Energy Labelling for existing heating appliances
Lessons from the HARP Project
19 JULY 2022 | 11:00 - 12:00 CEST
Agenda

11:05  **The HARP project** (Rui Fragoso, ADENE)

11:15  **Energy labelling methodologies for existing heating appliances** (Diego Menegon, EURAC)

11:25  **National campaigns and reaching out to the consumer** (Eztizen Gregorio, OCU)

11:35  **Policy scenarios of the adoption of the energy labelling scheme for existing heating appliances at MS level** (Marco Calderoni, R2M)

11:45  **Dialogue + Q&A** (moderated by Marco Grippa, ECOS)
HARP Project – Heating Appliances Retrofit Planning
Build Up Webinar
Rui Fragoso, ADENE – Portuguese National Energy Agency

19th of July 2022, online
HARP CONSORTIUM

18 partners
3 years
1,5 million consumers expected to be reached
10,000 consumers could be motivated to replace their heating

EUROPE
France
Germany
Italy
Portugal
Spain
HEATING’S ROLE IN THE PATH FOR ENERGY EFFICIENT BUILDINGS

Energy performance of buildings directive
Revised in 2018, new revision expected in 2022, the directive will help reach the building and renovation goals set out in the European Green Deal.

Renovation wave
Renovating the EU building stock will improve energy efficiency while driving the clean energy transition.

Long-term renovation strategies
EU countries have defined strategies that foster investments in the renovation of residential and commercial buildings.

Nearly zero-energy buildings
The EU has set a target for all new buildings to be nearly zero-energy by 2020.

REPowerEU: Joint European action for more affordable, secure and sustainable energy
“...reducing faster the use of fossil fuels in our homes, buildings, industry, and power system, by boosting energy efficiency, increasing renewables and electrification...”
HEATING’S ROLE IN THE PATH FOR ENERGY EFFICIENT BUILDINGS

Heating and hot water represents 80% of the energy demand of EU households.

and 84% of it is generated from fossil fuels. A sharp decrease in the energy consumption and use of fossil fuels is needed for the EU to fulfil its climate and decarbonisation goals.

60% of the heating stock consists of inefficient boilers (class C or lower).

The Ecodesign and Energy Labelling regulations for boilers, in place since 2015, remove the worst performing products from the market, while driving consumers towards the most efficient choices. But installed boilers can last for over 15 years, and their replacement rate is very low (4% per year). As a result, a large number of inefficient boilers is still in use today.

Except in Germany, consumers are not informed about the efficiency of their installed heating systems.

This information is crucial to trigger a replacement of the least-efficient heating appliances. HARP will build on the experience of the mandatory labelling of installed boilers in Germany. Recommendations will be issued for the implementation of the labelling methodologies for installed heating systems at the EU-level, and specifically in countries not participating in HARP.
CONSUMER’S RELATION TOWARDS HEATING

It works 😊, all is well!

It does not work, urgente decisions are necessary:

The **consumer knows and considers the energy label** of new heating appliances:

- When acquiring a new heating equipment, **>70% of the consumers acquires the same technology it had installed before**
- **43% of the consumers** believes their house, the architectural and infrastructure characteristics, **do not allow for the installation** of a different heating solution
- **28%** doesn’t know **other heating technologies**
- **25%** did not have the **time or availability** to look for more information

*Source: EHI/Centerdata, October 2021*
CONSUMER’S RELATION TOWARDS HEATING

HARP’s main goal is to motivate individuals to plan the replacement of their often outdated and fossil-fuel operated heating appliances, with more efficient and renewable alternatives.

To promote consumers conscious regarding energy efficient heating solutions the HARP consortium invited consumers to know more about their current heating systems and plan the potential replacement of their heating system with more efficient and renewable solutions, relying on the energy label as the main instrument to communicate energy efficiency.
HARP’S APPROACH

Allow the consumer to **compare, within the same basis, the label energy efficiency scale, old and new heating appliances**, promoting its planned replacement.

- **Awareness**: raising consumers’ interest in the heating topic  
  Consumer Theory of Change Model, key issues and communication channels

- **Quantification**: labelling the existing heating system  
  Methodology to calculate the efficiency and class of space, water and combi existing heaters

- **Overview of solutions**: presenting the most efficient heating technologies on the market  
  Assessment of heating solutions with the heating industry

- **Analysis of benefits**: providing information on potential energy, money and CO₂ savings  
  Estimate potential savings, new energy class and added co-benefits upon the replacement

- **Motivate the replacement**: extending the information to professionals and incentives  
  List of professionals that can support the consumer and available incentives
HARP’S ACTIVITIES

- Definition of the **consumer behaviour change model** regarding the adoption of heating systems
- Analysis of the heating stock in European households and current **market offer of heating solutions**
- Evaluation of the **co-benefits** associated with energy efficient heating solutions
- **Labelling methodologies** for the classification of existing heating appliances: space, water and combi heaters
- **HARPa, online application** (consumers and professionals)
- **Materials toolbox** about energy efficient heating solutions for consumers and professionals
- Two heating season communication campaigns **Feb/May 21 and Oct21/April 22**
- **Policy Integration scenarios** for the energy labelling of existing heating appliances in the EU and MS context
HARP’S RESULTS

- 8,9 m consumers reached (KPI = 1,5 m)
- 17,681 simulations for more energy efficient solutions
- 134,355 professionals reached
- 34,367 Energy labels issued for existing heating systems
- 18,979 consumers motivated to change (KPI = 10,000)
- 1,037 professionals trained (KPI = 1,000)
- 8,9 m consumers reached
- 17,681 simulations for more energy efficient solutions
- 134,355 professionals reached
- 34,367 Energy labels issued for existing heating systems
- 18,979 consumers motivated to change
- 1,037 professionals trained
6 PROPOSALS FOR POLICY INTEGRATION SCENARIOS

- Harmonize the existing systems for the energy labelling of existing heating appliances (voluntary and compulsory)
  - Take the opportunity to make these systems compatible with the EU regulations and considering both space and water heating

- Reinforce the link to EPBD
  - harmonizing the heating appliances performance evaluation with labelling regulations

- Reinforce the link to EPREL – European product database
  - Allowing for the comparison between the efficiency of old and new heating appliances

- Maintenance procedures of heating appliances
  - providing more information on the energy performance and class of the existing appliance

- One-stop-shops/renovation passports
  - support the consumer in the adoption of energy efficiency measures in their house, namely addressing the heating system

- Prioritize energy efficiency incentives and support the energy transition
  - boosting the replacement of the oldest and most inefficient heating appliances, targeting those more in need and achieving the highest revenues in terms of energy savings
Thank you for your attention!

Rui Fragoso
harp@adene.pt
ENERGY LABELLING METHODOLOGY FOR EXISTING HEATING APPLIANCES

Diego Menegon
Institute for Renewable Energy, Eurac Research
19 July of 2022, BUILD UP webinar, online
Introduction

Definition of an energy label for space heating and water heaters old appliances. For the appliances that were in the market before the introduction of energy label directive (regulations 811/2013 and 812/2013).

Give the possibility to final user and to professionals to compare the old appliance label with the one of a new product.

• Simplified version for a common user
• Detailed version for a professional user
Introduction

The methodology has been implemented as first step of the HARP tool. The labelling proposed in HARP is voluntary and its aim is to inform the final user about the (in)efficiency of old appliances. Therefore the graphics recalls the official label.
Workflow of the developing of labelling methodologies

1) **Analysis** of the *existing* compulsory and voluntary heating *labelling schemes* in EU countries

2) Development of **harmonized** methodologies with the **EU energy labelling regulations** Reg. 811/2013 (space heating) and Reg. 812/2013 (water heating)

3) Introduction of a **degradation factor** according to the appliance’s age defined in cooperation with the heating industry and considering the existence of regular maintenance procedures

4) **Validation** of the methodologies considering the technical data of more than *5.000 appliances* and **laboratory testing** of 5 appliances (space heating and water heaters)
Labelling methodologies for existing heating appliances

• The final user is not aware of the meaning of the calculation inputs
• For old appliances some values cannot be retrieved from datasheets or appliances books.

The validation of the methodologies considered those limits:
1. For the final user, the inputs are needed to define default values.
2. The selection of default values has been simplified.
3. The default values were selected from EN 15316 and from a market analysis.
Labelling methodologies for existing heating appliances

- Type of user
  - Final
    - Simplified Input
  - Professional
    - Detailed input

- Calculation

- Output
  - Efficiency
  - Energetic class
Exist existing water heaters

$$\eta_{WH} = \frac{Q_{ref}}{Q_{fuel} + CC \cdot Q_{el}} + Q_{cor} \cdot C_{age}$$

Labelling methodologies for existing heating appliances

$$\eta_s = \eta_{son} \cdot C_{age} - \sum F(i)$$

We considered different degradation coefficients for “normal” or “bad” maintenances depending on the appliances typology.
Labelling methodologies for existing heating appliances

**SPACE HEATING**

The representation is done according to the boilers groups:

- Standard
- Low temperature
- Condensing

The validation regarded:

- about 4600 models
- with construction year from 1972 to 2019
- gas and oil boilers
Labelling methodologies for existing heating appliances

**SPACE HEATING**

The representation is done according to the boilers groups:
- Standard
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- about 4600 models
- with construction year from 1972 to 2019
- gas and oil boilers

**WATER HEATING**

The appliances considered were:
- Gas storage
- Gas instantaneous
- Electric storage
- Electric instantaneous

The validation regarded:
- 400 appliances models
- Appliances older than 10 years old
- Electric and gas heaters

Average deviation of 3% between the simplified and the detailed calculations
Conclusion

Labelling methodologies for existing space heating appliances and water heaters has been developed.

The methodologies are compliant to EU regulations 811/2013 and 812/2013.

The methodologies considered two versions: a simplified for the final user and a detailed for the professional user.

The validation considered about 5000 appliances, laboratory test on 5 old appliances.

The average deviation between the simplified and the detailed versions is about 3%.
Thank you for your attention!

Dr. Diego Menegon

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39100 Bozen / Bolzano
HARP Project – National campaigns and reaching out to the consumer
Build Up webinar

19th of July 2022
MAIN GOAL REGARDING CONSUMERS

HARP’s main goal is to motivate individuals to plan the replacement of their often outdated and fossil-fuel operated heating appliances, with more efficient and renewable alternatives.

The objective is allow the consumer to compare, within the same basis, the label energy efficiency scale, old and new heating appliances, promoting its planned replacement.

Consumers don’t tend to plan the replacement. They replace the heating appliances once they are not working and often in a hurry without time or availability to look for information.

Although they consider the energy label when acquiring a new appliance, 3 out of 4 consumers choose the same technology they had installed.
HARP’S ACTIVITIES FOR CONSUMERS

Two heating season communication campaigns **Feb/May 21 and Oct21/April 22**

Omnichannel campaigns through

- Newsletters
- Consumer organizations websites
- Social media
- Articles in consumer magazines,
- Webinars
- Branded content

Adapted to the different behaviour of consumers in each country.
HARP’S COMMUNICATION JOURNEY

**Rising awareness:** raising consumers’ interest in the heating topic through social media newsletter, etc.

**Offer information on what they have:** labelling the existing heating system is a starting point.

**Overview of solutions:** presenting the most efficient heating technologies on the market adapted to consumer necessities. Through the app and factsheets.

**Information on benefits and cobenefits:** providing information on potential energy, money and CO$_2$ savings and also cobenefits. Through the app and infographics.

**Motivate the replacement:** extending the information to professionals and incentives. Explaining through webinars.
HARP ONLINE APPLICATION. HELPING CONSUMER IN THE DECISION MAKING PROCESS

HARPa, an online application supports consumers (and professionals) in the identification of their current heater’s energy class and finding an energy efficient replacement solution.

It also provides the contact with professionals and identifies incentives available at national level.
COMMUNICATION CAMPAIGN AND RESOURCES

Two heating seasons campaigns in 5 countries: 2020/2021 and 2021/2022

- Social media campaign.
- Public media.
- Communication and lobby activities engaging national authorities, consumers and industry.
- Using HARP toolbox for consumer on the different channels.
HARP'S TOOLBOXS, FOR CONSUMERS

BROCHURES
HARP’S TOOLBOXS, FOR CONSUMERS

HEATING TECHNOLOGIES FACTSHEETS

HEAT PUMP

Heat pump: heat my home and water with the heat pump

- If you already have a heat pump, it might be more efficient and help your energy savings. Replacing your heating system with a more efficient system will help you reduce your energy bills and substantially keep your home more comfortable, improve air quality, reduce your household and carbon dioxide emissions, reduce your carbon footprints.

- Heat pumps are a very efficient way to heat a house and provide domestic hot water. They work by transferring energy from a heat source (air, water, or ground) to heat to a heat sink (rooms in a house). Heat pumps are often used to provide space heating and hot water. The efficiency of a heat pump is determined by the ratio of heat delivered to the heat required to run the pump.

- A heat pump can be used as a space heater or as a water heater. It can also be used to cool a house by reversing the process. Heat pumps are often used in combination with other heating and cooling systems.

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HARP’S TOOLBOXS, FOR CONSUMERS

VIDEOS
HARP’S TOOLBOXS, FOR CONSUMERS

WELCOME TO THE QUIZ
THE HEAT YOU KNOW!

BECOME, AS ME, A HEAT JEDI!
HARP’S TOOLBOXS, FOR CONSUMERS

INFOGRAPHICS
HARP’S TOOLBOXES, FOR CONSUMERS

ARTICLES

Proyecto HARP: ¿es eficiente tu calefacción?

Apostando por la eficiencia energética de la calefacción

¿Sabes lo eficiente que es tu sistema de calefacción? Para poder dar respuesta a esta pregunta OCU forma parte del proyecto HARP (planificación para la recualificación de sistemas de calefacción), financiado a través del marco Horizonte 2020. El proyecto se...
HARP’S TOOLBOXS, FOR CONSUMERS

SOCIAL MEDIA CAMPAIGN
LESSONS LEARNED REGARDING CONSUMERS

- Development of adapted material for consumers (for each country).
- Engagement through organization of webinar with other topics more interesting for consumers (i.e., energy bill).
- Higher impact through paid campaigns for consumers and professionals.
- Information about incentives is not clear, is fragmented, is not at national level and does not reach properly to consumers.
HARP’S RESULTS REGARDING CONSUMERS

- 8.9 m consumers reached (KPI = 1.5 m)
- 34,367 Energy labels issued for existing heating systems
- 17,681 simulations for more energy efficient solutions
- 18,979 consumers motivated to change (KPI=10,000)
Thank you for your attention!

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Organización de Consumidores y Usuarios (OCU)
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A new labelling for installed heating appliances in Europe?

*Policy integration scenarios for the new label*

Marco Calderoni and Fabio Aprá
Adoption of the HARP methodology: the consortium countries' experience

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<td>Professionals/installers</td>
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**FRANCE**

**Existing methodologies and tools**

**Voluntary** – Methodology by E&A and COENOVE. Thought for **professionals** only.

No DHW (just liquid fuel + gas)

The **industrial associations** promoted and financed the methodology and tool.

**HARP in the future**

HARPa will be used instead of Mon Étiquette Chaudière. The new application will be called Mon Étiquette Chaudière Chauffage

Contacts ongoing with the French **Directorate General of Energy and Climate** to possibly endorse HARP.
There is **no existing tool** in Portugal, neither voluntary – **ADENE aims at using HARP at national level.**

ADENE’s idea is to **create a framework to offer to the government** to implement HARP methodology.

**HARP in the future**

The HARP methodology could be **used to evaluate the requests for incentives** and rank the best interventions requests (in €/kWh saved)

There is a explicit request from the European Commission in developing **one-stop-shop activities for the EPBD.**
ITALY

Existing methodologies and tools

**Voluntary** – Methodology by Assotermica. Thought for **professionals** only. To apply during maintenance. No DHW.

The **industrial associations** promoted and financed the methodology and tool.

HARP in the future

HARP methodology is **more easily accepted by public entities** (validated by EURAC, endorsed by ENEA)

Etichetta Energetica will be **replaced by HARP**.
Existing methodologies and tools

**Voluntary** – Simplified methodology by FEGECA. To apply during maintenance by professionals.

**Low utilisation** of the tool up to know.

HARP in the future

**IDEA** (Spanish energy agency) focuses on **RES** only, therefore cannot endorse HARP. Lack of Air-air heat pumps is also a weakness.

**AGENEX** (regional energy agency of Extremadura) endorsed HARP and is using it.
Labelling process works well, but this does not translate in a reason to change the heating system for the user.

**Mandatory** - Class calculator by BWMI. Thought for **professionals** only. No DHW.

Methodology based on a **national database** for each type of heating appliance, which is created with basic parameters.

**HARP in the future**

Germany will continue with the **current methodology**.

HARP’s methodology is more complete than the current German one (e.g. it covers also DHW).

Idea: HARP methodology can be included in the **individual renovation passport** (direct report to user on how to improve their house energy efficiency).
**POLAND**

**Promoter:** Association of Heating Device Manufacturers and Importers

**Motivation:**
- To avoid the user choosing the new heating system based on the most advantageous incentive.
- Put incentive providers in a position to assess whether the end user's request makes sense.

**Immediate actions:**
- Translate the app into Polish
- Adapt fuel prices and climate conditions

**Medium-term actions:**
- Make the app suitable for use by incentive providers

**GREECE**

**Promoter:** Greek Solar Thermal Industry Association

**Motivation:**
- The HARP app allows end users to simply get information about the benefits of modern technologies

**Immediate actions:**
- Translate the app into Greek
- Adapt fuel prices and climate conditions
Adoption of the HARP methodology: the consortium countries' experience

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Conclusions

APPROACHES TO LABELING
• Labelling of existing heating appliances first was adopted in Germany.
• The German experience shows that making this mandatory for professionals is not necessarily a promising approach.
• Industry-driven approaches seem to have a good potential.
• Another likely effective approach is to link the energy label to incentive mechanisms.

FUTURE SCENARIOS
• Besides countries participating in the HARP project, other countries showed interest for this methodology.
• HARP will provide feedbacks to the European Commission, which may or not consider to introduce labelling of existing heating appliances in legislation.
• Possible ways of introducing labelling at EU and national level are:
  • Incentive mechanisms
  • Future recast of EBPD
  • (Digital) Building logbooks
  • One-stop-shop for building renovation
• Important messages to be communicated to end users are not only related to operational savings (economic and energy), but also to health improvement and increased economic value of the building.
Thank you for your attention!

Marco Calderoni, Fabio Aprà
R2M Solution

Follow us!
heating-retrofit.eu
@HarpProject
Roundtable and Q&A

*Moderated by Marco Grippa, ECOS*
Thank you for your attention!

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