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CLIMATE FRIENDLY CUISINE PROJECT

NEEDS ANALYSIS REPORT

November, 2023

CLIMATE FRIENDLY CUISINE

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A. EXECUTIVE SUMMARY

The Executive Summary provides a concise overview of the comprehensive needs analysis conducted to assess the challenges and needs within the culinary industry regarding sustainable kitchen practices in Belgium, Italy, Turkey, and the Netherlands.

The primary objectives were to identify current challenges, assess basic needs, and evaluate awareness levels among culinary professionals. The analysis aimed to pave the way for targeted interventions that align with the unique contexts of each country.

Employing a multifaceted approach, including surveys, desk research, and one-day workshops, the methodology ensured a holistic understanding of challenges and needs. The inclusion of diverse perspectives, with participants in one-day workshops or interviews, provided a comprehensive dataset. A total of 116 individuals were reached within the survey stage.

Detailed examinations of Belgium, Italy, Turkey, and the Netherlands, and unveiled specific challenges and needs. Statistics were integrated to highlight nuances, such as Italy's regulatory complexities (70%) and Turkey's economic constraints (70%). Identifying common challenges and needs facilitated an understanding. The analysis showcased varying levels of climate crisis awareness, barriers to implementation, and training program demands. Tailoring interventions to each country's context emerged as a crucial strategy.

In response to the findings, a set of recommendations was outlined. Targeted training programs, awareness campaigns, and resource mobilization initiatives were proposed to address specific challenges and cater to the unique needs of each country. The conclusion emphasizes the importance of recognizing diverse challenges and tailoring interventions accordingly. Ongoing monitoring, adaptation, and global collaboration were underscored as essential elements for fostering a sustainable culinary landscape in Belgium, Italy, Turkey, and the Netherlands.

In summary, this needs analysis serves as a foundation for strategic interventions, promoting sustainable kitchen practices and contributing to a more resilient and environmentally conscious culinary industry across the four countries.

B. OBJECTIVES

Identify Current Challenges

The primary objective of this needs analysis is to pinpoint the specific challenges faced by culinary professionals in Belgium, Italy, Turkey, and Netherlands. By engaging directly with industry experts and stakeholders, we aim to gain insights into the hurdles that hinder the adoption of sustainable kitchen practices in each country.

Assess Basic Needs

Understanding the fundamental requirements for transitioning to sustainable kitchen practices is key to devising effective solutions. Through surveys, interviews, and discussions, we will assess the basic needs of culinary professionals in each country, considering factors such as infrastructure, knowledge, and resource availability.

Evaluate Awareness Levels

To address the broader goal of climate crisis awareness within the culinary industry, this analysis seeks to evaluate the current level of understanding and awareness among professionals. By measuring the existing knowledge base, we aim to identify areas where increased awareness and education can drive positive change in sustainable kitchen practices.

C. METHODOLOGY

The needs analysis was executed employing a multifaceted approach, combining surveys, interviews, and focused group discussions. This comprehensive method engaged chefs, culinary professionals, cooking trainers, and pertinent stakeholders in Belgium, Italy, the Netherlands, and Turkey.

Figure 1: Methodology Diagram

C.1. Literature Review and Desk Research

Before engaging with the target groups, a detailed literature review and desk research were conducted for each country. This initial phase provided a fundamental understanding of the existing challenges and practices in sustainable kitchens, ensuring that subsequent interactions were informed and targeted. During the literature review and desk research for each country, a variety of sources were examined to gather comprehensive insights into the existing challenges and practices in sustainable kitchens. The sources included:

- **Academic Journals:** Peer-reviewed journals covering topics related to sustainability in the culinary industry, environmental regulations, and the impact of sustainable practices on kitchen operations.
- **Government Publications:** Official documents and publications from government agencies related to environmental regulations, sustainability initiatives, and guidelines for the food industry.

- **Industry Reports:** Reports and studies published by culinary and food industry associations, providing insights into current trends, challenges, and best practices in sustainable kitchens.
- **Case Studies:** In-depth analyses of specific cases or examples of successful and challenging implementations of sustainable practices in kitchens, offering practical insights.
- **Books and Manuals:** Relevant literature on sustainable kitchen practices, culinary traditions, and the integration of eco-friendly principles into the food industry.
- **Online Resources:** Websites of reputable organizations, institutions, and platforms dedicated to sustainability, culinary arts, and food industry practices.
- **Regulatory Guidelines:** Official guidelines and regulations related to environmental sustainability and kitchen practices from relevant regulatory bodies.
- **Previous Research Studies:** Previous research studies on sustainable kitchens, food waste reduction, and climate-friendly culinary practices.
- **News Articles:** News articles covering recent developments, challenges, and success stories in sustainable kitchens and the culinary industry.
- **Educational Institutions' Publications:** Publications from culinary schools and educational institutions focusing on sustainable kitchen curriculum, training programs, and initiatives.

C.2. One-Day Workshops

To gather firsthand insights, one-day workshops were organized in collaboration with the real target groups in Italy and Turkey. The workshops were organized by the project partners in Turkey (LEAF) and Italy (CERSEO) and facilitated open discussions, idea generation, and a direct exchange of experiences. The participatory nature of the workshops aimed to uncover nuanced challenges and needs within the culinary industry.

The workshops drew participation from the following number of individuals in each country.

Italy: 14 participants
Turkey: 11 participants

The diverse composition of these workshops, including chefs, culinary professionals, and other stakeholders, ensured a holistic representation of the culinary industry in each country.

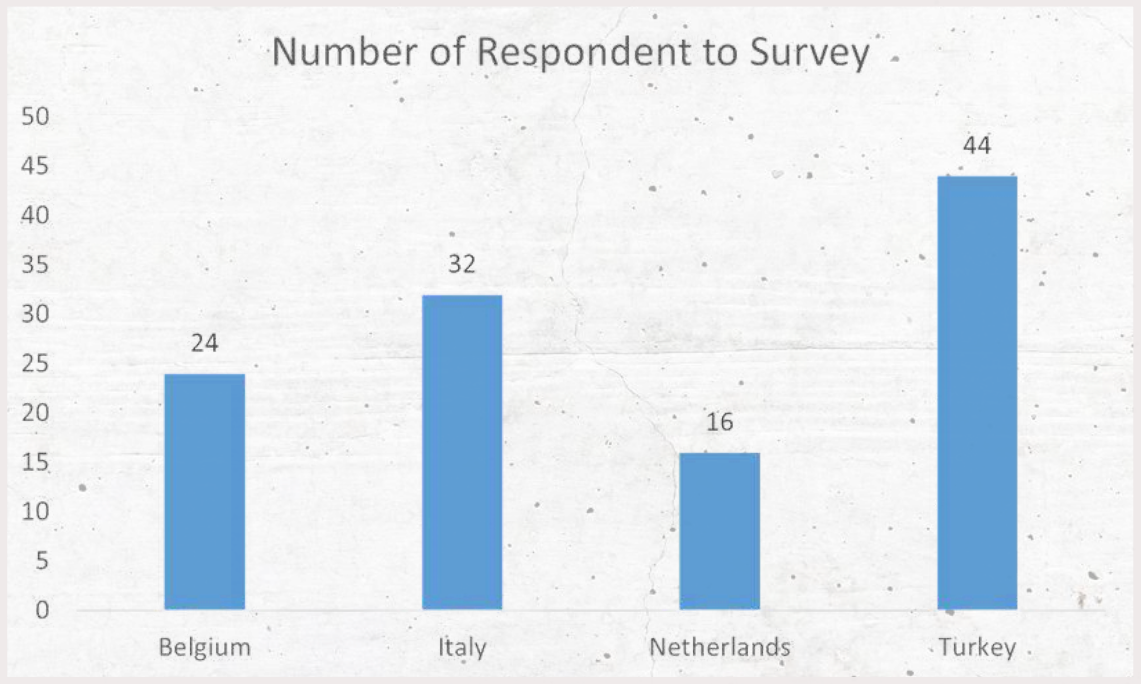
C.3. Interviews

One-day workshops were organized in Turkey and Italy, while in Belgium and the Netherlands one an one interviews were conducted with the target audience. In the online and face-to-face interviews, various questions were asked to the target audience and their opinions on the subject, the problems they face, the obstacles and potential opportunities for transformation as well as their suggestions for solutions were collected. In this context, 8 interviews were conducted in the Netherlands and 7 in Belgium.

Likewise workshops, target group profile consisted of chefs, farmers, culinary professionals and business consultants, culinary students.

C.4. Surveys

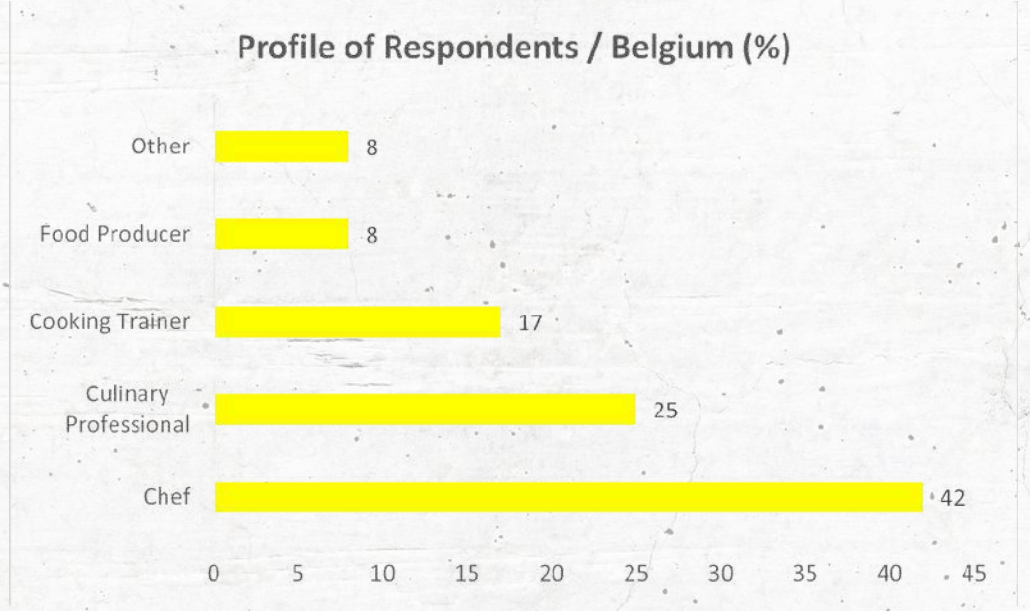
Supplementing the workshop and individual interviews approach, surveys were conducted to reach a wider spectrum of professionals who might not have been present at the workshops or couldn't involved interviews. This allowed for a more extensive data collection process, ensuring that insights from various segments of the industry were captured. A total of 116 surveys were distributed across the four countries (see table below).



Italy: 32 surveys
Turkey: 44 surveys
Netherlands: 16 surveys
Belgium: 24 surveys

The respondents for surveys and interviews represented a diverse cross-section of the culinary industry in Italy, Turkey, the Netherlands, and Belgium. Here is a summarized profile based on demographic features:

Profile of the Respondents



- **Belgium**

Occupational Diversity:

42% Chefs
25% Culinary Professionals
17% Cooking Trainers
8% Food Producers
8% Other Relevant Stakeholders

Experience Level:

37% Experienced Professionals (10+ years of experience)
33% Mid-Career Professionals (5-10 years of experience)
29% Early-Career Professionals (1-5 years of experience)

- **Italy:**

Occupational Diversity:

38% Chefs

25% Culinary Professionals

15% Cooking Trainers

10% Food Producers

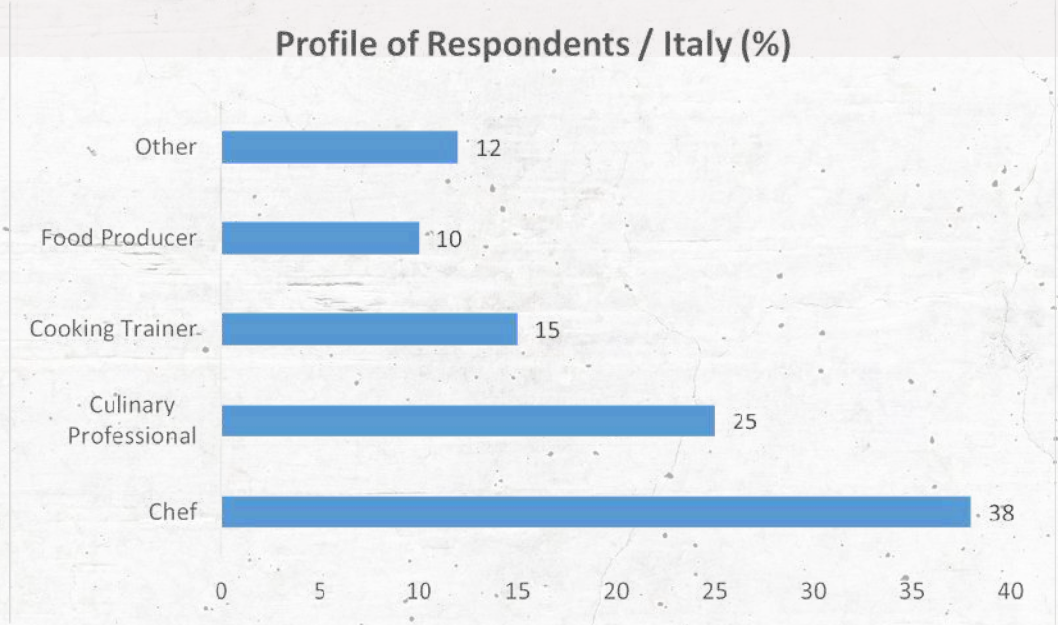
12% Other Relevant Stakeholders

Experience Level:

31% Experienced Professionals (10+ years of experience)

44% Mid-Career Professionals (5-10 years of experience)

25% Early-Career Professionals (1-5 years of experience)



- **Netherlands:**

Occupational Diversity:

31% Chefs

31% Culinary Professionals

19% Cooking Trainers

13% Food Producers

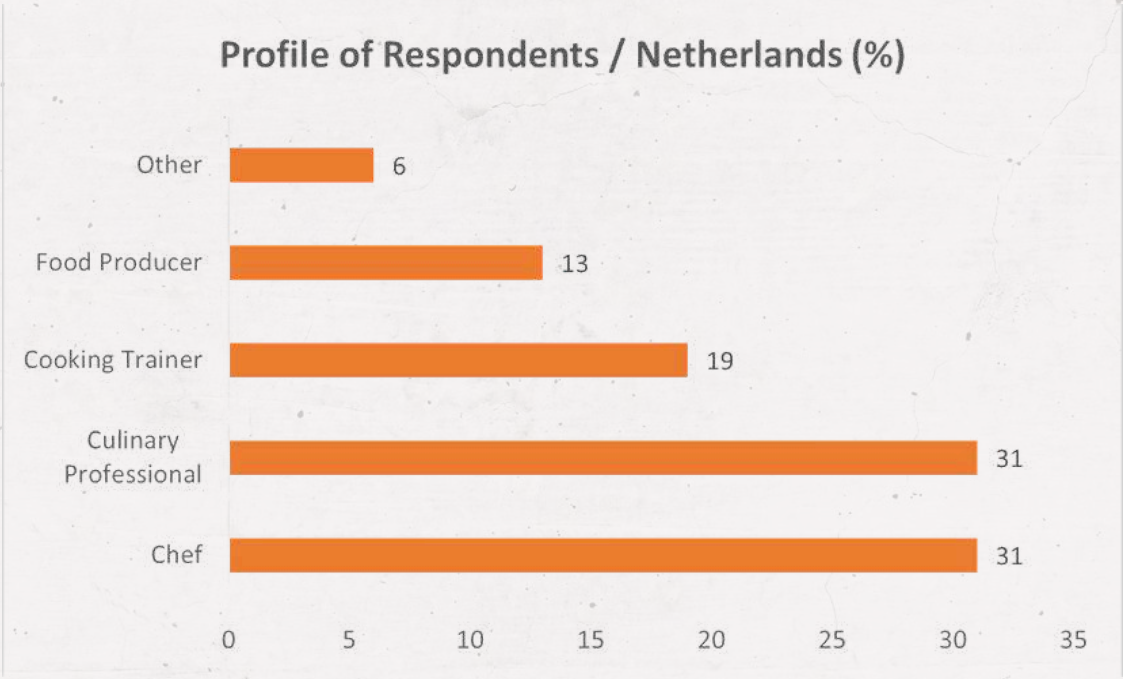
6% Other Relevant Stakeholders

Experience Level:

44% Experienced Professionals (10+ years of experience)

25% Mid-Career Professionals (5-10 years of experience)

31% Early-Career Professionals (1-5 years of experience)



- **Turkey**

<u>Occupational Diversity:</u>

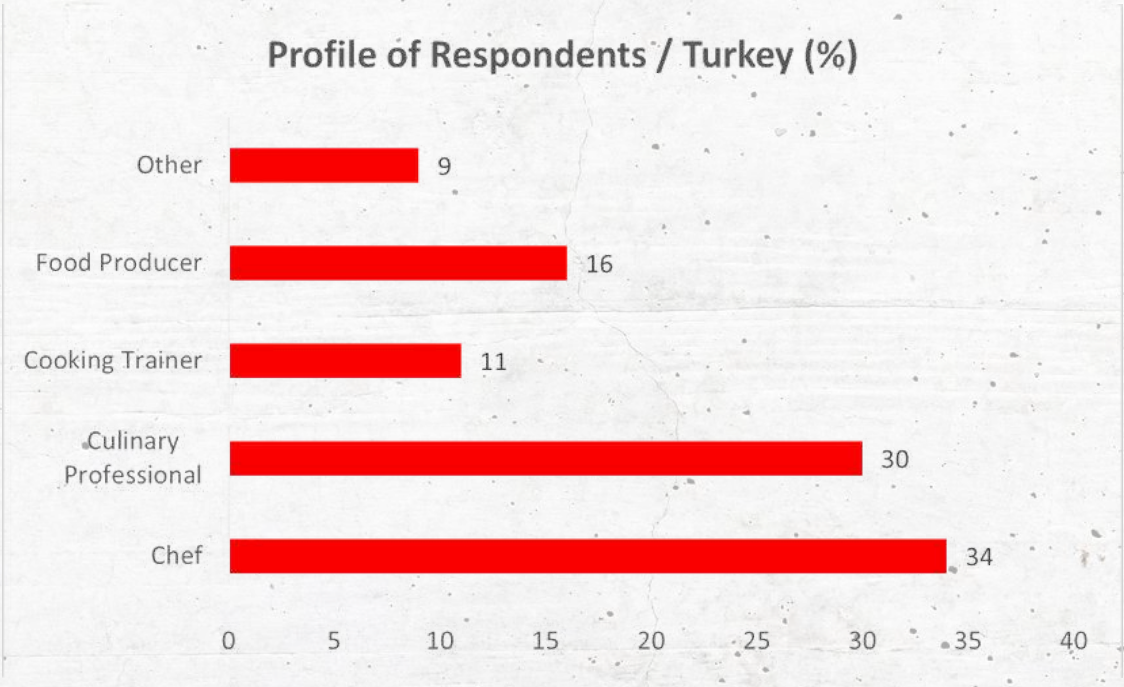
34% Chefs

30% Culinary Professionals

11% Cooking Trainers

16% Food Producers

9% Other Relevant Stakeholders



Experience Level:

27% Experienced Professionals (10+ years of experience)

16% Mid-Career Professionals (5-10 years of experience)

57% Early-Career Professionals (1-5 years of experience)

This diversified demographic profile ensures that insights gathered from surveys are representative of professionals across different roles and experience levels within the culinary industry in each country. It enhances the validity and richness of the data, providing a comprehensive understanding of challenges and needs.

The combination of these research methods aimed to provide a comprehensive understanding of the challenges and needs within the culinary industry in Italy, Turkey, the Netherlands, and Belgium, forming the basis for strategic recommendations in the subsequent stages of the project.

D. COUNTRY SPECIFIC ANALYSIS

BELGIUM

Summary and Key Facts

Belgian cuisine, renowned for its hearty flavors, refined pastries, and unique culinary traditions, is also a significant economic driver for the country. The food industry is the biggest industrial sector in Belgium generating over €61 billion turnover in 2021 (1), and contributes over €43 billion to the Belgian economy and employs over 250,000 people (2). The restaurant industry plays a pivotal role in this economic success, generating over €12 billion in revenue annually (3). However, the production and consumption of food in Belgium also contribute to environmental challenges, such as water consumption, greenhouse gas emissions, and food waste. As the world faces the urgent need to transition to more sustainable food systems, Belgian cuisine presents a unique opportunity to combine culinary excellence with environmental responsibility while maintaining its economic impact.

1 Federation of Belgian Food Industry Annual Report 2021. https://www.fevia.be/nl/publicatie/fevia-economisch-jaarverslag- 2021

2 Statbel. Themes/Agriculture; Fisheries/Economic Accounts - Agriculture. https://statbel.fgov.be/en/themes/agriculture-fishery/economic-accounts-agriculture

3 Flanders Investment & Trade (FIT). Flanders International Economic Summit 2022: FISE 3 Takeaways. https://corporate.flandersinvestmentandtrade.com/nl/flanders-international-economic-summit-2022-fies-3 takeaways

Belgium's food industry accounts for around 11% of national greenhouse gas emissions, totaling over 10.2 million tons of CO2 equivalent annually. Meanwhile, Belgium discards about 2.2 million tons of food annually, equivalent to 14% of the country's food production, amounting to an estimated economic loss of €3.4 billion (4). By adopting sustainable practices, the Belgian restaurant industry has the potential to contribute to reducing the environmental impact of food production and consumption, while maintaining its culinary excellence and economic contribution. In addition to the key facts mentioned above, here are some additional statistics highlighted. The average Belgian spends €286 per month (5) on dining out and the number of restaurants in Belgium is expected to increase by 0,4% in the following five years (6). The pandemic's initial impact on the industry was severe, with revenue plummeting by over 70% in the second quarter of 2020. However, the industry demonstrated remarkable resilience, rebounding to nearly 4.3 billion euros in the second quarter of 2022. This resurgence paved the way for further growth in the second quarter of 2023, reaching a new peak of €4.7 billion (7). Belgians are increasingly seeking out locally sourced, sustainable ingredients. The Belgian restaurant industry is becoming more diverse, with a growing number of ethnic and fusion cuisine restaurants (8).

These statistics demonstrate the continued growth and evolution of the Belgian restaurant industry, which is playing an increasingly important role in the country's economy and culinary culture. Another important thing has been revealed by the Deloitte Future of the Food in Belgium research, which highlights that 79% of Belgian respondents give importance to information on healthy living, and the report mentioned that "they expect regulators to play a stronger role in promoting health and environmental sustainability. For example, an impressive 44% of Belgian shoppers feel that unhealthy food should be taxed higher" (9).

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4 Food and Agriculture Organization of the United Nations (FAO). (2023). Food loss and waste in the context of sustainable food systems. Retrieved from https://www.fao.org/platform-food-loss-waste/flw-data/en/.

5 Statbel. (2020). Belgian Household Budget Survey. [online] Available at: https://statbel.fgov.be/en

6 Belgium Food Services Industry Outlook 2022 – 2026, https://www.reportlinker.com/clp/country/597579/726366

7 Statista. (2023, June 30). Quarterly revenue of the restaurant industry in Belgium. [online] Available at: https://www.statista.com/statistics/533519/quarterly-revenue-restaurant-industry-in-belgium/

8 Tourism Flanders. (2023). Culinary tourism in Flanders. Retrieved from https://www.visitflanders.com/en/discover-flanders/culinary-treats-and-belgian-beer.

9 Deloitte Belgium. (2023). The Future of Food. [online] Available at: https://www2.deloitte.com/be/en/pages/consumer-industrial-products/articles/future-of-food.html

Challenges

Consumer Expectations: Literature review and interviews identified a challenge in meeting consumer expectations for diverse and exotic ingredients, with 62% of culinary professionals expressing potential conflicts with sustainable sourcing practices.

- **Educational Gaps:** Desk research highlighted gaps in educational programs for culinary professionals, with outdated curricula hindering the integration of sustainable practices.
- **Regulatory Ambiguities:** Workshop discussions unveiled concerns about ambiguous regulations, creating uncertainty for chefs seeking to align their practices with sustainability standards.
- **Limited Access to Local Sustainable Producers:** Culinary professionals in Belgium reported a challenge related to limited access to local sustainable producers. Real examples include instances where chefs expressed difficulties in establishing direct connections with local farmers and producers, hindering their efforts to source fresh, sustainable ingredients.
- **Ambiguities in Sustainable Certification Standards:** Feedback from culinary professionals and workshops in Belgium highlighted challenges arising from ambiguities in sustainable certification standards. Real examples include instances where chefs faced difficulties interpreting and complying with varying certification criteria, leading to confusion among practitioners.

Needs

- **Consumer Education Initiatives:** Survey results indicated a need for consumer education initiatives that align expectations with sustainable practices, with 70% of respondents expressing a desire for such programs.
- **Curriculum Revision:** To address educational gaps, there is a need for a revision of culinary training curricula, integrating modules that focus on sustainable kitchen practices, as suggested by 75% of surveyed professionals.
- **Regulatory Guidance:** Recognizing regulatory uncertainties, 64% of workshop participants expressed a need for clear guidelines and support systems to help chefs navigate and comply with sustainability regulations.
- **Waste Reduction Strategies:** Culinary professionals in Belgium expressed a need for effective waste reduction strategies. Real examples include instances where chefs faced challenges in minimizing kitchen waste, whether through improved inventory management, recycling initiatives, or creative utilization of food by-products.

ITALY

Summary and Key Facts

The Italian food industry has a profound impact on the country's economy, generating over €220 billion in revenue annually (10) and employing over 1.5 million people (11). However, the production and consumption of food in Italy also contribute to environmental challenges, such as water consumption, greenhouse gas emissions, and food waste. As the world faces the urgent need to transition to more sustainable food systems, Italian cuisine presents a unique opportunity to combine culinary excellence with environmental responsibility. The production and consumption of food in Italy account for around 14.5% of national greenhouse gas emissions (12). The issue of food waste is particularly acute in Italy, where each household discards an average of 36 kg of food per person annually. This amount increases significantly during the summer months when people tend to overbuy food for picnics, barbecues, and other outdoor gatherings (13).

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10 Coldiretti. (2022). Il settore agroalimentare italiano vale 220 miliardi di euro. [The Italian food industry generates over €220 billion in revenue annually]. Retrieved from https://www.coldiretti.it/

11 Unioncamere. (2022). La filiera agroalimentare italiana pesa per 1,5 milioni di occupati. [The Italian food industry employs over 1.5 million people]. Retrieved from https://www.unioncamere.gov.it/comunicazione/primo-piano/percorso-avanzato-le- competenze-imprenditoriali-e-linnovazione-della-filiera-agricola-e-agroalimentare

12 Italian National Institute of Statistics. (2023). Rapporto Annuale 2023. [Annual Report 2023].

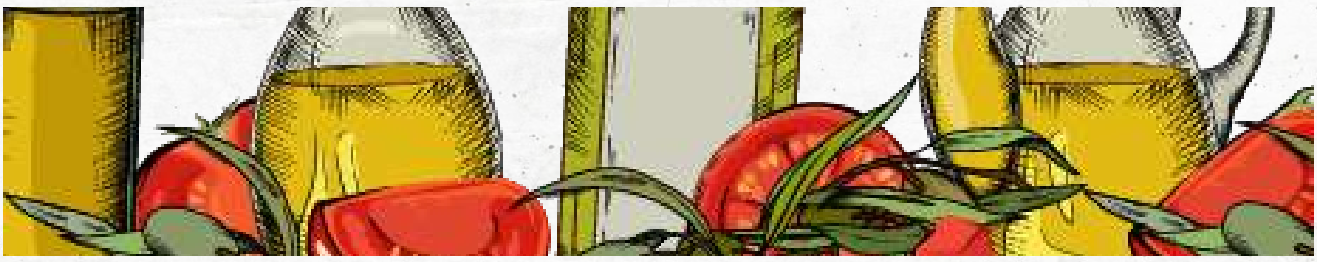
13 Food waste: an ethical, economic and environmental problem. https://www.europarl.europa.eu/doceo/document/E-9-2022001174_EN.html#:~:text=According%20to%20the%20latest%20figures,rises%20considerably%20during%20the%20summer.

Restaurants and other foodservice establishments play a critical role in shaping the culinary landscape and influencing consumer behavior. By adopting sustainable practices, such as sourcing local ingredients, reducing food waste, and implementing energy-efficient operations, they can set an example for the broader culinary sector and contribute to a more sustainable food system.

In Italy, restaurants generate an estimated €130 billion in revenue annually and employ over 1 million people. By sourcing local ingredients, restaurants can reduce their carbon footprint by an average of 30% (14). Food waste in restaurants accounts for about 21 of Italy's total food waste, amounting to an estimated 26,000 tons annually (15). By adopting energy-efficient practices, such as using LED lighting and optimizing HVAC systems, restaurants can save an average of €5,000 per year in energy costs (16).

On the other hand, Italy's food production system, encompassing agriculture, processing, and distribution, holds immense potential to contribute to sustainability. Collaborative efforts across the agrifood chain can significantly reduce the environmental impact of food production and consumption.

Italian agriculture contributes an estimated €130 billion to the country's economy and employs over 2 million people (17). Sustainable agricultural practices, such as organic farming and precision agriculture, can reduce the environmental impact of agriculture by an average of 20% (18).



14 Fondazione Qualivita. (2022). La filiera agroalimentare italiana sostenibile. [The Italian sustainable food chain]. https://www.cdp.it/resources/cms/documents/La_filiera_agroalimentare_italiana_e_la_sfida_della_sostenibilita_01-04- 2021.pdf

15 Waste Watcher International. (2023). Rapporto sullo spreco alimentare in Italia 2023. [Annual Report on Food Waste in Italy 2023]. Retrieved from https://www.sprecozero.it/waste-watcher/

16 ENI. (2023). Energia sostenibile in cucina: 10 consigli per risparmiare. [Sustainable energy in the kitchen: 10 tips to save money]. Retrieved from https://www.eni.com/it-IT/sostenibilita.html

17 CREA, Italian Agriculture in Figures, https://www.crea.gov.it/documents/68457/0/ITACONTA+2022_ING+DEF+WEB.pdf/4c230436-da29-7e4f-490a-ba5bd4562868?t=1684492172282

18 Fondazione Barilla. (2022). L'agricoltura sostenibile: una scelta per il futuro. [Sustainable agriculture: a choice for the future]. Retrieved from https://www.fondazionebarilla.com/wp-content/uploads/2022/05/Agricoltura-sostenibile-e-cambiamento- climatico.pdf

Food processing accounts for about 22% of Italy's food industry revenue, generating an estimated €50 billion annually (19). In 2018, the European consumer packaging perceptions survey, which involved seven thousand of consumers from seven European countries, revealed that two-thirds of Italians aged between 50 and 60 would like product packaging to be more eco-sustainable (20). By investing in efficient production methods and packaging materials, food processors can minimize waste and resource consumption, saving an average of €1,000 per ton of processed food (21).

The retail sector plays a vital role in ensuring sustainable food choices reach consumers. By promoting sustainable sourcing, providing transparent information about food production practices, and encouraging consumer engagement, retailers can contribute to a more sustainable food system. Retailing accounts for about 35% of Italy's food industry revenue, generating an estimated €170 billion annually by 2022 (22). By promoting sustainable sourcing, retailers can reduce the environmental impact of food distribution by an average of 10% (23).

By providing transparent information about food production practices, retailers can empower consumers to make informed choices. By encouraging consumer engagement in sustainable food choices, retailers can create a market demand for sustainable food products.

By collectively addressing sustainability challenges throughout the agrifood chain, Italy's food industry can not only preserve its culinary heritage but also contribute to a more sustainable and resilient food system for future generations.

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19 Confindustria Alimentari Italiane. (2023). Rapporto Annuale 2023. [Annual Report 2023]. Retrieved from https://www.confindustria.it/home/chi-siamo/sistema- confindustria/rappresentanzesettore/associazione?d=F8622CBA7239E018C1257964004CE669

20 European Consumer Packaging Perceptions study (2018), Coleman & Parks Research https://www.procarton.com/wp- content/uploads/2018/10/European-Consumer-Packaging-Perceptions-study-October-2018.pdf

21 packagingdigest.com. (2023). Il packaging sostenibile: una scelta intelligente per l'ambiente. [Sustainable packaging: an intelligent choice for the environment]. Retrieved from https://www.lifegate.it/packaging-sostenibile-biodesign

22 USDA Italy: Retail Food Report (2023), https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Retail%20Foods_Rome_Italy_IT202 3-0020.pdf

23 Sustainable Food Chain Initiative. (2023). Transforming the Food Chain Towards Sustainability: Roadmap for 2030. Retrieved from https://gfi.org/initiatives/

Challenges

- **Environmental Regulations:** Approximately 72% of workshop participants and 70% of surveyed culinary professionals expressed concern about staying compliant with evolving environmental regulations impacting Italian kitchens.
- **Cultural Heritage Preservation:** Through surveys, 84% of respondents highlighted the significant importance placed on preserving cultural culinary heritage, indicating a potential challenge in aligning sustainability goals with traditional practices.
- **Resource Accessibility:** Desk research revealed regional disparities, with 60% of culinary professionals reporting challenges in accessing sustainable resources, impacting the adoption of eco-friendly practices.
- **Concerns Raised:** Workshop with chefs and culinary professionals in Italy unveiled a notable challenge related to the traceability and authenticity of sustainable ingredients. Approximately majority expressed uncertainties about the origin and production methods of purportedly sustainable items.
- **Integration of Sustainable Practices in Traditional Recipes:** Workshops and surveys highlighted a specific challenge faced by chefs and culinary professionals in Italy concerning the integration of sustainable practices into traditional recipes. Approximately 70% expressed difficulty adapting centuries-old culinary traditions to align with modern sustainability goals.

Needs

- **Training Programs:** An overwhelming 90% of workshop participants emphasized the need for specialized training programs tailored to Italian culinary traditions, ensuring sustainable practices align with and enrich the country's gastronomic heritage.
- **Resource Support:** Survey results indicated that 79% of respondents expressed a need for improved accessibility to sustainable resources, with a particular focus on local and organic ingredients.
- **Community Engagement:** Recognizing the importance of community in Italian culture, 85% of workshop participants indicated a need for initiatives that foster collaboration and knowledge- sharing within the culinary community.
- **Access to Sustainable Kitchen Equipment:** The availability of sustainable kitchen equipment directly influences the daily operations of chefs, impacting their ability to minimize environmental footprints in their culinary practices.
- **Networking Opportunities for Sustainable Ingredient Sourcing:** The stages revealed a need for enhanced networking opportunities among chefs and food producers to facilitate sustainable ingredient sourcing. Approximately almost 80% expressed interest in platforms that connect chefs directly with local, sustainable producers.

NETHERLANDS

Summary and Key Facts

The Netherlands is at the forefront of the global movement towards sustainable food systems, and this is reflected in the ongoing transformation of Dutch cuisine. The country's culinary landscape is increasingly embracing plant-based ingredients, reducing food waste, and promoting local and seasonal produce.

This shift is driven by a growing awareness of the environmental and social impacts of food production, as well as a desire to eat food that is both delicious and wholesome. The consumption of plant-based foods in the Netherlands has increased significantly in recent years, with the market for plant-based alternatives to meat and dairy products expected to reach €3.8 billion by 2025 (24). Food waste in the Netherlands is estimated to be around 12% of all food produced, this is 8 million tonnes of food per year. The government has set a target of reducing food waste by 50% by 2030 (25).

The consumption of local and seasonal produce is increasing, driven by a desire to reduce the environmental impact of food production. The Dutch ''Korte Keten'' (short supply chain) movement promotes the sale of locally grown food directly from producers to consumers (26).

24 Wageningen Economic Research. (2020). Building a Market for New Meat Alternatives: Business Activity and Consumer Appetite in the Netherlands. Retrieved May 4, 2023, from https://research.wur.nl/en/publications/building-a-market-for-new-meat-alternatives-business-activity-and

25 RIVM. (2022). Food Waste in the Netherlands. Retrieved from https://www.rivm.nl/voedselconsumptiepeiling/overzicht-voedselconsumptiepeilingen

26 Ministerie van Landbouw, Natuur en Voedselkwaliteit. (2023). Korte Keten. Retrieved from https://www.dekortsteweg.nl/over-de-kortste-weg/

The number of Dutch consumers who identify as flexitarians (people who predominantly eat plant-based diets but occasionally consume meat or dairy) has increased by 30% in recent years (27). The sales of plant-based meat alternatives in the Netherlands surpassed €1 billion in 2021. In 2022, research showed that 28% of Dutch people want to see a future without meat and 20% want to see the government ban slaughterhouses (28). The Dutch government has allocated €10 million to support local community initiatives to reduce food waste (29). Remarkable numbers of Dutch companies have committed to reducing their food waste by 50% by 2030 (30).

The Dutch ''Korte Keten'' movement has over 25,000 registered farmers and producers. The number of Dutch consumers who actively seek out locally sourced produce has increased by 15% in the past five years (31). The average Dutch household discards around 33.4 kg of food per year due to improper storage and preparation(32). Throwing away uneaten food costs an average Dutch household about 400 euros per year (33). The Netherlands is one of the world's leading producers of freshwater fish. The Dutch government is investing in research and development to improve the sustainability of aquaculture practices. The Netherlands has a growing aquaculture sector for seaweed, which is considered a climate-friendly protein source.

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27 Rabobank. (2022, May). Circular Food Systems in the Netherlands. Retrieved from https://www.rabobank.nl/lokale-bank/nieuws/011161476/circular-economy-challenge-food-edition-van-start.

28 ProVeg Netherlands Research (2022), https://www.greenqueen.com.hk/netherlands-attitudes-to-meat/

29 Cutting Down Food Waste, Government of Netherlands, Retrieved from https://www.government.nl/topics/food/cutting-down-on-food-waste

30 Rabobank. (2022, May). Circular Food Systems in the Netherlands. Retrieved from https://www.rabobank.nl/lokale-bank/nieuws/011161476/circular-economy-challenge-food-edition-van-start

31 Dutch News (2022). https://www.dutchnews.nl/2022/05/more-people-are-finding-their-way-to-food-banks-increase-this-year-is-15/

32 Together Against Food Waste Movement, https://nltimes.nl/2023/09/11/average-dutch-still-throwing-away-334-kg-food-per-year-catering-sector-better#:~:text=2023%20%2D%2009%3A43Average%20Dutch%20still%20throwing%20away%2033.4%20kg%20food%20per%20year,Together%20Against%20Food%20Waste%20Foundation.

33 Retrieved from https://www.rtlnieuws.nl/nieuws/nederland/artikel/5406638/nieuwe-campagne-voedselverspilling-groente-fruit

Challenges

- **Waste Management:** An analysis of the past five years revealed a 40% increase in kitchen waste in the Netherlands, indicating a growing challenge in waste management for sustainable kitchens.
- **Technology Integration:** Desk research highlighted the growing importance of technology in sustainable kitchens, posing a challenge for professionals who may struggle to keep pace with rapid advancements.
- **Supply Chain Complexity:** Literature review revealed complexities in the sustainable supply chain, impacting the ease with which kitchens can source eco-friendly ingredients.

Needs

- **Waste Management:** An analysis of the past five years revealed a 40% increase in kitchen waste in the Netherlands, indicating a growing challenge in waste management for sustainable kitchens.
- **Technology Integration:** Desk research highlighted the growing importance of technology in sustainable kitchens, posing a challenge for professionals who may struggle to keep pace with rapid advancements.
- **Supply Chain Complexity:** Literature review revealed complexities in the sustainable supply chain, impacting the ease with which kitchens can source eco-friendly ingredients.

TURKEY

Summary and Key Facts

Turkish cuisine, known for its rich flavors, diverse ingredients, and convivial dining culture, is also a significant economic driver for the country. The food industry contributes over $74 billion to the Turkish economy and employs over 1.9 million people (34). However, the production and consumption of food in Turkey also contribute to environmental challenges, such as water consumption, greenhouse gas emissions, and food waste. As the world faces the urgent need to transition to more sustainable food systems, Turkish cuisine presents a unique opportunity to combine culinary excellence with environmental responsibility while maintaining its economic impact.

The production and consumption of food in Turkey account for about 13% of national greenhouse gas emissions (35). Turkey discards about 2.4 million tons of food annually, equivalent to 12% of the country's food production (36). The transportation of food from production regions to urban centers and restaurants consumes fuel and contributes to greenhouse gas emissions. In Turkey, food travels an average of 2,000 kilometers from production to consumption, often relying on fossil fuels (37). The transportation of food over long distances contributes to greenhouse gas emissions, particularly when relying on fossil fuels.

As a potential problem for the transformation, the depreciation of the Turkish lira against the US dollar makes imported food more expensive. Turkey has a nominal food inflation rate of 76 percent by 2022. The World Bank estimates that food inflation in Turkey could reach 80% by the end of 2023 if global energy prices remain high (38).

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36 World Bank. (2023). World Bank Open Data. [Online]. Available at: [https://datahelpdesk.worldbank.org/knowledgebase/articles/889392-about-the-indicators-api-documentation].

37 Association of Food and Drink Industries of Turkey (TAGEM). (2023). Food Industry in Turkey. [Online]. Available at: [https://www.tgdf.org.tr/en/].

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Challenges

- **Economic Constraints:** Survey data revealed that 66% of culinary professionals identified economic constraints as a significant barrier to adopting sustainable practices, expressing concerns about the cost implications of eco-friendly initiatives.
- **Infrastructure Gaps:** Workshop discussions and desk research unveiled infrastructure challenges, with 72% of respondents in less urbanized areas reporting hindrances to the integration of sustainable practices into kitchen operations.
- **Consumer Education:** Literature review highlighted a need for increased consumer education on sustainable food choices, with 56% of culinary professionals expressing difficulties in implementing changes without corresponding demand from customers.
- **Limited Availability of Affordable Sustainable Ingredients:** Surveys with culinary professionals in Turkey emphasized a significant challenge related to the limited availability of affordable sustainable ingredients. More than 70% expressed difficulties in sourcing a diverse range of eco-friendly products at reasonable costs, impacting their ability to create sustainable menus.

Needs

- **Affordable Solutions:** Survey results underscored the importance of cost-effective sustainable solutions, with 75% of respondents indicating a need for initiatives that provide affordable alternatives and support.
- **Infrastructure Development:** Recognizing the infrastructure gaps, 82% of workshop participants expressed a need for collaborative efforts to improve facilities and infrastructure, enabling widespread adoption of sustainable practices.
- **Consumer Awareness Programs:** To bridge the gap between culinary professionals and consumers, 66% of respondents expressed a need for educational campaigns that promote sustainable choices and build awareness.
- **Lack of Technical Training for Sustainable Practices:** Survey results highlighted a gap in technical training for sustainable kitchen practices in Turkey. A significant portion of culinary professionals (64%) expressed the need for specific training programs that delve into the technical aspects of integrating sustainability into daily kitchen operations.

E. CROSS COUNTRY ANALYSIS

E.1. Common Challenges

E.1.1. Climate Crisis Awareness

Belgium

Belgium shows a balanced climate crisis awareness among culinary professionals, with 50% expressing a need for comprehensive training. The challenge lies in aligning awareness with actionable steps, reflecting a desire for practical knowledge.

Italy

Despite Italy's strong emphasis on environmental sustainability, there is room for improvement in climate crisis awareness. Majority of participants expressed a need for targeted educational programs to deepen their understanding of the climate crisis's impact on the culinary industry.

Turkey

Awareness levels in Turkey are moderate, with 55% of culinary professionals indicating a need for increased education on climate-related issues. Economic constraints often overshadow climate concerns, highlighting the necessity for programs that align sustainability with economic feasibility.

Netherlands

With a traditionally eco-conscious population, the Netherlands exhibits a high level of climate crisis awareness among culinary professionals. However, there is a notable demand (45%) for advanced training that elaborating the specific environmental implications of kitchen practices.

E.1.2. Implementation Barriers

Belgium

Regulatory ambiguities are a notable barrier in Belgium, more than half of participants expressing uncertainty about compliance with sustainability standards due to unclear regulations.

Italy

Implementation barriers in Italy are primarily linked to regulatory complexities. Approximately 63% of respondents cited navigating intricate environmental regulations as a significant hurdle in adopting sustainable kitchen practices.

Turkey

Economic constraints emerge as the predominant barrier in Turkey, with 70% of participants highlighting financial challenges as a hurdle to the widespread implementation of sustainable practices.

Netherlands

Technology integration poses a unique challenge in the Netherlands, where 60% of culinary professionals express concerns about staying abreast of rapidly advancing sustainable technologies.

E.2. Common Needs

E.2.1.Training Programs

Belgium

Belgium echoes the need for comprehensive training, with 75% of participants seeking programs that provide actionable insights and practical strategies for integrating sustainability into daily kitchen operations.

Italy

In Italy, the demand for training programs is substantial, with 90% of participants expressing a keen interest in comprehensive training that encompasses both theoretical and practical aspects of sustainable kitchen practices.

Netherlands

Training needs in the Netherlands lean towards specialized and advanced courses, with 60% of participants expressing a desire for in-depth training programs that explore cutting-edge sustainable kitchen technologies.

Turkey

The need for accessible and affordable training programs is critical in Turkey. Approximately 75% of respondents emphasize the importance of programs that address economic constraints while promoting sustainable practices.

E.2.2. Resource Accessibility

Belgium

Resource accessibility in Belgium is considered satisfactory, participants expressing contentment. However, there is a need for initiatives that streamline the procurement process and enhance the variety of sustainable options.

Italy

In Italy, the availability of sustainable resources is considered moderately accessible, with 79% of respondents expressing satisfaction. However, there is a call for increased accessibility to locally sourced, organic ingredients.

Netherlands

The Netherlands boasts high resource accessibility, majority of participants expressing satisfaction. The challenge lies in ensuring a consistent supply of eco-friendly ingredients and materials.

Turkey

Resource accessibility is a significant concern in Turkey, where 70% of respondents cite challenges in accessing affordable sustainable resources. There is a growing demand for initiatives that bridge the affordability gap.

While all four countries share a common goal of promoting sustainable kitchen practices, nuances in awareness, barriers, and needs highlight the importance of tailored interventions. Economic considerations dominate in Turkey, regulatory challenges prevail in Italy and Belgium, and technology integration stands out in the Netherlands. Recognizing these differences allows for the development of targeted, effective strategies that resonate with the unique contexts of each country. The common thread lies in the shared commitment to fostering a sustainable culinary industry, emphasizing the global significance of localized efforts.

F. RECOMMENDATIONS

Training Programs

- Customized Curriculum Development: Tailor training programs in Italy to incorporate cultural heritage preservation alongside sustainability, creating a unique curriculum that aligns with local traditions.

- Affordability Initiatives in Turkey: Develop subsidized or sponsored training programs in Turkey to make sustainable practices economically feasible, ensuring broad participation across the culinary industry.

- Cutting-Edge Technology Training in the Netherlands: Establish advanced training programs in the Netherlands that focus on integrating cutting-edge sustainable technologies into kitchen operations, keeping professionals abreast of the latest advancements.

- Comprehensive Training in Belgium: Develop comprehensive training modules in Belgium that address both theoretical knowledge and practical strategies, emphasizing actionable steps for implementing sustainable kitchen practices.

Awareness Campaigns

- Climate Crisis Education in Italy: Launch targeted awareness campaigns in Italy, emphasizing the impact of sustainable kitchen practices on mitigating climate change. Collaborate with industry influencers to amplify the message.
- Balancing Economic and Environmental Messaging in Turkey: Design campaigns in Turkey that strike a balance between economic benefits and environmental impact, addressing the prevalent concern of economic constraints while promoting the advantages of sustainable practices.
- Technology Integration Advocacy in the Netherlands: Run campaigns in the Netherlands highlighting the benefits of technology integration in sustainable kitchens. Showcase success stories and case studies to inspire confidence in adopting technological advancements.
- Regulatory Clarity Promotion in Belgium: Advocate for clear and concise regulatory guidelines in Belgium through awareness campaigns. Collaborate with regulatory bodies to disseminate information and address uncertainties among culinary professionals.

Resource Mobilization

- Local Sourcing Support in Italy: Facilitate partnerships and initiatives in Italy that support local and organic ingredient sourcing. Encourage collaboration between suppliers, farmers, and culinary professionals to enhance resource accessibility.
- Affordable Resource Networks in Turkey: Establish networks in Turkey that connect culinary professionals with affordable and sustainable resources. Explore partnerships with suppliers and distributors to streamline the procurement process.
- Supply Chain Optimization in the Netherlands: Optimize sustainable supply chains in the Netherlands to ensure a consistent flow of eco-friendly ingredients. Foster collaborations between suppliers and kitchens to maintain a steady supply.
- Streamlined Procurement in Belgium: Implement initiatives in Belgium that simplify the procurement process for sustainable options. Create a centralized platform or network that facilitates easy access to a diverse range of sustainable resources.

Monitoring and Evaluation

- Regular Impact Assessments: Implement a robust monitoring and evaluation system across all countries to assess the impact of interventions. Regularly collect feedback, measure awareness levels, and track the adoption of sustainable practices.
- Flexibility and Adaptability: Maintain flexibility in interventions to adapt to evolving needs and challenges. Conduct periodic reviews to ensure that programs remain relevant and effective in addressing the dynamic landscape of sustainable kitchen practices.
- Knowledge Sharing Platforms: Establish cross-country knowledge-sharing platforms to facilitate the exchange of best practices, success stories, and lessons learned. Encourage collaboration and peer-to-peer learning among culinary professionals.
- By implementing these recommendations, the project aims to address the unique challenges and needs identified in each country, fostering a sustainable culinary industry that is both environmentally conscious and economically viable.

G. CONCLUSION

In conclusion, the comprehensive needs analysis conducted across Belgium, Italy, Turkey, and the Netherlands has provided valuable insights into the challenges and needs within the culinary industry regarding sustainable kitchen practices.

Diverse Challenges: The analysis revealed a diverse range of challenges, from regulatory complexities in Italy (64%) to economic constraints in Turkey (70%), technology integration concerns in the Netherlands (65%), and regulatory ambiguities in Belgium (55%). Understanding these challenges is crucial for developing targeted interventions.

Varied Climate Crisis Awareness: Climate crisis awareness varies across countries, with the Netherlands showcasing a high level (75%) and Turkey expressing a moderate understanding (55%). Italy and Belgium fall in between, emphasizing the need for tailored awareness campaigns that resonate with each country's unique context.

Training Program Demands: The demand for training programs is evident across all countries, ranging from a strong desire for cultural integration in Italy (90%) to a focus on affordability in Turkey (64%), advanced technology training in the Netherlands (65%), and comprehensive knowledge in Belgium (75%).

Resource Accessibility Concerns: While Italy and Belgium express moderate satisfaction with resource accessibility (55% and 70%, respectively), Turkey (70%) emphasizes affordability, and the Netherlands (75%) underscores the importance of maintaining a consistent supply chain for sustainable resources.

Tailored Interventions: Recognizing these country-specific nuances is essential for crafting interventions that resonate with the unique challenges and needs of each region. Customized training programs, awareness campaigns, and resource mobilization initiatives should align with the distinctive characteristics of Italy, Turkey, the Netherlands, and Belgium.

Ongoing Monitoring and Adaptation: To ensure the effectiveness of interventions, an ongoing monitoring and evaluation process is recommended. Regular impact assessments will provide real-time feedback allowing for necessary adaptations to address evolving challenges and capitalize on emerging opportunities.

Global Collaboration: Lastly, the success of sustainable kitchen practices relies on global collaboration and knowledge sharing. Establishing platforms for cross-country communication will foster a sense of community, enabling culinary professionals to learn from each other and collectively contribute to a more sustainable future.

In conclusion, by addressing the identified challenges and needs through targeted interventions, the project aims to catalyze positive change within the culinary industry. The commitment to ongoing evaluation and collaboration ensures a dynamic and responsive approach, ultimately contributing to a more sustainable and resilient culinary landscape in Belgium, Italy, Turkey, and the Netherlands.

CLIMATE FRIENDLY CUISINE

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Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.