SAVE 12.3 平台及 REFRESH 项目介绍

IVL瑞典环境科学研究院　　CCFA中国连锁经营协会　　CHEARI中国家用电器研究院

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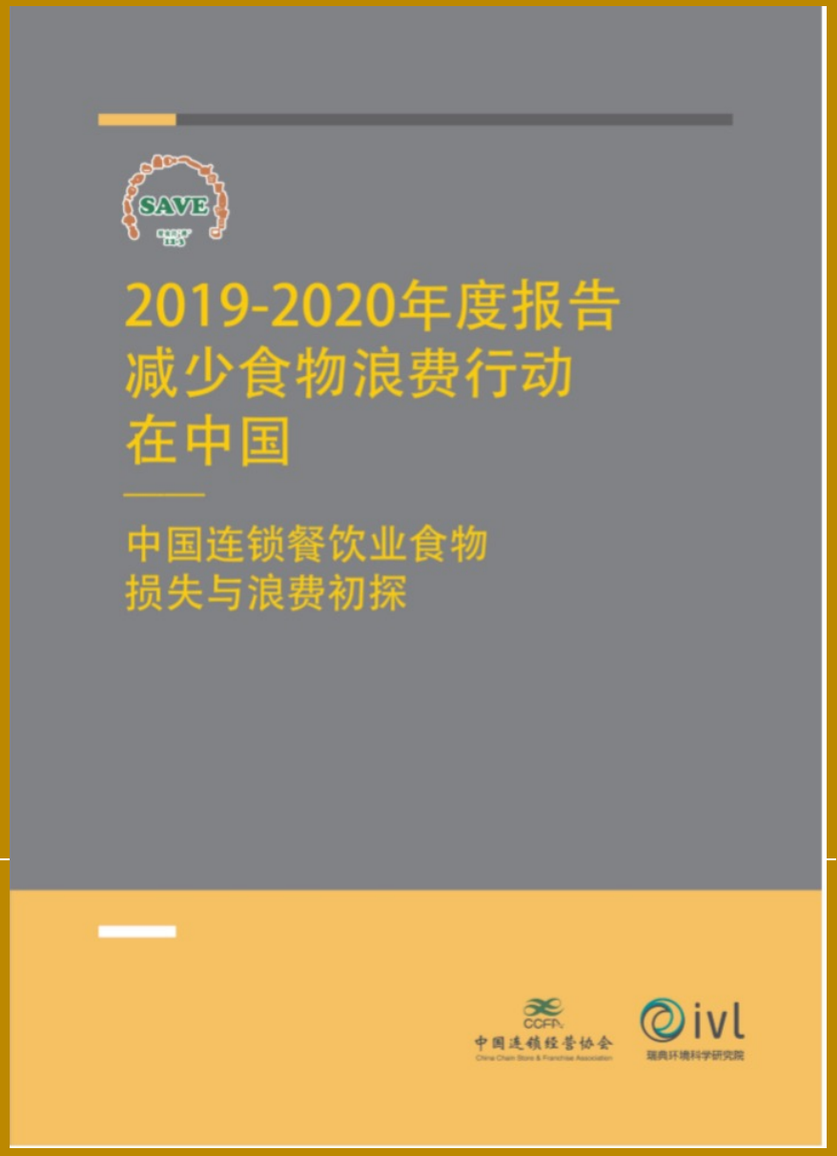

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IVL瑞典环境科学研究院——
全球领先的独立的非营利性研究机构

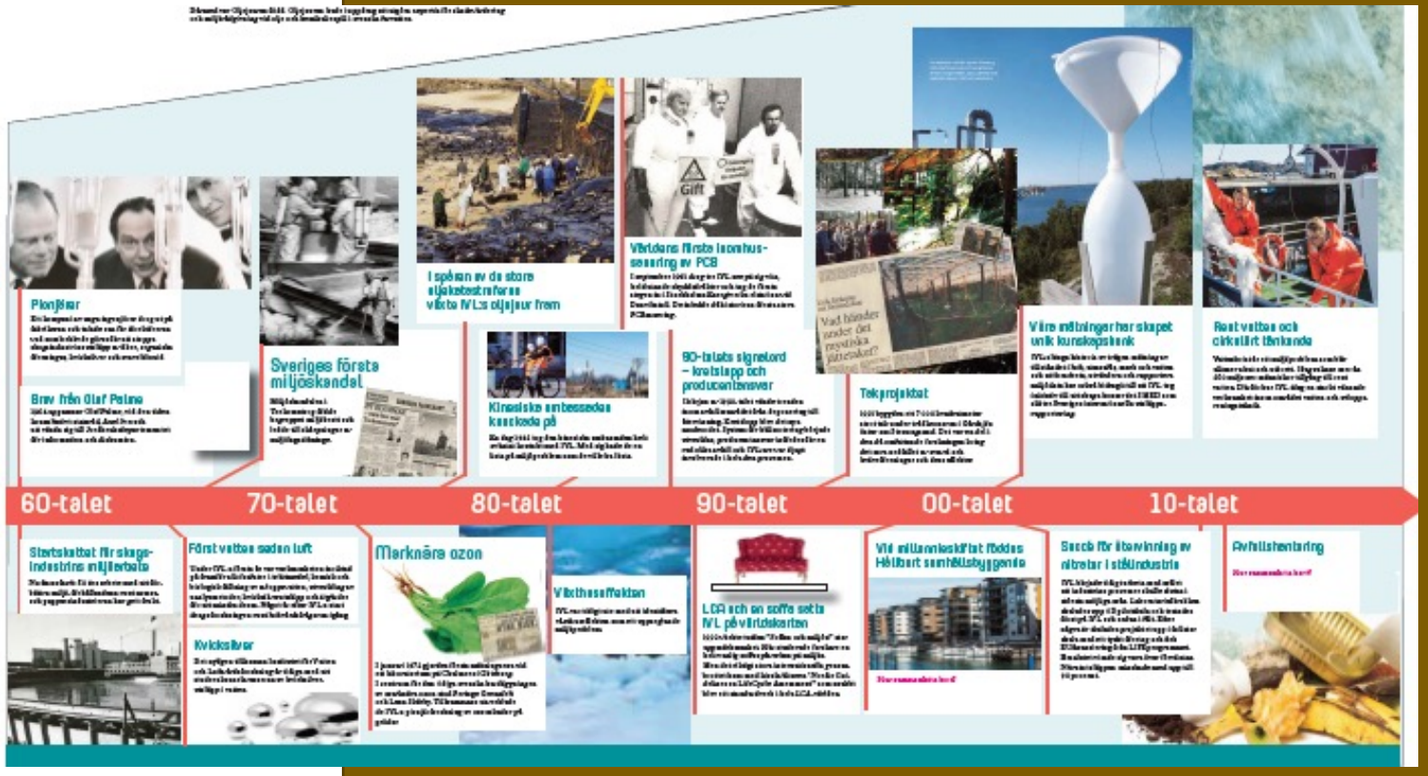
50年以上丰富的科研咨询经验

IVL 瑞典环境科学研究院成立于 1966 年,是瑞典第一家致力于环境保护的国家级应用型研究机构 （Institute av Vatten och Luft)。

强大的基金会背景

由瑞典政府和工业界出资(各占50%)通过SIVL基金会共同管理IVL并每年拨款运营经费。

IVL – an independent and non-profit research institute
IVL-独立的非营利性研究机构



Around 320 employees 大约320名专家

engineers, economists, social scientists, geoscientists, chemists, biologists, agriculturalists, communicators etc.

包含地球工程、经济学、社会学、地理学、化学、生物学和农学等各领域的专家。

Locations 主园区

The Royal Institute of Technology Campus in Stockholm

斯德哥尔摩皇家理工学院校园

Chalmers University of Technology Campus in Gothenburg

哥德堡查尔姆斯理工大学校园

Office in Beijing、Shanghai and Wuhan

在北京、上海和武汉成立代表处、办公室

Subsidiaries
旗下子公司和机构

环境产品声明国际认证公司（International EPD）	BASTA 公司（绿色建筑认证体系）
中国代表处（2009）	斯瓦利亚环境技术公司（2014）

IVL 在国际市场也有庞大的网络。中国是 IVL 业务合作重点国家，此外 IVL 还在印度、智利等国家有项目办公室，并且在印度尼西亚、马来西亚、巴西、南非等地有合作项目。

Past Research on food loss and waste

1. A holistic approach to the food waste problem. Understand why food waste occurs and support both the industry and individual consumers to make better choices. Technological guidelines and tools to enable better capitalization of food waste from the food industry, as well as designing different information platforms and support tools.

2. Food waste flows (measurement & data collection).

3. Food waste causes and treatment (in Sweden): holistic approach.

4. Life cycle assessment of foodstuff and food waste. Carbon accounting and LCA for Top 500 Enterprises, one of the biggest LCA team in Europe (around 40 experts in LCA calculation in various industries and different scope).

Past Research on sustainable diet

To support a more sustainable diet, IVL has conducted research on policy instruments effectiveness in terms of food consumption, and analysis of the environnmental results of the shifting diets (such as less meat consumption). It also shows the positive effects of consumption of organic food.

1. Analyze the environmental impact of a wide variety of different food categories, with respect to consumption, import, export and waste. – By comparing different scenarios of future food choices such as increased intake of ecological, local foods, reduced intake of animal-based protein, seasonal foods and diets, and by also taking into account guidelines published by the The Swedish Food Agency, we will be able to determine how our eating habits affect the environment. Establish whether it is possible to reduce environmental impact by changing contemporary diets and dietary guidelines.
2. A comprehensive overview of policy instruments aimed at encouraging sustainable consumption has been carried out. In total, 32 different policy instruments (in Sweden) targeting housing, transportation, shopping and food consumption have been surveyed and assessed. Information instruments targeting food consumption such as Climate and environmental labelling and shelf for instance are evaluated.
3. Calculating the climate impact that different food policy instruments may have on the European food consumption.
4. Dietary shift (less meat eating) carbon emission analysis.
5. Testing the effects of organic food in human bodies.

Save 12.3

减少食物浪费，我們在行動

关注save12.3公众平台

与我们一起聚焦食物浪费

In September 2018, the China Chain-Store & Franchise Association (CCFA), the IVL Swedish Environmental Research Institute and the China Household Electric Appliance Research Institute (CHEARI) jointly launched the SAVE12.3 platform for food waste reduction initiatives in China. The SAVE12.3 platform is dedicated to promoting the production side, market side by building open, cross-border partnership platforms and domestic and international exchange networks as well as the consumer side to get involved in reducing food waste. It also directs public attention to green consumption habits and lifestyle changes.

Platform: Since its inception, the SAVE12.3 platform has held a series of thematic forums, consumer education charity events and international experience exchange with extensive domestic and international network resources, and has received support and recognition from organizations such as the UN Food and Agriculture Organization, the Embassy of Sweden in China, the All-China Environment Federation, the Institute of Geographic Sciences and Natural Resources, and Champion12.3.

The SAVE12.3 has collaborated with UN Environment, UN FAO on food loss & waste communications and sustainable consumption; also joined the WRI Champion 12.3 as Friend of 12.3.

SAVE 12.3 减少食物浪费行动在中国

- **行动愿景**：推动绿色，健康的理念和实践，加强相关方交流合作共同行动，减少食物浪费，提高食物废物资源化以及利用率。
- **行动目标**：凝聚各方资源，扩大影响；支持创新技术解决方案，促进绿色合作；致力公众教育，促进意识提升和行动改变。
- **行动方案**：提供国内外资源支持，开展专题研究、编写标准和规范；支持示范项目，展现并推广最佳实践；开展宣传活动，提升行业和公众意识。

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Enterprises on the SAVE 12.3 Platform and *Initiative*

“CCFA餐饮连锁企业减少食物浪费倡议自愿行动书”
2019年3月·上海·第18届连锁餐饮峰会发布

1.我们将积极响应国家政府提倡的绿色消费号召,努力提高企业环境责任意识,关注减少食物损失与浪费,致力推动联合国可持续发展目标SDG5123在中国市场的实现,即到2030年中国消费环节的人均食物浪费减半。
2.我们认识到减少食物损失和浪费,对环境保护的重要意义。愿意作为行业SAVE12.3行动平台上的一份子,支持餐饮业的技术创新与交流,提高食品废弃物资源化利用;参与公众教育,促进意识提升和消费行为改变;积极参与国内外专题研究与交流活动。
3.我们愿意致力于推动企业自的实践及可持续发展能力建设,影响更多企业探索制定减少食物浪费持续发展战略及实施方案。
4.我们呼吁更多企业参加“餐饮精益管理SAV12.3工作坊在企业运营中加强能力建设,提升对与食物浪费相关联的重要环节的识别和管理,践行创新实践,持续提高精益管理水平。
5.我们呼吁各利益相关方一起行动,探索跨界合作,并依托门店的网络资源,积极参与行业组织的公益宣传活动,影响并带领全社会关注粮食节约与减少浪费,推动行业在践行环境与社会责任中做出更大贡献。

CCFA餐饮连锁委员会
CCFA中国可持续消费圆桌

Industrial Initiative on FLW
行业倡议

Conduct industrial and consumer survey
消费者与企业调查

Initiate Reducing FLW & Lean Management Workshop
餐饮精益管理工作坊

Introduce Practical tools for chain restaurants to evaluate and reduce food waste (Cooperating with WRAP and EU Refresh)
国际管理工具引入及应用

首次调研发现—
反食物浪费现状与挑战

针对食物浪费问题，中国连锁经营协会（CCFA）与瑞典环境科学研究院（IVL）
于2019年3月**首次**开展餐饮行业的专题调研。调研共收集到228份问卷。

从业人员
意识有待提高

挑战一

对食物损失与
浪费缺乏关注

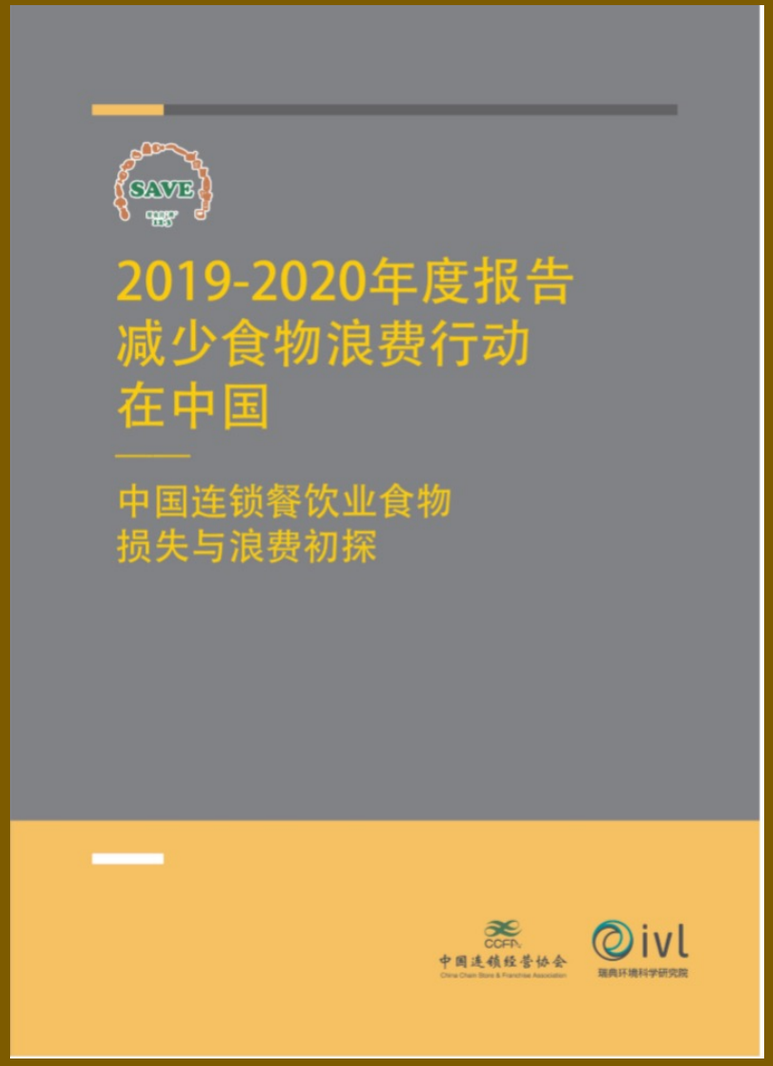
挑战二

食物浪费的关键环节
识别有待进一步研究

挑战三

餐厅业绩 vs
适量消费

挑战四



Drivers of food service business food waste and the different categorization. *I*=internal drivers (directly focusing on food service business), *E*=external drivers (consumers, suppliers and governmental policy/standards authorities)[2].

Groups	Drivers	Comparison with EU Fusions	I, E	Participants
Pre-kitchen (upstream processing, procurement and storage)	1. Too strict/unclear raw material standards (not procuring those too small or too ugly), too much processing waste upstream or later on abandoned due to not meeting requirements–especially for chain restaurants;	Institutional (business and economy) context	I	procurement managers & suppliers
	2. Inaccurate ordering (inappropriate forecast of demand) which leads to un-used raw materials that reach expiration date;	Institutional (Business and economy) context	I	
	3. Not prioritizing food use with earlier production date;	Technological context and Institutional (Business and economy) context	I	
	4. Unnecessarily higher food safety standards and policies (including for imported food and for ready-to-eat food)	Institutional (Legislation and policies) context	E	
	5. Un-used food close to expiration date not easy to donate due to no strong and clear regulations on food donations	Institutional (Legislation and policies) context	E	
	6. Fresh products transport: especially unpredicted weather and long-distance etc.	Technological context	E	
Kitchen (preparation of food)	1. Low staff capacity;	Institutional (Business and economy) context	I	Chefs and chef assistants
	2. Too strict standards for raw materials (chefs' habits or kitchen routine);	Institutional (Business and economy) context and social context	I	
	3. Food safety concern: possible quality problem	Institutional (Legislation and policies) context	I	
	4. Central kitchen processing efficiency	Institutional (Business and economy) context,	I	
	5. Short storage time and too much prepared;	Institutional (Business and economy) context	I	
Post-kitchen (Consumption & communication with consumers)	1. Un-standardized plate size which caused difficulties for new-comers to judge the volume;	Institutional (Business and economy) context	E	Owners, managers and or communication officers
	2. Fixed quantity for main food/other dishes with no choice for smaller amount, especially for women and children;	Institutional (Business and economy) context	I	
	3. Promotion strategy to facilitate food ordering that exceeds what can be consumed;	Institutional (Business and economy) context	I	
	4. Decoration food;	Institutional (Legislation and policies) context	I	
	5. Free snacks waste/free sauces/free dishes;	Institutional (Business and economy) context	E	
	6. Service mistakes;	Institutional (Business and economy) context	I	
	7. Food quality is not satisfactory;	Social context	I	
	8. Over-ordering because of compensation mind from long waiting time, face (mianzi), and/or wishes to taste more dishes when there are only few people (cultural, physical and habitual influence of consumers).	Social context	E	
	9. Food safety concern by consumers (suspicious of food quality);	Social context	E	
Others	1. Packaging influence: cheap and reusable materials?	Technological context	E	Packaging

Workshop results on possible solutions to reduce food waste [4].

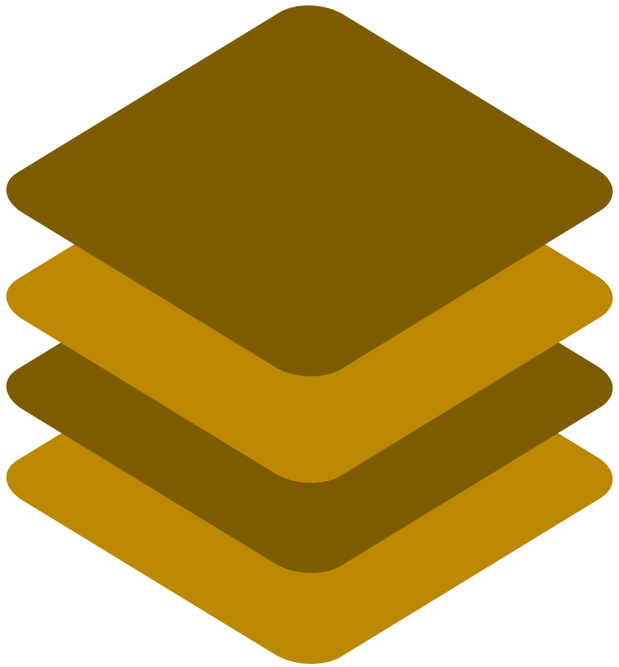
General categories	Secondary categories	Solutions
Internal	Food management system	1. Better procurement forecast system based on more accurate sales record. 2. More clear and standardized requirements over raw materials. 3. Use the food that has earlier expiration date. 4. Digital system application. 5. Clear award and punishment over the food management.
	Staff capacity	1. Training of staffs. 2. More semi-ready raw materials (clean vegetables and dish materials prepared by upstream suppliers). 3. Standardization. 4. Recruit professionals.
	Tasteful dishes	Improve food quality, which is both good for branding and attracting consumers to come back.
	Innovative actions	1. To change the way for employee lunch/dinner, from fixed portion to employee buffet. Observed high effectiveness of food waste reduction. 2. Innovative menus which can fully utilize all the food materials (like skins etc.)
	Adjusted portion size	1. To measure the consumption amount of the major sauces/dressings/dishes that has huge consumption amount, and re-design the portion size for such sauces and dressing to fit into different consumption level. Proven to be highly effective. 2. To change the plate size for expensive dishes with a reduction of price as well. Proven to be highly effective (observed shift from half loss to almost no loss), and combined benefits of consumers re-visiting.
I&E connection	Communication with up-stream suppliers	1. Strengthened communication with clear supply and demand. 2. Clear communicated standards for procurement. 3. Suppliers management: for instance a standardized good examination procedure. 4. Alliance and platform to match supply with demand (preferably supported/organized by government)
	Communication with consumers	1. Menu with clearer messages on volume and taste. 2. Different portion size choices. 3. Nudging with dishes choices: sell what is left in the kitchen 4. Gentle reminder (also nudging) of "order the amount you can eat, and order more if it is not enough". 5. Promotion of doggy-bag after meal. 6. Less decoration food or clearer message of the edibility of decoration food 7. Clear messages of no waste for all food served including free snacks.
External	consumer	1. Champion on empty plate. 2. Consumer education. 3. Sustainable consumption habits social norm establishment.
	Supplier	1. Better management and planning. 2. On-site standardized processing establishment
	Policies	1. More favourable policies, such as adjusted standards and evaluation over product to be sold 2. More clear and supporting policies for food donation. 3. Food safety life cycle tracking system

基于对SAVE12.3公众号2018年开展的消费者调查分析，
我们发现——

消费者的意识和行为对食物浪费存在一定影响

消费者认知度较高，
但行为改变有待推动

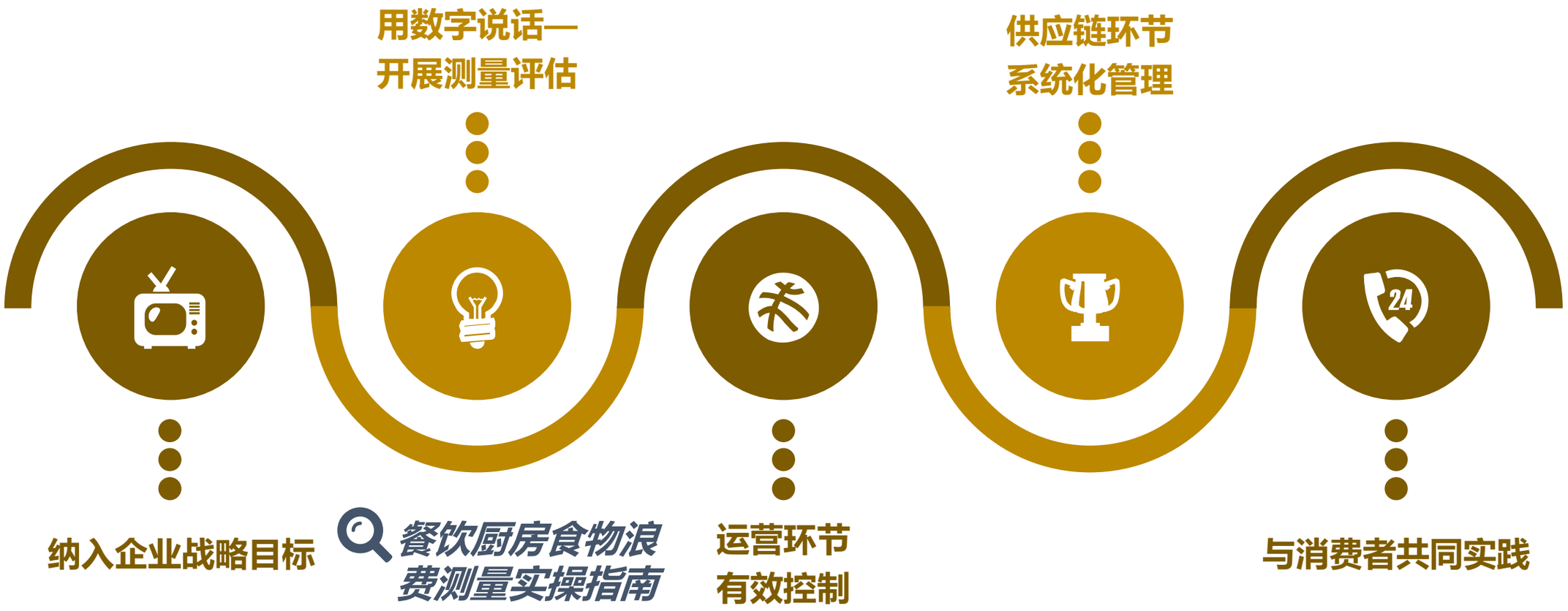
个人意识 VS 社会影响



就餐形式影响消费者行为

消费者更关注餐饮企业的行动

餐饮厨房食物浪费减量化——
解锁解决方案 & 食物浪费测量实操指南



REFRESH: Resource Efficient Food and dRink for the Entire Supply cHain

REFRESH's main objective is to contribute towards Sustainable Development Goal 12.3

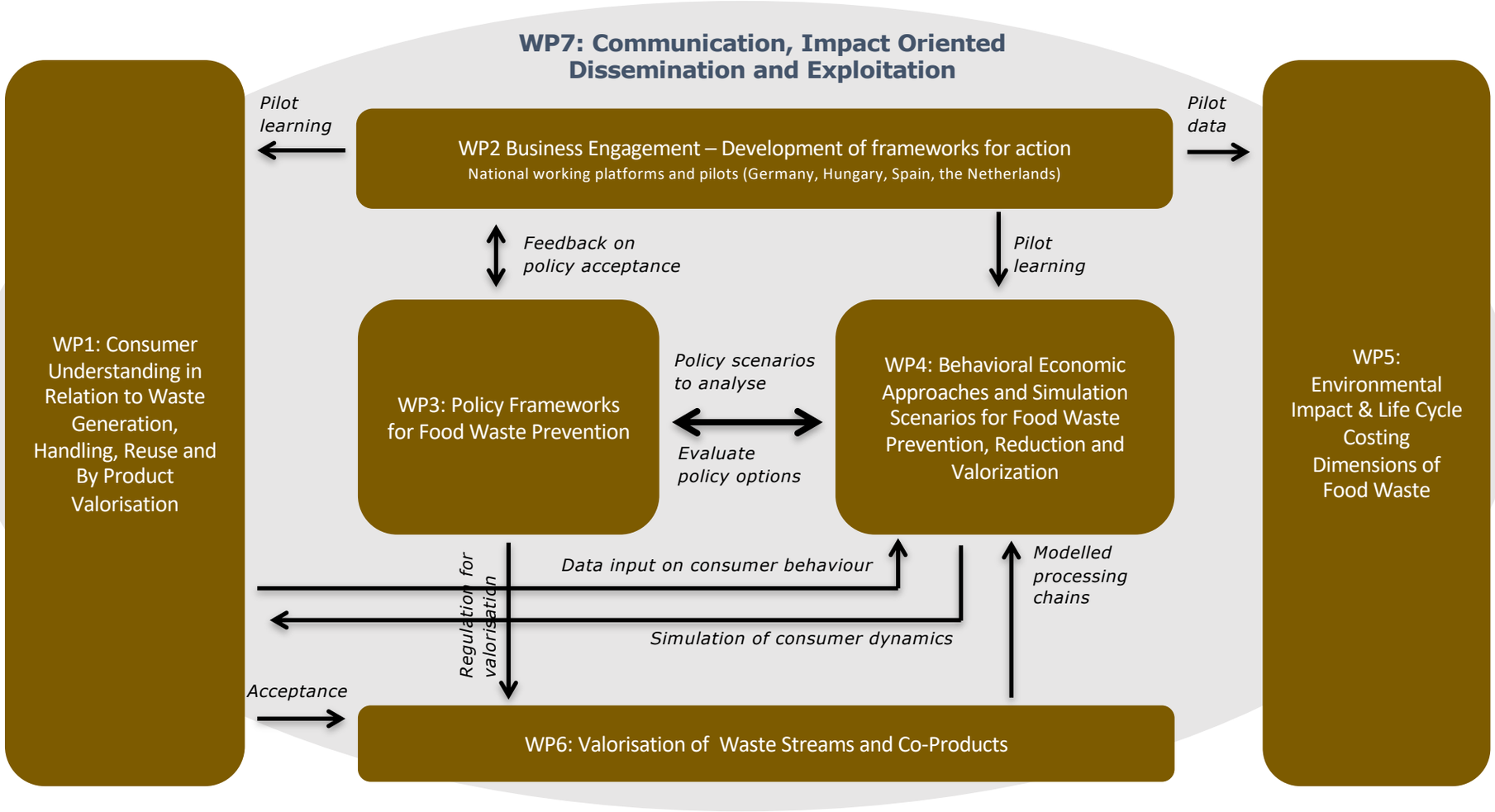
To achieve this, the project's main goals are to:

- Develop strategic agreements to reduce food waste with governments, business and local stakeholders in four pilot countries (Spain, Germany, Hungary, and the Netherlands) and China.
- Formulate EU policy recommendations and support national implementation of food waste policy frameworks
- Design and develop technological innovations to improve valorization of food waste and ICT-based platforms and tools to support new and existing solutions to reduce food waste

  - 26 Partners from 12 European countries and China
  - Duration: July 2015 – June 2019
  - Funding: ~ EUR 9 million

Project Consortium

WP Structure



Work Package 1: Consumer behaviour

- Theoretical framework for consumer food waste published (see report: Causes & Determinants of Consumers Food Waste) and serves as a “guide” for cross national data collection.
- Qualitative research has been conducted in four countries (DE, HU, ES, NL) following common research protocol (see report: Common qualitative research protocol).
- Special attention has been devoted to the accurate measurement of food waste in the home (report expected in 2017), particularly relevant also as part of the upcoming large scale multi-country quantitative survey.
- Development of improved ICT tools, on-pack information and by-product valorisation will follow later in the project

Work Package 2: Business engagement

- Design and develop pan-European Framework Agreements in 4 Member States
  - Research into the success factors conducted and integrated into Pilot Working Platforms (PWP) design
  - PWPs established in al 4 countries: Germany, Spain, Hungary & the Netherlands
  - Each PWP has developed a Framework Agreement which summarises national priorities, aims of the PWP, and actions that will be undertaken
  - Current priorities are to agree and commence pilot projects in each country, and to collect the baseline data to enable us to measure the impact of these activities.
  - Developing intuitive tools and models to aid the decision making process in food supply chains

Work Package 3: Policy

- Qualitative analysis of food waste drivers across the food supply chain
  - System map analysis with the objective of highlighting where policy opportunities exist and policy interventions are necessary
  - Generic system map will associate food waste drivers to the different segments of the supply chain to identify links with policies and with the other segments of the supply chain
  - Specific system maps are being developed zooming on specific product groups and analysing drivers and food losses from farm to fork

Work Package 4: Behavioural economics

- Analysing the behaviour of businesses and consumers with respect to food waste
  - Integrates statistical – Bayesian Networks – and computational – Agent-Based Models – methodologies to investigate
    1. Drivers of food waste generation along the food supply chain
    2. Role of innovation for reducing and preventing food waste
    3. Behavioural determinants of innovation adoption by firms (processors and retailers)
  - These models are also used to test the effects of selected policy interventions, thus providing reliable scenario analyses

Work Package 5: Environmental and life cycle costing

- Environmental and life cycle costing dimensions of food waste: providing the environmental and cost dimension of valorisation routes and options, by using life cycle assessment (LCA) and life cycle cost (LCC) methodologies.
  - Systemic approach for scoping an LCA and LCC problem developed to bridge the gap between existing standard and guidance documents for practitioners
- The guidance will help the practitioner by:
  - Providing worked out examples
  - Categorising different problems in “REFRESH situations” to be able elaborate on methodological choices
  - Encouraging the practitioner to ask the important questions and thus help better scoping the problem in a consistent way

Work Package 6: Valorization

- Valorization of waste streams and co-products
- Top waste streams having significant environmental impact selected, including brewers' spent grains, oil press cake and meat & dairy side-streams such as slaughter by-products and whey, as well as apple pomace, orange peel and tomato pomace.
- Development of food waste compositional database underway
- New food ingredient streams in development
  - Experimental trials have indicated the potential of new fibre based ingredients from chicory and carrot
  - These will undergo trials incorporated into real food products
- New animal (pig and chicken) feed products: decision support tool for optimisation of food co-products to feed developed for UK, scope to be widened to cover 4 more EU Member States

Work Package 7: Dissemination

- Communication, impact oriented dissemination, and exploitation

  - REFRESH website, social media channels, bi-annual newsletter, and print materials created and regularly updated

  - REFRESH Food Waste Solution Contest conducted in Fall 2016 to engage with, connect, and support food waste innovators

  - **REFRESH Multi-Stakeholder Conference: Berlin, 18.-19. May 2017**

Main results from REFRESH

1. Understanding Consumer Behaviour and Household Relationships with Food and Food Waste
2. Developing of Voluntary Agreements in four EU Member States
3. EU Policy Options to Reduce Food Loss and Food Waste
4. Understanding Food Waste through Behavioural Economic Approaches
5. Environmental and Cost Dimensions of Food Waste
6. Valorisation of Waste Streams and Co-products
7. REFRESH Communication and Events: Engaging Stakeholders across Policy, Practice and Research

If you would like to subscribe to the **REFRESH Newsletter,** please use the registration form at http://eu-refresh.org/ newsletter-registration

2021年，我们再度出发

拒绝食物浪费，我们一直在行动

感谢聆听！