

Topten.info: Market Pull for High Efficiency Products

Eric Bush, Anne Arquit Niederberger, Sophie Attali, Conrad U. Brunner, Cao Qiaohong

Topten International Group TIG, Paris, France

Abstract

Topten is a voluntary, international, non-profit project aiming at stimulating market demand for efficient products by creating a dynamic benchmark for the most energy efficient products on national markets and working in partnership with the most relevant market actors. This paper updates the international community on the evolution of Topten since the launch of the Swiss system in 2000, highlighting achievements and challenges. The paper presents new analysis of lessons learned with respect to topics such as:

- Institutional arrangements and prerequisites – cooperation and synergies with energy agencies and existing government programs
- Resource requirements – struggle to raise funding for the Topten "public service" to consumers; "business models"
- Cooperation with stakeholders – all the way on the market chain from manufacturers to end-users, R&D people to retailers, large scale buyers and public procurers, utilities and ESCOS
- Topten market functions and value added to various market actors
- Analysis of Topten impacts – status, plans and challenges (performance indicators, contribution to market transformation processes)
- International benchmarking and quality assurance – Topten will soon be present in 16 countries, allowing for powerful data cross-checking, inquiries to global manufacturers as well as policy recommendations
- Prospects for expanding Topten to additional countries.

The planned addition of more European countries but also of TopTen USA and China to the international Topten family brings a new dimension to this originally European program.

Introduction

Existing energy efficiency benchmarks can be used to eliminate the worst products from the market (e.g., mandatory minimum energy performance standards), encourage timely replacement and steer consumers to better than average products (e.g., voluntary energy star label cut-offs), but there is no incentive for manufacturers to go beyond these existing benchmark levels and innovate at the cutting edge of efficiency – and no easy way for large buyers and end users to seek out the highest efficiency models.

If we are to rise to the challenge of cutting greenhouse gas emissions significantly to levels currently under serious political discussion, it will be essential to speed the innovation and market transformation process to take maximum advantage of low-lifecycle cost end-use efficiency opportunities. Topten responds to this need [1-4].

Topten is coordinated by TIG, the Topten International Group. Topten is a transparent system to continuously identify the 10 "best" products available in each product category (with energy efficiency a key criterion) and to make the results freely accessible via a user-friendly Internet interface (www.topten.info). For each product category, the Internet site provides the following elements:

- Data displays for each of the approximately 10 products that make the selection cutoff, as well as for a representative “inefficient” product (to aid comparison)
- Selection criteria
- User advice, including background information and purchase/use tips
- Policy recommendations, for example, regarding appropriate levels for mandatory and voluntary standards or the design of incentive schemes
- Downloads and links to publications, standards, labels, and organizations external to Topten

By updating the product lists on review cycles that ensure that the most current products are always reflected on the site, national Topten Websites showcase highly efficient new products soon after they become available.

Topten relies on declarations of existing labels and schemes (e.g. EU-energy label, energy star), for which some tests are undertaken by authorities, consumer organizations and Topten carries out spot checking in the test center S.A.L.T. (www.salt.ch).

Achievements to Date

Establishment of a High-Efficiency Benchmark

Overview on categories

Thematically, the focus is put on electricity with mass produced equipment in household, SME and commercial buildings, as well as on cars (Figure 1).

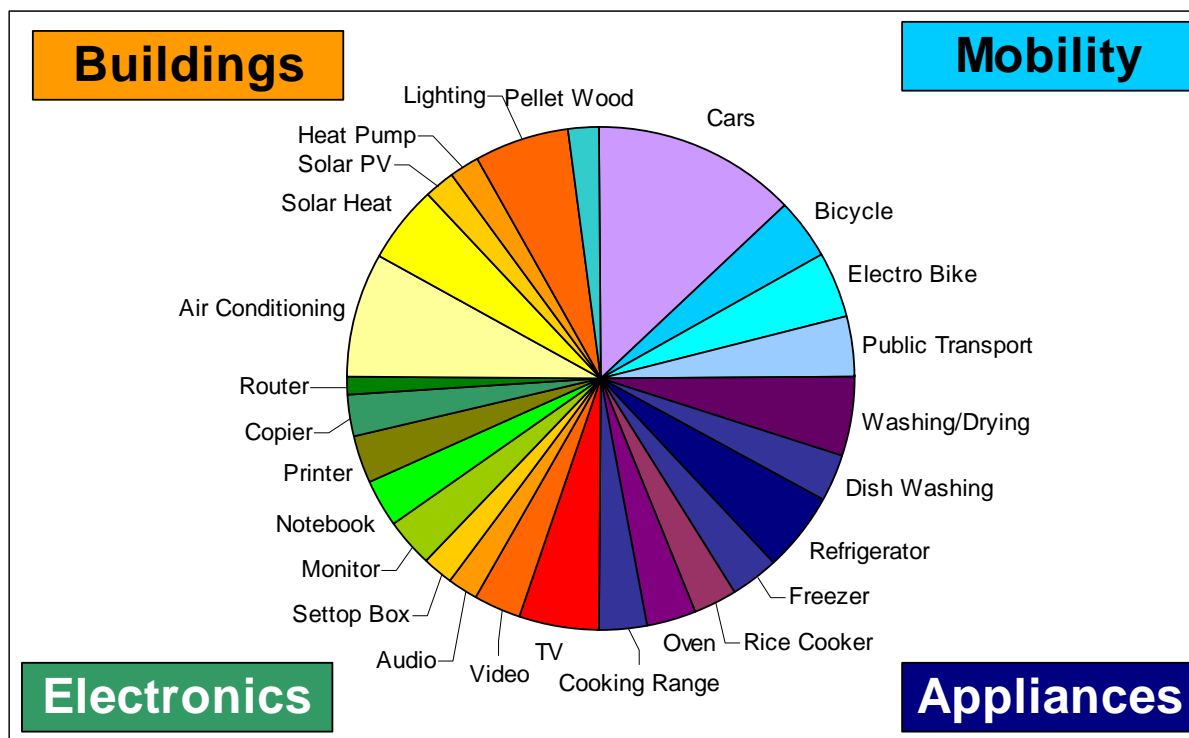


Figure 1: Overview on conceivable categories

Topten Benchmark Function

Topten offers the most stringent national benchmark to differentiate a wide range of product, equipment and vehicle categories based primarily on their energy efficiency. The dynamic nature of the selection criteria limits the product offerings to only the approximately top 10 performers, so Topten continuously pulls the market toward higher levels of efficiency. By working with various market actors to incentivize manufacturers toward innovation at the leading edge of efficiency, Topten promotes competition among manufacturers and ensures that tomorrow's "business as usual" products are radically more energy efficient than today's.

Approach and impact mechanisms

The over-all goal of Topten is to stimulate market transformation towards more energy efficient products and to contribute against climate change (Figure 2). The main concern is to lower barriers to find best available energy efficient products. Topten is one synergetic instrument of the strategy for energy efficient equipment. Topten focuses on the market pull of new efficient products, main stream products are covered by instruments as energy labelling and timely replacement whereas low end products need to be removed by market access limitations. The strengthening of transparency on high efficiency products for all actors is key. Market transformation takes place when producers can be stimulated to offer better products and consumers to ask for them.

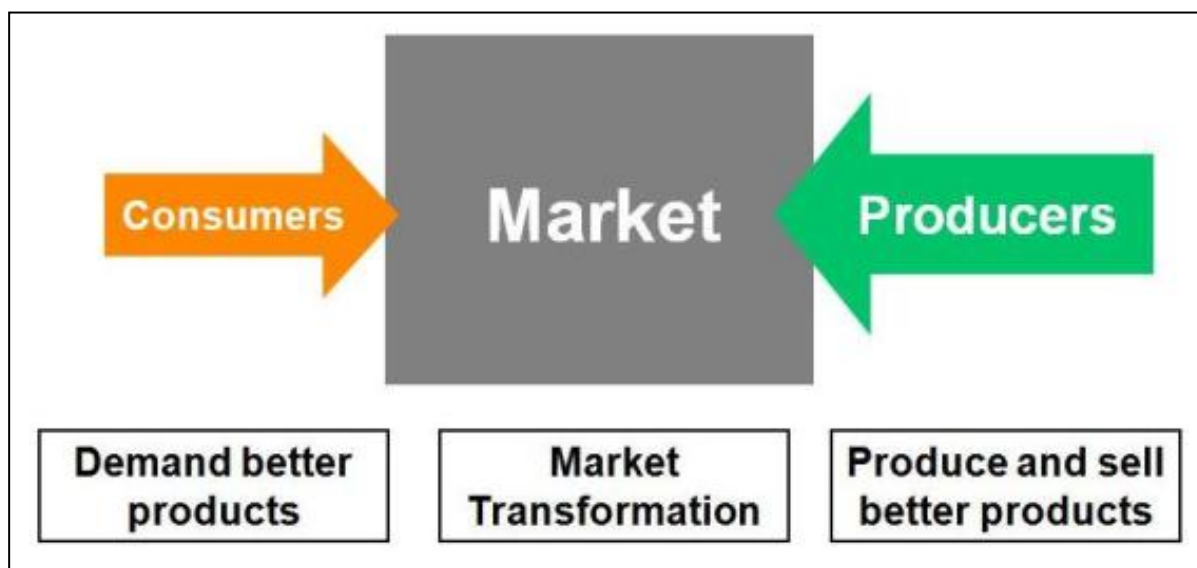


Figure 2: Impact mechanisms of Topten

Value Proposition

Topten plays a range of market functions that add value for the full range of market actors, both up- and downstream (Table 1). Topten's energy efficiency benchmarking function offers value through a commitment to educating purchasers, building markets for emerging technologies, blazing a trail for voluntary and mandatory efficiency programs, and conducting third-party testing to verify product performance.

Beyond its use to manufacturers, the general public and policymakers, Topten is a tool for utilities, procurement programs and other stakeholders to incorporate into efficiency programs, driving further energy savings. Such integration will link product purchases and installations to quantifiable energy savings. This integrated approach with the market will produce long-term reductions in carbon emissions and create positive environmental impact, while reducing energy costs, demand and waste.

Table 1. Range of market functions by Topten

Market Actor	Topten Value Proposition
Manufacturers	<ul style="list-style-type: none"> • Support market introduction of new high efficient products • Provide independent, objective marketing of products • Increase demand for innovative products
Retailers	<ul style="list-style-type: none"> • Identifies best products to optimize range of products • Increases sales of high end products • Position retailer as competent in energy efficiency and quality
Consumers	<ul style="list-style-type: none"> • User-friendly interface to identify most efficient products and access incentives (e.g. by electrical utilities) • Inform consumers on total life-cycle cost (purchase price plus energy bill). Communicate benefits of efficient products for climate protection
Large Buyers and Procurement Officers	<ul style="list-style-type: none"> • Support formulation of procurement specifications • Reduce operating costs to enhance competitiveness
Policy makers	<ul style="list-style-type: none"> • Provide real-time market data on the “best” products, with energy efficiency as a key criterion • Pave the way for new and more stringent standard & label specifications and minimal energy performance standards (MEPS)
Utilities	<ul style="list-style-type: none"> • Continuously identify the highest-efficiency products • Provide Topten benchmark for rebate programs • Include products for which standards/labels are not available
Media	<ul style="list-style-type: none"> • Serve as credible, independent source of information • Issue regular updates

Source: Adapted from a more comprehensive table in *TopTen USA 2009-11 Development and Funding Plan*

Market Introduction of Innovative Products

Heat Pump Dryers

Drying laundry with laundry dryers is becoming more and more popular. Electricity consumption by dryers will therefore increase considerably in the near future. The promotion of energy efficient heat pump dryers helps to strongly lower this effect. Heat pump dryers cut energy consumption of conventional dryers in half and exceed the energy label A threshold by far. According to market data from 2008, heat pump dryers did not reach the break through yet and achieved a market share of less than 4% in most European countries. The situation in Switzerland however is promising: the market share of heat pump dryers has grown continuously since 2004, and reached 15,6% in 2008. Also the product range is growing: today there are 11 models for residential and 3 for semi-professional use on the Swiss market. The introduction to the Swiss market was mainly facilitated by Topten and its partners, among them the City of Zurich, which could be convinced to launch a procurement program for heat pump dryers as well as rebate programs [6,7].

Coffee Machines

Annually, more than 18 million coffee machines are sold in Europe. The trend goes clearly towards espresso and filter pad machines (comfort and quality reasons); by now those account for about 45% of total sales, while the rest is mainly traditional filter coffee machines [8,9].

Espresso and filter pad machines use large amounts of electricity for permanent pre-heating and standby modes. According to measurements by Topten, energy consumption of a typical espresso machine is about 170 kWh per year. With relatively simple measures as auto-power-down, better insulation of boilers and low standby the energy efficiency of coffee machines can be strongly enhanced. High efficiency espresso machines only have a consumption of about 50 kWh per year.

The entire EU stock of coffee machines (estimated 100 Mio) thus holds a saving potential of up to 12'000 Mio kWh per year.

In the framework of the IEE-project "Euro-Topten" a measuring method for coffee machines was developed. This methodology is suggested and might be incorporated into the IEC 60661 standard (Methods for measuring the performance of electric household coffee makers) and a labelling directive, respectively. Euro-Topten and the label Blue Angel [10] coordinated their procedure and harmonized their measuring methods. It is applied for the selection of best products on www.topten.info and for the Blue Angel.

Conventional coffee machines usually have higher electricity consumption than A-class ovens or A++ refrigerators. Regarding the great differences between products and the high saving potentials, it is strongly recommended to take measures. Particularly an energy-label for coffee machines and an appropriate application of the new European MEPS for standby (including auto-power down) would be very effective measures to raise the efficiency of coffee machines, which should be covered by the preparatory study for eco-design on coffee machines (lot 25).

Already today, diverse high efficiency models of several important brands of coffee machines are available on the European market. They are presented on www.topten.info. Energy labels for coffee machines would be appropriate and would give incentives to trade and industry to develop and offer more energy-efficient coffee machines.

Geographical Expansion

Europe

So far, Topten is online in 12 European countries. The launch was funded by the European Commission (IEE-project Euro-Topten, 2006-08) and national funding [1-4]. With the IEE-project Euro-Topten Plus (2009-11) it will be expanded to 16 countries and include 20 partners (budget: 1.7 million €). New Topten sites will be launched in Norway, Greece, Romania and Lithuania. Best of Europe is an aggregation of all national Topten-projects and displays the very best products all over Europe. The launch has been funded by WWF and Oak Foundation (2007- mid of 2009). For the follow-up and extension new funding will be required.

In addition to updating existing websites and creating 4 new ones, the project will focus on household appliances, office equipment, cars and work with large buyers on procurement.

The impact of Topten Europe is summarized in the report 2009 [1] and in Table 2. Within the market transformation tool box, Topten is considered as a "soft measure", a measure that definitely impacts the market on crucial aspects: it is a market shifter, a facilitator, an education tool, a decision making aid.

Table 2. Key Results of Euro-Topten 2006 – 2008

12 websites presenting continuously updated selections of best appliances, recommendations for users and selection criteria
Information available in more than 10 languages
166 product categories scanned in the 12 countries, broken down into more than 600 market segments to stick to consumers' preferences
More than 9,5 million visitors over the three years of the project, 4,3 millions in 2008.
A large media coverage, reaching over 150 million readers, viewers and listeners, worth over 2,1 million € (this is a conservative statement as it only concerns the 6 countries which were able to quantify their media coverage)

"Best of Europe": the only review of the supply of efficient appliances on the European market (BAT, policy analyses)

An open Topten platform: new organizations can join at any time

Differentiated impact on numerous target groups: tailored information delivered to consumers, procurement officers, policy makers, NGOs and institutions, support to utilities, support and recognition to product manufacturers and retailers investing in energy efficiency.

The resulting number of saved kWh could be best quantified in the framework of a structured and comprehensive evaluation project. Topten covers a wide range of activities, from detailed market and technical studies to dissemination to various target groups including the general public. This versatility offers many keys for evaluation. A city modifies its procurement policy; a utility decides on a rebate programme; policy makers favour ambitious regulations; NGOS communicate on energy savings in homes in order to link individual behaviour and climate change issues; retailers chose to adopt energy efficient positioning and revise their range selection; manufacturers develop new efficient models and strongly market them; consumers' demand for efficient models grow – Though these decisions depend on the strategies stakeholders decide to adopt, Topten may weight, more or less explicitly, in all of these decisions transforming markets. Topten brings about three major positive impacts which all together contribute to save energy.

- Visitors get to know very quickly and simply about best appliances
- The portal www.topten.info has enabled the Topten partners to develop synergies and create a new activity called "Best of Europe" which identifies best available technologies and present the status quo on efficient products
- Through their daily activities, the Topten teams generate substantial positive impact and play a range of market functions that add value for the full range of market actors: consumers, manufacturers, retailers, procurement officers, policy makers, utilities, the media, NGOs.

United States

The potential energy (and related energy cost) savings and greenhouse gas emissions reductions that could be achieved by implementation of Topten in the United States – coupled with a lack of an energy efficiency benchmark more ambitious than ENERGY STAR and the promise of significant energy efficiency funding in the context of economic stimulus incentives – have created great enthusiasm for bringing the Topten system to the US market, particularly among energy efficiency program administrators (Table 3).

Table 3. TopTen USA Savings Potential

Product	U.S. Unit sales/yr (millions)	Avg. lifetime energy use (in kWh)	Est. % savings from TopTen	One year CO ₂ reduction for 10% TopTen market share (tons)	One year CO ₂ reduction for 100% TopTen market share (tons)
Screw-Based Lamps	1,400	60	80%	5,376,000	53,760,000
Televisions	36	6,000	60%	10,368,000	103,680,000
Computers	50	2,040	70%	5,712,000	57,120,000
Monitors	45	270	60%	583,200	5,832,000
Room Air Conditioners	10	7,540	25%	1,508,000	15,080,000
Clothes Washers	9.5	5,093	75%	2,903,010	29,030,100
Clothes Dryers (electric)	6.4	10,800	45%	2,472,768	24,727,680
Refrigerators	11	7,280	35%	2,242,240	22,422,400
Freezers	2.2	4,884	30%	252,014	2,520,144
Dishwashers	7.3	4,670	60%	1,625,160	16,251,600
Vehicles	17	7,212*	27%	32,470,000	324,700,000
Total	1,594.4			65,512,392	655,123,924

Source: *TopTen USA 2009-11 Development and Funding Plan*

The mission of TopTen USA is to create a dynamic benchmark for the most energy efficient products on the U.S. market and work in partnership with market actors to stimulate market demand for the highest-efficiency devices. Following a series of initial enquiries and preparatory efforts beginning in 2007, serious work on TopTen USA began with initial seed funding from WWF USA in April 2008 (Figure 3). Since then, an independent TopTen USA corporation was formed, the TopTen USA Executive Board was constituted, funding to hire an Executive Director and undertake the initial benchmarking work was secured from foundations, based on the *TopTen USA 2009-11 Development and Funding Plan*, and work on an initial set of product categories has been launched.

	Initial Concept	Preparatory Phase	Start-Up I	Start-Up II
Description	Informal consultations to gauge interest/feasibility	Secure startup funding and build organizational capacities	Nonprofit startup and strategic alliances	Market research, Web and product development
Time Period	2007 - 2008	2008	January - June 2009	July - December 2009
Funding	In kind only	\$200 k (WWF USA)	\$350 k (Sea Change Foundation, Energy Foundation)	Budget of \$1.3 m
Key Institutions	Interested expert consultancies	<ul style="list-style-type: none"> Interim Management Team Ad Hoc Advisory Panel (ACEEE, NEEA, NEEP, NRDC, PG&E, WWF USA) 	TopTen USA Institutions: <ul style="list-style-type: none"> Executive Board Advisory Panel National Consultative Group 	Same as Phase I, plus establish relationships with: <ul style="list-style-type: none"> Efficiency program administrators Media partners Retailers
Milestones		<ul style="list-style-type: none"> TopTen USA Executive Board and corporation formed 2009-11 Development and Funding Plan Funds secured for Start-Up Phase 	<ul style="list-style-type: none"> Hire Executive Director and retain contractors Preliminary lists for at least four categories of TopTen USA products Convene Advisory Panel & National Consultative Group Funds secured Phase II 	<ul style="list-style-type: none"> Complete initial product lists Create web design & content Obtain TIG Accreditation Establish relationships with market actors Funds secured Phase III

Figure 3. History and Plans for TopTen USA Development

TopTen USA is fortunate to have a powerful coalition of enthusiastic stakeholders represented in its Board, including the American Council for an Energy Efficient Economy; environmental non-profits (WWF USA and the Natural Resources Defense Council); regional energy efficiency program administrators (Northeast Energy Efficiency Partnerships, Inc. and Northwest Energy Efficiency Alliance); and Pacific Gas & Electric, which serves a liaison function with other California utilities.

Market research, product benchmarking, Web development, relationship building, and fundraising will continue in 2009, with a view to launch TopTen USA in 2010. TopTen USA has consulted extensively during its development phase with the founding Board members of the TopTen International Group to benefit from lessons learned in Europe and will soon join the TIG Board.

TopTen China

The TopTen China project was started in early 2009 with seed money from WWF Switzerland and Swiss government REPIC funds. It is coordinated by TopTen International Group (TIG) with technical support by TopTen International Services (TIS). The TopTen China Project Management Team (PMT) was built up in WWF Beijing China Policy Office and is developing the necessary partnerships with

Chinese NGO's, governmental agencies and market stake holders. The PMT of Topten China project has introduced the Topten concept to the related Chinese government and got positive feedback, while technical matters, co-funding and communication partners are still under discussion. In order to built-up the partnership at the inception phase and kick-off the Topten China website development a partner mobilizing meeting, which will involve both international partners (TIG, TIS and WWF Switzerland) and Chinese agencies (governmental officials, technical experts, representatives of NGO's etc) will be held in June 2009.

Within a three year period the Topten China project will prepare (year 2009), launch (year 2010) and start to continuously operate the Topten China website (year 2011). The build-up of the Chinese information platform will be made visible in electronic (internet, supported by radio and TV activities) and print media (newspapers, magazines and journals). In the preparatory phase, national market research in China will lead to identify priority products and select the most energy efficient equipment. In parallel research on the respective Chinese testing standards and performance criteria for the selection of the top ten products in each sector is planned.

The Topten China project has to deal with the characteristics of a huge market supply of and demand for Chinese energy efficient products. For each specific product category there are a lot of available and rapidly updated Chinese and international brands with top level of energy efficiency. For example, there are at present (CNIS: registration for Energy label 2008) 3199 refrigerator types in the market, and 76% of these products have the Chinese efficiency Class 1 [11].

Challenges

Documenting Topten Impacts

Analysis and assessment of national Topten systems and their impacts are necessary to:

- provide feedback and information needed to continuously improve processes and services, maintaining Topten's market position as the premier benchmark and resource guide to the most efficient equipment, products and services, thereby enabling Topten to succeed in its mission
- provide information needed by sponsors and funders to maintain their support for Topten as a strategy and tool to increase energy efficiency (i.e. regulated energy efficiency program administrators in the US must be able to demonstrate that TopTen USA positively impacts the market adoption of high efficiency products leading to energy savings)
- document the role that Topten can play in sustainable development efforts (e.g., poverty alleviation, climate change mitigation, energy security), including quantification of related impacts, as well as lessons learned to enhance the effectiveness national Topten systems.

In Europe the focus is put on sets of performance indicators, annual reporting and analysis of impact. In USA funders are rather demanding for independent evaluations. As a result, TIG has yet to issue guidance on Topten performance analysis and evaluation approaches.

Securing Sustained Funding, while Maintaining Independence

The effectiveness of Topten depends to a large extent on its credibility as a trusted high-efficiency benchmark for all market actors, which requires independence from industry (manufacturer) influence with respect to product selection. This has led to a strict funding firewall between manufacturers and Topten. Yet securing sufficient and sustained funding for both national Topten systems and the work of the Topten International Group has proven challenging.

The European Topten system systems still involve a lot of *pro bono* effort. Many national programs are struggling with only a few staff to develop, launch and fundraise for their programs. As Topten has had an organic development in Europe, these teams have done as much as possible with the limited resources available to demonstrate Topten, and are now slowly moving towards more sustained funding models. Core budgets in Europe have typically been in the range of about EUR 100 to 250 thousand per year. Although each national Topten system has pieced together its own mosaic of funding sources, the most common have been the following:

- Public government funding (federal, state, city) has typically been the initial source of seed funds – providing start-up funding to establish national Topten sites before there is a “product” to sell. In Switzerland (funded by Federal SwissEnergy program, electrical utilities and WWF) and the EU (funded through the Intelligent Energy Europe program and national partners), the government continues to be a major funding source. In the case of the new Euro-Topten Plus project, which runs from 2009-11, IEE pays 75% of the EUR 1.7 million budget and national programs secure the rest. Some state and city governments are also interested in direct cooperation in procurement programs and have funded specialized product testing as well as development of specifications for public tenders organized for best products (like copiers, office lighting, etc.). The results were usually transported into mandatory buying rules of the city for the time after the first purchase.
- Environmental non-profit organizations constitute the second major funding source, providing grants as well as in-kind support, especially on specific testing of products. Consumer advocacy organizations have shared the cost of product testing (they do regular tests on all kinds of products, not involving energy, whereas, Topten pays for the additional energy testing, according to an agreed annual plan). These relationships have also included agreements on publication in their media, which have great value to Topten. In many cases they negotiate media products (like billboards in the streets or small Topten booklets delivered in journals) for much lower cost than a commercial enterprise would have to pay. These organizations also provide in-kind qualified marketing and partnership development support. For instance, WWF Switzerland launched the “Climate Group” inviting large enterprises to sign a charter for environmentally friendly behaviour in many fields. WWF used Topten as a follow up tool to support decisions about the energy efficiency of the range of products that the charter signatories manufacture or sell.
- Utilities have provided core budget support and/or have funded specific projects (e.g., product tests, design of rebate schemes). Topten works with utilities to establish selection criteria for rebate/discount schemes and assists with determining an appropriate level for rebates (particularly for innovative products that have a higher up-front purchase price, such as A++ fridges or heat pump dryers). Usually, utilities provide strong support in communication as they are in direct contact with their customers.
- Private foundations are another source of funding for Topten, which have been crucial to launching the US effort. Since many European Topten systems are not independent entities, many are not directly eligible for grant funding and work through their NGO partners to obtain grants. The Oak Foundation, for example, channelled some funds via WWF Switzerland to the European Topten effort.
- Media are another potential source of funds (e.g., fees for Topten assistance with producing articles and shows (print, TV, radio, web, etc.)). However, Topten has not received relevant revenues from this source to date.
- Pro bono work has been a key ingredient. A committed group of experts continue to donate their services to Topten out of personal commitment and dedication to the causes of energy efficiency, climate change mitigation, emission reduction, and nature. This international network of friends and colleagues in the “Topten family” - which includes several industry insiders (many of which now have an internal group dedicated to innovate best products) – is regarded as a key factor in Topten’s success and ability to move fast into new fields (e.g., heat pump dryers, new generation of high-efficiency LED lights to substitute low voltage halogen lamps in domestic areas).

Early on, TopTen USA will explore the potential to generate market-based revenues through agreements with retailers to use the TopTen USA brand to promote listed products. For example, web-based retailers such as Amazon - as well as standard retail merchants - might use TopTen USA messaging and branding to demonstrate their commitment to energy efficiency by carrying the most efficient products available. In doing so, TopTen USA must position the TopTen USA brand as a complement to the well-established Energy Star label (e.g., in many cases, TopTen USA listed products will be the most efficient options that meet specific Energy Star product specifications). TopTen USA will also explore “fees for services” as another possible revenue strategy (e.g., charge

retailers for the service of connecting their stores to the TopTen USA website through a zip-code based retail store locator for TopTen USA listed products).

National Topten teams in Luxembourg and Switzerland have already begun to develop licensing relationships with retailers that allow them to use the Topten logo at the point of sale. This is a time-consuming process and it is too early to know whether these efforts will be successful as a significant new source of funding.

Although TIG has advised against requiring manufacturers to pay for independent testing as a criterion for product listing, TopTen USA will also investigate the potential to establish a set fee schedule to help cover the cost of product testing. It is routine for US-manufacturers to test products through third-party laboratories on a fee-for-service basis. In addition, manufacturers pay fees to certification organizations such as Green Seal and Scientific Certification Systems (SCS), models similar to potential TopTen USA testing. This model would likely depend on TopTen USA's success in creating sales for high-efficiency products.

Manufacturer and retailer revenues are potential funding options only at this time. It is important to note that, while the European Topten includes retailer licensing fees, it does not include funding from manufacturers. If TopTen USA expands funding to include testing fees from manufacturers, careful consideration must be given toward avoiding conflicts of interest and the protecting Topten's position as an independent resource for information regarding efficient products. Currently, TIG does not support any financial arrangement with manufacturers for TIG members.

International Benchmarking – Best of the World

TIG currently maintains the "Topten – Best of Europe" regional benchmarking system (www.topten.info), which draws on data from participating national Topten systems. With the planned addition of non-European countries to the Topten family, it is TIG's ambition to expand its benchmarking efforts to "Best of the World", but this simple concept presents significant methodological challenges, such as differences in:

- Testing procedures (e.g., standard driving cycles used to determine the fuel economy of cars)
- Electrical voltages and frequencies (e.g., refrigerators in Europe and Asia run on 230V at 50 Hz, whereas in the US they operate on 110 V at 60 Hz), which can affect the relative efficiency of equipment
- Equipment characteristics across markets (e.g., the US market has the tendency to demand significantly larger appliances and cars with more features than the European market)

Given these challenges, TIG intends to undertake joint European-US-Asia research on the best way forward, one option being to first develop additional regional benchmarks, such as for Europe, North America or Asia. The IEA Implementing Agreement 4E Project will launch an Annex on "Mapping & Benchmarking" that will provide an overview of policy measures and compare sales weighted average and best performance of products put on the market (like: domestic cold appliances, integrated home networks, TVs, water heaters, domestic laundry, domestic lighting, domestic air-conditioners, computer displays, laptop computers) in different countries. The Topten research can certainly benefit from 4E activities.

Organizational Development to Accommodate Growth

Topten International Group TIG

The Topten International Group (TIG) was formed in 2006 to launch, support and coordinate national Topten projects. The organization adheres to the Topten Charter and TIG Rules of Procedure and is operated largely via the part-time, *pro bono* efforts of its three founding board members. Up to now, TIG has mainly supported the Euro-Topten efforts, but thanks of the geographical development, TopTen USA and China will be received in the TIG Board soon.

National Topten Systems

In contrast to TopTen USA, national Topten organizations in Europe have been "structured" following funding opportunities, in particular, the Euro-Topten project within the framework of the EU Intelligent Energy Europe subsidy program. In most countries, Topten is a "project" or an "activity" undertaken by an organization (which carries out other projects) – and has no separate organizational structure. That these projects were carried out from the start exclusively by either public bodies or NGO explains why Topten projects have not (yet) grown into independent structures. For public bodies, as long as their government is happy and provides funding, there is no reason to change. For NGOs it seems difficult to start a project and then transform it into something independent which might compete for fundraising. This experience suggests that it is preferable to begin with a private, independent, non profit from the start – as is the case for TopTen USA and Switzerland.

Knowledge Management

Another issue is to ensure that the Topten International Group can meet the growing demands on the institution to fulfill its quality assurance, oversight/support, coordination, and policy roles. The main part of technical knowledge is public and online on topten.info. However, there is a large pool of operational knowledge in the Topten family. This "institutional memory" lies in publications, workshop-documents and in individuals' know-how. Guidance and periodic workshops on strategies applied and lessons learned in various countries should be strengthened.

Future Evolution

The Board of the Topten International Group will be expanded in 2009 to include representatives of TopTen USA and Topten China. Collaborative efforts for 2009-10 will be agreed at the TIG Board meeting in 2009 and may include items such as:

- Development of a common evaluation framework for Topten
- Terms of Reference for a TIG knowledge management system
- Brainstorming on a mechanism for routinely transferring high efficiency product developments between Europe, China and the USA
- Exchange of experience on building relationships with retailers and large buyers
- Clarification of the TIG accreditation process to facilitate TopTen USA accreditation in 2009
- Develop a Work Plan for research to support the development of "Topten – Best of the World"

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