universität wien

University of Vienna

# Seminar/VU: Contemporary Challenges in Urban Development

SS 2022 – March 24, 2022

Univ.-Prof. Kerstin Krellenberg

# **Dates and content** (to be adjusted if necessary)

| | |
|---|---|
| 10.03.2022 | Organization – Framing - Introduction to Sustainable Urban Development at district level |
| **24.03.2022** | **Input and Exchange from/with Urban Innovation Vienna:**<br>1. Seestadt Aspern Development/Planning Approach and Evaluation<br>2. Decision on how to proceed, including distribution of topics for group work |
| 28.04.2022 | Brief update on group work<br>Joint development of the multi-criteria evaluation framework |
| 12.05.2022 | Interim presentations of group work<br>Exchange on approaches and Q&A |
| 09.06.2022 | Meeting experts, tbd |
| 30.06.2022 | Final presentations, Work on Joint Outcome |

# 1. Seestadt Aspern Development/Planning Approach and Evaluation

# Your homework for today

## Short Feedback on Excursion on March 21, 2022

- What did you notice in the master plan, but perhaps didn't see realized while at Seestadt?
- Aspects that you found quite interesting/innovative, and others that you were skeptical of.

**→ Jointly look at thoughts and photos in Miro**
(https://miro.com/app/board/uXjVOGEdNE0=/?invite_link_id=314839359162)

## Welcome to Herbert Bartik
from Urban Innovation Vienna GmbH

- Information on the project strategy evaluation of Seestadt Aspern they are starting now
  - Retrospective/Prospective
  - Benchmarking
  - Key Performance Indicators → to measure „success“ plus monitoring

➢ **Open discussion on what is planned and what we can contribute!**

# 2. Decision on how to proceed, including distribution of topics for group work

# Why indicators?

## Why working with indicators? → Evaluate how sustainable the development of Seestadt Aspern (Vienna district)

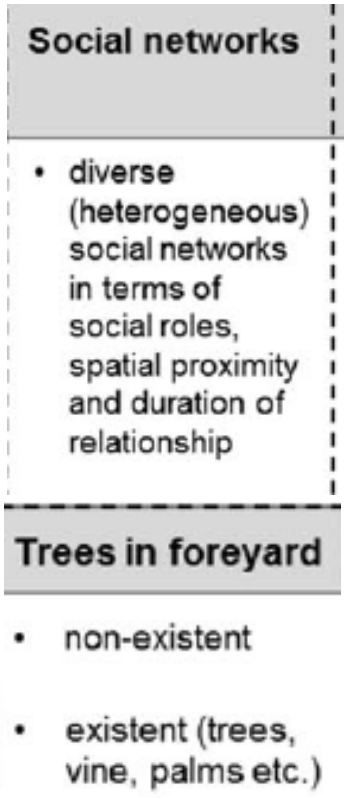
- Complexity reduction through proxies (metrics)
- Contextualization of goals
- Assessments/evaluation/monitoring
  e.g. standards, progress
- Comparison
- Communication tools
  e.g. evidence for decision-making

# How to develop Indicators?

- Variables/criteria — Indicators

| | |
|---|---|
| **Facilities** | |
| Benches | Number of benches related to total green space area size |
| **Biotic & abiotic elements** | |
| Meadow | Share of meadow area of total green space area size |
| Trees | Share of tree area of total green space area size |

- Mostly quantitative but also qualitative




Krellenberg et al., 2021Krellenberg & Welz, 2016

# Indicator development

## From indicators to indices (composite indicators)

- Index: aggregation of multiple indicators, normalization, weighting, aggregation, sensitivity analysis

**Coping Capacity to flood or heat**

coping capacity: high → low

| Preparedness / Awareness | Social networks | Knowledge of protection measures | Employment status |
|---|---|---|---|
| • took different measures when last event occurred, felt well-prepared for it and would improve coping options in future | • diverse (heterogeneous) social networks in terms of social roles, spatial proximity and duration of relationship | • was warned / informed beforehand by different people/ institutions and provides knowledge on protection measures | • employer, entrepreneur<br>• salaried employee<br>• self-employed |
| • took no measures when last event occurred, felt ill-prepared for last event and would not improve coping options in future | • uniform (homogeneous) social networks in terms of social roles, spatial proximity and duration of relationship | • Was not warned/ informed beforehand by different people/ institutions and provides no knowledge on protection measures | • pensioner<br>• unpaid family labour |

- e.g. normalized between 0 and 1000 scores

Krellenberg & Welz, 2016

# Sustainability indicators

## How to measure sustainability?

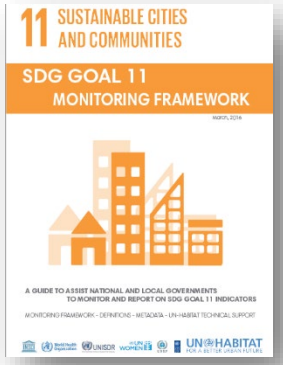
- "safe, resilient, sustainable and inclusive cities"
- Contextualization


UN, 2015

| Targets | Indicators |
|---|---|
| 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums | 11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing |

**Methodology:**
This indicator integrates the component of the slums/informal settlements that has been monitored for the last 15 years by UN-Habitat in mostly developing countries with a new component - inadequate housing - that applies largely to the developed countries. By integrating these two components, the indicator is now universal and can be monitored in both developing regions.

**Application and contextualization in developing and developed countries**



# Sustainability indicators


## Make cities and human settlements inclusive, safe, resilient and sustainable

## Targets

11.1 By 2030, ensure access for all to adequate, safe and affordable **housing** and basic services and upgrade slums

11.2 ... sustainable **transport** systems…

11.3 ... sustainable human settlement **planning…**

11.4 ... safeguard the world's cultural and natural **heritage**…

11.5 ... reduce the number of deaths and the number of people affected by **disasters**

11.6 ... reduce **environmental** impact of cities (air quality, waste)…

11.7 … **access to safe, inclusive and accessible, green and public spaces**, in particular for women and children, older persons and persons with disabilities

# Sustainability indicators

SDG 11

| Targets | Indicators |
|---|---|
| 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums | 11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing |
| 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons | 11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities |
| 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries | 11.3.1 Ratio of land consumption rate to population growth rate |
| | 11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically |
| 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage | 11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship) |
| 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations | 11.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population |
| | 11.5.2 Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters |

UN, 2015

# Sustainability indicators

## How to "measure"?

Developing countries

11.1.1 Proportion of urban population living in **slums, informal settlements** or inadequate housing

**a) Slum households:** Slums households are defined as those that lack one or more of the following: durable housing, sufficient living space, easy access to safe water, access to adequate sanitation and security of tenure[28]. The United Nations (2007) proposed the following definitions.

**Access to improved water**: A household is considered to have access to improved drinking water if it has sufficient amount of water for family use, which is at least 20 litres per person per day. The following criteria are used to determine the access to improved water:

- Piped connection to house or plot
- Public stand pipe serving no more than 5 households
- Protected spring
- Rain water collection
- Bottle water (new)
- Bore hole
- Protected dug well

**Access to improved sanitation:** A household is considered to have access to improved sanitation if they have access to:

- Direct connection to public sewer
- Proper flush latrine
- Pit latrine with slab, (this condition has a weight of 50% on total of the criterion)
- Ventilated improved pit latrine
- Direct connection to septic tank

**Sufficient living space:** A dwelling unit provides sufficient living area for a household if there are fewer than four people per habitable room. Additional indicators of overcrowding have been proposed: area-level indicators such as average in-house living area per person or the number of households per area. Additionally housing-unit level indicators such as the number of persons per bed or the number of children under five per room may also be used.

UN, 2015

# Sustainability indicators

## How to "measure"?

Developed countries

11.1.1 Proportion of urban population living in slums, informal settlements or **inadequate housing**

**b) Adequate housing:** In many developed countries, the definition of slums as provided above is less applicable, and hence a component of adequate housing that is more suitable for other regions will be integrated in the measurement framework for this indicator to ensure that the indicator is universal. According to the OHCHR, the definition of adequate housing[30] includes elements of security of tenure, affordability, habitability, availability of services, accessibility, location and cultural adequacy. Several elements that define inadequate housing are integral to the slum conditions as this already includes overcrowding, access to quality sanitation, access to quality water, living in semi-permanent structures, etc.

**Legal security of tenure:** Regardless of the type of tenure, all persons should possess a degree of security of tenure, which guarantees legal protection against forced eviction, harassment and other threats.
**Affordability:** Personal or household financial costs associated with housing should not threaten or compromise the attainment and satisfaction of other basic needs (for example, food, education, access to health care).
**Habitability:** Adequate housing should provide for elements such as adequate space, protection from cold, damp, heat, rain, wind or other threats to health, structural hazards, and disease vectors.
**Availability of services**, materials, facilities and infrastructure: Housing is not adequate if its occupants do not have safe drinking water, adequate sanitation, energy for cooking, heating and lighting, sanitation and washing facilities, means of food storage, refuse disposal, etc.
**Accessibility:** Housing is not adequate if the specific needs of disadvantaged and marginalized groups are not taken into account (such as the poor, people facing discrimination; persons with disabilities, victims of natural disasters).
**Location:** Adequate housing must allow access to employment options, health-care services, schools, child-care centres and other social facilities and should not be built on polluted sites nor in immediate proximity to pollution sources.
**Cultural adequacy**: Adequate housing should respect and take into account the expression of cultural identity and ways of life.

UN, 2015

# Sustainability indicators

## How to "measure"?

11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing

a) Slum households (SH) will be computed as follows

$$SH = 100\left[\frac{Number\ of\ people\ living\ in\ slum}{City\ population}\right]$$

b) Inadequate housing (IH) will be computed as follows:

$$IH = 100\left[\frac{Number\ of\ people\ living\ in\ inadequate\ housing}{City\ population}\right]$$

**Unit:**
%

**Data Sources:**
Data can be computed from Census and national household surveys, including DHS and MICS for slum component of the indicator. Data for the inadequate housing can be computed by using income and expenditure household surveys that capture household expenditures.

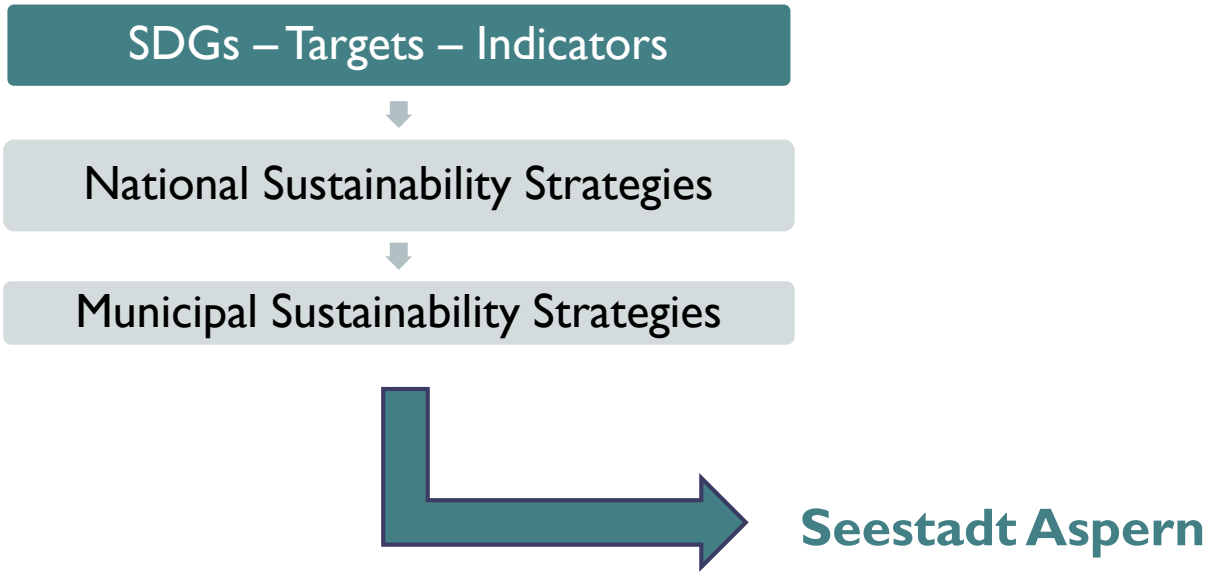
**Scope:**
Local, national, global. Reported in nearly all developing countries (slums) and all countries in the world (inadequate housing).

UN, 2015

# Sustainability indicators

## Contextualisation

- Relevance and applicability of indicators for specific contexts
- Measurability and data availability



# Sustainability indicators

## Interaction between SDGs

11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing


**Related SDG Targets / Indicators:**

**Direct relation**

| | |
|---|---|
| 1.1.1 | Poverty rate |
| 1.1.2 | Poverty rate, national |
| 6.1.1 | Access to Improved Water |
| 6.2.1 | Access to Improved Sanitation |
| 7.1.1 | Access to Electricity |
| 8.3.1 | Informal Employment |
| 8.5.2 | Unemployment Rate |
| 8.6.1 | Youth Unemployment |
| 10.2.1 | Population below Median Income |
| 10.1.1 | Grow rates of the poorest 40% |
| 11.2.1 | Public Transit Stop Coverage |
| 11.5.1 | Population Affected by Hazardous Events |
| 11.6.1 | Solid Waste Collection |
| 11.7.1 | Accessibility to Open Public Area |
| 11.7.2 | Public Space Safety for Women |
| 16.1.1 | Homicide rate |
| 16.1.3 | Population subjected to Violence |

**Indirect relation**

| | |
|---|---|
| 3.1.1 | Maternal Mortality |
| 3.2.1 | Under-Five Mortality Rate |
| 3.8.1 | Vaccination Coverage |
| 3.9.1 | Population Exposed to Outdoor Air Pollution |
| 4.2.1 | Early Childhood Education Programme |
| 4.3.1 | Participation in formal/non-formal education |
| 4.5.1 | Parity in Education |
| 4.6.1 | Literacy Rate |
| 9.c.1 | Mobile Network Coverage |
| 17.8.1 | Internet Access |

UN, 2015

# Sustainability indicators

## SDG Interaction Trade-offs and Co-Benefits

| Interaction | Name | Explanation | Example |
|---|---|---|---|
| +3 | Indivisible | Inextricably linked to the achievement of another goal. | Ending all forms of discrimination against women and girls is indivisible from ensuring women's full and effective participation and equal opportunities for leadership. |
| +2 | Reinforcing | Aids the achievement of another goal. | Providing access to electricity reinforces water-pumping and irrigation systems. Strengthening the capacity to adapt to climate-related hazards reduces losses caused by disasters. |
| +1 | Enabling | Creates conditions that further another goal. | Providing electricity access in rural homes enables education, because it makes it possible to do homework at night with electric lighting. |
| 0 | Consistent | No significant positive or negative interactions. | Ensuring education for all does not interact significantly with infrastructure development or conservation of ocean ecosystems. |
| –1 | Constraining | Limits options on another goal. | Improved water efficiency can constrain agricultural irrigation. Reducing climate change can constrain the options for energy access. |
| –2 | Counteracting | Clashes with another goal. | Boosting consumption for growth can counteract waste reduction and climate mitigation. |
| –3 | Cancelling | Makes it impossible to reach another goal. | Fully ensuring public transparency and democratic accountability cannot be combined with national-security goals. Full protection of natural reserves excludes public access for recreation. |

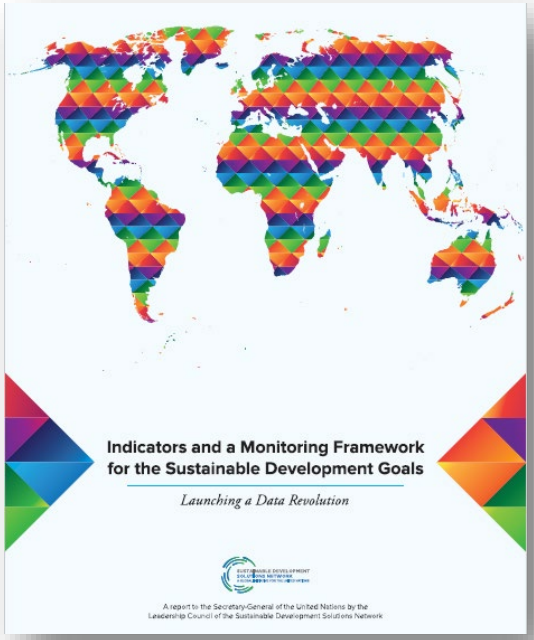

Nilsson et al., 2016

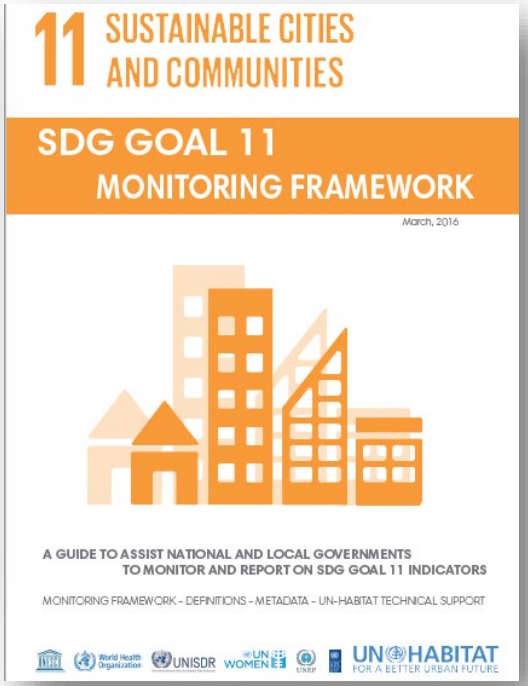
Map the interactions between Sustainable Development Goals

**Måns Nilsson**, **Dave Griggs** and **Martin Visbeck** present a simple way of rating relationships between the targets to highlight priorities for integrated policy.

# Sustainability indicators

## Indicators and Local Implementation




# Sustainability indicators

## How to measure sustainability? Transformation?

- New tools, other than purely data-driven indicators
- Avoid "greening" by numbers (e.g. measuring environmental parameters with smart technologies)
- Focus on numbers hides effects (e.g. increase in green spaces can lead to inclusion)
- "Living" indicators (e.g. impacts on social movements)

***'Don't call me resilient again!'*: the New Urban Agenda as immunology … or … what happens when communities refuse to be vaccinated with 'smart cities' and indicators**

Kaika, 2017

# CITYKeys Smart City Indicator Themes & Sub-Themes

- Triple bottom line +
  - People - Social Sustainability
  - Planet - Environmental Sustainability
  - Prosperity - Economic Sustainability
  - Governance – Inclusive Cooperation
  - Propagation – Scalability & Replicability

Bosch, 2017

| People | Planet | Prosperity | Governance | Propagation |
|---|---|---|---|---|
| • Health | • Energy & mitigation | • Employment | • Organisation | • Scalability |
| • Safety | • Materials, water and land | • Equity | • Community involvement | • Replicability |
| • Access to (other) services | • Climate resilience | • Green economy | • Multi-level governance | |
| • Education | • Pollution & waste | • Economic performance | | |
| • Diversity & social cohesion | • Ecosystem | • Innovation | | |
| • Quality of housing and the built environment | | • Attractiveness & competitiveness | | |

# Typology of Indicators

- **Input**
  - Resources required for implementation, including quantity, quality, and timeliness
    - Eg: Policy, human resources, materials, funding
- **Process**
  - To measure whether planned activities took place
    - Eg: Meetings, training courses, distribution of smart meters
- **Output**
  - Details in relation to the product/output of the activity
    - Eg: Number of smart meters distributed, number of electric busses
- **Outcome**
  - Measuring the results of the output with regards to the main objective
    - Eg: Outcome of a thermal isolation program could be the number of well isolated dwellings as percentage of the total number of dwellings covered by the program
- **Impact**
  - Measuring the quality and quantity of long-term results generated by program outputs
    - Eg: Change in quality of life, reduced energy use, reduced air pollution

Bosch, 2017

# ‘People’ Theme Indicators for Smart City Projects

### 3.2.6 Quality of housing and the built environment

| Indicator title | Indicator unit | Definition | Source |
|---|---|---|---|
| **Diversity of housing** | Simpson Diversity Index/Social Housing | Simpson Diversity Index of total housing stock in the project area<br>OR<br>Percentage of social dwellings as share of total housing stock in the project area | Eurbanlab; LEED |
| **Connection to the existing cultural heritage** | Likert scale | The extent to which making a connection to the existing cultural heritage was considered in the design of the project | Eurbanlab; LEED; DGNB |
| **Design for a sense of place** | Likert scale | The extent to which a ‘sense of place’ was included in the design of the project | Eurbanlab |
| **Increased use of groundfloors** | % in m2 | Increase in ground floor space for commercial or public use due to the project as percentage of total ground floor surface | |
| **Increased access to urban public outdoor recreation space** | m2 | Increase in public outdoor recreation space (m2) within 500m | OECD; Rotterdam SCP |
| **Increased access to green space** | m2 | Increase in green space (m2) within 500m | LEED; DGNB; Smart city Wheel; Triple Helix Model; ISO 37151 |

## SDGs

- **3. Good Health & Well-Being**
- **10. Reduced Inequalities**
- **11. Sustainable Cities & Communities**

## Seestadt Criteria

- **Well-designed public space**
- **Lively ground-floor zones**
- **Multi-Purpose ‘town houses’**

Bosch, 2017; UN, 2015; aspern Seestadt, 2017

# ‘Planet’ Theme Indicators for Smart City Projects

### 3.3.1 Energy & mitigation

| Indicator title | Indicator unit | Definition | Source |
|---|---|---|---|
| **Reduction in annual final energy consumption** | % in kWh | Percentage change in annual final energy consumption due to the project for all uses and forms of energy | Eurbanlab; Concerto; CIVIS, DGNB |
| **Reduction in lifecycle CO2 emissions** | % in tonnes | Percentage peduction in lifecycle CO2 emissions achieved by the project | CIVIS; DGNB |
| **Maximum Hourly Deficit** | MHDx | The maximum yearly value of how much the hourly local demand overrides the local renewable supply during one single hour | IDEAS |

### 3.3.3 Climate resilience

| | | | |
|---|---|---|---|
| **Climate resilience measures** | Likert scale | The extent to which adaptation options have been considered in the project | Eurbanlab |

### 3.3.5 Ecosystem

| | | | |
|---|---|---|---|
| **Increase in green and blue space** | % in m2 | Percentage icrease of green and blue spaces due to the project | |
| **Increased ecosystem quality and biodiversity** | Likert | The extent to which ecosystem quality and biodiversity aspects have been taken into account | |

## SDGs

- **7. Affordable & Clean Energy**
- **13. Climate Action**
- **14. Life Below Water**
- **15. Life on Land**

## Seestadt Criteria

- **Preventing & Adjusting to Climate Change**

Bosch, 2017; UN, 2015; aspern Seestadt, 2017

# ‘Prosperity’ Theme Indicators for Smart City Projects

### 3.4.1 Employment

| Indicator title | Indicator unit | Definition | Source |
|---|---|---|---|
| **Increased use of local workforce** | % in euros | Share in the total project costs that has been spent on local suppliers, contractors and service providers. | Eurbanlab |
| **Local job creation** | # of jobs | Number of jobs created by the project | |

### 3.4.5 Innovation

| Indicator title | Indicator unit | Definition | Source |
|---|---|---|---|
| **Involvement of extraordinary professionals** | Likert | The extent to which the project involved professionals normally not encountered in these type of projects | Smart city Wheel |
| **Stimulating an innovative environment** | Likert scale | The extent to which the project is part of or stimulates an innovative environment | |
| **Quality of open data** | # stars | The extent to which the quality of the open data produced by the project was increased | |
| **New startups** | # of startups | The number of startups resulting from the project | Smart city Wheel |

## SDGs

- **1. No Poverty**
- **8. Decent Work & Economic Growth**
- **9. Industry Innovation & Infrastructure**

## Seestadt Criteria

- **Functional Mix & Innovation**
- **Multi-Purpose ‘town houses’**

Bosch, 2017; UN, 2015; aspern Seestadt, 2017

# ‘Governance’ Theme Indicators for Smart City Projects

### 3.5.2 Community involvement

| Indicator title | Indicator unit | Definition | Source |
|---|---|---|---|
| **Professional stakeholder involvement** | Likert scale | The extent to which professional stakeholders outside the project team have been involved in planning and execution | Eurbanlab; Green Digital Charter |
| **Bottom-up or top-down initiative** | Yes/no | Has the project idea originated from the local community? | |
| **Local community involvement in planning phase** | Likert scale | The extent to which residents/users have been involved in the planning process | Eurbanlab; Green Digital Charter |
| **Local community involvement in implementation phase** | Likert scale | The extent to which residents/users have been involved in the implementation process | |
| **Participatory governance** | % of people | Share of population participating in online platforms | |

### 3.5.3 Multi-level governance

| Indicator title | Indicator unit | Definition | Source |
|---|---|---|---|
| **Smart city policy** | Likert scale | The extent to which the project has benefitted from a governmental smart city policy | Eurbanlab |
| **Municipal involvement - Financial support** | Likert scale | The extent to which the local authority provides financial support to the project | DGNB |

## SDGs

- **10. Reduced Inequalities**
- **11. Sustainable Cities & Communities**
- **16. Peace, Justice & Strong Institutions**
- **17. Partnerships for the Goals**

## Seestadt Criteria

- **Well-designed public spaces (*interdisciplinary planning*)**
- **Small-scale & diverse (*multi-stakeholder collaboration*)**

Bosch, 2017; UN, 2015; aspern Seestadt, 2017

# ‘Propagation’ Theme Indicators for Smart City Projects

### 3.6.1 Replicability & scalability

| | | | |
|---|---|---|---|
| **Social compatibility** | Likert scale | The extent to which the project’s solution fits with people’s ‘frame of mind’ and does not negatively challenge people’s values or the ways they are used to do things. | Eurbanlab |
| **Technical compatibility** | Likert scale | The extent to which the smart city solution fits with the current existing technological standards/infrastructures | Eurbanlab |
| **Solution(s) to development issues** | Likert scale | The extent to which the project offers a solution to problems which are common to European cities | Eurbanlab |

### 3.6.2 Factors of success

| | | | |
|---|---|---|---|
| **Changing professional norms** | Likert scale | The extent to which the project changes the professional ‘state of the art’ | Eurbanlab |
| **Changing societal norms** | Likert scale | The extent to which the project changes the norms and values of the society | Eurbanlab |
| **Diffusion to other locations** | Likert scale | The extent to which the project is copied in other cities and regions | Eurbanlab |
| **Diffusion to other actors** | Likert scale | The extent to which theproject is copied by other parties | Eurbanlab |

## SDGs

- **10. Reduced Inequalities**
- **11. Sustainable Cities & Communities**
- **17. Partnerships for the Goals**

## Seestadt Criteria

- **Functional Mix & Innovation**

Bosch, 2017; UN, 2015; aspern Seestadt, 2017

# CITYkeys Conclusions for Project Indicators

- Amalgamation of indicators from 43 sets for project evaluation
- Addition of 25 project specific indicators
- Of the 99 project indicators, only 20 can be quantitatively related or aggregated to the city level
- For 43 project indicators, no corresponding city level indicator exists
- 'The resulting indicator selection responds to the wishes of cities and citizens for the coverage of their priorities and reflects city (sustainability) goals'
- Mainly utilized impact indicators, with a number of generalized input, output, and outcome indicators

CITYKeys, 2017

# CITYKeys Project Indicators → *Thoughts? Ideas? Critiques?*

- How do the CITYkeys Indicators compare to those of the SDGs?
- Where do the CITYkeys indicators excel?
- What challenges do these CITYKeys indicators face in implementation, data collection, and monitoring?
- What indicators conflict with one another, and how can such be overcome?

# Who would like to work on which topic?

## High Quality Principles (Seestadt Aspern Master Plan)

# Indicators for Seestadt Aspern

## Next steps

- Work on topics/quality criteria of Seestadt Aspern in groups
- Develop key performance indicators
- Think about which indicators you could assess (2-3), which methods to be used?

**Please indicate until March 25, 2002 (noon) your topic/preferences**

| Topic/Quality Criteria | Group composition |
|---|---|
| Well designed public space | |
| Lively ground-floor zones | |
| Functional mix and innovation | |
| Range of mobility options | |
| Small-scale and diverse | |
| Multipurpose „town houses“ | |
| Preventing and adjusting to climate change | |

# For next Session

- Read on your topics (quality criteria) of Seestadt Aspern, specifically for Seestadt Aspern (what information is available) and further general scientific information (journal articles)
- Develop key performance indicators
- Think about which indicators you could assess (2-3)
- Draft ideas which methods you would like to use to assess the indicators?

- **Please prepare some slides and a max. 10 minutes presentation**

# **Dates and content** (to be adjusted if necessary)

| | |
|---|---|
| 10.03.2022 | Organization – Framing - Introduction to Sustainable Urban Development at district level |
| 24.03.2022 | Input and Exchange from/with Urban Innovation Vienna:<br>1. Seestadt Aspern Development/Planning Approach and Evaluation<br>2. Decision on how to proceed, including distribution of topics for group work |
| **28.04.2022** | **Brief update on group work**<br>**Joint development of the multi-criteria evaluation framework** |
| 12.05.2022 | Interim presentations of group work<br>Exchange on approaches and Q&A |
| 09.06.2022 | Meeting experts, *tbd* |
| 30.06.2022 | Final presentations, Work on Joint Outcome: blogpost |

# Literature (cited)


Seestadt Aspern. (2017). Master Plan Revisited: Status of Planning 2017. 1-23

Bosch, P., Jongeneel, S., Rovers, V. (2017). CITYKeys indicators for smart city projects and smart cities. 1-305

Kaika, M. (2017). 'Don't call me resilient again!': the New Urban Agenda as immunology… or… what happens when communities refuse to be vaccinated with 'smart cities' and indicators. Environment and Urbanization, 29(1), 89-102.

Koch, F., & Krellenberg, K. (2018). How to contextualize SDG 11? Looking at indicators for sustainable urban development in Germany. *ISPRS International Journal of Geo-Information*, *7*(12), 464.

Krellenberg, K., & Welz, J. (2017). Assessing urban vulnerability in the context of flood and heat hazard: Pathways and challenges for indicator-based analysis. Social Indicators Research, 132(2), 709-731.

Krellenberg, K., Artmann, M., Stanley, C., & Hecht, R. (2021). What to do in, and what to expect from, urban green spaces–Indicator-based approach to assess cultural ecosystem services. *Urban Forestry & Urban Greening*, *59*, 126986.

Smart City Wien. (2017). Monitoring Report 2017: Smart City Wien Framework Strategy. 1- 88.

United Nations. (2015). 2030 Agenda for Sustainable Development. Sdgs.un.org/goals.

universität wien

University of Vienna

# Seminar/VU: Contemporary Challenges in Urban Development

Univ.-Prof. Kerstin Krellenberg

kerstin.krellenberg@univie.ac.a