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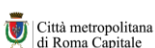
**SSPICE IT!**

Sustainability Skills Program for International Catering  
operators and Entrepreneurs through Integrated Training

## **SSPICE IT! – Sustainability Skills Program for International Catering operators and Entrepreneurs through Integrated Training**

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CIPFP CAMINO DE SANTIAGO  
ESCUOLA DE HOSTELERÍA & TURISMO DE LA RIBERA



Escola Profissional AMAR TERRA VERDE



## Submodule n°6: Less Energy-Intensive Cooking Processes

<b>THEMATIC AREA</b>	<b>How to implement circular practices in one's business</b>
<b>SUB AREA OF REFERENCE</b>	<i>Sustainable food</i>
<b>HOURS</b>	2
<b>LEARNING OBJECTIVES</b>	
<p><b>By learning this module, the student should be able to:</b></p> <p><b>1. Adopt sustainable practices in one's job.</b></p>	
<b>LEARNING ACTIVITIES</b>	
<b>Theoretical</b>	<b>Practical</b>
Exposure of the contents through resources like PowerPoint and apps created specifically for this course.	Exercises, discussions, and practice tasks for the students to measure the knowledge acquired during the module.

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## SUBMODULE 6: Less Energy-Intensive Cooking Processes

Energy consumption in cooking processes can have a significant environmental impact for several reasons:

**Greenhouse Gas Emissions:** Most of the energy used in cooking comes from non-renewable sources such as fossil fuels (natural gas, coal, and oil). The combustion of these fuels releases carbon dioxide (CO<sub>2</sub>) and other greenhouse gases into the atmosphere.

**Resource Depletion:** The production and extraction of non-renewable energy sources require significant amounts of natural resources. For example, the extraction of fossil fuels involves mining, drilling, and refining processes that can damage ecosystems and contribute to habitat destruction.

**Energy Production and Distribution:** The generation of electricity for cooking purposes often relies on power plants that burn fossil fuels. These power plants emit pollutants, including sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particulate matter, which contribute to air pollution and have harmful effects on human health and ecosystems.

**Infrastructure and Appliances:** Inefficient kitchen appliances and outdated infrastructure contribute to higher energy consumption during cooking. Older appliances, such as electric stoves or ovens without proper insulation, may waste a significant amount of energy.



Figure 1: A factory emits a harmful gas. (Image credit: Tatiana Grozetskaya /Shutterstock.com)



Figure 2: Scientist exploring a polluted area. (image credit: ArtPhoto\_studio / Freepik.com)



Figure 3: Electricity generated by nuclear power stations. (image credit: vecstock / freepik.com)



Figure 4: Professional kitchen (image credit: fxquadro / freepik.com)

To adopt energy-efficient cooking practices and minimize your ecological footprint, consider the following tips:

**Use Energy-Efficient Appliances:** Invest in energy-efficient appliances such as induction cooktops, convection ovens, and energy-efficient refrigerators. Look for appliances with the ENERGY STAR label, which indicates they meet high energy efficiency standards.



Figure 5: Modern professional kitchen. (image credit: freepik.com)

**Optimize Cooking Time and Temperature:** Preheat your oven only when necessary and avoid opening it frequently during cooking, as it can lead to heat loss. Match the size of your cookware to the size of the burner or heating element to prevent energy wastage. Use lids on pots and pans to retain heat and cook food more efficiently. Lowering the temperature while cooking can also save energy without compromising the quality of your dishes.



Figure 6: Chef working in the kitchen. (image credit: freepik.com)

**Choose the Right Cookware:** Use cookware made of materials with good heat conductivity, such as stainless steel or copper, as they heat up faster and distribute heat more evenly. Additionally, using flat-bottomed cookware ensures maximum contact with the heating surface, allowing for more efficient heat transfer.



Figure 7: A woman buying professional cookware. (image credit: prostooleh / freepik.com)

**Utilize Residual Heat:** Take advantage of residual heat in your oven or stovetop. Turn off the heat a few minutes before your food is fully cooked to allow the remaining heat to finish the cooking process. The retained heat can be sufficient for completing the cooking while reducing energy consumption.



Figure 8: Baking bread (image credits: pressfoto / freepik.com)

**Batch Cooking and Meal Planning:** Prepare multiple meals at once by batch cooking. This saves energy by utilizing the oven or stovetop more efficiently. Plan your meals ahead to avoid last-minute cooking decisions, as this can lead to unnecessary energy usage.



Figure 9: Meal planning (image credits: freepik.com)

**Consider Alternative Cooking Methods:**

Explore alternative cooking methods that require less energy, such as using a slow cooker, microwave, or pressure cooker for certain dishes. These appliances are designed to be energy efficient and can significantly reduce cooking time.



Figure 10: Sous vide preparation. (image credits: freepik.com)

**Regular Maintenance and Cleaning:** Keep your appliances clean and well-maintained to ensure they operate efficiently. Regularly clean the burners, coils, and filters to remove any buildup that may impede their performance.



Figure 11: Kitchen maintenance (image credits: freepik.com)

**Unplug or Use Energy-Saving Features:** When not in use, unplug small kitchen appliances or use power strips to easily turn them off completely. Many appliances have energy-saving features like standby or sleep mode, so utilize these features when available.

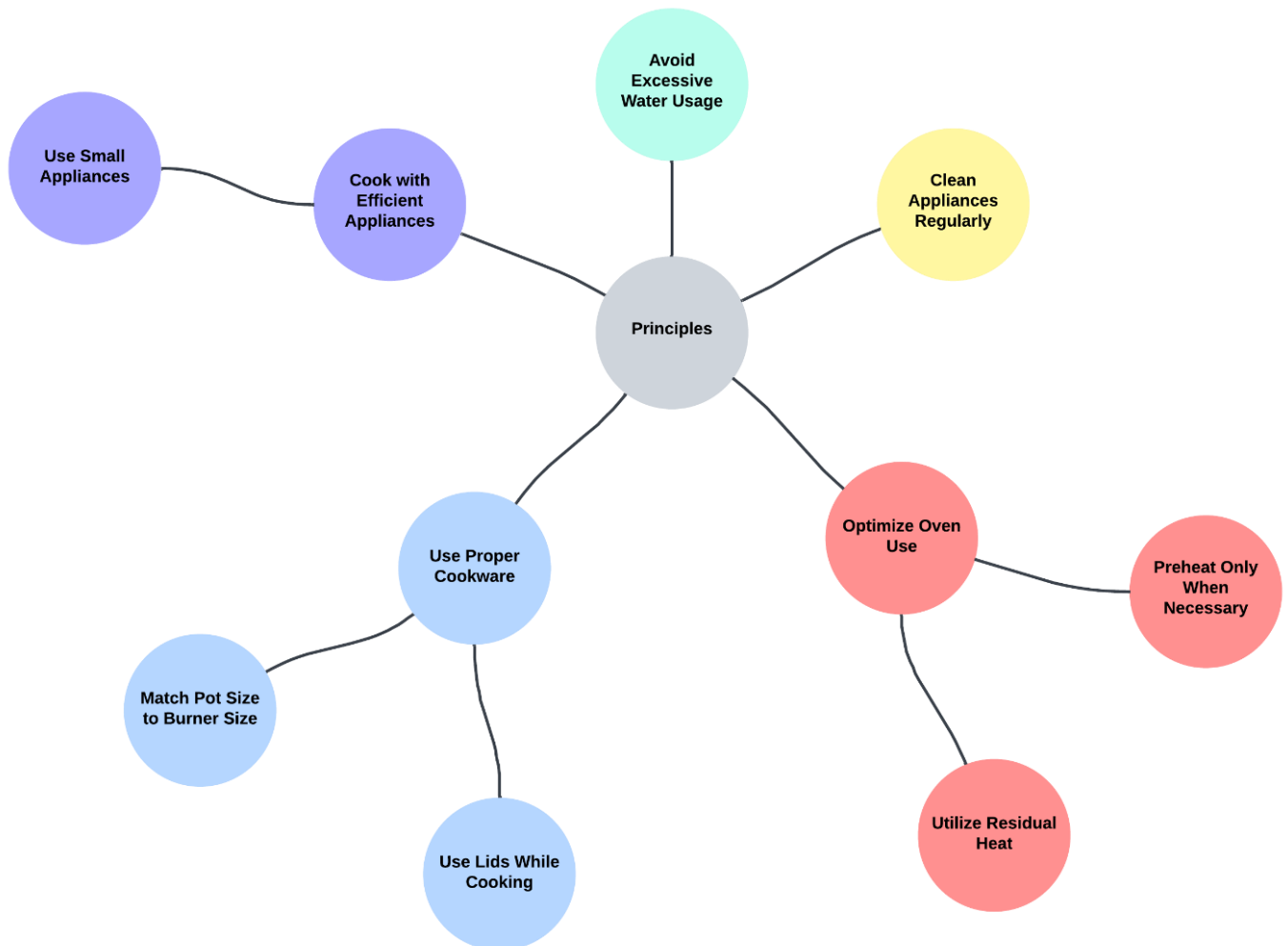


Figure 12: Teamwork in the kitchen (image credits: freepik.com).

## 1. Smart cooking practices for energy conservation

The smartest cooking practices for energy conservation include:

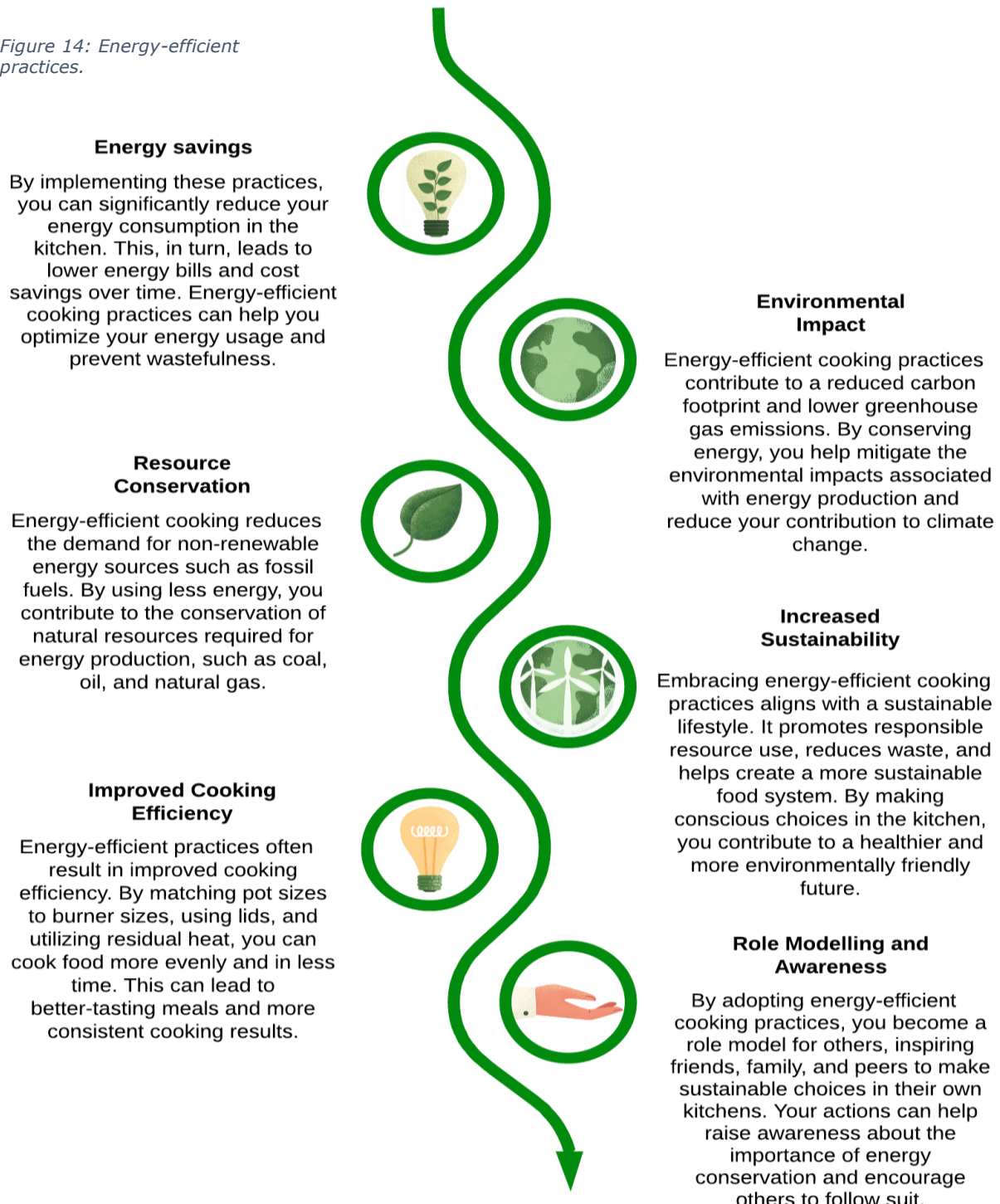
Figure 13: Fluxogram of smart cooking practices.



Created with Lucidchart. (<https://www.lucidchart.com>)

## 2. Benefits of adopting energy-efficient cooking practices

Figure 14: Energy-efficient practices.





Those practices can also have positive impacts on the economy, particularly for businesses in the food industry. Here are some benefits:

Figure 15: Benefits of energy-efficient practices.



Created with Lucidchart. (<https://www.lucidchart.com>)

By prioritizing sustainability, businesses can align with consumer demands, meet regulatory requirements, and contribute to a greener and more sustainable economy.

## Appendix

### 1. Glossary of Key Terms

This glossary provides definitions for key terms used throughout the learning material. It serves as a handy reference for students to better understand the terminology related to sustainable food practices, energy efficiency, local food systems, and more.

**Sustainable Agriculture:** A method of farming that focuses on environmental stewardship, economic profitability, and social responsibility. It aims to minimize the negative impact of agriculture on the environment while ensuring the long-term viability of farming.

**Energy Efficiency:** The practice of using less energy to perform a specific task or achieve a particular outcome, often by using energy-efficient appliances, techniques, or practices.

**Carbon Footprint:** The total amount of greenhouse gases, primarily carbon dioxide (CO<sub>2</sub>), produced directly or indirectly by an individual, organization, event, or product throughout its lifecycle. It is often measured in units of carbon dioxide equivalent (CO<sub>2</sub>e).

**Local Food:** Food that is grown, produced, or sourced within a specific geographical region, typically with an emphasis on supporting local farmers and reducing food miles (the distance food travels from farm to plate).

**Circular Economy:** An economic system that aims to minimize waste and make the most of resources by designing products and materials for durability, reuse, remanufacturing, and recycling.

**Food Waste:** The edible food that is discarded at various stages of the food supply chain, from production and processing to distribution and consumption.

**Composting:** The natural process of breaking down organic matter, such as food scraps and yard waste, into nutrient-rich soil conditioner known as compost, which can be used to enrich soil for gardening and farming.

**Sustainable Farming Practices:** Methods of farming that prioritize environmental conservation and long-term ecological balance. Examples include crop rotation, cover cropping, and reduced pesticide use.

**Renewable Energy:** Energy derived from sources that are naturally replenished, such as sunlight, wind, and hydropower, and do not deplete finite resources like fossil fuels.

**Food Security:** The condition in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

**Monoculture:** The practice of cultivating a single crop species over a large area of land, often with the aim of maximizing production but at the risk of depleting soil and increasing vulnerability to pests and diseases.

**Sustainable Kitchen Appliances:** Energy-efficient and eco-friendly kitchen appliances designed to reduce energy consumption, water use, and environmental impact.

**Regenerative Agriculture:** A type of farming that aims to improve soil health, sequester carbon, and enhance biodiversity through practices like minimal soil disturbance, cover cropping, and rotational grazing.

**Food Miles:** The distance food travels from the place of production to the consumer's plate. Reducing food miles is a key aspect of promoting local and sustainable food systems.

**Circular Food System:** An approach to food production, distribution, and consumption that minimizes waste, optimizes resource use, and emphasizes the importance of recycling and reusing food and food-related materials.

**Food Resilience:** The capacity of a food system to withstand and recover from shocks and stresses, such as climate change, economic fluctuations, and supply chain disruptions.

**Sustainable Packaging:** Packaging materials and designs that minimize environmental impact, reduce waste, and promote recyclability or compostability.

**Fair Trade:** A trading system that ensures fair wages and working conditions for producers in developing countries, often involving agricultural products like coffee and chocolate.

**Biodiversity:** The variety and variability of life on Earth, including the different species of plants, animals, and microorganisms, their genes, and the ecosystems they form.

**Organic Farming:** A farming method that avoids the use of synthetic pesticides, herbicides, and genetically modified organisms (GMOs) and emphasizes soil health, biodiversity, and sustainable practices.

## 2. Bibliography

Content:

ENERGY STAR - Energy-Efficient Appliances: <https://www.energystar.gov/products/appliances>

Food and Agriculture Organization of the United Nations (FAO) - Energy-Smart Food for People and Climate: <http://www.fao.org/energy-smart-food/>

Sustainable Agriculture Research & Education (SARE) - Energy Efficiency on the Farm and in the Home: <https://www.sare.org/resources/energy-efficiency-on-the-farm-and-in-the-home/>

International Energy Agency (IEA) - Energy Efficiency Indicators: <https://www.iea.org/topics/energy-efficiency/energy-efficiency-indicators>

European Commission - Environment: [https://commission.europa.eu/about-european-commission/departments-and-executive-agencies/environment\\_en](https://commission.europa.eu/about-european-commission/departments-and-executive-agencies/environment_en)

European Environment Agency (EEA): <https://www.eea.europa.eu/en>

Food and Agriculture Organization of the United Nations (FAO): <https://www.fao.org/home/en>

European Food Safety Authority (EFSA): <https://www.efsa.europa.eu/en>

European Environment Information and Observation Network (Eionet): <https://www.eionet.europa.eu/>

European Sustainable Development Network (ESDN): <https://www.esdn.eu/>

Sustainable Europe Research Institute (SERI): <https://www.seri.at/>

United States Environmental Protection Agency (EPA) - Energy Efficiency: <https://www.epa.gov/energy/energy-efficiency>

U.S. Department of Energy - Energy-Saving Tips for the Kitchen: <https://www.energy.gov/energysaver/save-electricity-and-fuel/appliances-and-electronics/energy-saving-tips-kitchen>

Local Harvest: <https://www.localharvest.org/newsletter/>

LCA Learning: <https://www.lifecycleinitiative.org/>

### 3. Further readings

- **Pollan, M. (2011). *The omnivore's dilemma*. Bloomsbury Publishing PLC.**- Explores the modern food industry and the impact of our food choices.
- **Participant Media & River Road Entertainment present; a film by Robert Kenner; producers, Robert Kenner, Elise Pearlstein; writers, Robert Kenner, Elise Pearlstein, Kim Roberts; directed by Robert Kenner. (2009). *Food, Inc.* [Los Angeles, CA]: Magnolia Home Entertainment.** - A visual exploration of the food production industry and its environmental and social consequences.
- **Pollan, M. (2009). *In defence of food*. Penguin.** - Offers practical advice on making healthier and more sustainable food choices.
- **Dan Barber (2016). *The Third Plate: Field Notes on the Future of Food*. Paperback. Penguin Press.** Chef Dan Barber explores the evolution of American food from the 'first plate,' or industrially produced, meat-heavy dishes, to the 'second plate' of grass-fed meat and organic greens and says that both of these approaches are ultimately neither sustainable nor healthy.

#### Websites:

- [The Sustainable Food Trust](#): Offers articles, reports, and resources on sustainable food systems.
- [Energy Star](#): Provides information on energy-efficient appliances and practices.
- [Local Harvest](#): Connects consumers with local farmers and food producers.

#### Organizations:

- [Slow Food](#): Advocates for sustainable and local food traditions.
- [The Ellen MacArthur Foundation](#): Promotes the circular economy and its applications in various industries, including food.
- [Food Tank](#): A think tank focused on sustainable agriculture and food systems.

#### Videos:

- [TED Talks on Food](#): Features a collection of TED Talks on various food-related topics, including sustainability.
- [Food, Inc. \(Documentary\)](#): A powerful documentary that explores the modern food industry and its impact.

## 4. Acknowledgment

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Sincerely,

Rodolfo Meléndrez Rodriguez

Chef / Cooking Techniques Course Coordinator

EPATV