



S.W.A.-Tool
Manual for the Analysis
of Solid Waste

Background Information
and Project History

Uwe Büll
ARGUS at the Technical University Berlin



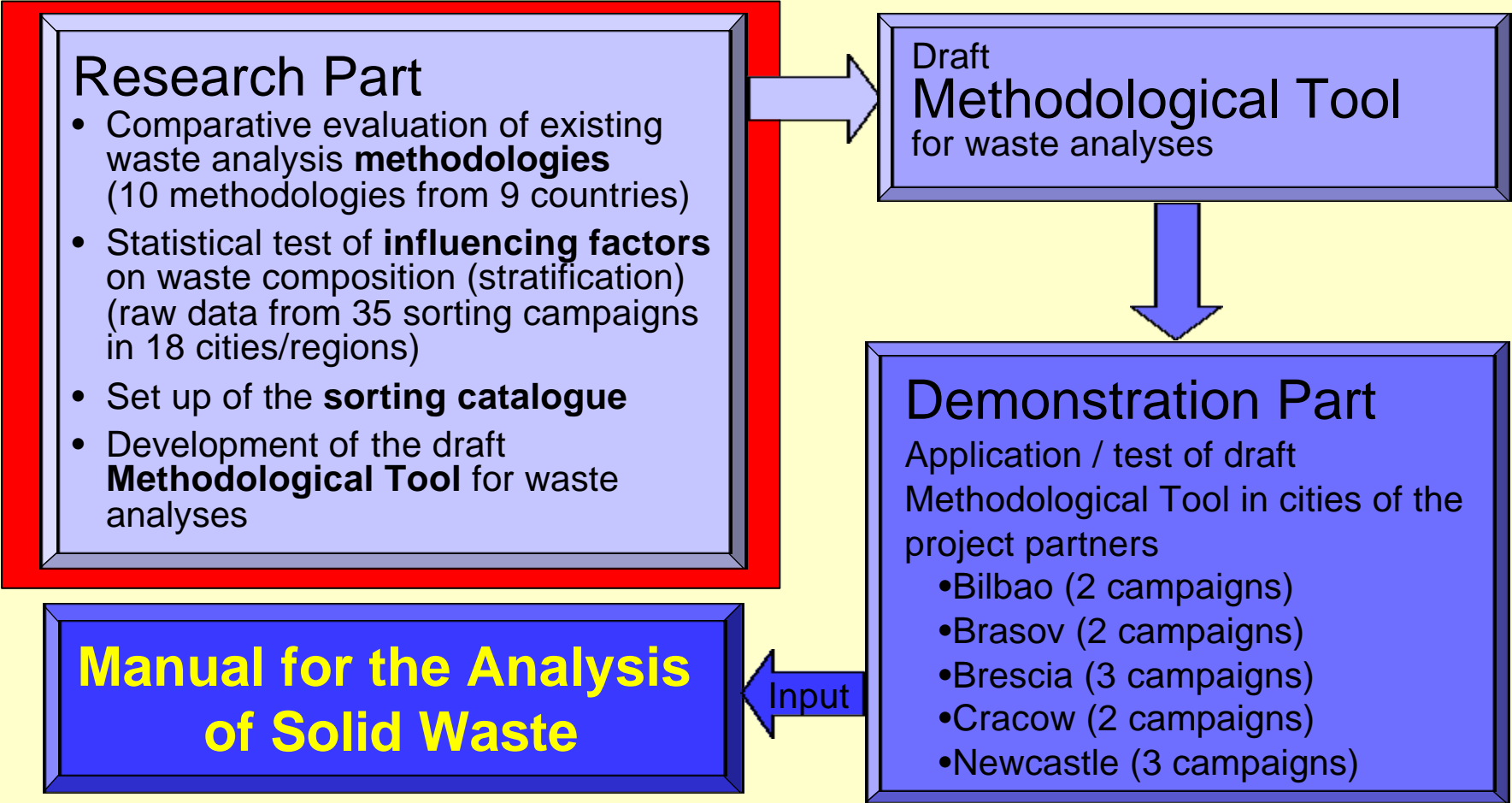
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Main objectives

- Establish an universal waste analysis methodology that is applicable in all European countries
- Establish minimum standards for performing waste analyses
 - Make waste analyses results comparable
 - Improve the quality of waste analyses results



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WP 2: Description and evaluation of existing waste analysis methods

Task 5: Identification of existing waste analysis methods in the EU

Task 6: Identification of differences in analysis design (statistical standards, sampling level, stratification criteria)

Task 7: Comparative evaluation of the identified differences (definition of evaluation criteria)



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WP 2: Description and evaluation of existing waste analysis methods

Evaluation criteria:

- Can **different waste types** be analysed separately?
- Is the determination of (specific) **waste amount** specified in the guideline/methodology?
- On which level is the sample taken from the parent population? Is the generation of defined **sample units** provided?
- Does the guideline/methodology include procedures for estimation of **sampling error** or for determination of result **accuracy**?



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WP 2: Description and evaluation of existing waste analysis methods

Method	①	②		③		④
	Separate Investigation of Waste Streams	Composition	Waste Amount	Level of Sampling	Sample Units	Error Estimation for Results
Austria. IC. Vienna	no	yes	no	waste bin	yes	yes
Austria. Hauer	no	yes	no	waste bin or truck	yes	yes
Germany. Brba Guide	yes	yes	yes	waste bin	yes	yes
Italy. UNI 9246	no	yes	no	truck	no	no
UK Method	yes	yes	yes	household or ED	yes	yes
Nordtest Method	no ¹	yes	yes ²	load of trucks ³	no	no
France Modecom TM	no	yes	no	load of trucks	yes	no
Ireland-EPA	yes	yes	no	household	no	no
NL AOO-IPA	yes	yes	no	waste bin	no	no

¹⁾ In order to obtain more detailed information, waste bags or containers may be collected and weighed separately

²⁾ Waste amount and waste composition are determined separately

³⁾ During special investigation: bin level or household level



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WP 2: Description and evaluation of existing waste analysis methods

International workshop in Vienna (April 2002) on waste analysis methodologies. Participants from Austria, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden, UK, USA

Results of WP 2:

- Austrian, German and UK methodologies were selected to be most appropriate basis for the development of the S.W.A.-Tool methodology (Manual)
- National requirements and particularities were identified and could be considered in the course of the tool development



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WP 3: Statistical tests of influencing parameters (stratification criteria)

Task 8: Selection and provision of *existing data sets* from residual waste analyses and analyses of waste components (separate collection)

Task 9: Performance of secondary analyses using bivariate and multivariate statistical procedures. This should establish:
which stratification criteria best describe the variability of the interesting characteristics (waste components)

- Ⓐ Identification of parameters which significantly influence the composition of waste



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WP 3: Statistical tests of influencing parameters (stratification criteria)

Raw data for the statistical tests from various European waste analyses:

- REMECOM (EU-project by Ademe): Fiumicino, Roma (I), Leeds (UK), Dublin (IRL), Créteil, Gueugnon, Monthyon (F), Hannover (D)
- ARGUS data, e.g. Berlin, Potsdam, Hannover, Bielefeld, Munich, 3 rural districts
- Vienna (A) and
- Wales (UK)



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WP 3: Statistical tests of influencing parameters (stratification criteria)

Results (parameters influencing waste composition):

- Residential structure ✓
- Bin size ✓
- Waste collection system ?
- Socio economic structure ?
- Source of waste (household / commercial waste) ✓
- Season ✓



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Sorting catalogue (primary categories)

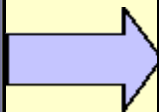
- **Organic**
- **Wood**
- **Paper and cardboard**
- **Plastics**
- **Glass**
- **Textiles**
- **Metals**
- **Hazardous waste**
- **Complex products**
- **Inerts**
- **Other categories**
- **Fines < 10 mm**



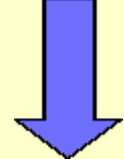
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Research Part

- Comparative evaluation of existing waste analysis **methodologies** (10 methodologies from 9 countries)
- Statistical test of **influencing factors** on waste composition (stratification) (raw data from 35 sorting campaigns in 18 cities/regions)
- Set up of the **sorting catalogue**
- Development of the draft **Methodological Tool** for waste analyses

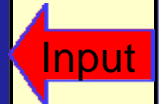


Draft
Methodological Tool
 for waste analyses



Demonstration Part
 Application / test of draft Methodological Tool in cities of the project partners

- Bilbao (2 campaigns)
- Brasov (2 campaigns)
- Brescia (3 campaigns)
- Cracow (2 campaigns)
- Newcastle (3 campaigns)

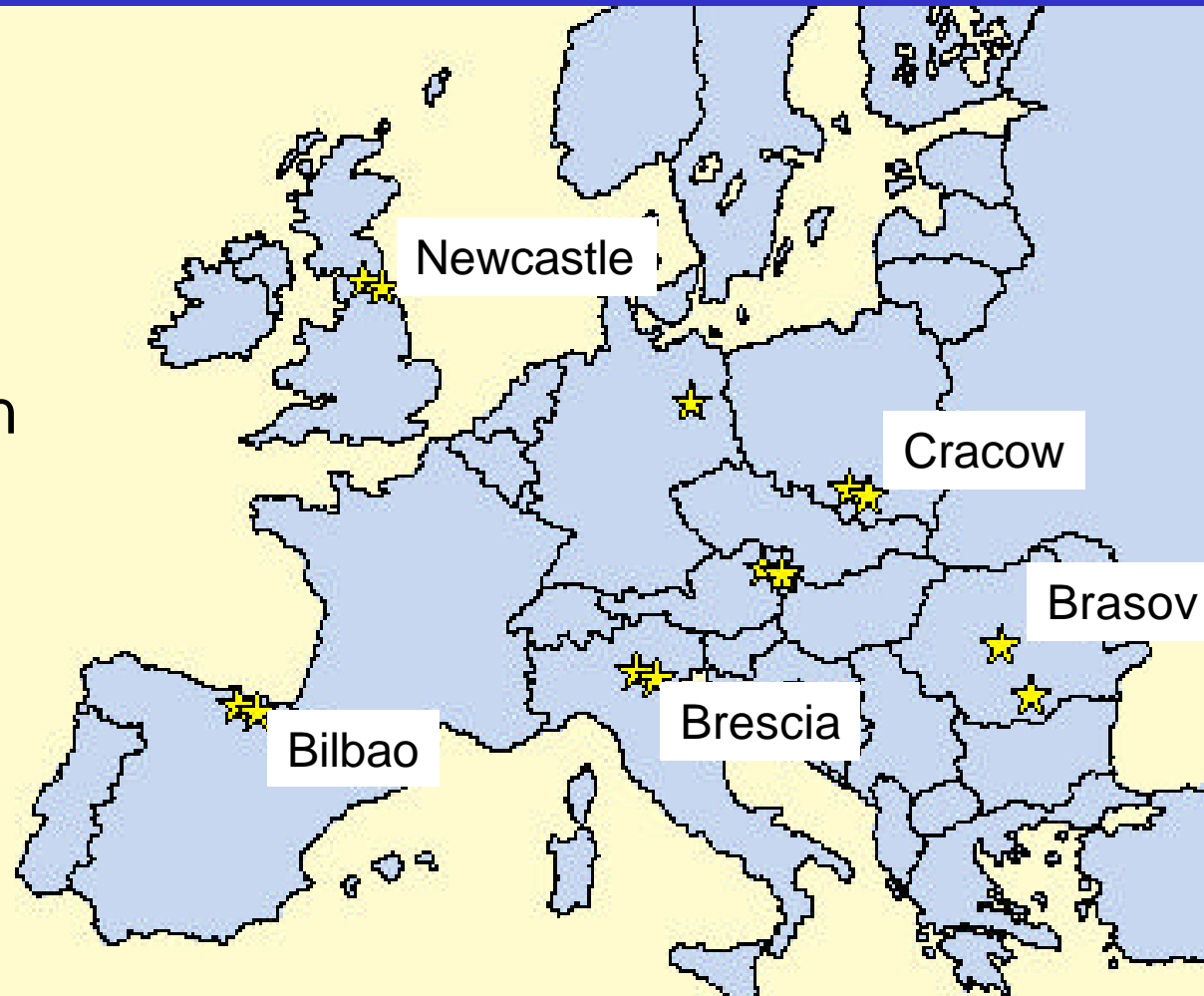


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Partner Cities
of the
Demonstration
Part





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Inputs to be considered in the final version of the Manual

Direct inputs from the partners:

(Review, remarks in the working groups)

Problems in application of the Tool

- Planning
- Sampling
- Sorting
- Evaluation
- Other remarks (gaps, ..)

Indirect inputs from reports etc.

(Indicators for misunderstandings and mistakes)

- Non plausible results
- Incomplete evaluation (no weighing of strata results)
- Definition of sample units
- Minimum sample size for strata
- No link with number of inhabitants
- Consideration of outliers

Revision

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Revision



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Proper waste analysis

Sample
size



Sorting
catalogue



(statistical)
Evaluation

Quality
assurance

