

a changing industry

natural refrigerants in Europe and beyond



**European Union Side Event
Warsaw Climate Change Conference**
EU action on HFCs and other f-gases
12 November 2013

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shecco

agenda



- shecco
- natural refrigerants in Europe and globally
- How to get there?

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- market development company
- climate friendly technologies
- role: “accelerate market introduction”
- offices: Brussels / Tokyo
- 100+ partners (Europe, Asia, America)
- expertise: HVAC&R & transport sectors
 - natural refrigerants: CO₂, NH₃, HC, H₂O, Air
 - electric vehicles



ammonia
everything natural



hydrocarbons
everything natural



agenda

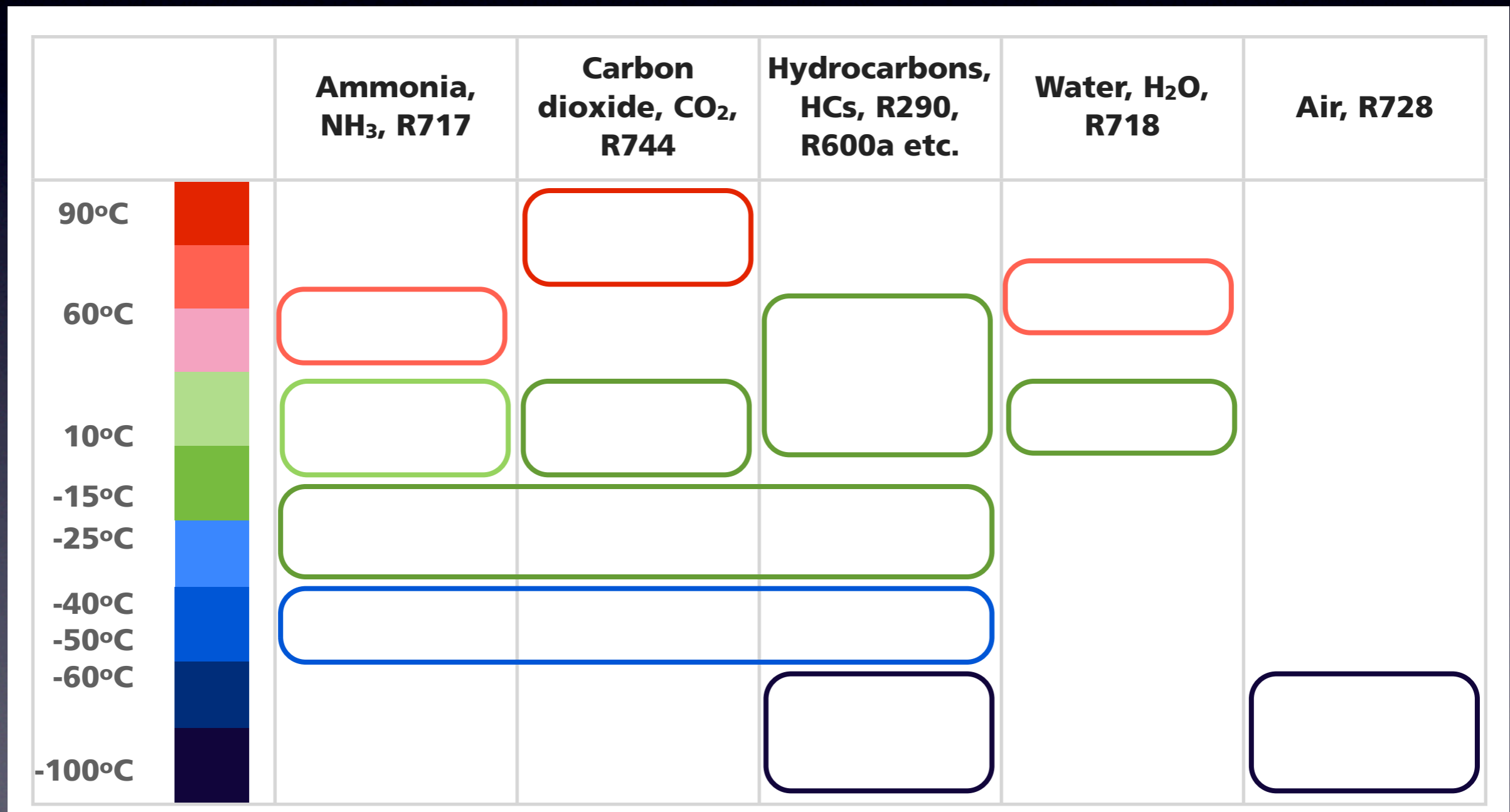


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technology: the application potential...

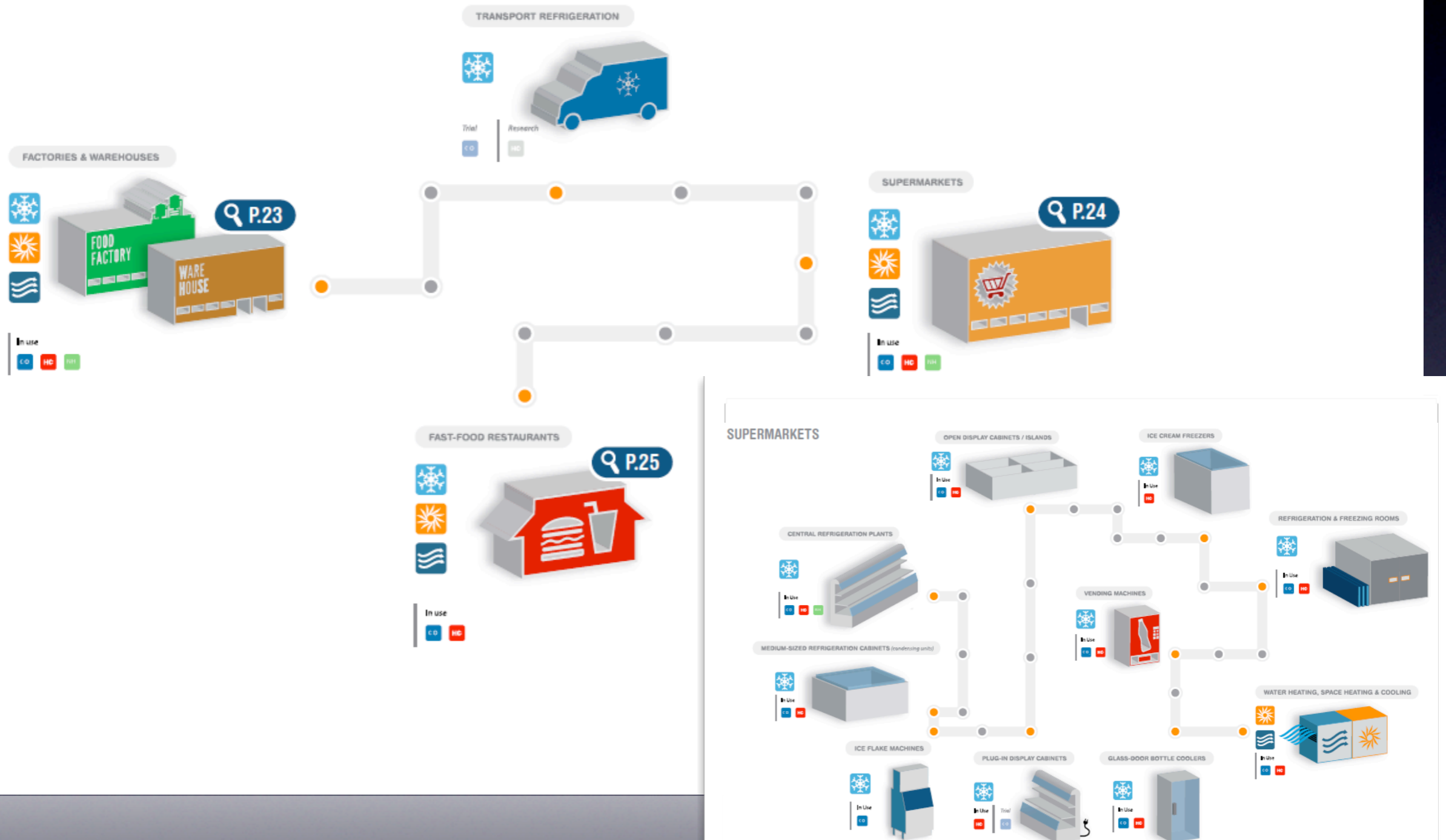


Across the whole range of heating, cooling and refrigeration needs the "Natural Five" can cover a wide range of applications



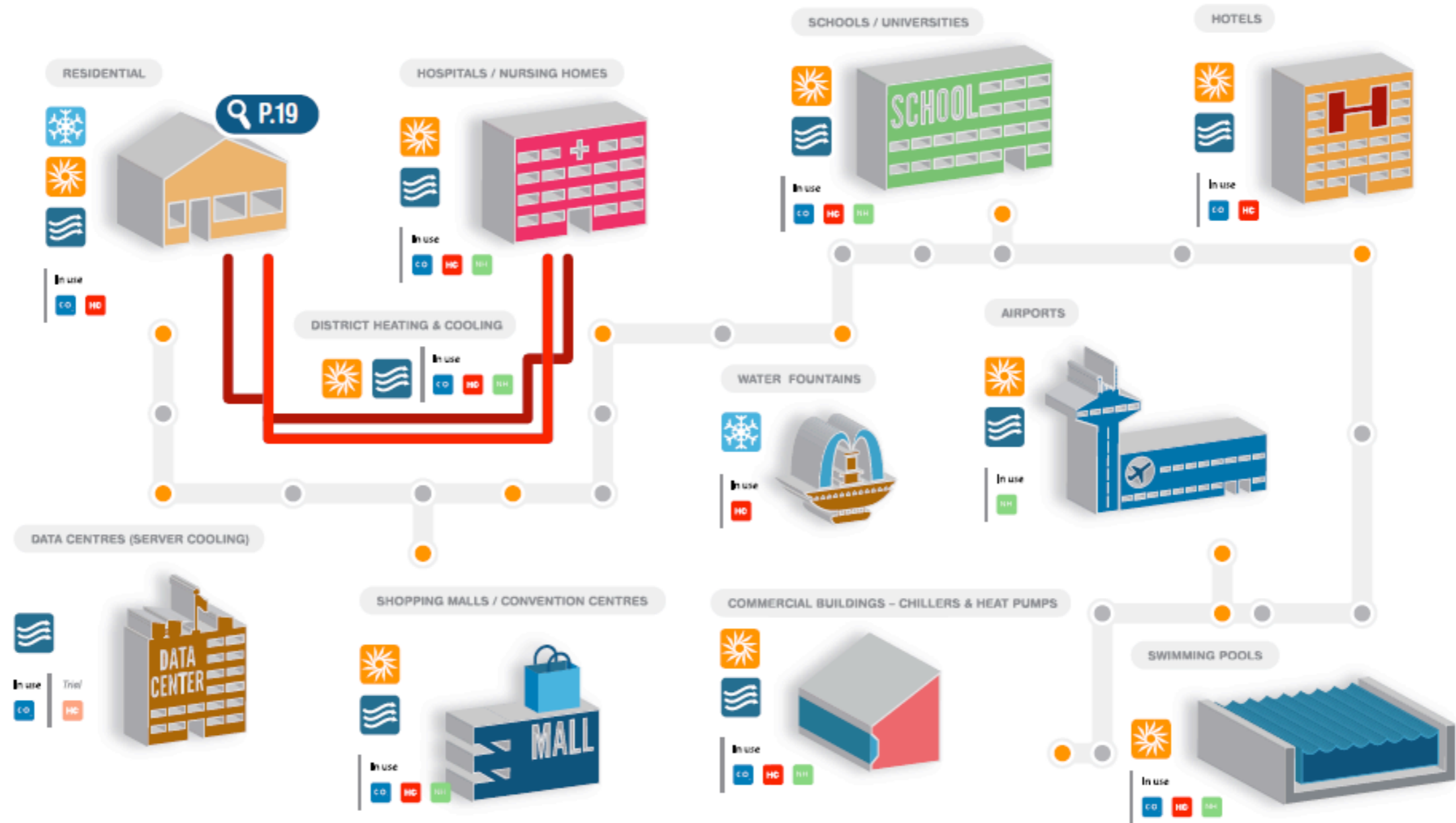
... in the food retail chain

THE FOOD CHAIN



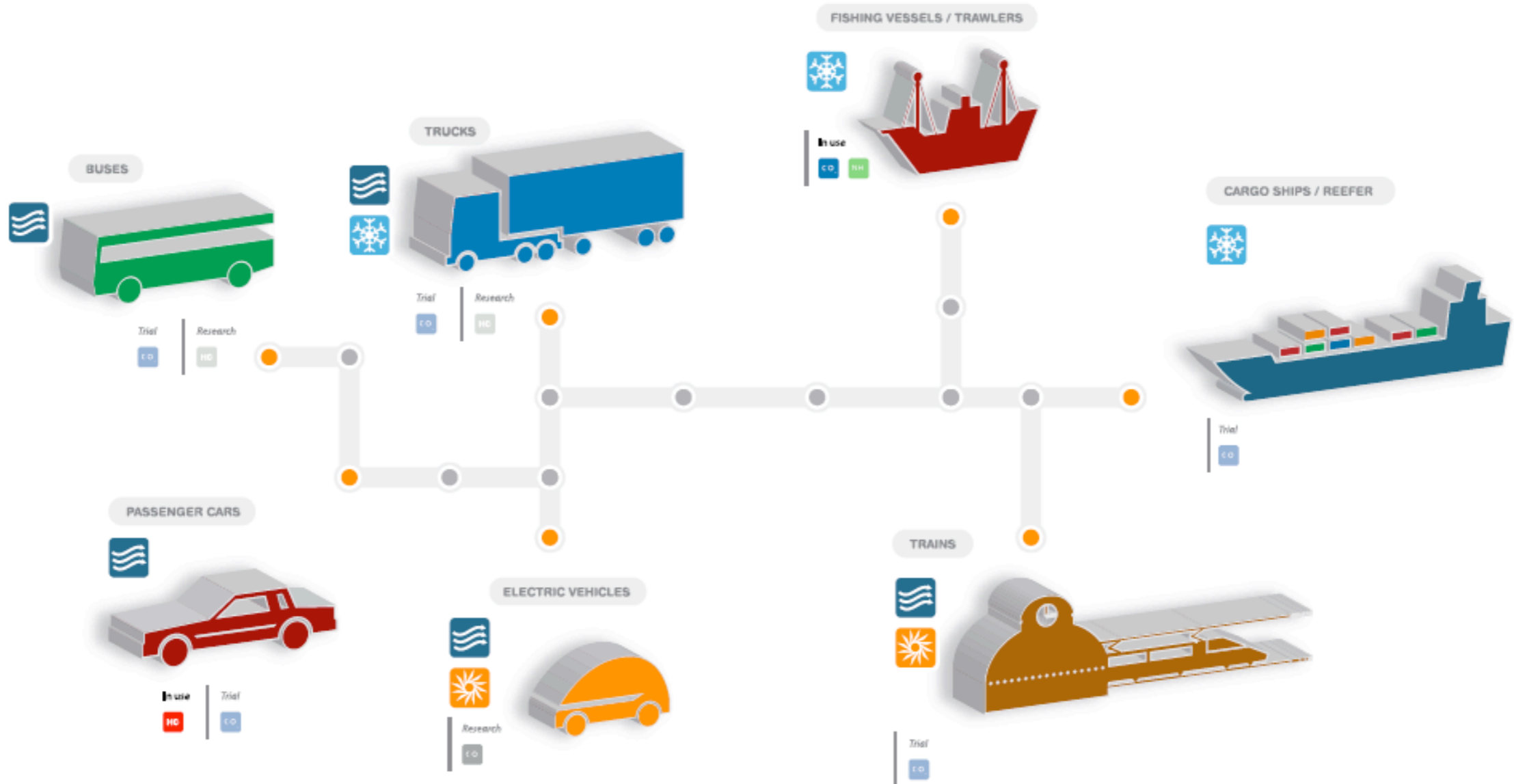
... in buildings

CITY & BUILDINGS



... in transport

TRANSPORT APPLICATIONS



Natural refrigerants have negligible Global Warming Potential



Global Warming Potential (100-yr horizon, IPCC AR4)

Natural refrigerants

Ammonia, R717	Carbon dioxide, R744	Propane, R290	Isobutane, R600a	Water, R718	Air, R728
0	1	3.3	4	0	0

Hydrofluorocarbons (HFCs)

Hydrochlorofluorocarbons (HCFCs)

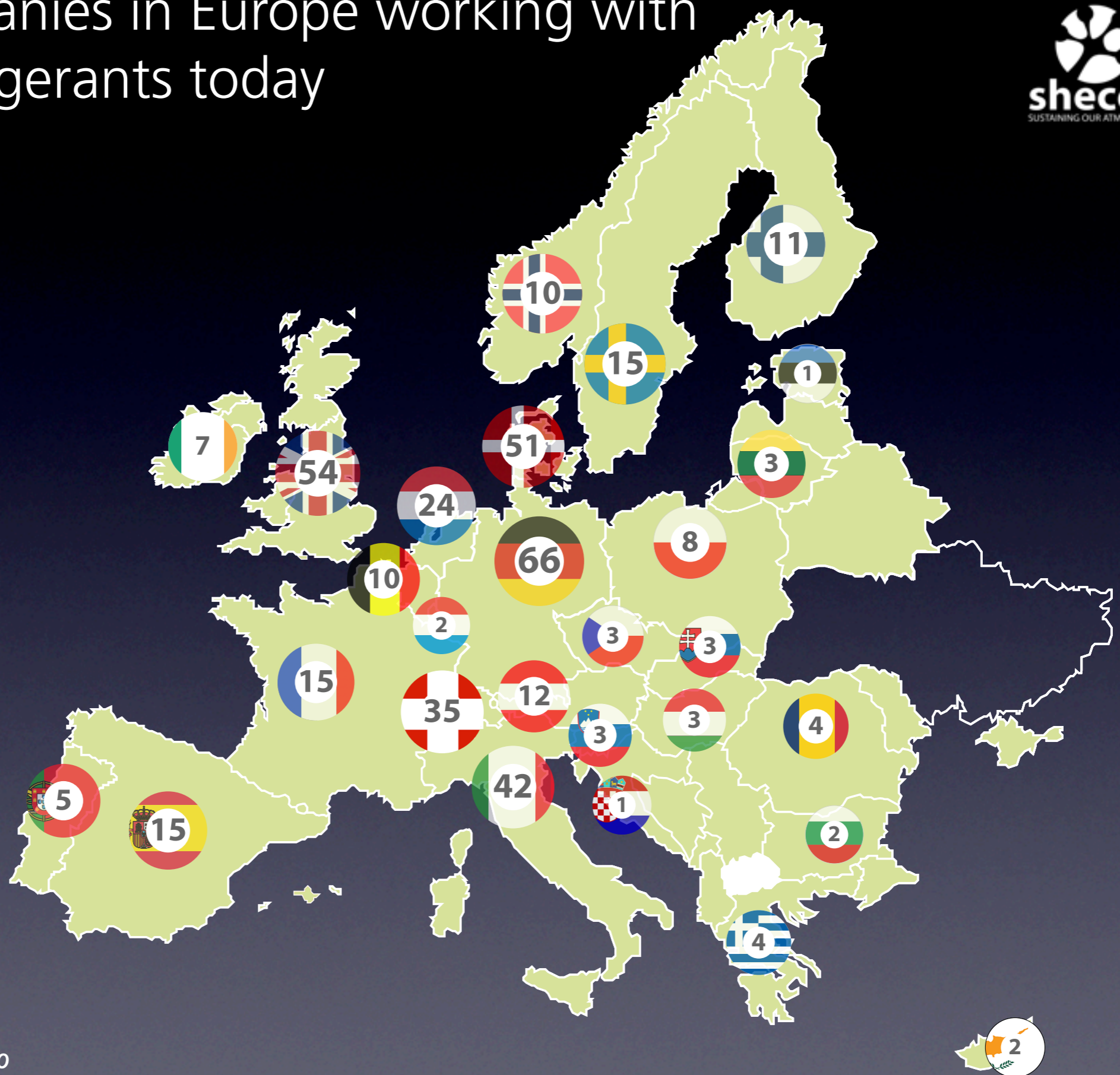
HFC404A	HFC410A	HFC134a	HFC32	HCFC22
3922	2088	1430	675	1810

manufacturers



- Increasing number of manufacturers are now developing solutions for natural refrigerant applications
 - bringing down costs
 - improving efficiencies
- They are forward looking and planning for the future where these technologies will not be banned (hedging their bets)
- They have the cash-cow of today (HFC) and are developing the cash-cow of tomorrow (Natural Refrigerants) in order to stay competitive

400+ companies in Europe working with natural refrigerants today



Source: shecco



accelerate due to end users



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Worldwide, retailers commit to CO₂ – the view from CGF's "Moving away from HFCs...Naturally!" Summit

11 June 2013

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In June 2013 the Consumer Goods Forum (CGF) held their 3rd Refrigeration Summit, "Moving away from HFCs... Naturally!" hosted by leading UK retailer Tesco, who revealed plans to double their number of CO₂ stores in 2013. Also in attendance were supermarket chain representatives from around the world, including Woolworths Australia, Aeon Japan, and Sainsbury's UK, together with CO₂ system supplier Advansor.

Explaining the rationale behind the CGF Refrigeration Summits, Tesco's Climate Change Director Helen Flemming said, "Our aim has been to share knowledge so that our whole industry feels confident to use natural refrigerant technology and shift away from HFC gases."

Tesco plans to double number of CO₂ stores in the UK in 2013

According to the presentation by Joe Gomez, Head of Refrigeration at Tesco, there are several compelling reasons for Tesco to tackle refrigeration in their bid to

- Consumer Goods Forum (major brands)
- 2015 Phase-in Natural Refrigerants (regardless of legislation)
- Motivation is not to be 'Green' or because of NGO pressure
- It's simply to save money!
- ST: more efficient
- LT: avoid another phase-down or Ban or tax.....

A success story well known: hydrocarbon
domestic refrigerators

HC domestic refrigerators

- ✓ highly **efficient** - about 10% more efficient
- ✓ **safe**
- ✓ **cost effective**
- ✓ **reliable** operation globally



In Europe, > 90% of domestic refrigerator/freezer sales use HCs

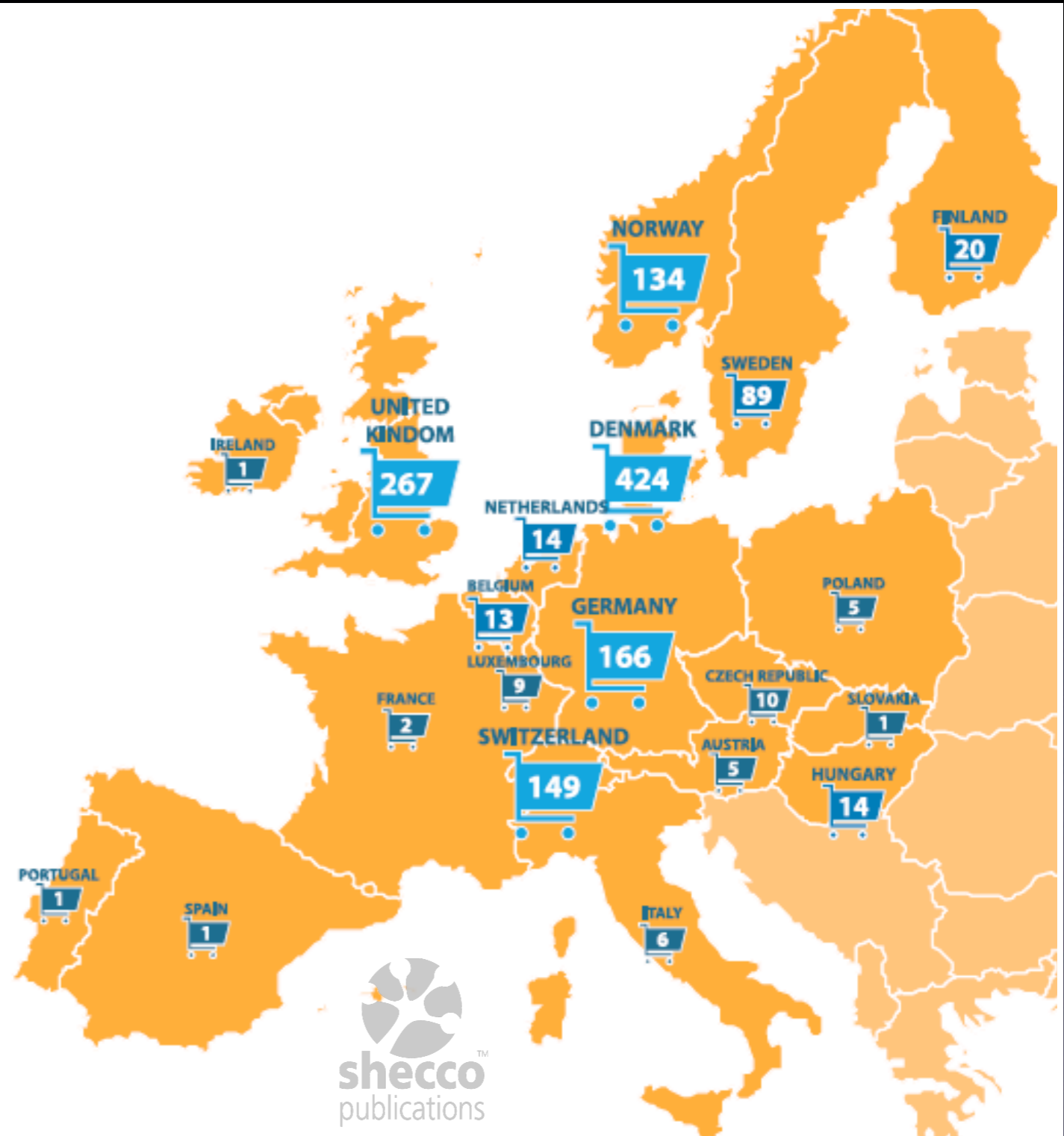
Worldwide, > 50% of new domestic refrigerators use HCs

A success story in the making: CO₂ supermarket refrigeration

CO₂ supermarket stores: Europe 2011



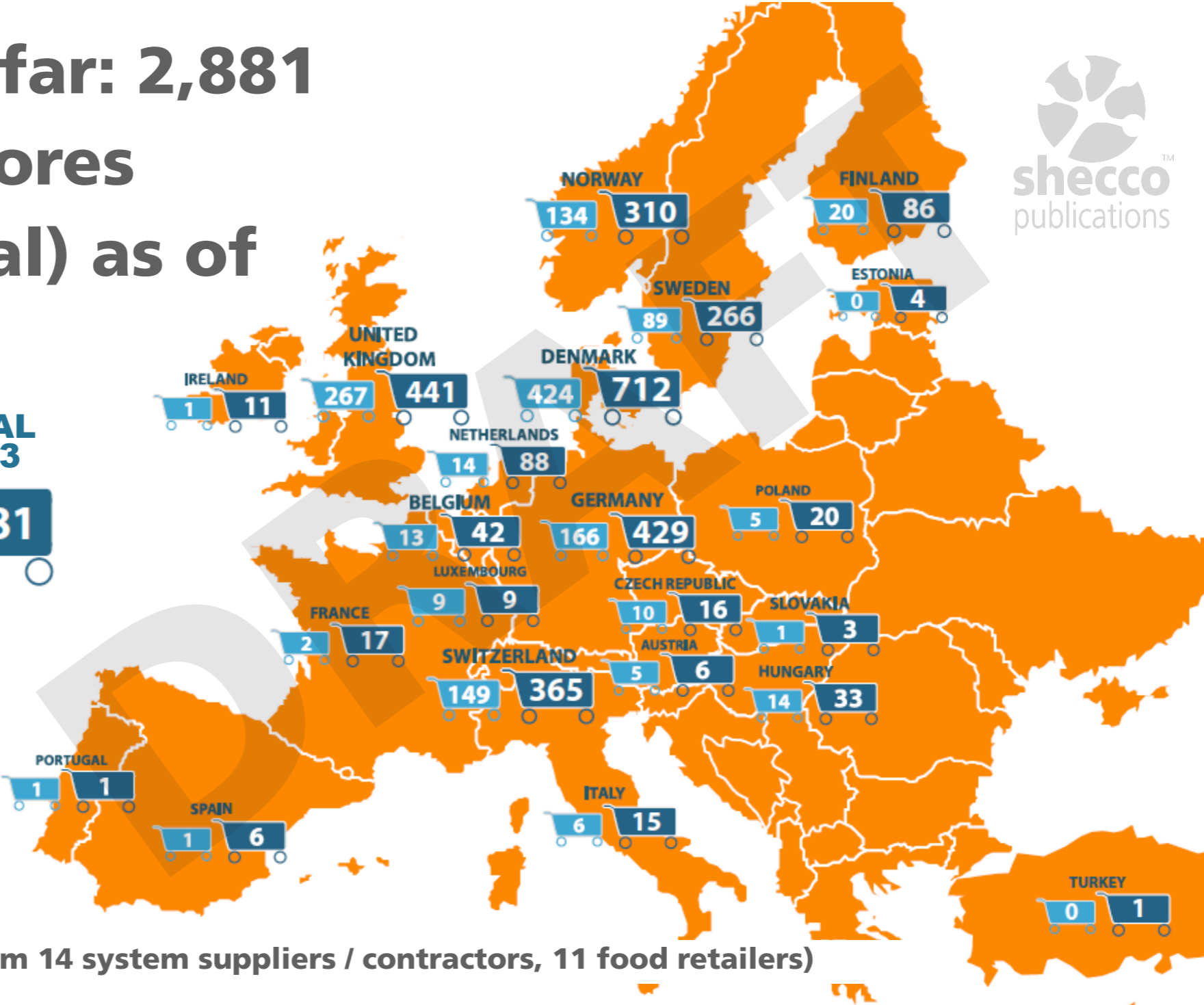
**verified: 1,331
CO₂-only stores
(transcritical) by
mid-2011**



CO₂ supermarket stores: Europe 2013



**verified so far: 2,881
CO₂-only stores
(transcritical) as of
Sept 2013**



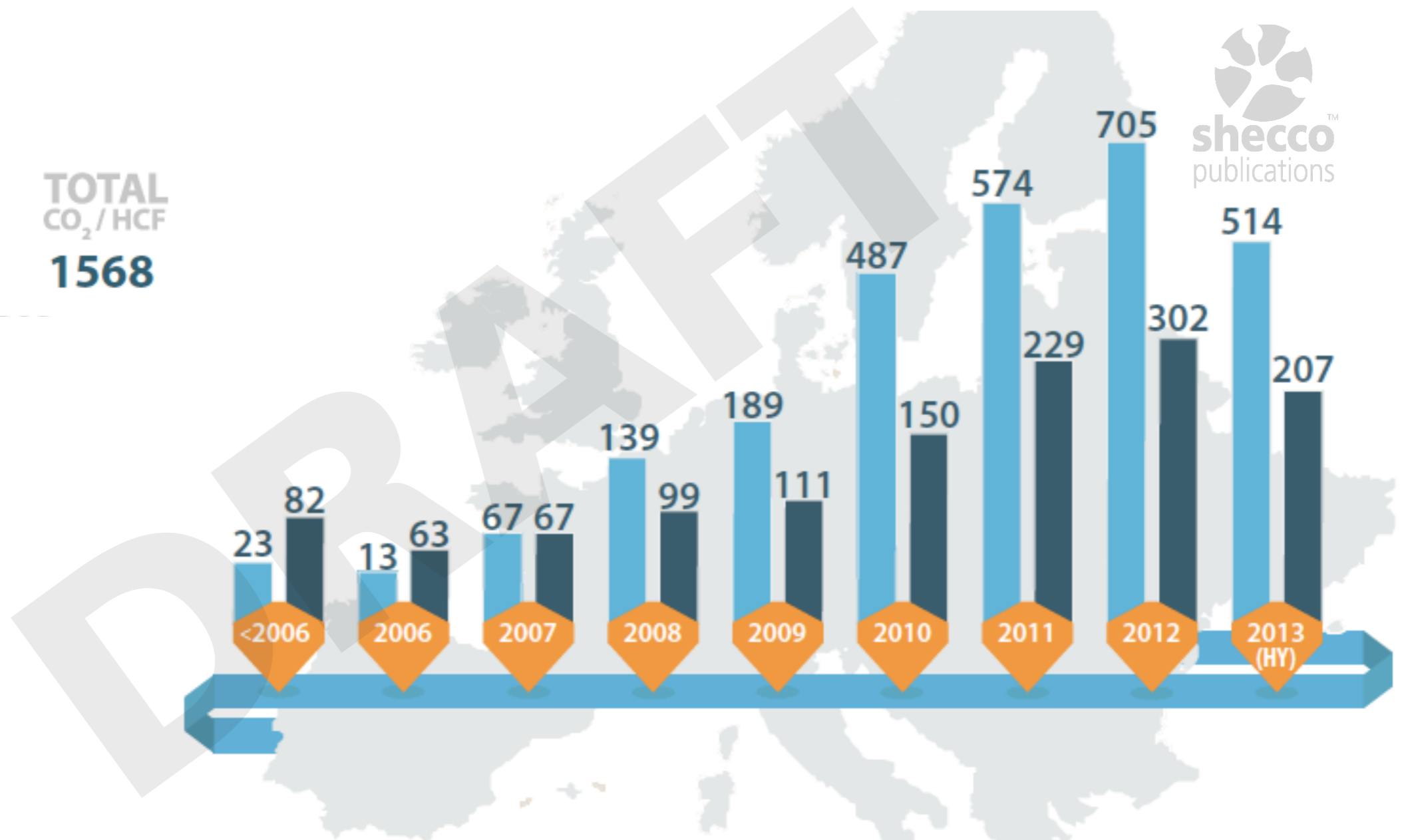
(status Sept 2013, data from 14 system suppliers / contractors, 11 food retailers)

growth in CO₂ stores in Europe 2006-13, new stores by year



TOTAL
CO₂ TC
2881




TOTAL
CO₂ / HCF
1568



Note: status by half-year 2013; the figures are based on a 2013 survey of leading system suppliers and retailers

CO₂ supermarket stores: Europe 2011-13 (est.)



		2011	2013	Increase in 2 years
	Denmark	424	712	+68%
	United Kingdom	267	441	+65%
	Germany	166	429	+158%
	Switzerland	149	365	+145%
	Norway	134	310	+131%
	EU	1331	2881	+116%

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Legislative framework matters: Highest deployment in countries with measures

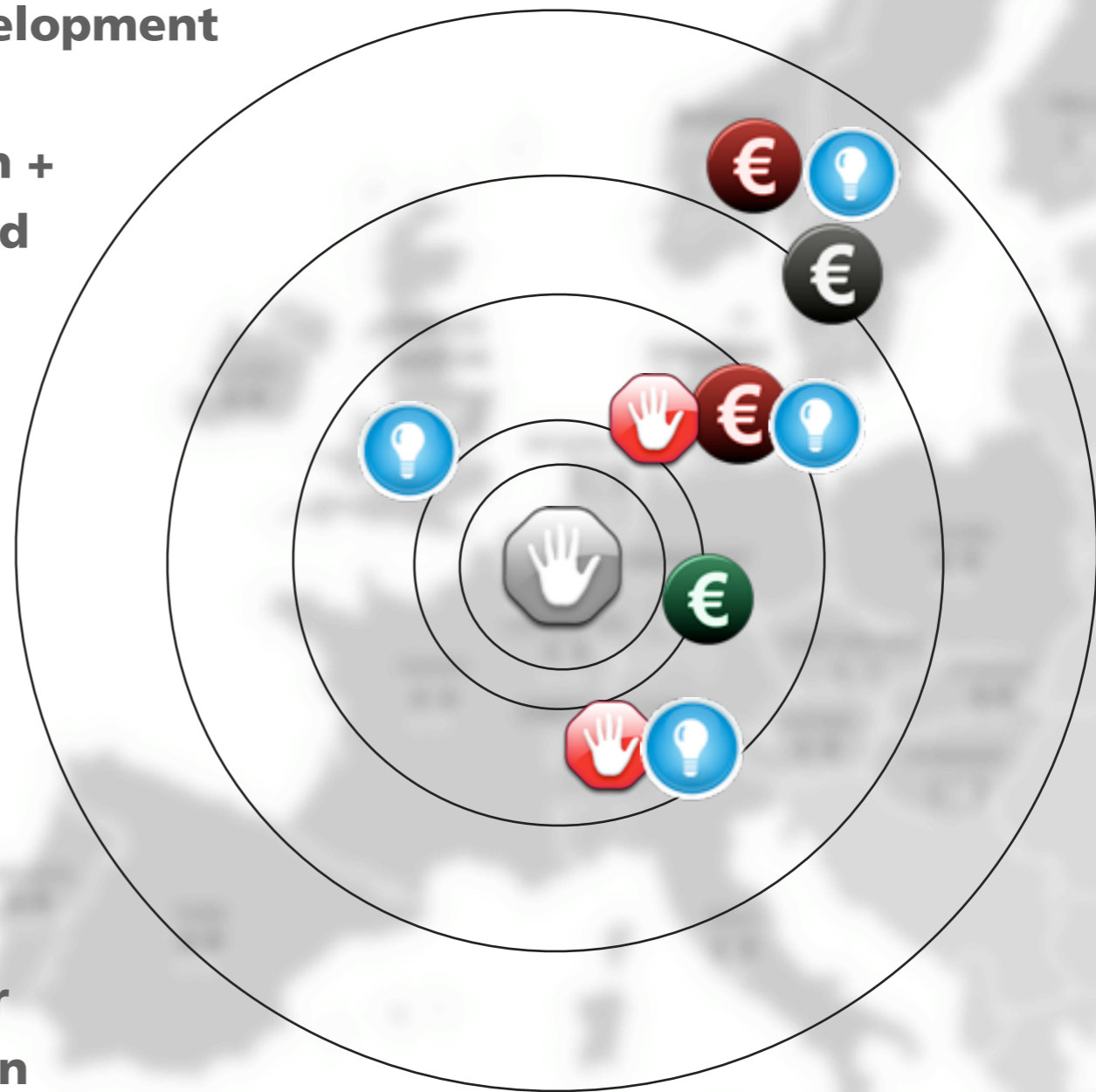
Denmark: HFC bans in new systems + HFC tax + support of technology development

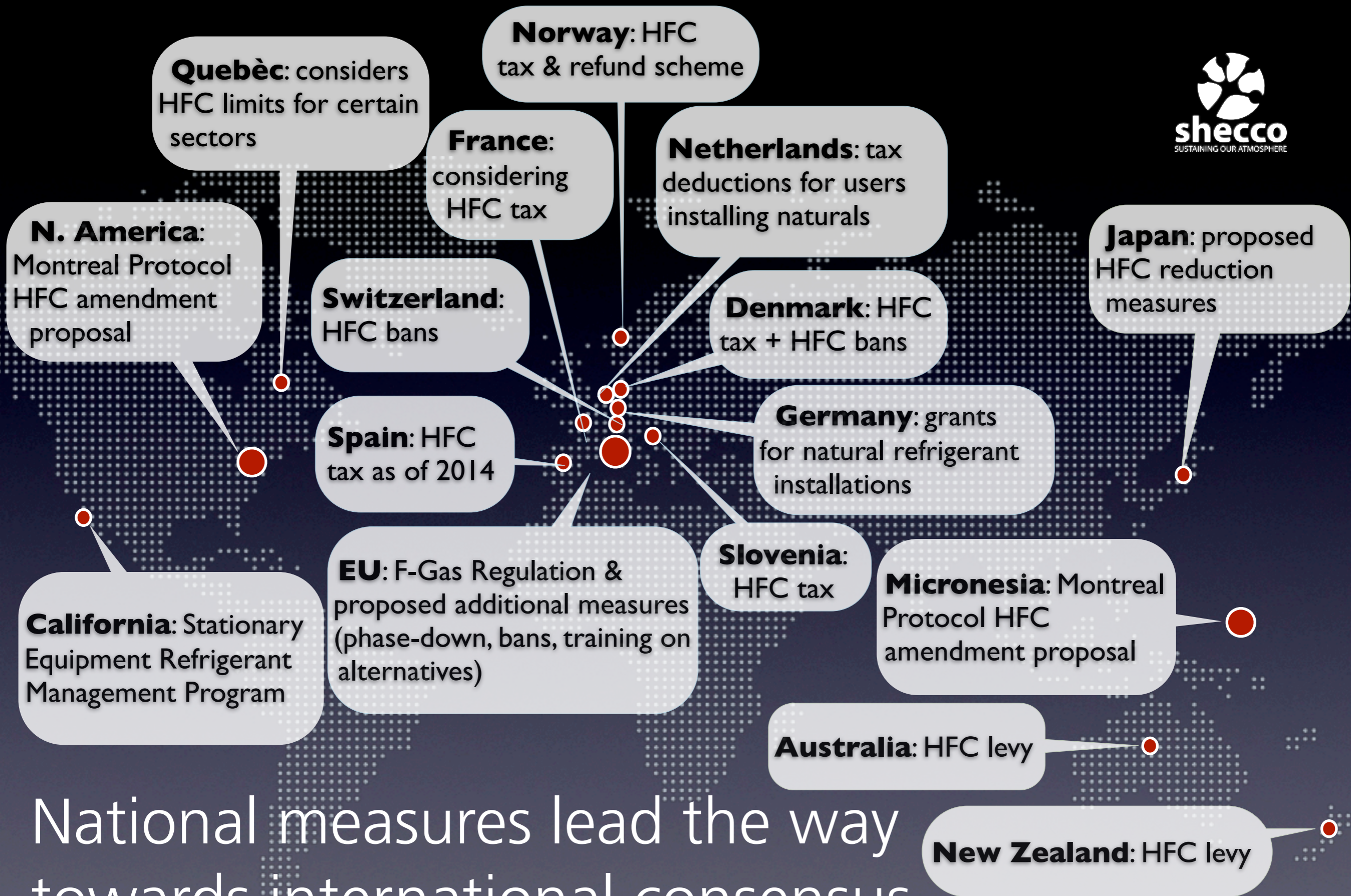
Switzerland: tight HFC regulation + several HFC bans to be introduced as of December 2013

Norway: HFC tax & refund scheme

UK: voluntary industry commitment (business sense); strong food retail sector

Germany: incentive scheme to cover 25% of investment cost for HFC-free commercial refrigeration





National measures lead the way towards international consensus

Global action on HFCs: “narrowing” the emissions gap



- HFCs could be responsible for up to 8.8 Gt CO₂eq by 2050 - comparable to total current annual emissions from transport (UNEP, HFCs: A Critical Link in Protecting Climate and the Ozone Layer, 2011)
- Emission savings potential of 0.3-0.5 Gt CO₂eq per year in 2020 (UNEP Emissions Gap Report 2013)
 - ▶ reduce the use of HFCs in countries where they are phased-in
 - ▶ avoid/ leapfrog HFCs in new equipment and in countries transitioning away from ozone depleting substances

Conclusions



- Natural refrigerants offer a “basket” of HFC-free solutions that **can cover a wide variety of applications**
- **Growing number of companies** working with natural refrigerants across Europe and beyond
- Action on HFCs contributes **cost-effectively** to GHG reduction targets --> national measures increasingly in place
- Significant role of legislation in:
 - ▶ creating **economies of scale** for “new” technologies
 - ▶ enabling the **leapfrogging** of intermediate steps
 - ▶ accelerating the **pace of innovation** in climate friendly technologies

thank you for your attention

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SUSTAINING OUR ATMOSPHERE