

INUAS-Ringvorlesung «Zukunft urbaner Lebensräume»



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1

Monitoring von Smart Cities

- **Indikatoren zur Messung der Lebensqualität in den Städten**

A.-K. Lautenschütz, Bundesamt für Statistik

- **Monitoring Cities Globally: the UNECE/ITU KPIs for Smart Sustainable Cities**

D. Carriero, Organization for International Economic Relations

Moderation: Vicente Carabias, INE-ZHAW
Plattform Smart Cities & Regions
Winterthur, 20.3.2017

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STANDORTFÖRDERUNG
REGION WINTERTHUR

2

Energie & Gesellschaftliche Integration



Architektur, Gestaltung und Bauingenieurwesen



Gesundheit



School of Management and Law



School of Engineering



Angewandte Psychologie
Zürcher Fachhochschule



Soziale Arbeit



Angewandte Linguistik



Life Science und Facility Management ³

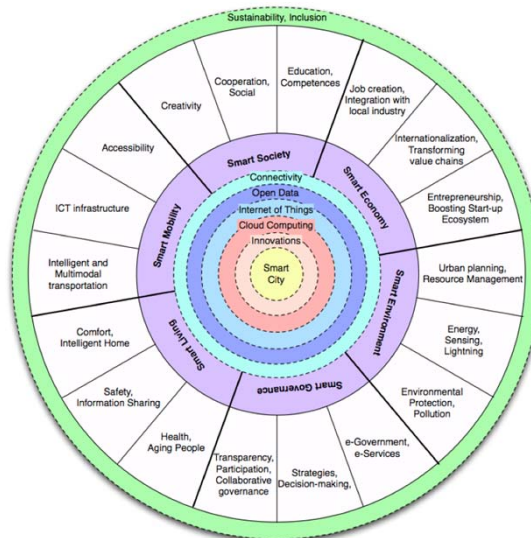
Interdisciplinary Platform «Smart Cities & Regions»



Smart Sustainability City Cycle – continuous improvement



Smart Cities Indicators



Smart Cities Benchmarking



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Quelle: Boyd Cohen, 2014

7

Users and associated benefits of Smart City Performance Metrics

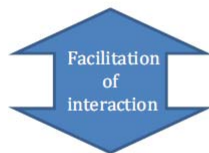
Owners and operators

Countries, nations, governments, investors, developers, etc.



Benefits:

- Easier planning;
- Easier infrastructure procurement;
- Easier purchase decision;
- Easier management of multiple providers



Standardized metrics
Community infrastructures
as integrable and scalable
products

Providers

Vendors, consultants, etc



Benefits:

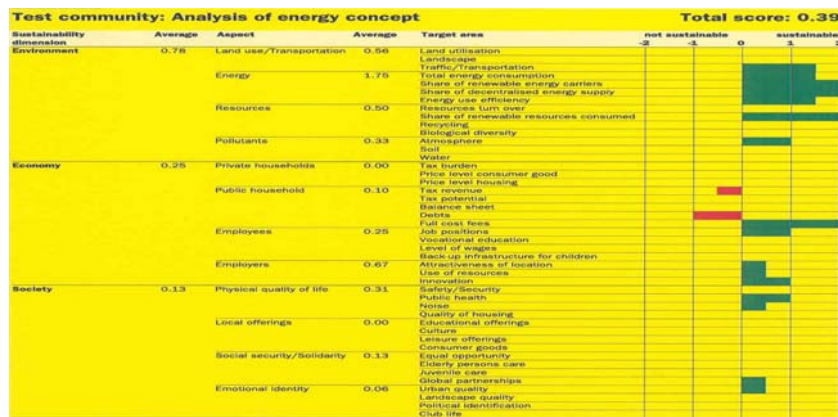
- Better understanding of owner needs;
- More efficient and effective global sales;
- More efficient and effective R&D

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Quelle: ISO/TS 37151:2015

8

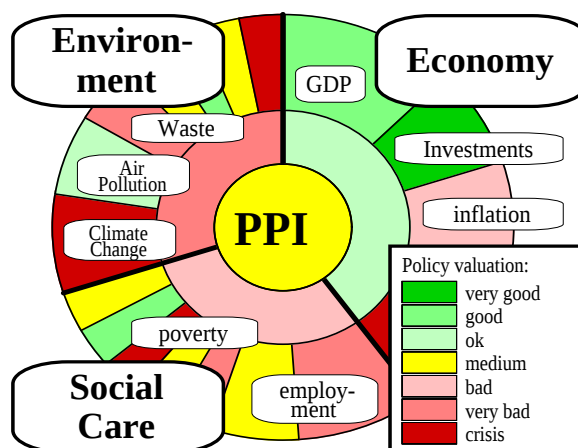
The Sustainability Barometer



PASTILLE - funded by EU 5th FRP & Swiss Government

9

Policy Performance Index (PPI) to visualize the Sustainability Performance of a specific Region



(Source: Jesinghaus 2000)

Sustainable Development Goals (SDGs)

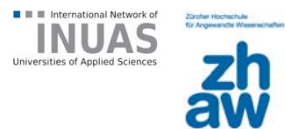


Quelle: UN-DESA (2015)

11



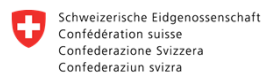
Monitoring von Smart Cities



Indikatoren zur Messung der Lebensqualität in den Städten

Anna-Katharina Lautenschütz, Bundesamt für Statistik

Winterthur, 20.3.2017



Eidgenössisches Departement des Innern EDI
Bundesamt für Statistik BFS

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12

Monitoring von Smart Cities

Monitoring Cities Globally: the UNECE/ITU KPIs for Smart Sustainable Cities

Domenica Carriero,
Organization for International Economic Relations

Winterthur, 20.3.2017

OiER
Organization for
International
Economic Relations

Monitoring von Smart Cities

Fragen & Diskussionen

 Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Eidgenössisches Departement des Innern EDI
Bundesamt für Statistik BFS

OiER
Organization for
International
Economic Relations

Winterthur, 20.3.2017


**STANDORTFÖRDERUNG
REGION WINTERTHUR**



UNECE



NAZARBAYEV
UNIVERSITY

swissuniversities



Joint International Events (14.-16.6.2017 in Astana, Kazakhstan) on Towards Smart Sustainable Cities – Integrated Approaches

- Promoting Innovation within the Energy Sector
- Prerequisites of Policy Change and Technological Innovation
- Transition of Regional Energy Systems
- Future Developments of Urban Habitats towards Smarter Cities
- Unlocking Implementation Models for City Energy Efficiency
- Sufficiency strategies of cities
- Future Electrical Infrastructure
- Heat & Electricity Storage
- Renewable energies in urban areas
- Future urban mobility concepts



15

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Apéro



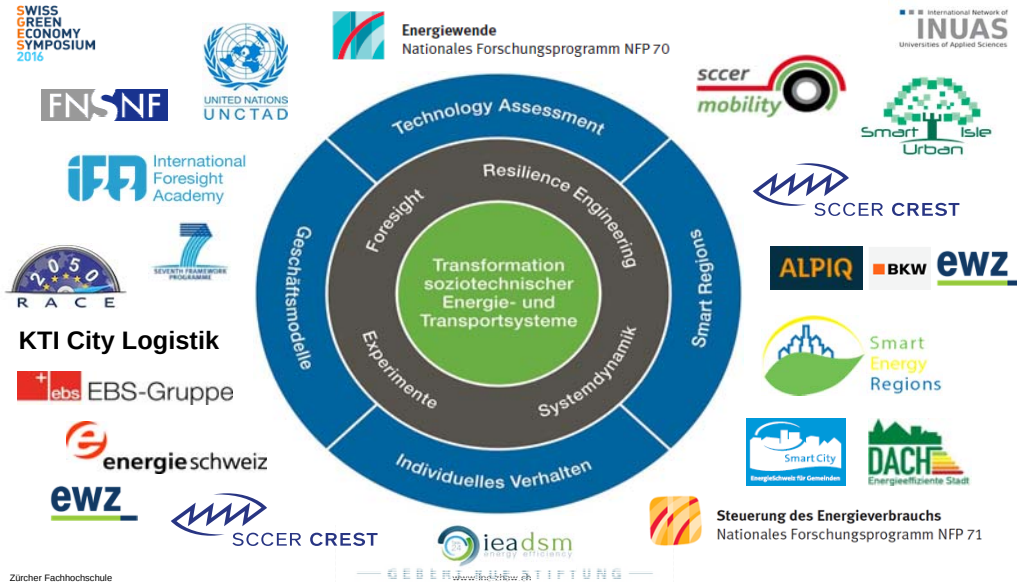
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REGION WINTERTHUR

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16

Vicente Carabias, cahu@zhaw.ch
ZHAW Institut für Nachhaltige Entwicklung

zhaw School of Engineering





Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Eidgenössisches Departement des Innern EDI
Bundesamt für Statistik BFS

Indikatoren zur Messung der Lebensqualität in den Städten

INUAS Ringvorlesung “Zukunft urbaner Lebensräume”

ZHAW Winterthur, 20. März 2017, Anna-Katharina Lautenschütz



1. Was ist das City Statistics?

- EU-Projekt zur Messung der Lebensbedingungen (Urban Audit)
- Schweiz mit Führung des BFS seit 2009 dabei
- Multithematische Datensammlung mit Fokus auf Lebensqualität
- Daten auf Quartiers-, Stadt-, und Agglomerationsniveau
- www.urbanaudit.ch
- Atlas der Städte, interaktive Daten, Städte- und Agglomerationsporträts
- Indikatoren der Lebensqualität



Warum Indikatoren zur Lebensqualität

Ein Aufwertungsprozess des Projekts

- Datensammlung ohne spezifischen Fokus
- Unklarheit über Nutzung und Nutzer des City Statistics
- Steigerung der Bekanntheit und Sichtbarkeit des City Statistics

Begleitgruppe:

- Partizipativer Prozess
- Workshops



Wer sollten die Nutzer der Aufwertung sein?

Stadtverwaltung als Benutzer zur:

- Eruierung zusätzlicher Statistiken möglich
- Definierung von Lebensqualität für die Stadt
- Messung und Evaluation der Stadtentwicklungsziele
- Differenziertes Standortprofil einer Stadt

Bürger als Beachter:

- Wahrnehmung der Lebensqualität ihrer Stadt
- Kommunikation der Ziele einer Stadt



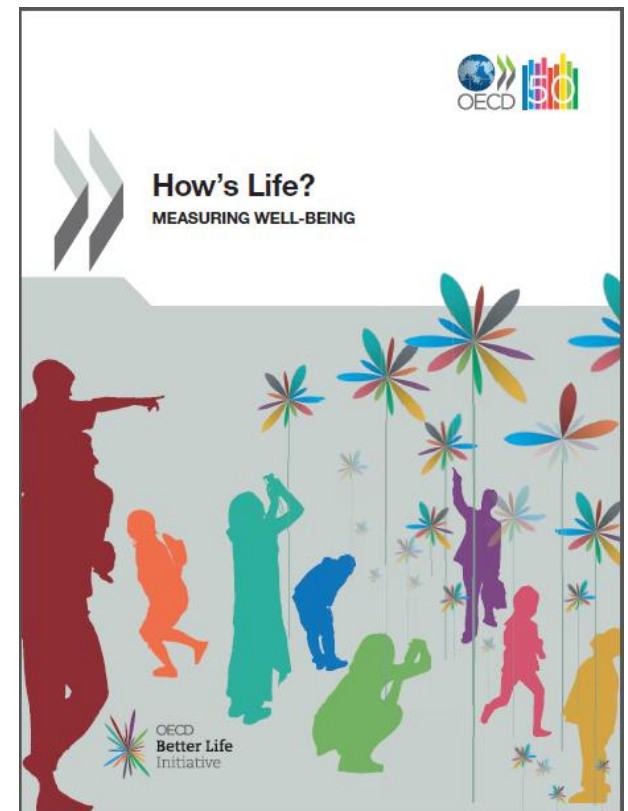
Inhalt

1. Was ist das City Statistics?
2. Das Konzept Lebensqualität der OECD
3. Auswahl der Dimensionen
4. Zuordnung der Indikatoren
5. Resultate
6. Ausblick



2. Was ist das How's Life (HL)?

- Rahmenkonzept zur Messung von Lebensqualität
- Fokus auf Individuen
- Material Living Conditions & Quality of Life
- 11 Dimensionen
- Anforderungen an Statistiken:
 - Plausibilität
 - Vergleichbarkeit
 - Verfügbarkeit
 - Outcome-fokussiert





2. Welche Dimensionen nutzt das HL?

INDIVIDUAL WELL-BEING	
Population averages and differences across groups	
Quality of life	Material conditions
Health status	Income and wealth
Work-life balance	Jobs and earnings
Education and skills	Housing
Social connections	
Civic engagement and governance	
Environmental quality	
Personal security	
Subjective well-being	

Quelle: OECD



2. Dimensionen & Indikatoren des HL

Jeder Dimension der Lebensqualität sind Indikatoren zugeteilt.

Zum Beispiel:

Umwelt:

- Anteil der Grünflächen

Wohnsituation:

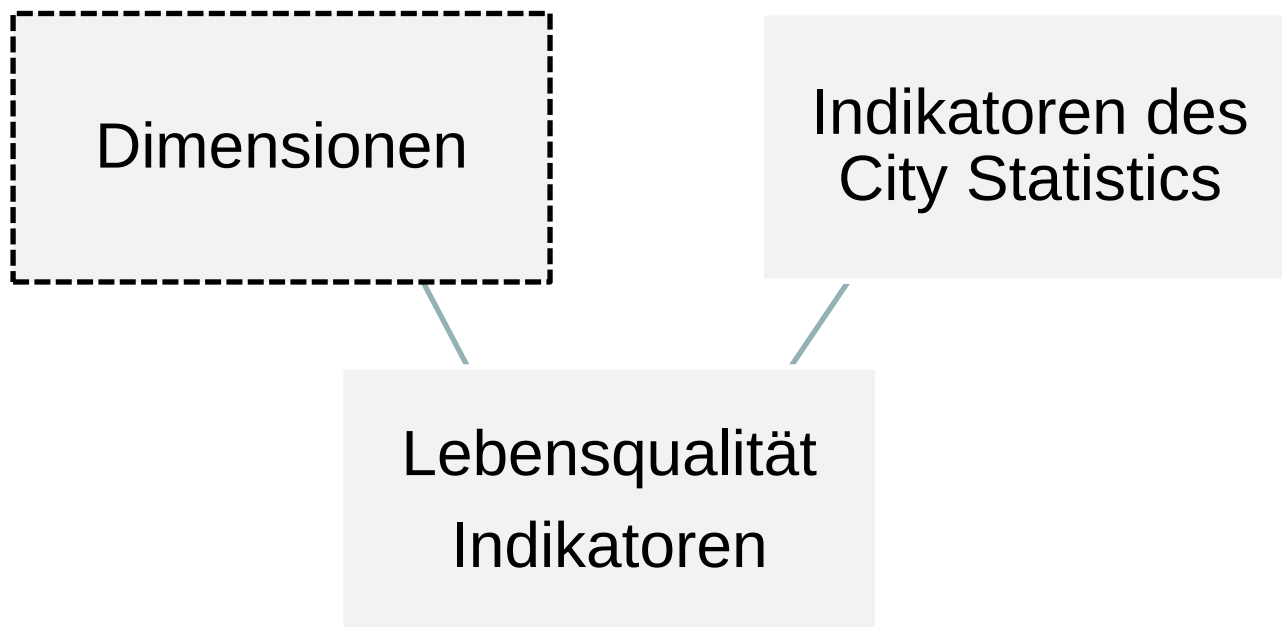
- Durchschnittliche Anzahl von Personen pro Haushalt
- Durchschnittliche Wohnfläche pro Person

Bildung:

- Frühzeitige Schulabgänger



3. Auswahl der Dimensionen





Dimensionen erarbeiten

Analyse der How's Life Dimensionen



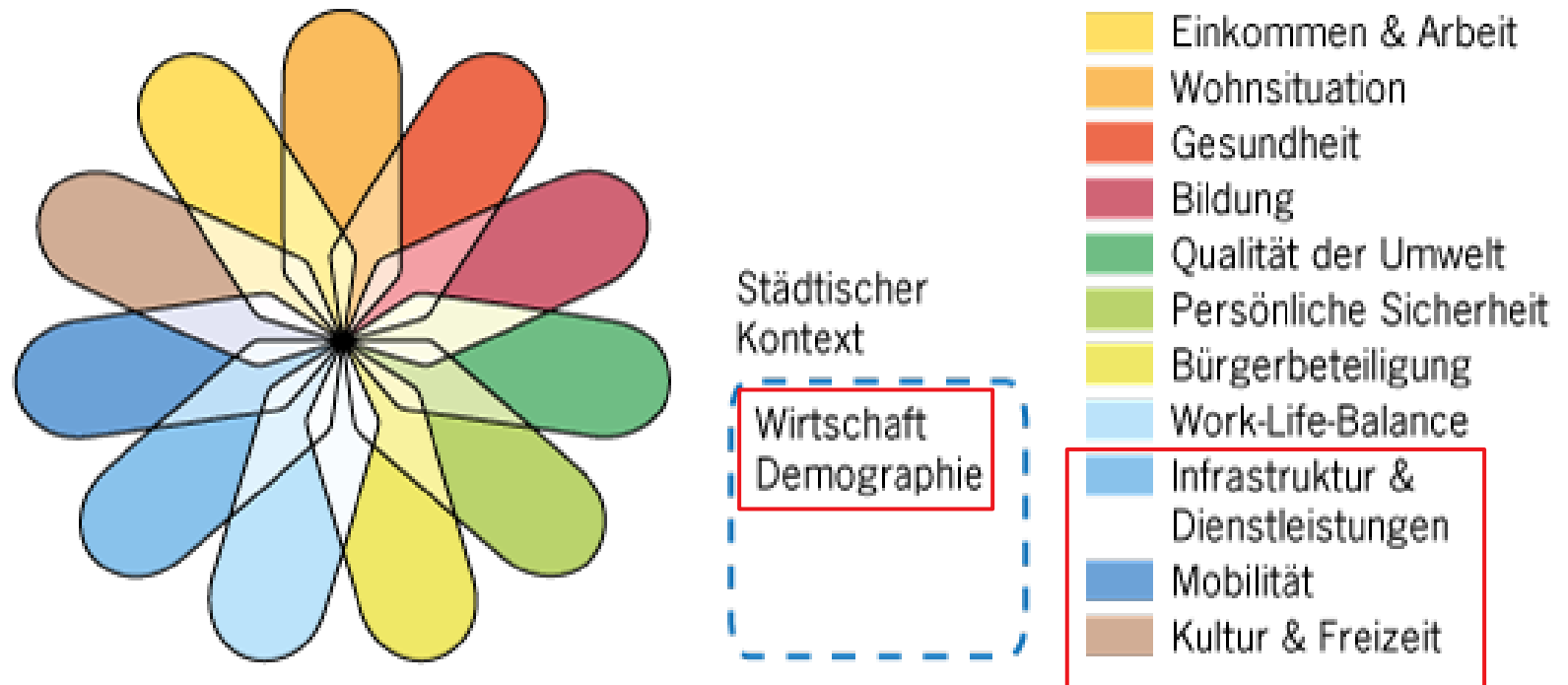
Korrespondenz How's Life Dimensionen
mit Themen des CS (EU Ebene)



Ergänzung von neuen Dimensionen
um speziellen Gegebenheiten der
Städte Rechnung zu tragen



Dimensionen der Lebensqualität

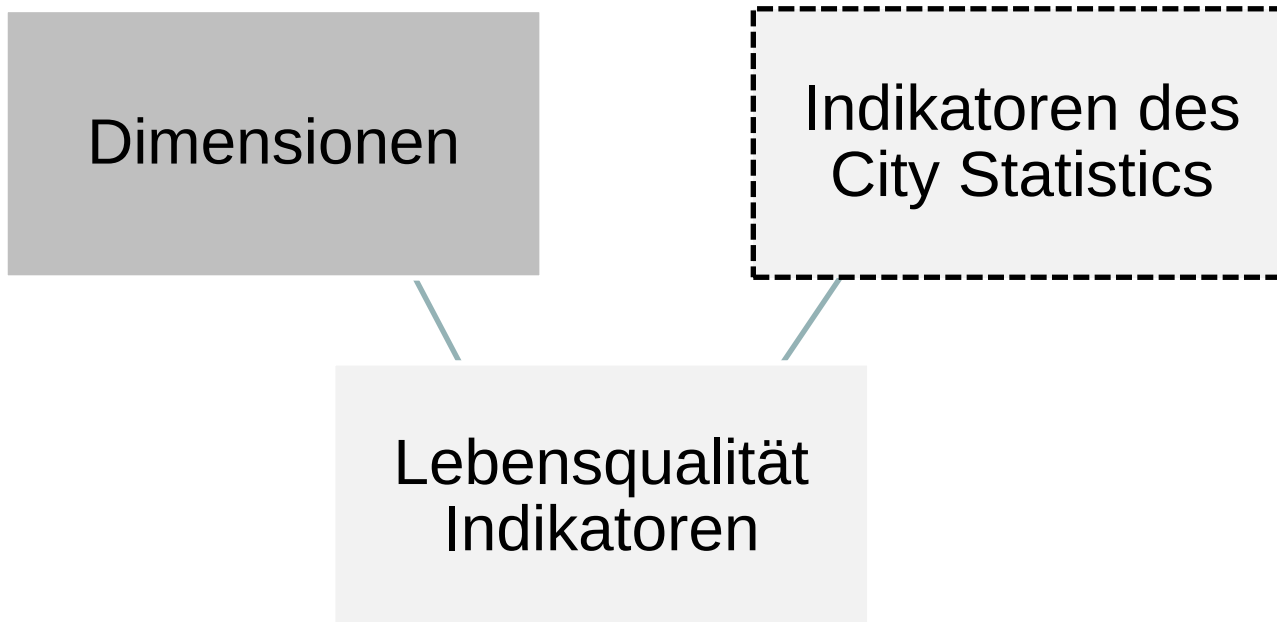


Quelle: OECD (2014) How's Life in Your Region? Measuring Regional and Local Well-being for Policy Making; OECD Publishing, Paris;
Design adaptiert durch BFS

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4. Zuordnung der Indikatoren





Zuordnung der Indikatoren

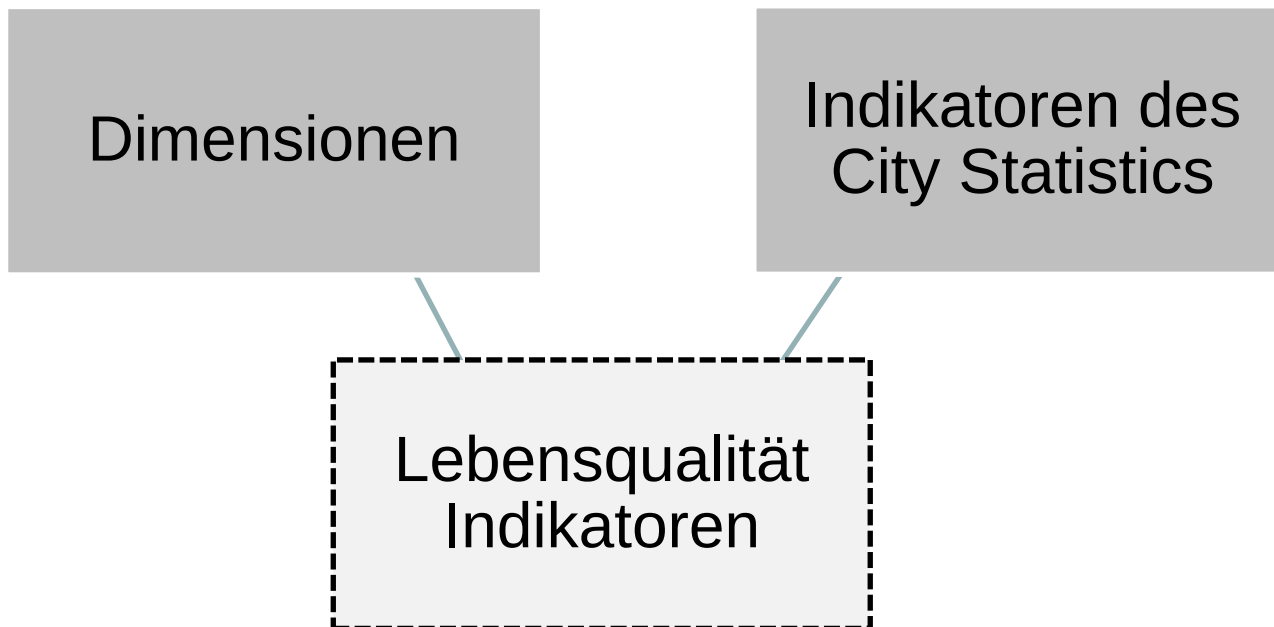
Auswahl der Lebensqualität
Indikatoren

Abgleich mit How's Life, Urban Audit
Key Indicators, City Statistics Illustrated

Zuordnung bestehender Indikatoren
zu Dimensionen → Validierung der
Liste



5. Resultate

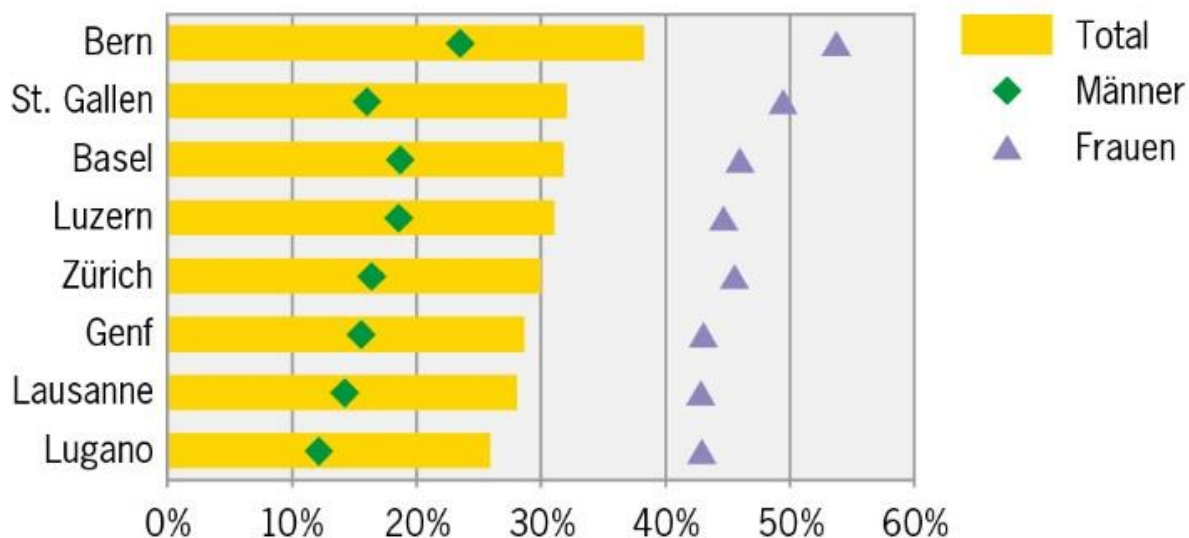




5. Beispiel: Einkommen & Arbeit

Teilzeiterwerb, 2015

Anteil Erwerbstätige mit Beschäftigungsgrad von <90%



Quelle: BFS – SE

© BFS 2016



Beispiel Teilzeiterwerb

Positiv:

Zusätzliche Zeit für...

- Vereinbarkeit Beruf und Familie
- Selbstverwirklichung
- Freizeit

Negativ:

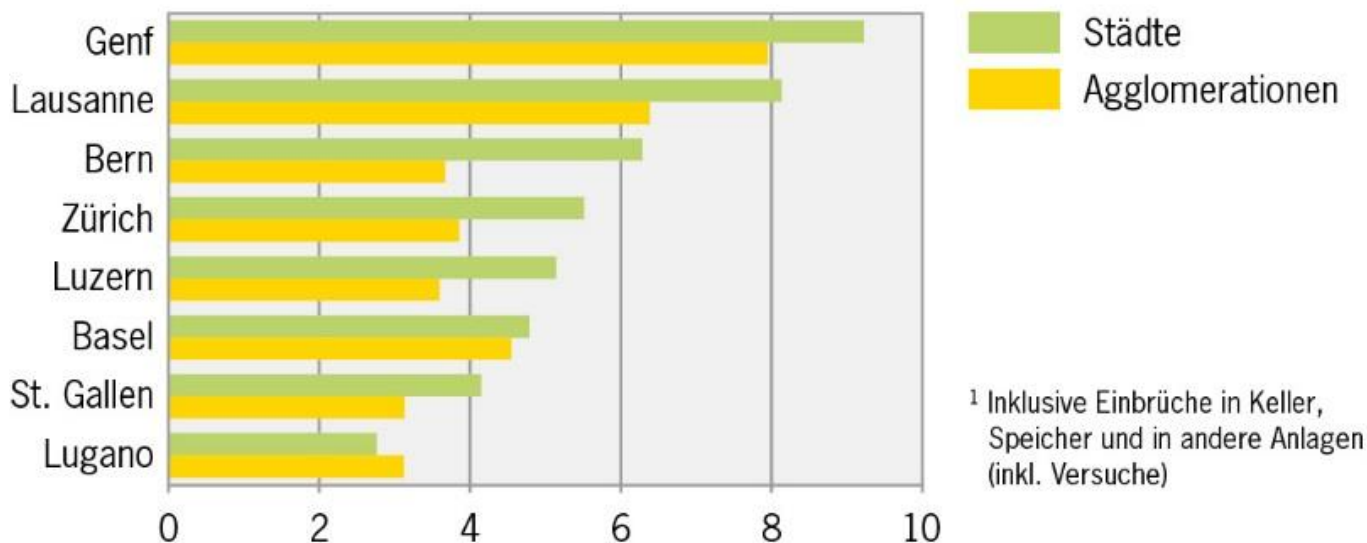
- Geringeres Einkommen
- Verminderte Aufstiegsmöglichkeiten
- eingeschränkte Weiterbildung
- tiefe Beiträge für die Altersvorsorge



5. Beispiel: Persönliche Sicherheit

Diebstähle in Wohneinheiten, 2015

Einbruch- und Einschleichdiebstähle¹ in Wohneinheiten,
pro 1000 Einwohner/innen



Quelle: BFS – PKS

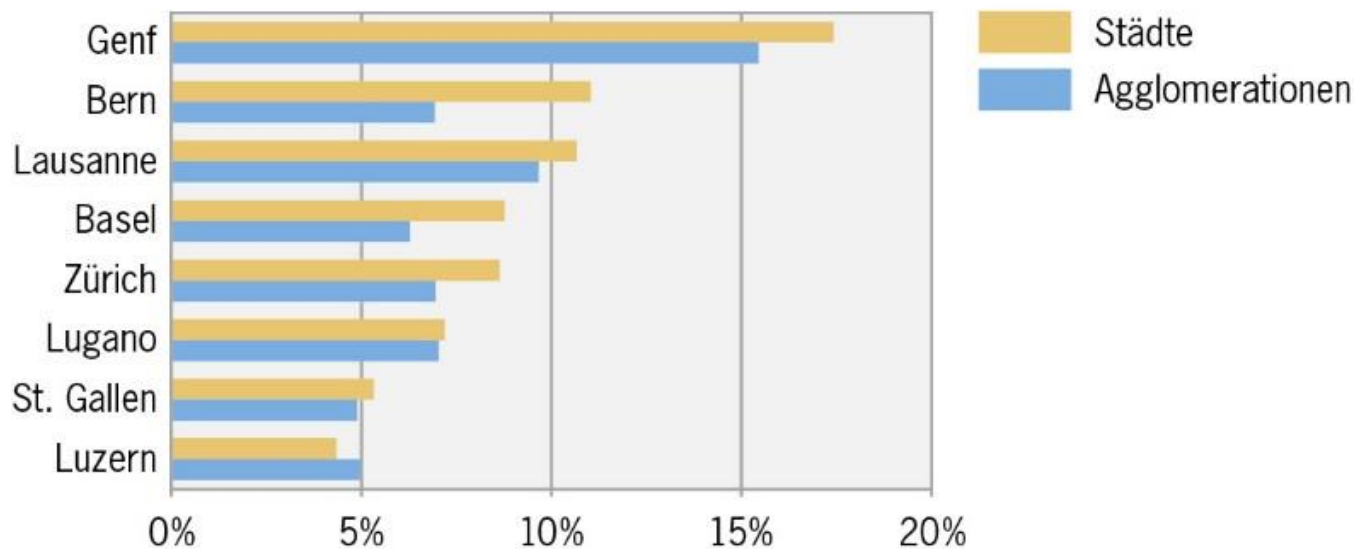
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5. Beispiel: Wohnsituation

Überbelegte Wohnungen, 2015

Anteil der bewohnten Wohnungen mit mehr als 1 Person pro Zimmer



Quellen: BFS – GWS, SE

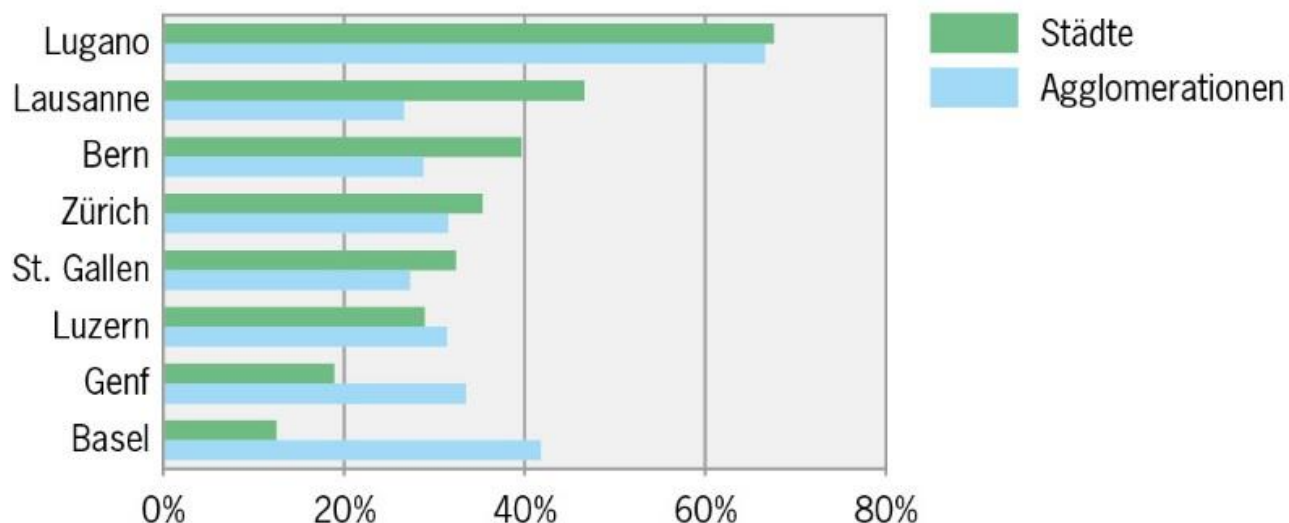
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5. Beispiel: Qualität der Umwelt

Bestockte und Erholungsflächen, 2004/09

Anteil an der Gesamtfläche



Quelle: BFS – AREA

© BFS 2016

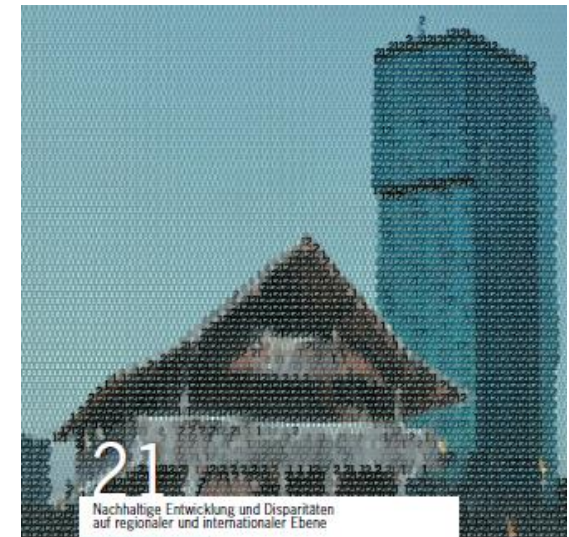


Indikatoren der Lebensqualität

- Momentan 25 Indikatoren publiziert
- Alle 2 Jahre aktualisiert
- Stufe Kernstadt und wo möglich Agglomeration
- Bedeutung des Indikators wird beschrieben

... ABER:

- Kein Index
- Keine Bewertung der Städte



City Statistics (Urban Audit)

Lebensqualität in den Städten 2016





6. Ausblick

Weiterentwicklung der Indikatoren:

- Erweiterte Kommentare zu den Indikatoren
- Ergänzende Indikatoren
- Europäischer Vergleich

Wie kann eine Stadt das Konzept HL benutzen?

- Anwendung des Konzeptes für die Legislaturplanung
- Monitoring der Stadtentwicklungsziele anhand von Indikatoren
- Lücken im Bereich Lebensqualität feststellen



Weitere Informationen

City Statistics:

www.urbanaudit.ch

Lebensqualität in den Städten des City Statistics:

<https://www.bfs.admin.ch/bfs/de/home/statistiken/querschnittstemen/city-statistics/indikatoren-lebensqualitaet.html>

Anna-Katharina Lautenschütz:

Email: urbanaudit@bfs.admin.ch

Telefon: 058 463 62 76



Herzlichen Dank für Ihre Aufmerksamkeit!

Fragen?

**“INUAS-Ringvorlesung «Zukunft urbaner
Lebensräume»
20 March 2017
Zurich, Switzerland**

Monitoring Cities Globally: the UNECE/ITU KPIs for Smart Sustainable Cities

**Domenica Carriero
Smart Cities Program Coordinator
Organization for International Economic Relations (OiER)**



Outline

- Some info on OiER
- Urbanization trends and challenges
- Definition of Smart City
- United for Smart Sustainable
- United Smart Cities
- The KPIs for Smart Sustainable Cities

Organization for International Economic Relations (OiER)

Established in 1947, Austria

More than 200 members

- Business platform to facilitate international trade and investments
- Support to Governments and International Organizations

OiER

Organization for International
Economic Relations

est. 1947



Energy & Environment



Urban Development & Smart Cities

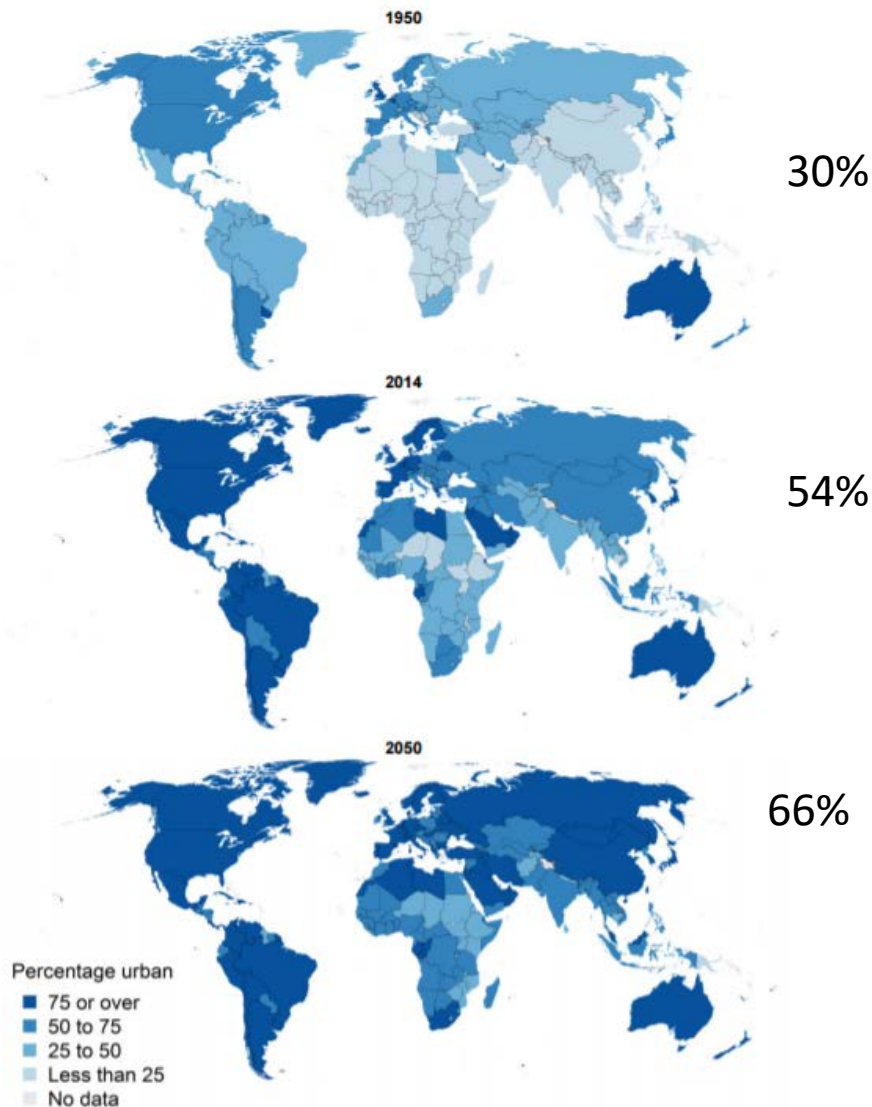


Health- Medical Infrastructure



Agro-Business & Food Supply

Urban population trends



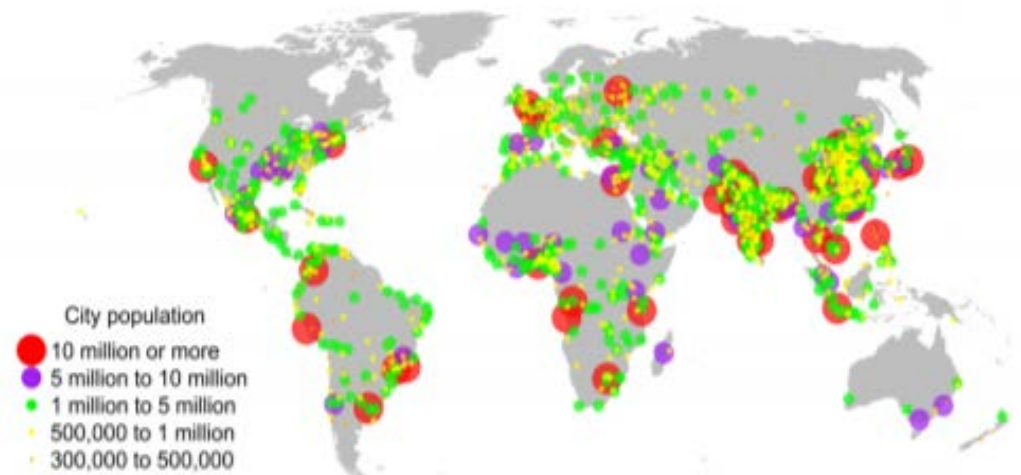
Population

- projected to increase to 9.7 billion people in 2050
- 90% increase in Asia and Africa
- most urbanized region Northern America (82%)
 - Latin America (80%)
 - Europe (73%)
 - Asia (48%)
 - Africa (40%)

Cities and mega-cities

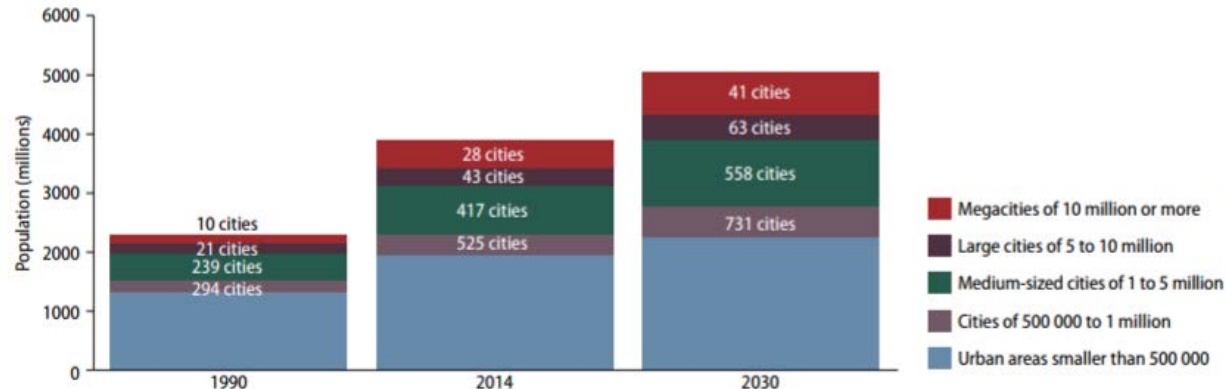
2030: 41 mega-cities (more than 10 million p.)

2030



Cities

- The largest: Tokyo (38 million)
 - Delhi (25 million)
 - Shanghai (23 million)
 - Mexico City, Mumbai, Sao Paulo (21 million)
- Fastest growing: medium-sized cities and cities with less than 1 million in Asia and Africa



Urbanization challenges

Statistics

- 80% of the world's GDP
- 54% urban residents
- 2/3 of world's energy consumption
- 70% of GHG emissions
- 1 billion urban poor

Main challenges

- High energy consumption
- High quantities GHG emissions
- Overpopulation and critical living conditions for citizens
- Informal settlements
- Conversion of land and green spaces into constructions and buildings
- Mobility problems and lack of infrastructures and services
- Housing issues

Smart city: definition

- UNECE/ITU definition: combines the «**smartness**» and the **sustainability** of a city

*“A smart sustainable city is an **innovative** city that uses information and communication technologies (ICTs) and other means to improve **quality of life**, **efficiency** of urban operation and services, and **competitiveness**, while ensuring that it meets the **needs of present and future generations** with respect to economic, social and environmental aspects as well as cultural.” [UNECE/ITU]*

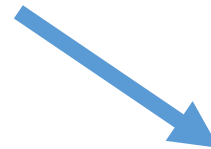
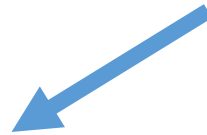


WHAT do cities need?

- To introduce new, affordable, reliable technologies
- To reduce their environmental impact
- To expand economic opportunities and save financial resources
- To bridge collaboration among stakeholders
- To increase their and attractiveness
- Improve the inhabitants' QUALITY OF LIFE



**United for Smart
Sustainable Cities
(U4SSC)**



**United Smart Cities
(USC)**



United for Smart Sustainable Cities (U4SSC): global initiative



U4SSC is a global initiative which provides a global platform for smart cities stakeholders to advocate for public policies to encourage the use of ICT and facilitate the transition to smart sustainable cities.

- Aim: policy advise through its activities, partners and deliverables
- When: launched on 18 May 2016
- Who: UNECE, ITU, ECLAC, UNECA, UNIDO, UN-Habitat, WTO, WMO, FAO, UNEP, UNEP-FI, UN Women, UNFCCC, UNCCD, UNU-IAS, WHO (observer) + other partner organizations
- Where: www.itu.int/en/ITU-T/ssc/united/Pages/default.aspx

United Smart Cities: program



United Smart Cities is a program which aims at addressing the major urban issues in sustainable development and its financing in medium-sized cities in particular in countries with economy in transition

Launched in April 2014

Hosted at: <http://unitedsmartcities.com/>

Main partners:



UNECE

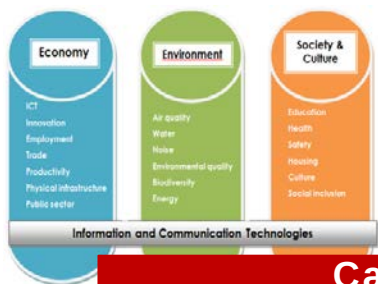
umweltbundesamt^U
ENVIRONMENT AGENCY AUSTRIA



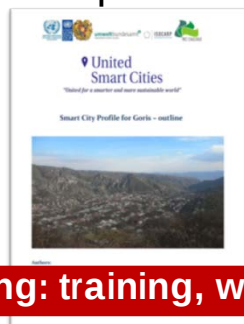
ISOCARP
Knowledge for better Cities

UN HABITAT
FOR A BETTER URBAN FUTURE

KPIs



SSC profiles



City action plan



Investment facility



Capacity building: training, workshops, meetings and events

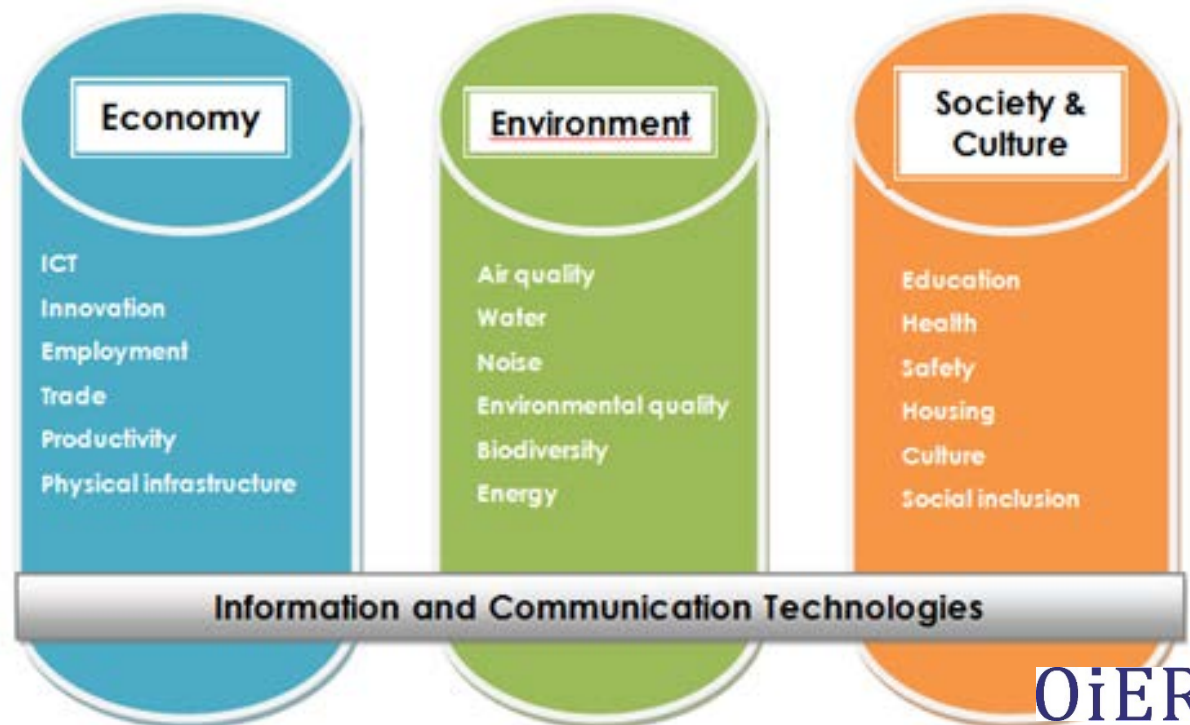
OIER

KPIs for smart sustainable cities to assess the achievement of SDGs

- Developed by a consortium of organizations (2015-2017)
- International standard
- Uniqueness: address smartness and sustainability of a city
- Support the monitoring of SDGs

Approach

- 3 main areas
- 18 topics
- 83 indicators (core & additional)



The indicators set: sources

- Sources:
 - worldwide **initiatives**
 - **available statistical data** (i.e. EUROSTAT, Urban Audit, World-Bank, WHO, FAO etc.)
 - **available maps** (i.e. likelihood of drought, earthquakes, flooding, precipitation)
 - **alternative methods** to assess the quality of urban features (perception surveys, check lists, expert judgement etc.)
 - **meetings/e-meetings** of the ITU Focus Group on smart sustainable cities, U4SSC and others
 - **stakeholder consultations**



Example of KPI

Category	Economy				
Subcategory	ICT				
Dimension	ICT Infrastructure				
KPI Name	Household Internet Access				
KPI No.		Type: Core or Advanced	Core	Type: Smart or Sustainable	Smart
Definition / Description	Percentage of households with Internet access				
Rationale / Interpretation / Benchmarking	As an indicator of access to information and technology connectivity given that connectivity across regions and between countries is correlated with economic prosperity, development, and growth. This in turn indicates inhabitant's access to knowledge, data, news, and communication to use for economic productivity i.e. training, education, research, managing business, exchanging ideas, etc. This should align with ITU-T reporting requirements. For any household via a fixed or mobile network at any given time. A value of 100% should be pursued For cities in developing or transition countries a positive trend should be observed				
Methodology	Calculate as Numerator: Number of households with internet access. Denominator: Total number of households Multiply by 100				
Unit	Percentage				
Data Sources / Relevant Databases	The data may be collected from local statistics department, or may need to be extrapolated from national data. Annual surveys of households may be another method for data collection to obtain the percentage of households with Internet access. This percentage will then be applied to the in-scope population. The data may also be collected from local internet service providers and telecommunications companies.				
SDG Reference(s)	SDG indicator 17.8.1 : Proportion of individuals using the Internet				

Benefits of KPIs



City level

- ☐ To evaluate the current status of a city
- ☐ To serve as a starting point for action
- ☐ To set priorities
- ☐ To measure changes

General level

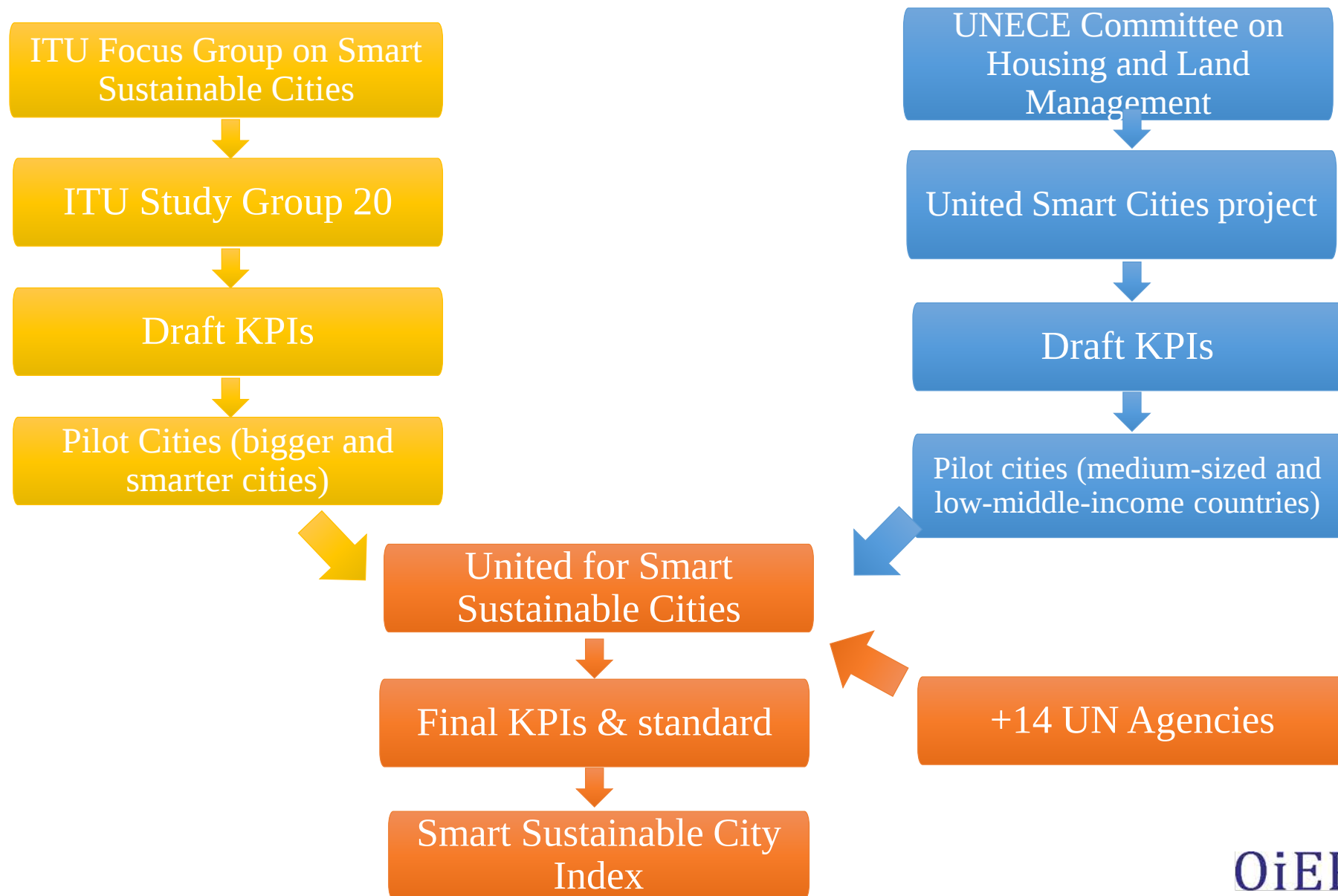
- ☐ To determine what data to collect
- ☐ To standardize data collection
- ☐ To demonstrate performance and outcomes
- ☐ To shows gaps and areas for improvement
- ☐ To support to achieve the SDGs

Challenges related to KPIs

- Data availability/scarcity and data-use legislation
- Diversification of collection practices (lack of harmonization)
- Resources: human and financial
- Expertise, skills and information on which data to collect



The KPIs process



Further steps



- To continue testing the KPIs in cities (50)
- To carry on the activities of U4SSC
- To scope the possibility to establish living labs in cities
- To start working on the Smart Sustainable Cities Index

Thanks for your attention

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