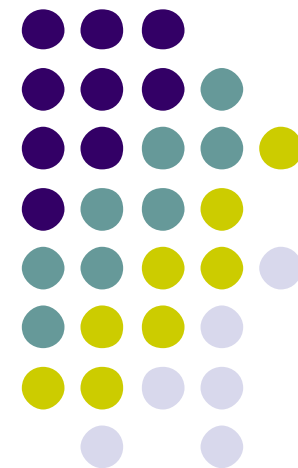


Energy Consumption Survey in Japan's residential sector

3rd February 2010
Wellington, New Zealand
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EDMC/IEEJ



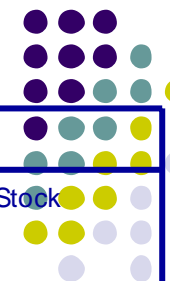
Background



- It has been difficult to determine the real energy consumption in the residential sector due to difficulty to monitor individual behavior.
- It is thought that it takes time and money to conduct residential energy surveys compared to industrial energy surveys.
- Even in Japan which has good statistics, a lot of surveys and researches for residential energy consumption have been conducted by various institutes, universities, enterprises and so on, on an ad-hoc basis.
- Energy consumption in the residential sector is still not clear in terms of end-use. In this regard, an official detailed energy consumption survey is indispensable to develop accurate energy consumption by end-use in Japan.



Main Energy Statistics



Name	Resource	Survey	Publish	Energy	Item
Mineral Resources and Petroleum Products Statistics	METI	Fundamental Statistics	Monthly Annually	Coal, Oil, Gas	Production, Import, Export, Stock changes etc
Trade Statistics of Japan	MOF		Monthly Annually	All Products	Import, Export etc
Supply and Demand of Electricity	Japan Electricity Association , ANRE	Administrative Statistics	Monthly Annually	Electricity	Power generation, Input fuels, sales amount etc
Report of the Current Survey of Energy Consumption	METI	Fundamental Statistics	Monthly Annually	Coal, Oil, Gas, Electricity	Consumption by Industry etc
Report of Gas Company	ANRE	Fundamental Statistics	Monthly Annually	Gas	Production, sales amount etc
Heat Service Utilities Statistics	JHSUA		Annually	Heat residue, fuels	Consumption etc
Input and Output Table	Ministry of Internal Affairs and Communications	Fundamental Statistics	5years	Expenditure etc	Coefficients, inverse matrix, coefficients, domestic production, producer's prices, purchaser's prices
Statistics of vehicle Transport, Rail Road Transport, Coastwise Vessel Transport and Aviation Transport	MLIT	Fundamental Statistics	Monthly Annually	Gasoline, Diesel oil , Fuel oil ,Jet fuel	Ton-km, Passenger-km, Consumption etc
Report on the Family Income and Expenditure Survey	Statistics Breau	Fundamental Statistics	Monthly Annually	Town Gas, LPG, Kerosene etc	Residential Consumption, Expenditure etc

- Report on the Family Income and Expenditure Survey is only one of statistics to determine the energy consumption in residential sector.

Introduction of Japan's residential survey

-Family income and expenditure survey-



Frequency

- Monthly and Annual basis.

Time lag

- Published two months after the end of the month.

Compulsory data submission

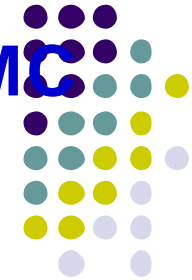
- Fundamental survey. The survey unit is the household except one-person household of student in the entire area of Japan.
- Sampling survey is conducted under statistical law. Data are obtained in four kinds of questionnaires, namely, Household Schedule, Family Account Book, Yearly Income Schedule and Savings Schedule.

Contents

- Average of monthly receipts and disbursements per household
- Yearly amount of expenditures and purchase frequency per household
- Average of energy consumption per household about Electricity, Kerosene, LPG are covered.
- However, this statistics covers only energy expenditure and consumption. This statistics does not cover energy consumption by end-use, which are cooling, heating, water heating, cooking and lighting.
 - Therefore, a lot of academic researches on end-use energy consumption in residential sector have been conducted by universities, institute and enterprises.

Estimation of End-Use in residential sector by EDMC

-HandBook of Energy & Economic Statistics in Japan-

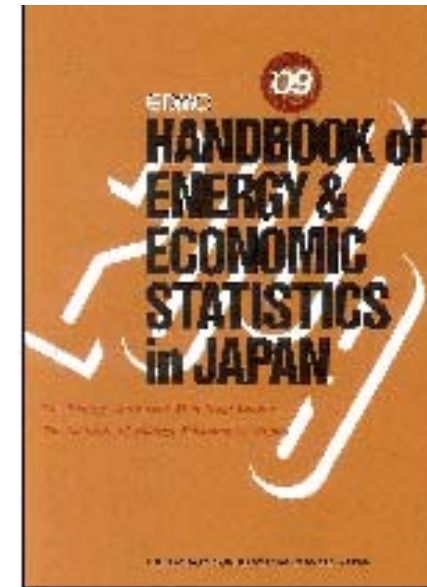


Publish:

Annual data
Every February

Data of residential sector

- Private Consumption, Number of Household and Residential Energy Consumption
- End-Use Energy Consumption in the Residential Sector
- Residential Energy Consumption by Source
- End-Use Energy Consumption per Household
- End-Use Energy Consumption by Source
- Diffusion of Household Electrical Appliances
- Cooling Degree Days by City
- Warming Degree Days by City
- Monthly Average Temperature in Tokyo
- Fluctuation in End-Use Energy Consumption in the Residential Sector
- Consumption expenditure concerning energy per household
- Improvement in Energy Efficiency of Home Electric Appliances



2007(F.Y.) (1,000kcal/Household, %)

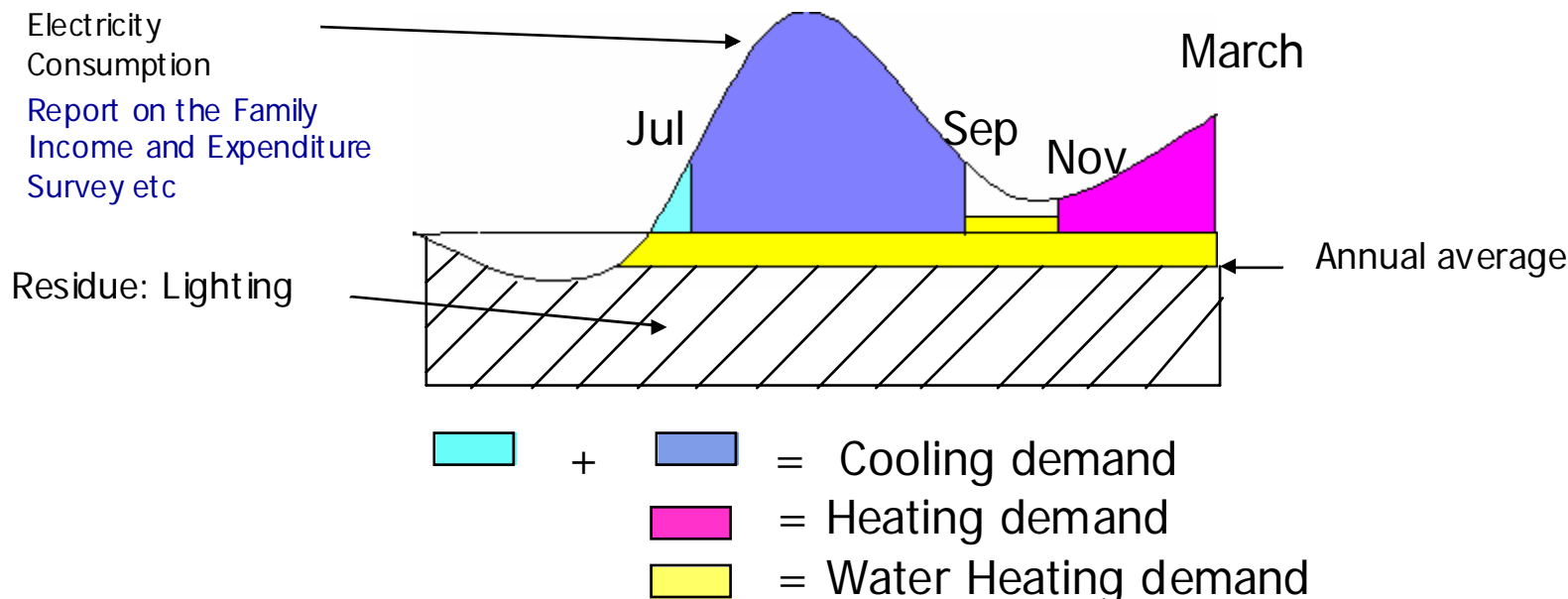
	Heating	Cooling	Hot Water	Cooking	Power etc.	Total	Shares
Electricity	351	273	331	194	3,673	4,822	(45.6)
Town Gas	467	0	1,140	303	0	1,909	(18.0)
LPG	120	0	889	331	0	1,340	(12.7)
Kerosene	1,706	0	682	0	0	2,388	(22.6)
Coal etc.	0	0	13	2	0	15	(0.1)
Thermal	0	0	106	0	0	106	(1.0)
Total	2,644	273	3,161	830	3,673	10,581	(100.0)
Shares	(25.0)	(2.6)	(29.9)	(7.8)	(34.7)	(100.0)	

Estimation of End Use in residential sector by EDMC

- Example of estimation of electricity demand by end-use-



- Japan's electricity demand generally peaks during summer time because of increase of cooling use. Increase from annual average from July to September and small increase from May to June are considered as electricity demand for cooling.
- Heating demand is also considered as an increase from annual average from November to March.
- Demand for water heating is defined as energy consumption of household having electricity water heating system. Electricity company sends receipt of expenditure and consumption to every household who has electricity water heating system
- Demand for lighting is calculated by total electricity demand minus cooling minus heating minus water heating.



Energy Consumption Survey in Residential Sector by METI, Japan



Sampling Survey

- 2006~2009
- Current year
- 7000-9000 households
- Internet survey (4 time survey with 50 questions)
- Conducted by METI

Contents of Survey

- Monthly expenditure and consumption (Electricity, Town Gas, LPG, Kerosene, Diesel)
- Structure of house (Solar, All electricity system, apartment etc)
- Number of appliances (TV, PC, refrigerator, air conditioner, washing machine etc)
- Detail of water heating system
- Utility days for cooling and warming
- Utility hours of air conditioner and gas furnace heater etc
- How to use both etc (number of shower time, morning shampoo, use of bath)
- Action of Energy saving
- Knowledge of energy policy in residential sector
- Family income etc



Conclusion

- Official energy consumption data of the residential sector in Japan depends on only one statistics, "Family Income and Expenditure Survey".
- Energy consumption by end-use have been estimated by institutes and universities based on their ad-hoc surveys.
- In this regard, METI, Japan has started a sample survey on residential sector from 2006 to prepare official energy consumption data by end-use but publication of this statistics is still under discussion.
- Energy saving promotion in the residential sector is very important in Japan. For monitoring energy saving action plans in the residential sector, the survey result being discussed by METI, Japan should be published in near future, but it should have high quality.