

OT3.1 – RGD TIM model validation in 2 pilot areas

Project	Responsible Green Destination Amazon of Europe
Acronym	Amazing AoE
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1. EXECUTIVE SUMMARY

The output presents the results of the testing and validation of RGD TIM at 24 locations in the Amazing Amazon of Europe area, done in the A.T3.1.

The testing and validation process started in January 2021 and lasted until September 2022. It started after the data mapping in 2020 with a second training for the RGD TIM experts on data collection. At the start, a Data collection plan along with supporting documents (Tips and tricks for data collection and Guidelines for SDAQ) was created and regularly updated during the process.

The testing proceeded in two phases. The first phase was for the first 12 locations and the second for the next 12 locations, altogether 24 locations for the years 2020/2021. The results show predominately Sleeper character (low benefits but also a low negative impact of tourism) with some Champion character (big benefits of tourism) and that the data availability and reliability are critical as all locations still predominately have low data accuracy.

Based on the results of the testing, Arctur proceeded with the validation of the RGD TIM which included improvements for selected RGD TIM indicators and a number of minor improvements. In parallel project partners continued with the data collection for their locations for the years 2021/2022. The results are identical to the years 2020/2021 (predominately Sleeper character; challenges with data availability and reliability). Based on the validation results and encountered challenges with data availability and reliability, the following recommendations can be given: the area should focus more on the tools/projects for encouraging/empowering data management and digitalisation (e.g. T4.0 Readiness toolkit, COSME Smarter AOE project), which would positively stimulate the data available and its accuracy as well as establish a basis for guided communication with data sources in different countries to open up the data channels (contact person, present and try to implement good practices from other countries).

2. METHODOLOGY FOR TESTING AND VALIDATION

At the start of the process of testing and validation of RGD TIM in A.T3.1, Arctur created a RGD TIM Data collection plan. The plan was checked and updated constantly during the progress of testing and validation to reflect the changes.

1. OBJECTIVES OF THE RGD TIM TESTING:

- a) Assess selected locations with RGD TIM by collecting data and inserting it into the online TIM questionnaire. The locations were selected in the activity A.T1.2 and are described in the DT1.2.1 - Report on the capacity of tourism service providers for model implementation.

- b) Make two rounds of assessments (in 2021 and 2022) to get results for a longer period of time
- c) Develop and validate RGD TIM based on the results of the assessments

2. TIME PLAN:

1. Year 2021:

- a) PP: collect data and insert it into the TIM online questionnaire for at least one location: **30.4.2021 – prolonged until 31.5.2021**
- b) ARC: generate an RGD TIM report for the first round of assessed locations, analyse the results and provide feedback to project partners: **June-September 2021 (results presented at 5th SCOM).**
- c) PP: collect data and insert it into the TIM online questionnaire for other locations: **October – November 2021**
- d) ARC: generate an RGD TIM report for the second round of assessed locations and analyse the results. Provide feedback and discuss results with PP. Combine results from the first and the second round and present them at the second workshop with PP (“How to interpret RGD TIM results”) at the 6th SCOM: **December 2021**

2. Year 2022:

- e) PP: perform the second round of RGD TIM assessments on locations (data collection for 2021 and estimation for 2022): **January – April 2022**
- f) ARC: generate RGD TIM reports, analyse the results, make a proposal for RGD TIM adjustments to capture the entire AoE area: **May – June 2022**
- g) ARC: present the final results to PP and the proposal of RGD TIM adjustments at the 8th SCOM (potential 3rd workshop): **June - July 2022**
- h) ARC: make adjustments to RGD TIM and validation based on the feedback from PP: **August - September 2022**
- i) ARC: RGD TIM completed: **30.9.2022**
- j) ARC: presentation of completed RGD TIM for AoE at the final conference: **November 2022**

Besides the Data collection plan, Arctur also prepared a document with Tips and tricks which contains additional information and advice on collecting data and completing the RDG TIM and Guidelines for answering the Standard Data Accuracy Questions (SDAQs).

Example from the Tips and tricks document

TIPS AND TRICKS FOR RGD TIM DATA COLLECTION

1. Complete TIM questionnaire 100%!

Only by providing data to all questions, can we get the final results. Even if the questionnaire is for example 90 % completed, we might not get the final results as some crucial data are missing. Please use the other tips below to help you provide all the necessary data.

2. Use info (“i”) to get directions on how to collect/insert data

The info (“i”) button beside each question can provide more details about the required data and how to collect them.

3. Use “TIM expert’s estimation” when no reliable data can be provided!

TIM expert’s estimation is when a TIM expert provides his estimation of data for certain questions. This is primarily when no data (written or verbal) exist, but it is evident that an activity to which a question relates is present. An example: there is no data at all about the number of passengers transported by public bus to the location, but the buses are present and are transporting passengers. So, the TIM expert, based on his knowledge of the location, provides the data which in his opinion would be the most accurate for this situation.

The accuracy of this data is the lowest and should be marked like this in the SDAQs. The TIM expert should also provide a comment (in the Expert comment) describing the situation and the reasons for the TIM expert’s estimation.

4. Use TIM Expert comments

There are two types of comments in the TIM questionnaire:

- a) Normal comment, which a TIM expert and a location can see and use (first from the top)
- b) Expert comment which only a TIM expert can see and use (second from the top)

Example from the Guidelines for SDAQs

GUIDELINES FOR FILLING OUT SDAQ QUESTIONS IN RGD TIM

Dear RGD TIM user!

Here is a list of guidelines to help you fill out SDAQ questions. These guidelines supplement the info about each individual SDAQ that can be found in the RGD TIM questionnaire (button "i").

1. SDAQ1 – when to select Third party source:

- a. Third party source should be chosen strictly when we are talking about an organisation that is NOT from the local government. If the organisation that is doing the RGD TIM assessment is not part of local government (ie. a DMO doing the assessment for the municipality), but the data source is a local government), then one of the first three options should be selected (» fully digital«, »partly digital« and »analogue«) and not "Third-party".
- b. If the data were obtained from two different sources simultaneously and one of them is a Third Party (ie. Own analogue source and a Third party source), RGD TIM users should select the source that provided the most accurate and reliable data.

2. SDAQ2 – the frequency of data collection:

- a. Sometimes the data source provided the RGD TIM user with monthly data, although it collects the data at more regular intervals (ie. daily, real time). In this case, the RGD TIM user should select the frequency at which the data source can provide the most accurate and detailed data to the RGD TIM user ("theoretically maximum" data frequency).
This "theoretically maximum" data frequency can be different from the frequency of the data currently provided and from the frequency with which the data source collects the data.
- b. When dealing with quantitative data that appear realistic, if there is no measurement or any proof of measurement (ie. a document), "Not measured should" be selected.
An example: B5.2a-Number of charging stations for electric cars. Here the location "knows" how many charging stations there are because there are only a few (2 or 5 or 10) of them, if this "fact" is not measured in any way, Not measured should be selected. Please note that these also affect SDAQ3, as data can't be accurate if something is not measured.

3. SDAQ3 – when to use Data is accurate and Data is not accurate:

Both the Data collection plan and Tips and tricks were presented to the project partners at the second training on 19.1.2022., where Arctur focused on empowering project partners on how to collect the data for selected locations using RGD TIM. The Guidelines for SDAQs were presented at a later stage through email communication.

3. THE FIRST PHASE OF TESTING

The first phase of RGD TIM testing started after the second training for project partners in January and lasted until June 2021.

In this phase project partners collected data and inserted the data in the RGD TIM for 12 locations (see table below).

	PROJECT PARTNER	LOCATION 1
1	Municipality of Velika Polana	Murska Sobota (municipality)
2	West Pannon Regional and Economic Development Public Nonprofit Ltd.	Lenti (municipality)
3	CROST Regional Development Nonprofit Ltd.	Mohács area including the Béda reserve (Mohács, Kölked, Sátorhely)
4	Tourism Board Međimurje	Čakovec (city)
5	Osijek-Baranja County	Draž (municipality)
6	Association for nature and environment protection Green Osijek	Bilje (municipality)
7	Koprivnica Križevci County	Central Podravina (7-8 municipalities)
		Drava sands (6-7 municipalities)
8	Varaždin County	City of Varaždin
9	Municipality of Apatin	Apatin (municipality)
10	City of Sombor	Sombor (municipality)
11	8Cities	Bad Radkersburg (municipality)

The first phase of testing was prolonged from April, as originally planned in the Data collection plan, to June to give project partners more time to get the data and complete the RGD TIM.

In the period from July until September Arctur analysed the collected data and assisted project partners in solving data-related challenges. These were primarily about getting the right data and properly inputting in the RGD TIM questionnaire for the main categories with mini DCC.

Below is a working table for certain categories with mini DCC which indicates where the data is missing.

	Murska Sobota	Velika Polana	Lenti	Mohacs	Čakovec	Sveti Martin na Muri	Oral	Kneževi vinogradi	Bilje	Drava sands	Central Podravina	Varaždin	Apatin - ON HOLD	Sombor	SUM
Sewage system DCC		x		x	x	x						x			5
Drinking water DCC		x	x		x	x				x	x	x			7
Energy management DCC	x		x		x	x				x	x	x			11
Waste management DCC		x	x		x	x		x	x	x	x	x	x		10
Tourism Income DCC			x												1
Investments DCC	x			x	x	x	x		x					x	7
Tourism accommodation capacity DCC										x	x				2
Jobs DCC	x	x	x	x	x	x	x	x	x	x	x	x	x		13
Local economy DCC	x		x	x	x	x	x	x	x						6
Real estate and consumer goods DCC			x								x	x			8
Visitors and satisfaction of locals with tourism DCC			x	x	x	x	x	x	x	x	x			x	10
Social responsibility DCC															1
Education DCC	x							x							3
Telecommunication DCC							x								2
Health and safety DCC				x		x	x	x							4

These categories are:

- Pillar Environment: Drinking water, Energy management, Waste management
- Pillar Economy: Jobs, Investments, Real estate and consumer goods
- Pillar Society and Culture: Numbers of visitors (overnight and one night stays)

Arctur used this table to inform project partners on which categories they need to focus their data collection efforts to complete the RGD TIM.

Arctur presented the results of the analysis at the 5th SCOM on 6.10.2021 in Moravske toplice, Slovenia.

10 locations were satisfactorily completed (more than 85% of questions answered), 1 was partially completed (more than 50% of questions answered) and 1 was less completed (less than 50% of questions answered).






The results show that all locations show predominately **Sleeper results** (low benefits but also a low negative impact of tourism).

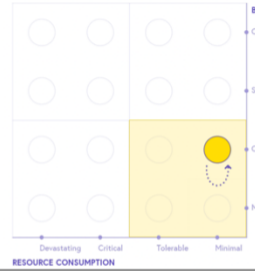




Possible explanation:


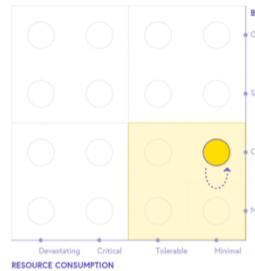



- Locations have underdeveloped tourism according to RGD TIM criteria
- Data used for analysis are from 2020 and we can observe the impact of COVID-19

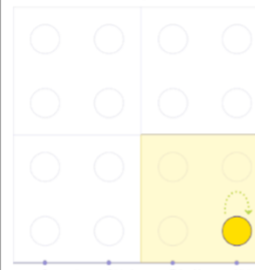

Also, all locations showed low data accuracy results which means the results are not reliable enough to show the true picture of the impact of tourism.

Below are the summary results with the Main DCC chart for all locations:

Location	Murska Sobota (SI)	Lenti (HU)	Mohács area including the Béda reserve (HU)																																				
TIM DCC	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	No TIM DCC.																																				
SDAQ																																							
Results of DCCs	<table border="1"> <tr><td>Sleeper</td><td>19</td></tr> <tr><td>Champion</td><td>7</td></tr> <tr><td>Misuser</td><td>1</td></tr> <tr><td>Exploiter</td><td>0</td></tr> <tr><td>TOTAL</td><td>27</td></tr> <tr><td>MISSING</td><td>4</td></tr> </table>	Sleeper	19	Champion	7	Misuser	1	Exploiter	0	TOTAL	27	MISSING	4	<table border="1"> <tr><td>Sleeper</td><td>15</td></tr> <tr><td>Champion</td><td>9</td></tr> <tr><td>Misuser</td><td>4</td></tr> <tr><td>Exploiter</td><td>0</td></tr> <tr><td>TOTAL</td><td>28</td></tr> <tr><td>MISSING</td><td>3</td></tr> </table>	Sleeper	15	Champion	9	Misuser	4	Exploiter	0	TOTAL	28	MISSING	3	<table border="1"> <tr><td>Sleeper</td><td>11</td></tr> <tr><td>Champion</td><td>8</td></tr> <tr><td>Misuser</td><td>0</td></tr> <tr><td>Exploiter</td><td>0</td></tr> <tr><td>TOTAL</td><td>19</td></tr> <tr><td>MISSING</td><td>12</td></tr> </table>	Sleeper	11	Champion	8	Misuser	0	Exploiter	0	TOTAL	19	MISSING	12
Sleeper	19																																						
Champion	7																																						
Misuser	1																																						
Exploiter	0																																						
TOTAL	27																																						
MISSING	4																																						
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Champion	8																																						
Misuser	0																																						
Exploiter	0																																						
TOTAL	19																																						
MISSING	12																																						

Location	Draž (CRO)	Bilje (CRO)	Central Podravina (CRO)
TIM DCC	No TIM DCC.	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 
SDAQ			
Results of DCCs	<p>Sleeper 17</p> <p>Champion 3</p> <p>Misuser 4</p> <p>Exploiter 0</p> <p>TOTAL 24</p> <p>MISSING 7</p>	<p>Sleeper 18</p> <p>Champion 6</p> <p>Misuser 2</p> <p>Exploiter 0</p> <p>TOTAL 26</p> <p>MISSING 5</p>	<p>Sleeper 25</p> <p>Champion 4</p> <p>Misuser 1</p> <p>Exploiter 0</p> <p>TOTAL 30</p> <p>MISSING 1</p>

Location	Drava sands (CRO)	Varaždin (CRO)	Čakovec (CRO)
TIM DCC	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	No TIM DCC.
SDAQ			
Results of DCCs	<p>Sleeper 25</p> <p>Champion 4</p> <p>Misuser 1</p> <p>Exploiter 0</p> <p>TOTAL 30</p> <p>MISSING 1</p>	<p>Sleeper 23</p> <p>Champion 6</p> <p>Misuser 1</p> <p>Exploiter 0</p> <p>TOTAL 30</p> <p>MISSING 1</p>	<p>Sleeper 13</p> <p>Champion 10</p> <p>Misuser 1</p> <p>Exploiter 0</p> <p>TOTAL 24</p> <p>MISSING 7</p>

Location	Sombor (SRB)	Apatin (SRB)	Bad Radkersburg (AT)
TIM DCC	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Sustainable sleeper</p> 	Not enough data.	Not enough data.
SDAQ		Not enough data.	Not enough data.
Results of DCCs	<p>Sleeper 23</p> <p>Champion 7</p> <p>Misuser 1</p> <p>Exploiter 0</p> <p>TOTAL 31</p> <p>MISSING 0</p>	Not enough data.	Not enough data.

4. THE SECOND PHASE OF TESTING

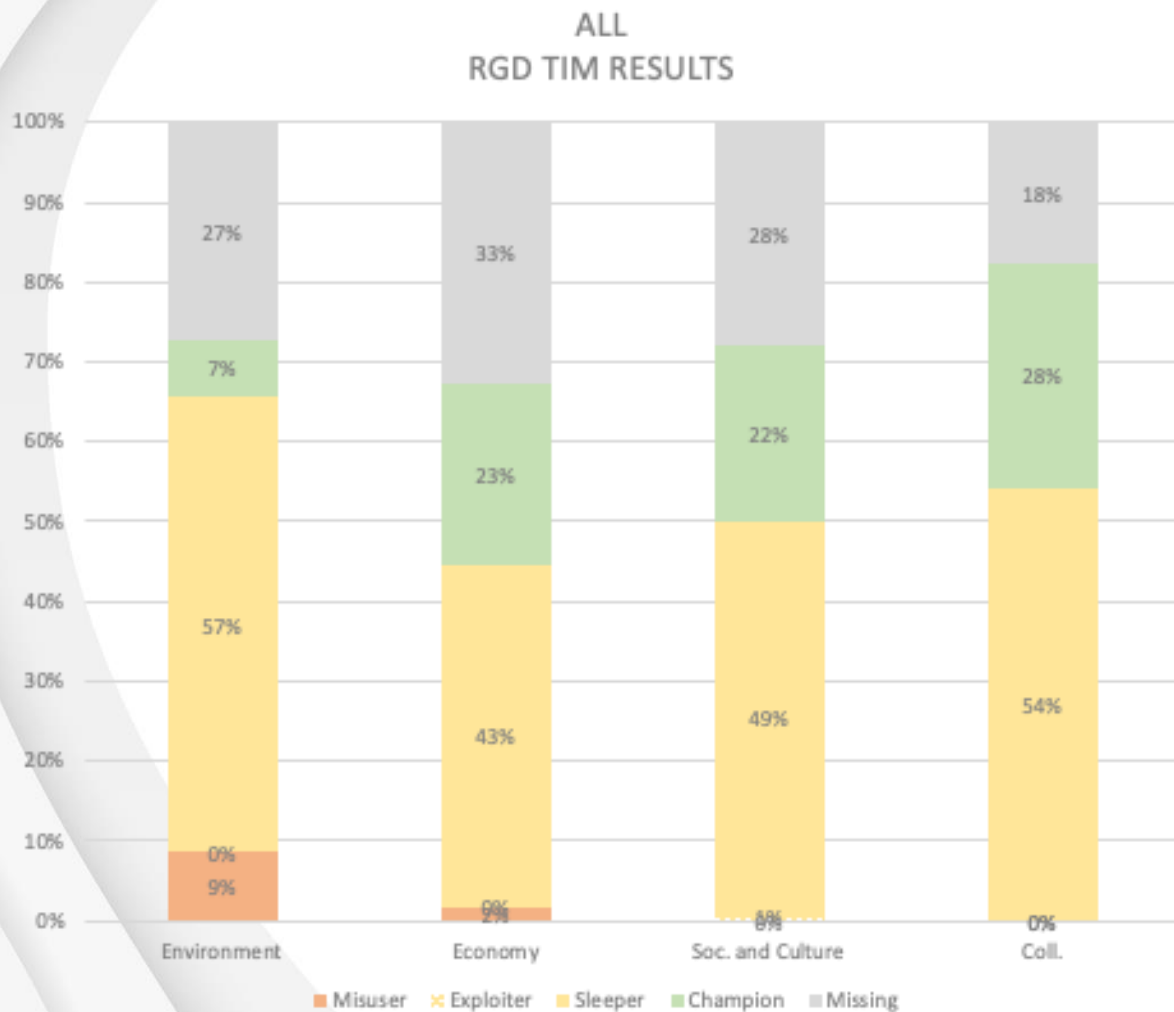
The aim of the second phase of testing was for project partners to complete the RGD TIM for the second location. The second locations are:

	PROJECT PARTNER	LOCATION 2
1	Municipality of Velika Polana	Velika Polana (municipality)
2	West Pannon Regional and Economic Development Public Nonprofit Ltd.	Lispesztadorján/Bázakerettye/Kistolmács - 3 municipalities (potential joint destination)
3	CROST Regional Development Nonprofit Ltd.	Nagyatád area (municipality)
4	Tourism Board Međimurje	Sveti Martin na Muri (municipality)
5	Osijek-Baranja County	Kneževi Vinogradi (municipality)
6	Association for nature and environment protection Green Osijek	Erdut (municipality)
7	Koprivnica Križevci County	Central Podravina (7-8 municipalities)
		Drava sands (6-7 municipalities)
8	Varaždin County	Drava municipalities west of Varaždin city (3 municipalities)
		Drava municipalities east of Varaždin city (5 municipalities)
9	Municipality of Apatin	Part of Special natural reserve Upper Danube
10	City of Sombor	Part of Special natural reserve Upper Danube (Bezdan, Backi Monostor)
11	8Cities	Feldbach (municipality)
		Fehring (municipality)

The second phase was carried out between October and December 2021. When it was completed in December 2021, of 24 locations 13 locations were satisfactorily completed (more than 80% of questions answered), 4 locations were partially completed (more than 50% of questions answered) and 7 locations were less completed (less than 50% of questions answered).

The results were presented at the 6th SCOM on 15.12.2021 which was held online.

Locations show predominately Sleeper character (low benefits but also low negative impact of tourism) with some Champion character, as seen from the chart below.



Here, it is important to highlight three points:

1. There are still challenges with getting the data for certain categories. In addition to categories already identified in the first phase of testing, here are new categories:
 - a) Pillar Environment: Sewage system
 - b) Pillar Economy: Local economy
 - c) Pillar Society and Culture: Health and safety, Education
2. Data availability and reliability are critical as all locations still predominately show low data accuracy, as seen from the table below

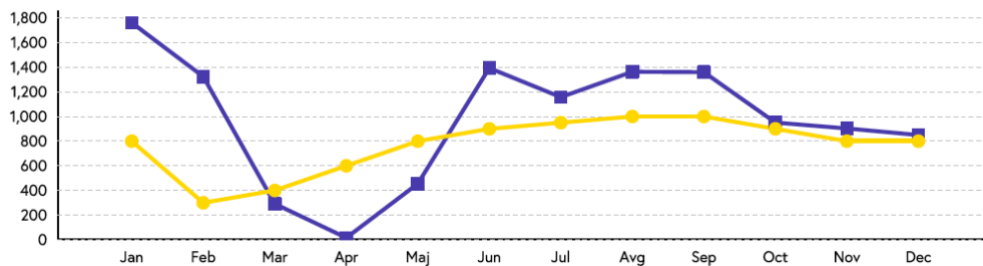
Data accuracy	SLO	CRO	HU	SRB	AT	AoE West	AoE East	General
Low	54%	67%	80%	52%	20%	57%	64%	60%

Medium	41%	27%	17%	23%	71%	38%	20%	30%
High	5%	6%	4%	25%	10%	4%	16%	10%

3. The impact of COVID 19 pandemic and lockdown is visible, e.g. the drop in overnight stays as the graphs below show.

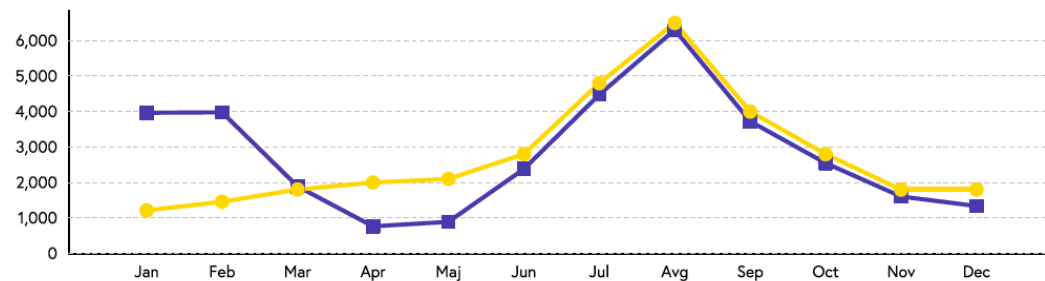
Sombor (SRB)

Figure 3: Overnight stays in last year (2020) and current year (2021)



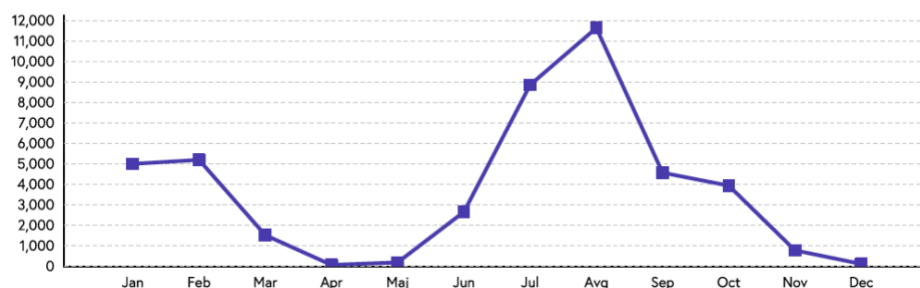
Varaždin (CRO)

Figure 3: Overnight stays in last year (2020) and current year (2021)

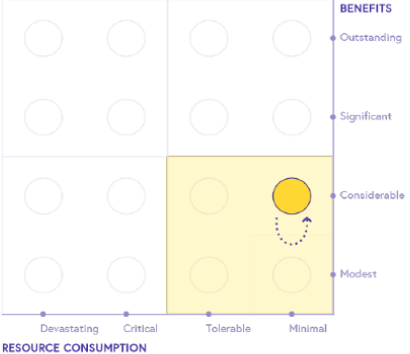
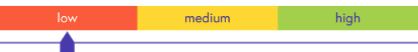

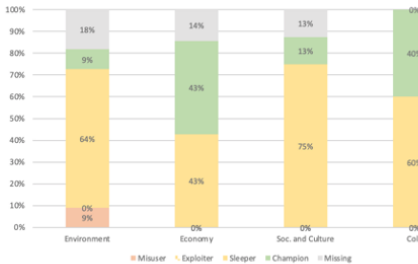
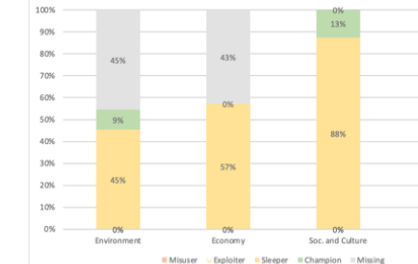





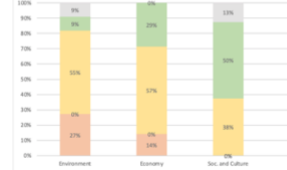
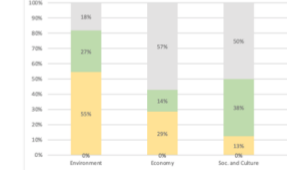
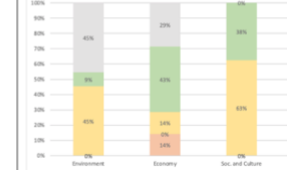
Lenti (HU)





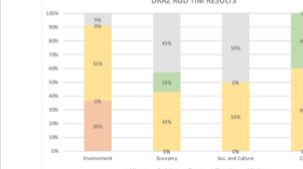
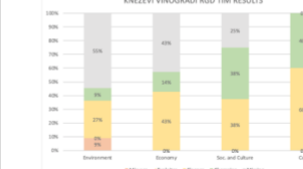
Figure 3: Overnight stays in last year (2020) and current year (2021)

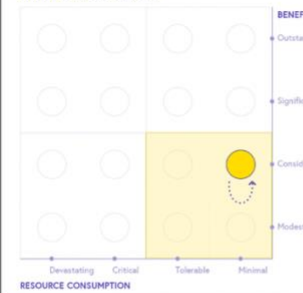
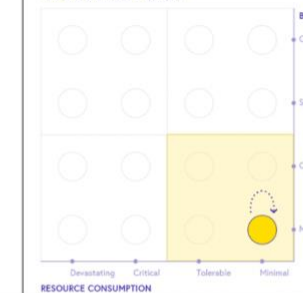





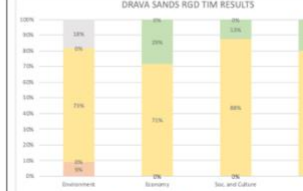


Below are the summary results with the Main DCC chart for 17 locations which are at least partially completed:

Location	MURSKA SOBOTA (SLO)	VELIKA POLANA (SLO)
TIM DCC	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	No TIM DCC, key data missing.
SDAQ		
Results of DCCs	<p>MURSKA SOBOTA RGD TIM RESULTS</p> 	<p>VELIKA POLANA RGD TIM RESULTS</p> 

Location	LENTI (HU)	MOHÁCS AREA INCLUDING THE BÉDA RESERVE (HU)	ČAKOVEC (CRO)
TIM DCC	No TIM DCC, key data missing.	No TIM DCC, key data missing.	No TIM DCC, key data missing.
SDAQ			
Results of DCCs	<p>LENTI RGD TIM RESULTS</p> 	<p>MOHÁCS RGD TIM RESULTS</p> 	<p>ČAKOVEC RGD TIM RESULTS</p> 

Location	SVETI MARTIN NA MURI (CRO)	DRAŽ (CRO)	KNEŽEVI VINOGRADI (CRO)
TIM DCC	No TIM DCC, key data missing.	No TIM DCC, key data missing.	No TIM DCC, key data missing.
SDAQ			
Results of DCCs	<p>SV. MARTIN NA MURI RGD TIM RESULTS</p> 	<p>DRAŽ RGD TIM RESULTS</p> 	<p>KNEŽEVI VINOGRADI RGD TIM RESULTS</p> 

Location	BILJE (CRO)	CENTRAL PODRAVINA (CRO)	DRAVA SANDS (CRO)
TIM DCC	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 
SDAQ			
Results of DCCs	<p>BILJE RGD TIM RESULTS</p> 	<p>CENTRAL PODRAVINA RGD TIM RESULTS</p> 	<p>DRAVA SANDS RGD TIM RESULTS</p> 

Location	VARAŽDIN (CRO)	APATIN (SRB)	SOMBOR (SRB)
TIM DCC	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Consistent sleeper</p> 	No TIM DCC, key data missing.	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Sustainable sleeper</p> 
SDAQ			
Results of DCCs	<p>VARAŽDIN RGD TIM RESULTS</p> 	<p>APATIN RGD TIM RESULTS</p> 	<p>SOMBOR RGD TIM RESULTS</p> 
Location	BEZDAN, B. MONOŠTOR (SRB)	FELDBACH (AT)	FEHRING (AT)
TIM DCC	<p>Figure 1: TIM Destination Character Chart</p> <p>You are: Sustainable sleeper</p> 	No TIM DCC, key data missing.	No TIM DCC, key data missing.
SDAQ			
Results of DCCs	<p>BEZDAN, B. MONOŠTOR RGD TIM RESULTS</p> 	<p>FELDBACH RGD TIM RESULTS</p> 	<p>FEHRING RGD TIM RESULTS</p> 

The second phase of testing concluded with the third training for project partners following the 6th SCOM. At the training Arctur presented to project partners RGD TIM results for their locations based on the data collection process, along with in-depth analysis, using the RGD TIM Main report and RGD TIM Data accuracy report. The training was held in two sessions, on 17.12.2021 and on 20.12.2021.

The training is described in more detail in O.T3.2.

5. VALIDATION OF RGD TIM

Based on the results of RGD TIM testing in 2021, Arctur proceeded with the RGD TIM validation in 2022.

The validation encompassed:

- Selecting RGD TIM indicators which need improvement (around 30 indicators)
- Defining the changes and modifications to the selected indicators
- Implementing the changes and modifications to the selected indicators

The process of validation proceeded in parallel with the project partners' activity of data collection for 2021/2022. The results of the data collection for 2021/2022 are almost identical to the results for 2020/2021, so there were no major changes in either a positive or negative way.

At the end of the data collection for 2021/2022, 14 locations were satisfactorily completed (more than 80% of questions answered), 4 locations were partially completed (more than 50% of questions answered) and 6 locations were less completed (less than 50% of questions answered).

The results from the data collection were used in the validation process.

5.1. The main improvements in RGD TIM indicators

1. Indicator C3.1b (What are the number of jobs in tourism at your location?).

Improvement: added additional explanatory text which jobs are considered jobs in tourism ("Jobs in tourism are jobs directly connected to tourism, which usually involve direct contact with tourists, jobs at tourism establishments, or jobs with a strong influence on tourism (eg. travel agent, hotel manager, spa manager, tour operator, event & conference organiser, tour guide, executive chef, sommelier, PR manager, leisure coordinator, and many more).")

The data about jobs in tourism can be found with statistical offices, following the United Nations International Standard Industrial Classification of All Economic Activities (ISIC) Rev.4 for tourism activities: 55 Accommodation, 56 Food and beverage service activities, 9200 Gambling and betting activities and 79 Travel agencies and other reservation services.")

2. Indicators C3.3b (What is the detected monthly number of unregistered employment in tourism at your location?) and C3.3c (What is the detected monthly number of all unregistered employment at your location?)

Improvement: it is very difficult to get any quantitative data (per month) for these indicators. So, if there is no quantitative data, the user provides qualitative data.

A new question was added before C3.3b: Do you measure unregistered employment in tourism in your locality?

Answer:

- If yes, please enter a value (monthly value like C3.3b)
- Not measured

If not measured, continue with: Is unregistered employment in tourism a problem in your location?

Answer:

- Is it a problem for the whole year
- Is the problem only in the tourist season
- Not a problem

A new question was added before C3.3c: Do you measure unregistered employment at your location?

Answer:

- If yes, please enter a value (monthly value like C3.3c)
- Not measured

If not measured, continue with: Is unregistered employment a problem at your location?

Answer:

- Is it a problem
- Is it a minor problem
- Not a problem

3. Indicator C3.3j (Unemployed people at your location in comparison to total unemployed in the country)

This indicator is a result of the equation between indicators C3.3e What is the monthly number of unemployed people in your country? and C3.3g What is the monthly number of unemployed people at your location?

Improvement: the values for the DEXI attribute was changed from poor (0%-95%), medium (95%-105%) and good (more than 105%) to poor (0%-95%), medium (95%-120%) and good (more than 120%).

4. Indicator B2.1c (How many tourism service providers are connected to the sewer system which enables separation of surface runoff from sewage?)

Many locations in the AoR region, also due to their rural character, use septic tanks instead of a sewer system. This is not perfect, but it is acceptable for the region. So, the answers to this indicator should reflect this.

Improvement:

- We changed the question to “How much wastewater from tourism is sustainably disposed of (into a sewer system or into an eco septic tank)?”
- The answer is value in percentage.

- The DEXI values remain as they were.
- Additional explanatory info was added: “Wastewater from tourism encompasses all wastewater that is "created" by tourists or for the purpose of serving the tourists (eg. personal hygiene, any type of cleaning, pools etc.). Only a sewer system or an eco septic tank are considered sustainable. The usage of the regular septic tank is not considered sustainable. When assessing the amount of wastewater, please pay attention that a small number of big tourism service providers might "create" more wastewater than a higher number of small providers. Also for some providers, tourism only presents a part of their activities and here not all wastewater should be considered.”

5. Indicators B2.4b (What is the drinking water consumption of tourism service providers at your location (m3?)) and B3.1b (What is the electricity consumption of tourism service providers at your location (in kWh?)) and B4.1b (What is the waste produced by tourism service providers at your location (in kg?))

Improvement:

- We unified DEXI values to all three indicators: poor (0%-10%), medium (10%-30%) and good (30% and above)
- In the Resource Consumption DEXI tree three new combined attributes were created:
 - 1) combines indicators B2.4b, B2.4c (What is the supply of drinking water at your location?) and B2.4f (Does your drinking water meet the quality standards of the EU Drinking Water Directive?)
 - 2) combines B3.1b and B3.1c (What is the condition of the electrical grid at your location?)
 - 3) combines indicators B4.1b and B4.1c (Define the effectiveness of waste management at your location?)

6. Indicator D4.2c (How many events and happenings each year are affiliated with cultural heritage?)

Improvement:

- Added info on what is considered “cultural heritage events”
- The question changed to ask how many cultural heritage events are big and small (checkbox with text). This can then be used to track the trend over the years and what is the impact of tourism.

Answers:

- Big events: value
- Small events: value

7. Indicator D4.1g (Has the number of sport, entertainment, and gourmet facilities, institutions, and services at your location increased because of tourism?)

Improvement: change the answers so they are now radio buttons instead of checkboxes

The new question was added before D4.1g (Has the number of sport, entertainment, and gourmet facilities, institutions, and services at your location increased because of tourism?)

Answers radio button style:

- Significant increase
- Modest increase
- No increase

Add Conditional follow-up to Significant increase and Modest increase which leads the user to the existing D4.1g question with the following answers (checkbox):

- sport,
- entertainment,
- gourmet,
- other__

A similar change is done for the D4.1h (Has the number of sport, entertainment, and gourmet facilities, institutions, and services at your location decreased because of tourism?).

8. All “positive impact of tourism” indicators (“TIE indicators”)

Challenge:

The TIE questions, which are subjective questions, represent a large part of the weight on the Benefits DEXI tree. How to properly interpret DCC graphs where answers to TIE questions are included, especially where these answers have a high weight.

Improvement

In addition to the answers for the TIE questions in the questionnaire (no effect, small and large effect), a text box is added where the user has to write an explanation of the answer. Answer is now radio+text.

The user's answer is directly used in the Opinion text in the report. This way we get more precise information about the tourism impact assessment, which can be used in the interpretation of the DCC graphs.

9. Indicators D1.3a (Is public Wi-Fi available at your location (in parks, at markets, in public buildings?)) and D1.3b (What percentage of households have broadband internet access?)

Improvements:

- Modified the question D1.3a into: Is public Wi-Fi available at your location in main residential and tourist areas?

Answers:

- Yes
- Partially
- Poorly

Add info: This includes public Wi-fi that was set up only by the local/regional/national government and not by private providers.

- Modified question D1.3b into: What percentage of households have fixed broadband internet access?

Added improved info: Fixed broadband internet access encompasses the following technologies: DSL, VDSL, FTTP and Cable. National institutes for statistical surveying usually have this data.

Answer (input number) and DEXI values remain the same.

- A new question was added D1.3b1: How is your location covered with mobile broadband internet access?

Added info: Mobile broadband internet access is 4G and higher technologies. National institutes for statistical surveying or mobile operators usually have this data.

Answers (radio button):

- Fully covered
- All main residential and tourist areas are covered
- Only residential areas are covered
- Only tourist areas are covered
- Poorly covered

Added answers to Benefits DEXI tree and Condition DEXI tree, in Benefits DEXI tourist areas have a higher weight, in Condition DEXI residential areas have a higher weight.

- Added Optional question: What percentage of your location is covered with mobile broadband internet access?

Answer is input number.

10. Indicators C1.3a (How much of the collected tourist tax do you invest in (public) infrastructure per year (in EUR)?) and C1.3b (How much of the collected tourist tax do you invest in tourism infrastructure (see explanation) per year (in EUR)?) and C1.3c (How much of the collected tourist tax do you invest in tourist organisations (Tourist Office, TIC, or anyone responsible for tourism) for advertising (marketing) per year (in EUR)?)

Currently, the location gets a lower score if it invests 100% in one category and 0% in the other two categories. Also, not all tourist tax is encompassed.

Improvements:

- A new question is added: C1.2b (Do you collect tourism tax at your location?) Additional info is added: The tourism tax is the tax tourists pay at the destination. It can be a per-day tax on rooms in hotels and other temporary accommodations or a departure tax or any other form. Usually, the regional or national legislation prescribes how the tax is used, along with the amounts paid by tourists.

Answers:

- Yes
- No

Answers go to the Benefits DEXI tree, Yes is positive, No is negative.

Questions C1.3a, C1.3b and C1.3c are excluded from Benefits DEXI tree and the results are displayed in a pie chart.

Condition DEXI questions C1.3d (How much of total tourism income do you invest in (public) infrastructure per year (in EUR)?) and C1.3e (How much of total tourism income do you invest in tourism infrastructure (see explanation) per year (in EUR)?) are moved from Condition DEXI to Benefits DEXI tree. They replace indicators C1.3a-C1.3c.

11. Indicators B1.1a (Do you measure CO2 emissions at your location?) and B1.2a (Do you measure CO2 emissions caused by tourism activities at your location?)

The CO2 cannot be measured, it can only be calculated from different sources.

Improvement

- Modified question B1.1a: Do you monitor CO2 emissions at your location?

Answers:

- Yes
- No

Made a follow-up question to “Yes”: B1.2a1 (What is the yearly quantity of CO2 emissions at your location (in tonnes)?)

Made a follow-up question to “No”: Existing question B1.1d (How do you estimate the yearly quantity of CO2 emissions per capita at your location?)

- Modified question B1.2a: Do you monitor CO2 emissions caused by tourism activities at your location?

Answers:

- Yes
- No

Made a follow-up question to “Yes”: existing question B1.2b (What is the yearly quantity of CO2 emissions caused by tourism activities at your location (in tonnes)?)

Made a follow-up question to “No”: existing question B1.2c (How do you estimate the yearly quantity of CO2 emissions caused by tourism activities in relation to all CO2 emission per capita at your location (%)?)

- Added a new question set about the Black Carbon

B1.3a Do you measure Black Carbon?

Answers:

- Yes
- No

Follow-up question to “Yes”: B1.3b (Please input the peak value per month ($\mu\text{g}/\text{m}^3$)) (input per month)

Added info to the question set: Black carbon is a component of fine particulate matter ($\text{PM} \leq 2.5 \mu\text{m}$). Black carbon consists of pure carbon in several linked forms and is one of the main types of particles in both anthropogenic and naturally occurring soot. Black carbon causes human morbidity and premature mortality. It is also a climate-forcing agent contributing to global warming.

Added info to the question: There are several methods for measuring black carbon. Standardized measurements are carried out by environmental agencies where black carbon is measured on a daily basis with usually time-consuming laboratory analyses of filter samples.

Newer approaches such as CASS - Carbonaceous Aerosol Speciation System (<https://mageesci.com/mproducts/oc-ec-analyzer/>) present advanced systems for measuring black carbon as they measure in short time intervals (20 min - 1 h) and present results digitally without the need for additional laboratory analysis.

5.2. Other minor improvements

Besides the improved RGD TIM indicators, a number of minor improvements were implemented in the RGD TIM questionnaire and report.

Here are two cases:

- a) **RGD TIM report, chapter H3 - 4.4.1 Visitors (density and intensity) (D1.1). Formulas for calculating tourism density in intensity for the current year were added to the existing formulas for the last year to better monitor the changes between the years.**

Example from one the RGD TIM reports:

Tourism density (overnight stays/km²) in **2020** was **9,72** and you estimate that in **2021** it will be **21,66** (low risk <719, high risk >2278).

Additionally, in **2020** there were also **5,39** one day visitors per km² of your location during the whole year.

Tourism intensity (overnight stays/local resident) in **2020** was **0,15** and you estimate that in **2021** it will be **0,34** (low risk <4,49, high risk >9,58).

Additionally, in **2020** there were also **0,08** one day visitors per local resident during the whole year.

- b) **RGD TIM report, chapter H3 - 4.2.4 Drinking water. A formula for calculating the consumption per tourist was added to provide additional information and a benchmark.**

Example from one the RGD TIM reports:

Drinking water consumption of tourism service providers at your location represents **2,42 %** of total consumption or **5,33 m³** per overnight visitor.

The estimation for the current year is **2,67%** of total consumption or **5,4 m3** per overnight visitor.

5.3. RGD TIM recommendations

Taking into consideration the results of the data collection for 2020 and 2021 and especially the challenges with data availability and reliability (very low data accuracy), the following recommendations were presented to the project partnership at the 9th and 10th SCOM (in Mohacs and Osijek):

1. AoE area is not ready for the full use of RGD TIM because of poor data availability and accuracy.
2. It is more suitable to start with tools/projects for encouraging/empowering data management and digitalisation (e.g. T4.0 Readiness toolkit, COSME Smarter AOE project), which would positively impact the data available and its accuracy.
3. It is also recommended to establish a basis for guided communication with data sources in different countries to open up the data channels (contact person, present and try to implement good practices from other countries)!
4. To get a clearer picture of the RGD TIM results, it is recommended to encourage RGD TIM experts to write comments. Now many results are without comments, and it is not clear why they are like that.
5. Due to the above-mentioned challenges with data, it is currently not sensible to seek better integration with the Tourism 4.0 digital tools, like DOTI (Personal Digital Passport) and CIT (Collaboration Impact Token). Both tools work best if there is enough data with a high frequency (“refresh rate”) available on the impact of tourism. So, it would be necessary to work on improving the data availability and reliability and then assessing the further integration with Tourism 4.0 digital tools and AoE Booking system.

