tds exposure

FP7 Total Diet Study Exposure: Regional differences and harmonization across Europe

Darja Sokolić, PhD
Head of Scientific Support and Databases Department
Croatian Food Agency

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REGULATION (EC) No 178/2002 Food Law

Article 6

Risk analysis

1. In order to achieve the general objective of a high level of protection of human health and life, food law shall be based on **risk analysis** except where this is not appropriate to the circumstances or the nature of the measure.

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Risk analysis paradigm

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REGULATION (EC) No 178/2002 Food Law

Article 6

2. **Risk assessment** shall be based on the available scientific evidence and undertaken in an independent, objective and transparent manner.

Risk assessment

1. **HAZARD IDENTIFICATION:** identification of known and potential effects on health associated with a specific factor.

2. **HAZARD CHARACTERISATION:** qualitative and / or quantitative assessment of the nature of adverse effects with biological, chemical and physical factors that may be present in food.

3. **EXPOSURE ASSESSMENT:** qualitative and / or quantitative assessment of degree of input that could happen.

4. **RISK CHARACTERISATION:** integration (inclusion) hazard identification, hazard characterization and exposure assessment in the grade of adverse effects that may occur in certain populations, including the accompanying uncertainty.

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Tools for risk assessment

- EU countries implement **food surveillance** plans in order to monitor contamination of the foods which are regulated according to EU directives and regulations, such as, the European Commission regulation (EC) No 1881/2006 setting maximum limits in foods for several contaminants.
- **Duplicate diet studies** are based on analysis of duplicated meals taken by a small sample of individuals (less than 300).
- Another source of information for exposure assessment is **biomonitoring**, which is often based on blood or urine sample analysis.
- **Total Diet Studies**

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Total Diet Study

The WHO-FAO definition (2002):

"A total diet study consists of purchasing foods commonly consumed, processing them as for consumption, combining the foods into food composites or aggregates, homogenizing them, and analyzing them for toxic chemicals. The analytical results are combined with food intake information for different populations to estimate exposure"

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The main steps in TDS

(1) define the population of interest (infants, children, adults, elderly)

(2) identify the core foods using national consumption surveys and estimate their intake by the different populations of interest

(3) sample the selected foods, prepare them „as usually consumed by the population" (i.e. prepared and cooked as by the average consumer) and pool relevant food groups

(4) analyze pooled samples for the selected nutrients and contaminants

(5) match consumption data and the analytical data to assess nutrient intakes and exposure to contaminants

(Pennington and Hernandez 2002; Egan et al. 2007, Sirot et al 2009)

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Total Diet Study Exposure

Proposal acronym

TDS_EXPOSURE

Type of funding scheme

Collaborative Project

Call addressed

FP7-KBBE-2011-05

theme

2 - Food , Agriculture and Fisheries, and Biotechnologies

activity

2.2 – Fork to Farm: Food (including seafood), health and well being

area

2.2.4 Food quality and safety

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TDS-Exposure at a glance

- Duration: 4 years
- Budget: over 7.5 million Euros
- Partners: 26
- Countries: 19
- Work Packages: 11

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PARTNERS

- 26 beneficiaries

- **19 countries:**
Belgium, The Czech Republic, Finland, France, Germany, Ireland, Italy, Latvia, The Netherlands, Poland, Portugal, Spain, Sweden, UK, Croatia, Iceland, Turkey, Norway and Switzerland.

- **Different structures:**
10 research centres,
6 food safety agencies,
5 universities,
4 National Institutes of Public Health
1 SME

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Objectives

- Identify the information TDS can provide for exposure and risk assessment
- Estimate dietary intake of contaminants in foods as consumed
- Increase numbers of TDS in Europe
- Harmonize the TDS methods
- Develop a European TDS database for risk assessors and risk managers

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Approach and methods

- **Standardization of methods for:**
  - Selection of chemical contaminants
  - Priority foods
  - Food sampling
  - Food preparation and analyses
  - Exposure assessment and modeling
- TDS-Exposure will assess a variety of methods for sampling and preparing food, and define best practice
- Food selection will be based on national consumption data, prepared as consumed, and data from related foods pooled prior to analysis
- TDS-Exposure will provide training for those countries without total diet studies
- Information will be published to promote better use of dietary exposure data and establish a legacy of harmonized methods and science-based recommendations for public health

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Documentation

- **DoW**
- **Consortia Agreement**

- **Quality manual:**

- The **process for strategic management** of the consortium (piloting, decision making process, structure and organization of the consortium, management of disputes or conflicts, workflow and confidentiality issues, etc).
- The **process for operational management** of the activities of the Project for each partner (deadlines, costs and resources, deliverables as well as communication flow, quality assessment).
- The **process for improving** consortium management when the Project is runing.

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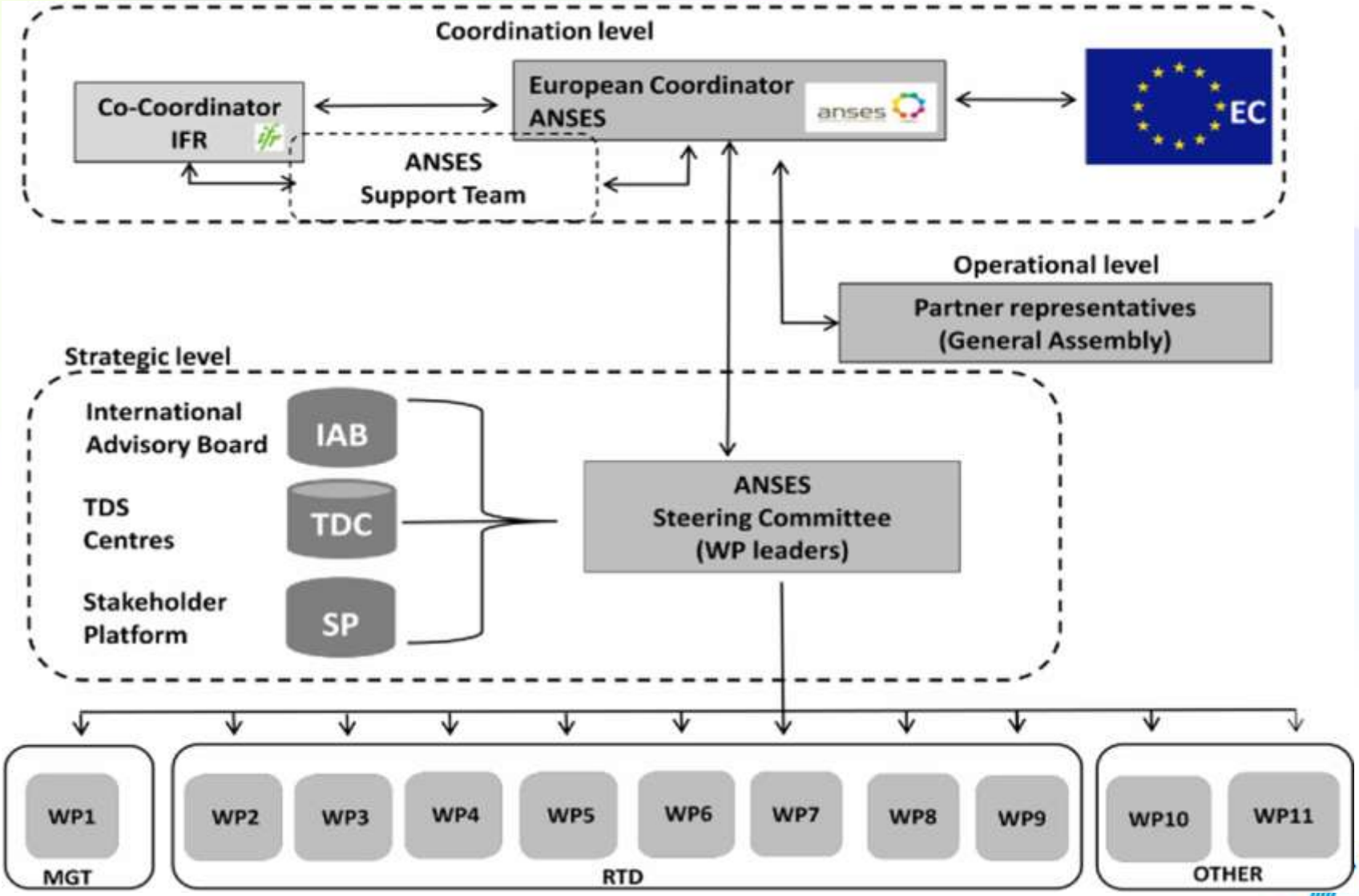
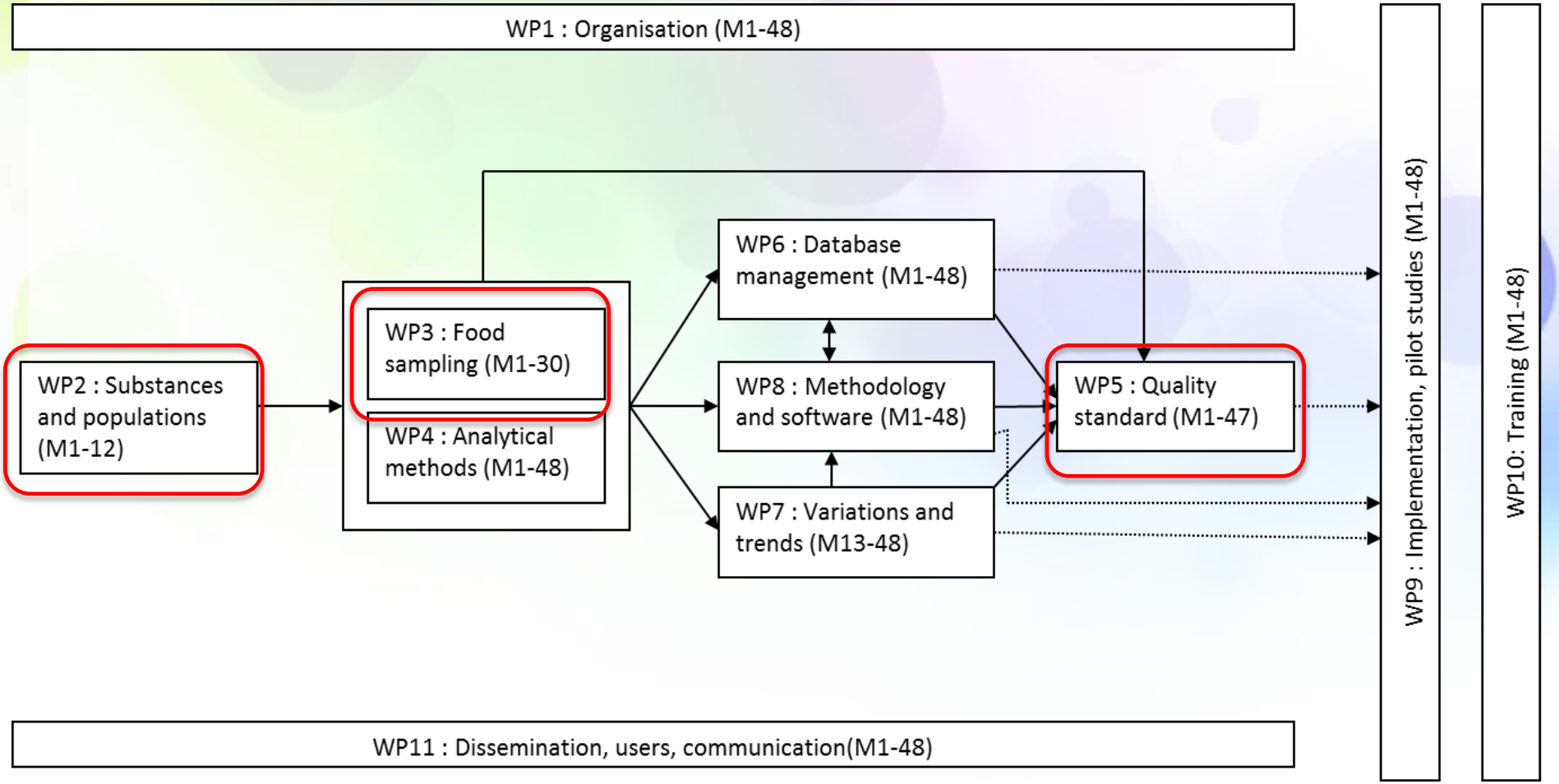
Management structure of the project



tds exposure

OVERVIEW OF THE PROJECT



WP2 – Overall Objectives

Choice of substances of interest and populations of consumers

2.1: To identify the populations of interest for total diet studies, and develop the list of specific foods that have to be included in the study, considering certain specific populations

2.2: To validate the relevance of TDS approach for substances which are not ubiquitous contaminants (for which TDS are initially designed)

2.3: To identify the priority criteria for the selection of substances to be studied in TDS and to establish a list of priority substances

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2.1: Choice of populations of interest (M1-5)

Task Leader – ANSES

Participants: INRAN, UGent, HAH,MSPSI/AESAN, ISS & TUBITAK-MAM

Sub-task 2.1.1: Analysis of populations of interest for risk assessment considering age, gender, pregnancy, lactation women, health condition or specific diet (bibliographical work) (M1-2)

Sub-task 2.1.2: Identification of specific foods based on market availability, dedicated to a specific population as identified in the previous subtask 2.1.1 (M3-5)

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2.2: Relevance of TDS approach by type of substance (M1-6)

Task Leader – Ugent, ISS & TUBITAK-MAM

Participants: ANSES, INRAN, HAH & MSPSI/AESAN

Sub-task 2.2.1: Bibliography of validation studies for the target substances (M1-3)

Sub-task 2.2.2: Comparison of TDS exposure for these substances vs. other external exposure: analysis of the results of existing TDS and comparison with other exposure assessments (other studies) (M4-6)

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2.3: Prioritization of substances: criteria and strategy of selection (M6-12)

Task Leader – Ugent, ISS & TUBITAK-MAM

Participants: ANSES, INRAN, HAH, MSPSI/AESAN

Sub-task 2.3.1: Identification of priority criteria for the family of substances studied: risk ratios for chronic exposure, substance activity (CMR), regulation project, public concern… (M6-7)

Sub-task 2.3.2: Analysis of publications for these priorities and establishment of a hierarchy between criteria: studies dealing with the issue will be collated and analysed and the criteria will be prioritised (M8-10)

Sub-task 2.3.3: Development of a list of priority substances (M11-12)

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Outcomes WP2

Deliverable 2.1.

List of populations of interest for TDS and the corresponding foods

Deliverable 2.2.

Criteria for the selection of substances, list of priority substances, and prioritization plan

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WP3 – Overall Objectives

Food sampling: food products collection

3.1: Building the design and Designing the sampling strategy plan for food products sample collection in the frame of a Pan-EU Total Diet Study

3.2: Setting criteria and strategies to formulate representative food samples to purchase (food shopping lists) starting from the food list

3.3: Defining specific food shopping lists.

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3.1 Collection of ancillary information and data analysis (M1-M14)

Task Leader: INRAN, UCD;

Participants: UGR, HAH, PVD,MSPSI/AESAN, INSA,NFNI/IZZ, ISS, TUBITAK MAM, URV, NFA

Sub-task 3.1.1: Literature review (M1 – M6)

Subtask 3.1.2: Analysing Food Consumption Datasets (M6 – M14)

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3.2 Protocol development (M15 – M24)

Task leader: INRAN

Participants: INSA, ISS, BfR, UCD, NFNI, TUBITAK MAM, URV

Sub-task 3.2.1: Desk study (M15 – M16)

Sub-task 3.2.2 Protocol (M17 – M24)

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3.3 Food shopping lists (M25 – M30)

Task Leader: INRAN

Participants: UGR,UCD, HAH, PVD,MSPSI/AESAN, INSA,NFNI/IZZ, ISS, TUBITAK MAM, URV, and NFA

This task is related to the practical implementation of the procedure built in the context of this WP to generate real food shopping lists. The final task is aimed at creating a compendium of the food shopping lists derived by each partner and the consensus on a common food shopping list.

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WP5 - Overall Objectives

To develop, test and implement a Total Quality Management (TQM) System for TDS in Europe in order to improve the quality of data and comparability between countries for use by risk assessors and managers:

5.1: Overall Total Quality Management System

5.2: Process design (quality framework & SOPs);

5.3: Food description & classification systems;

5.4: Quality requirements for data compilation & interchange;

5.5: 3rd Party Recognition/Certification Scheme

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5.1: Development of overall TQM System for TDS (M1-42)

Task Leaders - INSA & IFR

Participants: ANSES, EVIRA, NIPH/SZU, HAH, UGENT, PVD, NFA, MATIS, NIPH, NFNI/IZZ & TUBITAK

Sub-task 5.1.1: Set up TDS Centre Network and define definitions and common language to be used for TDS and TQM (M1-6)

Sub-task 5.1.2: Identification of required TDS results and development of approaches (M7-30)

Sub-task 5.1.3: Integration of the results of the other tasks to build the overall quality model (M25-45)

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TDS Exposure - expected outcomes

- **Methods defining populations of interest (e.g. young children, older adults), and choosing contaminants and core foods**
- **Standardized methods for food preparation and analysis**
- **Pooled food composition and contamination database for related food groups, prepared and cooked as consumed**
- **Homogenous approach estimating nutrient intakes and exposure to contaminants for each population of interest**
- **A network of TDS centers, and implementation of new TDS in several countries and relevant training**

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Benefits:

- ✓ Data exchange
- ✓ Access to partners databases
- ✓ Knowledge exchange
- ✓ Trainings, workshops and summer schools
- ✓ New experience
- ✓ Establishment of national TDS center
- ✓ Inclusion in the TDS network
- ✓ Contibution to regional development

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HAH
CROATIAN FOOD AGENCY

Hrvatska agencija za hranu

I. Gundulića 36b/III

31 000 Osijek

free customer phone

0800 0025

info@hah.hr

www.hah.hr

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