

# LAND USE CHANGES AND URBAN DYNAMICS. HOW TO MEASURE?

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# Sustainability as an approach into the land use

- The main goal (by actually Czech Construction Act) of contemporary urban development and planning is sustainable territorial development
- BUT!! Are urban processes ruled by our urban planning system really sustainable?
- Second : Are the responsible person prered for it? Have they relevant tools?

# **Sustainable Urban Planning Tools**

**(by „new“ Building Act from 2006 year)**

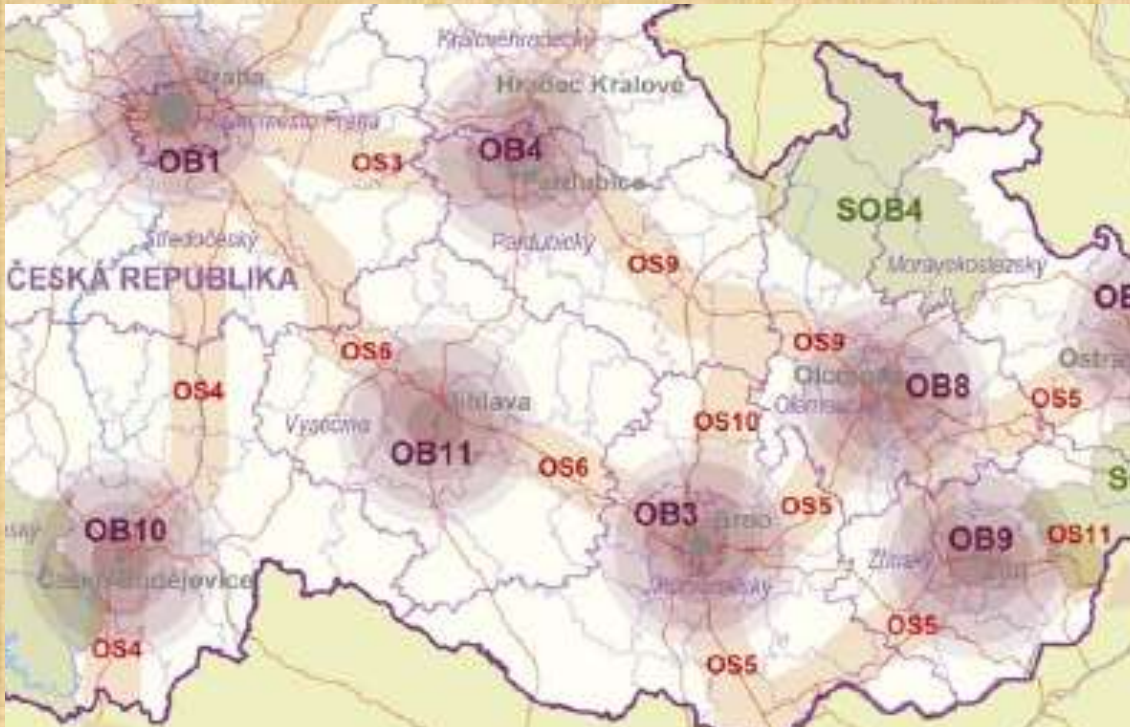
- The town and country planning authorities procure the „planning analytical materials“ for its administrative unit (microregions with very different number of cadasters) every 2 years
- analysis of the area sustainable development is a separate part of the planning analytical materials
- analysis of the microregional sustainable development are integral part of master and regulatory plans, also other plans

**Territorial sustainable development  
analysis  
developed for using in the fences  
of Czech Building Act**

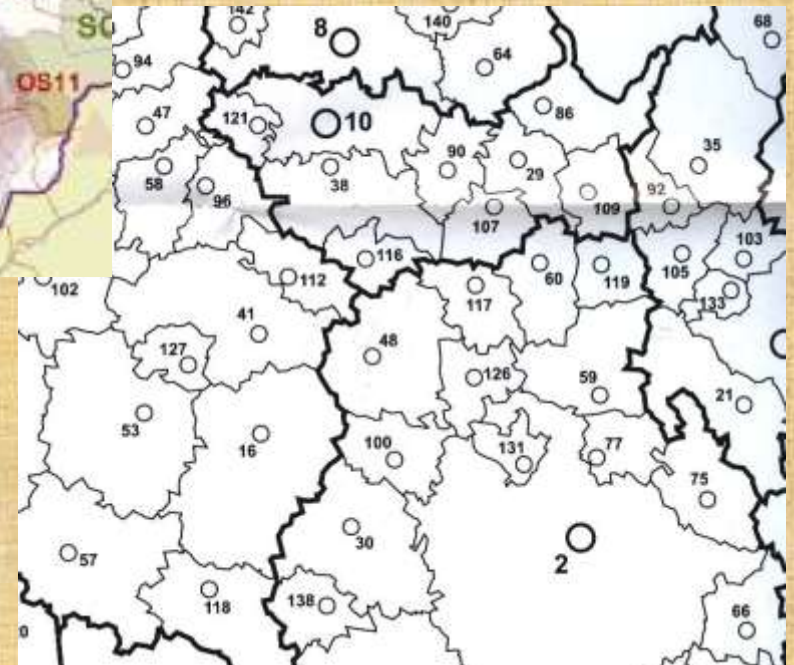
New methodology for new aims solving



# Example of common Urban analysis of Polička Region



SCG regionalization, 2001

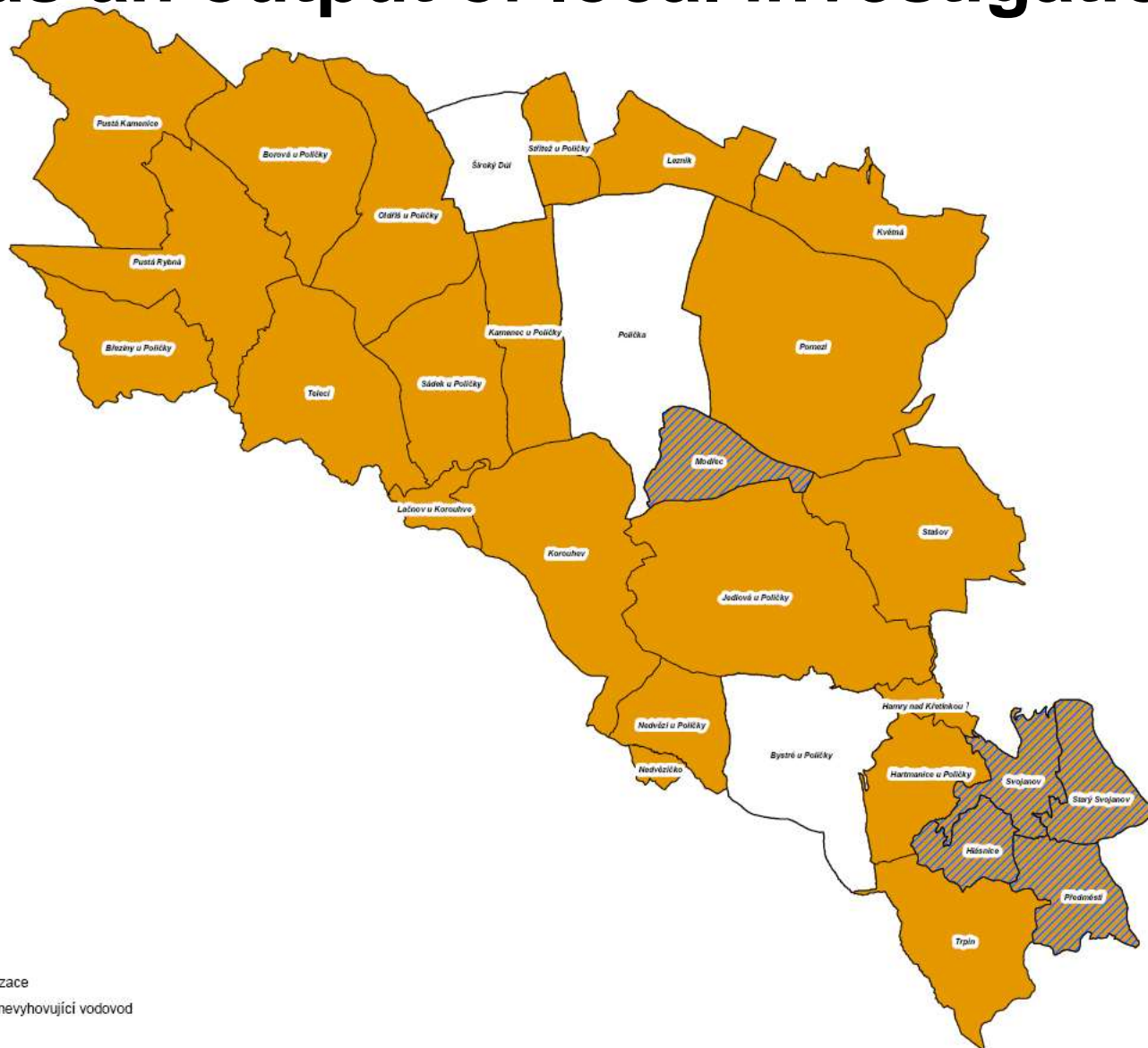


Urban Development Policy CR 2006







# Water supply and sewage system problems as an output of local investigation

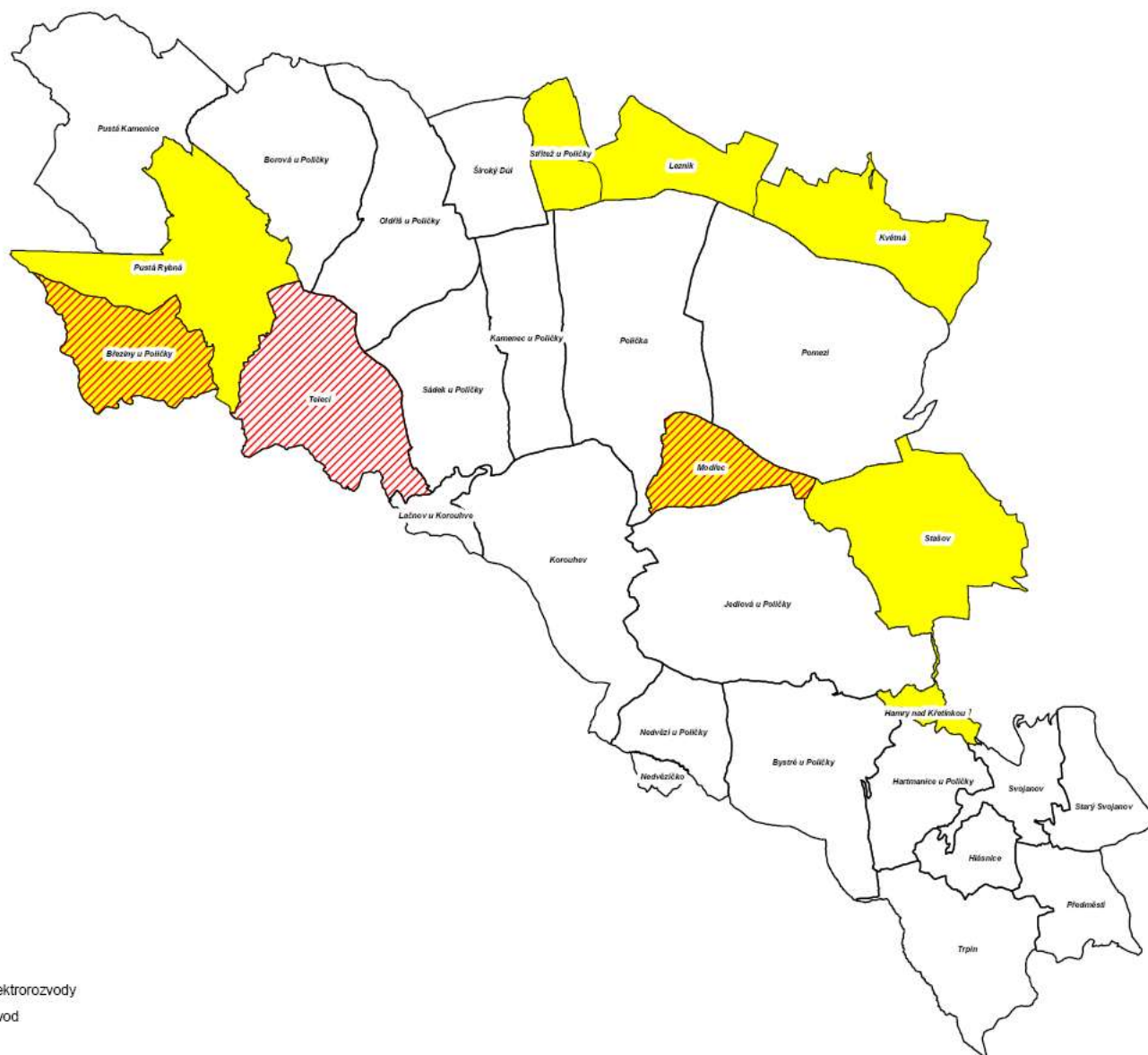


## Legenda



-  Chybějící kanalizace
-  Chybějící nebo nevyhovující vodovod



# Lack of electricity and/or gas supply in Policka microregion

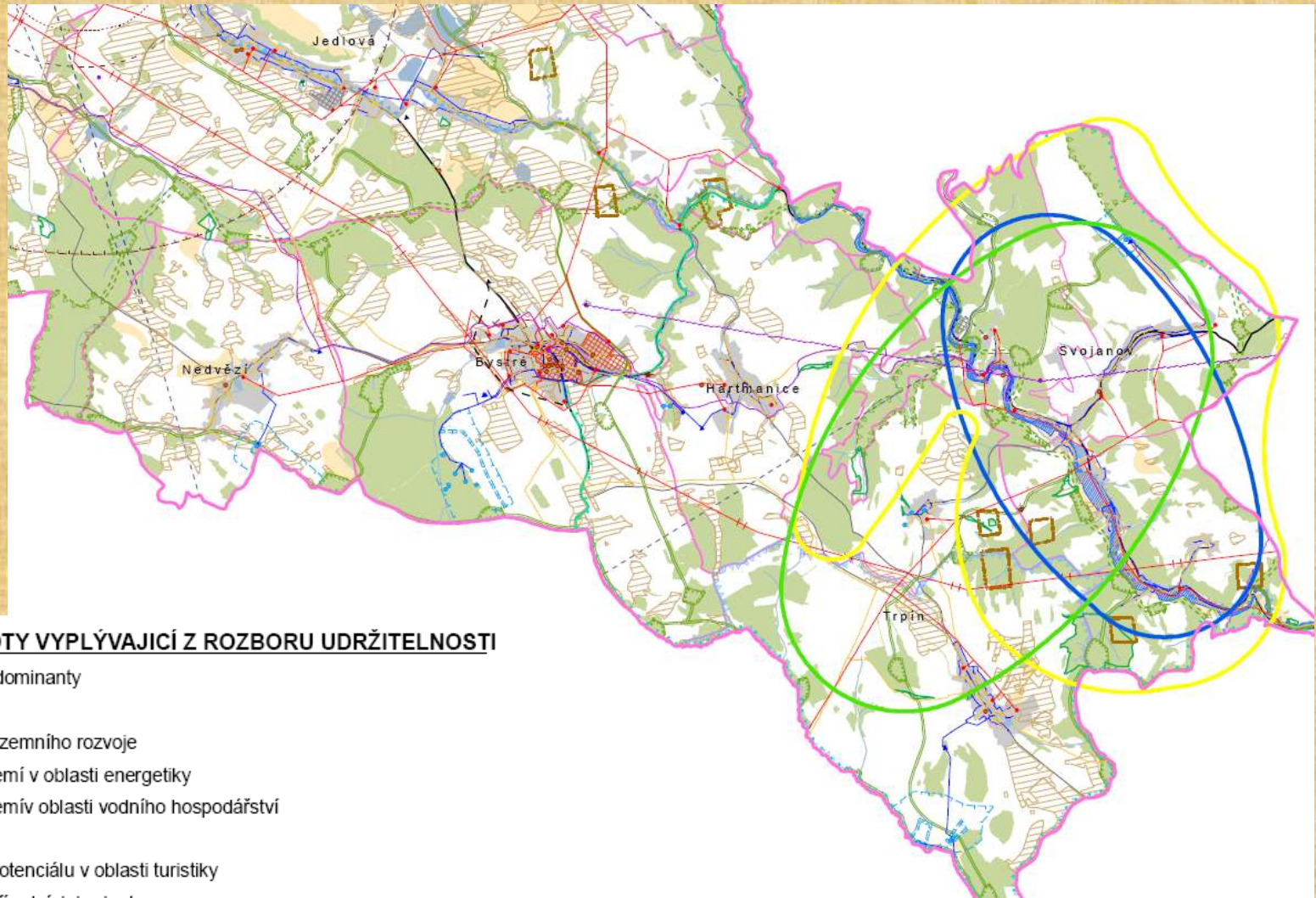


## Legenda

-  Nevyhovující elektrorozvody
-  Chybějící plynovod



# Problems and risks analysis in the southern part of Policka microregion



# Komplex area analysis

- **SWOT analysis:**
  - strength
  - weaknesses
  - opportunities
  - threats
- **Evaluation areas:**
  - environment
  - social cohesion
  - economical situation
- **Experts team:**
  - environmentalist
  - social geographer
  - urban economist
  - urban planner
  - local expert



Strengths	Frequency
High quality environment incl. preserved reg.systems of ecolog. stability	4
Good public transit transportation accessibility – (bus) – existence of stops, or their accessibility is good from the municipality, sufficient frequency of links	3
No greater environmental pollution is recorded in general	3
Existing possibility for the travel and tourism industry of natural and cultural character	2
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Good natural immigration increase in 2003–2007	2
Low long-term unemployment and work opportunities in certain municipalities	2
Large forest area	1
High koeficient of ecological stability	1
Area relatively rich of water sources	1
Low number of tourists	1
Environmental pollution sources only in Policka	1
Well-preserved area from the point of view of landscape	1
Relatively well ventilated area	1
Higher intesity of dwelling construction in the comparison with region	1



# Field of interaction between SD pillars

- Environmental x social (Env x S)
- Environmental x economy (Env x Ec)
- Social x environmental (S x Ec)
  
- Evaluation values from -2 till 2
  - -2 ... significantly negative
  - -1 ... slightly negative
  - 0 ... neutral interaction
  - +1 ... slightly positive
  - +2 ... significantly positive

# Comprehensive SWOT analysis

Strengths	Type of interaction Soc x Eco					
SWOT analysis theme	1. exp.	2. exp.	3. exp.	4. exp.	5. exp.	Aggregated value
High quality environment incl. preserved regional systems of ecological stability	0	0	-2	1	0	0
Good public transit transportation accessibility – (bus) – existence of stops, or their accessibility is good from the municipality, sufficient frequency of links	2	1	2	2	2	2
No greater environmental pollution is recorded in general	0	2	0	0	0	0
Existing possibility for the travel and tourism industry of natural and cultural character	2	1	1	2	1	1
Wealthy cultural life, offer of social and cultural events, and other offers for leisure time activities in the majority of municipalities of Municipalities with Extended Powers	2	1	2	2	1	2
Good natural immigration increase in 2003–2007	1	2	2	2	1	2
Low long-term unemployment and work opportunities in certain municipalities	2	2	2	2	2	2

# Komplex evaluation of themes from SWOT analysis

Weaknesses	Relationships between pillars			
	Frequency	Soc x Eco	Soc. x Envi	Envi x Eco
Insufficient facilities of regional technical infrastructure – water pipes, sewerage with connection to waste water treatment plant	5	-2	-2	-2
Insufficient quality of local roads and class III motorways	5	-1	-2	-1
Existence of brownfields incl. old ecological burdens	5	-1	-2	-2
Insufficient public transit transportation accessibility of certain municipalities	4	-2	-2	-1
Insufficient social facilities in certain municipalities	4	-2	-1	0



# Results of komplex SWOT analysis processing

- Agregation of SWOT analysis themes due to its importance and frequency
- Definition of main themes of the region :
- Insufficient facilities of regional technical infrastructure – water pipes, sewerage with connection to waste water treatment plant
  - ▶ Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant
- No greater environmental pollution is recorded in general ▶ Preservation of landscape's character
- ...

# Main themes of the region

1. Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant;
2. Quality of class III motorways and local roads;
3. Disparity in the region's accessibility by public transit;
4. Accessibility of social facilities to all inhabitants of the region;
5. Preservation of landscape character;
6. Unsuitable conditions in the area of employment and job opportunities in the region, incl. wage development;
7. Gradient of development in the travel and tourism industry (development of ecotourism, agrotourism etc.);
8. Development in the number of inhabitants and their age structure;
9. Absorption capacity of the region in the area of acquiring financial sources for the development of municipalities;
10. Existence and other establishment of brownfields;
11. Quality and capacity of energy supply of municipalities.

# Matrix of the evaluation of interactions between individual pillars of SD

ENV	-	-	-	+	+	+	-	+
EK	-	-	+	-	+	-	+	+
SOC	-	+	-	-	-	+	+	+
	Výrazně neudržitelné	Neudržitelné			Udržitelné s výhradami			Udržitelné

Significantly  
unsustainable

Slightly  
unsustainable

Slightly  
sustainable

Significantly  
sustainable



# Evaluation of main themes of the region from the aspect of sustainability

	Main themes of the region	Soc x Eco	Soc. x Envi	Envi x Eco	Evaluation
1	Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant	-2	0	-1	Slightly unsustainable
2	Quality of class III motorways and local roads	-2	-1	-2	Significantly unsustainable
3	Disparity in the region's accessibility by public transit	-2	-2	-1	Significantly unsustainable
4	Accessibility of social facilities to all inhabitants of the region	-2	0	-1	Slightly unsustainable
5	Preservation of landscape's character	1	2	2	Significantly sustainable

# General SD evaluation of the region

... in general, the region of Polička can be viewed as a region with preserved, quality natural environment (significant positives in terms of the environment); nevertheless, with an inadvertent tendency to unsustainable development mainly in social and economic aspects ...

# System indicators

Indicator	SD arrangement ***	Description	Comments
A1 Satisfaction with local community	Quality and comfort of housing provision in the locality	Quality of housing perception in the locality (comparison with city average number by EC indicator A1)	% lower or equal as the city average number
A3 Mobility and local transport	The portion of transport modes into / from the locality (Promotion of public transport and bicycle transport into the locality)	Portion of separate transport means (city average number in comparison with the locality – EC indicator A3)	% of number lower or equal as city average
B8 Noise pollution	Protection and compensation arrangement against negative impact from transportation	Noise pollution measurement in the area (in the comparison of city average by EC indicator B8)	% lower or equal as the city average number

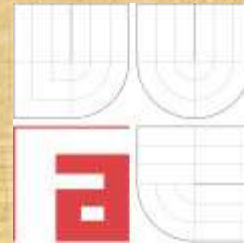


# Specific indicators

Main themes of the region	Indicator	Unit	Source	Measuring frequency
Region facilitated with sufficient and capacitive technical infrastructure in the area of water management and sewerage, incl. connection to the water treatment plant	1.1 Number of inhabitants/homes connected to public water pipes	Number of persons/homes	Čzech Statistical Office	2 years
	1.2 Number of inhabitants/homes connected to sewerage	Number of persons/homes	Čzech Statistical Office	2 years
Disparity in the region's accessibility by public transit	3.1 Transit time of PT to Polička and Pardubice from individual municipalities	Isochrone in time intervals of 20,40 and 60 min.	Calculation – regional planning office	2 years
	3.2 PT transport service (frequency of links)	Number of links/days	Calculation of municipalities/regional planning office	2 years

# Conclusion

Evaluation of sustainable regional land use waits further lengthy development, as we are basically just at the beginning of this discipline. Practical experience is relatively limited thus far. Therefore, methodological manuals, recommendations and specifications have all the greater significance, as how principles of sustainable development in regional planning will actually be implemented depends on them.



# Thank you for yours attention

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