
Tailings of the Sor-Varanger ASA mine, early spring

QUANTIFICATION OF QUALITATIVE INDICATORS
The REDIF Method

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The **REDIF (REGional DIFferential) method** has been developed within the IRON CURTAIN project as a reaction to the fact of high variability of reference areas in terms of actual problem definition and data availability. It provides a unifying concept allowing the analyst to bring the assessment of territorial competitiveness of such different areas on the comparable level using only limited set of widely available indicators and quantified expert estimates. The quantification of expert estimate is inspired by semantic differential introduced by Osgood and colleagues [1] [2]. REDIF is a combined qualitative - quantitative method to assess the status of an area according to the LEADER concept of Territorial competitiveness [3]. Its main strength is perceived in the ability to combine the qualitative and quantitative data assessment.

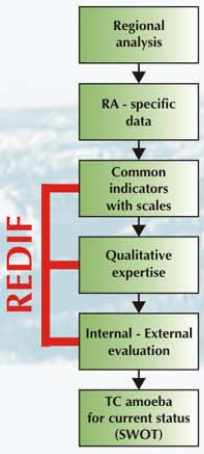


Figure 1: REDIF approach in quantified SWOT assessment.

REDIF is based on a combination of following approaches:

- **Quantitative assessment** of Territorial competitiveness components using basic set of **indicators** with defined **scales** from 0 (worst value) to 10 (best value) for each reference area.
- **Qualitative assessment** by **expert estimates** based on the same scale with the limit values of 0 and 10 referring to overall verbal description of the worst and the best status for the component according to the LEADER concept.

As an additional method to get comparable results for different areas, a verification process took place. The results of the REDIF assessment for each reference area were reviewed by leaders of all other reference areas. The verification process is described below.

The scheme of the method applied for quantified SWOT analysis for all of the reference areas is in Figure 1.

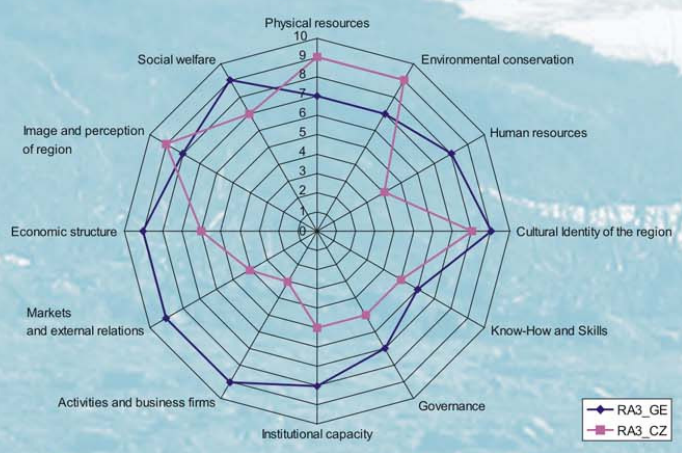
The assessment was done using a table covering both qualitative and quantitative approaches (example of social welfare in Table 1).

Table 1: Example of assessment of area capital component (Czech side RA3 - social welfare).

			TOTAL SCORE (quantitative + qualitative assessment)												
Social welfare	bad housing conditions, (no housing - homeless/displaced persons, or house not affordable), insecure area of high criminality, high poverty, low life expectancy		0	1	2	3	4	5	6	7	8	9	10		good housing conditions, accessible family houses, secure area with very low criminality, low number of poor people, long life expectancy, healthy population
			Quantitative assessment												
	indicators	actual value	worst										best	score	
	Uneployment rate (%)	5	30								5		*0*	8	
	Number of uneployment on 1 vacancy	30	100							30			*1*	7	
	Life expectancy men	70	55							70			*78*	7	
	Life expectancy women	80	57									80	*83*	9	

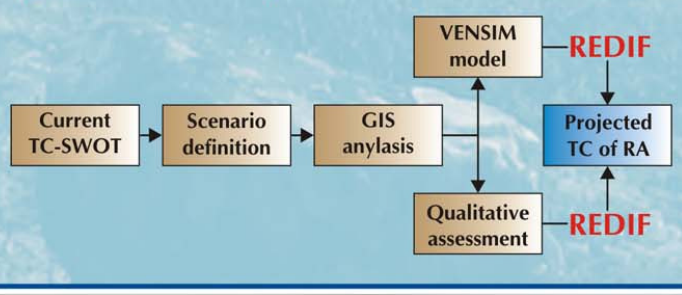
The results of the assessment are presented in form of an "amoeba" graph (Figure 2).

Figure 2: Amoeba of territorial competitiveness for both sides of reference area 3.



The REDIF method, which displays territorial competitiveness of an area in the form of amoeba graph, was also used for assessment of the development scenarios / options in the reference areas. In this case, question was how the human interventions in the area will affect all components of territorial competitiveness when projected to years 2010 - 2015. A scenario impact had to be studied for all twelve components to see the overall effect and different (positive or negative) effects on all components at the same time. In order to keep the comparability of the scenario assessment results for all reference areas on the base of LEADER concept of territorial competitiveness, the projection of the assessment results is done again using the amoeba graphs identical to that used for the SWOT analysis. The scheme of the REDIF application for scenario assessment is in Figure 3.

Figure 3: REDIF scheme for development scenarios assessment.



REDIF method is very suitable for comparison of different reference areas. Current status of twelve regions within the six IRON CURTAIN reference areas was assessed by corresponding Prime Movers. The result of the REDIF assessment is Table 2. The data in the table represent an input matrix for statistical methods used for comparison of the areas.

Table 2: The results of REDIF assessment in IRON CURTAIN areas.

Region	Physical resources	Environment conservation	Human resources	Cultural identity	Know-how and Skills	Governance resources	Institutional capycity	Activities and business firms	Markets and external relations	Economic structure	Image and perception	Social welfare
RA1_NO	6	8	8	9	8	5	8	6	5	7	7	9
RA1_RU	3	5	2	3	4	2	4	4	3	2	2	2
RA2_GE_W	9	8	6	10	9	7	5	6	4	8	10	9
RA2_GE_E	9	8	3	8	9	8	5	6	5	6	9	9
RA3_GE	7	7	8	9	6	7	8	9	9	9	8	9
RA3_CZ	9	9	4	8	5	5	5	3	4	6	9	7
RA4_AU	8	7	6	9	6	8	8	7	6	6	8	8
RA4_CZ	6	7	8	10	5	6	4	6	6	4	9	7
RA5_AU	8	8	8	9	7	8	8	8	7	6	8	8
RA5_HU	8	7	6	9	6	7	8	6	7	6	9	6
RA6_GR	7	6	7	7	6	7	6	6	5	6	7	7
RA6_BG	6	6	8	7	4	6	4	4	4	3	7	4

Factor analysis [4] was used to decrease the dimensionality of the input matrix and compare the reference areas. Three factors describing 84.3 % of the matrix variability were acquired from the factor analysis. The representation of particular TC components in the factors is summarized in Table 3.

Table 3: Representation of TC components in three factors according to the factor analysis.

	Component		
	1	2	3
Physical resources	,921		
Environmental conservation	,887		
Image and perception of region	,877		,445
Social welfare	,799	,511	
Know-How and Skills	,745	,381	-,313
Cultural Identity of the region	,730	,288	,554
Economic structure	,659	,634	
Governance	,616	,416	,406
Activities and business firms	,149	,901	,271
Institutional capacity	,161	,854	,107
Markets and external relations	,104	,775	,486
Human resources		,361	,816

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Factor 1 is the most aggregated, prevailing dimensions of the area competitiveness are related to physical conditions, social dimension and economical dimension. Factor 2 describes economical dimension both in terms of private and public sector (Institutional capacity). Factor 3 is mainly influenced by human resources. The areas in question can be visualized in a three-dimensional view using the defined factors (Figure 4).

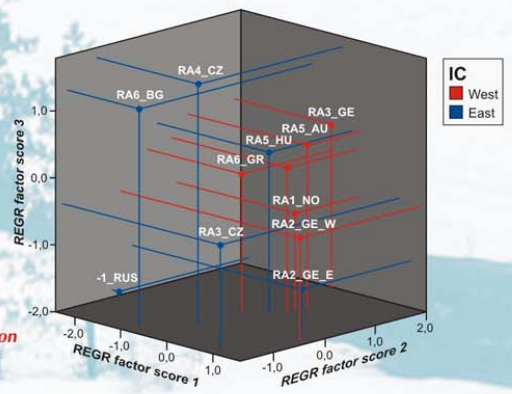


Figure 4: Visualization of the regions using three factors.

Another possibility how the REDIF can be used for comparison of different regions is computation of Territorial Competitiveness Index from the TC components scores. Standardized form of sum scale acquired using arithmetic average was used for calculation of the TC Index. Reliability Analysis was performed to test suitability of the sum scale (Cronbach Alpha =0,93) [4]. The calculated TC Index for the studied areas is in Figure 5.

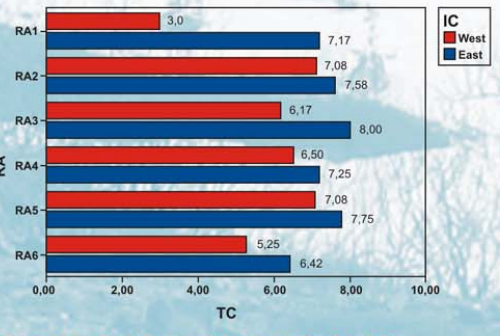


Figure 5: Territorial competitiveness Index for IRON CURTAIN regions.

After the border between Norway and Russia was agreed upon in 1826, there were often disputes between the Norwegian and Russian fishermen.

The District Administrator of Finnmark has asked several times to have a gunboat placed at the river mouth of Jakobselv (the boundary river).

A norwegian marine officer suggested that they should rather build a church.

In 1869 the chappel was consecrated. King Oskar II visited the chappel in 1873 and asked to have his name linked to it.

In the cemetery adjacent to the church, there are graves with Russian, Saami, Finnish and Norwegian names on the tombstones. Some of the crosses are orthodox, but most of them are Lutheran.


King Oskar II chappel, Grense Jakobselv


Sumava region

Verification of the TC amoeba

The results of the SWOT quantification - the TC amoeba were acquired with contribution of the group of the local actors in the reference area. It represents the internal view on the area competitiveness. The Prime Movers of all six IRON CURTAIN reference areas were then asked to assess the total competitiveness of the all other reference areas. The Prime Movers visited the most of the reference areas during the project workshops and many other meetings, so they could provide their expertise in order to harmonize the results from the internal assessment with the other areas and to bring them on a comparable level. That was necessary because at the time of the SWOT analyses assessments in the reference areas, there was no common scale of indicators used for the components evaluation. Moreover, in case of some components, which were described above, there were no indicators defined or corresponding data available in all of the reference areas. The Prime Movers evaluated the total competitiveness of each


Wooden church in a fishing village, Varanger Fjord

reference area in comparison with their own reference area. This approach was used to review the internal amoebae. The comparison was done using scale from -9 to +9, where negative values refer to lower competitiveness of the evaluated area and vice versa. The results of the assessment done by RA3 Prime Mover (GEO for Czech part, UNIJENA for German part) are presented in Table 4. The results of the assessment of both parts of RA3 done by the other Prime Movers are in Table 5. The values in the tables 4 and 5 can be also presented in form of the amoeba graphs (Figure 6 and Figure 7).

Table 4: How GEO and UNIJENA see competitiveness of RA3 in comparison with the other reference areas.

	RA1_NO	RA1_RUS	RA2_W	RA2_E	RA3_GE	RA3_CZ	RA4_AU	RA4_CZ	RA5_AU	RA5_HU	RA6_GR	RA6_BG
RA3_GE	2	9	3	4	0	7	2	5	2	1	4	7
RA3_CZ	-4	7	-3	-1	-3	0	-2	-2	-3	0	3	5

The results of the internal/external assessment were analyzed and the local actors were confronted with them. In case of RA3, no consequent corrections were done, because the internal and external assessments were in good accordance.

Table 5: How the other Prime Movers see the competitiveness of RA3 in comparison with their reference areas.

	RA3_GE	RA3_CZ
RA1_NO	5	5
RA1_RUS	-5	-4
RA2_WEST	-3	5
RA2_EAST	-4	3
RA3_GE	0	7
RA3_CZ	-3	0
RA4_AUS	0	3
RA4_CZ	-2	-1
RA5_AU	-1	3
RA5_HU	-6	-2
RA6_GR	-3	1
RA6_BG	-6	-2

Figure 6: Internal assessment of RA3 amongst the IRON CURTAIN reference areas.

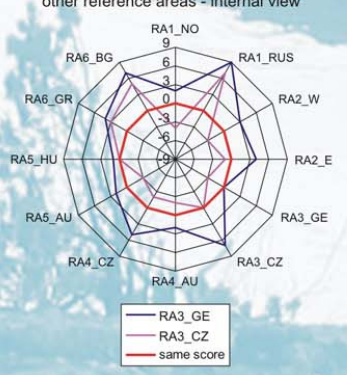
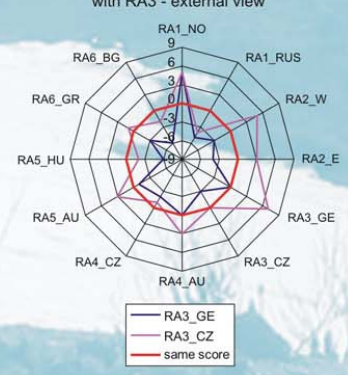


Figure 7: External assessment - comparison of the IRON CURTAIN reference areas with RA3.



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GEO geologie, ekologie, odpady

Interconsult