

Air Pollution Policies foR Assessment of Integrated Strategies At regional and Local scales

Grant Agreement number 303895

# WP2: Review and gaps identification in Air Quality and Health Assessment methodologies at regional and local scale

### TerrAria

## D2.8 – Database entry finalized

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# Summary

This deliverable describes and explains the main functionalities of the APPRAISAL database, which was created to compile and manage information from online questionnaires on different assessment methodologies used by the European Member States to assess the effects of emission abatement policy options and measures on the reduction of atmospheric pollutants concentrations and on human health.

## **Version History**

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# 1. Introduction

In the scope of the APPRAISAL's overall review of methodologies used in different european member states to address and assess the impact of local and regional air quality plans and their health implications, a questionnaire was structured (deliverable D2.1) and a database developed. A collaborative multiple users tool (i.e. the questionnaire filling in is the results of the interaction between the editor and the reviewer) was implemented to sustain this final database: the APPRAISAL website. This deliverable describes the database and the software application, (please refer to D2.4 for a detailed description of the contents of the questionnaire) and its feeding through the users filling. This application is completely published online through a specific Webapp included in the Appraisal Website. The aim of this WebApp is to manage all the life cycle of the questionnaire:

- opening a new questionnaire
- filling in
- submitting to Appraisal Steering Committee's reviewers
- approving and feeding the questionnaires' database
- querying the questionnaires' database.

The Web application includes three parts:

- the information one
- the private one (questionnaires filling in, submitting and approving)
- the public one (queries, figures and statistics tables).

Access to the section dedicated to the questionnaire of the project can be reached from the left menu of the official website of the project (www.appraisal-fp7.eu) by clicking on the "Questionnaire" button (see Figure 1). The direct link to the section dedicated to the questionnaire is <u>http://servizi.appraisal-fp7.eu/appraisal/</u>.



Figure 1: Home page of Appraisal project website screen.



# 2. Appraisal Questionnaire: (1) public part

The following paragraphs illustrate the screens of the website public section dedicated to questionnaires on Appraisal project, namely the Questionnaire Info and the Questionnaire fill in. In the public part the statistics on the "validated" questionnaires are also included with the menu voice " Queries Statistics", see chapter 4 for details.

### 2.1. Questionnaire Info

This section of the Web presents the reasons that led to the creation of the project database.



Figure 2: Questionnaire information screen.

# 2.2. Questionnaire fill in

This section of the Web contains useful information to fill in the questionnaire (see Figure 3).





#### Figure 3: Questionnaire fill in screen.

The first step of the process is to register (see figure 4). In this section the users interested in filling one or more questionnaires, must enter the required data to complete the registration.

		Appraisal project Questionnaire Info Questionnaire Fill in Login Register Quenes Statistics	User registration User Name + Password + Password + Pirst Name + Last Name + Email + A message will be sent to the email address s activation. The registration system has only a statistical purposes, the personal data will not be used f and will not be provided to third parties. Register	peofied for service and management or commercial purposes	
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#### Figure 4: Register screen.

After registering as a database user it is possible to login (see figure 5) and to fill in and submitt questionnaires.



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Figure 5: Login screen.



# 3. Appraisal Questionnaire: (2) private part

This area can be accessed only by registered users. There are two types of users: Editor User and Reviewer User.

The Editor User can:

- Fill in a new questionnaire
- Change a not yet submitted questionnaire
- Submit a completed questionnaire.

The Reviewer User can:

- View the submitted questionnaires
- Approve the submitted questionnaires
- Approve with modifications the submitted questionnaires
- Reject the submitted questionnaires.

Furthermore, using both background knowledge and the data gathered in the Database, APPRAISAL designed an IAM structure which is based on the DPSIR (Driving Forces-Pressures-Sate-Impacts-Responses) framework (deliverable D3.1). A radar chart is included in the private part of the online database to graphically provide the level of completeness of the answers in the questionnaires according to the DPSIR approach.

### 3.1. Editor user

#### Identification

In this section the user must enter the data relating to its own identification (see Figure 6).

Appraisal	Welcome, test Log out	Alle -
Appreisal Appraisal project Questionnaire Fill In Do You weed Help 3 Identification Questionnaire List	Identification         1. Institution:         2. Type:	
	Type (Other) value 3. Web site:	

Figure 6: Identification screen.



#### **Questionnaire List**

In this section the user can view the list of questionnaires, their approval status and he/she can insert a new questionnaire (see Figure 7).

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	-	Apprais	al proj	ect						35.0
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		Questionnaii	e list				-			1.5
		Questionnaire Identifier	Activity title	Status	Note	Actions	Radar			10 maria
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the second second second		New Quest		Rejected	EIT.	Delate	37.0%			

Figure 7: Editor user questionnaire list screen.

Clicking on "Submit a new questionnaire", the user is guided in the compilation of all the questionnaire sections (see Figure 8). The user can save each completed section by clicking on the "Save" button located at the bottom of each page. Once completed, the user must click on the "Submit" button to submit the questionnaire to the approval procedure (see Figure 9).

all a	Appraisal project	Questionnaire Test	
	Questionnaire Info	Questionnaire identifier:	
1200	Do You Need Help 7	Test	
1	Identification Guestionnaire List Activity Information Topic 1 Topic 2	Activity information	
	Topic 3 Topic 4 Topic 5 Submit	test 1	
	(Jaculture)	2. Activity type	1 march
20		Ar Duality Plan	Constant States
42		Chter	
1000		3. Activity commitment:	
		institutional Member State activity	
		R&D EU Project	
		R&D National Project	S

Figure 8: Questionnaire fill in screen.



	Appraisal	Welcome, test Logout
2	Appraisal project	
30	Questionnaire Info Questionnaire Fill In Do You Need Help 7 Identification Questionnaire List Activity information Topic 1 Topic 2 Topic 3	Submit the questionnaire "Test" to the approval procedure.
	Topic 4 Topic 5 Submit	
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Figure 9: Questionnaire submitting screen

### 3.2. Reviewer user

In this section the Reviewer User can see the list of questionnaires submitted by the Editor Users (see Figure 10), view their contents (see Figure 11) and approve, approve with modifications or reject the individual questionnaires.

	Appraisal		-	Welcome, test1	Log out	10000
	Appraisal project					1
	Submitted questionnaire list Questionnare dentifier	Activity title	Note	- Actions		A
- H	DBDuestimmaire, 5, 12, 12, 12, MINNI, 2 pol gabriele zanihiĝenea il	Researcher	The information in the questionnaire should refer should refer should refer an AD plan Here instead some information are related to the CV of the researcher Ext	Approve Additive with modification Report		
	OBCuestionnaire_RIATplus-EMR-	OPERA	ten .	Approve		1000

Figure 10: Reviewer user questionnaire list screen.



	Appraisal	Welcome, test1 Log out	
	Appraisal project	Ouestionnaire 09Ouestionnaire.5.12.12.MINNL2.pdf	14
1 mar	Questionnaire List Activity information Topic 1	Questionnaire identifier: DBQuestionnaire_5_12_12_MINNI_2.pdf	
	Topic 2 Topic 3 Topic 4 Topic 5	Activity information	
	Deruces	Researcher	9.8
N.		2. Activity type Ar Duality Plan Research project/activity	- 44 A
100		3. Activity commitment:	<i>د</i>
		Institutional Member State activity     R&D EU Project     R&D National Project	

Figure 11: Questionnaire view screen.

### 3.3. Radar

The radar chart graphically represents the level of completeness of the answers in the selected questionnaire according to the DPSIR model. Consequently the questionnaries classification of completeness is split on five macro skills:

- Drivers (D)
- Pressures (P)
- State (S)
- Impact (I)
- Response (R).

For each of the five skills four levels of completeness have been defined:

- Level 0 the skill is not included in the questionnaire analysed
- Level 1 low
- Level 2 medium
- Level 3 hight.

When it is not possible to assign a level of completeness of the answers in the questionnaire a no level is assigned.

Figure 12 shows an example of a radar chart build with data from a particular questionnaire. The assignment of the level for each skill is based on the answers given to specific questions: assignment rules for the different classes of completeness are listed in Table I (please refers to WP3 for details).





Figure 12: Example of a radar chart.

#### Table 1: Assignment rules for the DPSIR model completeness.

DPSIR	LEVEL	LEVEL DESCRIPTION (IN WP3)	QUESTIONNAIRE RELATED QUESTION (IN WP2)
D	LIV0	not implemented	Topic1, Question 2.1 oand 2.2 and 2.3 and 2.4 (no answer)
	LIV1	top-down approach, using coarse spatial and temporal allocation	Topic1, Question 2.1 or 2.2 (any answer). No answer at 2.3
		schemes	and 2.4
	LIV2	bottom-up approach with generic (i.e. national/aggregated)	Topic1, Question 2.3 (any answer). No answer at 2.4.
		assumptions	
	LIV3	bottom-up approach with specific (i.e. local/detailed) assumptions	Topic1, Question 2.4 (any answer)
Р	LIV0	not implemented	Topic1, Question 3 (no answer) and
			Topic2, Question 7.1 (no answer, for all models)
	LIV1	emissions estimated for rough sectors on a coarse grid	Topic2, Question 7.2 ('top-down'). If at least one model with
		(spatialization), using top-down methodology	different answer, go to LIV2 or LIV3
	LIV2	combination of bottom-up and top-down methodology	Topic2, Question7.2 ('bottom-up' or 'combined')
			If more than 1 model, look at least for one answer like this.
	LIV3	emissions calculated with the finest space and time resolution	Topic2, Question 7.2 ('bottom-up' or 'combined')
		available (fine grid), with the bottom-up method with the SNAP	Topic2, Question 7.3bis ('local data' or 'traffic count').
		finest levels.	If more than 1 model, look at least for one answer like this.
S	LIV0	not implemented	Topic2, Question 4 ('none'). and
			Topic2, Question 9 (no answer)
	LIV1	measurements are used	Topic2, Question 4 ('none'). and
			Topic2, Question 9 (any answer)
	LIV2	one model is used or more models are used with the same grid	Topic2, Question 4 ('1 model') or Topic2, Question 4 (> 1
			model with the same modelling grid)
	LIV3	a downscaling models chains is used	Topic2, Question 4 ('more than one model, with different
			modelling grid')
Ι	LIV0	not implemented	Topic3, Question 1 (no answer)
	LIV1	coarse description of exposure provided either by measurement or	Topic3, Question 1 (any answer). and
		modelling of AQ (e.g. average mean annual exposure for a city),	Topic3, Question 6.4 ("intake fraction" or "air quality
		simple population description.	(interpolated) monitored data")
	LIV2	similar to level 1, but with spatial detail in the STATE description.	Topic3, Question 1 (any answer) and
			Topic3, Question 6.4 ("Air quality modeled data")
	LIV3	a detailed temporal and spatial resolution for exposure and	Topic3, Question 1 (any answer)and



		population data	Topic3, Question 6.4 ( "Individual exposure data") or Topic2,
			Question 2 (other answers LIV1, LIV2, LIV3)
R	LIV0	no scenario analysis nor optimization	Topic2, Question 2 (no answer)
	LIV1	expert judgment and scenario analysis.	Topic2, Question 2 ('scenario analysis')
	LIV2	source apportionment and scenario analysis.	Topic2, Question 2 ('scenario analysis') and
			Topic4, Question 1 (any answer)
	LIV3	Optimization	Topic2, Question 2 ('cost-benefit'or 'cost-effect.'or 'MultiObj')



### 3.4. Help and Logout

By clicking on the "Menu / Help" button located in the left Menu, the user can view the help relating to the section is viewing. Figure 13 and Figure 14 illustrate the "Help" menu.

Appraisal project
Questionnaire Info
Do You Need Help ?
Identification
Questionnaire List
Menu/Help

#### Figure 13: Help/Menu button screen.

	Appraisal	Welcome, test Log out	1 Maria
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ma	Menu/Help	Identification	
	CTRU key can be used to select more they one response.		S.
	Identification	2. Type:	
	Institution	Research / Higher Education	and the second
	Provide the name of the Institution	Applied research	
F	you're coming from.	Fundamental/basic/pure research	
	2. Туре	Private company	0
	SME - Small or Medium Enterprise	SME	150 . 20
1	5. Contact Person	Carge	the second s
42	Person responsible for the filling in of the	Government Agency/Institution/Administration	
	documented and informed about the	Non Governmental Organization	
	reported activity or activities.	C Other	A.
	6. Your experience with Integrated		
	Assessment	Type (Uther) value	2 and 1
	Integrated assessment (IA) is the	3. Web site:	17
	scientifs multi-discipline that integrates		

Figure 14: Help screen.

By clicking on the "Log out" button, on the right side of the website top bar (see Figure 15), the user can disconnect itself from the private area dedicated to the Appraisal project questionnaires.



Figure 15: Log out screen.



# 4. Appraisal Questionnaire statistics

Once the questionnaire is approved by one of the Reviewers (see previous chapter), its data moves to the final questionnaire database to which is dynamically queried by the statics tool. This query statistics are publically available. Through the statistics (menu voice: Queries statistics) it is possible to analyse the answers given to every question, both open-ended and closed questions (see Figure 16).

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3	Appraisal project		the second
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Figure 16: Queries statistics screen.

Moreover once a question has been selected it is possible to apply a filter (a condition to select the data) and therefore to analyse the different pattern of the responses to this specific question in relation to different conditions. Thus, at the end four different query types are possible:

- Closed questions (i.e. with closed answers)
  - o Without filter
  - o With filter
- Open-ended questions (i.e. with free answers)
  - o Without filter
  - o With filter

Figure 17, Figure 18 and Figure 19 provide different examples of the query statistics outcomes.



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Figure 17: Queries statistics graphics screen (Closed questions).

	Appraisal project Questionnaire Info Questionnaire Fill In Login Register Queres Statistics	Selection Fapic: 4 Guestion 1	utsuly information 1 - Adding Type		
	1	Filter Enable filter Sopic: Genetice: Arawer:		* *	
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Figure 18: Queries statistics graphics screen (Closed questions) with filter.



	Appraisal		-	Mar 2
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		Queetion		Contraction of the local division of the loc
Contract of the local division of the local		2.3.1 - Activity type (Other) value	15	100 100 10
A 14 P		Filter:		
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1000		Infla • Total answers at this suestion: 5 • Total number of questionnaites: 49		•
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Figure 19: Queries statistics screen (Open-ended questions).



# 5. First conclusions

A collaborative multiple users tool to fill in the questionnaires and this way to load Appraisal database through the interaction between the editor and the reviewer has been implemented in the Appraisal project. This database aims collecting, in a common format, information on the different assessment methodologies for the air quality used in European Member States to identify the strengths and weaknesses in current practices and provide guidelines to users, to help in the assessment of the impact of local/regional air quality plans. A specific radar chart has been designed to graphically represent the level of completeness of the answers in the selected questionnaire according to the DPSIR model.

The online Web application will be maintained and supported during all the project lifetime helping to increase the questionnaires numbers and consequently the representativeness of the results.