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Status of IEA Energy Efficiency Template and Manual

**Energy Efficiency Indicators Workshop
Paris, France, 6-7 June 2012**



The context of our current energy efficiency indicators work

■ The 2009 IEA Ministerial meeting

- Acknowledge the importance of developing meaningful indicators to support policy development
- Commit to report data supporting the development of indicators annually through the IEA template

■ Requests from member and non-member countries to provide guidance on:

- What indicators to use
- How to build these indicators
- What data are needed to support the development of these indicators

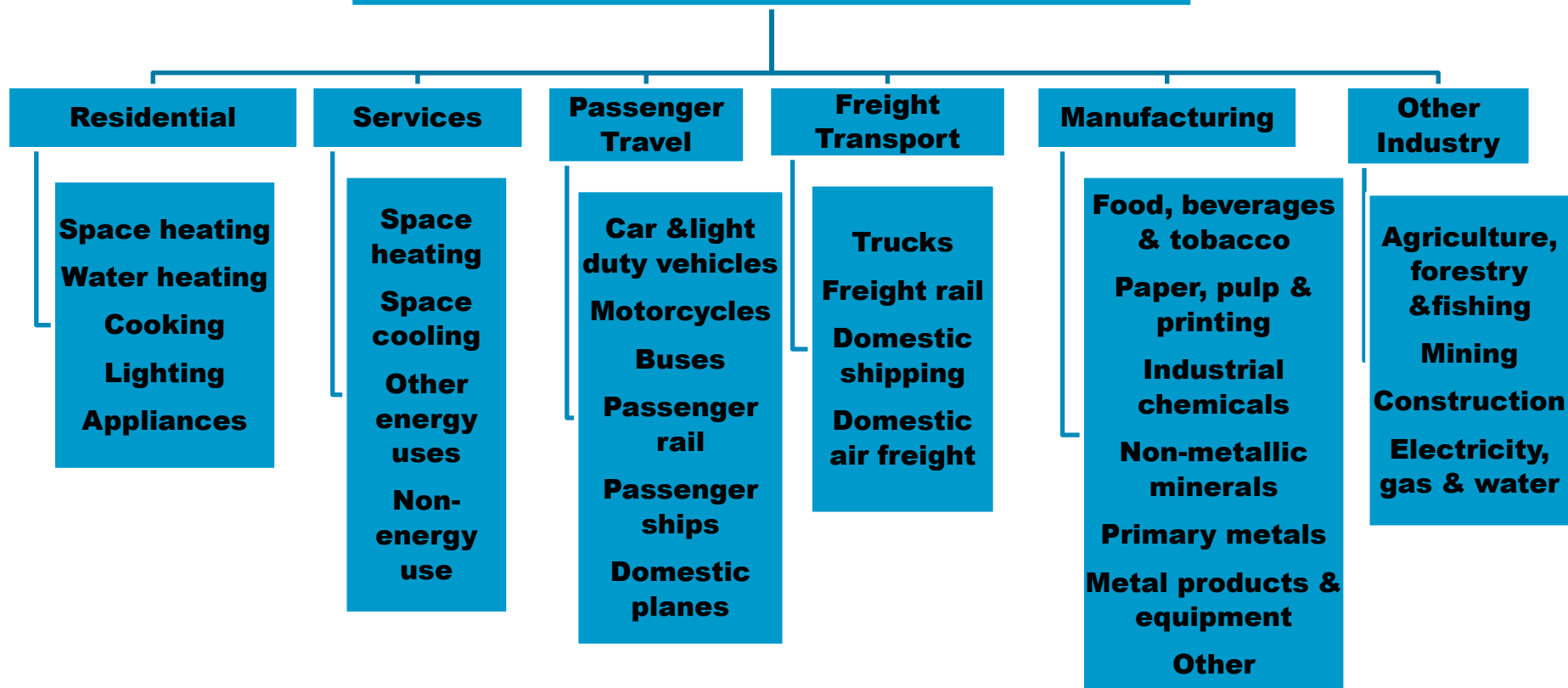
STATUS OF TEMPLATE

Energy Efficiency Indicators Template		
country name		
	MACRO ECONOMIC DATA	
	COMMODITIES	
COUNT	INDUSTRY	web links
MACR		>>
COMM	SERVICES	>>
INDUS	RESIDENTIAL	>>
SERV	TRANSPORT	>>
RESID		
TRAN		
Energy consumption and activity data		
IEA DATA and AGGREGATE INDICATORS		
ELECTRICITY GENERATION	Electricity generation from combustible fuels and efficiencies	>>
BASIC INDICATORS	Predetermined set of aggregate energy and activity indicators	>>
SUPPORT TOOLS		
USER REMARKS	To incorporate comments associated to the data from the individual sheets	>>
DATA COVERAGE	Generates a graphical summary of data coverage (completed vs. expected)	>>
SINGLE INDICATOR GRAPHS	To generate a graph for one energy indicator	>>
MULTIPLE INDICATORS GRAPHS	To generate a graph comparing trends from multiple indicators	>>
CONSISTENCY CHECKS	To run the integrated consistency checks	>>

Sample of the template structure

TRANSPORT					units	2005	2006	2007	2008	2009		sources	comments
Menu	Legend	Check all/none	Add remarks	Manual									
Activity & Structure indicators													
Passenger transport [passenger-kilometres]													
<input checked="" type="checkbox"/>	Cars, SUV and personal light trucks				10 ⁹ pass-km	688.99	744.86	768.35	736.78	0		Country submission	
<input checked="" type="checkbox"/>	- gasoline (spark ignition) engine				10 ⁹ pass-km	0	0	0	0	0			
<input checked="" type="checkbox"/>	- diesel (compression ignition) engine				10 ⁹ pass-km	0	0	0	0	0			
<input checked="" type="checkbox"/>	Motorcycles (2 wheelers) & 3 wheelers				10 ⁹ pass-km	74.03	75.45	75.82	76.17	0		Country submission	
<input checked="" type="checkbox"/>	Buses				10 ⁹ pass-km	101.20	103.05	102.92	102.26	0		Country submission	
<input checked="" type="checkbox"/>	Passenger Trains				10 ⁹ pass-km	50.47	50.89	49.68	49.52	0		Country submission	
<input checked="" type="checkbox"/>	Domestic passenger airplanes				10 ⁹ pass-km	12.81	13.93	15.33	15.06	0		Country submission	
<input checked="" type="checkbox"/>	Domestic passenger ships				10 ⁹ pass-km	3.73	4.07	4.06	3.83	0		Country submission	
Total Passenger Transport					10⁹ pass-km	931.22	992.25	1,016.16	983.62	0			
Freight transport [tonne-kilometres]													
<input checked="" type="checkbox"/>	Freight & Commercial road transport				10 ⁹ tonne-km	211.80	187.01	179.41	178.16	0		Country submission	
<input checked="" type="checkbox"/>	- gasoline (spark ignition) engine				10 ⁹ tonne-km	0	0	0	0	0			
<input checked="" type="checkbox"/>	- diesel (compression ignition) engine				10 ⁹ tonne-km	0	0	0	0	0			
<input checked="" type="checkbox"/>	Freight trains				10 ⁹ tonne-km	24.83	26.19	27.38	25.89	0		Country submission	
<input checked="" type="checkbox"/>	Domestic freight airplanes				10 ⁹ tonne-km	0.98	1.04	1.11	1.00	0		Country submission	
<input checked="" type="checkbox"/>	Domestic freight ships				10 ⁹ tonne-km	46.93	46.67	52.30	46.89	0		Country submission	
Total Freight Transport					10⁹ pass-km	284.54	260.91	260.20	251.94	0			
Freight transport [tonnes]													
<input checked="" type="checkbox"/>	Freight & Commercial road transport				10 ⁶ tonnes	1,508.70	1,483.87	1,496.88	1,482.31	0		Country submission	
<input checked="" type="checkbox"/>	- gasoline (spark ignition) engine				10 ⁶ tonnes	0	0	0	0	0			
<input checked="" type="checkbox"/>	- diesel (compression ignition) engine				10 ⁶ tonnes	0	0	0	0	0			
<input checked="" type="checkbox"/>	Freight trains				10 ⁶ tonnes	0	0	0	0	0			
<input checked="" type="checkbox"/>	Domestic freight airplanes				10 ⁶ tonnes	0	0	0	0	0			
<input checked="" type="checkbox"/>	Domestic freight ships				10 ⁶ tonnes	79.45	79.03	88.81	79.86	0		Country submission	
Vehicle kilometres													
<input checked="" type="checkbox"/>	Cars, SUV and personal light trucks				10 ⁹ vkm	405.29	438.15	451.97	433.40	0		Country submission	
<input checked="" type="checkbox"/>	- gasoline (spark ignition) engine				10 ⁹ vkm	275.03	284.43	280.95	259.92	0		Country submission	
<input checked="" type="checkbox"/>	- diesel (compression ignition) engine				10 ⁹ vkm	114.70	136.63	152.81	153.75	0		Country submission	

End-Use Coverage



- **Country submissions**
- **ODYSSEE**
- **IEA balances**
- **OECD for macroeconomic data**

● Energy Efficiency Indicators Database finalised August 2011

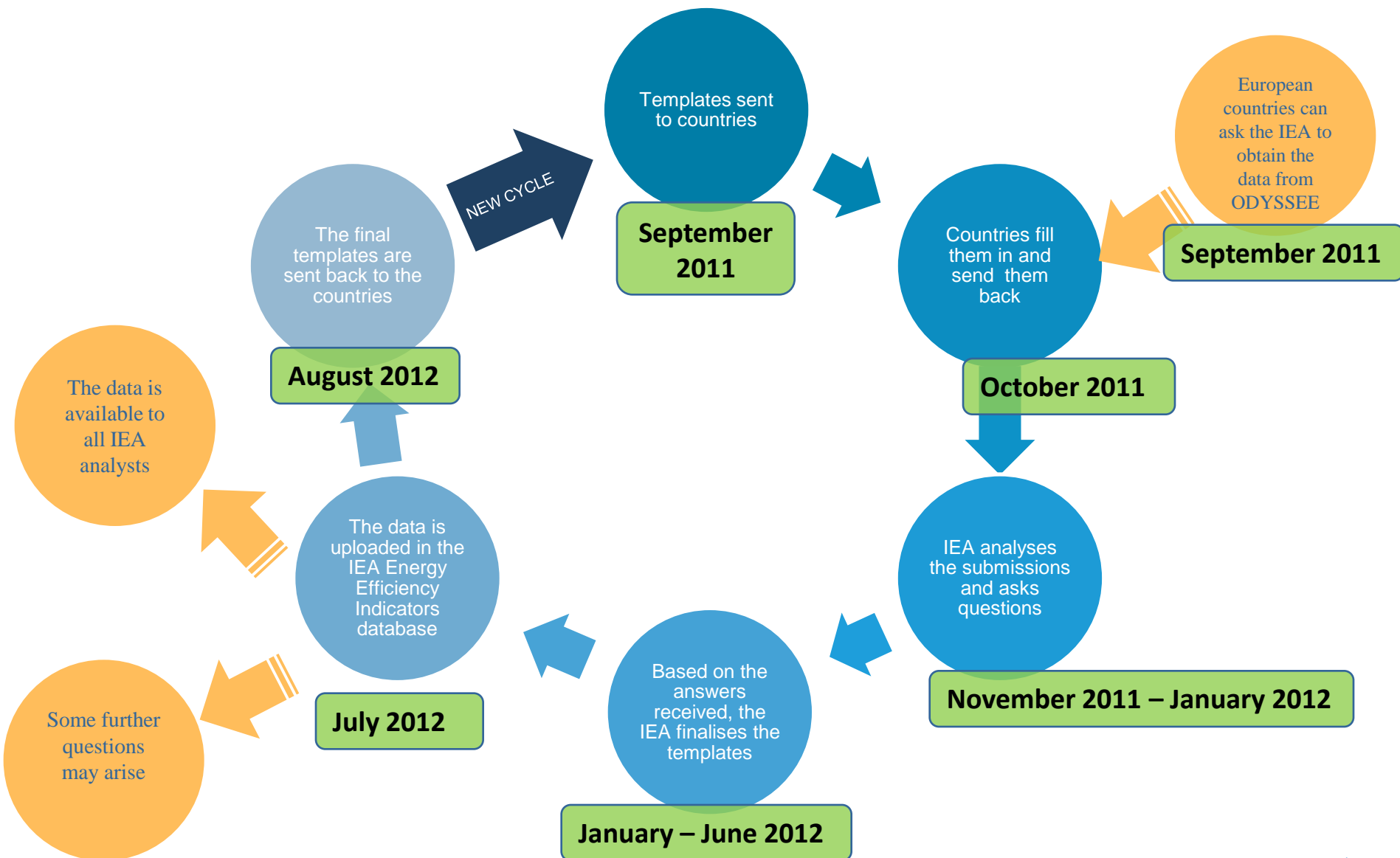
- ◆ Data for the years 1990 to 2008
- ◆ Out of 28 IEA countries, 16 countries with sufficient coverage and quality for 1990 to 2008 for all of the four sectors

Residential	Services	Manufacturing	Transport
• 18 countries	• 4 countries (breakdown) • 21 countries (total)	• 19 countries	• 18 countries

- **No cooling degree days available for EU countries**
- **Countries may be using different approaches to calculate heating degree-days**
- **Differences reported for energy efficiency template and IEA energy balances**
- **Confusion between diffusion rate of appliances and ownership rate**
- **Occupied dwelling: occupied dwelling, permanently occupied dwelling or households**

- **Differences in the industry and value-added coverage**
- **No distinction between passenger and freight for ships and airplanes**
- **Major break in series identified (as a result of methodology change, or discontinued surveys)**
- **Residential end-use breakdowns are inconsistent (e.g. lighting included in appliances)**

IEA Indicators Template - The process

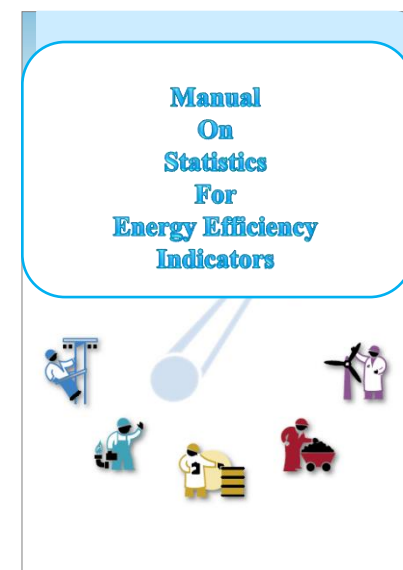


STATUS OF MANUAL

- **The IEA received many requests from countries, individuals, organisations on several issues:**
 - What indicators to use?
 - How to build these indicators?
 - How to collect the data needed for these indicators?

What data to collect and how?

- **The IEA is developing a Manual on Statistics for Energy Efficiency Indicators**
 - To help countries to collect energy end-use and activity data for the development of energy efficiency indicators
 - To collect best practices from IEA member countries and beyond
 - In cooperation with the ODYSSEE network, APEC, countries, companies and associations
- **Release expected in late 2012**



What is the manual about?

- 👉 The manual will provide information on how to collect the data required to develop energy and energy efficiency indicators
- 👉 The Manual will not be a reference manual on energy statistics or on indicators
- 👉 However, it will briefly touch upon what are indicators and why they are part of any sound energy efficiency policy
- 👉 The main focus will be on how to collect the data needed to build those indicators.



An outline for the manual

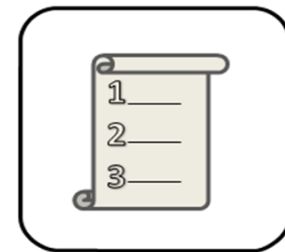
- **Why a manual**
- **Energy Efficiency Indicators: What are they?**
- **The Data behind the Indicators: How to collect them?**
- **Collecting What and How for the Residential Sector**
- **Collecting What and How for the Services Sector**
- **Collecting What and How for the Industry Sector**
- **Collecting What and How for the Transport Sector**
- **Validating the Data**
- **Annexes**

Why a manual?

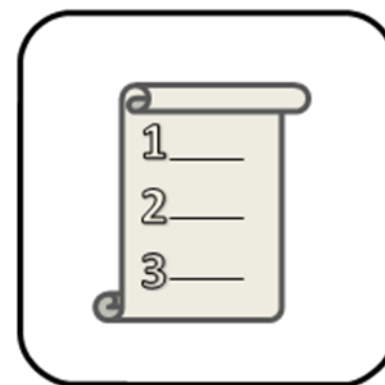
- **Growing importance of energy efficiency in energy policy**
- **Indicators used to support policy analysis**
- **Data needed**
- **More detailed data needed to build meaningful indicators**

The data behind the indicators

- Assess priorities in sectors (residential? industry? transport? or services?)
- Assess data needs
- Scan existing data sources (there is often a lot of available information that you don't know about)
- Legislative authority
- Practicality
- Time frame 
- Then decide on a method of collecting
- Budget available 



- **General energy statistics**
- **General activity statistics**
- **Collection methods:**
 - **Surveying**
 - **Measuring/Metering**
 - **Modeling**
 - **Administrative Sources**
 - **Consolidating Data from Multiple Sources**



Collecting what and how for the residential sector

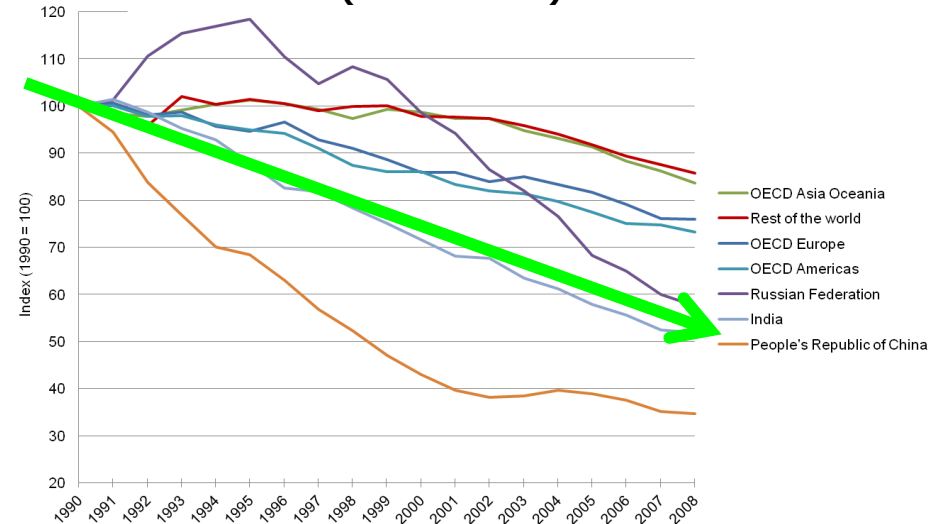
- **What does the residential sector mean and cover?**
- **Why is the residential sector important?**
- **What are the main end-uses driving the consumption of the sector?**
- **What are the most frequently used indicators?**
- **The data behind the indicators**
- **How to collect the data**
- **Communicating indicators effectively**

Validating and disseminating

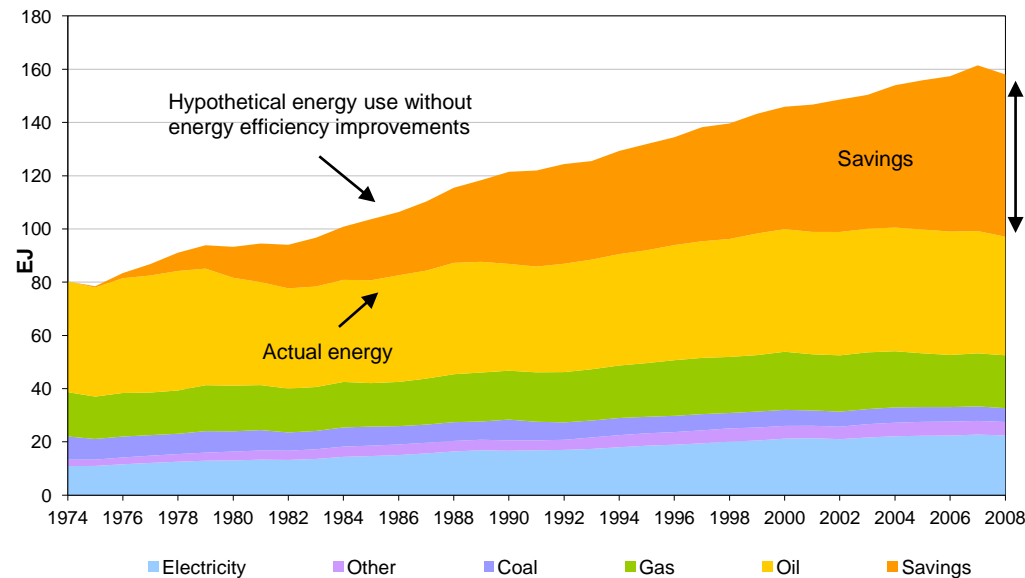


Worldwide Trends in Energy Use and Efficiency

Energy consumption per unit of GDP (1990 = 100)



Long-term energy savings from improvements in energy efficiency, IEA11



IEA Scoreboard 2011



- Specific issues: Frequency, interpolation, extrapolation, degree-days, units, etc.
- Good/best practices for the residential sector
- Good/best practices for the services sector
- Good/best practices for the industry sector
- Good/best practices for the transport sector
- ☐ To include questionnaires used to conduct the collecting of data (who agree to provide it)

Manual On
Statistics For
Energy Efficiency
Indicators

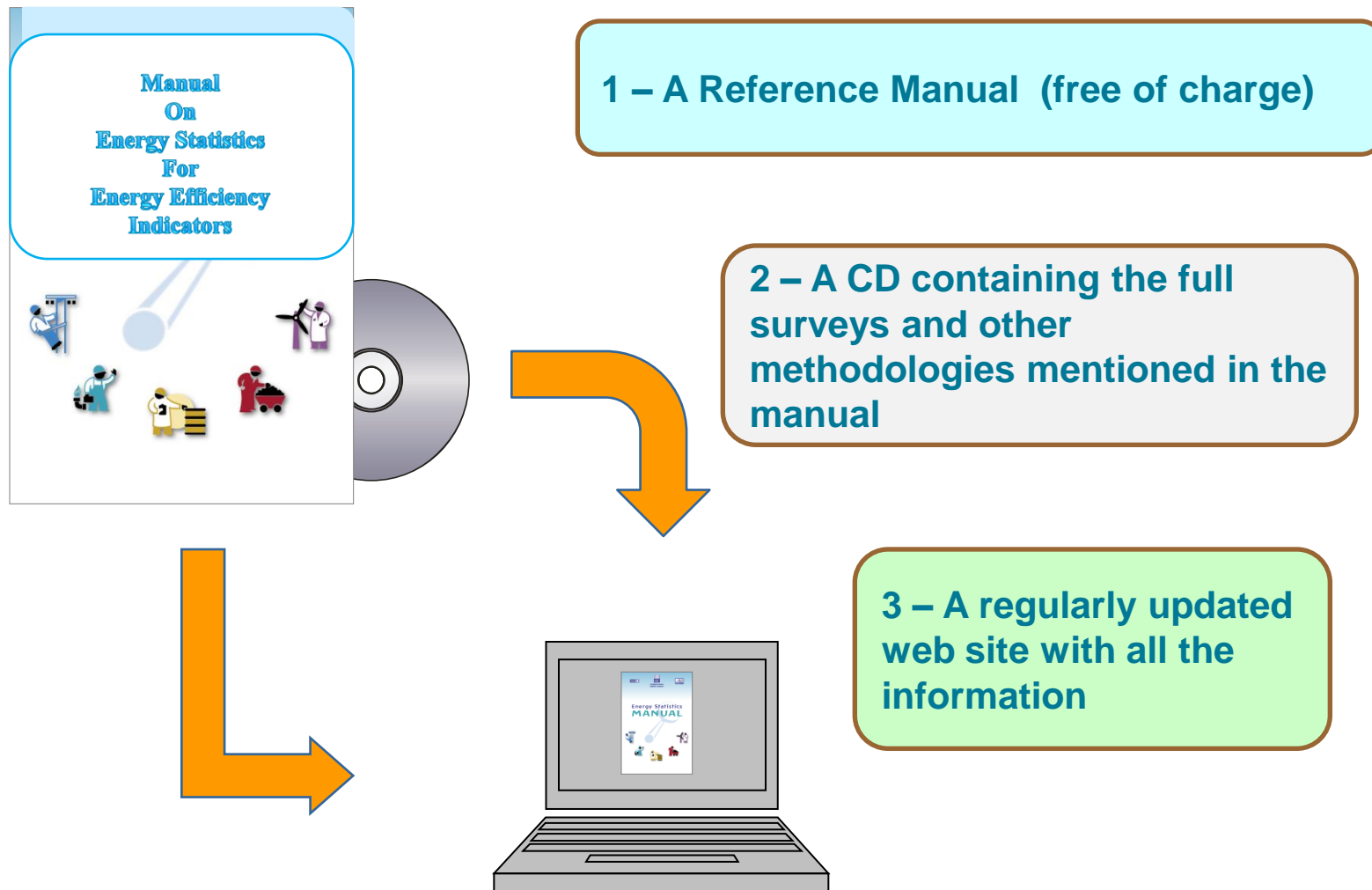


The best practices template

Background	Country	Austria		R/Su/01	Sector and Collection Method	
	Organisation	Statistics Austria				
	Name of the survey	Household energy consumption survey				
	Survey purpose	<ul style="list-style-type: none">• To determine total household energy consumption• To determine household appliances energy consumption• To collect household energy expenditure• To collect dwelling physical characteristics• To collect household occupant characteristics				
a collection	Sample design	Stratified random sampling approach			Data Collection	
	Sample sources	List of addresses, list of telephone numbers, labour force survey.				
	Collection methods	<ul style="list-style-type: none">• Computer assisted personal interview (CAPI)• Computer assisted telephone interview (CATI)				
	Sample/Population size	14 000 / 3 429 720	Response rate			55%
	Frequency	Every two years	Last time surveyed			2010
	Time to complete survey	10 minutes	Mandatory			No

Overall 150+ practices submitted

Notes and comments	Main challenges	<ul style="list-style-type: none"> Inconsistent responses Response quality 		Notes and Comments
	Possible improvements			
	Key best practice	A new approach to data control compared with previous surveys was taken for the first time in 2004 and continued in the follow-up survey runs. Up to and including the 2000 survey, only the individual energy sources themselves were checked for plausibility, any missing data were calculated (quantity-value pairs) and substitutions were made if necessary. Such routines of course continue to be used, with the additional step that the total of the reported energy consumption is then related to a calculated (fictitious) overall consumption. This fictitious overall consumption by the household is calculated from the data for that household, on the one hand (floor space, number of people in household) and pre-set parameters for the individual types of use (space heating, water heating, cooking, other purposes), on the other hand. Calculating the total reported energy consumption per household in this way involves some quite complicated plausibility routines, because one or more alternative quantities have to be calculated if the quantity-value pairs do not match and these alternative quantities then, when variably applied, lead to a number of different calculated overall energy consumption figures. The fictitious standard value is then used to select the quantity-value pairs that appear most probable.		
	Other documentation	Available: Surveying Methodology and Questionnaire		



Where are we now?

- Draft residential chapter and accompanying Annex sent to 176 contributors for review/comment

Figure 2 • Share of the residential sector in the world Total Final Consumption for selected fuels (2009)

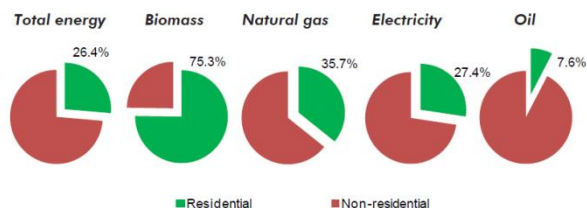


Figure 3 • Breakdown of the residential consumption by end use for 19 selected OECD countries

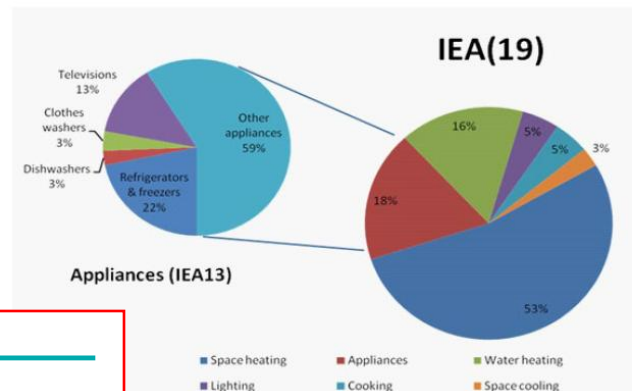
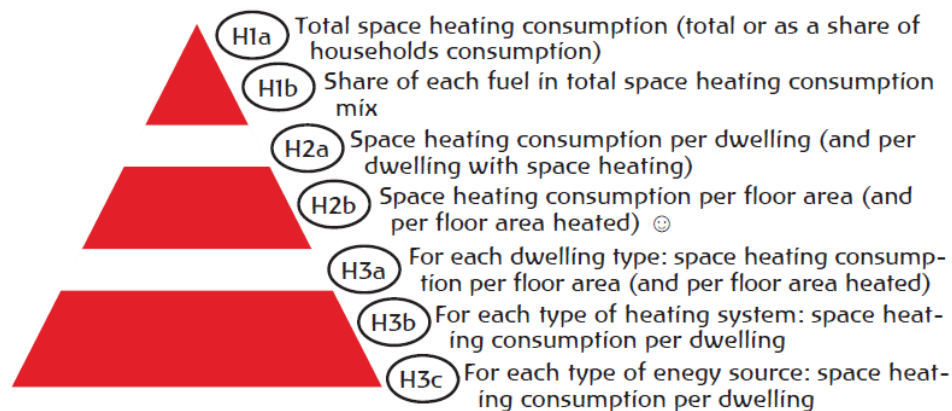


Figure 4 • Pyramid of space heating indicators



- **Friday morning brainstorming to review comments**
- **Incorporate comments**
- **Based on the first chapter, write**
 - **other sector chapters**
 - **introductory chapter**
 - **technical annexes**
 - **remainder of best practices Annexes**

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Thank you