



EUROVENT

Presenter

Mr Felix Van Eyken

Secretary General

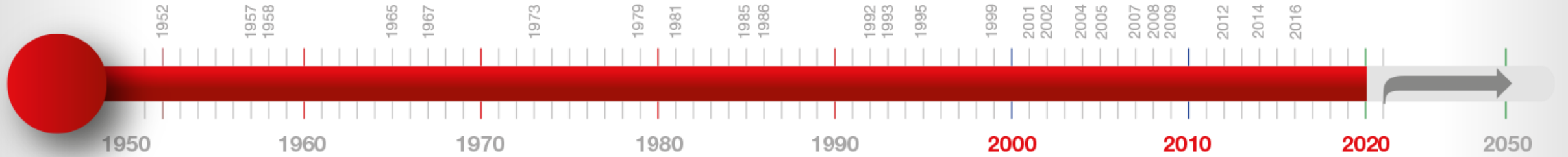


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Europe www.eurovent.eu

Middle East www.eurovent.me





Heating in Europe

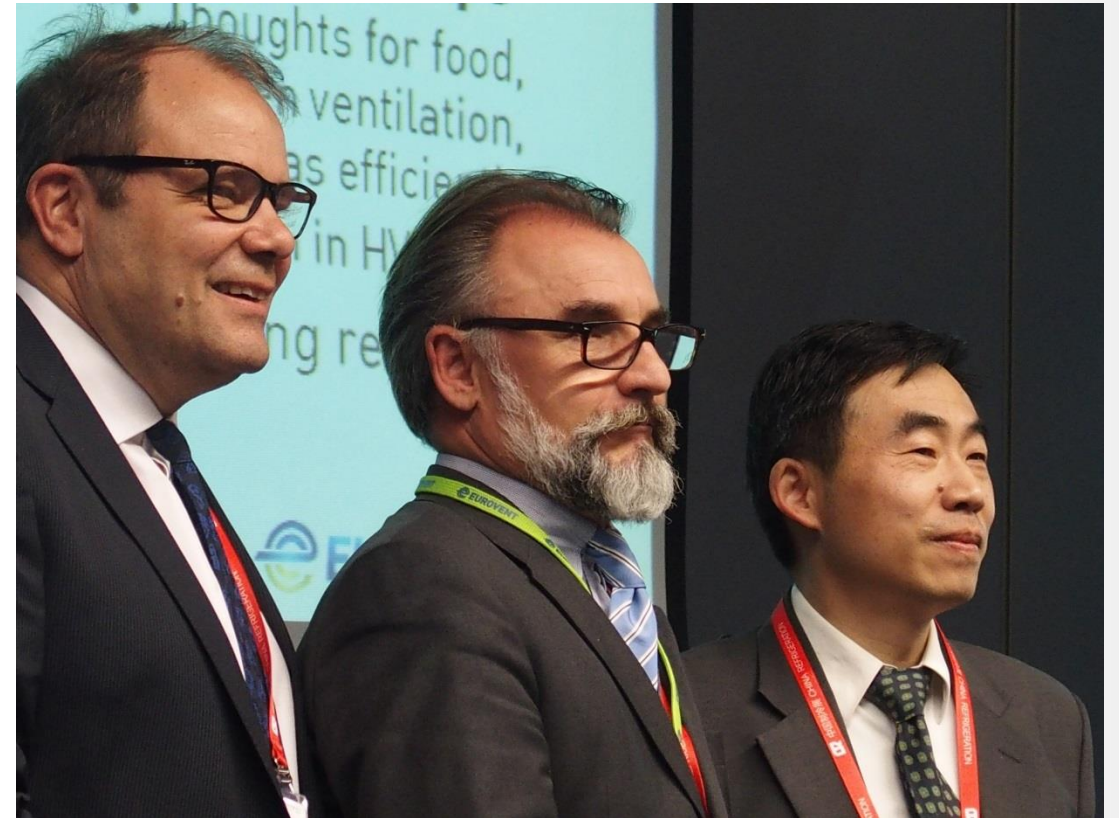
A journey through the past, present and future

Felix Van Eyken, Secretary General, Eurovent Association

Introduction to Eurovent

The Eurovent Association

- **Europe's industry association for manufacturers of Indoor Climate (HVAC), Process Cooling and Food Cold Chain Technologies**
- Founded in 1958
- Representing more than 1.000 manufacturers in Europe and the Middle East
- Strong network of Europe's leading, national industry associations



Introduction to Eurovent

Core activities

- **Technical and Regulatory Affairs**

- Representing the industry vis-à-vis European and international legislation and standardisation bodies)
- Developing codes of good practice (Eurovent Recommendations)

- **Industry Representation**

- Supporting members concerning trade issues
- Raising awareness on new and upcoming technologies
- Organisation of networking events

Introduction to Eurovent ICARHMA

- **Founding member of the International Council for Air-Conditioning, Refrigeration, and Heating Manufacturers (ICARHMA)**
- Global networking of HVAC&R association from around the globe
- Close cooperation with CRAA and CAR in China



Introduction to Eurovent

World of Eurovent

Eurovent consists of three independent units

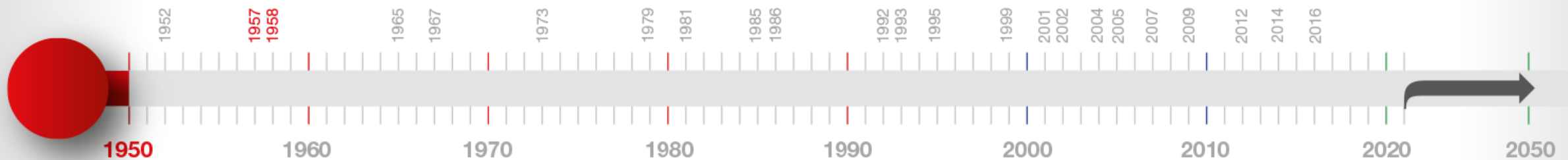
- Eurovent Association
 - Eurovent Middle East
- Eurovent Certita Certification
 - 'Eurovent Certified Performance'
- Eurovent Market Intelligence



Introduction to Eurovent Eurovent Middle East



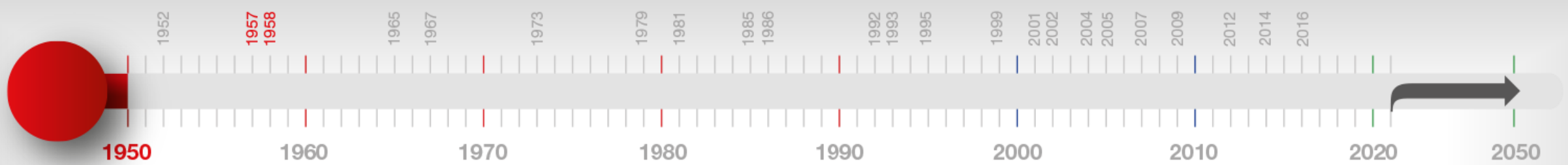
- **Representative of Eurovent members based in and/or active in the Middle East region**
- Home to leading HVACR manufacturers, sector associations and national industry initiatives
- Open to all manufacturers that share our quality ideals
- Jointly working towards a lower energy demand, an improved food safety, and a better indoor air quality in the Middle East
- For more information, visit www.eurovent.me



Heating in Europe

A journey through the past

Felix Van Eyken, Secretary General, Eurovent Association



Past: The 1950s

Beginning of European unification

- **1950: Schuman Declaration**

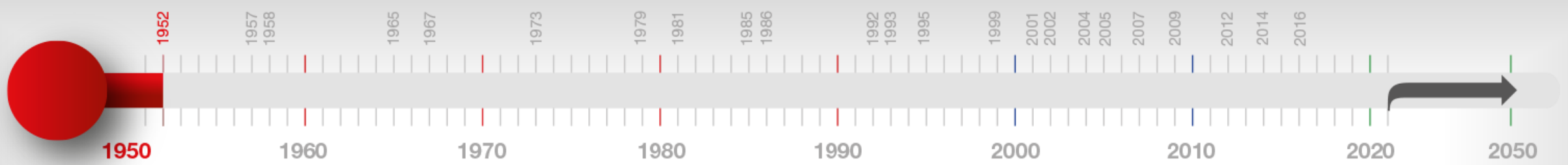
- Proposing a European Coal and Steel Community (1952-2002)
- Founding members ('The Inner Six'): Belgium, Federal Republic of Germany, France, Italy, Luxembourg and the Netherlands

- **1957: Treaty of Rome**

- European Economic Community (EEC)

- **1958: Founding of the Eurovent Association**



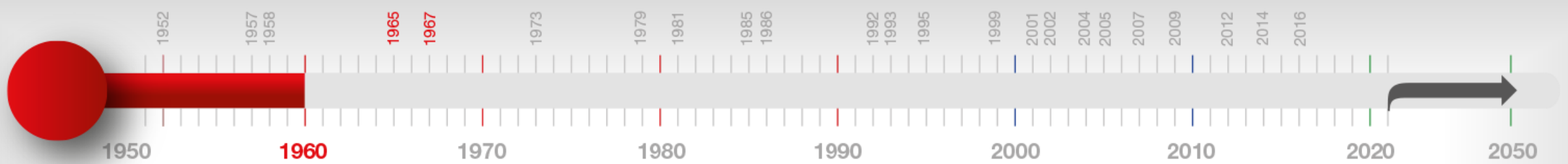


Past: The 1950s

1952

- Smog all over Europe
 - Renowned example:
Great Smog of London (→)
- Fireplaces/stoves in every room
- Instantaneous gas water heaters
- Coal, town gas, oil
- Emergence of hot air and hydronic heating



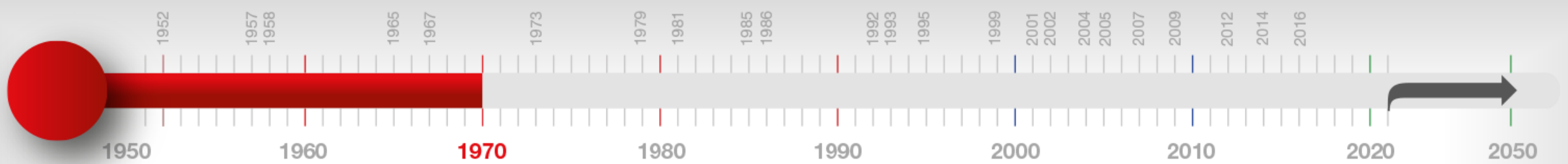


Past

The 1960s

- Emergence of natural gas
- Hydronic central heating favoured
- 1965: CEN initiates work on EN 26 Gas-fired instantaneous water heaters
- **1967: Oil embargo (→)**
 - Leading to OAPEC (Organization of Arab Petroleum Exporting Countries)



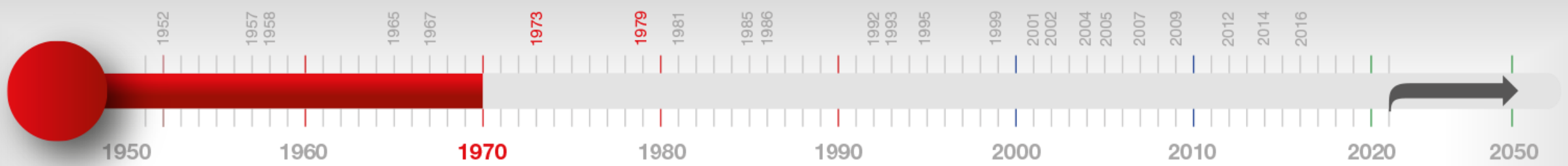


Past: The 1970s

Gas safety

- **National safety requirements for gas appliances (→)**
- Emergence of labels, initially for safety aspects of gas appliances
- Calculation/sizing/dimensioning of models for the installer
- Natural gas



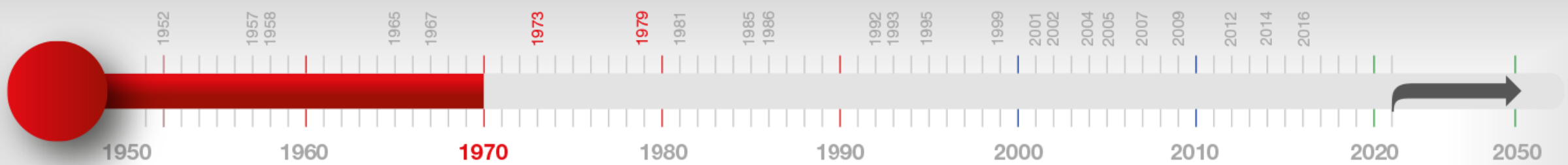


Past: The 1970s

Environmental policies

- New social and environmental policies
- Initial focus on protection of air and water quality
- 9 Member States
 - Denmark, Ireland, and United Kingdom join

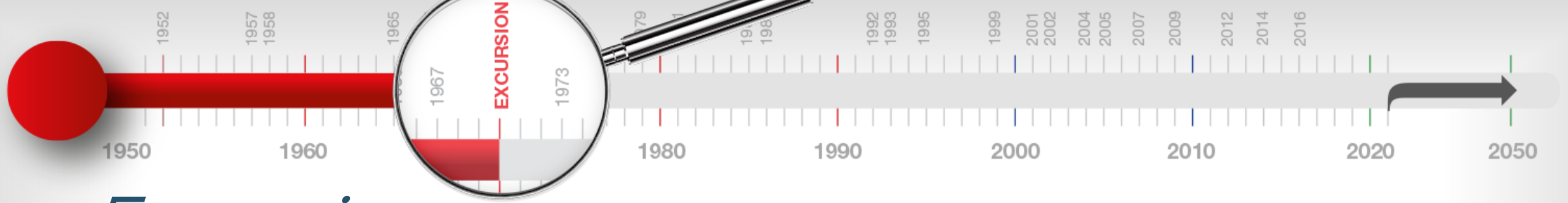




Past: The 1970s Ups and downs

- **1973: Oil crisis due to OAPEC oil embargo (→)**
 - Initial responses:
 - Insulation
 - Double glazing
- 1979: First elections to European Parliament
- **Energy crisis: Iran Revolution**

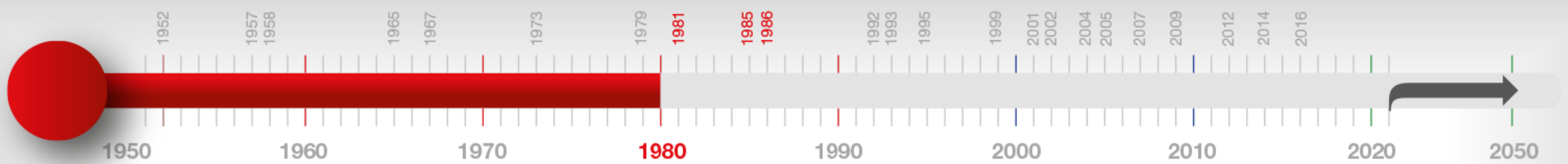




Excursion

Legislation in the 1970s

- National energy saving legislation
- Development and proliferation of private, semi and national labels
- Labels as effective barriers to trade

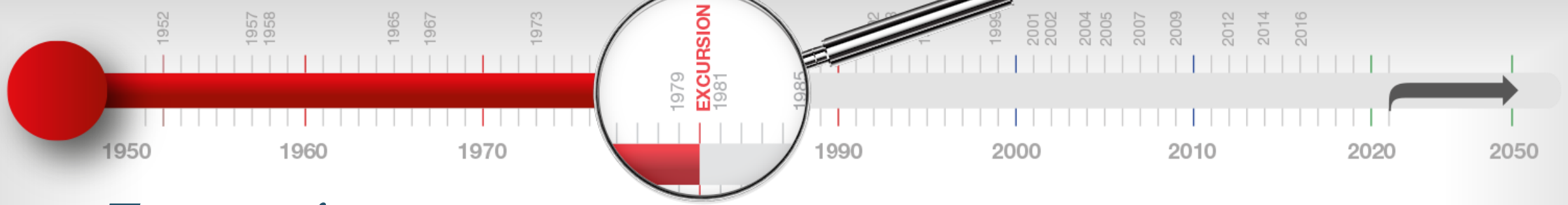


Past: The 1980s

Towards a Single European Market

- 1981: 10 Member States
 - Greece joining the EU
- **1985: White Paper setting to complete European Single Market by 1 January 1993**
 - Remove trade barriers in Europe
 - Allow EU industry to grow
 - Prepare European industry for global competition
- 1986: 12 Member States
 - Spain and Portugal joining

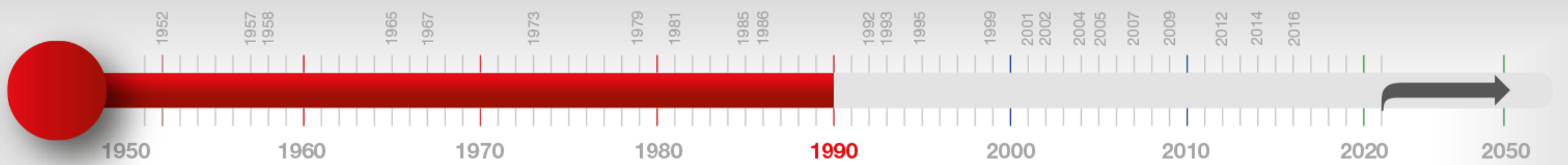




Excursion

Construction Products Directive 89/106/EEC

- Development started in the 1970s
- 6 essential requirements
 - Mechanical strength and stability
 - Safety in the event of fire and in use
 - Hygiene, health and the environment
 - Safety in use
 - Protection against noise
 - Energy economy and heat retention
- Conformity by
 - Harmonised standards
 - European Technical Approvals
 - Assessment to national provisions
- Attestation of conformity
 - By manufacturers own resources or through approved certification body.
 - Procedures stipulated by European Commission (Standing Committee on Construction)

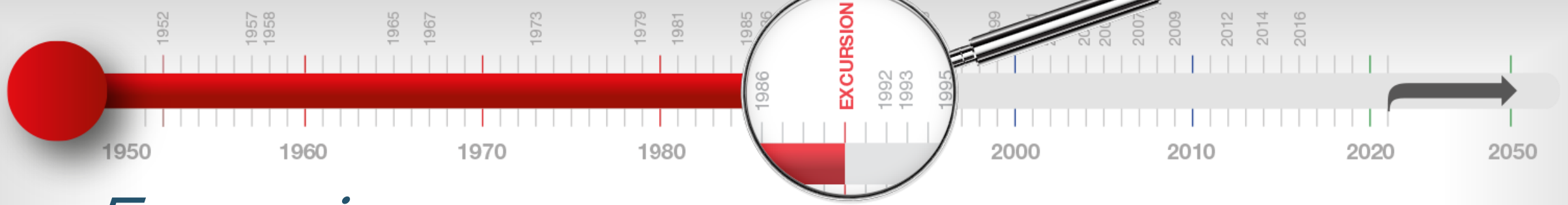


Past: The 1990s

1990

- German reunification on 3 October 1990

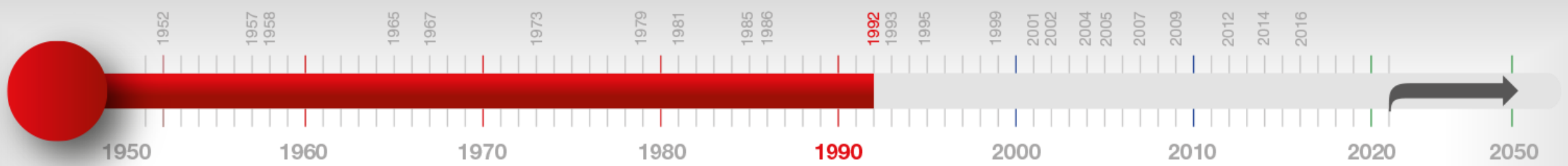




Excursion

Gas Appliances Directive 90/396/EEC

- Development started in 1987
- Essential safety requirements
- Harmonised standards provide presumption of conformity
- Mandatory 3rd party certification
- Transposition into national laws
- Non-legally binding guidance sheets

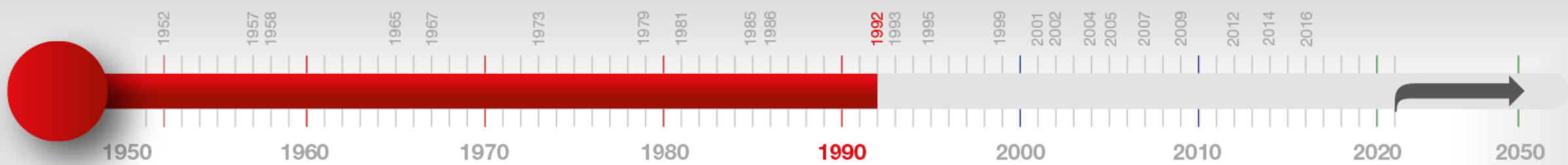


Past: The 1990s

1992

- **Boiler Efficiency Directive 92/42/EEC (→)**
- Development started in 1989
- Hot-water boilers fired with liquid or gaseous fuels with a rated output of no less than 4 kW and no more than 400 kW
 - Standard boilers
 - Low-temperature boilers
 - Gas condensing boilers

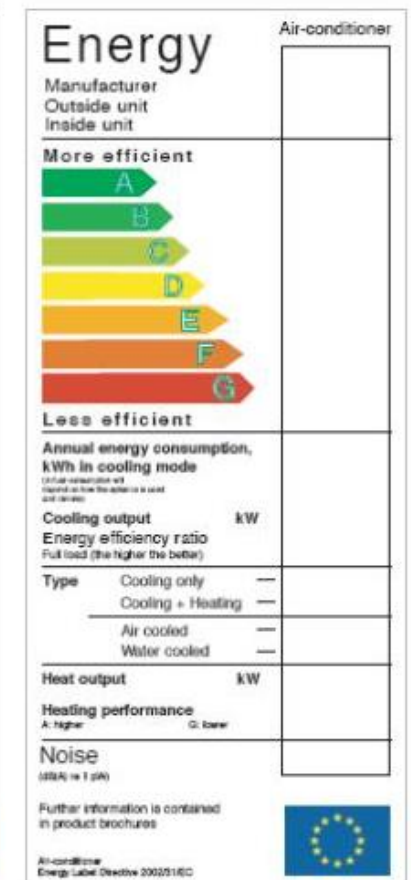
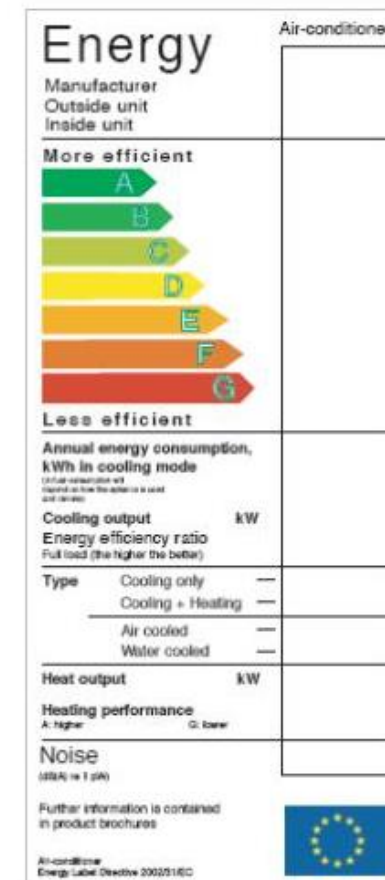


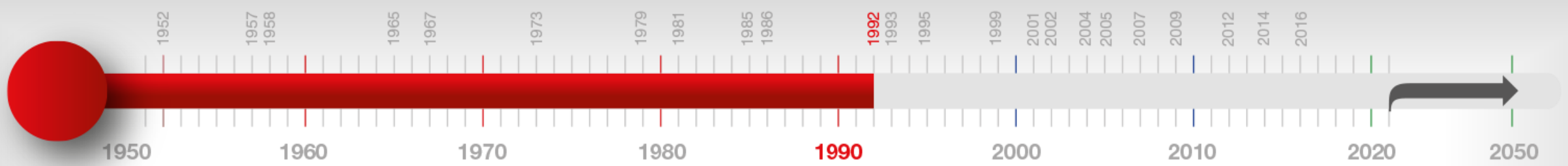


Past: The 1990s

1992

- **Energy Labelling Directive 92/75/EEC**
 - Up to 2011 (→)
- Applied to
 - Refrigerators, Washing machines, Dishwashers
 - Ovens
 - Water heaters and hot-water storage appliances
 - Lighting
 - Air-conditioning



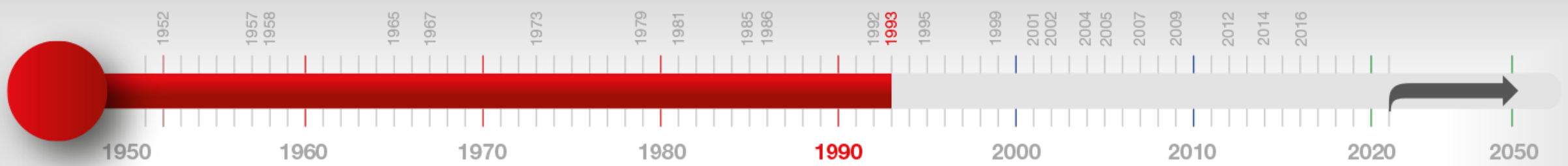


Past: The 1990s

1992

- **Ecolabel Regulation EEC 880/92 (→)**
 - Voluntary
 - Applicable for heat pumps 2007-2016 (limited numbers)
 - Water-based heaters 2014-2018 (none)

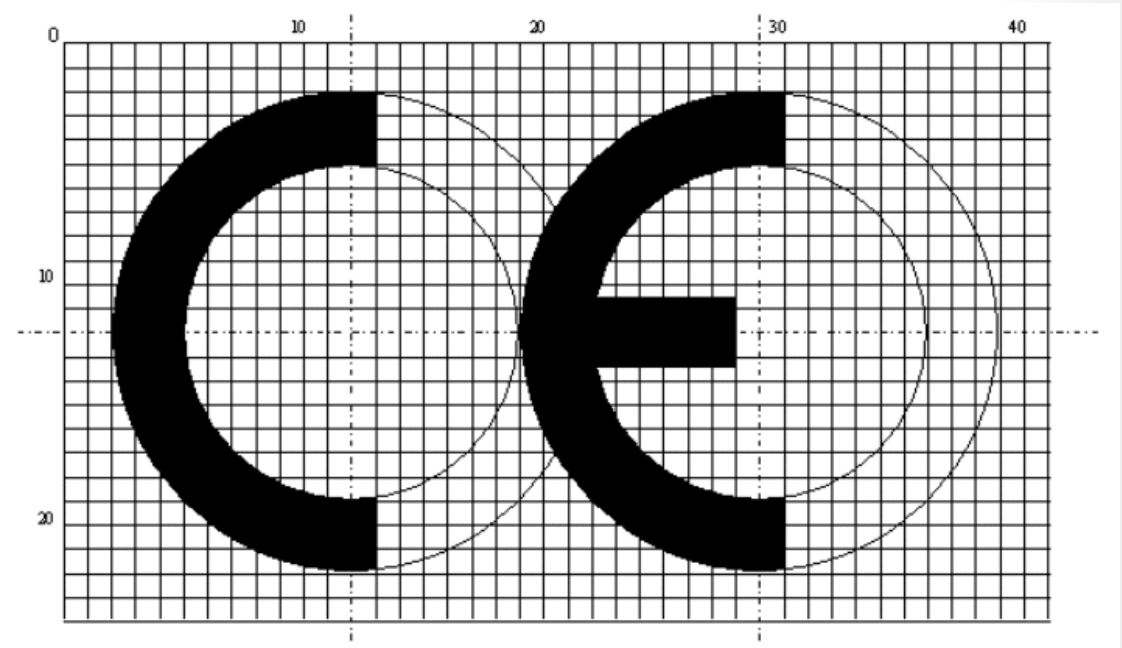


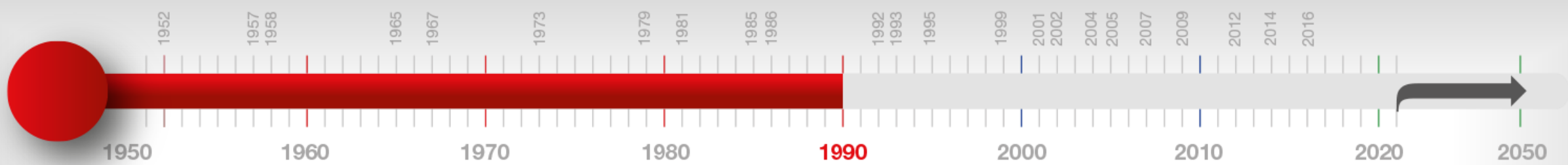


Past: The 1990s

1993

- Introduction of the Single Market
- Removal of trade barriers
- National marks for gas appliances withdrawn
- Mergers amongst boiler manufacturers gathering pace

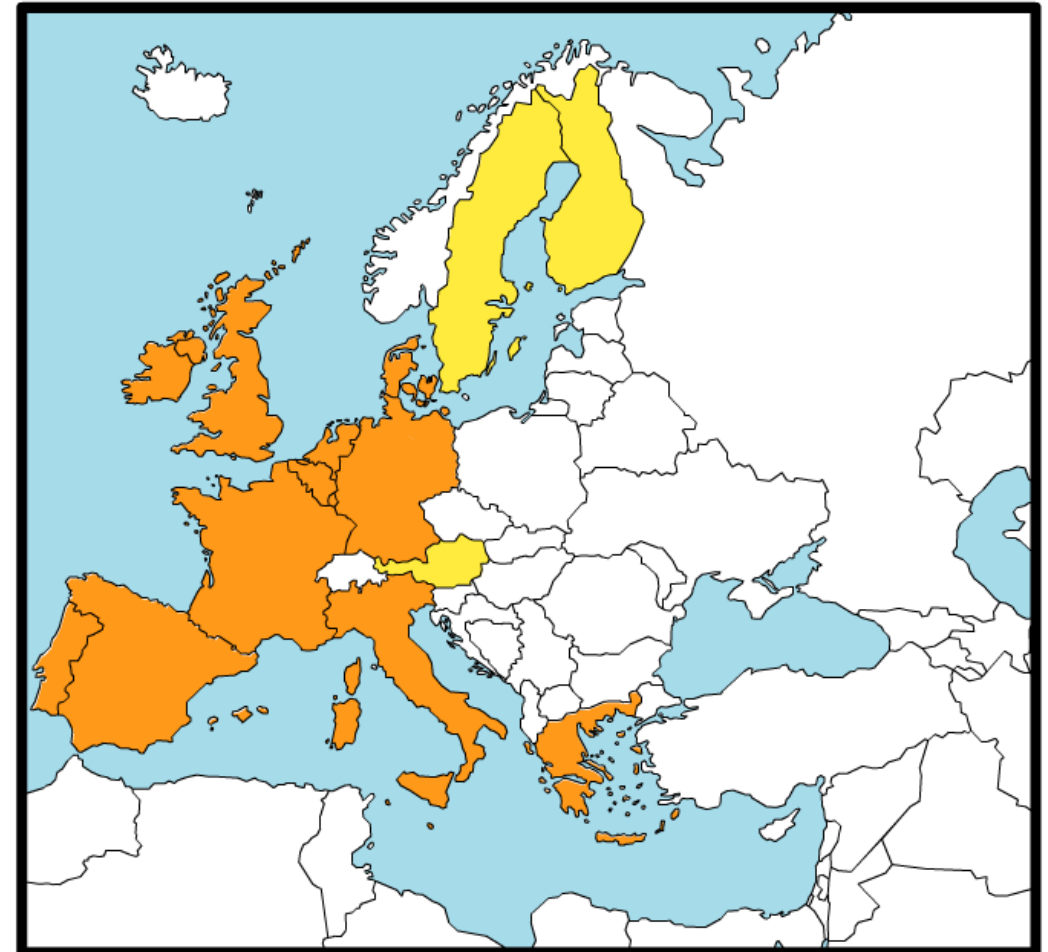


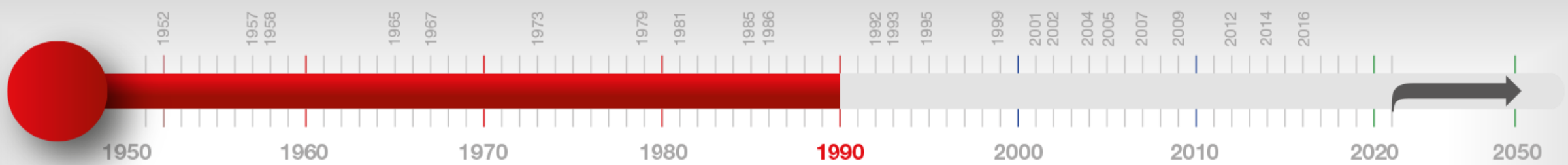


Past: The 1990s

New standards

- **1995: 15 Member States**
 - Austria, Finland and Sweden joining (→)
- Publication standard EN 26 'Gas-fired instantaneous water heaters'
 - Standardisation started in 1965



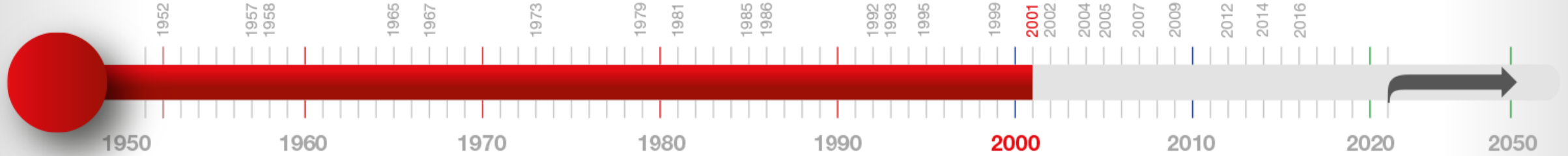


Past: The 1990s

Joint European currency

- 1999: Single currency created
- **2002: Euro issued (Euro zone) (→)**

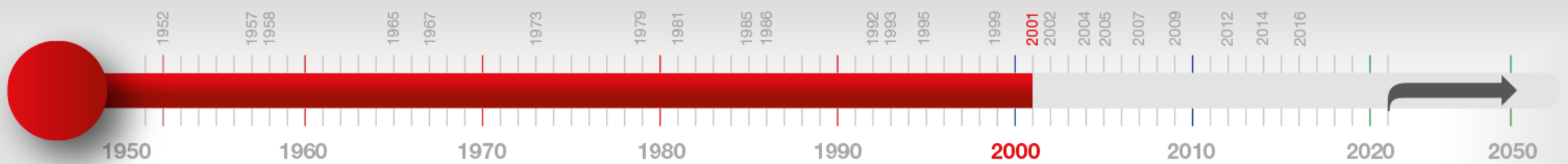




Heating in Europe

A journey through the present

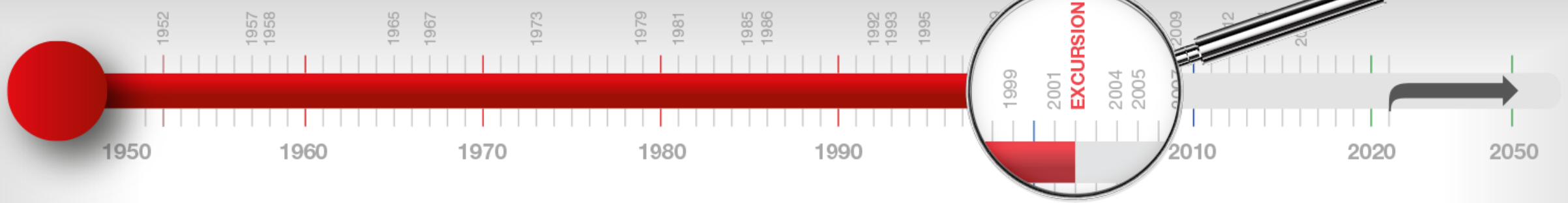
Felix Van Eyken, Secretary General, Eurovent Association



Present: The 2000s

2001

- **National Emissions Ceilings Directive 2001/81**
 - Upper limits for emissions by 2010 of the four pollutants responsible for acidification, eutrophication and ground-level ozone pollution (sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia)
 - However: Member States to decide which measures



Excursion

Directive 2002/91/EU Energy Performance of Buildings

- Common methodology, Minimum standards on performance
- **Certificates (→)**
- Regular inspection of boilers and central air-conditioning systems in buildings and assessment of heating installations in which the boilers are more than 15 years old
- Member States set minimum requirements
- National and regional transpositions
- Proliferation of calculation models, certificates, ...

ENERGIEAUSWEIS für Nichtwohngebäude
gemäß den §§ 16 ff. Energieeinsparverordnung (EnEV)

Erstellt an:
Aushang

Gebäude		Gebäudedefoto (freiwillig)
Hauptnutzung / Gebäudekategorie		
Adresse		
Gebäudeteil		
Baujahr Gebäude		
Baujahr Wärmezeuger		
Baujahr Klimaanlage		
Nettogrundfläche		

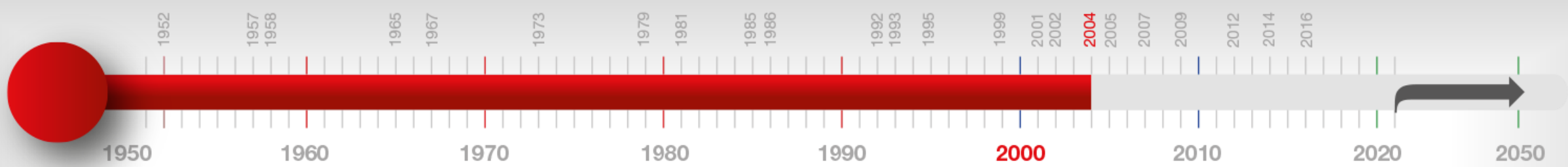
Primärenergiebedarf „Gesamtenergieeffizienz“
Dieses Gebäude: kWh/(m²·a)

EnEV-Anforderungswert Neubau ↑ EnEV-Anforderungswert modernisierter Altbau

Aufteilung Energiebedarf

Nutzenenergie Endenergie Primärenergie „Gesamtenergieeffizienz“

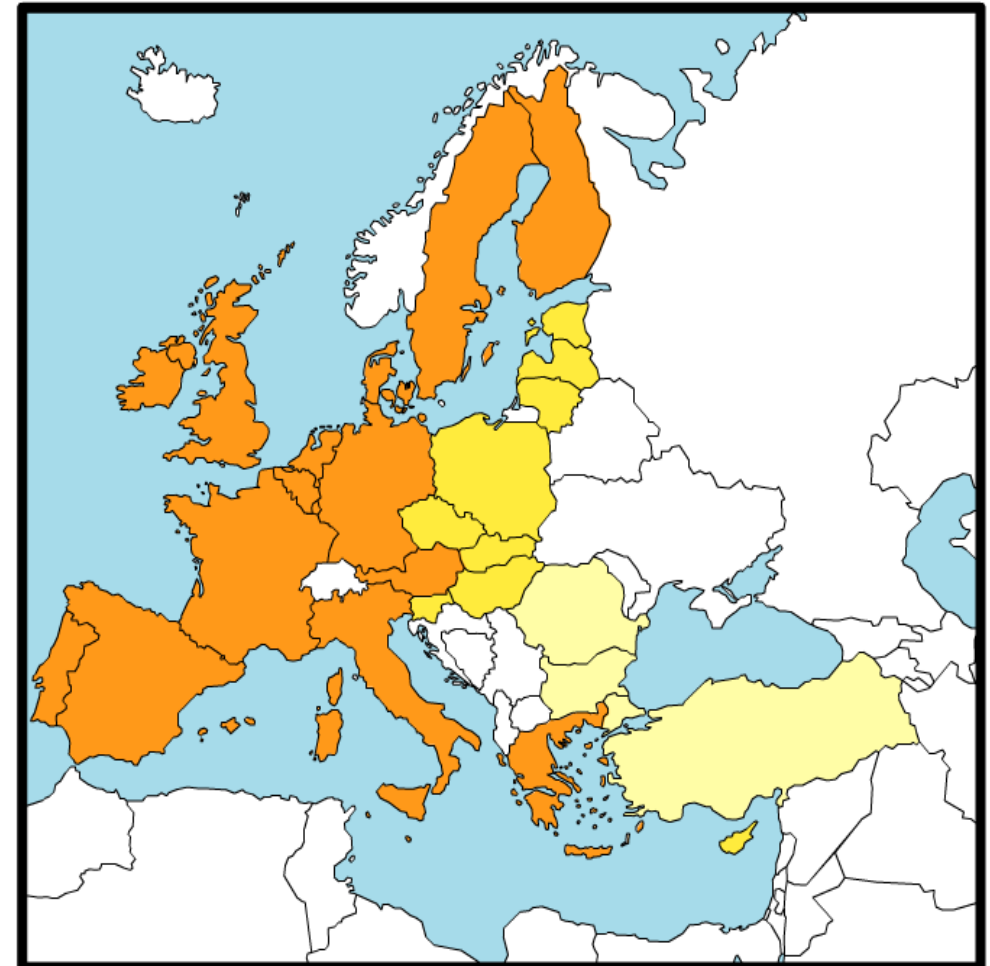
Aussteller
Unterschrift des Ausstellers

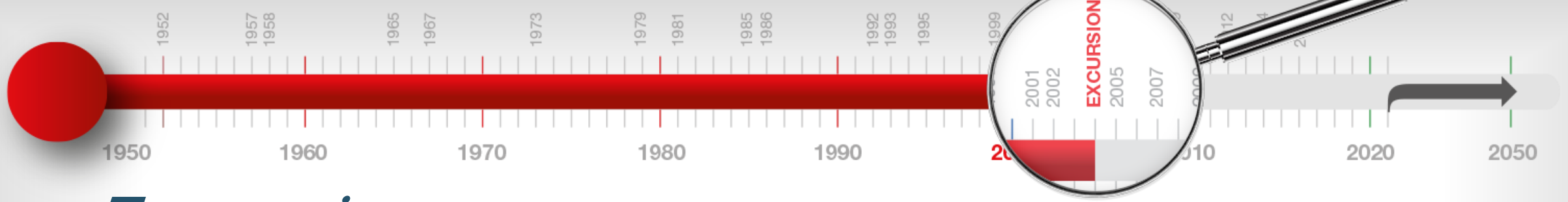


Present: The 2000s

2004

- **25 Member Countries:**
 - Czech Republic, Hungary, Poland, Slovakia, Estonia, Latvia, Lithuania, Slovenia, Cyprus, Malta join (→)

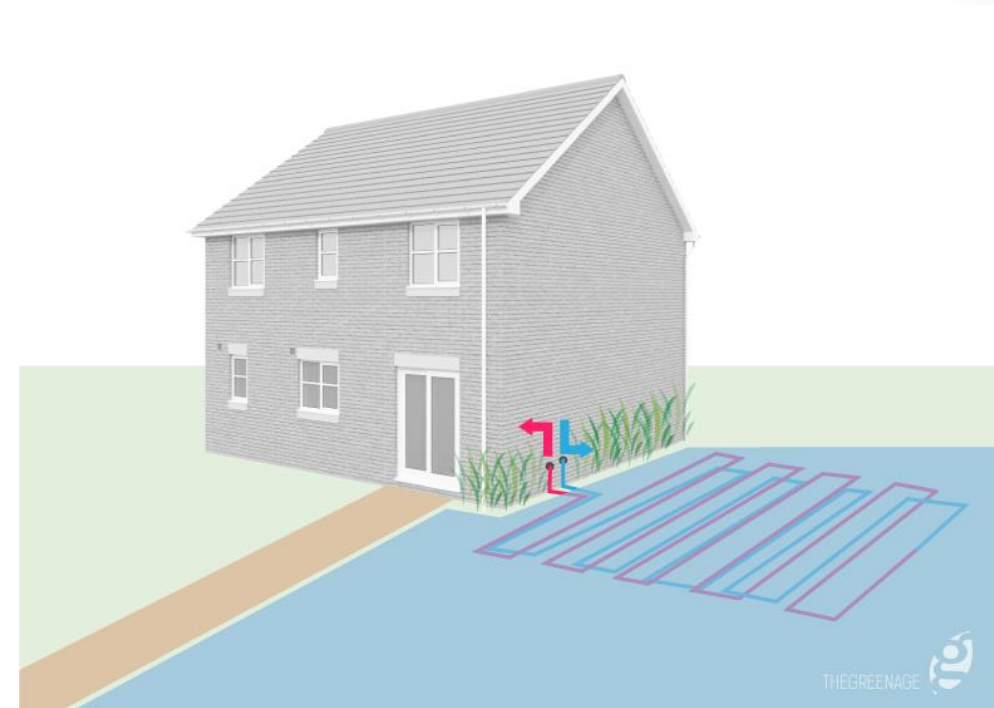


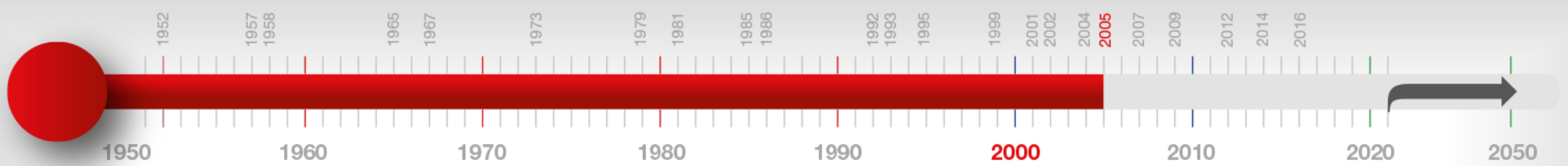


Excursion

Developments since 2004

- Growth of condensing boilers (gas & oil- incentives)
- Wall-hung
- Increased interest (incentives)
 - **Heat pumps (→)**
 - mCHP
 - Biomass, Solar
 - Combinations
- Modern district heating systems

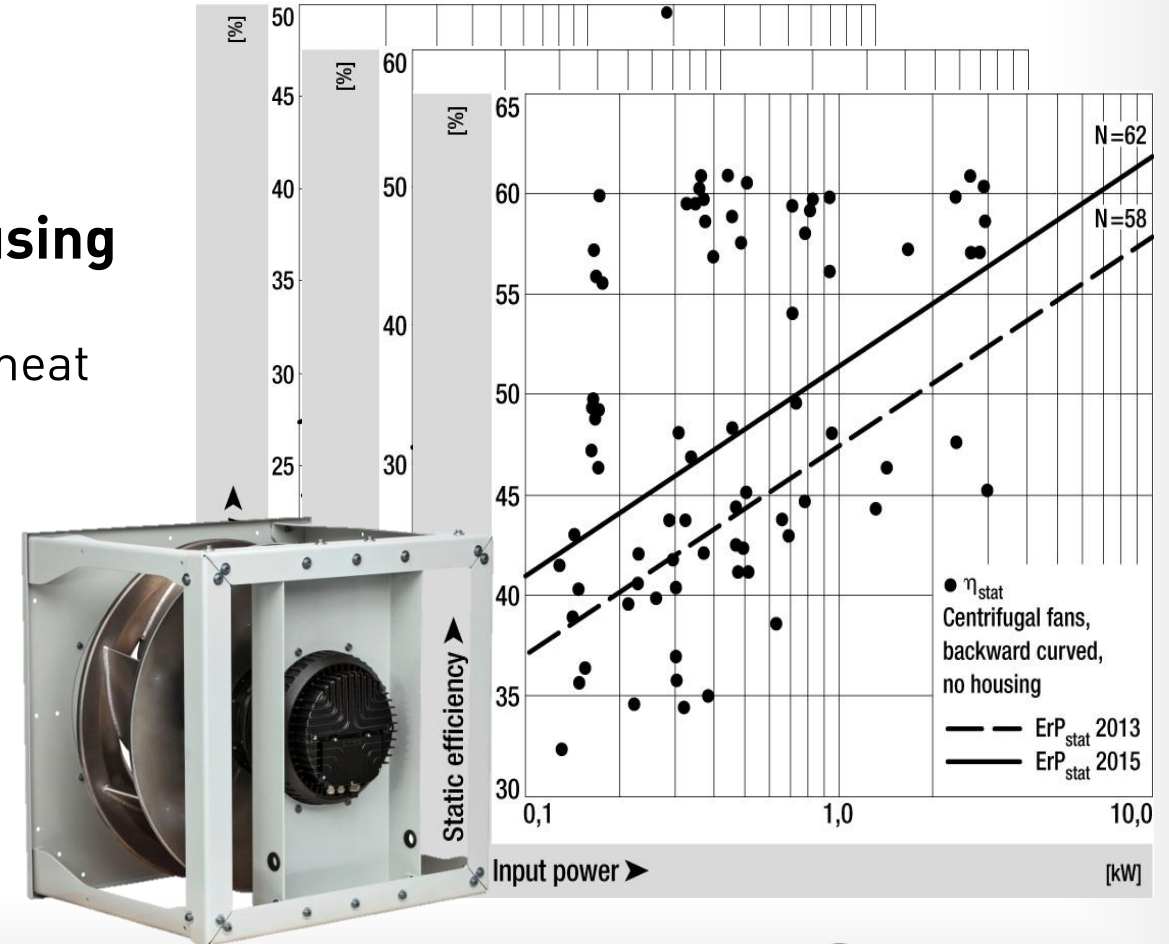


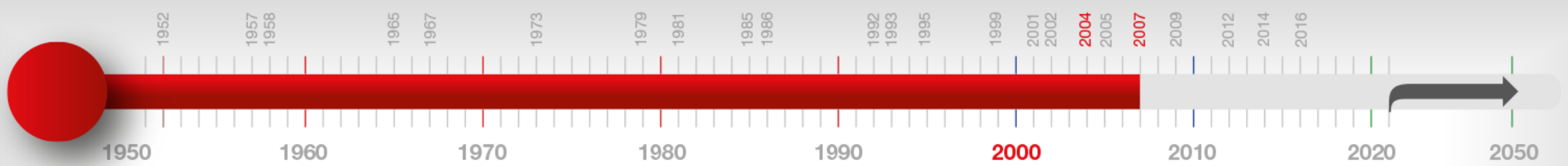


Present: The 2000s

2005

- **Ecodesign requirements for energy using products**
 - Space heaters (boilers, later: including heat pumps)
 - Water heaters
 - Air-conditioning equipment
 - Refrigeration and freezing equipment
 - Commercial refrigeration
 - **Fans (→)**
 - ...

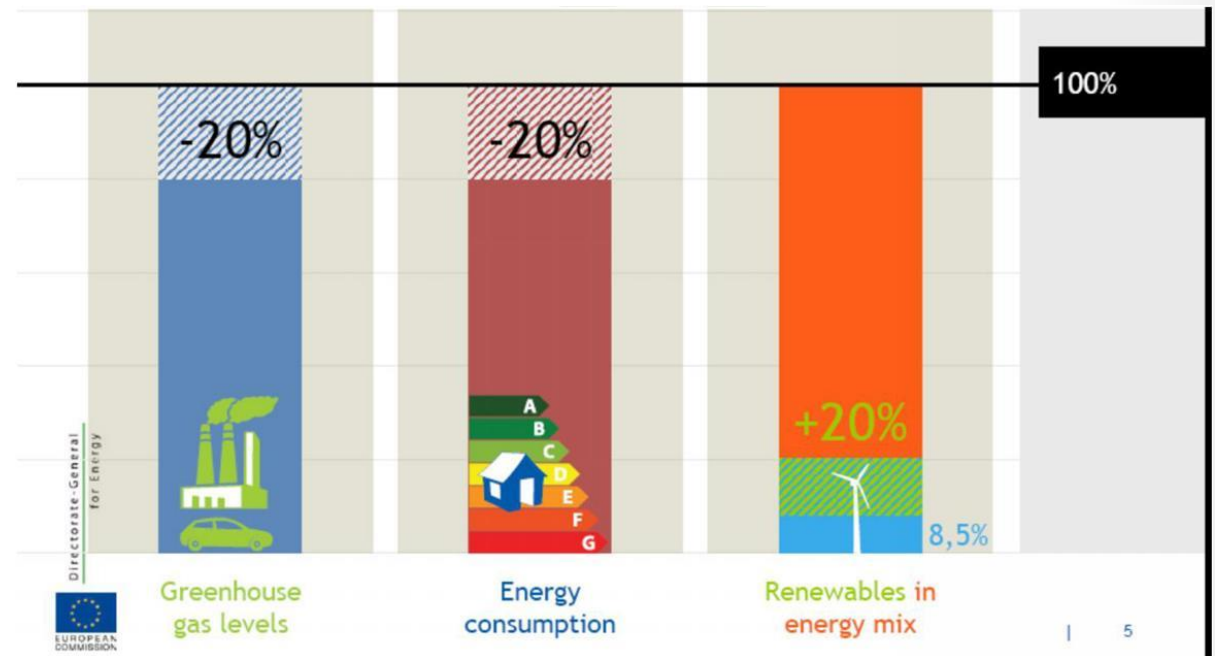


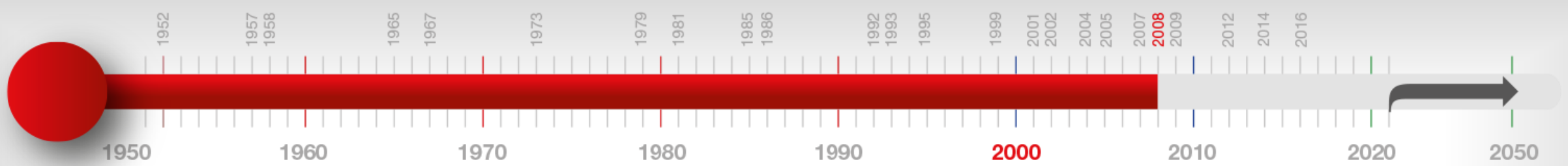


Present: The 2000s

Eastern enlargement, 20 20 20 Strategy

- 2004: 27 Member States
 - Bulgaria and Romania joining
- **2007: ‘2020 Climate & energy Package’**
 - **20 20 20 by 2020 (→)**



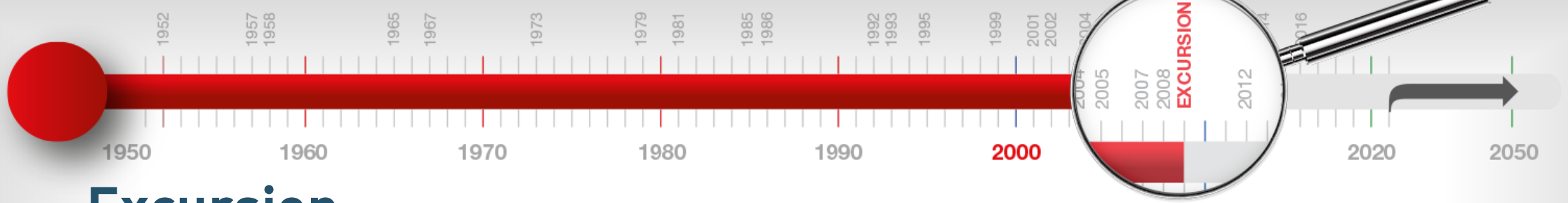


Present: The 2000s

Cleaner air for Europe

- **Ambient Air Quality Directive 2008/50/EC**
 - Cleaner air for Europe
 - Fine particles (PM 2,5, PM 10)
 - Nitrogen oxides (NOx)
 - Local, regional or national air quality plans for improvement
- 2013: 28 Member States
 - Croatia joining



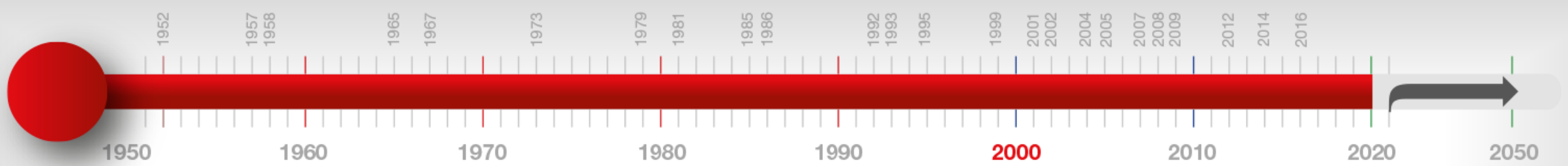


Excursion

Directive 2009/28/EC promoting the use of energy from renewable sources

- Set out targets to be achieved
- **National Renewable Energy Plans**
 - To contribute to 20 20 20 target of a 20% share of renewable energy in 2020 (compared to the share of 8.5% in 2009)
 - Savings of 600 to 900 million tonnes of CO₂ emissions per year
 - Reductions in fossil fuel consumption of 200 to 300 million tonnes per year
- Heat pumps considered as a renewable energy source





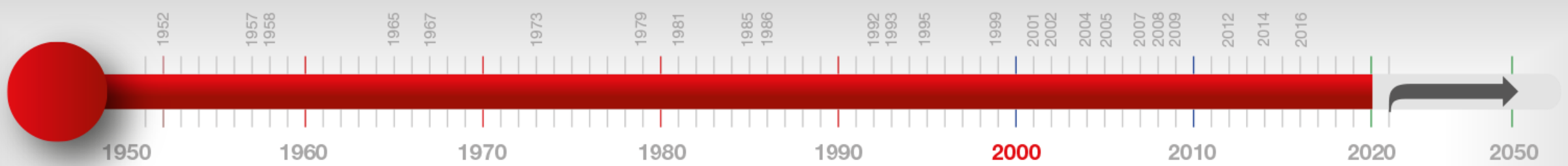
Present

Climate and energy policy as an integrated approach

3 core objectives

- Security of supply
- Competitiveness (affordable energy)
- Sustainability (combat climate change)



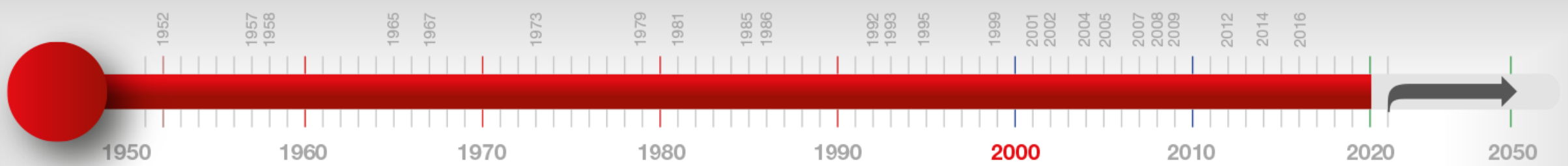


Present

The Single Market today

- **Physical barriers**
 - **Border controls removed (→)**
- **Technical barriers**
 - Principle of mutual recognition
- **Public contracts**
 - Open to bidders from anywhere in the EU
- **Work in progress**
 - Administrative and technical barriers to free movement



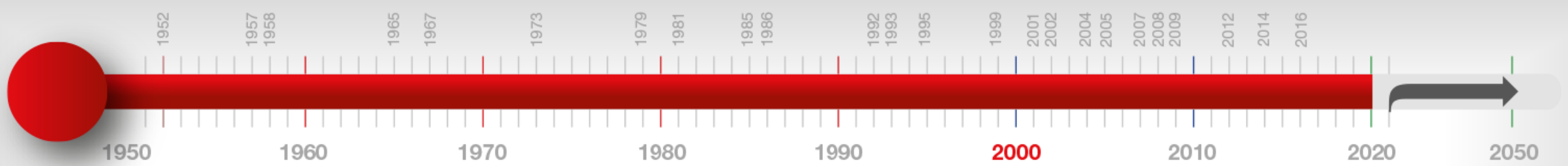


Present

Ecodesign Framework Directive - Energy Related Products 2009/125/EC

- Extended scrutiny right by European Parliament
- Work plan with more product groups
 - Air conditioning above 12 kW
 - Ventilation
 - Local space heaters
 - Refrigerated storage cabinets
 - Chillers
- By 2016: 37 product groups covered

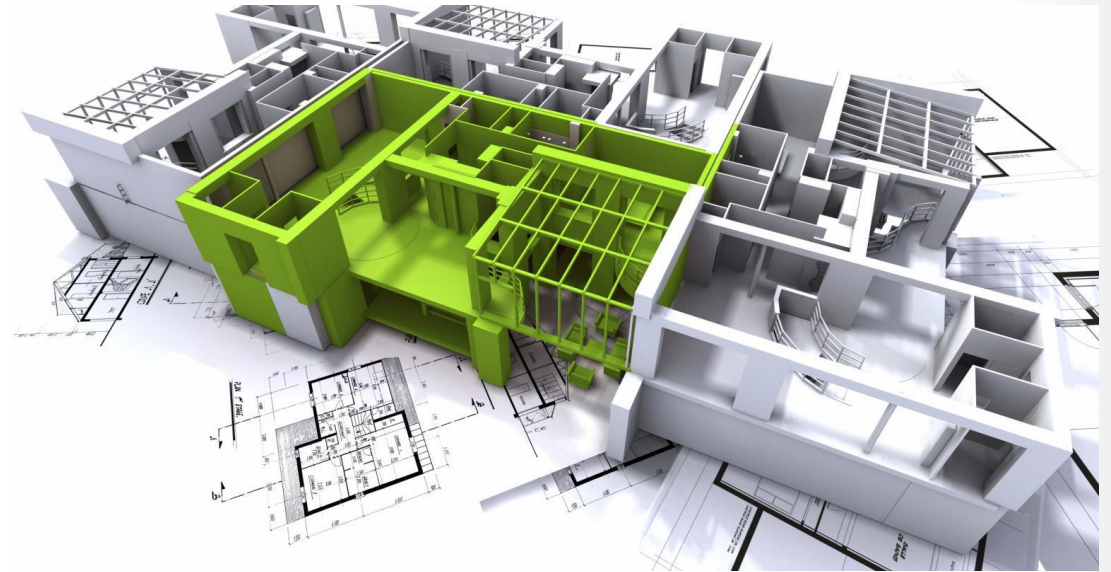


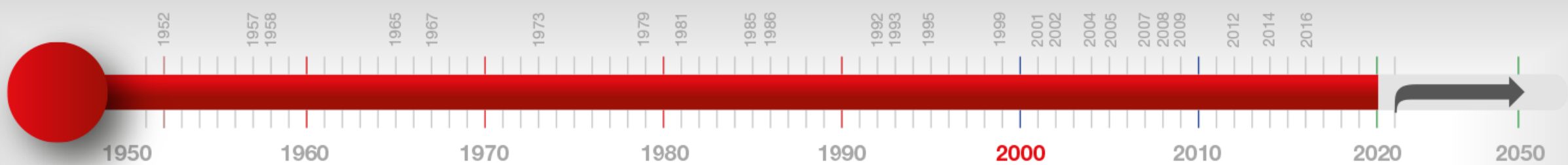


Present

Recast of the Energy Performance of Buildings

- Directive 2010/31/EU replaced Directive 2002/91
- **To move to nearly zero energy buildings by 2018/2021**
 - **Calculation of cost-optimal levels**
- For new buildings evaluate feasibility
 - a) Decentralised energy supply, RES
 - b) Cogeneration
 - c) District or block heating
 - d) Heat pumps

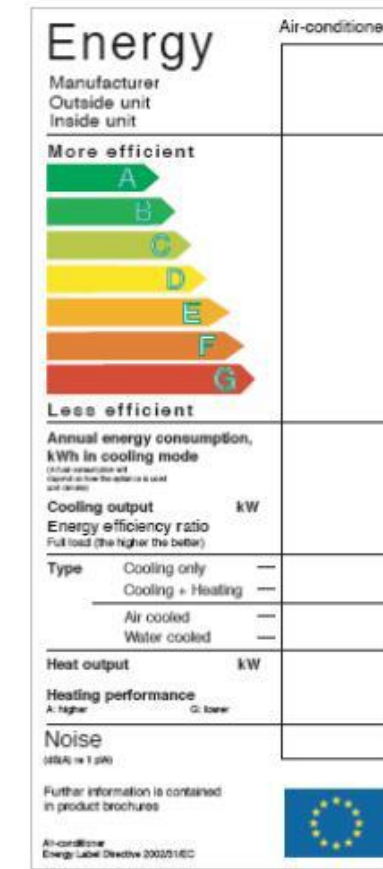




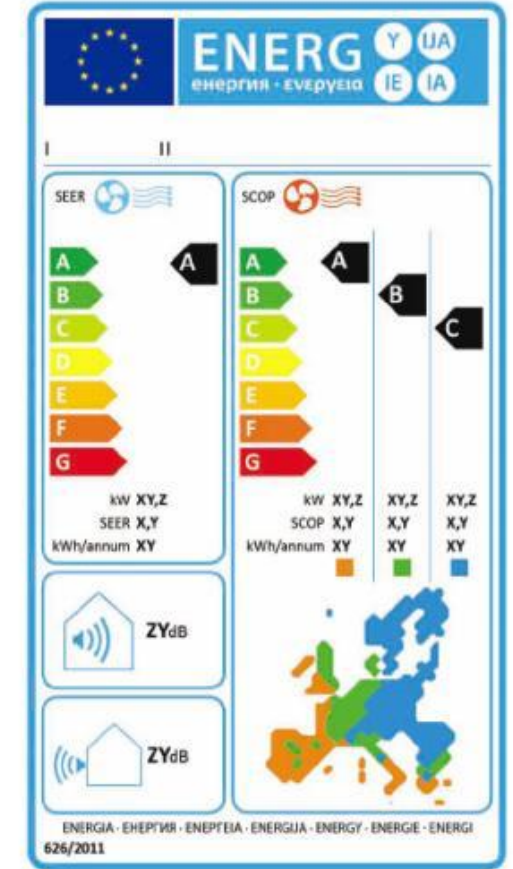
Present Labelling Directive 2010/30/EU

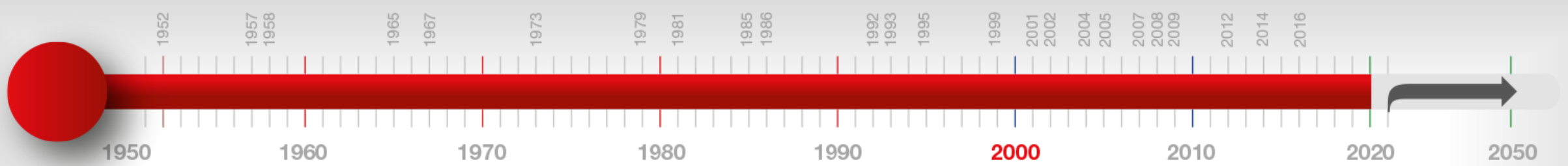
- Replaces 92/75/EC
- Implementing measures via delegated acts specifying technical details
- From A-G
- To A+++ to G

Current Energy Label



New Energy Label

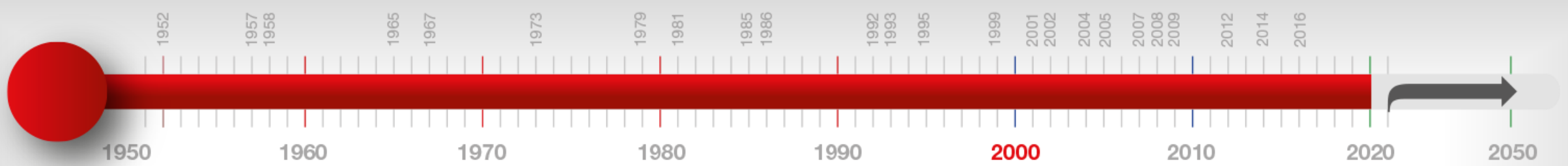




Present

Construction Products Regulation 305/2011/EU

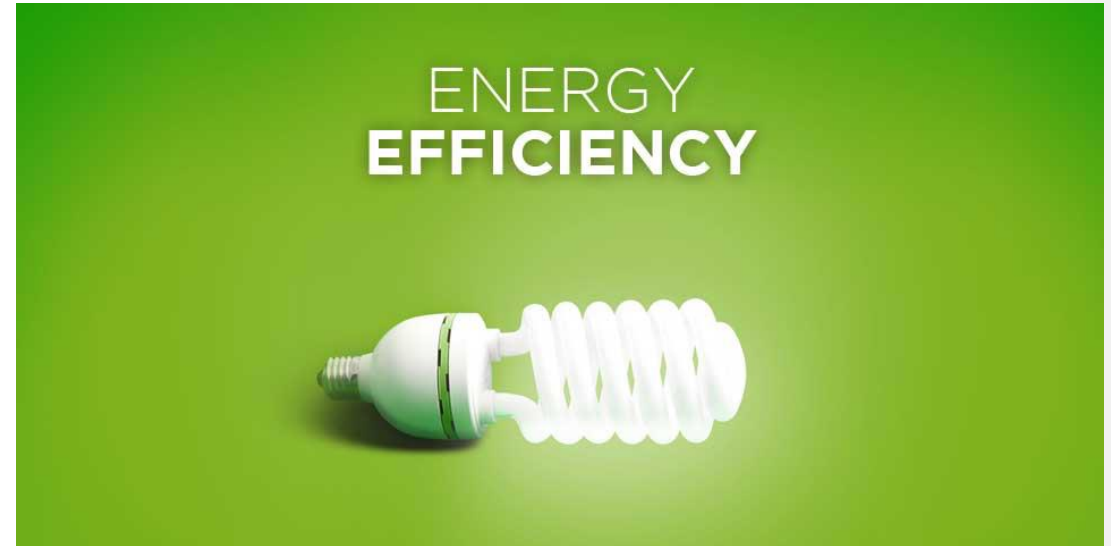
- Recast replacing the Construction Products Directive (89/106/EEC – CPD)
- 7 essential requirements
 - Mechanical strength and stability
 - Safety in the event of fire
 - Hygiene, health and the environment
 - Safety in use
 - Protection against noise
 - Energy economy and heat retention
 - **Sustainable use of natural resources**

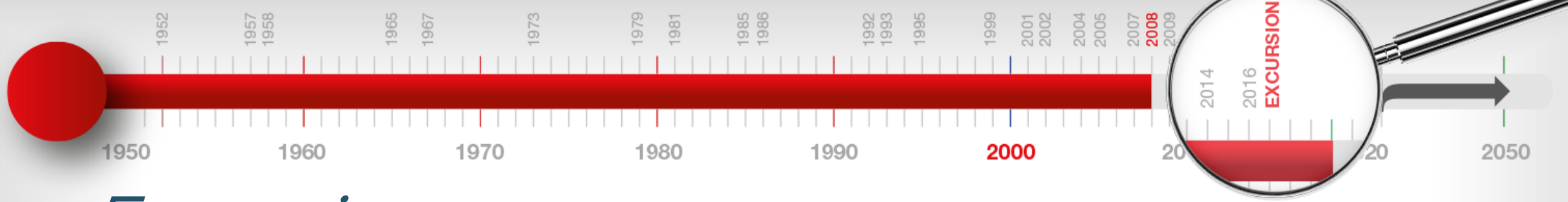


Present

Energy Efficiency Directive 2012/27

- Binding measures to reach 20% energy efficiency target by 2020
- Governments must carry out energy efficient renovations on at least 3% (by floor area) of the buildings they own and occupy



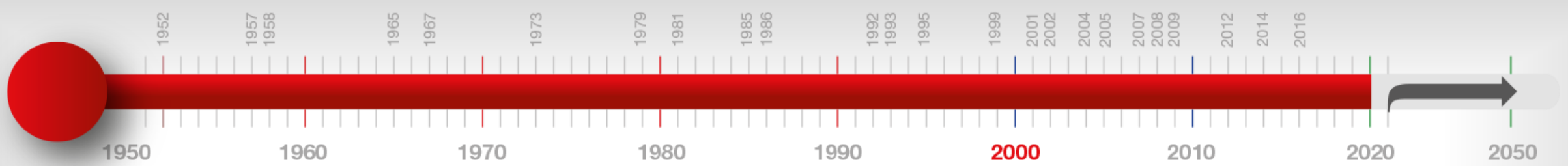


Excursion

Trends in the boiler industry

- Legislation is leading to concentration of industries
- **300 boiler manufacturers in the mid 1980s**
- **5 to 10 major groups by 2015** offering full climate comfort solutions
 - Stoves,
 - Boilers,
 - Solar,
 - mCHP,
 - Air Conditioning,
 - Heat pumps,
 - Controls,
 - ...

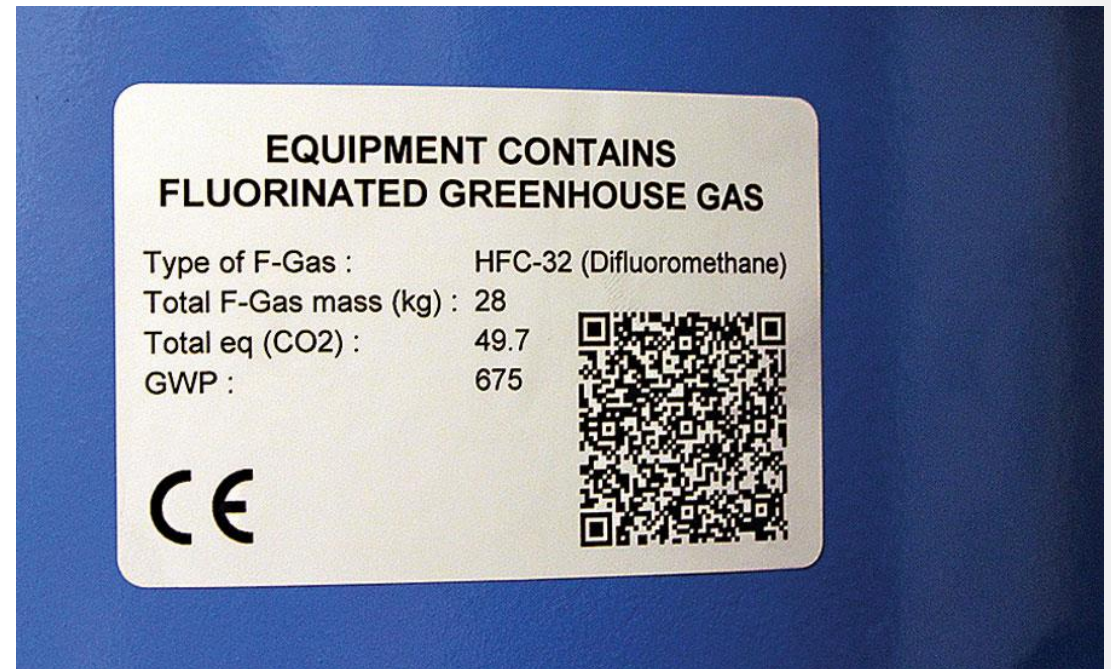


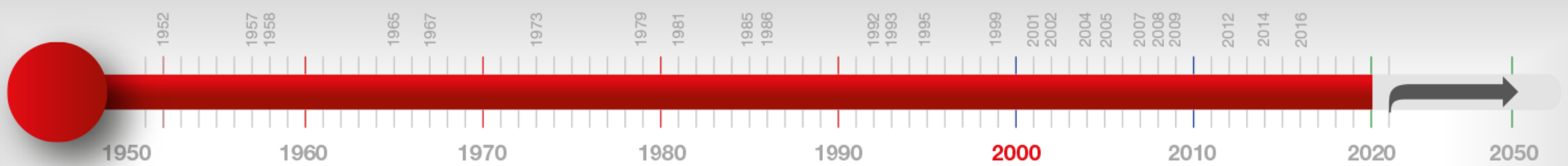


Present

F-Gas Regulation 842/2006

- Reduce emissions of the F-Gases covered by the 1997 Kyoto Protocol (adopted by EU in 2002)
- Aim: Reduction of 8 % compared to 1990 levels in the period from 2008 to 2012

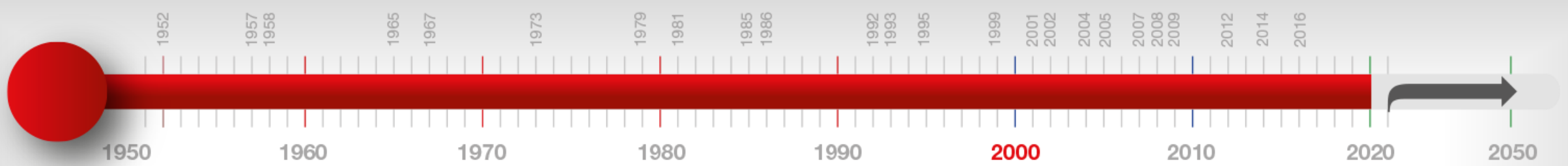




Present

F-Gas Regulation 517/2014

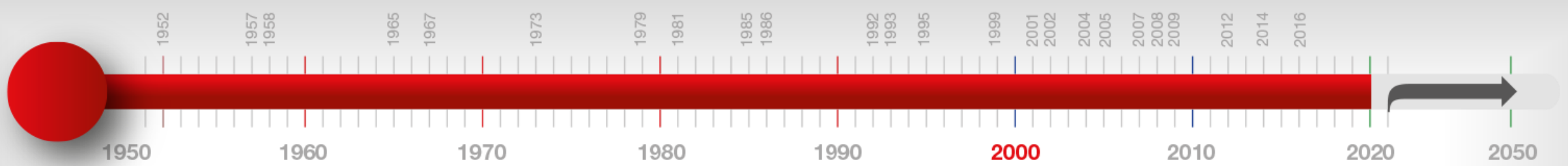
- **Updating Regulation 842/2006**
- **Limiting the total amount** of important F-gases that can be sold in the EU from 2015 onwards and phasing them down in steps to one-fifth of 2014 sales in 2030
- **Banning the use** of F-gases in many new types of equipment
- **Preventing emissions** of F-gases from existing equipment by requiring checks, proper servicing and recovery of the gases at the end of the equipment's life



Present

2016: Clean Energy for All Europeans

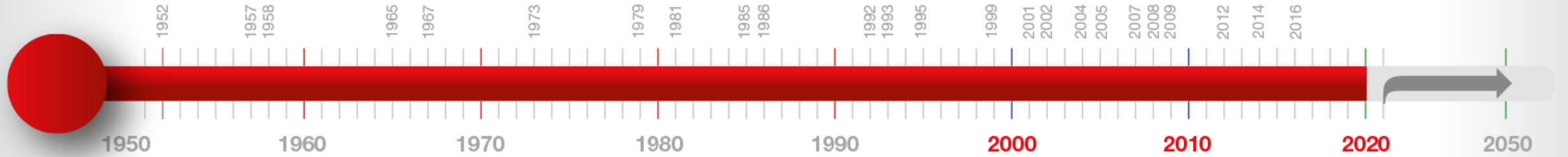
- November 2016
- **Binding EU-wide target of 30% for energy efficiency by 2030**
 - Updates the **Energy Efficiency Directive**
 - Changes to **Energy Performance of Buildings Directive**
 - New approach to **Ecodesign**
 - Revised **Renewable Energy Sources Directive**



Present

2016: Heating and Cooling Strategy

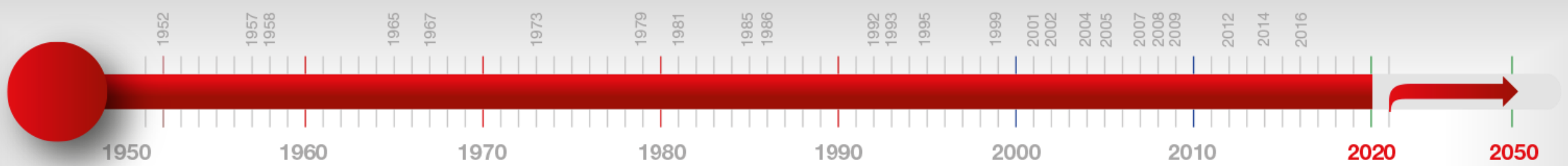
- EU data for heating reliable
- EU data for cooling not sufficient
- Strategy/vision
 - District heating/cooling in urban areas
 - Heat pumps and renewables in other areas
 - Decarbonisation



Heating in Europe

A journey through the future

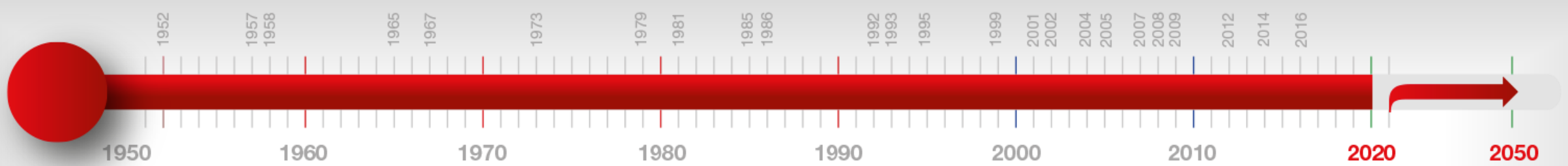
Felix Van Eyken, Secretary General, Eurovent Association



Present and future

2030 Framework for Climate and Energy

- At least 40% cuts in **greenhouse gas emissions** (from 1990 levels)
- At least 27% share for **renewable energy**
- At least 27% improvement in **energy efficiency**
- 40-27-27 strategy



Present and future Priorities for buildings

- **The first priority is providing a healthy environment for citizens**
- Health costs, specially for older generation, are spiralling
- Energy related issues should consider this
- Consequences
 - Clean energy production
 - Limit energy requirements
 - Different approaches for new and existing buildings

YOUR AIR FILTER MAKES THE DIFFERENCE

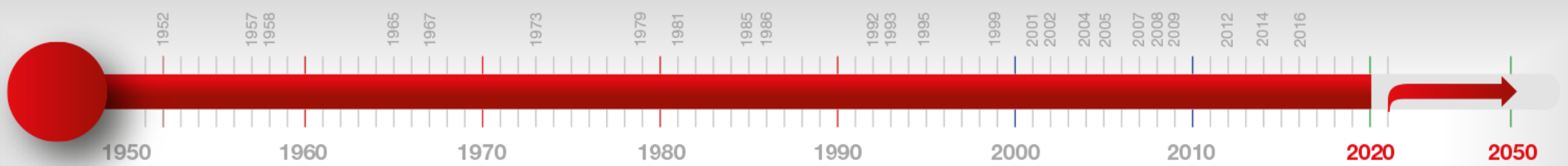
IAQmatters
Yes to a better Indoor Air Quality

Air filters are essential in ensuring a good indoor air quality, which evidently increases productivity levels, reduces health risks, and provides for a good level of comfort. Do you know if the air filter in your HVAC system does what it is supposed to do?

THINK AHEAD, SHARE THIS MESSAGE. TELL YOUR BUILDING OWNER AND HVAC SUPPLIER THAT #IAQmatters TO YOU.

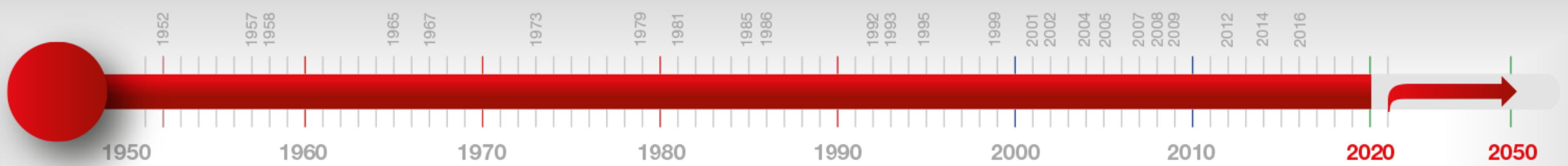
For more information, visit www.IAQmatters.org

EUROVENT **EUROVENT MIDDLE EAST**



Present and future Clean energy production

- Decarbonise where possible
- **Shift away from coal fired power stations**
 - Install, maintain and regular replacement of air cleaning filters in power stations
 - Conversion to oil or gas as an intermediate measure
- Investment in solar and wind energy production

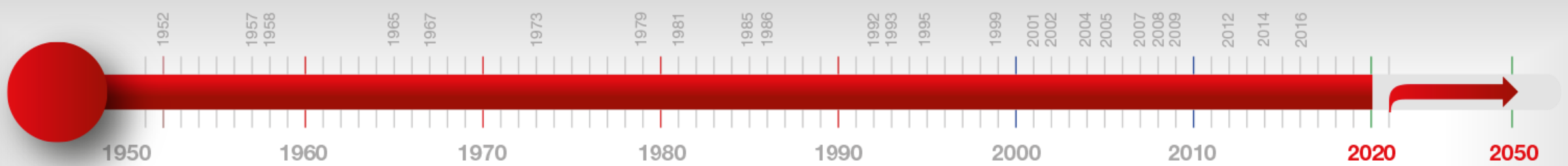


Future

New buildings/urban districts

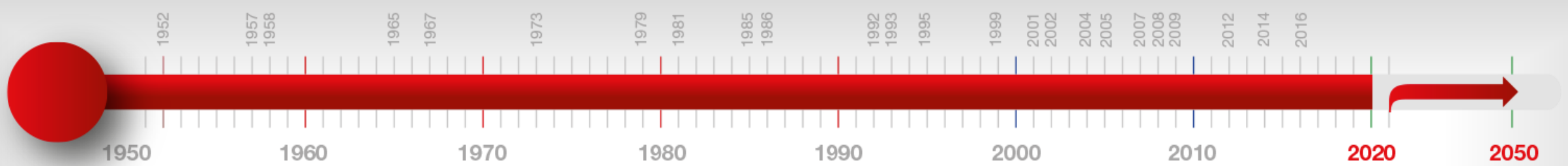
- Urban planning to limit impact from transport pollution
- District heating and cooling
 - Plus wind and solar if available
- Buildings to be zero or energy plus
- **Bosco Verticale (Milan, Italy)**





Future Existing districts/buildings

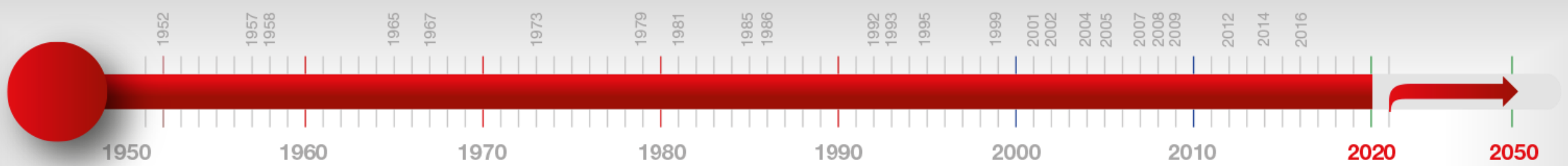
- Existing district layouts are difficult to upgrade
- Eliminate maximum of pollution sources
- If not possible, improve control of pollution sources
 - By shifting from towards less polluting energy sources
 - Maximum use of filtration technologies
 - Replace of block heating with newer boiler technologies



Future Existing districts/buildings

- Focus on reducing heat losses of the envelope could be preferred but may not always be the best economic solution for rapid results
- Most rapid cost effective results:
 - Focus on upgrading/replacing energy using equipment with efficient alternatives (condensing boilers, led lighting...) even before insulating the building envelope
 - Integrate smart controls
- **Consider demolition and replacement with new buildings as the economic alternative to renovations, in particular for medium and high-rise buildings**
 - **Negative side: Breaking up of communities**





Future Newly build individual homes

- Optimal orientation
- Focus on insulation of envelope
- Best possible technology
 - Reversible heat pumps
- High performing ventilation systems
- Use of solar panels to generate electricity or hot water

