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“ESCWA Training Manual on methodologies for data collection of energy use of the transport sector”

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- 1- Background**
- 2- Why an ESCWA training manual?**
- 3- Brief introduction to the manual**
- 4- Recommendations for a survey plan**

Total primary energy consumption in Arab region steadily increased, over last decade:

- ❑ Average growth rate = **6.3%** for [2001-2010] / notable acceleration in the last 5 years;
- ❑ Average growth rate = **6.9%** for [2006-2010] compared to **4.6%** for [2001-2005]

Total primary energy production has shown a much slower growth rate over same period:

- ❑ Average growth rate = **2.2%** for [2001-2010] / notable slowdown in the last 5 years;;
- ❑ Average growth rate = **0.9%** for [2006-2010] compared to **3.2%** for [2001-2005]

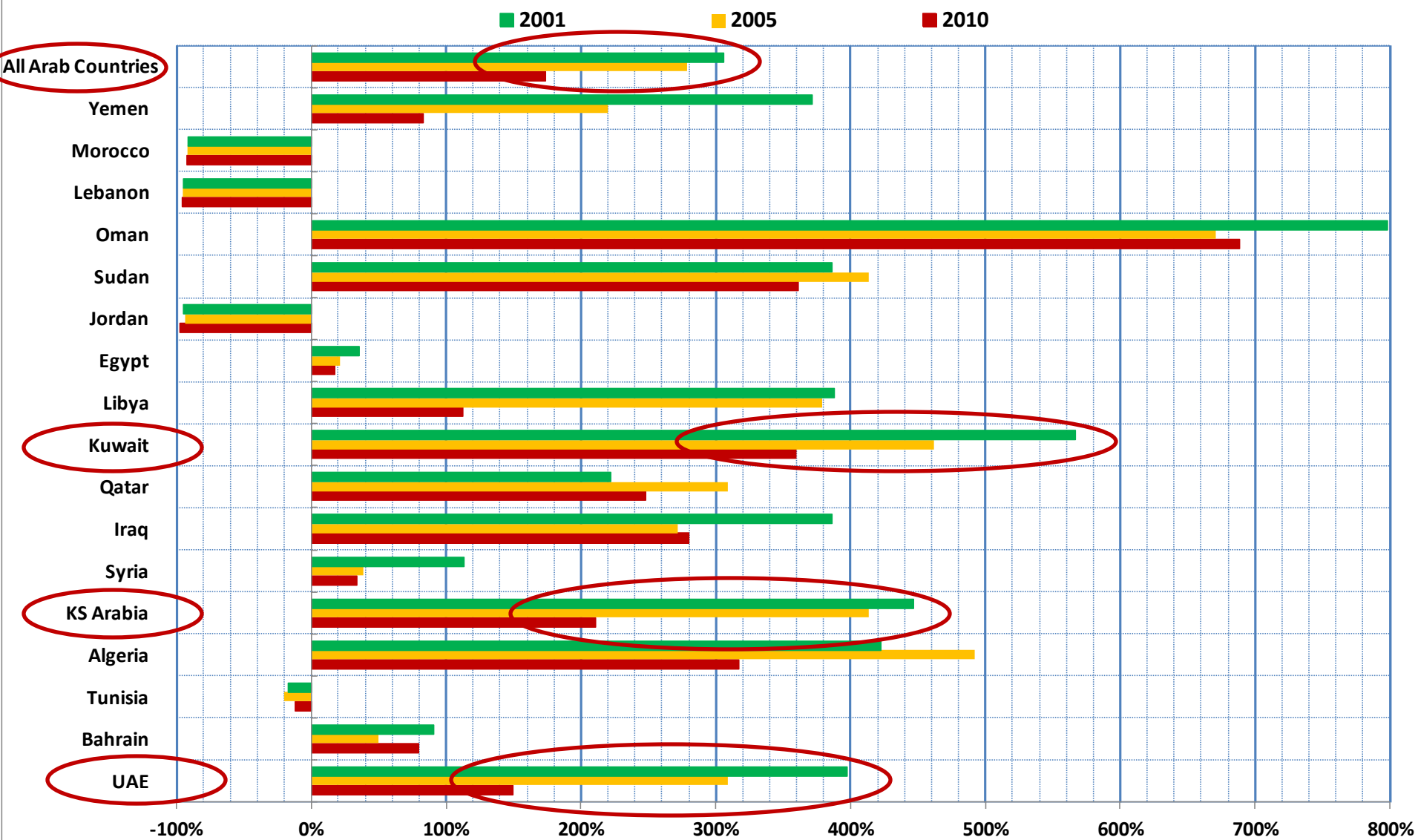
The part of the total primary energy production devoted to meet the region's local energy needs, evolved from about **25%** in 2001 to **27%** in 2006 and **36%** in 2010, indicating a sharp increase in energy consumption in the region during the last five years of that decade.

(Source: OAPEC-Annual Statistical Reports)

1- Background / Energy Context in the region



Primary Energy Surplus Index In Arab Countries For 2001, 2005 and 2010



PE Surplus Index = [(Total PE Production – PE Consumption) / PE Consumption] x 100%

These energy consumption trends will lead to the following alarming situations:

- ❑ For Arab countries with economies relying on revenues from fossil fuel exports:
A reduction in hydrocarbon products destined for export → A reduction in potential revenues → A major risk for on-going development programmes
(Total energy exports of net energy exporting Arab countries represented 3.75 times their energy consumption in 2001 and only 1.9 in 2010)
- ❑ For Arab countries that presently have some energy exporting capacities:
current trends will lead them to join the countries that are net importers of energy
- ❑ For Arab countries already net importers of energy:
current trends will increase their vulnerability to international energy price fluctuations, hence a much weakened energy security situation

1- Background / Energy Consumption in the Transport sector



- ❑ In 2011, the share of the transportation sector in the Arab region's total final energy consumption amounted to about 31% (slightly higher than the world's level; about 28%)

[Source: IEA, Energy Balances of Non-OECD countries-2013 Edition]

- ❑ The transport sector's contribution to the total world's GHG emissions amounts to over 13%, and its share of GHG from fossil fuels combustion amounts to 23% (75% of which is due to land transportation)
- ❑ Land transportation consumes about 50% of the petroleum products both worldwide and in the Arab region

2- Why an ESCWA training manual? Need for Reliable End Use Energy Statistics



- **Energy represents a basic input to all sectoral and national development plans, particularly in the Arab Region**
- **The development of national policies is highly dependent on the availability, accuracy and reliability of statistical energy production and sectoral consumption information**
- **CO2 emissions are strongly linked to fossil fuel energy consumption in most economic sectors, and particularly in the transport sector**

2- Why an ESCWA training manual? Need for capacity building



- **The quality of energy statistical information in most of ESCWA MC needs to be substantially improved to meet the required levels for formulating national development plans and international reporting**
- **End use energy consumption in the transport sector is one of the weakest areas:**
 - ✓ **The region does not have strong administrative records / or business registers or research studies on vehicle/fuel efficiency that allow appropriate model building**
 - ✓ **The statistics need to be improved in order to be a basis for designing appropriate energy efficiency programmes and estimating CO₂ & air pollutants emissions.**

2- Why an ESCWA training manual? Need for Standardisation & Harmonization



- ❑ Create a shared understanding of various terms and concepts related to survey formulation.
- ❑ Provide a common framework for reviewing and evaluating Fuel Energy Consumption (FEC) surveys
- ❑ Provide a tool for:
 - ✓ a better understanding and analysis of the sector's current situation in terms of energy use;
 - ✓ Assessment of energy efficiency policies and programs in the field of transportation using appropriate indicators;
 - ✓ Prospective vision about the sector's future consumption in terms of new measures and policies that are likely to be adopted by the sector's major stakeholders including the State

3- Brief introduction to the manual Background



- ❑ Part of an ESCWA DA project on energy statistics and balance (2012-2014) to build capacity of member countries to produce energy statistics data and build national energy balance Website: <http://www.escwa.un.org/esab/> (Project lead by ESCWA's Statistics Division)
- ❑ Advocates the conduct of properly designed energy surveys to have relevant information on consumption by energy product and end use in the transport sector.
- ❑ Title: “Training Manual on Methodologies for Data Collection on Energy Use by the Transport Sector and Case Studies from the Arab Region”,

Authors:

Mr Abdelaziz Bourahla (MEDSTAT III) & Mr Rafik Missaoui (ALCOR)

<http://css.escwa.org.lb/sd/esab/ESCWATrainingManual1.pdf>

3- Brief introduction to the manual

Content / 6 Main sections + Annexes

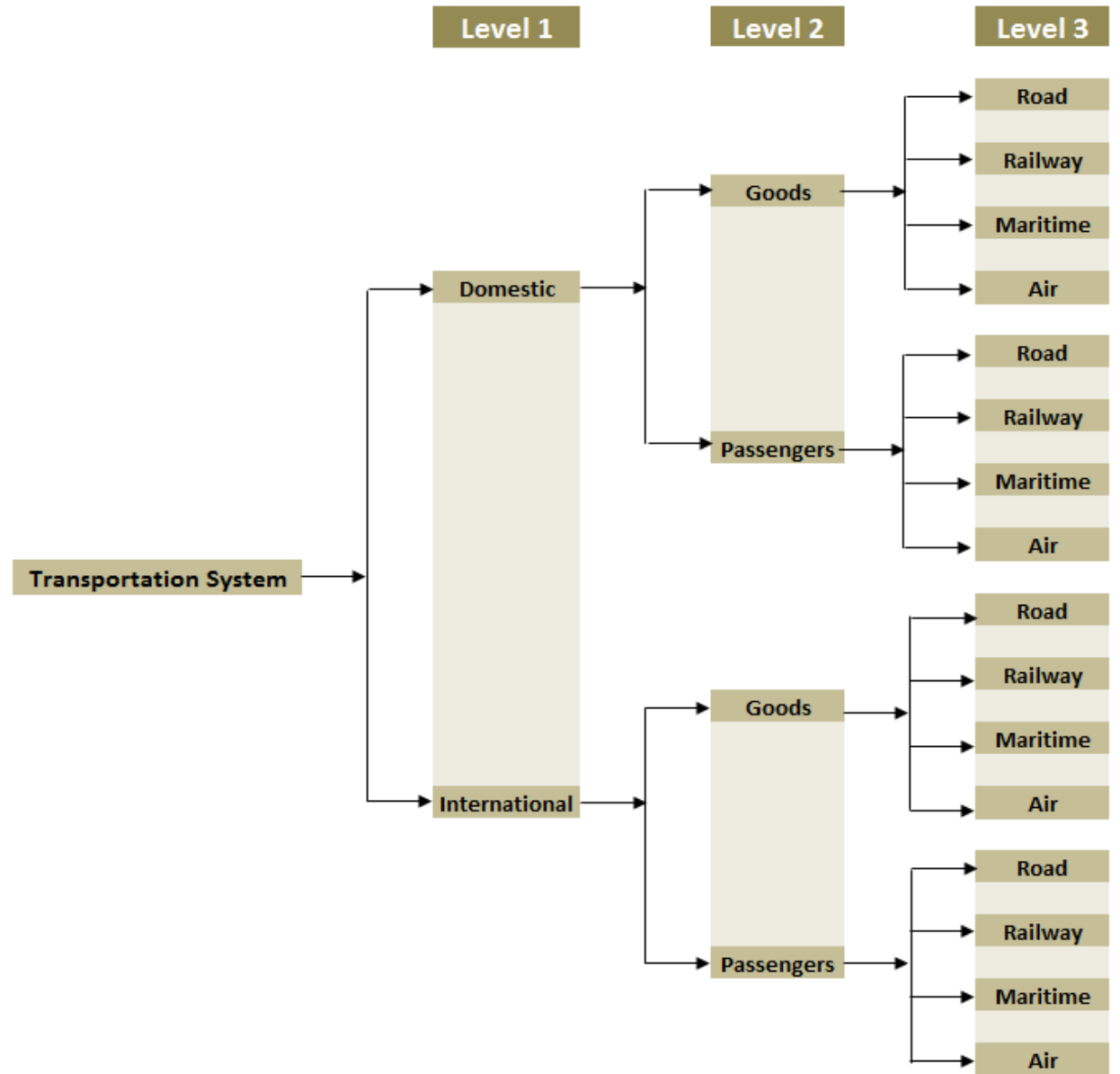


- ❑ **Section 1**: A brief introduction of the importance of energy use data :
- ❑ **Section 2**: Description of standard transportation organisation; classification by:
 - ✓ Type of actors,
 - ✓ mode of transport
 - ✓ type of energy
 - ✓ More details for road transport
- ❑ **Section 3**: Presentation of commonly used methodologies for data collection of the transport sector focusing on road transport of passengers and goods and the sector' standard actors.

3- Brief introduction to the manual

Content / 6 Main sections + Annexes

Classification of transportation system



3- Brief introduction to the manual Content / 6 Main sections + Annexes



Type of fuel used according to transport mode

Mode	Gasoline	Diesel	LPG	CNG / LNG	Kerosene	Fuel	Electricity
Road transport	x	x	x	x			x
Railways		x					x
Maritime		x		x		x	
Air transport					x		

- Energy consumption can be easily calculated for all modes run by organized structures except for the road transport sector :
Need to use properly designed surveys

3- Brief introduction to the manual

Content / 6 Main sections + Annexes



❑ Section 4: Guidelines for designing surveys for the transport sector

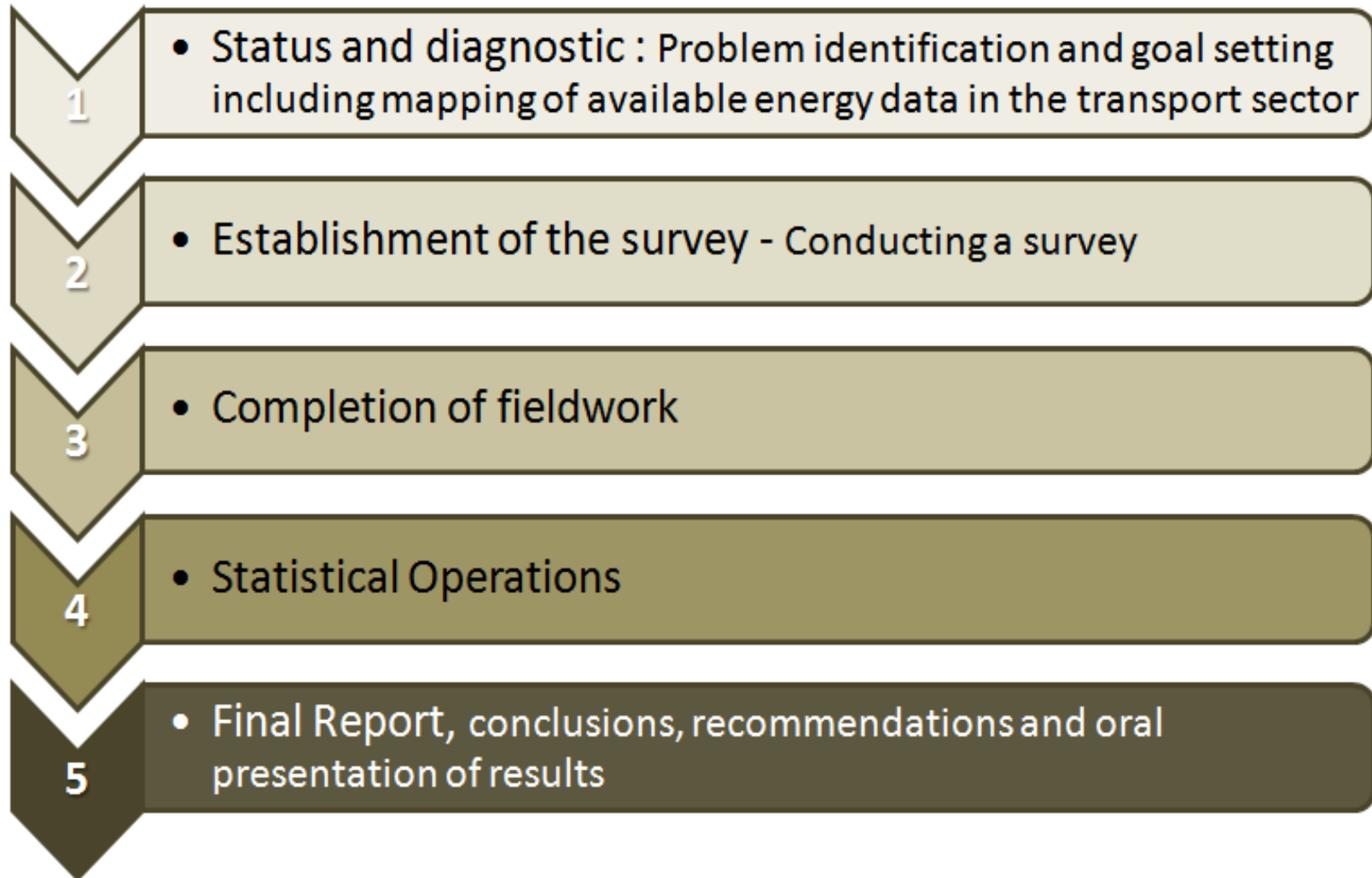
- ✓ Main stages of the conduction of a survey
- ✓ Principles that need to be analysed in final energy consumption surveys for the transport sector, taking into account all economic activity sectors and mode of transport,
- ✓ Sample design to get data on target variables
- ✓ Questionnaires samples are provided in annex

3- Brief introduction to the manual

Content / 6 Main sections + Annexes



Main phases for the implementation of a survey



3- Brief introduction to the manual

Content / 6 Main sections + Annexes



- ❑ **Section 5: Presentation of existing models for estimating energy statistics**
 - ✓ Supply and demand models,
 - ✓ Highlight of widely used software forecasting and planning details for transport sector and experiences according to models categories.

- ❑ **Section 6: Presentation of case studies:**
 - ✓ Canada
 - ✓ Morocco
 - ✓ Tunisia
 - ✓ Palestine

4- Recommendations for a survey plan



❑ Short term period:

- ✓ Setting up thematic working of energy use statistics according to the structure flow of energy balances (international standard): Industry, Transport, Public Administration, Tertiary, Residential, Agriculture, etc.
- ✓ Select transport as pilot project during the preliminary phase in order to structure the team-work and to gain experience for the next ones.
- ✓ Organise national Energy Information System Workshop in order to reach on the establishment of framework for managing energy use statistics in the country. The framework has to set-up the following major element:

❑ Short term period (Ctd):

- Creation of steering committee at level of Energy Information System (EIS) stakeholders
- Establishment of EIS technical committee
- Develop or improve and formalise national network of EIS institutions (Data Centres)
- To nominate the lead agency, preferably joint institutions between National Statistical Office and Ministry of Energy or Equivalent
- ✓ Inventory of existing data and new data being generated and related metadata for energy use in transport

4- Recommendations for a survey plan



❑ Short term period (Ctd):

- ✓ Diagnostic of national register / census for the preparation of list frame: Enterprises, Households, Vehicles, etc
- ✓ Diagnosis of the state of energy consumption statistics and related indicators & GHG emissions inventories
- ✓ Study analysis on methodology of work for the national "Technical control of vehicle"
- ✓ Research funds for the transport survey

4- Recommendations for a survey plan



□ Medium & long term period:

- ✓ Formulation of sampling design
- ✓ Questionnaire preparation (Pre-test, revision, printing & manuals)
- ✓ Field operation & Data processing
- ✓ Report and release of survey results
- ✓ Aggregate data according ISIC/NACE Integration of data in EB (international standard)
 - Generalise the use of international nomenclature ISIC/NACE
- ✓ Calculation of GHG emissions & related EE indicators
- ✓ Training LEAP Model
- ✓ Forecasting & planning team within energy & transport institutions
- ✓ realisation of sectoral publications

Thank you for your attention

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