

Final Report:

Top-Ten Chile**Third Implementation Stage**

**Author(s):**

Karien Volker Kroeger, Fundación Chile
Sebastian Reyes van El, Fundación Chile
Sophie Attali, Topten International Services, Zurich
Eric Bush, Topten International Services, Zurich



Date of the Report: December 2017	Contract Number: 2015.06
Institution: Topten International Services	Country: Switzerland

Prepared by:

Fundación Chile

Parque Antonio Rabat Sur 6165, Vitacura, Santiago, Chile, 7630000
+56 2 22400300, Karien.volker@fch.cl, sebastian.reyes@fch.cl, <https://fch.cl/>



And

Topten International Services

Schaffhauserstrasse 34, CH-8006 Zurich, Switzerland

With the Support of:

REPIC Platform

c/o NET Nowak Energy & Technology AG
Waldweg 8, CH-1717 St. Ursen
Tel: +41(0)26 494 00 30, Fax: +41(0)26 494 00 34, info@repic.ch / www.repic.ch

The REPIC Platform is a mandate issued by the:

Swiss State Secretariat for Economic Affairs SECO
Swiss Agency for Development and Cooperation SDC
Federal Office for the Environment FOEN
Swiss Federal Office of Energy SFOE

The author(s) are solely responsible for the content and conclusions of this report.



Executive Summary

The general objective of the Top-Ten Chile project is to support the Chilean government and consumers to mitigate climate change by addressing energy efficiency through reductions of demand-side energy and related GHG emissions. This project will expand the already established local Top-Ten Chile structure and further develop the Top-Ten Chile website and database. The initial phase of the Top-Ten Chile project has been funded by the Chilean Ministry of Energy (November 2014- June 2015, CHF 60'000) and WWF Chile (CHF 10'000), supported by TIS, and ended in August 2015 with the official launch of the first version of the Top-Ten Chile webpage www.top-ten.cl. At that moment, the webpage contained a first set of those product categories that have the largest share of energy consumption in Chile: refrigerators, lighting, TVs and motor vehicles. Top-Ten Chile successfully went through an accreditation procedure and quality control and became a full member of the Topten International Group (TIG). TIG is the umbrella organization of all the existing Topten programs worldwide and in charge of the quality control of its national programs.

The expansion phase objective was to make the website of Top-Ten Chile fully operational and further enlarge the information contained in the database and published in the web page with: additional lists of product categories (and subcategories), consumer advice, policy recommendation and green public and private procurement for large buyers. The market research on BAT has been expanded and continuously updated during the project; the Top-Ten criteria have been defined according to the BAT of the national market. This has supported the exchange with policy makers to push MEPS and energy labels for more stringent EE thresholds. Moreover, a strong communication campaign has been implemented since the beginning of the expansion phase and has made Top-Ten better known by the public in Chile and other actors such as public and private procurement departments. Top-Ten has also worked with manufacturers and retailers to promote efficient products thanks to training sales staff and promotion activities. Finally, after the launch of Topten Argentina, the Chilean team has continued to work on the expansion of the Topten initiative in other Latin American countries such as Brazil, Mexico and Uruguay.

This final report presents all the progresses of the development of Top-Ten Chile and the following table is a summary of these achievements. The main ones during the expansion phase have been the new functionalities and product categories of Top-Ten Chile website, the green procurement section and



communication about this new tool (with the participation of Top-Ten in important national events), the communication campaign to the public and important increase of visits to the website, policy recommendations for the authorities, financial pilot incentive programs to help consumers to buy efficient products, testing of LED lamps sold online and the new collaborations with brands and retailers that have been initiated during 2017.

OBJECTIVE 1: Increase awareness of energy efficient consumer goods	<i>Achievements</i>	<i>Recommendations</i>
1.1 WP1 - Project Management		
1.1.1 Top-Ten Chile team	<i>Top-Ten Chile team organized</i>	-
1.1.2 Monitoring of Top-Ten Chile activities	<i>Permanent monitoring of Top-Ten activities</i>	<i>Continue with the monitoring</i>
2.2 WP2 - Organizational development		
1.2.1 Design the organizational structure for the expansion phase (M2)	<i>Organizational structure already working</i>	-
1.2.2 Design and develop a sustainable operation plan and funding schemes (M1 for 2016 / M2 for 2017)	<i>The co-funding for 2017 is ensured by the contract from the Ministry of Energy. Moreover, the Ministry of Environment is interested in supporting Top-Ten in the future. Finally, a global analysis of possible financing mechanisms was realized.</i>	<i>Meetings and potential agreements with potential financing actors to ensure the future funding scheme.</i>
1.2.3 Advisory Board meetings to assist in the implementation of Top-Ten Chile	<i>Advisory board organized with all the relevant members: the Top-Ten Chile team meets regularly with the different members.</i>	<i>Possible organization of a global meeting with all members in order to define business model for 2018.</i>
2.3 WP3 - Market research, products and web development and update		
1.3.1 Continue developing the web page software, adding functionalities	<i>During 2017, a great effort was made on the www.top-ten.cl platform with a new design, new functionalities. New web site for professional buyers.</i>	
1.3.2 Develop a Top-Ten mobile version (M1)	<i>Modern and working Top-Ten mobile version.</i>	<i>Potential improvements passing to the new international software.</i>



1.3.3 Expand the BAT product database: market research, technical analysis, selection criteria	<i>At the beginning of 2016, there were 5 product categories on Top-Ten: LED E27 light bulbs, refrigerators, freezers, TVs, vehicles. We added: LED lamps: E14, GU10, tubes, external projectors; microwaves; printers; electronic devices: sound systems, home theaters, DVD players; more vehicles; air conditioners</i>	<i>Continue to add more product categories depending on the information available (market and energy data) and depending on the specific needs of Chile. For this year, it is planned to add thermal appliances (space heaters and water heaters).</i>
1.3.4 Develop the policy recommendation section	<i>See WP5</i>	-
1.3.5 Develop the green procurement section for large buyers	<i>Creation of "Top-Ten Empresas" for companies with a first list of 6 product categories. https://top-ten.cl/pro/index Moreover, FCh had several meetings with ChileCompra (national public procurement) to add the Top-Ten logo in their platform and potentially participate in an important symposium in May to present Top-Ten Empresas. Finally, on 2017 April 4th, a communication event was organized with purchasers from relevant companies in order to show them the tool and receive their suggestions.</i>	<i>- Add more product categories - Organize other events during the year to present to more actors - Participate in an important symposium for public and private procurement.</i>
1.3.6 Regular update: market screening, data exchange with manufacturers	<i>Updated information online, updated selection criteria, permanent update of market availability and prices.</i>	<i>Continue the same efforts.</i>
1.3.7 Elaborate and publish report on EE market monitoring/development	<i>The Top-Ten Chile team undertook analyses of the energy performance of different kinds of products present in the Chilean market in order to control that it is improving: electronic devices and lighting products. Moreover, we have prepared a press article for TV set-boxes to highlight their global inefficiency.</i>	<i>Publish the reports in the new website section: "Publications" and work on other products such as lighting products, refrigerators.</i>



1.3.8 Testing products for increasing knowledge and fair competitiveness (M3)	<i>First, it was planned to do lab tests for air conditioners. Finally, as there were not any available certified labs in Chile for air conditioners, it was decided to work on another relevant subject: safety and energy efficiency for LED lamps sold online. The tests were run in February 2017 and the test reports are presented in this report.</i>	<i>Present the reports to the authorities in order to support the policy recommendation about reinforcing the market verification and enforcement (many products sold online without certification). Publish the test results in the media to explain to the consumers the importance of selecting certified products.</i>
2.4 WP4 - Outreach and communication		
1.4.1 Design and develop a national outreach/communication strategy	<i>The communication strategy has been developed and is already implemented.</i>	<i>Continue to communicate and propose new communicational activities to always make Top-Ten better known.</i>
1.4.2 Develop communication tools based on new online social media and regularly update them	<i>An important community already exists in social networks reaching more than 1.000.000 people for some of our articles. Moreover, in November 2016, a contest on social networks was organized to incentivize users to go to Top-Ten and know the platform.</i>	<i>Continue these activities; propose new communicational activities to always make Top-Ten better known.</i>
1.4.3 Promotional “launch” of the website (M1 & M3)	<i>In March 2016, a first promotional event was organized. In 2017, it was decided to focus on the presentation of the green procurement section to relevant actors from several sectors. The first meeting took place on April 4th with important actors.</i>	<i>Organize other meetings to present the green procurement section to more relevant actors in the market and receive their suggestions to improve it.</i>
1.4.4 EE promotional activities with key actors: retailers, manufacturers, consumers ‘associations and NGOs	<i>An important work has been realized to collaborate with manufacturers and retailers. Some of them already have the "Top-Ten Chile label" online showing the most efficient products and more of them are working on it. The digital development of this label has been a great success to approach brands and retailers. For the moment, the Top-Ten label is implemented on: www.solotodo.com and www.sindelen.cl</i>	<i>Continue efforts to have the remaining brands and retailers implement the label in the next months.</i>



Objective 2: Support EE policy and know how exchange	Progress	Next step
3.1	WP5 – Multipliers (manufacturers, retailers, government), information exchange	
2.1.1 Establishment (& update) of an online EE community social network supporting public efforts for changing consumers' behavior	See WP4	-
2.1.2 Prepare document/list of EE products for financial incentive programs	<p><i>A first common project was developed with EBP Chile with an Energy City: Temuco (South of Chile) where an associative purchase of Top-Ten LED lamps was organized. Besides, the contest on social networks enabled the winners to get a kit of 20 Top-Ten lamps. Moreover, thanks to the discussions with the Ministry of Energy, the national program that delivers light bulbs to low-revenue families will consider LEDs instead of CFLs for 2017r. Finally, another pilot project is being prepared with a municipality in Santiago and an energy utility to aggregate demand and sell LED lamps at a lower price.</i></p>	<p><i>- Terminate the current project in Santiago for LED lamps</i> <i>- Realize other similar initiatives looking for the greatest impact to increase awareness about EE and to enable the greatest amount of people to get efficient products with cost-effective programs.</i></p>
2.1.3 Organize meetings with Ministry of Energy to develop policy recommendations about EE products	<p><i>Top-Ten Chile already had meetings with the Ministry of Energy and the SEC in order to present our policy recommendations regarding several products: the energy label, MEPS or test procedures: electronic devices, air conditioners, lighting. Besides, in December 2016, a meeting with the authorities was hold to talk about the refrigerators energy label and MEPS. Finally, in March 2017, a meeting with the main lamp companies was hold to discuss on the new energy label.</i></p>	<p><i>Continue to work with the authorities about these products and present policy recommendations for other products.</i></p>
2.1.4 Engage key actors to promote the most energy efficient products	See WP4	-

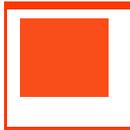


3.2 WP6 – International know-how exchange		
2.2.1 Know-how exchange with existing Top-Ten worldwide (Europe & China): experiences, best practices, funding strategies, etc.	<ul style="list-style-type: none">• <i>Regular mails and meetings with TIS, Topten Argentina and other countries.</i>• <i>Latin American workshop with TIS and Topten Argentina in March 2016..</i>• <i>TIG General Assembly with Chile in April.</i>• <i>Meeting with TIS in September 2016 in Switzerland.</i>• <i>Workshop in Santiago in November with TIS about test procedures.</i>	<i>Continue this know-how exchange</i>
2.2.2 Support Topten Argentina: software development, advices on approaching stakeholders and methodology development	<i>Top-Ten Chile supported Argentina in the launch of their Topten platform in 2015. Nowadays, Top-Ten Chile is supporting Argentina to implement direct links to web stores and to habilitate the new international software. Moreover, we share strategies about communication and future business models.</i>	<i>Moreover, we are starting to collaborate with Argentina about the test procedure to measure air conditioners performance because Argentina is also working to update it.</i>
2.2.3 Networking with relevant stakeholders in other Latin American countries to promote the Topten initiative and push for new Topten programs in the region.	<i>We have achieved to contact several important Latin American countries during 2016: Brazil, Uruguay, Mexico, Peru, Costa Rica and Ecuador. They all seem interested in the Topten initiative even if of course, some of them still do not have the necessary legal context about energy efficiency to start a Topten project (energy label for instance). In Peru, the energy labeling program is finally starting and we already had interesting conversations with them, they are really interested by the Topten project. The Topten Brazil team is already starting and Top-Ten Chile will help in the project development.</i>	<i>In April, we will have a meeting with potential actors in Mexico, so we are making all the efforts to go on in this country and of course, we will continue working with Argentina Brazil and other potential countries such as Columbia.</i>



Content

1	Starting Point.....	4
2	OBJECTIVE 1: Increase awareness of energy efficient consumer goods	9
2.1	WP1 - Project Management.....	9
2.1.1	Top-Ten Chile team.....	9
2.1.2	Monitoring of Top-Ten Chile activities.....	9
2.2	WP2 - Organizational development.....	12
2.2.1	Design the organizational structure for the expansion phase (M2)	12
2.2.2	Design and develop a sustainable operation plan and funding schemes (M1 for 2016 / M2 for 2017) 13	
2.2.3	Advisory Board meetings to assist in the implementation of Top-Ten Chile	14
2.3	WP3 - Market research, products and web development and update.....	15
2.3.1	Continue developing the web page software, adding functionalities	15
2.3.2	Develop of Top-Ten mobile version.....	16
2.3.3	Update of the Top-Ten Label.....	17
2.3.4	Expand the BAT product database: market research, technical analysis, selection criteria18	
2.3.5	Develop the policy recommendation section.....	20
2.3.6	Develop the green procurement section for large buyers	20
2.3.7	Elaborate and publish report on EE market monitoring/development.....	27
2.3.8	Testing products for increasing knowledge and fair competitiveness (M3)	27
2.4	WP4 - Outreach and communication.....	31
2.4.1	Design and develop a national outreach/communication strategy	31
2.4.2	Develop communication tools based on new online social media and regularly update them 32	
2.4.3	Website Advertising.....	35



- 2.4.4 EE promotional activities with key actors: retailers, manufacturers, consumers' associations and NGOs 39
- 3 Objective 2: Support EE policy and know how exchange 44
 - 3.1 WP5 – Multipliers (manufacturers, retailers, government), information exchange 44
 - 3.1.1 Establishment (& update) of an online EE community social network supporting public efforts for changing consumers' behaviour 44
 - 3.1.2 Prepare document/list of EE products for financial incentive programs..... 44
 - 3.1.3 Organize meetings with Ministry of Energy to develop policy recommendations about EE products 47
 - 3.1.4 Engage key actors to promote the most energy efficient products 51
 - 3.2 WP6 – International know-how exchange 51
 - 3.2.1 Know-how exchange with existing Top-Ten worldwide (Europe & China): experiences, best practices, funding strategies, etc..... 51
 - 3.2.2 Support Topten Argentina: software development, advices on approaching stakeholders and methodology development..... 51
 - 3.2.3 Networking with relevant stakeholders in other Latin American countries to promote the Topten initiative and push for new Topten programs in the region. 52
- 4 LESSONS LEARNED / CONCLUSION..... 56
- 5 Appendices..... 58
 - 5.1 Appendix 1..... 58
 - 5.2 Appendix 2..... 58
 - 5.3 Appendix 3..... 58
 - 5.4 Appendix 4..... 58
 - 5.5 Appendix 5..... 58
 - 5.6 Appendix 6..... 58
 - 5.7 Appendix 7..... 58



5.8	Appendix 8	58
5.9	Appendix 9	58
5.10	Appendix 10	58
5.11	Appendix 11	58
5.12	Appendix 12	58
5.13	Appendix 13	59
5.14	Appendix 14	59
5.15	Appendix 15	59

Tables' index

Table 1	Product categories on top-ten.cl (March 2016)	18
Table 2	New Product categories on top-ten.cl (March-November 2016)	18
Table 3	New Product categories on top-ten.cl (November 2017)	18
Table 4	Analyzed LED models	28
Table 5	Result of the LEDs testing	29
Table 6	External people in "Top-Ten Empresas" lunch	36

Figures' index

Figure 1	Top-Ten Chile Organizational structure	12
Figure 2	Top-Ten website overview	16
Figure 3	Top-Ten mobile overview	17
Figure 4	New Top-Ten label.....	17
Figure 5	Top-Ten Pro version 1	22
Figure 6	"Top-Ten Empresas" overview	24
Figure 7	Visits to Top-Ten website.....	33
Figure 8	Top-Ten brochure	35
Figure 9	"Top-Ten Empresas" first breakfast.....	39
Figure 10	Online Top-Ten label.....	40
Figure 11	Latinoamérica Verde award	43



1 Starting Point

Topten is an international, independent, not-for-profit network encouraging energy savings for consumer goods. Its mission is to mitigate climate change through market transformation. “There is substantial untapped energy efficiency (EE) potential in Latin America that could reduce greenhouse gas (GHG) emissions at low or even negative cost”. Energy Efficiency measures can become Latin America's new growth engine as they are cheap with strong and positive impacts on government expenses, households and the commercial and industrial sector. Chile government is actively involved in developing the EE potential for the country, and there is steady progress in this area. Some of the country's needs include:

- Strategies and actions that support the Chilean National Action Plan on Climate Change and in particular the mitigation strategy.
- Strategies and actions that help meet the Chilean Energy Agenda goals: contribute to reduce the national energy consumption, develop an efficient energy sector, make EE a long-term national policy, and increase the impact of the new EE labels.

Topten supports sustainable development through a market shift towards low carbon and energy efficient electrical consumer goods. National Topten websites (accessible from the international Topten platform¹) promote the most efficient consumer products, such as household appliances, consumer electronics and office equipment, lighting, building components and motor vehicles. With this promotion of Best Available Technology (BAT), Topten wants to help consumers to make informed purchase choices that save energy and money and that have a lower environmental impact. Topten works closely with public and private actors to push EE into the market. Topten advises governments directly to improve energy labels and minimum energy performance standards (MEPS), financial incentive and procurement programs. Topten helps corporations on their EE strategies to improve their use of energy. Topten advises manufacturers and importers, as well as retailers of consumer goods on BAT products.

The Topten Chile program is already well aligned with the national EE program and it is - according to the Chilean Ministry of Energy - a valuable tool that is worth to incorporate in the country's EE strategy. Topten International Services (TIS) started working in 2013 with Fundación Chile (FC), its local partner. FCh has received in 2015 funding support from the Ministry of Energy and WWF Chile for the implementation of

¹ www.topten.info



the initial phase of Top-Ten Chile. In 2016 and 2017, the Ministry of Energy has confirmed its interest in the project providing funding again to FCh for the expansion phase of Top-Ten Chile.

In Chile, the current situation of the energy sector is characterized by the following:

- Energy and electricity demand per capita is increasing coupled with the economic growth.
- Electricity peak load shortages in summer and winter create urgent need of increased power generation and grid capacity that require large investment capital.
- Energy security threat: dependency on foreign oil, gas and coal supplies for electric energy generation. Chile imports 60% of its primary energy.
- Increasing energy prices for consumers and industry.
- Increasing GHG emissions.

Chile can be considered a **dynamic consumer economy, with a dominant and growing middle class that has now over 50% of the population**. Today, the Chilean consumer is better informed, selective and competitive. The population in Chile is **18 million**; the number of households is 5.5 million. Consumers buy about 300'000 electricity/gas consuming products per year and 400'000 motor vehicles per year. **Since 2010, the household electricity cost has increased by 20%**. Consumer awareness on the use of energy efficient products is slowly increasing. Over 50% of the national residential electric energy consumption comes from: refrigerators (29%), lighting (16%) and TVs (12%). In Chile, 91% of the population own a cell phone while 66% have access to an internet connection and 69% of internet users get connected on a daily basis. The trend (74% in 2014) is to access internet via cell phones. In order to progress about the subject, the government has established several programs, agencies, laws and targets in respect to the energy sector and in particular to EE, including the Top-Ten Chile project.

The general objective of the Top-Ten Chile project is to support the Chilean government and consumers to mitigate climate change by addressing EE through reductions of demand-side energy and related GHG emissions.

This project has expanded the already established local Top-Ten Chile structure and further developed the Top-Ten Chile website and database. The initial phase of the Top-Ten Chile project has been funded by the Chilean Ministry of Energy (November 2014- June 2015, CHF 60'000) and WWF Chile (CHF 10'000), supported by TIS, and ended in August 2015 with the official launch of the first version of the Top-Ten



Chile webpage www.top-ten.cl². At that moment, the webpage contained a first set of those product categories that have the largest share of energy consumption in Chile: refrigerators, lighting, TVs and motor vehicles, and each of them had a different number of subcategories (refrigerator with freezer, refrigerator side by side, etc.). Top-Ten Chile successfully went through an accreditation procedure and quality control and by mid-June 2015, it became a full member of the Topten International Group (TIG). TIG is the umbrella organization of all the existing Topten programs worldwide and in charge of the quality control of its national programs.

The expansion phase objective was to make the website of Top-Ten Chile fully operational and further enlarge the information currently contained in the database and published in the web page with: additional lists of product categories (and subcategories), consumer advice, policy recommendation and green public and private procurement for large buyers. The market research on BAT was expanded and continuously updated. The Top-Ten criteria of new categories were defined and the criteria of the current categories were updated according to the BAT of the national market. This enabled the Top-Ten Chile team to assess the policy makers to push MEPS and energy labels for more stringent EE thresholds.

At an international level, Topten also trains retail staff, provides training for the general public and private buyers/procurers and works closely with consumer and environmental organizations. As a second step, Top-Ten Chile started to broaden its activities by **establishing a strong interaction with public bodies and private companies (to include also industrial and commercial products)**. Another pillar is the ability of Top-Ten to establish networks **bringing together all the stakeholders that are able to push for EE**, such as end-consumers, manufacturers, retailers, policy makers, certification bodies, testing laboratories and utilities. During the 2 years of the project, Top-Ten Chile has received feedbacks from all these organizations (via social networks for end-consumers, seminars and conferences for end-consumers, manufacturers, public and private buyers and meetings with other actors such as laboratories and certification bodies and the authorities) and has taken them into consideration to identify the main challenges to push EE in Chile and implement it with the different players.

Top-Ten has also worked closely with **policy makers** for improving the policy framework and EE tools in order to achieve a market transformation for energy efficient products. Top-Ten, with its international

² www.top-ten.cl



network, also provided product benchmark information from global BAT in order to stimulate the Chilean market.

An important effort has been made to introduce the Top-Ten methodology and selection criteria for BAT consumer goods based on life cycle cost analysis (market price plus energy consumption during life operation time) into **green public and private procurement programs**, especially the public sector which is the main buyer of the country. Moreover, future **financial incentive programs** have been designed with several actors in order to help consumers acquire efficient products (these programs were finally not included in the future Energy Efficiency Law as the process of this regulation was temporarily stopped).

Top-Ten Chile has also established a strong **national online EE community social network** and benefited from the experience of Topten Europe and Top10 China in communication, marketing and outreach for market transformation. Additionally, the **Top-Ten Chile program became a reference EE program in Latin America** and worked during all the project to identify potential new Topten programs in the region and support the new Topten teams in their development.

This final report presents the progresses of the development of Top-Ten Chile according to all these points and specifically about the accomplishment of the tasks included in the four milestones of the project:

- Market research & web:
 - Top-Ten Chile mobile version is developed (M1)
 - Three testing reports of the tested products are delivered
 - Market research on BAT products led to the development of a database with 8-10 product categories
 - www.top-ten.cl website is up-to-date. www.top-ten.cl website has now an “Efficient Tips” section,
 - www.top-ten.empresas.cl website is a sub-domain of the Top-Ten website, focuses on professional buyers. It includes a green procurement section and calculators to simulate potential energy and economic savings.
- Outreach:
 - Communication event 1 (M1)
 - Communication event 2 (M3)
 - The outreach and communication strategy is developed for end-consumers, large buyers and retailers.



- Multipliers: Top-Ten Chile has established a network of key actors in the EE field and initiated collaboration projects with industry, retailers and government.
- International know-how exchange:
 - Top-Ten Chile has promoted the Topten program to other Latin American countries
 - Top-Ten Chile as participated in international exchanges with European and Chinese Topten programs.
- Organizational structure: Future funding for the Top-Ten Chile project in 2018 is ensured.
- Project management:
 - Funding for 2016 was secured + Status report (M1)
 - The Top-Ten Chile organizational structure was developed and consolidated, future funding was secured especially for 2017 + Status report (M2)
 - Status report (M3)
 - Final status report + Final financial report (M4)

The present report is built according to the two main objectives of our agreement with REPIC and Topten International Services:

- Objective 1: Increase awareness of energy efficient consumer goods
- Objective 2: Support EE policy and know-how exchange

and all the work packages included in each objective.



2 OBJECTIVE 1: Increase awareness of energy efficient consumer goods

2.1 WP1 - Project Management

2.1.1 Top-Ten Chile team

In order to correctly manage the Top-Ten Chile project, since the launch of the initiative in 2015, we have built up a team of **4 members in the Sustainability Area of Fundación Chile** that has been a bit modified lastly due to some departures from the company:

- Project manager and senior expert: Karien Volker and Ulrike Broschek
- Project coordinator and senior expert: Sebastián Reyes
- IT expert: External company working in several projects in FCh: Kuantum

Moreover, for all the communication aspect and the organization of communication events and workshops, we can count on the support of **LFI** and the **Communication & Marketing Area of Fundación Chile** including the Marketing and Communication expert: Alejandra Olhagaray and the Event Producer: Erika López. Of course, we can count on the support of the Topten International team specifically of Eric Bush and Sophie Attali and all the national teams. In order to show the progress of activities and benefit from the Topten international experience, Top-Ten Chile holds a meeting (via Skype) with TIS approximately every month. Finally, we require the support of all the general services of Fundación Chile such as administration, secretariat of the Sustainability area, accounting area, lawyer services, informatics area, offices.

2.1.2 Monitoring of Top-Ten Chile activities

In order to clarify the progress of Top-Ten Chile activities and thanks to TIS's help, in addition to the biannual report sent to REPIC written by the Top-Ten Chile team and TIS, several monitoring Excel sheets, attached to the present report, are constantly updated. These different documents are:

- **Monitoring of the time** spent in each work package described in this report for each person of the team (appendix 12).
- **Monitoring of the Top-Ten partners:** all the information of the various partners whether for financial, technical, communication support and the level of support they can provide (appendix 1).



- **Monitoring of Top-Ten website impact and communication actions:** This document provides website tracking information, publications and social medias, apparitions on TV and radio and finally event information (appendix 4).
- **Monitoring of collaboration with retailers** explaining the type of collaboration (financial or not), the level of their efforts in promoting Top-Ten, the use of Top-Ten labels... (appendix 3).
- **Monitoring of collaboration with manufacturers** explaining the type of collaboration (information exchange, Top-Ten promotion, organizing activities together...) (appendix 2).

Below, the balance of time monitoring between 2015-11-01 and 2017-11-30 comparing the expected time and the real time spent in each work package is presented.

Comments per work packages:

- **WP1: Project Management**

Project management: administration, report redaction, explore business models, etc.

- **WP2: Organizational development**

Organization development: We have been working since last year to implement an efficient organization in order to present in www.top-ten.cl updated products with good technical information. Thus, FCh created a global Top-Ten team working with collaborators such as SEC and the Ministry of Energy, communicating strongly with LFI, with good informatic development trough Kuantum SA and the subcontractor SoloTodo (market data). We have regular meetings with the Ministry of Energy and SEC in order to show progresses, to validate steps with them, to present our analyses about the market and the energy label. And finally, we are working really hard to find new business models for the future of Top-Ten complementing the funds from the Ministry of Energy.

- **WP3: Market research, products and web development and update**

Important work realized for on market research (SoloTodo, meetings with brands, retailers and distributors), and energy data research: SEC database, Energy Star database, foreign certificates such as Eurovent or directly from the brands..

- Important work as well in IT development: direct buying links, improvement of the buying links, new Top-Ten Professional web page (Empresas) with different tools such as efficient savings calculators and green procurement guidelines, new product categories, product page, new functionalities and a better design.
- WP4: Outreach and communication**



We made great efforts for communication and outreach with the help of a communication agency: weekly articles about EE, environment, interesting opportunities to buy efficient products at a good price, social network competition... Each of these articles are reviewed by the Top-Ten Chile team of FCh. Besides, we did an important work to meet with retailers and manufacturers. They are really interested in the idea of an automatic Top-Ten label and are willing to use it in their webpages (already working in SoloTodo and in Sindelen) and we plan to start soon training sessions about EE and Top-Ten for the retail sale staff. Also, in 2017 we participated in several events with the public and the private sector in order to position the Top-Ten brand as an expert in EE and as a consulting service for large buyers. In total, between the Top-Ten Chile launch, at August 2015, and the end of 2017, we had 123. visits to the platform corresponding to 552.251 different webpages viewed in www.top-ten.cl (90,2% of new users). It is a positive aspect to have new visitors during the first few years, because we are looking to get the website well-known and reach as many people as possible.

- **WP5: Multipliers (manufacturers, retailers, government), information exchange**

We are currently exchanging regularly with the Ministry of Energy and SEC, meetings and providing them information about the energy performance of the market: lighting, electronics, air conditioning. We are developing collaboration with retailers and manufacturers, and already wrote policy recommendations for the Ministry and SEC with Top-Ten information and feedbacks from the manufacturers and retailers. We organized regular meetings with the private and public sector in order to exchange on the progresses about these policy recommendations. We had several meetings with trade associations in order to present them the initiative and take advantage of their contacts, their technical knowledge and their non competitive status for policy recommendation.

- **WP6: International know-how exchange**

Activities: organization of the Topten Latin American workshop, participation in April 2016 in the Latin American Seminar about EE, many meetings with potential actors in Latin America, many meetings with TIS and Topten Argentina, presence of the Top-Ten Chile IT engineer for 1,5 month in Europe to help for the new international software roll-out, 3-day workshop in Santiago with TIS about the test protocol to take advantage of their experience. Besides, the team has participated in the elaboration of the Topten global report that describes the progresses in every country and the redaction of the paper on Topten international which was presented at the EEDAL conference in September 2017. Finally, a team in Brazil is starting this year with a Topten project: we regularly hold Skype meetings with them to help in the

implementation of Top-Ten, in aspects such as web design, navigability, information displayed, communication plans and business model.

2.2 WP2 - Organizational development

2.2.1 Design the organizational structure for the expansion phase (M2)

Top-Ten Chile is currently run by Fundación Chile, who is supported by several stakeholders such as TIS, subcontractors and governmental entities.

The following diagram describes the constitution of the global Top-Ten Chile team for the different aspects of the activities: technical aspect about energy, informatics part and communication part.

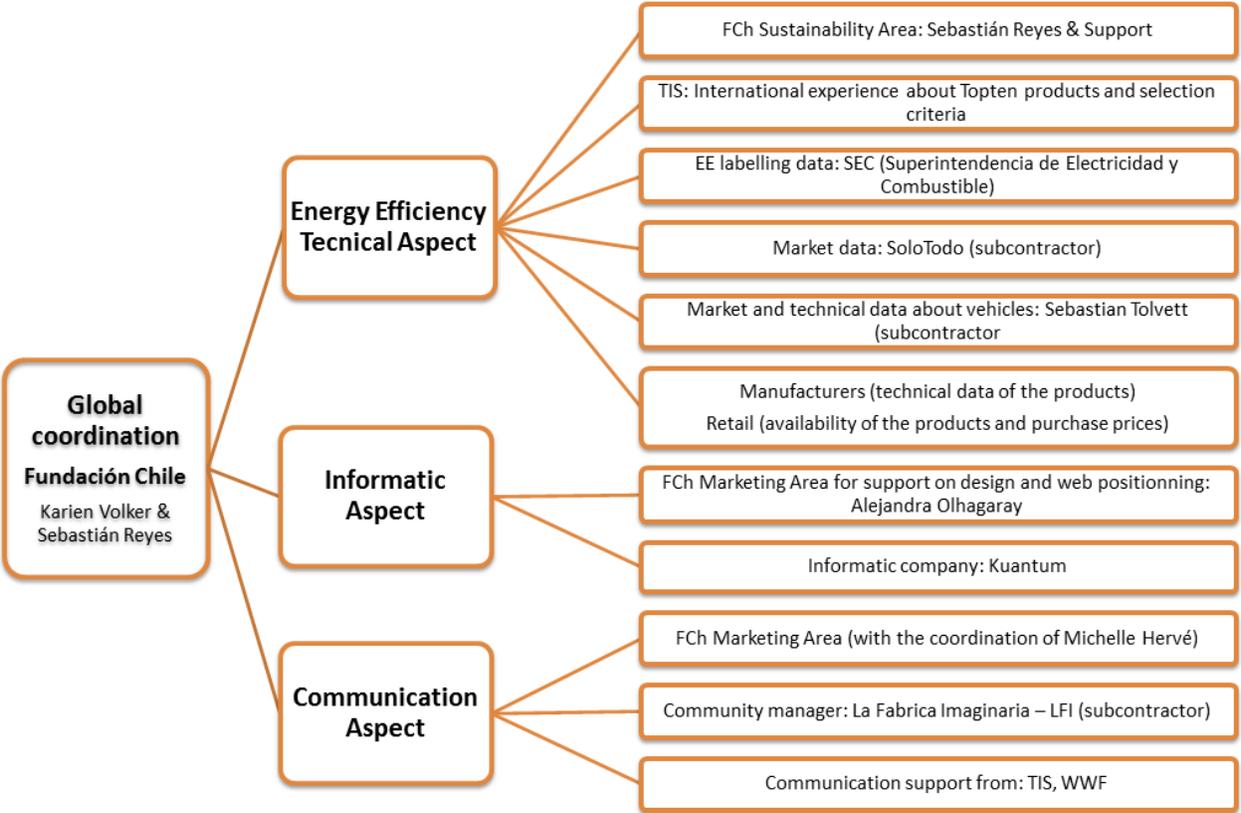


Figure 1 Top-Ten Chile Organizational structure

This organizational structure between FCh, TIS and the subcontractors has been maintained during the 2 years of the contract and it will be maintained at least until the end of 2018. Below, the detail about the people working on the different subjects is presented:

Global Coordination: Karien Volker and Sebastián Reyes



1. Energy Efficiency Technical aspect: 1 person in FCh, 2 people in TIS, 3 people in SEC (a few hours a month), 1 person in SoloTodo, 1 person for vehicles (a few hours a year)

- FCh Sustainability Area: Sebastián Reyes & support (Pablo Cárdenas as Intership)
- TIS: Eric Bush and Sophie Attali
- SEC: 2 people from the Products Area and 1 informatics engineer (only one or two meetings a month and a few hours to collect the needed information)
- SoloTodo: 1 manager and its informatics team
- Kuantum S.A for TI aspects.
- Vehicles: Sebastián Tolvett (a few hours a year)
- Manufacturers and Retailers

2. Informatics aspect: Kuantum, 1 people in the informatics area of FCh (only a few hours a year for Top-Ten)

- Kuantum: Carlos Marchant as responsible
- FCh informatics area: 1 people (only a few hours a year for Top-Ten)
- TIS software
- Web design and web positioning - LFI: 1 person (over all at the beginning of the project)

3. Communication aspect: 1 person in FCh, 2 people in LFI, 4 people a few hours a year in WWF and TIS.

- FCh Marketing area: Alejandra Olhagaray coordinating all the communication activities of the Sustainability area.
- Community manager - LFI: 1 project manager (Walter Urrue) and a designer for the graphics.
- Communication support: TIS (Eric Bush and Sophie Attali), WWF (Ricardo Bosshard and Susan Diaz): a few hours a year.

2.2.2 Design and develop a sustainable operation plan and funding schemes (M1 for 2016 / M2 for 2017)

2.2.2.1 Funding schemes until the end of 2016

For 2016, the funding contribution per funder and per year could be successfully achieved.

2.2.2.2 Funding schemes for 2017

For 2017, the funding contribution per funder and per year was successfully achieved.



2.2.2.3 Funding schemes for the future

At the end of 2017, as the REPIC funding will be finished, the Top-Ten team has worked on other potential funding schemes with different actors in order to design how these Top-Ten partners could help maintaining the project.

In general, several options were analyzed and were designed depending on feedbacks received from different actors. The objective was to define precisely how the partnership would work and then define the budget.

Regarding the funding by the Ministry of Energy, it is still uncertain whether they will be able to finance Top-Ten, given that they had a 60% reduction in their budget for 2018. However, Top-Ten will be co-financed with by the en.lighten and GEF-Refrigerators projects. It makes sense given that Top-Ten provides valuable information to both projects.

2.2.3 Advisory Board meetings to assist in the implementation of Top-Ten Chile

It is important to complete the day-to-day Top-Ten team with other actors several times a year (1 or 2 meetings a year) to continue developing the project and define the key directions of the initiative.

First, we identified all the important actors that should be part of this Advisory Board:

- Fundación Chile as the Top-Ten Chile executive team
- Ministry of Energy (EE division) as one of the main funder and as the responsible of the EE labeling program and MEPS.
- Superintendencia de Electricidad y Combustibles (SEC) as one of the main information source for Top-Ten and as the executor of the EE labeling program (monitoring, control and enforcement).
- WWF Chile as our communication partner.
- Swiss Embassy in Chile representing REPIC in the country.
- Consumers' associations (SERNAC, ODECU) who can help us improve the way the information is presented on the website.
- End-consumers directly via social networks.
- In a remote way: Topten International Services, REPIC

Moreover, in the two years of the project, we had numerous meetings with the private sector such as:

- Brands and manufacturers



- Retailers and other shops.

It is interesting to know what the brands, manufacturers and retailers look for with the Top-Ten initiative. They inform us about different subjects: level of the performance tests run in Chile, certification systems, general public's education level about EE and EE labeling, EE status of the market and their willing to train selling staff.

That is why, as it can be complicated to organize meetings with all these actors, we worked separately with the private sector collecting their opinion, and with the Ministry of Energy and SEC, then we discussed with the Topten International team to take advantage of their experience and finally we presented all the opinions to the other members.

2.3 WP3 - Market research, products and web development and update

2.3.1 Continue developing the web page software, adding functionalities

Throughout 2017, the Top-Ten Chile team implemented several improvements to the website. These improvements include: two new product categories (water heaters and space heaters), an improved interface detailing tips of efficient use and product documentation, more comprehensive energy savings information, and a completely new platform for companies.

The Top-Ten website since its creation has been in constant change because it is intended to give the user the best possible experience. In fact, during the course of 2017 various comments, suggestions and feedbacks have been received from Top-Ten users, brands and partners, which have been taken into consideration. That is why we have worked on the development of a new website design in order to optimize the user's experience and to make more understandable the contents that are shown, such as the "savings". For example, for products that represent greater energy savings (such as lighting), savings are shown in the form of a payback, while for electrical appliances or electronic equipment it is preferable to show energy savings or total savings.

In addition, new information was also added to the "see more" tab in the products section. Now, in this new design, all the products show the CO₂ emissions avoided and annual savings, among others.

This new design was worked in conjunction with the Chilean company Kuantum, who have a high knowledge in this subject of navigability and with the marketing area of Fundación Chile to complement

the graphic aspects. In this work several elements were considered, firstly to modernize the home page like modern web pages and to promote the categories and the tips for efficient use of products.

Also, new documents were added to the “Tips” section. In these documents, consumers can find the Top-Ten team’s product selection methodology and list of references.

All these new improvements can be seen in the following figures:

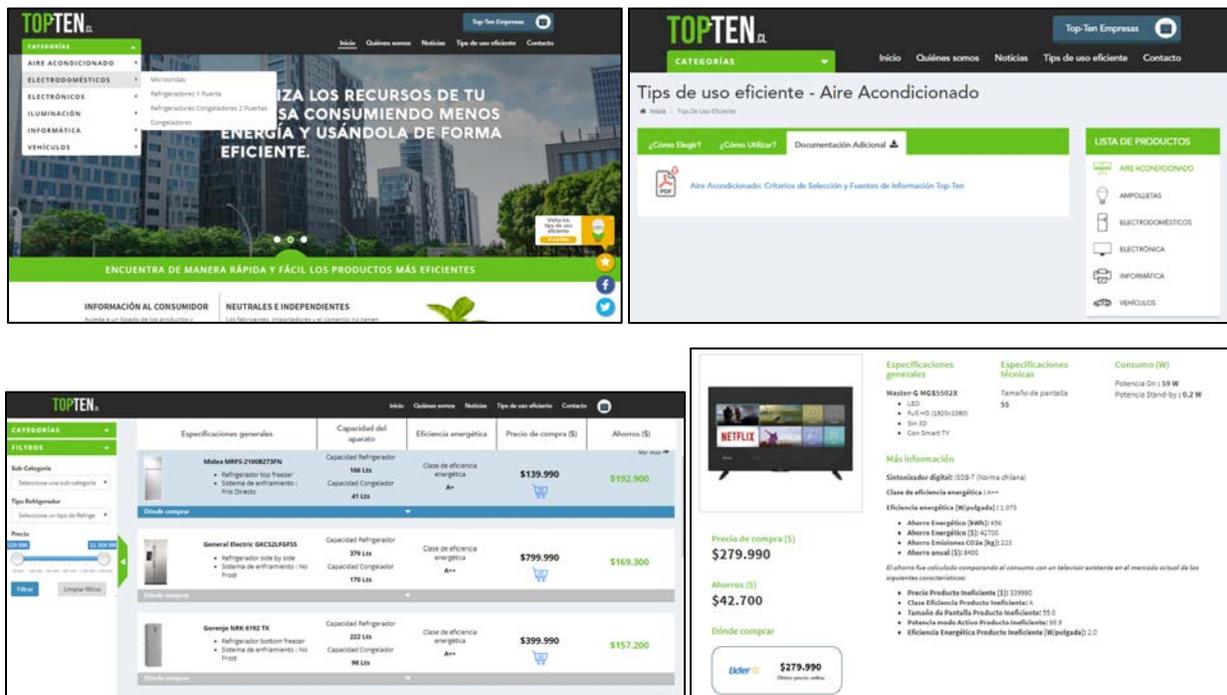


Figure 2 Top-Ten website overview

Finally, the most significant improvement was the implementation of the new platform for companies “Top-Ten Empresas”. This platform is detailed in the section 2.3.5 of this report.

2.3.2 Develop of Top-Ten mobile version

With the adaptation to the international platform, Top-Ten Chile has successfully embraced a new mobile version, which has a completely responsive layout and is more intuitive to the user. This mobile version has all the capabilities of the full site. Examples are shown in the following figures:

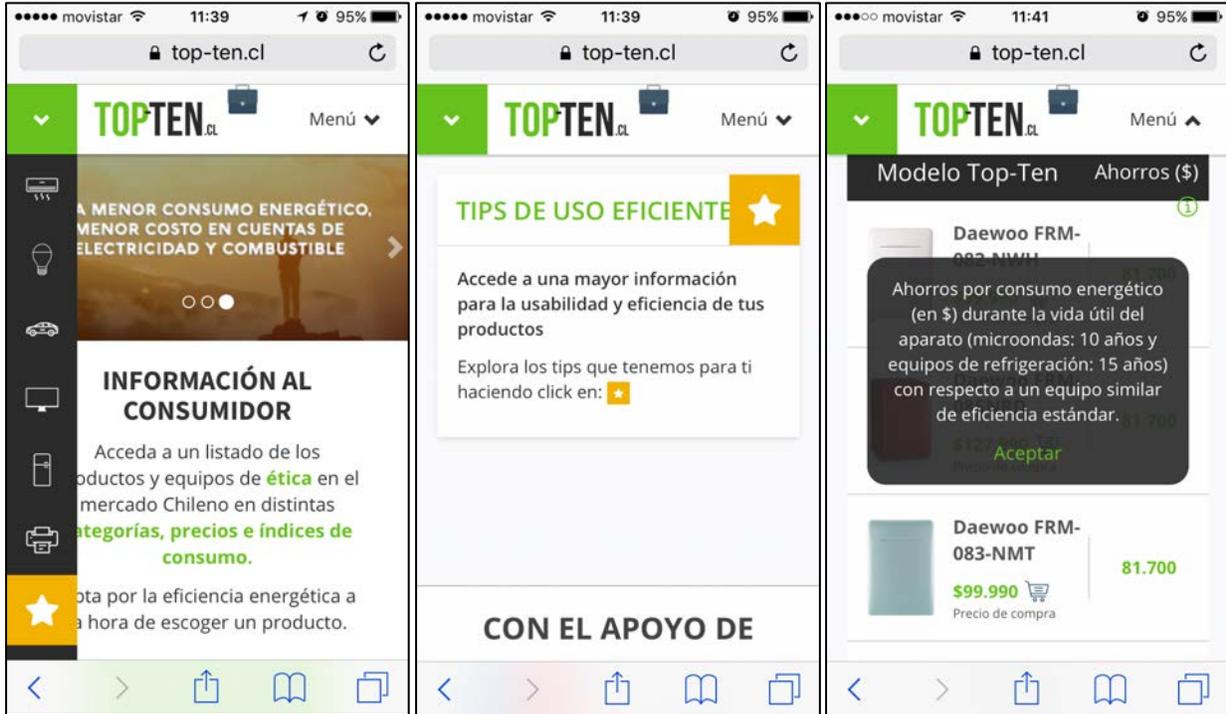


Figure 3 Top-Ten mobile overview

2.3.3 Update of the Top-Ten Label

After receive the feedback from the end consumers and the marketing area of Fundación Chile, it was decided that the Top-Ten label should be modified because the message of EE wasn't clear enough. The new label now comes in two colors and it says explicitly that the product is energetically efficient. The new label can be seen in the following figures:



Figure 4 New Top-Ten label



2.3.4 Expand the BAT product database: market research, technical analysis, selection criteria

For the communication event in March 2016, Top-Ten had selections of following products on-line, together with their corresponding selection criteria:

Table 1 Product categories on top-ten.cl (March 2016)

Products categories	Selection criteria
LED Lights: E27, E14 and tubes	Lighting efficiency (lm/W) and life time (hours)
Refrigerators and freezers	EE index (depending on the consumption and the volume of the refrigerator)
Microwaves	Stand-by consumption (W)
Electronic devices: Televisions, Sound systems, Home theaters, Blu-Ray & DVD players	Stand-by consumption (W)
Fuel vehicles: CityCar, Hatchback, Sedan, SW+SUV and vans	Fuel performance in city (km/Lt)
Electric cars	No selection criteria

Between March and November 2016, other products were added to the website.

Table 2 New Product categories on top-ten.cl (March-November 2016)

Products categories	Selection criteria
LED Spot Light: GU10	Lighting efficiency (lm/W) and life time (hours)
LED external projectors	Lighting efficiency (lm/W) and life time (hours)
Air conditioners: wall mounted Split	Inverter technology and COP/SEER

Also, at the end of 2016 the selection criteria for televisions was updated taking advantage of the new information about on-mode consumptions that is now shown in the Chilean EE label for these devices (change of the criteria).

Finally, at the end of 2017, two new categories were added to the website.

Table 3 New Product categories on top-ten.cl (November 2017)

Products categories	Selection criteria
Water Heaters (LPG and Natural Gas)	Thermal conversion (thermal W / Fuel Consumption W)



Space Heaters. (electric, wood and kerosene)

Thermal conversion (thermal W / Fuel Consumption W)

For the water heaters, only devices using LPG and natural gas could be categorized since the technical specification information was available. It should be noted that most other water heaters present on the market do not show their technical specification, due to the lack of regulations in Chile and thus were not included. Electric heaters do not show technical specifications either and will be added to the website in the future.

For the space heaters, as a consequence of the poor conditions in air quality, the ministry of environment and energy are carrying out a plan to reduce levels of air pollution, especially in Santiago and some southern cities, such as Temuco and Coyaique which are the most critical. That is why they have pressed the Top-Ten team to add heating products to the site. In the same spirit, in addition to performing the efficiency calculations for each stove, calculations were also implemented to estimate the amount of combustion gases in the operation. This information is shown on the website.

Also, in 2017 the refrigerator selection criteria were improved by making use of the formula indicated in the Chilean standard NCh 3000.Of2006. This allowed the site to generate values for refrigerator efficiency indexes and cross check the results with the online market (SoloTodo) instead of referencing the SEC's database. Thanks to this it was possible to categorize most of the products that are actually sold in market.

2.3.4.1 General update of Top-Ten lists

All the product lists are updated frequently and the commercial information (prices and availability) is updated twice a day. Moreover, more technical features are constantly added to the products to complete the information for the consumers as the ones explained in 2.3.1.

In 2017, with the intention of showing information as accurate as possible, an improvement was made to the formula for calculating product life-time monetary savings. Now the annual saving is capitalized according to a discount rate that is similar to the Retail Price Index (RPI) (5%), expressing the current money value.

Also, in order to get information and feedback, several meetings were organized with different brands, manufacturers, and distributors like **Sindelen, Daewoo, Electra, Conelectric, Bosch, Eurofred, LG, Samsung, Technolamp** and **Byp** (Westinghouse) generating long-term collaborations with them, so they share information directly with the Top-Ten team about their new efficient products and their associated certificates improving and facilitating the process of updating the Top-Ten lists. Moreover, thanks to a new



regulation from SEC, it is now mandatory for the e-commerce to put the safety label and the energy label online for each of the sold products. Thank to that, it was possible for Top-Ten Chile to complete its database with more EE information.

2.3.4.2 Future Top-Ten lists

Based on the two new categories added, in the future it is expected to add electrical water heaters and space heaters that use LPG, natural gas and pellets.

Moreover, depending on the progress of the energy label in Chile, we will add:

- Microwaves according to on-mode consumption: products are starting to be tested with a new standard including standby (IEC 62301-2011:01) and on-mode consumption (IEC 60705:2014-06).
- Electric ovens according to on-mode consumption (IEC 60350-1:2011-12).
- Washing machines (IEC 60456:2010-02).
- Tumble dryers (IEC 61121:2012-04).

2.3.5 Develop the policy recommendation section

The content of this part has been moved to the WP5.

2.3.6 Develop the green procurement section for large buyers

2.3.6.1 Green procurement section in top-ten.cl

This section³ provides purchasing guidance and savings estimates calculators for public procurers and other professional buyers and clear guidance on tender criteria to buy the most efficient products on the market.

The goal was to achieve professional guidelines and technical specifications for:

- 5 product categories in 2016.
- 10 product categories in 2017.

For the first range of products, the most common appliances present in offices were selected:

- LED light bulbs of different types: E27, E14 and GU10
- LED tubes
- LED external projectors for facade lighting for example.
- Air conditioners (plug-in systems)

³ <https://empresas.top-ten.cl/>



- Light vehicles and vans.

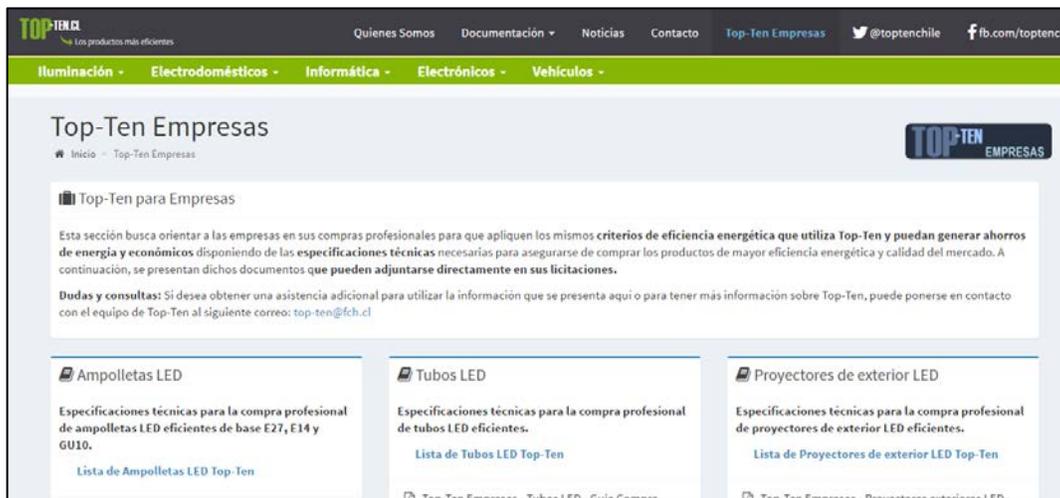
It is important to clarify that all of these products do not have an EE label: LED tubes and external projectors. For these products, it was necessary to get information directly from the providers using international certification to ensure the quality and the efficiency of the models. For air conditioners, as it was explained earlier, the test procedure used in Chile is based on the ISO standards from 1994 is obsolete. Thus, the team had to collect information and international certificates from the providers.

For each of these products, a document was written with different sections:

- What is Top-Ten?
- Why should buyers use the Top-Ten criteria? How much can they save?
- What technical criteria and documentation should buyers put in their tender process?

The buyers can directly use these documents to launch their tender process and thus be sure to get one of the most efficient products available in Chile. All of these documents are presented in appendix 8 of this report.

Below are shown some figures of the “Top-Ten Empresas” (Top-Ten Companies) section when it was launched in 2016:



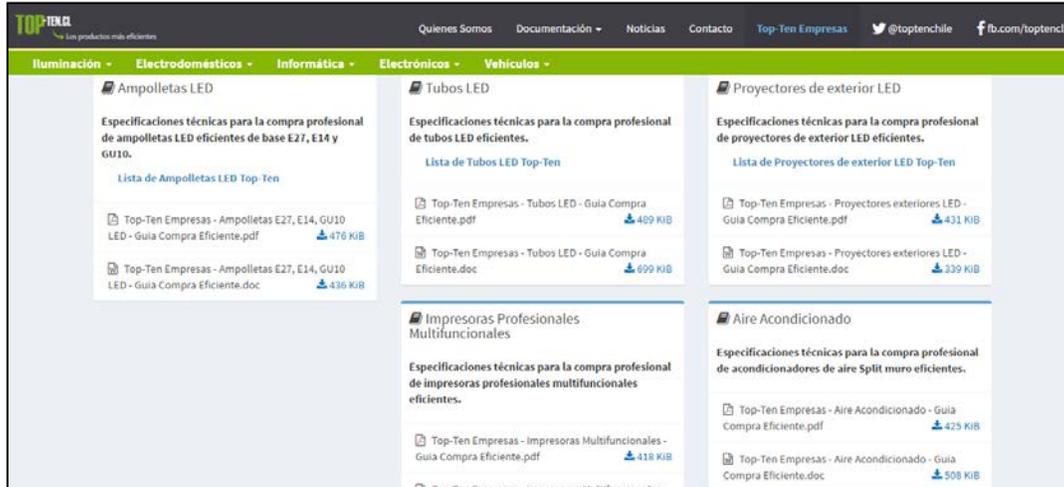


Figure 5 Top-Ten Pro version 1

In December of 2017, thanks to the work of Kuantum, Top-Ten Chile improved the software and the overall design of the complete section, making it more intuitive and attractive to users.

Also, three new product categories were added, in addition to their respective documentation and guidelines (these guidelines were reviewed by experts in this matter like Alfalux):

- Computers (Desktop and Notebooks)
- Space Heaters (Electrical, wood and kerosene)
- Electric Motors up to 7,5 kW

Moreover, the new platform now offers an **online** saving calculator service for all products (based on the calculations made for the Top-Ten lists) so companies can have an estimate of their energy reduction for massive purchases. The Top-Ten team has received a lot of positive feedback about the usefulness of these calculator and the guidelines. The new design can be seen in the following figures:



CALCULA TUS AHORROS

Simula tus ahorros con nuestra calculadora de consumo eficiente

¿CUANTO AHORRARÁS REEMPLAZANDO LAS AMPOLLETAS DE TU EDIFICIO POR AMPOLLETAS LED CON CRITERIOS TOP-TEN?

PREGUNTAS

¿Cuántas ampolletas de tu casa cambiarás? Ampolletas

¿De qué tipo son tus ampolletas actuales?

¿De qué potencia son? Watts

¿Cuántos días a la semana se utilizan? Días por semana

¿Cuántas horas están encendidas al día? Horas / día

¡VE TUS AHORROS!

AHORROS GENERADOS

Para visualizar y estimar tus ahorros generados, primero debes responder las preguntas de nuestra calculadora de ahorro.



Figure 6 “Top-Ten Empresas” overview

Finally, this new webpage emphasizes the role that Top-Ten can take as an energy consultant in terms of purchasing and/or bidding processes. In this way, professional buyers or public procurers are encouraged to contact the Top-Ten Chile team.

2.3.6.2 Approaching main actors

- “Top-Ten Empresas” meetings

In order to improve the green procurement section of Top-Ten Chile, it was decided to organize several events during 2017 in order to present the new tool to potential users, to train the users on how to use it, to receive their feedback and suggestions and to know the most useful products that should be added to Top-Ten Empresas. Several events were organized with among others:

- Public procurement bodies (ChileCompra, municipalities, etc.)
- Operation managers from industries, banks, pharmacies, retailers
- Energy efficiency consultancies that could recommend Top-Ten products in their energy diagnosis.



- Universities and schools

More information about this event is presented in the “2.4.3 Website Advertising” chapter.

- **ChileCompra**

As the public sector is the most important buyer of the country, it is crucial to collaborate with ChileCompra⁴ (national public procurement platform) to improve the energy efficiency level of public procurement.

ChileCompra is a public body which has the mission to create value for the public market in order to ensure that public buyers conduct their activities in a transparent and efficient way, and providers have greater access to the market. Its strategic objectives include increasing the effectiveness of supply and demand within the public purchase market, meeting the needs of market clients and establishing the framework for a sustainable public market guaranteeing ample market access.

After the meeting with ChileCompra in June 2016, Top-Ten worked on the first green procurement guidelines that were uploaded on the website and that were presented directly to ChileCompra in January 2017. The public entity was very interested in the guidelines, as they perfectly complete their new national directive (directiva n°25) for sustainable national procurement. The current actions with them are:

- Top-Ten acts now as an energy efficiency expert for important ChileCompra tender processes, in order to indicate them what EE criteria they can ask for.
- Besides, as ChileCompra has an “online shop” with a lot of different product categories for the public purchasers, Top-Ten and ChileCompra are analyzing the possibility to add the Top-Ten label to the online shop⁵.
- Finally, every year in May, ChileCompra is part of a really important forum⁶ with thousands of purchasers and sellers. Thanks to ChileCompra, Top-Ten was able to get a stand at the forum and to present the initiative and the Top-Ten Empresas tool with a brochure (it is presented below in this report). Thanks to that, the Top-Ten Chile team did two training sessions to the Health Service of Santiago about EE in public purchase and also good practices for EE.

⁴ <http://www.chilecompra.cl/>

⁵ <http://www.mercadopublico.cl/Home/Contenidos/TiendaBuscador/>

⁶ <https://www.expofemer.cl/programa2017/>



- **Other professional meetings**

We present below a list of activities that the Top-Ten Team has implemented throughout 2017 in order to successfully approach relevant actors in the EE market:

- Expo FEMER (May 2017): An exhibition where the main buyers of the private and the public sector reunite. Here, Top-Ten was able to present for 3 days its website and more importantly, its section “Top-Ten Empresas” which was very well received by professional buyers.
- Creo Chile (June 2017): A meeting space between the main actors of entrepreneurship and innovation in our country. Here, Francisco Leiva, leader of the EE area in Fundación Chile exposed about the utility of a platform like Top-Ten in a market as diverse as in Chile. Also, the Top-Ten team was present with a stand showing the functionalities of the website.
- Ashrae Seminar (September 2017): A seminar from the American Society of Heating, Refrigerating and Air-Conditioning Engineers, which was attended by the world president of Ashrae.

2.3.6.3 Technical advice to the public sector

Due to the good reception of the Top-Ten’s work in the Expo FEMER, several companies contacted the team to generate consultancy instances or talks on how to apply EE in the industry.

An important case was the consulting service developed to ChileCompra for the purchase of efficient computers by the Ministry of Health. In this case, 40,000 computers, laptops and desktops were renewed and Top-Ten was asked to develop minimum energy efficiency criteria (see Appendix 13) to demand in purchase bids. The following criteria were developed according to the type of computer:

- Profile A: Typical Energy Consumption criteria according to EnergyStar less than 107,5 kWh.
- Profile B: Typical Energy Consumption criteria according to EnergyStar less than 205 kWh.
- Profile C: Typical Energy Consumption criteria according to EnergyStar less than 137,5 kWh.
- Profile D: Typical Energy Consumption criteria according to EnergyStar less than 26,6 kWh.
- Profile E: Typical Energy Consumption criteria according to EnergyStar less than 26,6 kWh.

Moreover, a calculation was made to estimate potential energy and economic savings, and environmental impact mitigation in the case of acquiring computers that meet these criteria. It is estimated that between



1,000 and 1,600 million CLP (between 1560 and 2500 CHF) per year can be saved, and around 5000 million CLP (7500 CHF) during the life time of the computers.

2.3.7 Elaborate and publish report on EE market monitoring/development

The Top-Ten Chile team undertook analyses of the energy performance of different kinds of products present on the Chilean market in order to control that it is improving. Some of these reports are explained in section 3.1.3. Currently, these are not publicly accessible because the information they contain is confidential and it must first pass through the Ministry of Energy and SEC. It is expected that in the future they will be downloadable from the website.

2.3.8 Testing products for increasing knowledge and fair competitiveness (M3)

In the previous progress report sent in November 2016, it was planned to test air conditioners with the new European standards that enables to highlight the energy efficiency of inverter technology. However, there is only one accredited laboratory for air conditioners in the country, which did not have any availability for a “non-commercial” test and did not want to change its testing conditions with a different protocol than the current one in Chile for our study. We also reviewed an option in Argentina but they had the same problem as there are only 2 accredited labs there and they are using the same old protocol than in Chile. Finally, as the main issue for air conditioners' energy efficiency remains the old test protocol, it was decided not to run tests on air conditioners but to start working on updating the test protocols. This work is being done directly with Topten Argentina and the Ministries of Energy in both countries thanks to the common work of both Topten teams. This collaboration aims to develop a common test protocol for both countries, which would be a great opportunity for the region.

Regarding the tests, it was decided to focus on a critical aspect of the current market in Chile which is the increasing number of LED lamps and luminaires sold online. The number of webpages selling all kinds of imported products such as LED lamps is exploding and most of them do not certificate their products (for lack of knowledge about the certification system or for lack of budget). Besides, in general, these webpages claim good energy efficiency for their products in comparison with the market. That is why, Top-Ten decided to test several of these products in order to know their real safety and efficiency and communicate about it.

Thus, it was decided to analyze and send to an accredited test laboratory 13 different LED models sold online:

- 5 classic E27 classic LED light bulbs because they are the most common types of LED products.



- 4 GU10 light bulbs due to its high presence and continuous expansion in the lighting market in Chile, more and more households incorporate this type of light bulbs in their home.
- 4 E27 filament LED light bulbs: Indeed LED filament lamps are a recent technology but there are growing very fast. The online market analysis showed that the number of stores that sell this type of LEDs increases and consumers feel familiar because of its esthetical similarity with the incandescent lamps.

Table 4 Analyzed LED models

Brand	Technology	Provider	Price Chilean peses (\$CLP)	Equivalent Price in US\$
Kuhn 6W	LED spot lamp GU10	Kuhn	\$ 2.119	\$ 3,2
FSL 6W	LED spot lamp GU10	Conelectric	\$ 2.500	\$ 3,8
LED Light 4,5W	LED spot lamp GU10	LED Light	\$ 4.165	\$ 6,3
LED Studio 6W	LED spot lamp GU10	LED Studio	\$ 4.000	\$ 6,1
DEMASLED 8W	Classic LED light bulb	DEMASLED	\$ 2.590	\$ 3,9
Eglo 11W	Classic LED light bulb	Eglo	\$ 8.990	\$ 13,6
Sunshine Light 6W	Classic LED light bulb	Wei	\$ 4.351	\$ 6,6
Elfa 9W	Classic LED light bulb	Easy	\$ 6.990	\$ 10,6
CleverGroup 9W	Classic LED light bulb	CleverGroup	\$ 2.450	\$ 3,7
Belight 4W	Filament LED light bulb	Belight	\$ 9.900	\$ 15,0
Eglo 4W	Filament LED light bulb	Eglo	\$ 9.990	\$ 15,1
FSL 6W	Filament LED light bulb	IluminaLED	\$ 3.990	\$ 6,0
Kuhn 7W	Filament LED light bulb	Kuhn	\$ 6.597	\$ 10,0

These 13 models were chosen with the following methodology:

1. First, the database of all brands certified in safety and efficiency in Chile was studied (data until November 2016), which is the information provided by SEC.
2. Besides, Top-Ten recollected the list of light bulbs sold online. This data collection indeed provides a good knowledge of the different brands present on the online market. As explained above, there are more and more LED lamps available on the online Chilean market from a lot of different webpages and some of them might not be certified. Moreover, some webpages claim energy efficiencies above average.
3. That is why, we crossed the Top-Ten database of online products with the SEC database of certified products and selected different LEDs that did not appear in the SEC database and that claimed relatively high energy efficiencies.

4. These models were tested for safety and energy efficiency in an authorized Chilean laboratory. Top-Ten asked for prices from the two authorized laboratories (accredited by the Chilean accreditation body INN and authorized by SEC) in the country and finally the CESMEC lab was selected.

The results of these tests are presented below. As it can be seen, the complete safety tests were done and about energy efficiency, we measured energy consumption, luminous flux and light quality (color temperature and color rendering index CRI). Lamps' life time was not measured due to time and budget issues.

Table 5 Result of the LEDs testing

Brand	Purchase price (\$CLP)	Safety test	Energy Efficiency test						
			EE test	Comparison declared and measured values	Luminous flux (lm)	Power (W)	Color rendering index (CRI)	Color temperature (K)	EE (lm/W)
Kuhn 6W	\$2.119	OK	OK	Declared Measured Error %	500 509 2%	6 5,8 -3%	80 82 2%	2700 2685 -1%	83 88 6%
FSL 6W	\$2.500	OK	Fail	Declared Measured Error %	520 421 -24%	6 6 0%	80 82 2%	6500 5929 -10%	87 70 -24%
LED Light 4,5W	\$4.165	OK	Fail	Declared Measured Error %	450 270 -67%	4,5 4,7 4%	80 72 -11%	3000 3146 5%	100 58 -72%
LED Studio 6W	\$4.000	OK	Fail	Declared Measured Error %	480 428 -12%	6 6,6 9%	80 83 4%	5500 5139 -7%	80 65 -23%
DEMASLED 8W	\$2.590	OK	Fail	Declared Measured Error %	806 679 -19%	8 8,7 8%	80 82 2%	6500 5992 -8%	101 78 -29%
Eglo 11W	\$8.990	OK	OK	Declared Measured Error %	1055 1050 0%	12 12,1 1%	80 83 4%	3000 2816 -7%	88 87 -1%
Sunshine Light 6W	\$4.351	OK	Fail	Declared Measured Error %	580 379 -53%	6 6,3 5%	75 82 9%	2700 2532 -7%	97 60 -62%
Elfa 9W	\$6.990	OK	OK	Declared Measured Error %	800 790 -1%	9 9,5 5%	80 82 2%	3000 2855 -5%	89 83 -7%
	\$2.450			Declared	800	9	80	3000	89

CleverGroup 9W		OK	OK	<i>Measured</i>	798	9	82	3015	89
				<i>Error %</i>	0%	0%	2%	0%	0%
Belight 4W	\$9.990	OK	OK	<i>Declared</i>	360	4	80	2700	90
				<i>Measured</i>	381	4,1	82	2682	93
				<i>Error %</i>	6%	2%	2%	-1%	3%
Eglo 4W	\$9.990	OK	OK	<i>Declared</i>	350	4	80	2700	88
				<i>Measured</i>	337	3,8	82	2643	88
				<i>Error %</i>	-4%	-5%	2%	-2%	0%
FSL 6W	\$3.990	OK	OK	<i>Declared</i>	600	6	80	2700	100
				<i>Measured</i>	579	5,96	82	2684	97
				<i>Error %</i>	-4%	-1%	2%	-1%	-3%
Kuhn 7W	\$6.597	OK	OK	<i>Declared</i>	800	7	80	2700	114
				<i>Measured</i>	754	7	82	2601	108
				<i>Error %</i>	-6%	0%	2%	-4%	-6%

The main conclusions that can be drawn from this study are that:

- For most of the importers and small ones in particular, the certification system is frequently unknown. Or in other cases, they decide not to pay the certification cost which is significant in comparison to the sales volumes.
- All the models passed the safety test which is very good news for the consumers because it shows that even if some of them are not as efficient as they declare, at least they are not dangerous for the users.
- There are brands such as FSL that have both efficient and inefficient models with incorrect declared values. Indeed, its GU10 model has 20% error on its efficiency, and its LED filament model has 3% error and is highly efficient (97 lm/W). So, it is not necessarily a question of companies but specific models.
- Another finding was to discover that most of the products that do not comply with the EE test and that do not declare correct values are the most expensive models (as LED light and Sunshine light). On the other hand, cheap models showed really good efficiencies and correct declared values (as Kuhn or CleverGroup for example). So, there is no direct link between the purchase price and the product quality.

Finally, the models that did not comply with the performance test requirements were declared to SEC in order to proceed with the enforcement procedure. Indeed, SEC went to inspect non-compliant brands and began the corresponding legal proceedings with these suppliers.



2.4 WP4 - Outreach and communication

2.4.1 Design and develop a national outreach/communication strategy

Apart from the running communication strategy that was explained in the previous report (from 2016), in 2017, it was decided to focus on other subjects:

- **Follow a strategic calendar for the communication activities:**

Top-Ten is planning its communicational calendar according to a strategic calendar associated with buying periods such as discount, cyber days, and others in order to motivate the consumers to buy efficient products.

- **Develop strategic alliances with other relevant organizations in terms of communications:**

For example, with WWF Chile, in order to amplify our collaboration and coordinate our common communicational activities, it was decided to have a monthly talk with them. Top-Ten supported the WWF's "Earth hour", from their side, they will repost Top-Ten articles and will help us contacting companies for Top-Ten Empresas meetings.

Besides, we started a closer collaboration with Engie Factory (Engie national incubator) because they work on several sustainable subjects. First, they have a webpage (Biwil) where they write articles about sustainability, which is similar as Top-Ten. Moreover, one of their projects (Wenu) is a mobile application combined with an energy meter that indicates to the user its instantaneous energy consumption with the participation of each appliance. They are selling the service to end consumers and mostly to small and medium sized enterprises. Top-Ten could be a second-step service to the clients: "Now that you identified the most consuming appliances, here is a tool that will enable you to find the most efficient replacing technologies on the market and to compare prices". FCh will continue to look for strategic mobile applications than can complement Top-Ten platform.

At the end of March, Top-Ten was contacted on social networks by Google in order to know how they could help us in communicating about the project and bring a good targeted audience to the webpage.

- **Collaboration with other FCh's initiatives**

Within the Sustainability Area of Fundación Chile, other important projects are being executed such as the international UN Environment project En.lighten that aims to accelerate the transformation of the lighting market towards more efficient products.



The En.lighten project includes an important communication campaign that was named “Cambia El Foco⁷” and that aims to educate the Chilean people about efficient lighting and its benefits. The website and articles of the campaign present Top-Ten as the reference to choose the best products available on the market.

2.4.2 Develop communication tools based on new online social media and regularly update them

2.4.2.1 Permanent communication campaign for Top-Ten.cl

Top-Ten constantly communicates on Facebook and Twitter about the platform and about energy efficiency and environment in general. This effort in social network enabled to create a real community with people interested in energy efficiency and willing to learn more about the subject and to share contents. Thus, we reached great amounts of people with our articles and graphics: in July and October of 2016, the number of people that saw Top-Ten reached close to 2’000’000 persons! Till December 2017, on Facebook, we have 5’900 followers, which are a great progress since beginning of 2016 (105 followers).

- Press coverage of Top-Ten

The appendix 4 presents the monitoring of Top-Ten press coverage and the visits to social media on the Top-Ten accounts (Twitter and Facebook). Moreover appendix 6 presents the last monthly report (November 2017) of top-ten.cl visitors from Google Analytics.

Since the launch of Top-Ten Chile in 2015, there were several press articles speaking about the initiative and its benefits. All of them are presented in the “En la prensa” section of the website which is our “online press book” that serves to present more concretely the initiative to potential new partners.

- Visits to www.top-ten.cl

2015

Between the launch of Top-Ten.cl in August 2015 and the end of the last year, there have been **7’100 visits to the website**. More information is presented below.

2016 and 2017

During 2017, thanks to the work on social networks, to the press articles that spoke about Top-Ten, to our participation in seminars and our new partnerships with brands and retailers (Top-Ten logo on

⁷ <http://www.cambiaelfoco.fch.cl/>



www.solotodo.com for example that is described in the WP4 chapter), the visits to the Top-Ten website have increased strongly, as you can observe in the following graphics.

Visits to www.top-ten.cl

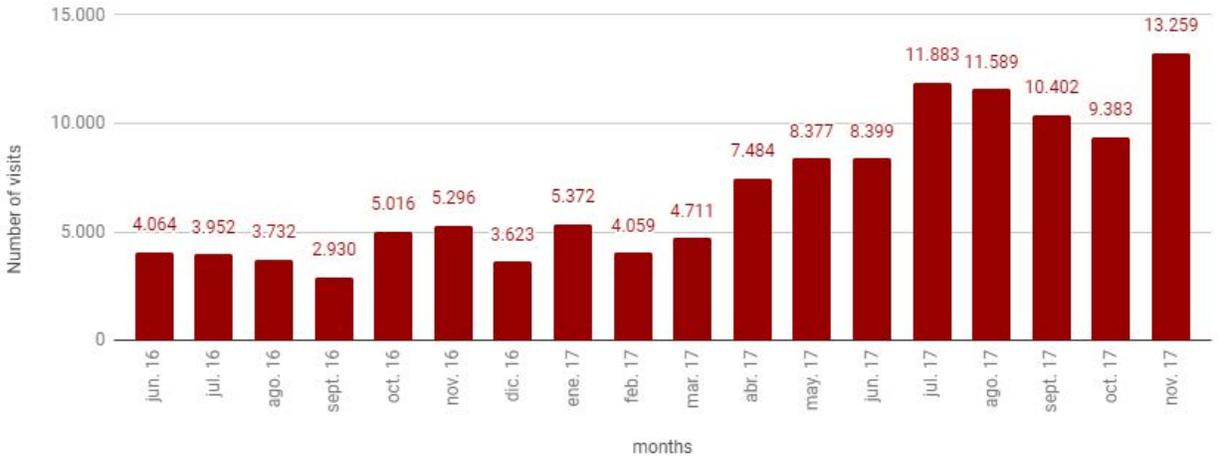


Figure 7 Visits to Top-Ten website

- August 2015: Top-Ten Chile launch
- December 2015: Launch of the Top-Ten Chile communication campaign
- March 2016: Launch of the paid campaign in social network and Top-Ten event on March 8th.
- During the first 8 months of 2016: average of 3'580 visits per month, whereas at the end of 2015 and the beginning of 2016 it was 1'000.
- October 2015: 5'016 visits reached in one month thanks to a great impact due to the published articles.
- February 2017: Summer period where a lot of Chilean people are on vacation.
- March 2017: New increase of the visits to Top-Ten.
- August 2017: Implementation of the new site
- December 2017: Updated "Top-Ten Empresas"

In total, since the launch of the website and until the end of November 2017, we have the following figures: **122'000 visits** to www.top-ten.cl, viewing 543'040 pages! 83,2% of the Top-Ten visitors are new users, so it shows that the number of users is increasing.

In order to increase these numbers, in the future, it is planned to:

- Continue with weekly articles about energy efficiency tips, energy in Chile and sustainability, and daily campaign in social networks such as Facebook and Twitter.



- Other competitions in social networks because they always have a great impact to make the Top-Ten brand known.
- Develop our partnerships with retailers, brands and price comparators in order to implement the Top-Ten logo in many websites such as SoloTodo.
- Continue developing partners with related organizations such as the AChEE, WWF, ChileCompra, among others.
- Communication events, such as the Expo Femer 2018 and the national day of EE.
- Press cover about the highlights of Top-Ten Chile development or the impact of the consulting service.

2.4.2.2 Produce communication materials: role of EE in lifestyle /climate change

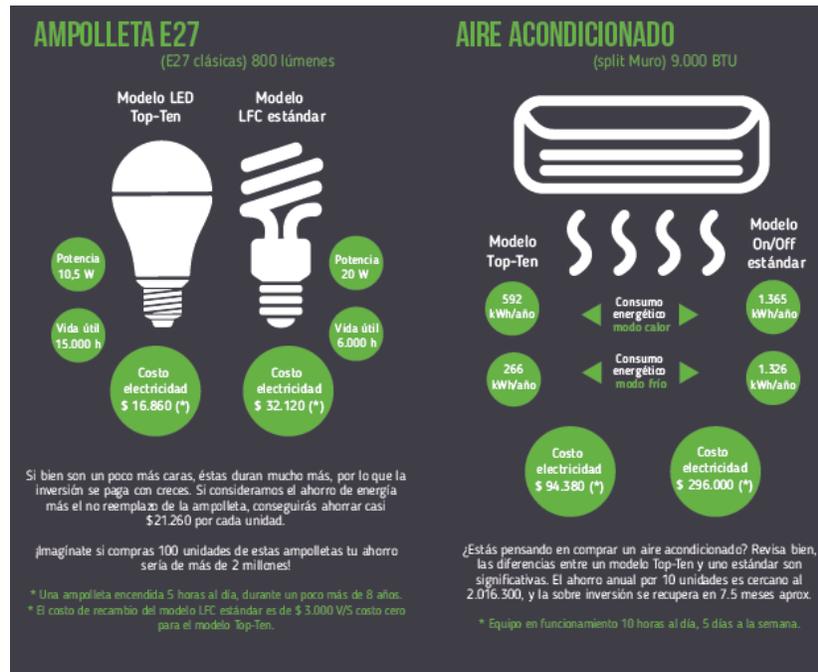
- **Online material**

Within the campaign FCh is doing with *La Fabrica Imaginaria*, daily articles are published on the Top-Ten website about energy efficiency, its role in lifestyle, its benefits for the people and the environment, tips to save energy. Some of these articles were used by other websites to communicate about energy savings.

In the future, other communication materials such as flyers, videos, postcards, memes, etc. will be realized.

- **Other materials**

A diptych (brochure) was designed in order to have a better approach to the consumers, and also, to the public and private sectors. This material was delivered in social events and it was very well received. An example of this document can be seen in the following figure:



TOP-TEN.cl
SE PARTE DE TOP-TEN CHILE

Top-Ten Empresas
"Guía de compras eficientes"

Más detalles de los productos disponibles en:
www.top-ten.cl

Logos: Ministerio de Energía, FCH FUNDACIÓN CHILE, and a circular logo with a checkmark and 'TOP-TEN.cl EN AHORRO ENERGÉTICO'.

Figure 8 Top-Ten brochure

2.4.3 Website Advertising

- Communication event in 2016 (M1)

This event that took place on March 8th was described in the first interim report.



Moreover, that year, Astrid Hanrot participated in a seminar in Temuco where she presented the role of EE in climate change and specifically the Top-Ten project and how it participated in this challenge.

Finally, the idea of the Top-Ten competition in November 2016 in social network to win LED light bulbs was to create a digital communication event enabling to increase the Top-Ten community.

- **Communication event in 2017**

This year, it was decided for the communication event to focus on the potential new users of “**Top-Ten Empresas**” section, i.e. persons in the public and private sectors in charge of professional procurement, operations, maintenance or sustainability who have the ability to potentially modify technical specifications for procurement processes. Moreover, instead of doing one big event, Fundación Chile preferred to organize several breakfasts and lunches with around 20 people in order to present the Top-Ten tool and be able to receive feedback from the participants about the platform, the Top-Ten Empresas tool, and to know what are the most interesting products for them to be added to the platform.

In order to invite the target audience, FCh did an important work to collect contact information from all its partners: operations area in FCh, AChEE, WWF Chile with its clients, Wenu with its clients, Municipalities, and all potential contacts that we added from industries, retail, banks, pharmacies, clinics, universities, schools, etc.

In total, for the first event that took place on April 4th, 58 external people were invited, 17 had confirmed their participation and finally 10 were present during the Top-Ten Empresas first lunch:

Table 6 External people in “Top-Ten Empresas” lunch

Type of companies	Nombre	Apellido	Company name
Retail	Miguel	Iturrate	Falabella
Retail	Andrea	Cardenas	Easy en Cencosud S.A.
Retail	Felipe	Canales	Easy en Cencosud S.A.
Bank	Pablo	Perez	Banco del Estado de Chile
Bank	Luis	Alarcón	Banco del Estado de Chile
Retail	Carmen	Cariqueo	Falabella
Consultancy EE	Pablo	Guzman	Intenergix
Governmental	Mariana	Pavon	Ministerio de Energía
Governmental	Elena	Mora	Chilecompra
Governmental	Cecilia	Rojas	Chilecompra

This lunch was a very good opportunity to present Top-Ten and in general what Fundación Chile has done since August 2015 and Top-Ten is financed. Then, the presentation focused more in detail on the Top-Ten



Empresas section where we explained the purpose of the tool, how to use the guidelines, how they were elaborated for the different categories, the potential energy savings associated for different products, the assumptions used in these calculations, the origin of the information and certificates associated.

The participants listed the other products they would need in Top-Ten Empresas depending on their activities such as other LED lamp types, motors and commercial air conditioning systems.

They commented that it would be interesting to highlight more the annual savings brought by the Top-Ten products because many purchasers from the public and private sectors have annual budgets and need to compare the "overinvestment" to the annual saving. Moreover, they asked where the energy efficiency data on Top-Ten comes from. As FCh explained that the information and data on Top-Ten come from trustful sources such as national and international certificates, the attendees recommended making it clearer on the webpage.

Besides, FCh asked the audience to give contacts from other organizations in order to present them Top-Ten and the Top-Ten Empresas section and enable them to improve their energy management as well.

Such events like lunches or breakfasts generate a very positive impact given the closeness between the guests and the Top-Ten team. In fact, the attendees congratulated the Top-Ten team for their work, they proposed some suggestions to improve it and to communicate more about it. Besides, as 2 important retailers (Cencosud and Falabella) were present in the same room, we also spoke about the importance of the knowledge of Top-Ten among the population and the role retailers can play in this. After describing the Top-Ten logo online and in shops, and the possibility to train sale staff, the two retailers showed a great interest for implementing these actions and it has been planned to keep progressing on that subject.

Several pictures of the event are presented below:

- Welcome words by Astrid Hanrot, project coordinator of Top-Ten Chile
- Presentation by Sebastián Reyes, energy engineer of Top-Ten Chile and Astrid Hanrot about the project in general, the Top-Ten web platform and the Top-Ten Empresas tool.
- Discussions about what other products should be added to "Top-Ten Empresas", what improvements could be implemented to the platform, what other activities could be realized to help communicate about Top-Ten.
- Finally, we took a picture of the participants.





Figure 9 "Top-Ten Empresas" first breakfast

2.4.4 EE promotional activities with key actors: retailers, manufacturers, consumers' associations and NGOs

In order to make Top-Ten better known, FCh will organize several promotional activities with relevant actors of the market such as retailers, manufacturers, consumers’ organizations or NGOs like WWF.

As we already work with **WWF Chile** for communication about Top-Ten, we completed our current collaboration in order to increase the impact on end-consumers. For example, Top-Ten joined WWF in its Earth-hour action, which is a well-known initiative targeting the general public and Top-Ten supported WWF in their communication on social networks. Moreover, WWF helped us to invite more companies to the Top-Ten Empresas event. We also worked to develop more our collaboration with **consumers’ associations** in Chile.

In 2017, Top-Ten deployed a series of activities to promote EE in the population. The amount of advertising on the social media was increased for those commercially important days, such as Cyber day and Black

Friday. Top-Ten was in contact with the company Sodimac to assist them in their communication campaign on EE. Top-Ten also participated in the national energy efficiency day in the center of Santiago.

Finally, the updated “Top-Ten label” continues to stay online at some retail vendors, as shown in the following figures:

PRODUCTOS *Línea Blanca - Calefacción*

Usted está en: Línea Blanca - Refrigeradores Iniciar Sesión / Registrarse

Calefacción Eléctrica
Calefones Gas Licuado
Calefones Gas Natural
Caminas
Cocinas
Encimeras
Estufas a Gas
Estufas a Parafina
Freezers
Frigobar
Hornos Empotrables
Lavadoras
Lavaplatos
Refrigeradores
Secadoras de Ropa

OFERTAS
COMBOS



COMBI RD-6500SI

- Refrigerador Frio Directo
- Capacidad total: 240 litros
- Capacidad Freezer: 49 / 59 litros
- Capacidad Conservador: 132 litros
- Clasificación eficiencia energética: A++
- Control mecánico de temperatura con termostato regulable
- 3 bandejas de vidrio templado ajustables en altura en el compartimento conservador superior
- 4 balcones en puerta superior
- Gaveta en conservador de frutas y verduras con regulación de temperatura
- 5 gavetas independientes en el compartimento congelador inferior (freezer)
- Luz interior - Iluminación LED
- Dimensiones: Ancho: 567 mm, Alto: 1807 mm, Profundidad: 627 mm
- Peso: 66 kg
- Color: Silver
- Código de barras: 7807333793820

Precio: \$ 339.900
Precio Oferta: \$ 299.900

PDF Ficha Técnica

PDF Manual de uso

Código QR

Certificado SBC

Eficiencia Energética



SoloTodo Tecnología - Hardware - Electro -

Libero LFH-100



Características

Tipo: Freezer
Frosting: Frio Directo
Eficiencia: A+
Consumo: 13,2 kWh/mes

Otros

Capacidad refrigerador: Desconocido
Capacidad freezer: 100,0 L.
Tamaño: 845 x 568 x 560 mm.
Peso: 31 kg.
Dispensador de agua: No
Dispensador de hielo: No

Tienda	Rating	Precio	Historial
Corona	★★★★★	\$79.990	Q
Falabella	★★★★★	\$97.990	Q
Sodimac	★★★★★	\$97.990	Q
Ripley	★★★★★	\$99.990	Q
La Polar	★★★★★	\$99.990	Q
Hites	★★★★★	\$99.990	Q
Easy	★★★★★	\$159.990	Q

¿Ya lo compraste? ¡Déjanos tus comentarios!

[Opciones -](#)



Figure 10 Online Top-Ten label



2.4.4.1 Approach manufacturers to promote EE products

Since 2016, FCh has focused on improving its work with manufacturers in order to make Top-Ten better known, to increase its impact on the EE performance of the market and to improve the global knowledge about EE, organizing regular meetings with them to discuss about energy efficiency and accelerate the market transformation.

Thus, Top-Ten now works on a regular basis with several manufacturers such as: Philips, Lúcala, GE Lighting, Westinghouse, Technolamp, LG, Carrier, Midea, Sindelen, Daewoo, Eurofred (Daitsu, Fujitsu), Daikin, Bosch, Samsung, etc. These manufacturers send us their updated product lists and the associated EE certificates in order for FCh to be able to select potential Top-Ten products. Besides, these meetings enabled FCh to better understand the current certification system in Chile and its issues. Indeed, even if a product already has an international certificate (safety and energy efficiency), to be authorized on the Chilean market, it needs a certificate from a national certification organism. In most of the cases, the manufacturer needs to pay another test (including with the same protocol than the original certificate). At the end, the cost of introducing a new product on the Chilean market is relatively expensive for the manufacturers, so they limit the importation of new models, reducing the options of new energy efficient products. FCh is working with manufacturers and the authorities to limit this barrier. Moreover, some of these brands have participated with us in some events.

2.4.4.2 Approach retailers to promote EE products and develop training material for capacity building

With the collaboration with the retailers, Top-Ten searches to promote energy efficient products and increase the average of energy performance of sold products and also to train the retail staff about energy efficiency and its benefits.

As explained in the last report, Fundación Chile achieved to meet with big retailers such as Cencosud which is the number one in Chile. The manager of the Sustainable Area at a corporate level is really interested in collaborating with us and kept update the information to the 3 different Cencosud business units: supermarkets (Jumbo), home centers (Easy) and commercial centers (París). We are now in contact with Easy and París with the Sustainability area and had another meeting with the Quality manager who is in charge of labeling. They showed great interest in the Top-Ten logo online and in the future a printed Top-Ten logo in shops, so this development is in progress even if, of course for this kind of companies, it is a slow process.

We also organized meetings with **other retailers** such as Sodimac, one of the principal home centers in the country even if for the moment, it has been relatively slow in the progress of the collaboration.



Finally, we have already started to collaborate with **specialized shops** (online and physical shops: Electra, Conelectric, Dartel, CasaMusa, LED Studio among others) such as electrical shops or decoration shops which are important actors in the market of some kinds of products like lighting products because they offer better prices than classical retailers. We already collected the technical data and prices of the products that are already in Top-Ten and are working on integrating automatically the Top-Ten logo online. In fact, given that they are smaller companies, the implementation of concrete actions is easier than for large retailers.

Appendixes 2 and 3 present the monitoring of all our contacts with retailers and manufacturers.

Moreover, with the Top-Ten functionality allowing to land directly on the retail pages, in the future it should be possible to negotiate with retailers to implement **affiliate marketing measures**, which is a type of performance-based marketing in which a business rewards one or more affiliates for each visitor or customer brought by the affiliate's own marketing efforts (it can be per click on the retail page or a percent of the bought product).

2.4.4.3 Awards

Another great achievement of 2017 was obtaining a certificate for being considered as one of the best environmental projects in Latin America.

After participating in the “Latinoamérica Verde” contest, an event that rewards the best sustainable initiatives in Latin America, Top-Ten was recognized as one of the best initiatives at a regional level. For more information please go to <http://www.premioslatinoamericaverde.com/>.



Figure 11 Latinoamérica Verde award



3 Objective 2: Support EE policy and know how exchange

3.1 WP5 – Multipliers (manufacturers, retailers, government), information exchange

3.1.1 Establishment (& update) of an online EE community social network supporting public efforts for changing consumers' behaviour

This subject is described in the WP4 about communication implemented by LFI: campaign in social network and articles about energy efficiency for the Chilean people.

3.1.2 Prepare document/list of EE products for financial incentive programs

In order to educate people about energy efficiency and its benefits, we did a complete analysis of the implemented replacement programs in different countries in order to highlight the advantages and disadvantages of each program. Then, we discussed this report with key actors such as manufacturers, the Ministry of Energy, municipalities and others in order to define the best cost-effective program to be implemented.

FCh identified 4 interesting programs that could be implemented with their main objectives.

- a) **Retail alliances:** The idea is to have discounts and promotion and to inform the consumers about energy efficiency and its benefits (written information and training to sales staff), for example bringing back to retailers their old inefficient light bulb or appliance and getting from retailers a discount for the purchase of an efficient Top-Ten lamp or appliance. This model intends to lower the barrier of purchase price which was highlighted as the main obstacle and to educate people about the benefits of efficient lighting.
- b) **Municipalities / Energy cities:** The objective is to aggregate demand for efficient products and do a global purchase with an official tender process to get good quality products at a lower price and be able to sell them at better prices to consumers. This model already exists in municipalities for medicines (“Farmacia Popular” or “Popular Pharmacy” program) and it is the same program that has been implemented in Temuco (see next point).
- c) **Energy Utilities:** This model is like an ESCO model in which the end-consumers could directly buy efficient products to the energy utilities to change the ones they have in their houses paying it on their energy bill during several months. The transition from inefficient lighting or appliances to



efficient products will generate savings on the energy bill, so the idea is to pay the efficient products to the energy utilities in several fees with these monthly energy savings. Once the total cost of the product is paid by consumers, the amount of the energy bill will decrease and the consumer will finally pay less.

- d) **Sensibilization campaign and courses in schools:** This model was designed in order to take advantage of the “children to parents” phenomena that shows that the children can educate the parents about many subjects such as environment and energy efficiency among others. Top-Ten could try to organize activities in school to talk about energy efficiency, its potential and concrete EE actions such as choosing a Top-Ten product.

3.1.2.1 Comuna Energética (Energy City)

The main barriers for energy efficiency promotion in the residential sector are: the lack of public awareness, high initial investment costs of efficient products and the lack of information channels that provide confidence to users about available technologies and suppliers.

Our “benchmarking” of international replacement programs showed that aggregating demand through municipalities is an effective way to promote efficient products. That is why, in 2016, we followed the good example from Switzerland about the collaboration between Energy City and Topten to implement a project in Temuco (one of the Chilean Energy City) with EBP Chile helping hotels, restaurants and social institutions to buy LED efficient lamps at a low price.

Learned lessons from 2016

The Temuco project in which we achieved to buy 1’000 LED lamps (bulbs, tubes) for hotels and social institutions was a great first success for Top-Ten and Energy City.

Collaboration between Fundación Chile and EBP during this project was very good and the common work enabled to achieve the project in time. The objective is to repeat this kind of initiative in different towns such as Providencia in Santiago which is another energy city.

At the end of 2016 we identified the learned lessons in the Temuco project in order to improve the scheme for a future project:

- In the Temuco project, we did not ask for a written engagement from the hotels and restaurants before starting the tendering process with the providers. Unfortunately, some of them gave up on the project and the quantities of LED went down. Because the purchase price offered by the providers depends on the purchased quantities, it is important to ensure this demand. In the



Temuco case, the provider that won the project decided not to increase the price of the products. Anyway, for the next project, we will have to be stricter with the “clients”. Indeed, Chile is not a country really used to cooperative activities so people do not necessarily commit themselves. In the next project, the idea would be to articulate the project enabling each beneficiary to buy its required quantity on his own, taking advantage of a discount acquiring efficient Top-Ten products.

- In the next project, it would be better to limit the number of different kinds of products (light bulbs, spot light, different size of tubes, etc.). Indeed, because of these different kinds of models, only a few providers were able to bid. The impact would have been bigger with the providers proposing only a LED classic E27 light bulb, which is a more massive model.

Top-Ten project in Providencia

Providencia is an important township in Santiago that implements many projects about energy efficiency (energy audits in more than 60 buildings, energy consumption competition between neighbors, incentive program to implement solar panels, etc.). They were very enthusiastic about the Top-Ten project and were ready to communicate it to the residential, touristic and commercial sectors.

First, we had to find who could manage the global purchase of the lamps, that is to say who could do the “bank” for the project between the end-consumers and the LED provider: collect the money from the different consumers and pay the global bill to the provider. In fact, either the municipality or Fundación Chile could do this process. In order to solve this problem, we first had a meeting with Groupon, an e-commerce platform. However, they take a high margin on the sold product so it would not be possible to lower enough the price for good-quality products. Then, we had a meeting with ENEL, the energy utility in Providencia that is trying to implement several energy efficiency projects and they were really enthusiastic about the initiative. The objective is to bill the consumers directly on their energy bill and to divide the payment in several months in order to “pay” the investment thanks to the energy savings brought by the LED technology (like an ESCO model). Once the LED lamps are all paid by the consumer, her/his energy bill will be reduced and he will save money. This project will be implemented in the next months and aims to be repeated in other townships.

3.1.2.2 Social network contest to win LED products

In order to show the benefits of efficient products to the general public, we will realize other contests on social network with our social network community to offer LED products to the winners. Although the



impact at a country level is not really significant, this action participates in the education campaign and helping the people to get closer to energy efficiency and its benefits.

3.1.3 Organize meetings with Ministry of Energy to develop policy recommendations about EE products

In Chile, the EE labeling program is implemented by SEC. They manage the program from the redaction of the energy performance test protocols (validated after by the Ministry of Energy) to the certification code of each model. Thus, they have the information about all the future labeled products, all accredited test labs and the database of all labeled models with EE data. However, they do not have any information about the actual Chilean market and about the products actually sold in the shops. That is why Top-Ten is a strong support for them because we make the relation between the EE labeling program and the Chilean market and give the Ministry the opportunity to update the energy policy of the country.

1. First, at the beginning of 2017, we published an article⁸ about the global low energy efficiency of **TV DECODERS** offered by the telecommunication companies in Chile. The objective was to communicate to the Chilean consumers that it is important to take into account the EE of the TV decoders because, as they are working all day long, the impact on their energy bill can be significant. An efficient model can save around 80000 CLP (125 CHF) during his life time (6 years).
2. **LIGHTING:** Thanks to the benchmarks done by Top-Ten and thanks to the help of Francisco Zuloaga from Topten International, FCh analyzed the proposal for the new lighting energy label written by SEC. In fact, the first version of this new energy label was based on the current EU energy label and given the quick market evolution, all the LED lamps already available on the market would have been in A+ and A++ classes, so the lighting manufacturers would not have had any incentive to bring more efficient products to the Chilean market. Moreover, we projected the Chilean market with the potential future EE label in Europe - which is comparatively very ambitious - and almost all the market was then in G-class and the best ones were D-class products. After discussing with the Ministry of Energy, it was decided that in order for the end-consumers to get used to the EE label, it seemed complicated to not have high-class products in the market. Thus, FCh worked on a new proposition that aims to be useful for the market for at least 5 years - projection assuming

⁸ <http://www.revistaemprededores.cl/noticias/top-ten-alerta-sobre-alto-consumo-electrico-de-decodificadores-de-tv/>



an improvement of LED energy efficiency by 10% each year (information from the lighting industry) - and then update it again to achieve the new EU label.

This proposal was first presented to the Ministry of Energy and SEC and was approved by them. Then, on March 21st, FCh presented this proposal to the lighting industry in order to get their comments and suggestions. In appendix 9, we present the presentation of the workshop and the comments collected by the assistants.

Development on the energy label was continued under the en.lighten project. The energy label proposal for lighting generated by FCh (with the support of Top-Ten) consists of an intermediate stage and a second stage that will be equal to that of Europe. It has already been validated by the industry. The Ministry of Energy and SEC are currently cross-checking sales data with the proposal.

- 3. REFRIGERATORS:** In 2016, a MEPS (minimum energy performance standard) for refrigerators and freezers has been implemented, prohibiting to sell products below class A. So currently in Chile, the more inefficient refrigerator on the market is an A-class product whereas all the communication campaigns about EE say to choose at least A-class appliances. That is why Top-Ten analyzed the refrigerator market in the last years in order to see the evolution of EE. In appendix 11, the results are presented. First, it is possible to see that the MEPS did not reduce a lot the presence of inefficient products because they already represented less than 15% of the market. Besides, the graphics allows to show a common energy label problem: the “+” classes. Indeed, the number of A-class and A+-class products has increased in the past years but the number of A++-class products has decreased. This can be explained by the fact that the consumers do not understand that these appliances are much more efficient. So they are not willing to pay a more for an A++-refrigerator because they think that A++ is only a little bit better than A+ or A whereas there is a 50% difference in the EE. Top-Ten talked about this subject with manufacturers and they confirmed that they do not import A++ refrigerators to Chile because they are difficult to sell. FCh presented this analysis to the authorities and is currently working on a new energy label proposal. Also, some energy savings simulations were carried out assuming that it was possible to change 50% of the refrigerators in the country from a classification A to A++. The results show that it possible to reach savings of around 2 000 GWh per year and close to 900 000 tons of CO₂ emissions. The next steps regarding the energy label are going to be defined at the first months of 2018 under the project GEF-Refrigerators. It is most likely that the label proposal is not going to considerate the “A+” classes and which will be harmonized with that of Europe.



4. **AIR CONDITIONERS:** As a consequence of the market research and study on split-wall air conditioners global energy efficiency, the obsolescence of the current standard in Chile NCh 2685 was revealed (it is based on the international standard ISO 5151 from 1994!). This standard establishes tests at full load, so the newer and more efficient models such as inverters that can adapt the energy consumption depending on the temperature demand (reaching 50% less energy consumption), are not able to show their real efficiency. Thanks to Top-Ten's work, it was possible to show that the energy label could no longer differentiate between efficient and inefficient products, as all were A-class products.

Indeed, FCh had exchanges with the main air conditioners brands in Chile (LG, Eurofred, Midea & Carrier, Daikin and Trane) during which they commented that they cannot show the real efficiency of their inverter products. This means that they have no incentive to bring new models and efficient technologies to the country as it is impossible for them to explain the difference of efficiency to the consumer. Apart from that, these companies indicated that the only authorized laboratory in Chile (SICAL) has high quality in their lab tests. Therefore it is not so relevant to perform an inter-laboratory test in order to check the quality of the laboratory. Besides, we tried to make performance test in the SICAL lab with a new test protocol from Europe in order to see the results in Chile and see the difference between inverter and on/off technologies, but SICAL did not want to participate and try other test conditions.

That is why, instead of doing tests on air conditioners, it was decided to work on the most important issues for these products, i.e. work on a proposal for a new test protocol and a new energy label.

The objective is to change the test protocol to allow partial load tests and not only at full load in order for the efficient inverter models to reflect their real efficiency. In Europe, partial load tests are carried out under 4 conditions for the cold mode, given their many different climate conditions and the high capacity of European laboratories. Since Chile has a small laboratory capacity and its climate conditions are not so extreme, it is not feasible to carry out tests under 4 different conditions as they last much longer. This is why, it is proposed to test only under 2 conditions instead of 4 for the cold mode. This work is being carried out together with Topten Argentina and the Ministries of Energy in both countries. The objective is to achieve a common standard in both countries and thus facilitate the certification process.



The proposal includes the following two conditions for the cold mode: 35 and 25 degrees for the outside temperature which causes the equipment to operate at 100% and 47% of load respectively. In fact, these temperature conditions reflect the real climate of Argentina and Chile during the spring and summer seasons. Then, for both conditions, an Energy Efficiency Ratio EER is obtained and the seasonal energy efficiency ratio (SEER) is given by:

$$SEER = 0,35 \cdot EER_{100\%} + 0,65 \cdot EER_{47\%}$$

These weighting factors were the result of statistical work carried out by the Argentine Institute for Standardization and Certification (IRAM) and the Ministry of Energy of Argentina. Indeed, with these weighting factors, efficiencies similar to those delivered by the European protocol are achieved. Currently Top-Ten Chile is developing the same study for the heat mode, also aiming to get two tests conditions.

5. We also did a study about **ELECTRONIC DEVICES** which check whether the EE label is still adequate. Indeed, having all the information on energy efficiency and commercial information of the products (availability, prices, etc.), it has been possible to deeply analyze the labeling program. The objective was to determine if the label is well designed and effectively meets its goal to push the market towards more efficient technologies. This analysis and its main findings and conclusions will be soon presented to the authorities (it has not been possible to focus on this subject during our last meetings). However, we already presented part of this study to the authorities about DVD and Blu-ray players: Top-Ten showed that all the models on the market are A-class products (the condition for A-class products is to have a standby power of less than 1W) whereas there are huge differences in their standby powers: between 0,14 W and 0,9W, so the end-consumer energy consumption will be much higher with a 0,9W standby power.

ELECTRIC MOTORS: With the electric motors incorporated to “Top-Ten Empresas” it was possible to carry out a market analysis. The information received from SEC shows that in the last 3 years, no engine under 7,5 kW surpassed an efficiency of 90% and that all engines are B-class or lower according to the Chilean standard. This is of interest for productive industries since electric motors consume considerable amounts of energy. By changing from B-class to A-class engines, there is an approximate 5% total energy savings for the Chilean industry. Moreover, we informed that many of the products present in their database are not available on the market: old products are not available anymore or some products were imported to Chile



by manufacturers without being put in the market. Thanks to our market benchmark, we highlighted many products for sale that are not in SEC database. They explained that there is also a “manual” certification system in which the certified models are not added to the database and indicated that they are currently trying to “eliminate” this manual system in order to collect all information of certified products.

3.1.4 Engage key actors to promote the most energy efficient products

The key actors are the Government, manufacturers, retailers, consumers’ associations. This subject is described in previous paragraphs and in the monitoring Excel sheets for retailers and manufacturers.

3.2 WP6 – International know-how exchange

3.2.1 Know-how exchange with existing Top-Ten worldwide (Europe & China): experiences, best practices, funding strategies, etc.

One of the most interesting aspects of the Top-Ten initiative is its international team and experience, which is very important to benefit from all countries to increase even more the global impact on sustainability.

To efficiently exchange know-how information between every country, we are using several ways:

- Frequent Skype meetings with Eric Bush and Sophie Attali from Topten International Services every month to share progresses in each country in Europe, technical information, communication and technical experiences...
- Skype meetings with Top-Ten Argentina on experience sharing, software development...
- Regular mails with TIS, Top-Ten Argentina and other countries such as China.

3.2.2 Support Topten Argentina: software development, advices on approaching stakeholders and methodology development

Fundación Chile continued to support Top-Ten Argentina on different subjects such as:

- Informatics development: In 2015, for the Topten Argentina launch, we:
 - Enabled the domain and web server.
 - Enabled the web platform and realized a usage training of the platform.
 - Helped and supported the Topten product selection.



- Since then, Top-Ten Chile has continued its technical support for the software.
- In March 2017, Top-Ten Chile habilitated for Topten Argentina the direct links to online shops and in the next months, Topten Argentina will migrate to the new international software thanks to Top-Ten Chile's support.

Moreover, as explained before, Top-Ten Chile and Topten Argentina are working together on a new performance test protocol for air conditioners. That would be a great success to achieve the validation of a common test protocol in the Latin American region.

Finally, we are sharing ideas and suggestions about potential business models to sustain the Topten project in both countries. For example, Topten Argentina is trying to make brands pay for a license to use the Topten label on their products.

3.2.3 Networking with relevant stakeholders in other Latin American countries to promote the Topten initiative and push for new Topten programs in the region.

Since the Latin American workshop in Sao Paulo in 2013, Top-Ten Chile and Topten Argentina were born in 2015 and the objective is to develop the network in the continent.

BRAZIL:

In 2016, a lot of efforts were put to find a Topten partner in Brazil given that this is the largest economy of the continent and that they already have a well-functioning energy label and MEPS programs.

Top-Ten Chile and TIS worked with INMETRO, the national organization that manages the energy labeling program in Brazil. They gave us some options of institutions (such as the consumers' association PROTESTE) that could run Topten, but it did not succeed. Other organizations were contacted (such as Carbon Trust or EBP Brazil) but they could not manage to get the needed funds for the project.

Finally, Topten Brazil is starting this year with the technical support of Topten Argentina and Top-Ten Chile and thanks to funding from the Swiss Government. The company that will create Topten Brazil is BSD Consulting, a company that works on sustainability issues and on some specific project that include public policies and energy efficiency. Top-Ten Chile will support them during the implementation phase that will last until the end of March 2018.

Other Latin American countries:



For the other countries, FCh with the help of TIS, is contacting many people from other countries and is studying the legal context of each country in order to analyze the possibility to start a Topten project. With TIS's help, FCh defined important questions that need to be answered by the different countries to see if the national legal context enables a Topten project.

- Is there any standard or regulation required (mandatory) to sell appliances in your country?
 - For example, electrical safety or use of gas?
 - Energy efficiency information?
- Is there any energy efficiency labeling program established?

IF YES:

- Is it inspired from a program in another country (for its rules, its appearance)?
- What kind of label is implemented: informative or endorsement?
- For what kind of products is it implemented?
- Is it mandatory or voluntary?

IF NOT:

- Is the Government considering implement one?
 - When does the Government plan to implement an EE labeling program?
 - If you have such a program and it is not functioning well: Why?
- Because it is too demanding?
- Because the endorsement label might not be supported enough by the Government?
- Is there a measurement standard explaining for each types of products how to measure energy consumption?

In fact, even if it is not mandatory to declare the consumption in an EE label for example, it would mean that manufacturers have this number and that the front runners may be willing to give this information to a Topten project.

- If there is a standard, this standard requires measuring the level of energy efficiency or performance of the product?

For example in Chile, it is mandatory to realize a laboratory test for energy performance for instant water heaters but there is still not an EE label for that product.

In general, after contacting different kinds of institutions in the Latin American countries, we have realized that the best first step is contacting the Ministries of Energy. In fact, they perfectly know the current



framework in their countries and of course, a Topten project has more sense having the support from the authorities, so it is better to contact them first.

In order to contact the different countries, we used the contact list from the workshop in Sao Paolo and to complete, Astrid Hanrot from the Top-Ten Chile team attended the Latin American Seminar about EE in Uruguay on April 27th and 28th of 2017, organized by OLADE⁹ (Alejandro Espin) and the Ministry of Energy from Uruguay (Carolina Mena). Below, a status summary of each country is presented:

URUGUAY: Carolina Mena and Antonella Tambasco from the Ministry of Energy from Uruguay.

Fundación Chile is in contact with the Ministry of Energy in Uruguay since the beginning of 2016. In fact, the country has the requested legal framework to implement Top-Ten and the Ministry already has a planned activity to create an online platform for end-consumers about products energy efficiency. FCh presented the Topten concept during a seminar in April 2016 in Montevideo. However, for the moment, it has not been possible to work more in details about a Topten Uruguay project.

MEXICO: Pedro Hernández from CONUEE Mexico (Comisión Nacional para el Uso Eficiente de la Energía). This is the institution that manages the EE label program in the country. He was very interested by the initiative that FCh presented in April 2016 during the seminar in Montevideo. We did not receive more information from him. However, thanks to the En.lighten project, we got another contact in CONUEE, so the next step is to present the Topten initiative to this new contact and try to progress in México.

PERU: Carlos Caceres and Tania Zamora from the Ministry of Energy in Peru, they are responsible of the energy labeling program.

FCh presented Topten to the Ministry of Energy. They explained to us that the energy label is currently launched in Peru, so a Topten project is interesting for them. That would enable:

- To follow the energy efficiency performance of the market and the evolution of purchase prices,
- To monitor the success of the energy labeling program and see the evolution of the market,
- For policy recommendations to update the energy labels and MEPS,

⁹<http://www.olade.org/vii-seminario-de-eficiencia-energetica-2016/>



- To participate in the consumers' awareness campaign about the importance of selecting energy efficient products showing the potential savings that an efficient product can generate in comparison with a standard one,

- To collaborate with all TopTen experts from all countries and share experiences.

Moreover, they are also working on public green procurement in order for the public sector to buy efficient products. So, after this first presentation and a meeting we had with them and TIS, they are currently working on a possible funding scheme for Topten and studying who could run Topten in Peru.

COLUMBIA: FCh achieved to get the contact in the Colombian Ministry of Energy of the Responsible of the energy labeling program and already contacted them. As Colombia is one of the biggest countries in the region and as they already have an energy label, a Topten project would be really interesting.

OTHER COUNTRIES

Thanks to the conversation we had with several actors from other countries and thanks to the seminar in Uruguay, we had the opportunity to know about the EE status in the other countries of the region and they are not ready yet for a Topten project.

-
- Ecuador
- Venezuela
- Caribbean countries

Moreover, at the beginning of April 2017, we will have a Skype meeting with WWF México and with the responsible of Energy for Latin America. This conversation should help us in progressing in Mexico and other countries.

CONCLUSION

In conclusion, Brazil is starting its Topten project, we also have achieved to contact several important countries of Latin American since the beginning of 2016 and they all seem interested in the Topten initiative even if of course, some of them still do not have the necessary legal framework about energy efficiency to start a Topten project. In the short term, the most relevant countries to work with are Brazil (for the implementation phase), Mexico, Peru and Colombia (Uruguay has been too difficult for the moment).



4 LESSONS LEARNED / CONCLUSION

Since the beginning of the project in 2015, the Top-Ten Chile team supported by Topten International Services, has progressed significantly in developing a modern and complete web platform and has also worked on all the other activities associated to the initiative.

The Fundación Chile team, helped by external institutions for specific items such as digital communication and online market benchmarking, is well organized and enables to progress in all the activities. Moreover, Top-Ten Chile has achieved to get co-funding for 2017 and to create an advisory board with all the most relevant actors. The whole team is currently working on new business models to sustain the Topten project for the future (collaboration with retailers, brands, enforcement authorities, e-commerce and others).

The team has worked since the beginning of 2016 on improving the Top-Ten website with new functionalities that improved a lot the user's experience. Besides, the number of product categories online went from 5 to more than 8 thanks to the important market and energy data research done by the team. This analysis and the development of a strong network composed of manufacturers, retailers and the authorities enabled the creation of a green procurement section called "Top-Ten Empresas" and the redaction of report on energy efficiency market monitoring. In order to make this new Top-Ten Empresas tool more famous, FCh organized several breakfasts and meetings during 2017 with procurement officers from different companies and public institutions. One of these meetings already took place and was a great success. Moreover, with its knowledge of the Chilean market, the Top-Ten team prepares policy recommendations for the Ministry of Energy and SEC in order to update the energy label, the MEPS and the test protocols. Finally, as Top-Ten Chile had identified the LED lamp online market as a potential quality risk for the consumers (because a lot of product are sold without the mandatory safety and EE certification), FCh carried out at the beginning of 2017 safety and performance tests for 13 LED models from the online market. FCh is currently presenting these results to the authorities and will communicate about to the general public in order to raise awareness about the importance of buying certified products.

All of these developments are combined with a strong communication strategy that has permitted to achieve more than 120'000 visits to the website since the launch in 2015 whereas there had been only 7'100 visits at the beginning of 2016. Top-Ten Chile has a growing community on social networks, FCH is working with a lot of different manufacturers and distributors to develop the Top-Ten logo online and in shops. Moreover, Top-Ten Chile, as an EE expert, is receiving everyday more invitations to present about



energy efficient products in different events and seminars. Finally, Top-Ten has implemented several incentive programs in 2016 and supported other projects in 2017 in order to save energy with concrete projects, promote energy efficient products and educate the general public about energy efficiency and efficient technologies.

Finally, Top-Ten Chile, supported by Topten International Services, and Topten Argentina are in contact with organizations in different Latin American countries in order to analyze with them the potential for a local Topten project. The most advanced countries are Brazil, Mexico and Uruguay.



5 Appendices

5.1 Appendix 1

Excel sheet: Top-TenChile_Monitoring_Partners_Multipliers

5.2 Appendix 2

Excel sheet: Top-TenChile_Monitoring_Manufacturers

5.3 Appendix 3

Excel sheet: Top-TenChile_Monitoring_Retailers

5.4 Appendix 4

Excel sheet: Top-TenChile_Monitoring_Website_Medias

5.5 Appendix 5

PDF report: Informe RRSS Top-Ten Chile (October 2017)

(Report about social networks in March 2016)

5.6 Appendix 6

PDF report: Informe Google Analytics Top-Ten Chile (October 2016)

(Report about website analytics in March 2016)

5.7 Appendix 7

Excel sheet: Top-Ten_Business Models

5.8 Appendix 8

PDF document: Guías de compras eficientes para Top-Ten Empresas

(Green procurement documents for large buyers in the Top-Ten Professional section)

5.9 Appendix 9

PPT: Propuesta_EtiquetaEE_iluminación_En.lighten2017

(Proposal of lighting EE label for En.lighten)

5.10 Appendix 10

PDF document: Informe ensayos de iluminación

(Lighting tests report)

5.11 Appendix 11

PPT: Análisis ventas, etiqueta, mercado Refrigeradores 07022017

(Sales, label and market analysis of refrigerators 07/02/2017)

5.12 Appendix 12

Excel sheet: Time monitoring of FCh and TIS



5.13 Appendix 13

Excel sheet: Asesoramiento compra computadores Ministerio de Salud

5.14 Appendix 14

Excel sheet: Calculadoras de ahorro Top-Ten

5.15 Appendix 15

Word document: Tips de uso eficiente para estufas y calefones.