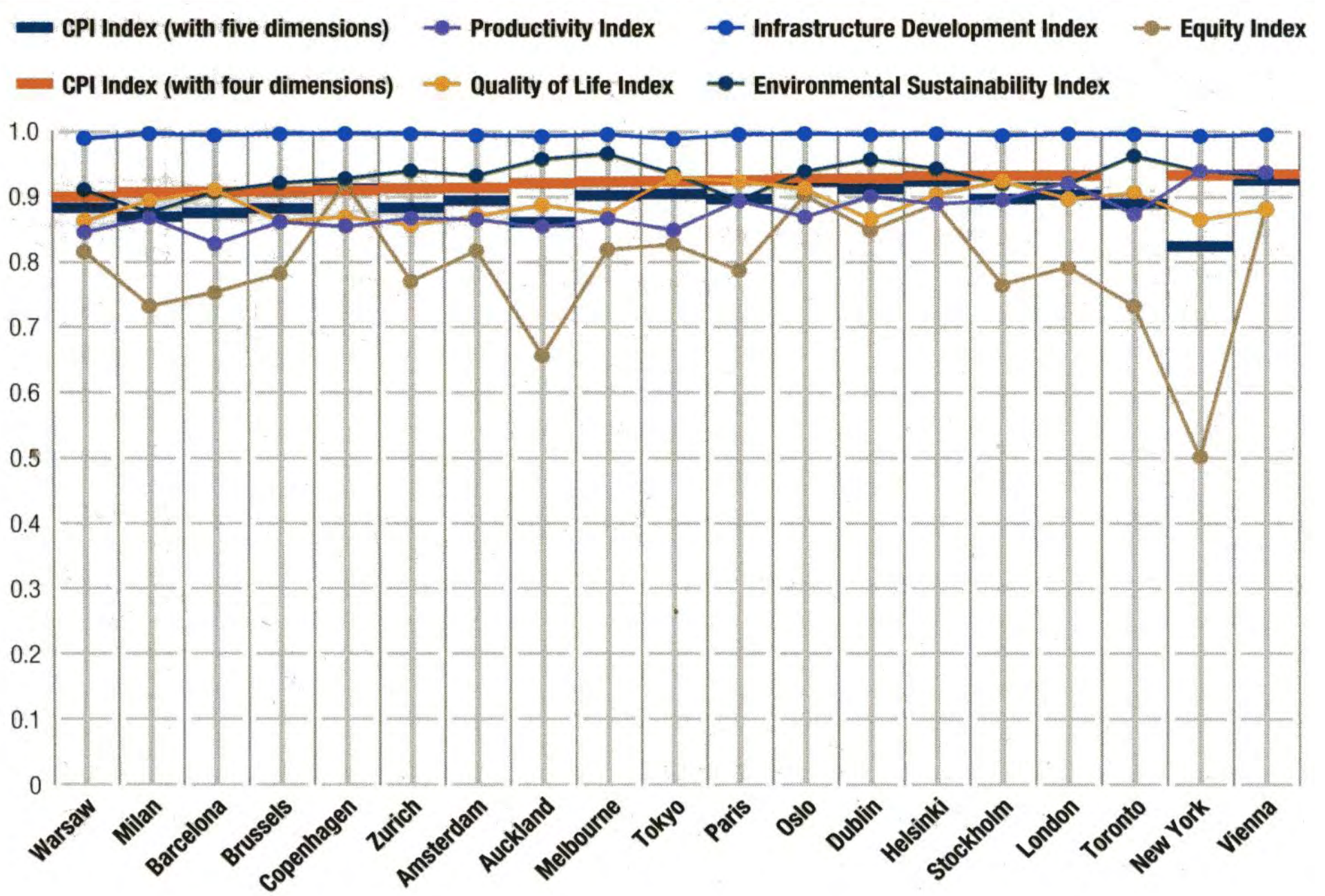
Vienna
Mexico City
Johannesburg

Cities with very solid prosperity factors

Source: SWCR 2012.



Urban Prosperity

Source: SWCR 2012.

Cities with a very solid prosperity factors (0.9 and above) are well developed overall.

FEATURES:

1. **Good governance, urban planning, laws, regulations and institutional frameworks ensure that no particular dimension of prosperity gains prevalence to the detriment of the others.**
2. **High volumes of goods and services**
3. **Strong economic fundamentals and high productivity.**
4. **Their population live longer and are well educated.**
5. **Infrastructure available without spatial distortions**
6. **The urban environment is well managed.**

From Metrics to Policies:
The policies implications and outcomes of CPI

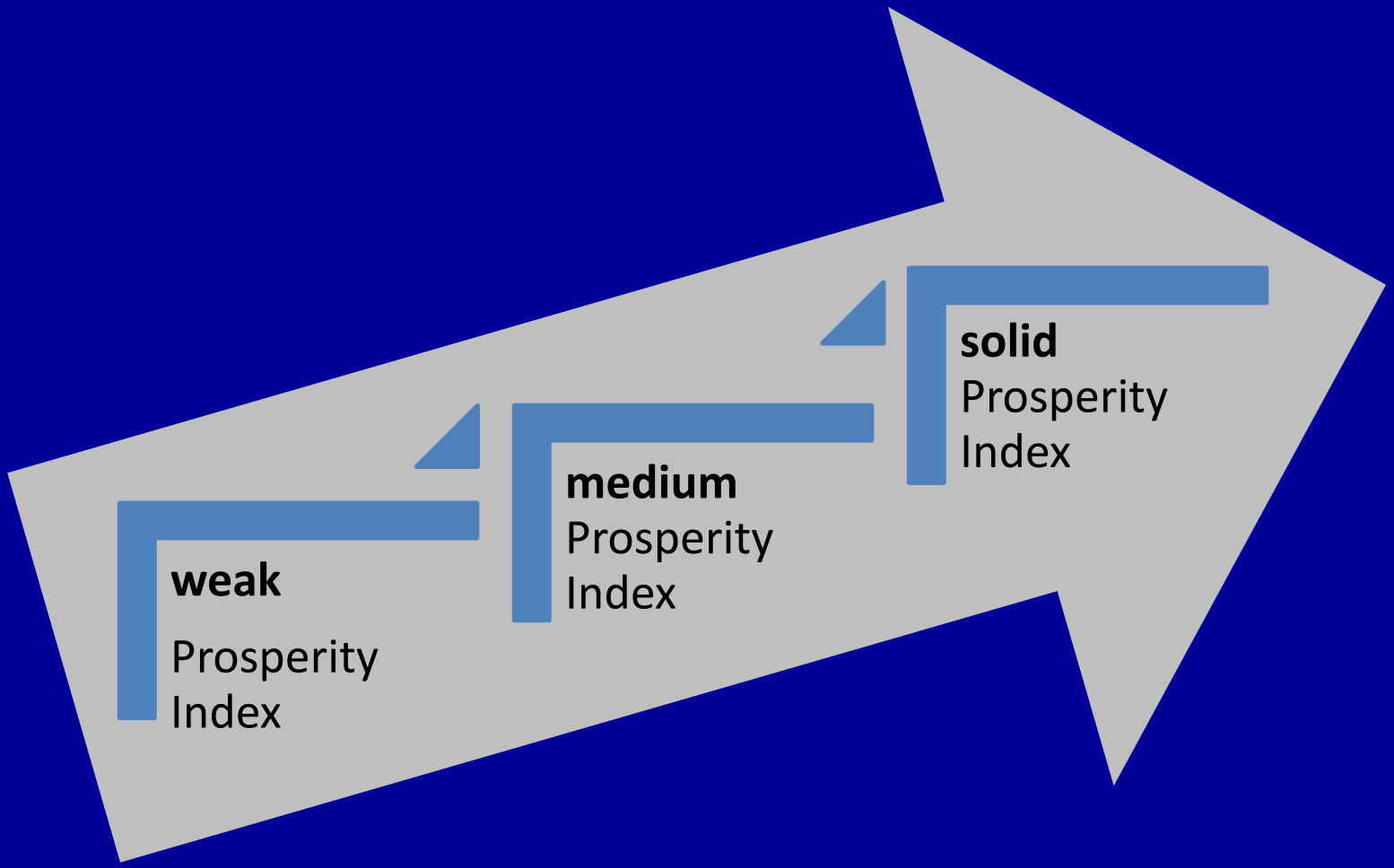


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Table 1

City Prosperity Index and components

Source: SWCR 2012.

Country	City	City Prosperity Index (CPI) with 5 Dimensions	City Prosperity Index (CPI) with 4 Dimensions*	Productivity Index	Quality of life Index	Infrastructure Index	Enivronment Index	Equity Index
Austria	Vienna	0.925	0.936	0.939	0.882	0.996	0.932	0.883
United States	New York	0.825	0.934	0.940	0.866	0.994	0.941	0.502
Canada	Toronto	0.890	0.934	0.874	0.907	0.997	0.963	0.733
United Kingdom	London	0.904	0.934	0.923	0.898	0.997	0.920	0.793
Sweden	Stockholm	0.898	0.934	0.896	0.925	0.995	0.921	0.767
Finland	Helsinki	0.924	0.933	0.890	0.905	0.997	0.944	0.890
Ireland	Dublin	0.913	0.929	0.901	0.867	0.996	0.958	0.850
Norway	Oslo	0.924	0.929	0.870	0.914	0.997	0.939	0.903
France	Paris	0.897	0.927	0.895	0.925	0.996	0.895	0.788
Japan	Tokyo	0.905	0.925	0.850	0.931	0.989	0.936	0.828
Australia	Melbourne	0.903	0.925	0.867	0.875	0.996	0.967	0.820
New Zealand	Auckland	0.862	0.922	0.854	0.889	0.994	0.958	0.657
Netherlands	Amsterdam	0.895	0.915	0.866	0.872	0.995	0.933	0.818
Switzerland	Zurich	0.884	0.914	0.868	0.858	0.997	0.941	0.772
Denmark	Copenhagen	0.913	0.911	0.855	0.871	0.997	0.928	0.922
Belgium	Brussels	0.883	0.910	0.862	0.864	0.997	0.922	0.783
Spain	Barcelona	0.876	0.909	0.829	0.912	0.995	0.908	0.755
Italy	Milan	0.870	0.908	0.868	0.895	0.997	0.876	0.733
Poland	Warsaw	0.883	0.901	0.846	0.864	0.990	0.911	0.817
Portugal	Lisbon	0.853	0.899	0.827	0.867	0.995	0.916	0.692
Hungary	Budapest	0.881	0.894	0.808	0.867	0.990	0.921	0.833
Greece	Athens	0.862	0.889	0.800	0.885	0.996	0.884	0.762

Figure 1.1.3

Source: SWCR 2012.

Cities with solid prosperity factors – first category

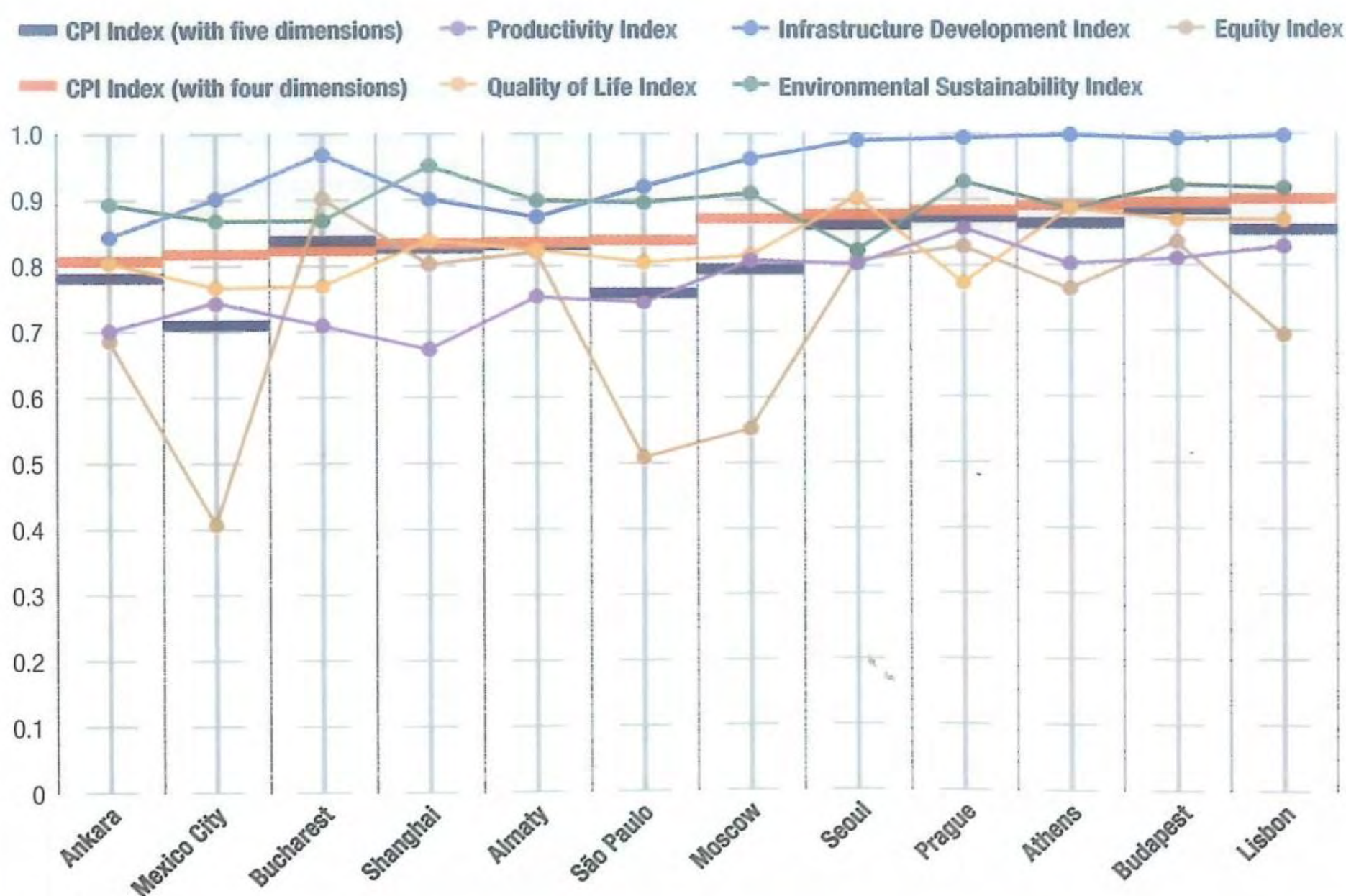


Figure 1.1.4

Cities with solid prosperity factors – second category

Source: SWCR 2012.

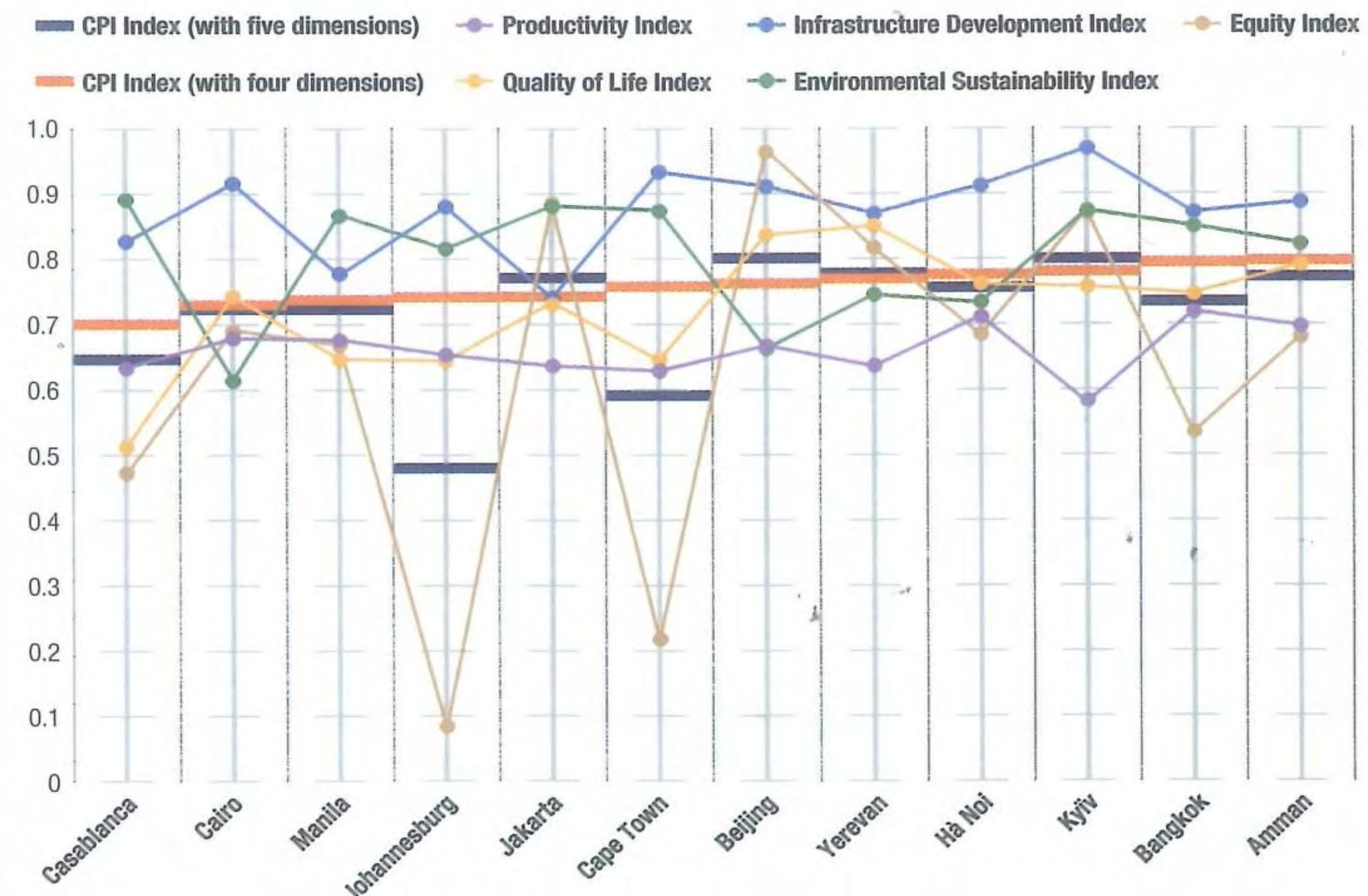
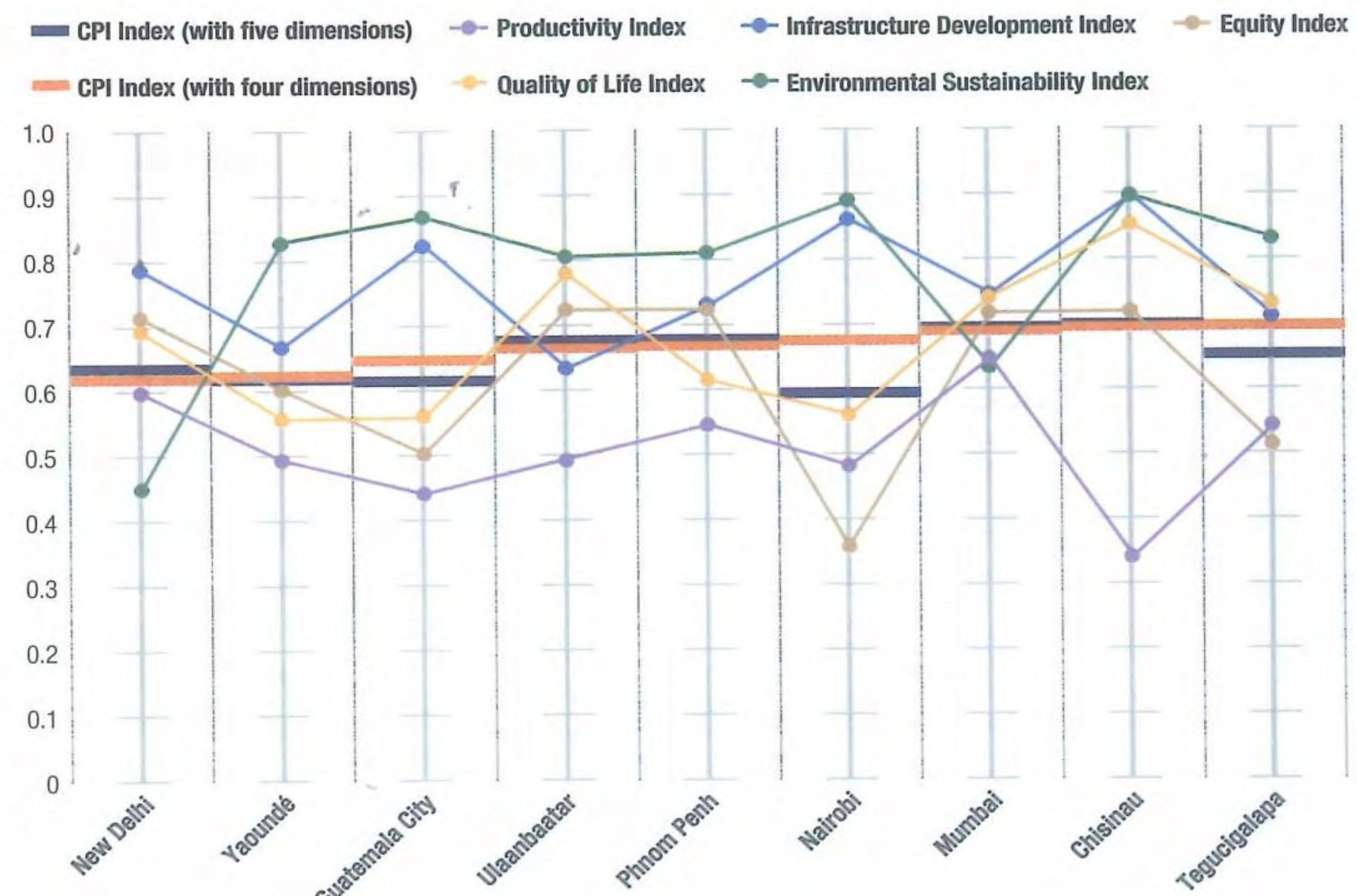


Figure 1.1.5

Cities with moderate prosperity factors

Source: SWCR 2012.



Urban Prosperity

Source: SWCR 2012.

Cities with moderate prosperity factors (CPI: 0.60-0.699).

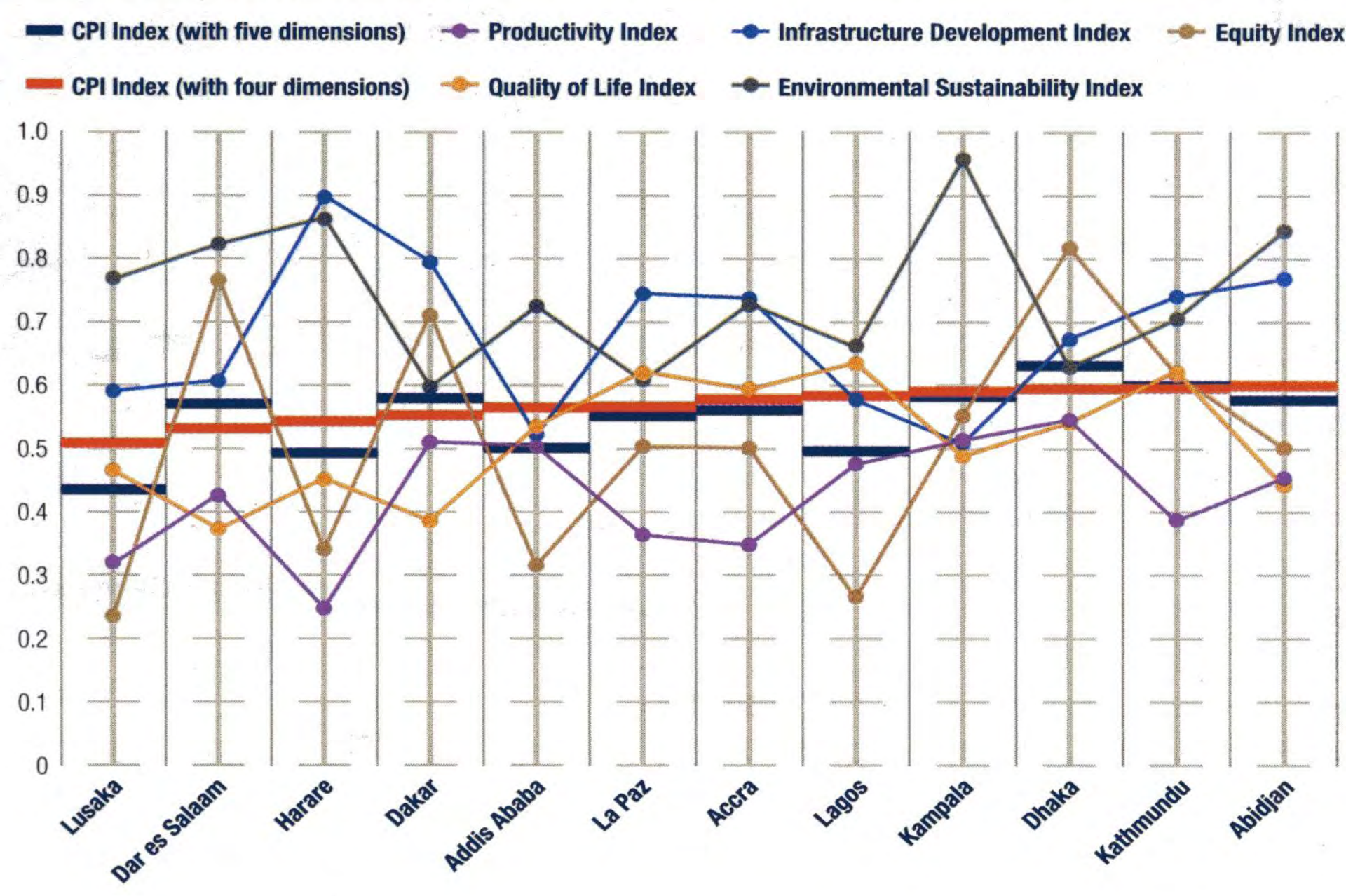
FEATURES:

1. **Presents institutional and structural failures**
2. **Cities with less balanced development feature contrasted patterns**
3. **Socially and economically divided cities (rich x poor)**
4. **Low city product**
5. **Serious environmental problems**

Figure 1.1.6

Cities with weak prosperity factors

Source: SWCR 2012.



Urban Prosperity

Source: SWCR 2012.

Cities with weak prosperity factors (CPI: 0.50-0.59).

FEATURES:

1. **Much remains to be done in terms of quality of life, infrastructure and environment in most of the cities within this bracket.**
2. **Historical structural problems**
3. **chronic inequality of opportunities**
4. **Widespread poverty**
5. **Inadequate capital investment in public goods**
6. **Absence of pro-poor social programmes are critical factors behind such low degrees of prosperity.**

Table 1

City Prosperity Index and components

Source: SWCR 2012.

Country	City	City Prosperity Index (CPI) with 5 Dimensions	City Prosperity Index (CPI) with 4 Dimensions*	Productivity Index	Quality of life Index	Infrastructure Index	Enivronment Index	Equity Index
Kazakhstan	Almaty	0.830	0.833	0.751	0.822	0.872	0.897	0.818
China	Shanghai	0.826	0.832	0.671	0.836	0.900	0.950	0.800
Romania	Bucharest	0.836	0.821	0.707	0.767	0.968	0.867	0.900
Mexico	Mexico City	0.709	0.816	0.743	0.764	0.900	0.866	0.405
Turkey	Ankara	0.780	0.806	0.699	0.802	0.842	0.891	0.683
Jordan	Amman	0.771	0.796	0.697	0.790	0.887	0.824	0.680
Thailand	Bangkok	0.733	0.794	0.719	0.747	0.871	0.850	0.533
Ukraine	Kyïv	0.798	0.781	0.579	0.757	0.968	0.874	0.873
Viet Nam	Hà Noi	0.756	0.776	0.712	0.761	0.912	0.733	0.683
Armenia	Yerevan	0.779	0.769	0.635	0.850	0.870	0.745	0.817
China	Beijing	0.799	0.762	0.667	0.836	0.911	0.663	0.967
South Africa	Cape Town	0.590	0.758	0.628	0.645	0.933	0.875	0.217
Indonesia	Jakarta	0.769	0.743	0.636	0.733	0.741	0.881	0.885
South Africa	Johannesburg	0.479	0.742	0.654	0.645	0.880	0.816	0.083
Philippines	Manila	0.723	0.737	0.676	0.647	0.775	0.868	0.669
Egypt	Cairo	0.722	0.730	0.679	0.743	0.916	0.616	0.692
Morocco	Casablanca	0.647	0.700	0.634	0.513	0.827	0.891	0.472
Honduras	Tegucigalapa	0.652	0.694	0.541	0.729	0.709	0.829	0.510
Moldova	Chisinau	0.698	0.693	0.340	0.850	0.895	0.894	0.717
India	Mumbai	0.694	0.688	0.645	0.739	0.745	0.632	0.715
Kenya	Nairobi	0.593	0.673	0.481	0.559	0.860	0.889	0.357
Cambodia	Phnom Penh	0.677	0.666	0.544	0.613	0.728	0.809	0.722
Mongolia	Ulaanbaatar	0.675	0.664	[illegible]	0.777	[illegible]	[illegible]	[illegible]

Egypt	Cairo	0.722	0.730	0.679	0.743	0.916	0.616	0.692
Morocco	Casablanca	0.647	0.700	0.634	0.513	0.827	0.891	0.472
Honduras	Tegucigalapa	0.652	0.694	0.541	0.729	0.709	0.829	0.510
Moldova	Chisinau	0.698	0.693	0.340	0.850	0.895	0.894	0.717
India	Mumbai	0.694	0.688	0.645	0.739	0.745	0.632	0.715
Kenya	Nairobi	0.593	0.673	0.481	0.559	0.860	0.889	0.357
Cambodia	Phnom Penh	0.677	0.666	0.544	0.613	0.728	0.809	0.722
Mongolia	Ulaanbaatar	0.675	0.664	0.493	0.777	0.632	0.804	0.722
Guatemala	Guatemala City	0.614	0.646	0.440	0.556	0.823	0.866	0.502
Cameroon	Yaoundé	0.618	0.623	0.492	0.555	0.666	0.827	0.600
India	New Delhi	0.635	0.617	0.596	0.690	0.786	0.448	0.712
Côte d'Ivoire	Abidjan	0.578	0.599	0.452	0.440	0.767	0.842	0.500
Nepal	Kathmundu	0.598	0.594	0.385	0.621	0.740	0.704	0.617
Bangladesh	Dhaka	0.633	0.593	0.545	0.539	0.673	0.627	0.817
Uganda	Kampala	0.581	0.590	0.512	0.486	0.507	0.956	0.550
Nigeria	Lagos	0.496	0.582	0.475	0.634	0.576	0.659	0.262
Ghana	Accra	0.560	0.576	0.347	0.592	0.737	0.728	0.500
Bolivia	La Paz	0.551	0.565	0.363	0.621	0.745	0.606	0.502
Ethiopia	Addis Ababa	0.501	0.564	0.503	0.534	0.521	0.724	0.313
Senegal	Dakar	0.581	0.552	0.510	0.384	0.794	0.596	0.712
Zimbabwe	Harare	0.493	0.542	0.246	0.451	0.899	0.864	0.338
United Republic of Tanzania	Dar es Salaam	0.571	0.530	0.427	0.371	0.607	0.822	0.767
Zambia	Lusaka	0.434	0.507	0.316	0.463	0.590	0.766	0.233
Niger	Niamey	0.482	0.456	0.402	0.426	0.485	0.521	0.602
Mali	Bamako	0.491	0.452	0.401	0.416	0.544	0.460	0.683
Madagascar	Antananarivo	0.465	0.446	0.171	0.558	0.511	0.812	0.552
Guinea	Conakry	0.449	0.416	0.133	0.461	0.607	0.809	0.612
Liberia	Monrovia	0.313	0.285	0.048	0.381	0.411	0.886	0.457

*The CPI with 4 dimensions does not include the equity index

Source: United Nations Human Settlements Programme (UN-Habitat), Global Urban Indicators Database 2012.

Source: SWCR 2012.

10.

Refining and further Developing the City Prosperity Index:

Seeking ways to capture spatial dimensions and indicators reflecting spatial structures

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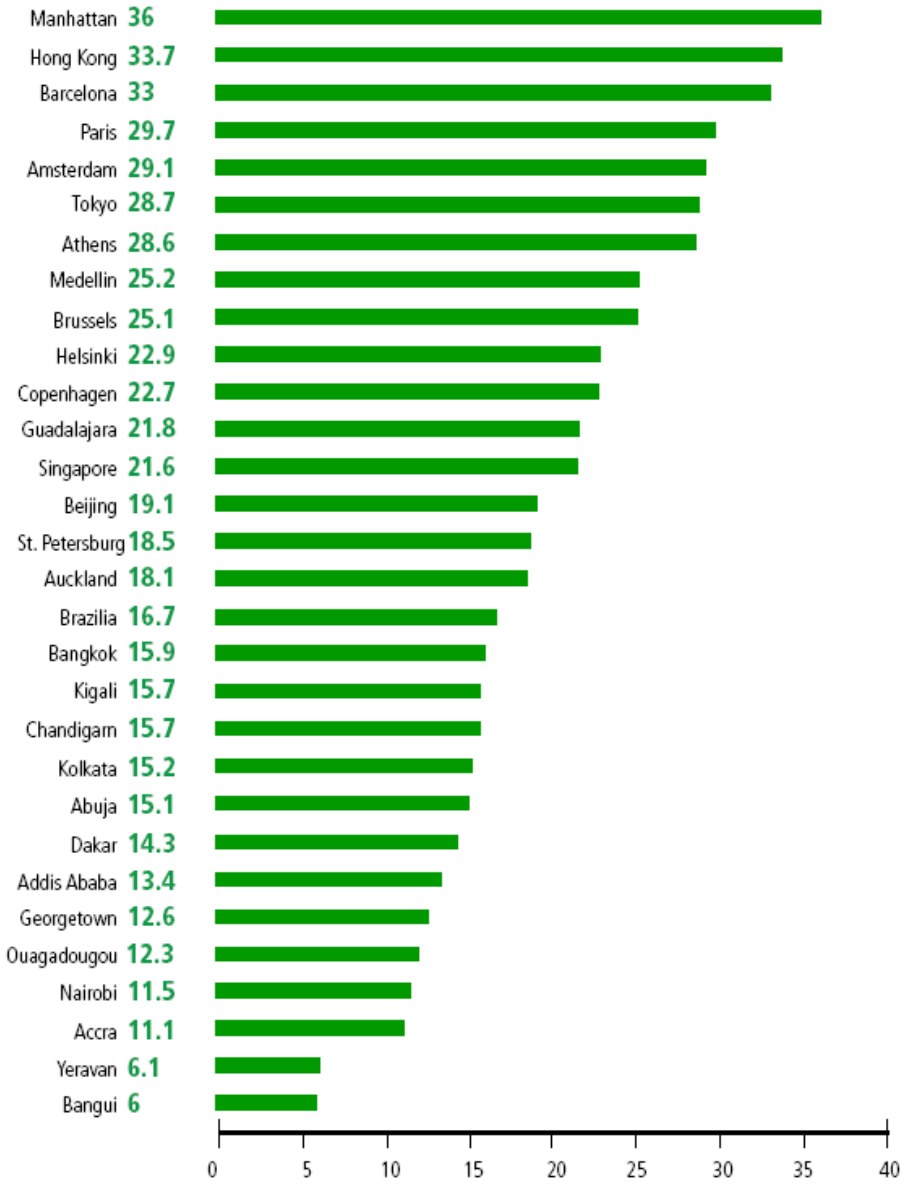
Reconceptualizing the CPI

- Urban form carries the spatial dimention
- Streets and public spaces are linked to efficiency and productivity of urban structures
- Streets contribute to prosperity: infrastructure, quality of life, spatial inclusion, accessibility and productivity
- Land allocation to streets safeguard. public goods

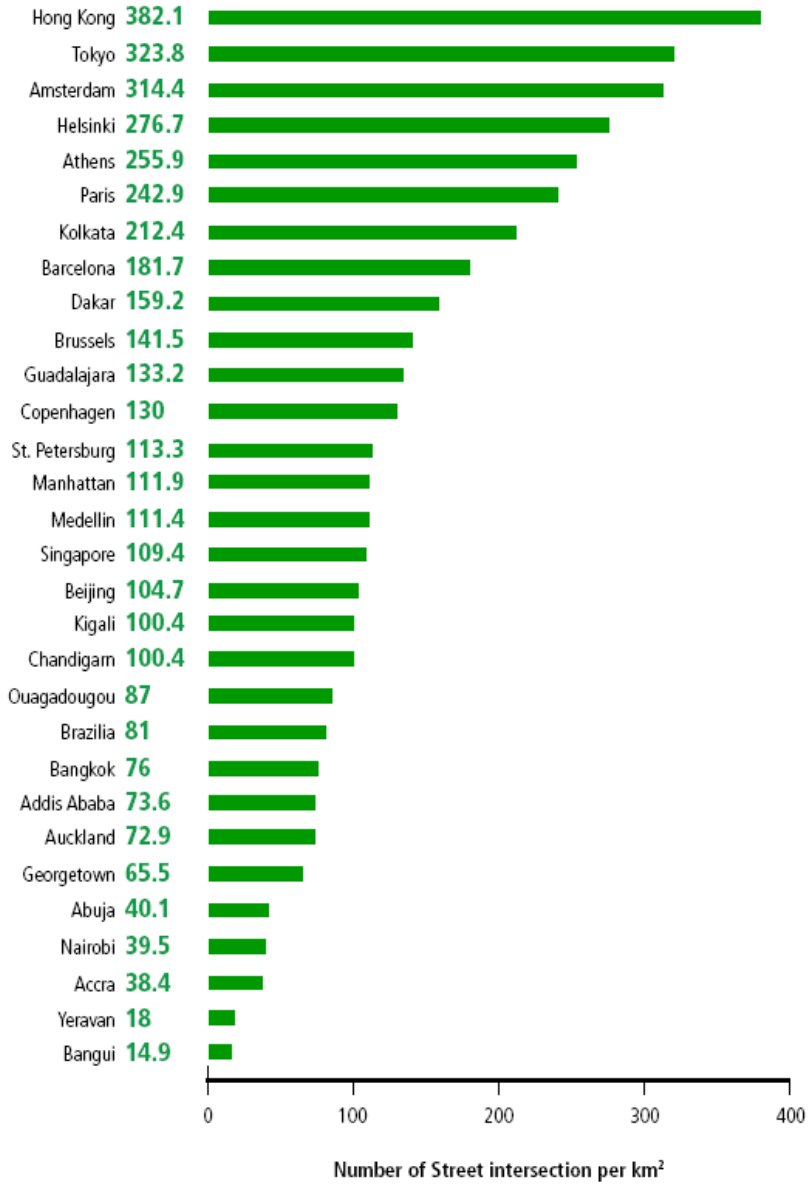
Thirty cities have been selected as a pilot project:

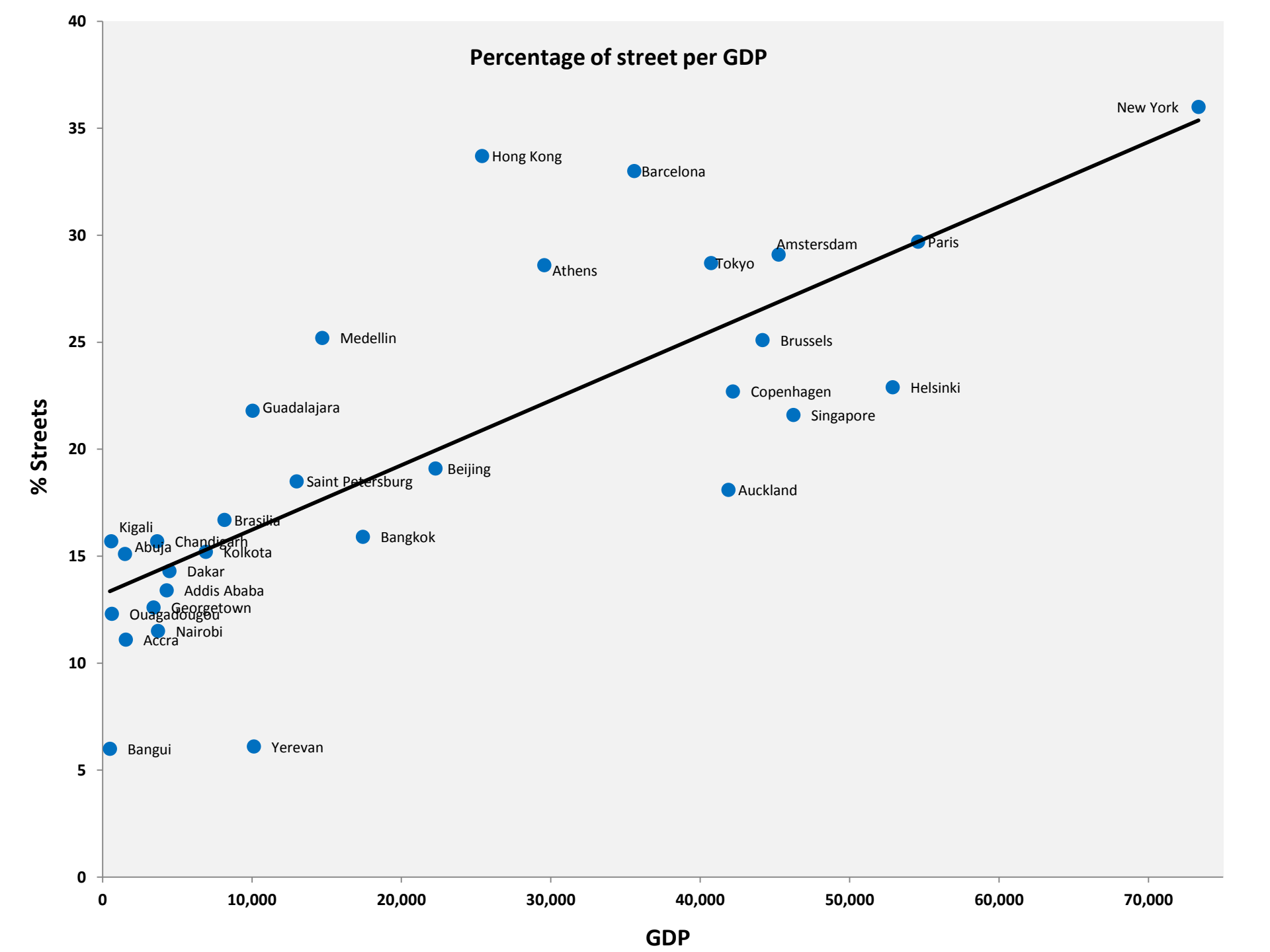
1. Manhattan
2. Hong Kong
3. Barcelona
4. Paris
5. Amsterdam
6. Athens
7. Guadalajara
8. Medellin
9. Brussels
10. Tokyo
11. Helsinki
12. Copenhagen
13. Beijing
14. St. Petersburg
15. Singapore
16. Brasilia
17. Auckland
18. Bangkok
19. Kigali
20. Chandigarh
21. Kolkata
22. Abuja
23. Ouagadougou
24. Dakar
25. Addis Ababa
26. Georgetown
27. Nairobi
28. Accra
29. Yeravan
30. Bangui

Ranking of selected cities in relation to its land allocated to streets



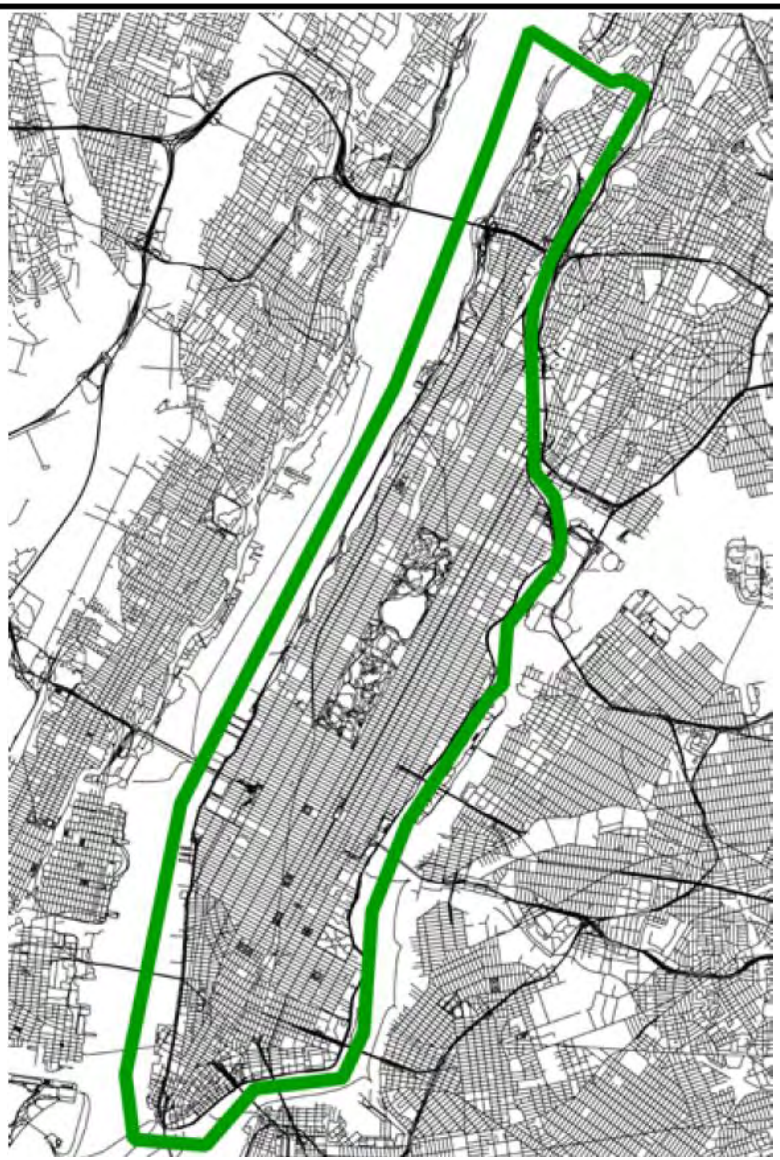
Ranking of cities in relation to number of street intersection per SQ/Km




Percentage of street per GDP
% Streets
GDP
0
5
10
15
20
25
30
35
40
0
10,000
20,000
30,000
40,000
50,000
60,000
70,000
New York
Hong Kong
Barcelona
Amstersdam
Paris
Athens
Tokyo
Medellin
Brussels
Copenhagen
Helsinki
Guadalajara
Singapore
Beijing
Saint Petersburg
Auckland
Brasilia
Kigali
Bangkok
Abuja
Chandigarh
Kolkota
Dakar
Addis Ababa
Georgetown
Ouagadougou
Nairobi
Accra
Bangui
Yerevan

NEW YORK (MANHATTAN)

	Total land area (km²)	Total streets area (km²)	Proportion of streets area (%)	Total streets length (km)	Street density (km/km²)	Average street width (m)	Total intersections (Int)	Intersections density (Int/ Km²)
Centre area	52	19	36	1,188	22.7	15.9	5,863	111.9



The higher the street connectivity, the higher the city prosperity index

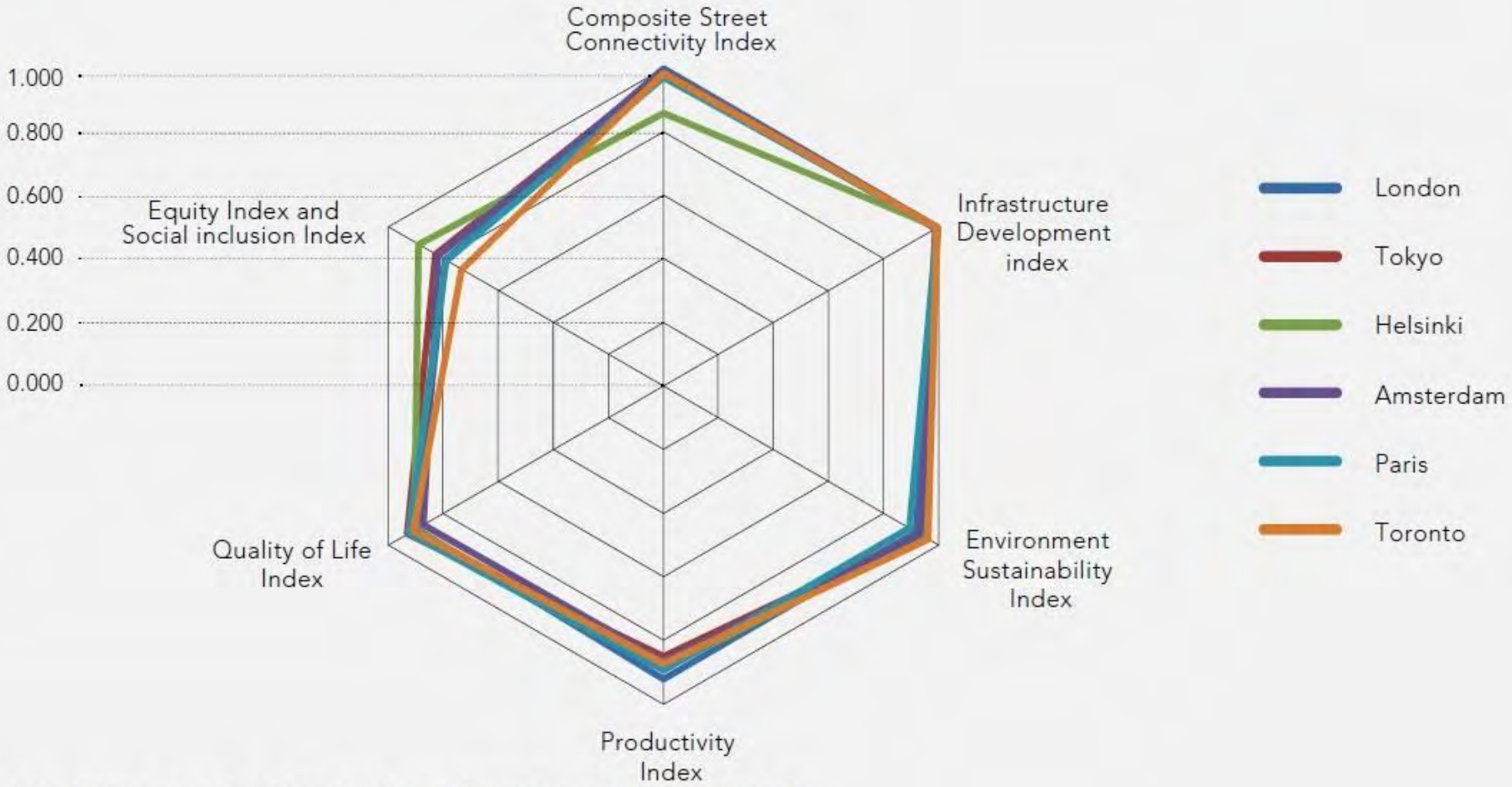
Street Connectivity : parameters of urban form

Infrastructure Development Index (ID)	1. Housing Infrastructure Sub Index (HI)	1. Improved Shelter
		2. Access to Improved Water
		3. Access to Improved Sanitation
		4. Access to Electricity
		5. Sufficient Living Area
		6. Residential Density
	2. Social Infrastructure (SI)	1. Physicians Density
		2. Number of Public Libraries
	3. ICT Sub Index (ICT)	1. Internet Access
		2. Home Computer Access
		3. Average broadband speed
	4. Urban Mobility Sub Index (UM)	1. Use of Public Transport
		2. Average Daily Travel Time (reversed)
		3. Length of Mass Transport Network
		4. Traffic Fatalities (reversed)
		5. Affordability of Transport (reversed)
	5. Street Connectivity (SC)	1. Street Intersection Density
		2. Street Density
		3. Land allocated to streets

Measuring and Testing Co-relations of Street Connectivity in the CPI

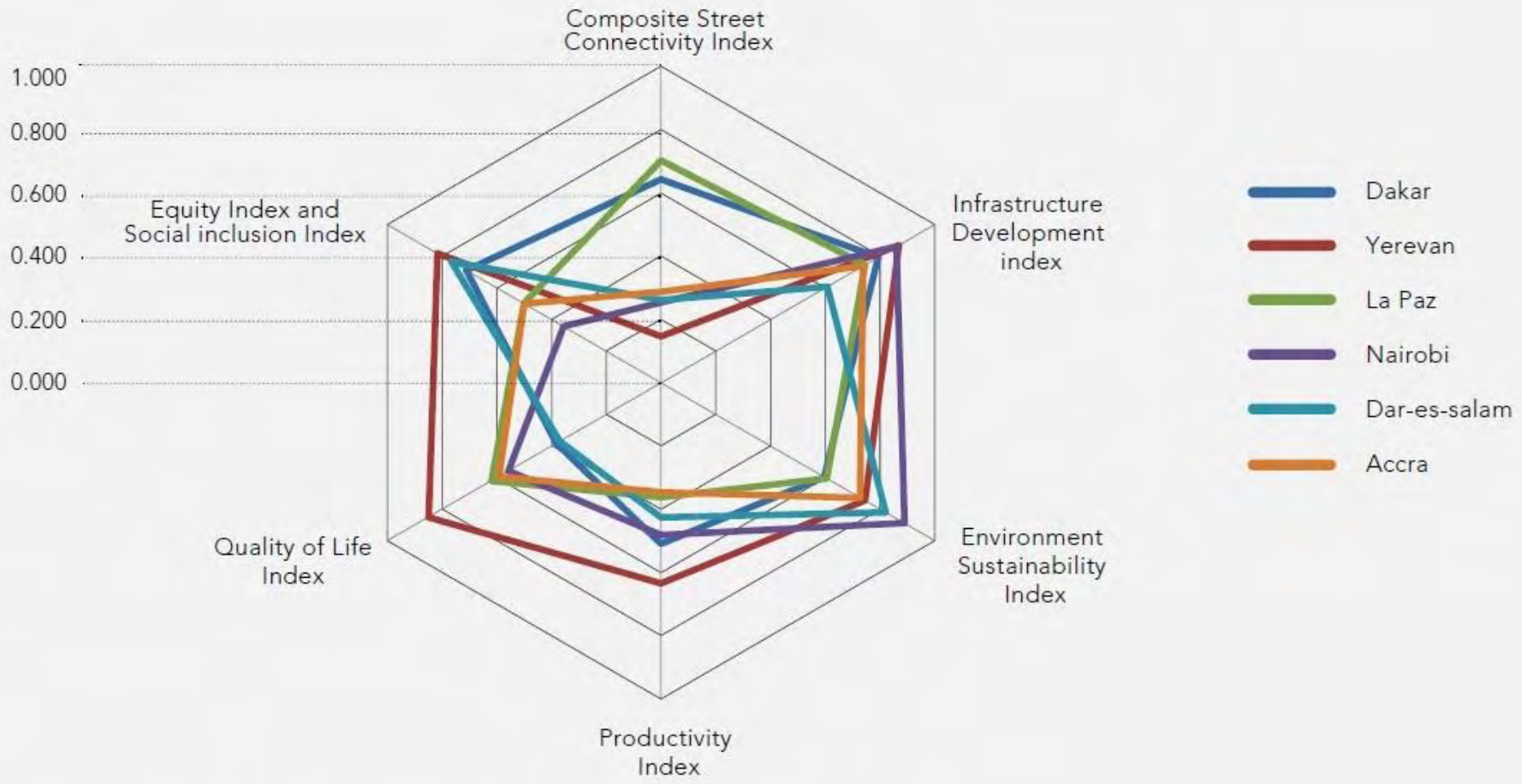
- Transforming Street Connectivity into a spoke of the CPI: the composite street connectivity index
- Corelation between higher CPI and high street connectivity: urban form matters, urban structure influences city prosperity

The higher the street connectivity, the higher the city prosperity index



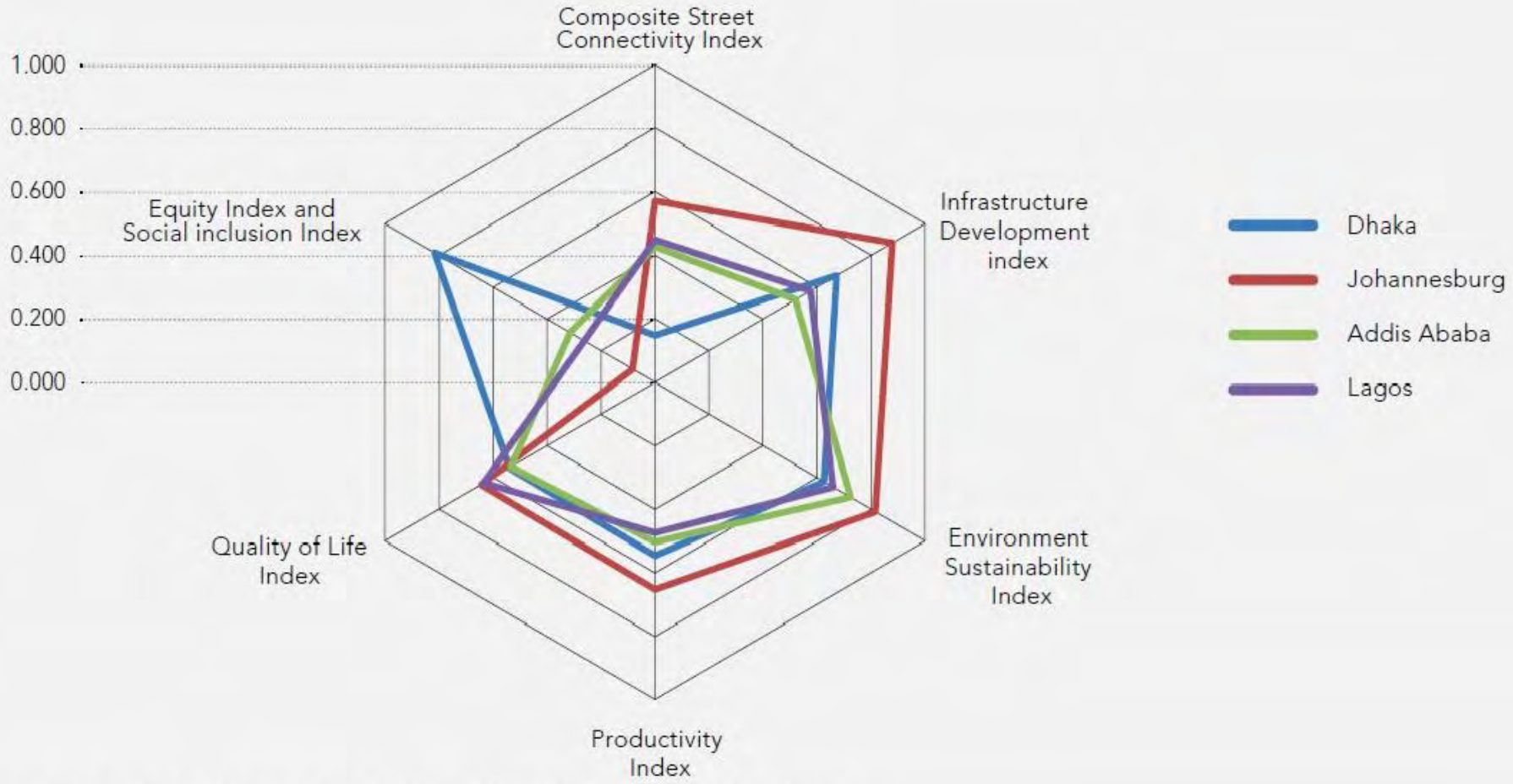
UN-Habitat (2013) *Streets as Public Spaces and Drivers of Urban Prosperity*, UN-Habitat, Nairobi.

FIGURE 5.5 **CITIES WITH A CPI OF BETWEEN 0.500 AND 0.599**



UN-Habitat (2013) *Streets as Public Spaces and Drivers of Urban Prosperity*, UN-Habitat, Nairobi.

FIGURE 5.6 **CITIES WITH A CPI OF BELOW 0.500**



UN-Habitat (2013) *Streets as Public Spaces and Drivers of Urban Prosperity*, UN-Habitat, Nairobi.

5. Street Connectivity (SC)	1. Street Intersection Density
	2. Street Density
	3. Land allocated to streets

a. Since ancient times, streets have played a critical role in cities, connecting spaces and people and allowing goods to reach them, and thereby facilitating commerce, social interaction and mobility.
b. Successful urban development is a function of an organized physical layout, a fluid urban structure and a system of street that enables interconnectivity within cities.
c. Cities that have failed to integrate the multi-functionality of streets tend to have lesser infrastructure development, lower productivity and a poorer quality of life.

11.

Methodological aspects:

Data collection, coherence and further understanding of indicators that help define prosperity and the basis for policy analysis.

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City Development Index - CPI

Dimension	Definitions/Variables
1. Productivity	Productivity index is measured through the city product (outputs & goods produced by a city's population). Variables: capital investment, formal/informal employment, inflation, trade, savings, export-import and household income/consumption.
2. Infrastructure development	The index combines two sub-indices: one for infrastructure proper, and another for **housing.**
3. Quality of Life	This index is a combination of 3 indices: education, health sub-index and public space.
4. Equity and Social inclusion	This index combines statistical measures of inequality of income/consumption, (Gini coefficient) and inequality of access to services and infrastructure.
5. Environmental sustainability	Values the protection of the urban environment while ensuring growth…

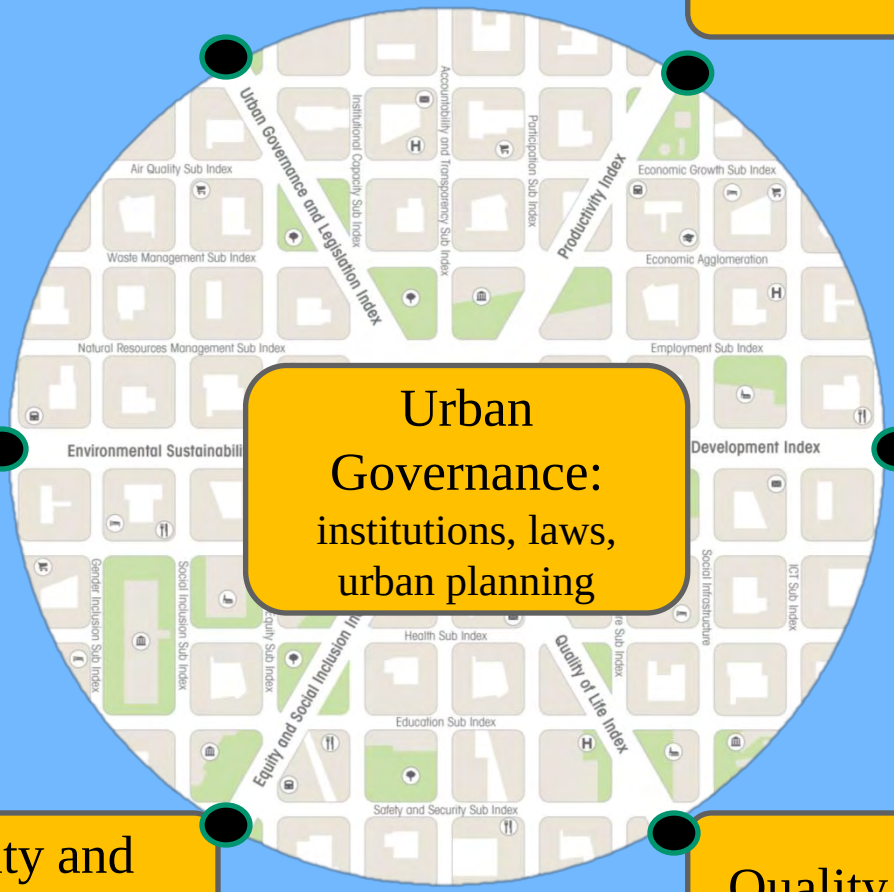
City Development Index - CPI

From 5 to 6 spokes

Refining the CPI

Productivity

Environmental Sustainability

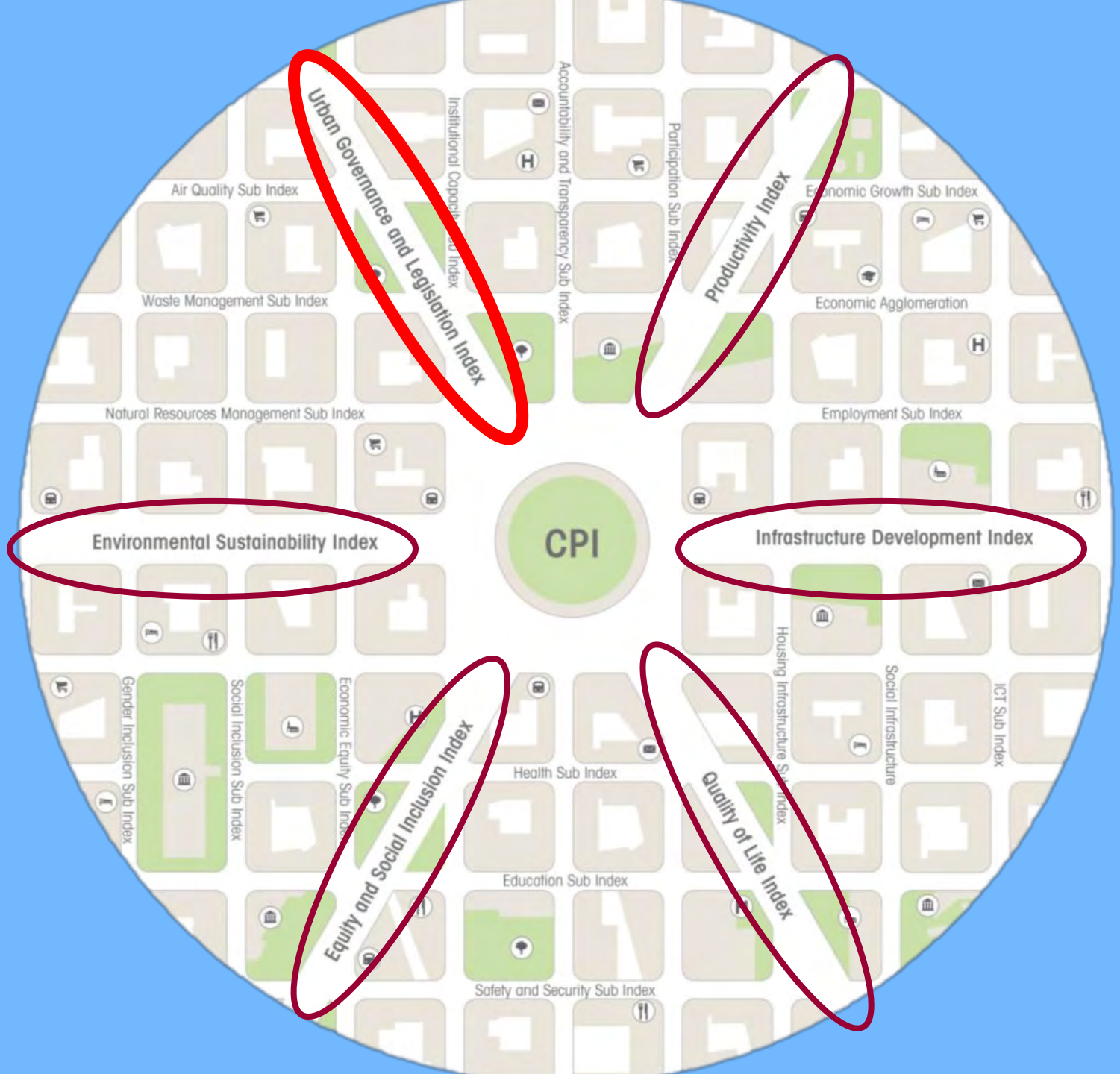


Urban Governance: institutions, laws, urban planning

Infrastructure Development

Equity and Social Inclusion

Quality of Life


CPI
Urban Governance and Legislation Index
Productivity Index
Environmental Sustainability Index
Infrastructure Development Index
Equity and Social Inclusion Index
Quality of Life Index
Air Quality Sub Index
Waste Management Sub Index
Natural Resources Management Sub Index
Institutional Capacity Sub Index
Accountability and Transparency Sub Index
Participation Sub Index
Economic Growth Sub Index
Economic Agglomeration
Employment Sub Index
Housing Infrastructure Sub Index
Social Infrastructure
ICT Sub Index
Gender Inclusion Sub Index
Social Inclusion Sub Index
Economic Equity Sub Index
Health Sub Index
Education Sub Index
Safety and Security Sub Index

Incremental approach to Prosperity

Contextual CPI		
Policy performance monitoring	Comparable across time	70 Indicators

Extended CPI		
In-depth Diagnosis	Comparable region / country	55 Indicators

Basic CPI		
Initial Diagnosis	Globally comparable	30 Indicators

Productivity Index (P)	1. Economic Growth Sub Index (EG)
	2. Economic Agglomeration (EA)
	3. Employment Sub Index (E)
Infrastructure Development Index (ID)	1. Housing Infrastructure Sub Index (HI)
	2. Social Infrastructure (SI)
	3. ICT Sub Index (ICT)
	4. Urban Mobility Sub Index (UM)
	5. Street Connectivity (SC)
Quality of Life Index (QOL)	1. Health Sub Index (H)
	2. Education Sub Index (E)
	3. Safety and Security Sub Index (SS)
	4. Public Space (PS)
Equity and Social Inclusion Index (ESI)	1. Economic Equity Sub Index (EE)
	2. Social Inclusion Sub Index (SI)
	3. Gender Inclusion Sub Index (GI)
	4. Urban Diversity (UD)
Environmental Sustainability Index (ES)	1. Air Quality Sub Index (AQ)
	2. Waste Management Sub Index (WM)
	3. Water and Energy Sub Index (WE)
Urban Governance and Legislation (UGL)	1. Participation Sub Index (P)
	2. Accountability and Transparency (AT)
	3. Institutional Capacity (IC)
	4.Governance of Urbanization (GU)

23 Sub Indexes

Indicators will reveal the sub-dimensions and the dimension of the CPI

DIMENSION	SUB-DIMENSION	INDICATOR
Productivity Index (P)	Employment (E)	P_E_1_UnemploymentRate (Reversed)
		P_E_2_EmploymentToPopulationRatio
		P_E_3_InformalEmployment (Reversed)
	Economic Growth (EG)	P_EG_1_CityProductPerCapita
		P_EG_2_OldAgeDependencyRatio (Reversed)
		P_EG_3_MeanHouseholdIncome
	Economic Agglomeration (EA)	P_EA_1_EconomicDensity
		P_EA_2_EconomicSpecialization

Indicator:	City Product per capita
Scope	Basic CPI
Rationale:	Cities have traditionally served as economic centers and have become primary providers of services. They are engines of economic growth and development. Also, cities currently generate more than half of national economic activities worldwide (UN-Habitat, 2003). Urban production, measured through the City Product, is an important indicator to measure the level of economic development of a city *vis-à-vis* the national level that provides information about the level of income and the capacity to generate employment opportunities (United Nations, 2001). A prosper city seeks to increase its level of product per capita in order to achieve higher levels of economic well-being.
Definition:	The City Product per capita is the sum of the gross value added by all producers within a city, relative to its total population.
Unit [ ]	US$ per capita (2011 PPP)
Methodology:	The City Product per capita is calculated as the sum of the product between the National Gross Domestic Product (GDP) in each economic sector (primary, industrial and service sectors) and the employment sector's share of the national's sector employment, divided by total city population:

$$City\ Product\ per\ capita = \frac{\sum_{j=1}^{J} National\ Product_j * \left(\frac{city\ employment_j}{national\ employment_j}\right)}{Total\ City\ Population}$$

Where j stands for the industry sector. In case that city employment information by sector does not available, it is possible to use census information about the employment structure.

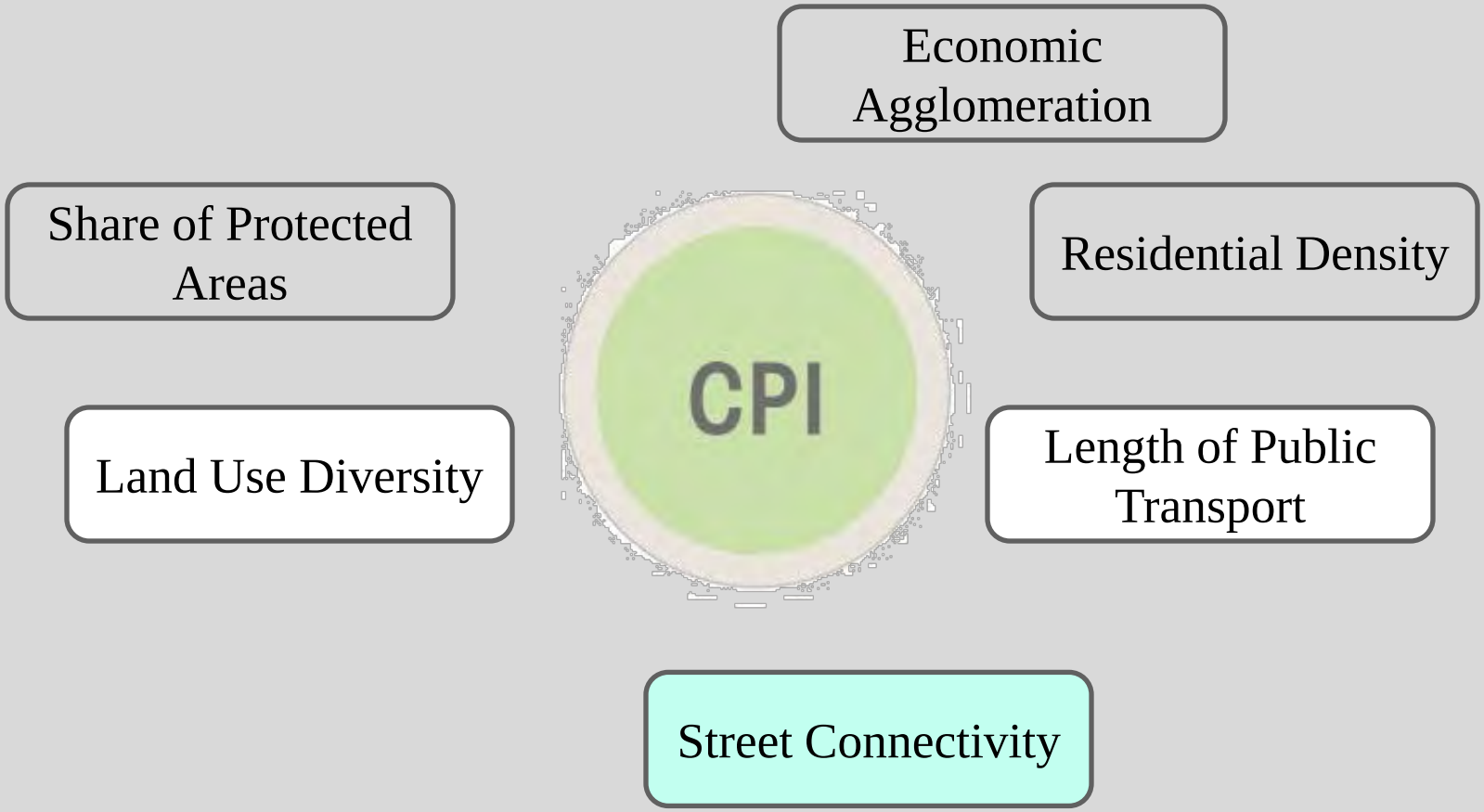
The following table should be filled out for each economic sector (using sectorial

12.

SPATIAL INDICATORS:

Using the composite street connectivity index to bring urban form, urban patterns and spatial dimensions into the CPI

Use of spatial indicators



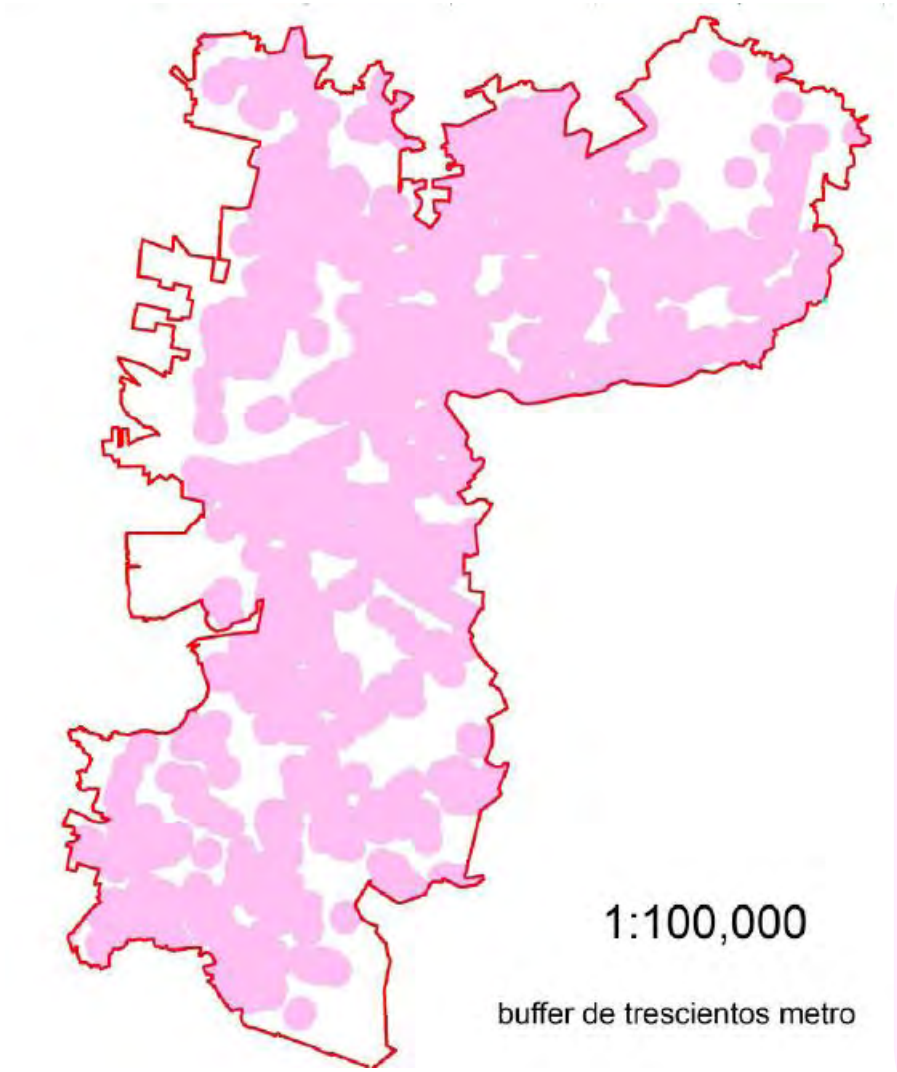
Spatial indicators in the dimensions

Productivity Index (P)	Economic growth	• City Product per capita • Old age dependency ratio • Mean household income
	Economic agglomeration	• Economic density • Economic Specialization
	Employment	

Spatial indicators in the dimensions

Infrastructure Index (P)	Housing	
	Social infrastructure	
	ICT	
	Urban mobility	
	Street connectivity	• Land allocated to streets • Street density • Street intersection density

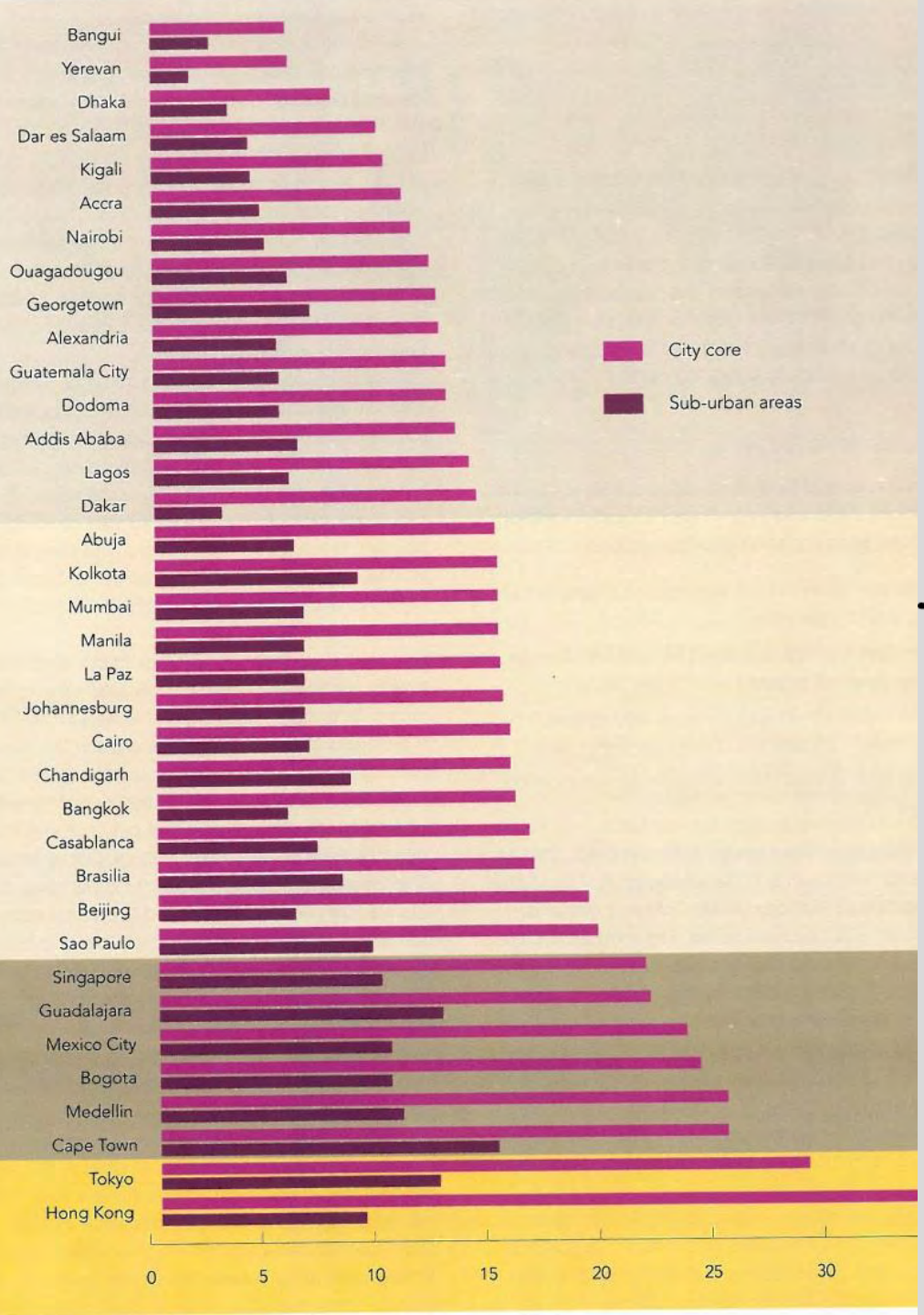
Public Space Indicators



1. Green Area per Capita

2. Accessibility to Open Public Space

- % urban AREA within 300m from open public space
- % urban AREA within 1000m from **major** open public space



Absence of footpaths

Slums very poor street networks

Many streets are links.. only.

New urban extensions undeserved by streets

The form of the city and prosperity
(street connectivity index)

City	Land allocated to streets	Street density	Intersection densities
Neiva	22.5	24.8	**243.8**
Bogotá	**18.3**	**15.9**	153.2
Santa Marta	20.0	18.6	160.9
Medellín	22.1	18.1	105.0
	20.5	**18.3**	**150.8**
Recommended range	**30**	**20**	**100**

Form of the City – Example: Medellin
(connectivity at intra-city level)

Consolidated areas	
Land to streets	25.99
Land density	19.79
Density intersections	130

Residential areas	
Land to streets	30.74
Land density	22.69
Density intersections	140

Informal areas	
Land to streets	12.04
Land density	16.17
Density intersections	130

Form of the City – Example: Medellin
(connectivity at intra-city level)

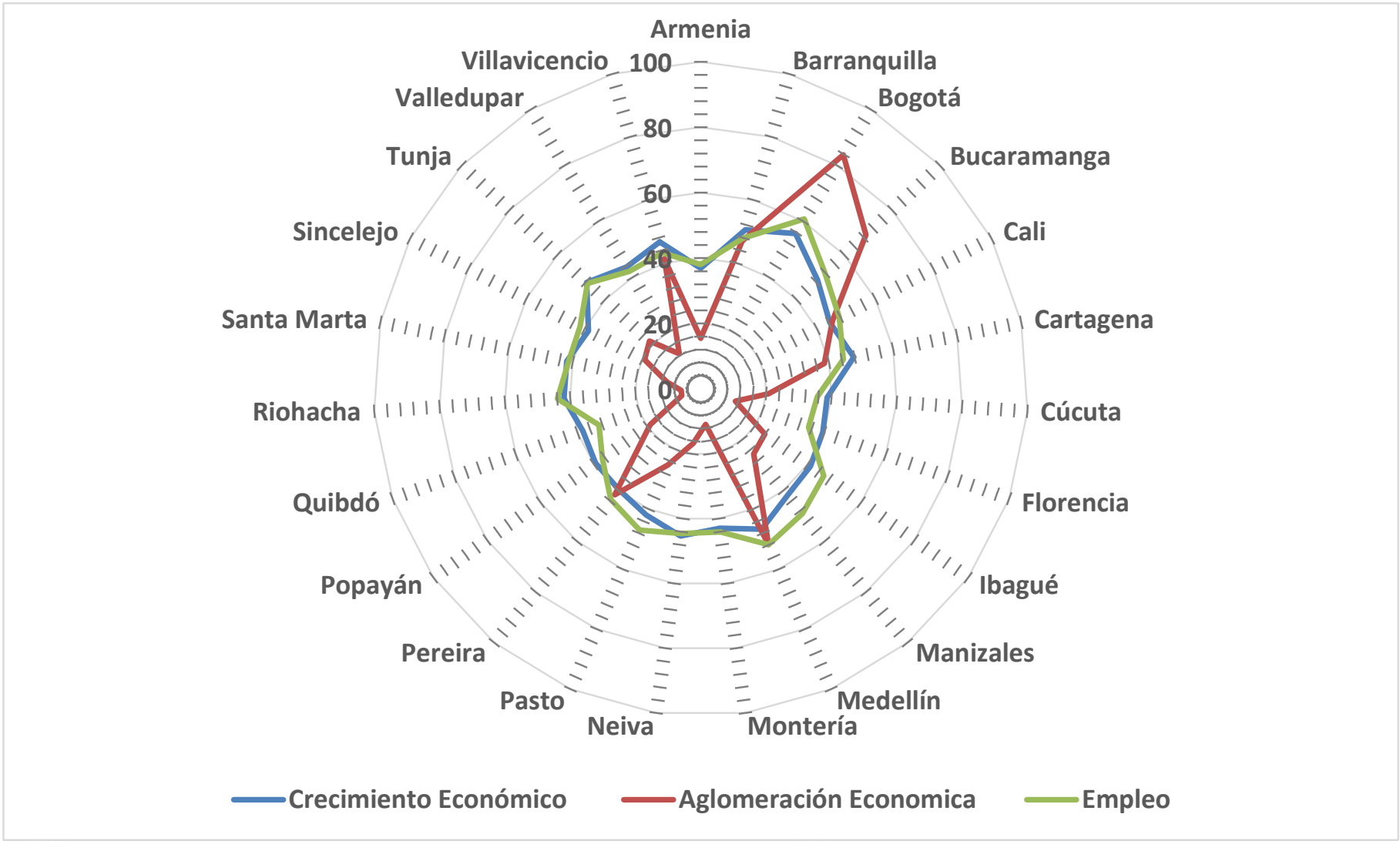
The shape and structure of the city are crucial in achieving prosperity

Street in informal areas are half of the consolidated areas

EXTENDED PROPERTY INDEX
Aggregated Values

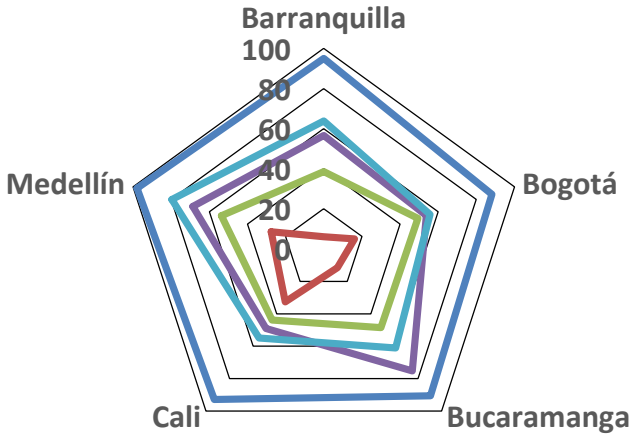
	Productivity Index	Infrastructure Development Index	Quality of Life Index	Equity and Social Inclusion Index	Environmental Sustainability Index	**IPU Extended**
Armenia	30,138	55,793	54,797	58,373	60,223	**50,360**
Barranquilla	48,467	52,022	52,758	60,145	43,678	**51,130**
Bogotá	66,729	52,664	60,379	70,058	52,898	**60,134**
Bucaramanga	56,574	57,346	57,204	72,207	47,926	**57,748**
Cali	45,763	54,659	49,567	64,907	45,593	**51,631**
Cartagena	43,595	54,378	60,345	60,059	43,434	**51,806**
Cúcuta	31,699	53,990	50,669	57,649	42,123	**46,204**
Florencia	28,566	48,352	47,153	60,026	43,612	**44,294**
Ibagué	36,990	59,953	48,945	66,649	52,564	**52,002**
Manizales	38,874	61,260	53,433	64,989	58,314	**54,532**
Medellín	50,161	65,510	63,797	62,659	50,517	**58,127**
Montería	32,680	46,122	49,586	59,617	59,979	**48,460**
Neiva	35,597	49,594	51,218	62,624	56,963	**50,317**
Pasto	38,101	51,676	53,030	61,211	58,819	**51,882**
Pereira	41,638	62,000	49,003	63,394	55,775	**53,718**
Popayán	31,727	47,750	52,058	57,146	54,804	**47,702**
Quibdó	25,806	33,979	48,153	37,734	41,512	**36,651**
Riohacha	30,634	44,456	45,356	52,551	39,559	**41,852**
Santa Marta	31,212	50,871	49,968	59,807	55,571	**48,330**
Sincelejo	33,232	50,696	49,458	58,855	43,545	**46,334**
Tunja	38,840	55,036	52,472	67,224	45,713	**50,990**
Valledupar	32,767	54,888	52,038	63,260	56,291	**50,648**
Villavicencio	43,752	49,720	46,716	65,447	39,768	**48,360**

EXTENDED CPI
Productivity Dimension

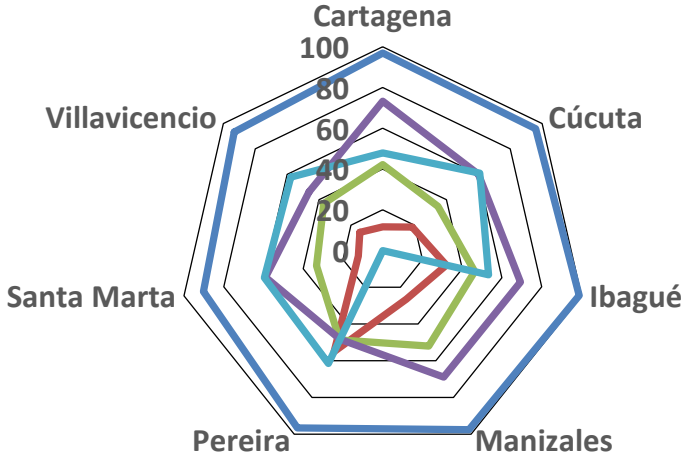


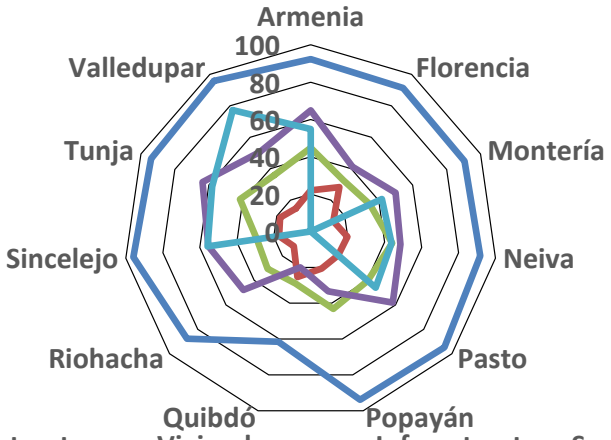
EXTENDED CPI
Infrastructure Development Dimension

Cities with more than 1 million inhabitants



Cities between 1 M & 400.000 inhabitants

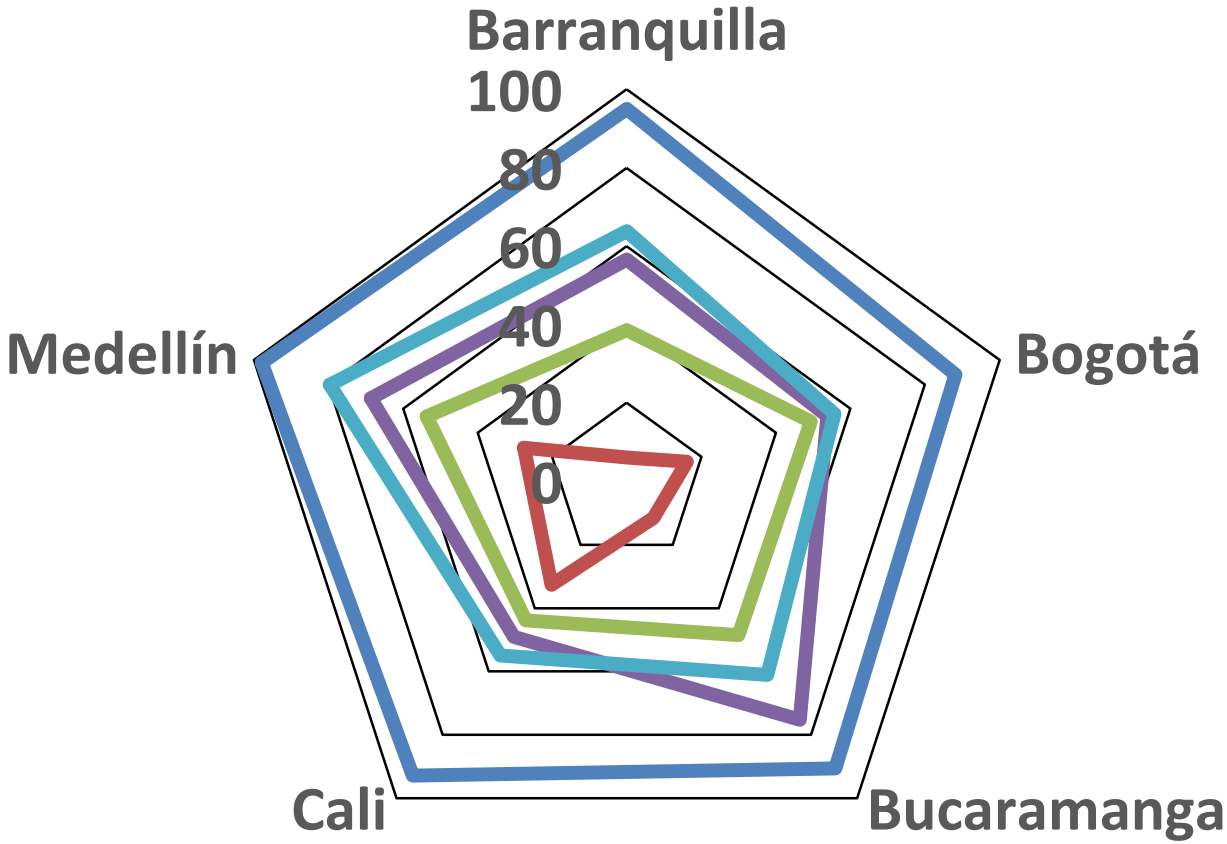




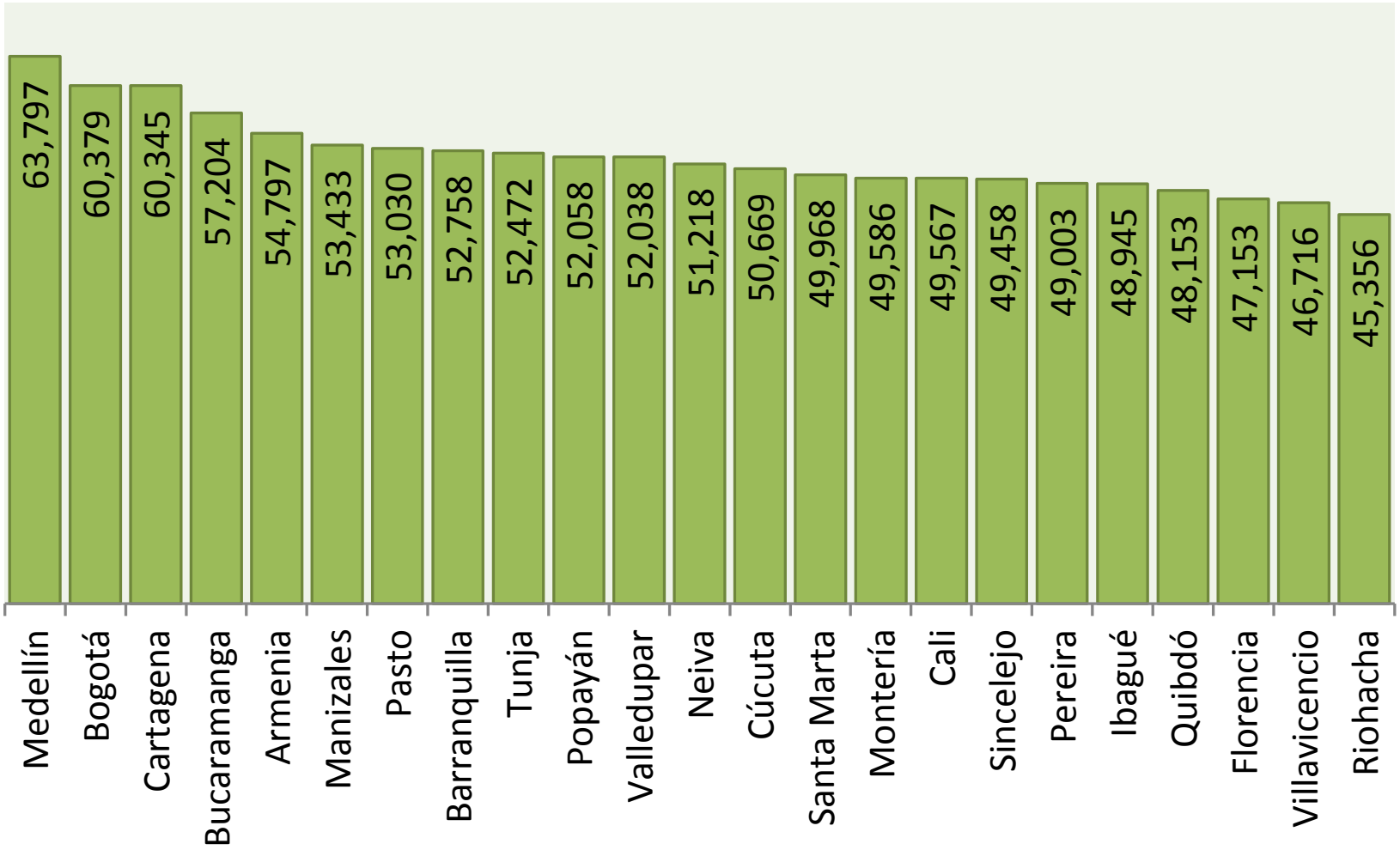
Cities with less than 400,000 inhabitants

EXTENDED CPI
Infrastructure Development Dimension

Cities with more than 1 million inhabitants más de un millón de habitantes



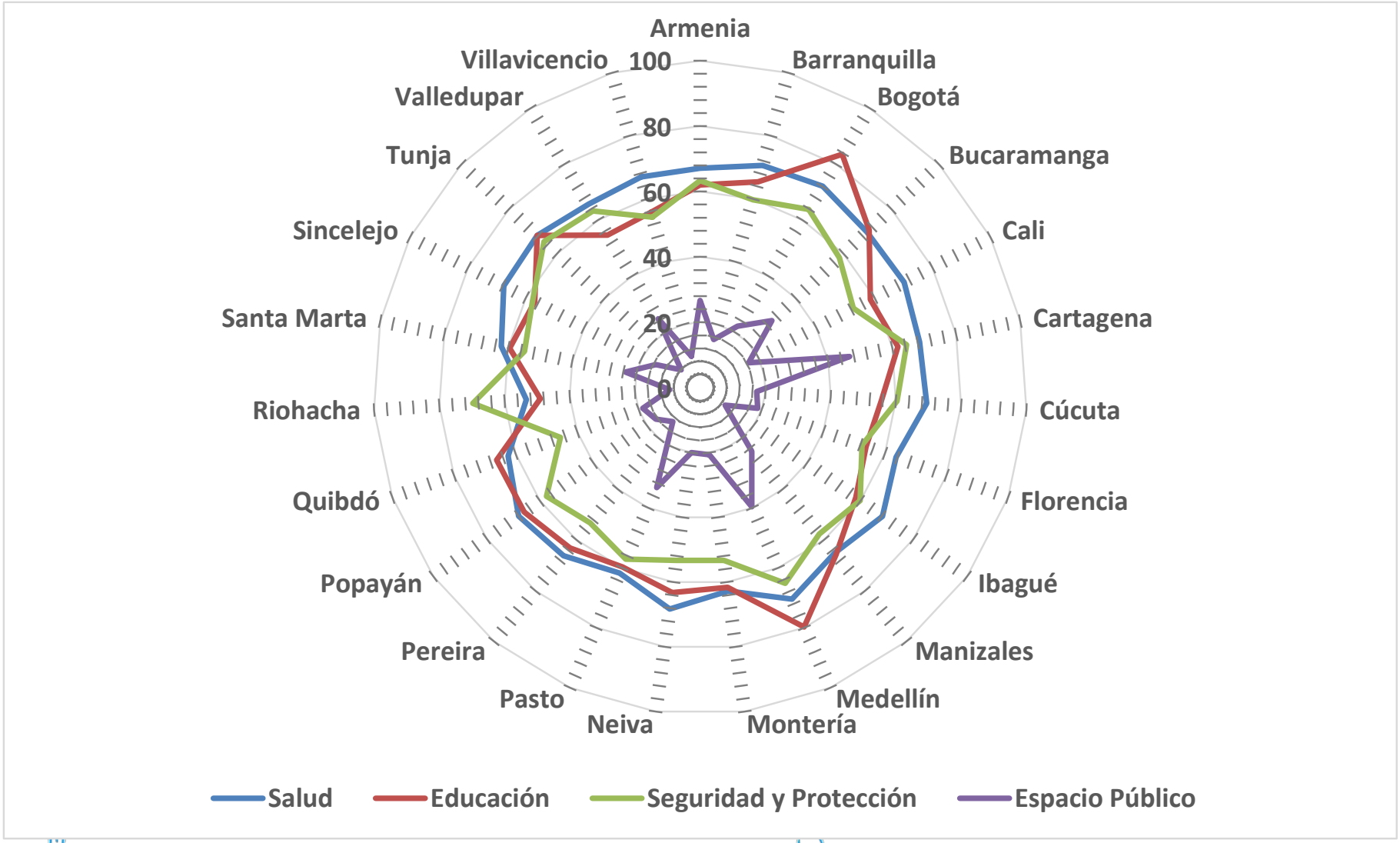
EXTENDED CPI
Dimension Quality of Life



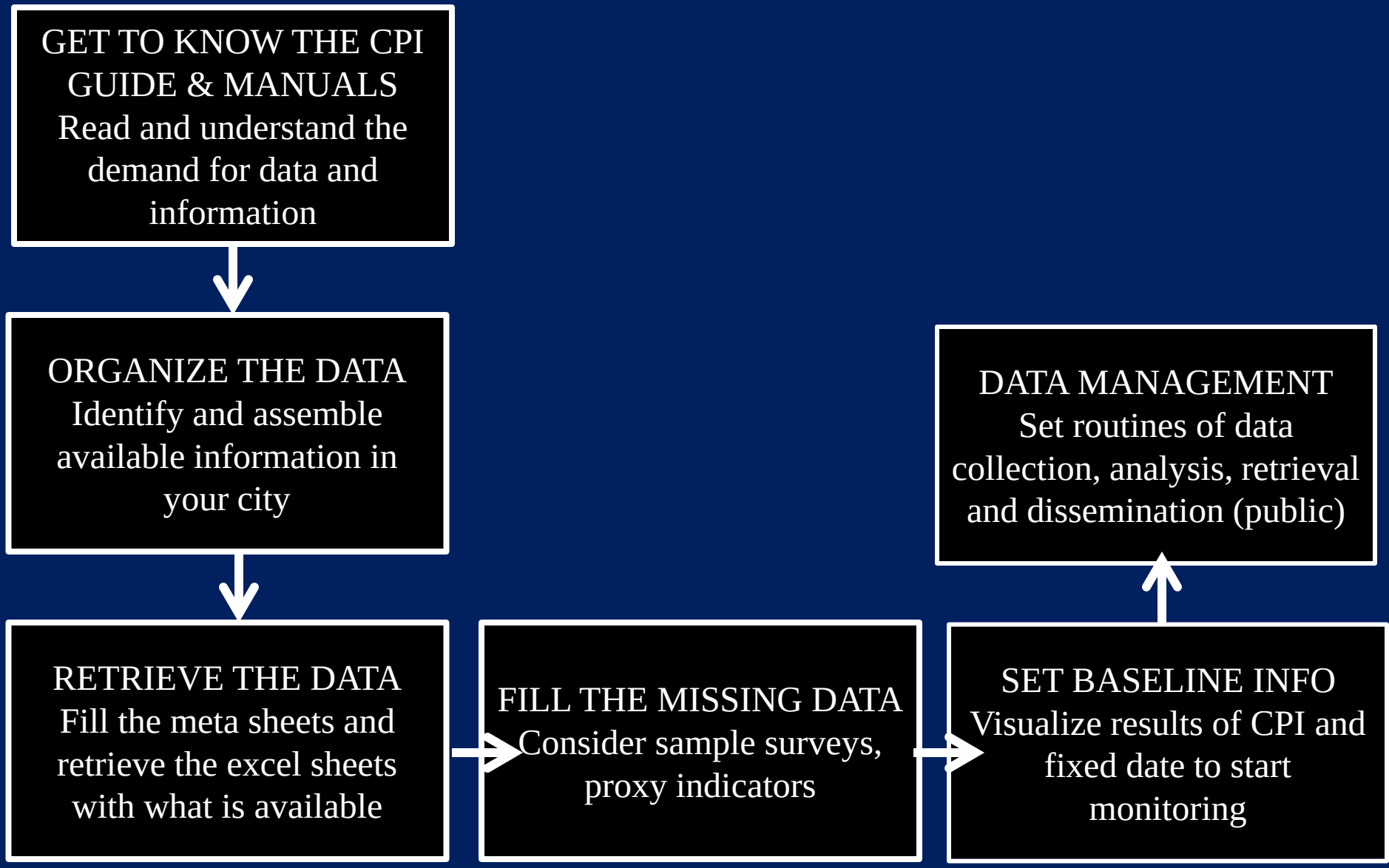
EXTENDED CPI
Dimension Quality of Life

Ciudad	Salud	Educación	Seguridad y Protección	Espacio Público	Calidad de Vida
Armenia	67,097	62,055	63,372	26,667	**54,797**
Barranquilla	70,583	65,418	59,698	15,333	**52,758**
Bogotá	72,074	83,596	63,846	22,000	**60,379**
Bucaramanga	69,823	70,732	58,261	30,000	**57,204**
Cali	70,210	58,619	52,773	16,667	**49,567**
Cartagena	68,517	61,758	64,437	46,667	**60,345**
Cúcuta	69,472	55,574	60,296	17,333	**50,669**
Florencia	63,560	53,885	52,502	18,667	**47,153**
Ibagué	68,276	58,283	59,886	9,333	**48,945**
Manizales	65,152	65,855	57,659	25,067	**53,433**
Medellín	70,468	79,764	65,255	39,700	**63,797**
Montería	62,744	61,631	53,303	20,667	**49,586**
Neiva	68,336	63,233	53,303	20,000	**51,218**
Pasto	61,828	59,769	57,189	33,333	**53,030**
Pereira	66,249	63,142	53,288	13,333	**49,003**
Popayán	68,062	65,954	57,551	16,667	**52,058**
Quibdó	62,400	66,123	45,422	18,667	**48,153**
Riohacha	53,303	49,051	69,738	9,333	**45,356**
Santa Marta	62,138	59,531	54,871	23,333	**49,968**
Sincelejo	67,685	57,060	57,755	15,333	**49,458**
Tunja	68,198	68,282	65,408	8,000	**52,472**
Valledupar	65,687	54,565	63,235	24,667	**52,038**
Villavicencio	66,963	55,744	54,156	10,000	**46,716**

EXTENDED CPI
Dimension Quality of Life



OPERATIONAL & METHODOLOGICAL STEPS



THE END
thank you.

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FOR A BETTER URBAN FUTURE

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