

# CLIMACT

Empowering you to act  
on climate change

IDEA   
CONSULT thinking ahead

## Socioeconomic impacts assessment of the climate transition in Belgium

### Factsheet – Healthcare sector

28/06/2024



Santé publique  
Sécurité de la Chaîne alimentaire  
Environnement

# Introduction to the factsheet

## This factsheet aims at :

- Giving a big picture of the different levers that can be activated by the sector to decarbonize itself
- Identifying the jobs that are the most impacted by the transition, and the skills that should be mastered to ensure a successful transition

The 1<sup>st</sup> part of this factsheet aims at identifying the main employment dynamics within the sector (main jobs in volume, variations).

The 2<sup>nd</sup> part of this factsheet suggests a decomposition of the sector's carbon footprint and discusses the different levers that can be activated.

The 3<sup>rd</sup> part of this factsheet identifies the key skills to possess and highlights the gap between the competency profiles and the required skills.

PART 1. Sector characterisation

p.4 to 7

PART 2. Levers

p.8 to 20

PART 3. Focus on skills

p.21 to 29

Appendices

p.30 to 34

# PART 1. Sector characterisation

*(Economics, decarbonization scenario)*

# Economic profile

## Key economic data

### NACE-BEL codes

- **861 – 869** : human health activities (inpatient, outpatient, dental, other)
- **871 – 873** : residential care for elderly, disabled and drug dependent patients

### Activity

- **507.400** workers (2023), accounting for **10%** of workers in Belgium
  - **+ 14,5%** of jobs over the last 10 years (more than national level).
- Added value **27,8 billion euros** (5% of Belgian GDP)

Source : NBB

### Main Belgian companies of the sector

1. **ORGANISATIE BROEDERS VAN LIEFDE – 7.100 employees (care and education association)**
2. EMMAUS
3. CENTRE HOSPITALIER UNIVERSITAIRE DE LIEGE
4. HUMANI
5. CLINIQUES UNIVERSITAIRES SAINT-LUC

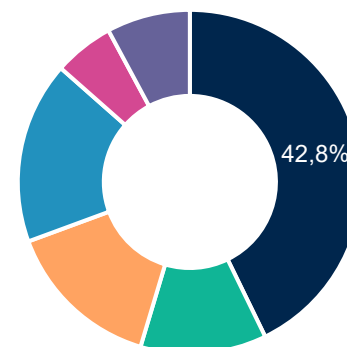
Source : Belfirst

### Main professions of the sector

1. **Nursing associate professionals (67.400 workers)**
2. **Nursing professionals (61.900 workers)**
3. **Health care assistants (59.900 workers)**
4. Physiotherapists (23.600 workers)
5. Specialist medical practitioners (21.900 workers)

Source : Statbel Labour Force Survey 2023

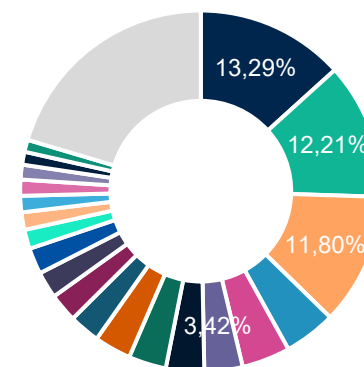
## Workers in 2023 per sectors (NACE3)



- Hospital activities
- Medical and dental practice activities
- Other human health activities
- Residential nursing care activities
- Residential care activities for mental retardation, mental health and substance abuse
- Residential care activities for the elderly and disabled

Source : Statbel Labour Force Survey 2023

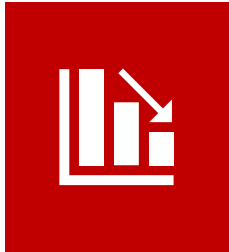
## Professions in the Health subsector (focus on the top 25)



- Nursing associate professionals
- Nursing professionals
- Health care assistants
- Physiotherapists
- Specialist medical practitioners
- Generalist medical practitioners
- Social work associate professionals
- Cleaners and helpers in offices, hotels and other establishments
- General office clerks
- Medical secretaries
- Psychologists
- Health professionals not elsewhere classified
- Social work and counselling professionals
- Medical and pathology laboratory technicians
- Dentists
- Audiologists and speech therapists
- Midwifery professionals
- Kitchen helpers
- Domestic cleaners and helpers
- Office supervisors
- Others

Source : Statbel Labour Force Survey 2023

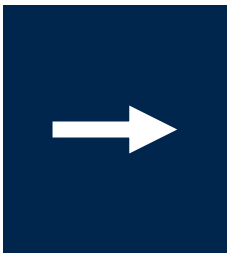
# Jobs evolution in the health sector



- **Decrease of jobs in residential care activities for mental retardation, mental health and substance abuse**
- **Decrease of the auxiliary services via externalisation** : kitchen helpers, cleaners, receptionists etc.

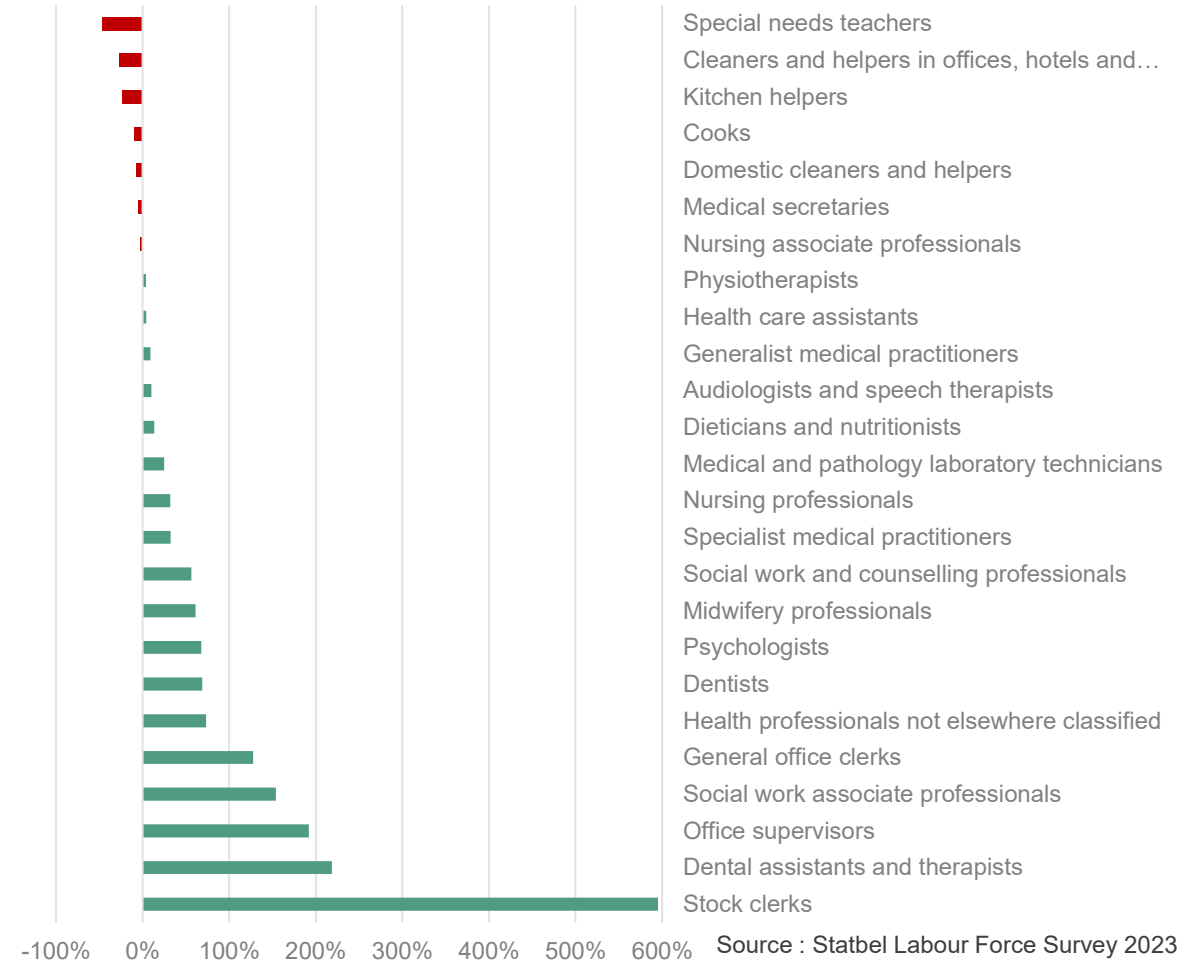


- **High growth of doctors and dentists activities compared to the hospital's activities.**
- **Strong increase of office and assistants professions** : dental assistants, social work assistants, office supervisors, office clerks etc.



- **Average increase in traditional and specialized healthcare professions: nurses, doctors, specialists, etc.**
- **Agoria prevision jobs (2022-2030) : +106.000 jobs (2<sup>nd</sup> largest increase in Belgium)**

## #jobs evolution over the last 10 years for the top-25 professions



# Subsectors specifications

Hospital activities		Medical and dental practice activities		Other human health activities		Residential nursing care activities		Residential care activities for mental retardation, mental health and substance abuse		Residential care activities for the elderly and disabled	
<b>217.000</b>	<b>workers</b>	<b>60.000</b>	<b>workers</b>	<b>74.900</b>	<b>workers</b>	<b>86.800</b>	<b>workers</b>	<b>28.700</b>	<b>workers</b>	<b>39.800</b>	<b>workers</b>
21%	Nursing professionals	23,76%	Generalist medical practitioners	19,15%	Nursing associate professionals	42,05%	Health care assistants	38,94%	Social work associate professionals	27,53%	Health care assistants
17%	Nursing associate professionals	12,10%	Dentists	15,65%	Physiotherapists	12,49%	Nursing associate professionals	15,69%	Social work and counselling professionals	9,08%	Nursing associate professionals
6,7%	Specialist medical practitioners	11,58%	Specialist medical practitioners	9,45%	Psychologists	6,54%	Nursing professionals	9,99%	Special needs teachers	8,58%	Nursing professionals
4,8%	Health care assistants	8,03%	Dental assistants and therapists	8,60%	Nursing professionals	3,89%	Cleaners and helpers in offices, hotels and other establishments	3,53%	Health care assistants	8,05%	Cleaners and helpers in offices, hotels and other establishments
4,2%	Medical secretaries	7,82%	Medical secretaries	6,01%	Audiologists and speech therapists	3,88%	Health professionals not elsewhere classified	2,96%	General office clerks	4,63%	Kitchen helpers

Statbel Labour Force Survey 2023

## PART 2. Decarbonization levers

## Methodological disclaimer

- As the objective of the factsheet is rather to feed discussions than to produce a detailed evaluation of the healthcare's footprint, the priority is rather set on orders of magnitude than perfectly accurate numbers.
- Due to a significant lack of data, for Belgium and in general for the healthcare system's carbon footprint, a lot of assumptions have been made. However, if the values displayed in the coming slides must be taken with caution,
  - the orders of magnitude can be read with a good level of confidence as they match with the most recent studies.
  - the levers that are listed are valid, powerful (in terms of decarbonization potential), and should be discussed between professionals, whatever their exact decarbonization potential is. The lack of data should not delay action.

# Policies impact the sector, with a focus on environmental issues and adaptation



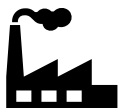
- **EU4Health program** aims at making healthcare more resilient (among others through its digitalization)
- **The Ambient Air Quality Directive** and **8<sup>th</sup> environmental action program** acknowledge the intricate links between environment and health and reaffirm the ambition for a healthy life within the planetary boundaries, building on the Green Deal



- The **NEHAP** is the main plan for jointly addressing environment-health issues. It is the instrument of the Joint Interministerial Conference on Environment and Health. It contains 8 action sheets (adaptation to CC, heatwaves, ozone peaks, exotic mosquitoes...)
- The **National Adaptation Strategy** was approved by the National Climate Commission in December 2010. This plan outlines the anticipated effects of climate change in Belgium and includes, among other things, the creation of a National Adaptation Plan.
- the **National Adaptation Plan** (2017-2020) enables coherent action and communication at national, European and international level.



- Regional **(air)-climate-energy plans** serve as a roadmap for meeting European and international obligations. The **Walloon PACE**, for example, calls for an increase in the number of front-line healthcare workers. **Flanders**, too, has an **adaptation plan** that includes increased awareness-raising and prevention activities.

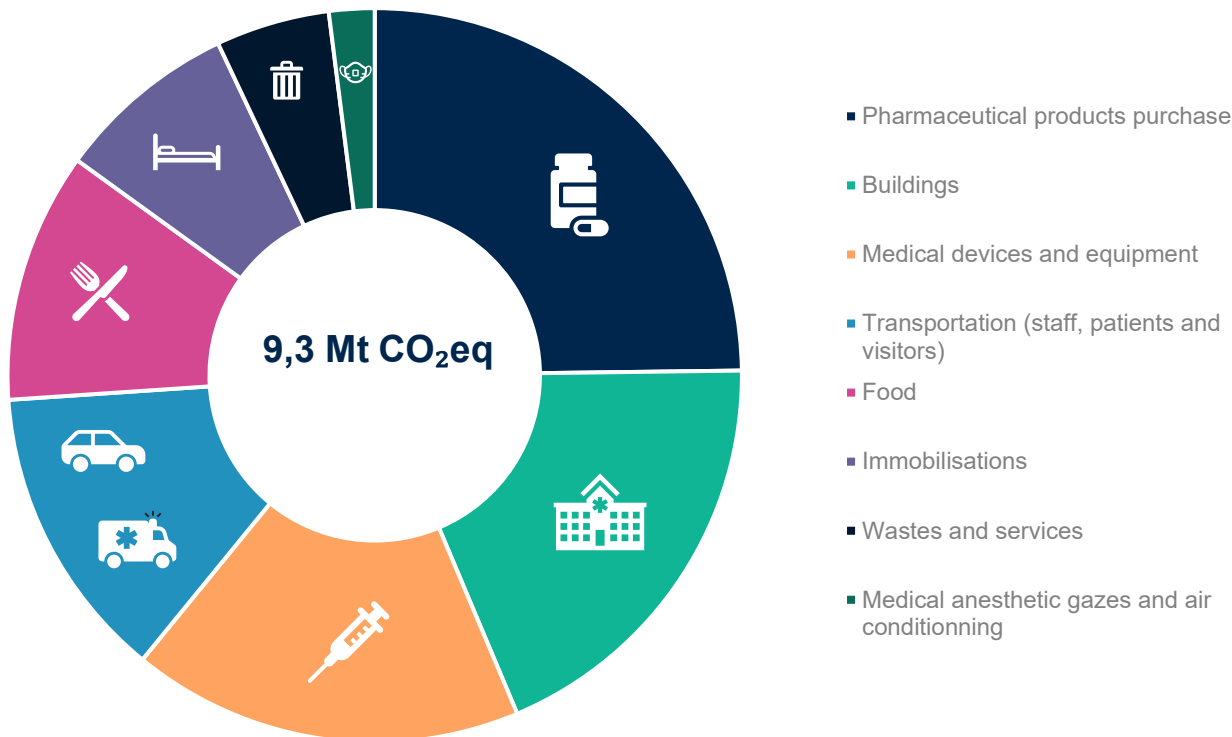


- The healthcare sector is dependent on policies taken in other sectors, such as the **long-term renovation strategies of the three regions**, which require buildings to be carbon neutral by 2050.

# The carbon footprint of the healthcare system is dominated by emissions from medical products and equipment, and buildings

## Estimated decomposition of the carbon footprint of the healthcare system

(Based on 2014 total emissions)



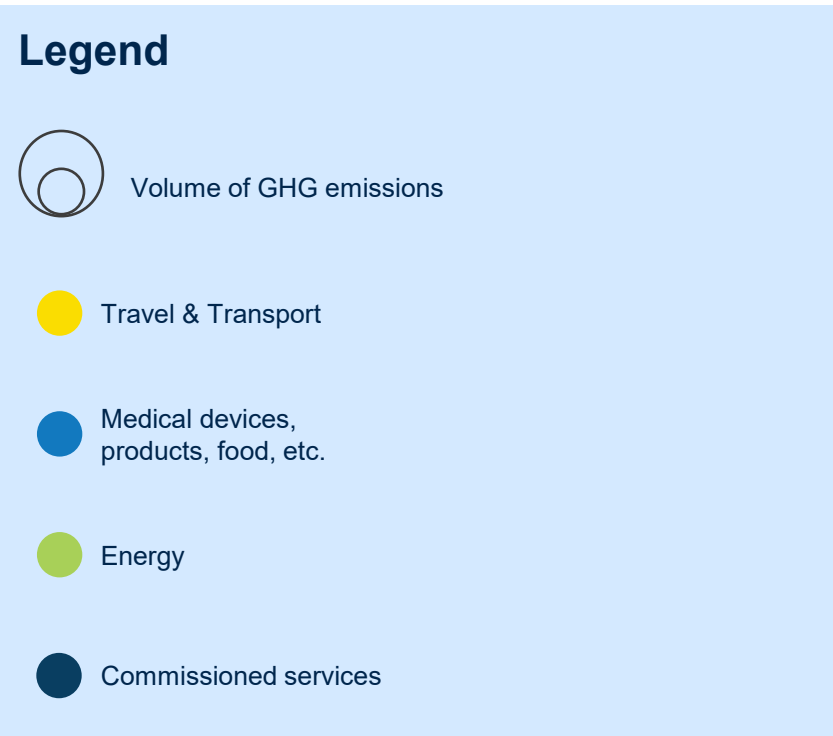
### Sources

**Total emissions** : Healthcare without Harm (2014)

**Relative shares** : Derived by CLIMACT from “Décarboner la Santé pour soigner durablement” (The Shift Project, 2023) with an adaptation to the Belgian data for Buildings emissions. Shares are estimated with a significant error margin (such as in the reference) and should be taken as such.






- **No robust estimation of the Belgian healthcare system’s carbon footprint exists.** Estimating this footprint would be a first step towards a net-zero healthcare system.
- The Healthcare sector is a service sector, meaning that **its decarbonization mostly depends on the decarbonization of other sectors** (industry, transportation). However, **through its policies** (energy renovation, drugs licences, land covering) **and its purchases, it contributes directly to the successful decarbonization of these sectors.** Reducing the sector’s dependency to fossil fuels and building up its adaptation capabilities is key to its resilience.
- Orders of magnitude from the two studies available (*Healthcare without Harm* and *Décarboner la Santé pour soigner Durablement*) are similar for the total footprint, but with high discrepancies between emissions relative shares. **The choice was made to rather consider the shares from « Décarboner la Santé pour soigner Durablement »,** which is a more recent study with more accurate emission factors for pharmaceutical products and medical equipment
- Decarbonization is one end of the healthcare system’s issue in a climate change context. Adaptation to climate change is another significant one, out of the scope of this factsheet.

# Carbon hotspots are largely linked to acute use of pharmaceuticals and medical devices



World Bank Group (2017). *Climate-Smart Healthcare*. [World Bank Document](#)

# To decarbonize the healthcare system, technological and behavioural/organisational levers must be activated

Emission sources		Technological levers	Behavioural and Organisational levers	2050 objective
	Transportation	<ul style="list-style-type: none"> <li>• Full decarbonization of all transport modes</li> <li>• Remote consultation</li> </ul>	<ul style="list-style-type: none"> <li>• Proximity care (general practitioners) and land planning</li> <li>• Optimisation of rounds (home nurses and doctors)</li> </ul>	<ul style="list-style-type: none"> <li>• Full decarbonization and efficient organisation</li> </ul>
	Buildings	<ul style="list-style-type: none"> <li>• Energy renovation with a switch to low-carbon energies</li> </ul>	<ul style="list-style-type: none"> <li>• Evolution of behaviours</li> </ul>	<ul style="list-style-type: none"> <li>• Full decarbonization and energy sufficiency in uses</li> </ul>
	Food, immobilisation, waste	<ul style="list-style-type: none"> <li>• Sourcing of low-carbon supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainable procurement, waste reduction</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly decarbonized, low residual emissions (10 to 20%)</li> </ul>
	Pharmaceutical products	<ul style="list-style-type: none"> <li>• Reduction of the emission factor (pharmaceutical industry)</li> </ul>	<ul style="list-style-type: none"> <li>• Production relocation</li> <li>• Less waste (unused drugs)</li> <li>• Switch to preventive care</li> <li>• Sustainable procurement</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly decarbonized, low residual emissions (10 to 20%)</li> </ul>
	Medical equipment	<ul style="list-style-type: none"> <li>• Reduction of the emission factor (biomedical industry)</li> </ul>	<ul style="list-style-type: none"> <li>• Reuse of equipment</li> <li>• Switch to preventive care</li> <li>• Sustainable procurement</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly decarbonized, low residual emissions (10 to 20%)</li> </ul>

# Emissions from buildings' use, food and immobilisation decrease thanks to energy renovation and sustainable purchasing policies



## Facts & Figures



- A food offer more local, vegetarian and seasonal is implemented and food waste is drastically reduced, leading to a **75% reduction of food-related emissions**
- Buildings undergo deep energy renovation and switch to zero-carbon energy sources, following the BeCalc scenario (1)
- Hospitals and nursing homes source most of their equipment from suppliers offering zero-carbon products, leading to a reduction of 95% of emissions.

**Managing positions within healthcare institutions are key to implement energy renovation and sustainable purchasing policies :**



- Hospital directors
- Logistics and mobility managers
- (Food and office) procurement managers
- Buildings maintenance managers

(1) Core-95 in Scenarios for a climate neutral Belgium by 2050, FPS Public Health (2021) ([link](#))

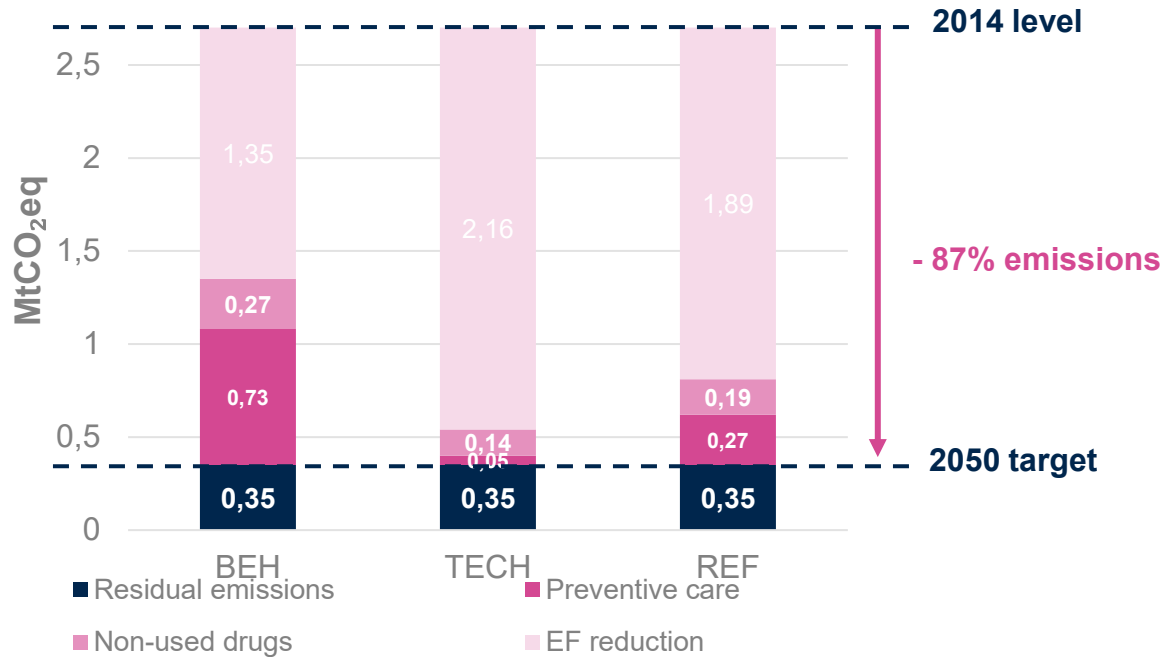
Reducing these emissions is primarily a matter for **decision-makers** in healthcare establishments. Decarbonizing buildings **involves considerable investment**.

**Decarbonizing food**, on the other hand, relies mainly on more **eco-responsible purchasing** choices, which also offer **synergies with patient health**.

**Decarbonizing transport** relies on **technological and behavioural levers**. Hospitals need to implement integrated mobility plans that promote active and shared mobility among employees and users. The **volume** of transport required must also be reduced, in particular through **prevention** and **telemedicine**. However, the complete decarbonization of transport will not be possible without the **electrification of vehicles**.

# Indirect emissions from pharmaceutical products' purchase and use drastically fall thanks to manufacturing process decarbonization and a switch to preventive care

## Scenarios to decarbonize pharmaceutical products' purchase



## Facts & Figures

- The emissions generated by drugs produced in Belgium are expected to fall by 87% by 2050, which represents a tremendous challenge for pharmaceutical industries in terms of process transformation (1). Scenarios are in line with this objective.
- If all scenarios lead to a (very ambitious) reduction of 87% of the pharmaceutical products, **BEH relies on a 50% reduction of the products' emission factor together with a high switch to preventive care**, whereas the **TECH scenario relies on a 80% reduction of the emission factor** (1)
- **High greenhouse-gas anaesthetics should be banned**  
**General practitioners** are the main impacted professionals

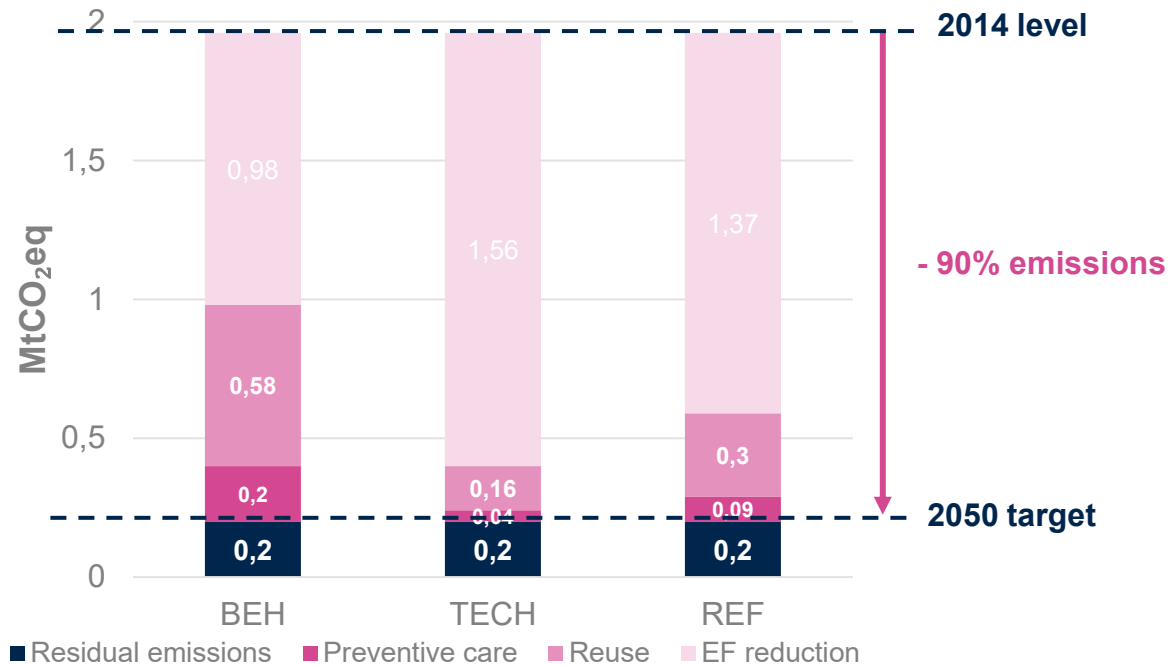
(1) Core-95 in Scenarios for a climate neutral Belgium by 2050, FPS Public Health (2021) ([link](#))

The reduction of the drugs' carbon footprint directly relies on the pharmaceutical industry transformation, through process decarbonization and relocation of the production (imported molecules for drug production account for 18% of the production costs in Belgium). However, **healthcare professionals could play a more active role by selecting drugs with a lower carbon footprint** (which would require that such footprints are available). This role should be supported by the health authorities, for example by conditioning the drug's market approval to the publishing of their carbon footprint (at first) and to specific carbon footprint values (once the sector has gained maturity). The potential for influence on pharmaceutical industry remains low but can still be activated.



**A significant volume of products is wasted, because of an overprescription** (~50% of wasted drugs in France) **or unjustified consultations** (56% of emergency consultation are non-justified in Belgium (Berchet, 2015)). Ending overprescription and drugs overconsumption requires a shift from a curative system to a preventive system, with a promotion of Health (centering practices around health rather than diseases) and of the "Right care" (avoiding overprescribing).

# Emissions from medical equipment use decrease thanks to the implementation of circular practices and the reduction of the equipment's carbon footprint

## Scenarios to decarbonize purchase of medical equipments



## Facts & Figures

- 
 The emissions generated by the manufacturing industries are expected to fall by 90% by 2050, which represents a tremendous challenge for pharmaceutical industries in terms of process transformation (1). Scenarios are in line with this objective.
  - In BEH, circular practices lead to -30% emission reduction, together with a 50% cut in the equipment's emission factor, as modelled for a French decarbonization plan (PTEF, The Shift Project)
  - TECH and REF scenarios rely on a higher level of reduction of the equipment's emission factor (80% and 70% respectively)
- 
**Purchasing professionals as well as all medical staff are impacted. New jobs should be created consequently from the implementation of circular practices.**

(1) Core-95 in Scenarios for a climate neutral Belgium by 2050, FPS Public Health (2021) ([link](#))

Circular practices are very rare in hospitals. For example, the APHP (Paris) calculated that in average 40% of the equipment used during a surgery end up in the trash, whereas an important part of them could be reprocessed and reused. Systematically challenging single-use requires raising awareness among medical staff and providing them with appropriate training on these issues. Implementing reprocessing units into hospitals is for that purpose mandatory and could offer new job creation opportunities.

# Circular practices in healthcare face numerous barriers

## People



- Manpower shortage
- Lack of required skills inside of hospitals
- Time consuming tasks

## Price



- Reusable is more expensive than single-use materials
- VAT on reusable is 21% vs 6% on single-use materials
- No incentive for hospitals in a difficult financial context
- High cost of necessary devices and infrastructure needed for the reuse

## Infrastructure and regulation



- Some appliances are sterilized in the hospitals, others are outsourced
- Increase in the outsourcing following European MDR regulation : extra quality control for reuse.
- Lack of available space to dedicate to reuse
- Technical limitation : characteristics of the material can't be altered by the treatment

## Inspiring examples from Denmark :

- **Regulatory** : Integration of **Nordic Criteria for More Sustainable Packaging** into public procurement processes. This regulatory framework not only emphasizes traditional factors like cost and quality but also mandates environmental considerations in the packaging of healthcare products.
- **Technological innovation** : The **ReGlove** project is developing reusable nitrile gloves, a first in the healthcare sector where single-use gloves are standard. This initiative focuses on creating a washable version of nitrile gloves, integrated into existing hospital logistics, making the reuse process seamless.
- **Logistics innovation** : **Novo Nordisk's ReturPen™ initiative** introduces a national program in Denmark for the return and recycling of used injection pens. These pens, which are made up of around 70% plastic along with metal and glass components, are collected at local pharmacies, where they are sorted for recycling.

Healthcare Denmark (2024). *Transitioning to a sustainable healthcare sector.*

# Prevention, Health Promotion and Deprescription face numerous barriers

## Cultural



- Cultural reluctance to consider environmental indicators when deciding to prescribe care.
- Relationship with death and quaternary prevention: the paradigm of 'life expectancy' rather than 'life expectancy in good health' means that the last year of life costs the most and has the highest emissions.
- Institutional discourse of abundance: '*everyone has the right to consult a specialist*', rather than '*everyone has easy access to primary care and is referred to a specialist if necessary*'.
- Concept of *staggered care* is difficult to accept: people want to go straight to a specialist.

## Structural

- Research capital is directed towards high-tech solutions with low efficiency gains and high economic costs.
- A hospital-centric system and fee-for-service remuneration that drives healthcare consumption.
- Lack of a less specialized and more accessible front-line service.

## Cultural



- Young people need to receive positive feedback from an engaging and empowering frontline role model.
- Greater consistency with scientific evidence in public discourse on meat consumption
- Multidisciplinary approach to prevention: sociological obstacles to be overcome in representations (the *prestige-car*, *sugar-wealth*, *cultural-meat*, etc.)

## Structural

- Reconsider the fee-for-service model of healthcare
- Strengthen the front line of care and restructure the standard patient journey.
- Focus research on sociological innovations, the robustness of the healthcare system and its organisation. Propose a territorial approach to healthcare where 1st and 2nd line players are collectively responsible for the health outcomes of an area.

# Beyond its own decarbonization, the healthcare can play a powerful role in the decarbonization of transport and agriculture

**Switching from a curative to a preventive system means switching from a “disease-based” to a “health-based” system.** If medical practitioners have always been at the forefront to prevent long-lasting and heavy diseases, medical advices for active modes of mobility, frequent activity and healthy food diets often are rather answers to specific medical conditions, rather than **key elements of a “sustainable health path”** (i.e. before the disease occur).

Beyond contributing to the general health of the population, **implementing individualised “sustainable health paths” could strongly benefit to behavioural changes that are key for other sectors decarbonization and for which the significance of the challenge requires to activate all possible levers.** The influence could for example be significant on :

- **Modal shift** - CORE95 Objective: reducing by at least 40% the use of cars by 2045.
- **Decreasing meat consumption** – CORE95 objective : reduction of 56% by 2050.

Promoting active modes (walking, cycling) and plant-based diets within sustainable health paths could bring a useful contribution to these objectives.

Kong (2024). Impacts of active mobility on individual health mediated by physical activities

Mueller (2015). Health impact assessment of active transportation: A systematic review

McEvoy (2012). Vegetarian diets, low-meat diets and health: a review

Core-95 in Scenarios for a climate neutral Belgium by 2050, FPS Public Health (2021) ([link](#))

# Key policy recommendations

## 1. Green procurement policies

Incorporate environmental criteria into the procurement of medicines and medical equipment, ensuring reimbursement is tied to sustainability standards. The EMA could integrate environmental impact as a criterion when authorizing new medications. Similarly, health insurances should consider the ecological footprint when deciding on reimbursement.

## 2. Promote reuse over single use

Establish ISO standards for the reuse of medical materials, ensuring that reused products get refunded by health insurances. Avoid dependency on single-use devices and lock-ins. Provide financial incentives, starting with the VAT on reusable devices.

## 3. Outcome-based healthcare system

Shift to a business model where the main KPI of healthcare professionals are health outcomes rather than the number of acts performed, fostering efficiency and sustainability. Trigger discussions on end-of-life practices.

## 4. Strengthen prevention and health promotion

Expand preventive care, particularly for underserved populations, with a focus on cost-effective and carbon-effective method. Trigger discussions to modify the patient-journey, rooting from a stronger first line.

## 5. Lead by example

Implement regulations to eliminate vending machines and restrict the marketing of unhealthy products in hospitals and schools, promoting healthier, sustainable choices.

# PART 3. Focus on skills

# Methodology

The methodology used **to analyse the skills required to address the impact of health sector on climate change** differs from other factsheets. Typically, **we first select several professions based on specific criteria**, such as strong representation in the sector, growth or decline trends, and strategic roles essential for implementing sustainable transition strategies. **Then, we analyse the skills required for those specific professions** to drive the sector's transition towards more eco-responsible practices.

**For the health sector, we adopted a reverse approach: we started with a skills-based analysis**, identifying **the essential skills healthcare professionals need to mitigate the impact** of healthcare on climate change. Afterward, we identified **the most relevant and strategic professions that require these skills to drive the transition**. This method is suitable for practice changes among many professionals whose representation in the sector remains constant, with a focus on upskilling.

The selected skills blocks and the most relevant and strategic professions associated with those skills to drive the transition are as follows:

- Focus 0: Knowledge of environmental health and climate change: General/Specialist medical practitioners, nursing professionals, directors of medico-social establishments, public health advisors
- Focus 1: Project management, strategic planning and change management to manage the transition within the hospitals: directors of medico-social establishment
- Focus 2: Sustainable and responsible procurement practices: directors of medico-social establishments, procurement managers
- Focus 3: Eco-design of healthcare services: general/specialist medical practitioners, nursing professionals
- Focus 4: Prevention and promotion of public health: general/specialist medical practitioners, nursing professionals, directors of medico-social establishments, public health advisor

For each of these skills blocks and the associated professions, we have applied the same methodology as for the other factsheets. We analysed the occupational competence profiles required by employment support organizations. These profiles, developed by sectoral social partners and Synerjob (VDAB, Actiris, Bruxelles-Formation, Le Forem, and ADG), guide the content delivered by education and training actors. Aligning this content with the emerging needs for climate change adaptation and mitigation is crucial for an effective education, training, or continuing education offer.

The purpose of this analysis is to determine the adequacy of the skills blocks considered essential to engage the health sector's transition and mitigate its climate impact and to assess the extent to which these skills are integrated into the profiles of the selected professions.

# Focus 0: Knowledge of environmental health and climate change

- To effectively address the climate emergency, integrating climate-health training across **both initial and continuous professional development for health professionals** is crucial. Prioritizing the training of current practitioners is essential for achieving swift and impactful results<sup>(1)</sup>.
- First, we analyse the occupational competency profile of the three most represented profiles in the healthcare sector: nursing professionals, nursing associate professionals, and healthcare assistants, who **together make up 37.3% of the workforce**. We also include general and specialist practitioners, **representing 7.75% of the workforce** <sup>(2)</sup>
- In addition to these major profiles, we chose to analyse two other profiles. Although they are fewer in number, they are essential for their ability to guide and manage the transition to more sustainable and resilient healthcare practices: the director of a medico-social establishment (**0.36% of the workforce**) and the public health advisor (**0.18%**). <sup>(2)</sup>
- Medical practitioners, nursing (associate) professionals, and healthcare assistants are experiencing a structural shortage due to difficult working conditions (hours, travel, workload, salary), an aging workforce and advancements in medical knowledge and treatments. For doctors, managing access to the profession within the INAMI framework and meeting working hour standards exacerbate the situation. Recruitment tensions are expected to worsen due to aging, with nearly two out of five workers being aged 50 or

Key skills to possess	Actual occupational competence profiles				
	Generalist/specialist medical practitioners	Nursing (associate) professionals	Healthcare assistant	Director of medico-social establishment	Public health advisor
<b>Understanding the impact of the health sector<sup>(1)</sup></b> <ul style="list-style-type: none"> <li>Solid comprehension of climate-energy issues</li> <li>Understanding the carbon impact of the health sector</li> </ul>	✗	✗	✗	✗	✗
<b>Fundamental competencies/knowledge in environmental health <sup>(4)</sup></b> <ul style="list-style-type: none"> <li>Link between climate change and human health (increase of climate-related diseases due to extreme weather conditions, poor air quality, vector-borne diseases, eco-anxiety,...)</li> </ul>	✗	✗	✗	✗	✗
<b>Understanding the current curative western healthcare system<sup>(5)</sup></b> <ul style="list-style-type: none"> <li>Recognizing the influence of current health policies on systemic conditions</li> <li>History and medical approaches: have knowledge of the history of western medicine to put into perspective the current techno-centric approach and explore alternative methods</li> </ul>	✗	✗	✗	✗	✗

(1) *The Shift Project (2023). Décarboner la santé pour soigner durablement*

(2) *Statbel Labour Force Survey (2023)*

(3) *Le Forem (2024) Veille , analyse et prospective du marché de l'emploi*

(4) *Columbia mailman school of public health. Global consortium on climate and health education. (2023). Climate & health core concepts for health professionals*

(5) *T. Lasar and all. (2023). Un forum pour repenser les cursus en sciences de la santé.*

## Recommendations

Firstly, **revising competency profiles through sectoral funds** is essential to incorporate environmental health skills and the necessary mitigation and adaptation strategies.

**Collaboration with experts in environmental health** and climatology is crucial for defining and validating these new competencies.

Additionally, **specific modules must be integrated into the curricula of medical schools, nursing training institutions, and healthcare assistant programs. Mandatory continuing education programs, including workshops, seminars, and online courses, are also vital for practicing professionals.**

# Focus 1: Project management, strategic planning, and change management to drive the transition within the hospitals

- **The role of the director of a medico-social establishment** is pivotal in driving the climate transition within the healthcare sector. Despite representing only approximately **0.36% of the workforce**<sup>(1)</sup>, these directors play a crucial role in implementing sustainable strategies that can significantly reduce the carbon footprint of their establishments.
- Their leadership is essential in promoting a culture of sustainability, not only within their organizations but also within the broader community.

Key skills to possess	Actual occupational competency profile
	Director of medico-social establishment
<b>Strategy and project management</b> <ul style="list-style-type: none"> <li>• Ability to implement sustainable strategies</li> <li>• Management of high-impact projects: expertise in identifying + managing project with high impact (reducing use of unnecessary tests, procedures, treatments)</li> <li>• Long- term planning: current decisions towards future net-zero carbon pathways</li> <li>• Risk management: ability to assess and manage risk associated with implementation of new sustainable practices</li> </ul>	✘
<b>Technical knowledge</b> <ul style="list-style-type: none"> <li>• Knowledge of SD practices in the healthcare sector<sup>(3)</sup></li> <li>• Capacity to organize and promote energy efficiency in usage</li> <li>• Competence in assessing and measuring the hospital's carbon footprint to identify areas for improvement</li> </ul>	✘
<b>Change management</b> <ul style="list-style-type: none"> <li>• Ability in leading and managing change within organization</li> <li>• Ability to integrate sustainability into the establishment's culture</li> <li>• Encouraging sustainability education and raising awareness among employees about the importance</li> <li>• Collaborative leadership: ability to engage and collaborate with various stakeholders</li> </ul>	✘

## Recommendations

To equip directors of medico-social establishments with the skills to implement green strategies in hospitals, it is crucial **to embed these competencies in their competence profiles**. Simultaneously, **new training modules must be integrated** into initial education programs for directors, **in partnership with higher education institutions**.

Additionally, to ensure ongoing development, **mandatory continuous training programs should be established through professional training centres**. Interinstitutional collaboration is essential. Furthermore, partnering with professional associations (like the Belgian Association of Hospital Directors (ABDH), for example) and unions is vital to promote these skills and facilitate training access for current directors.

(1) Statbel Labour Force Survey (2023)

(2) Le Forem (2024) Veille , analyse et prospective du marché de l'emploi

(3) The Shift Project (2023). Décarboner la santé pour soigner durablement

# Sustainable healthcare practices

In addition, it is essential to develop and provide tools and procedures that ensure high-quality and safe care, **while also minimizing the environmental impact of the healthcare sector**, starting immediately<sup>(1)</sup>.

All training programs must include courses on **sustainable healthcare design** to reduce environmental impact and enhance resource efficiency. This can be achieved **upstream and downstream of production**<sup>(1)</sup>.

Upstream actions: reduction of the carbon cost per unit of each medication → **implementation of eco-responsible purchasing policy** and make the carbon footprint a mandatory and determining factor in product tenders<sup>(1)</sup>.

Downstream actions: **reduction of the volume of consumed and wasted medications and medical devices through 4 measures**<sup>(1)</sup>:

- Adapting practices to consume **less medical equipment and materials** (quality/safety/financial efficiency vs carbon cost)
- Reduce the **use of medications** and decrease the amount of unused medications
- Reduce the **use of medical devices** and encourage reuse (instead of single-use items)
- Manage demand by **developing prevention and health promotion**

<sup>(1)</sup> *The Shift Project (2023). Décarboner la santé pour soigner durablement*

## Focus 2: Sustainable and responsible procurement practices

- Upstream actions: Reducing the carbon cost per unit of each medication is critical. Implementing an eco-responsible purchasing policy and making the carbon footprint a mandatory and determining factor in product tenders are essential steps.
- The role of the director of medico-social establishments is crucial in ensuring that the establishment's procurement practices and decisions prioritize environmental impact.
- Buyers, representing **0.21% of the total workforce** in the healthcare sector, play a pivotal role in the procurement process<sup>(1)</sup>. They must possess expertise in evaluating the carbon footprint of products and services, ensuring that their selection meets all sustainability criteria.

Key skills to possess	Occupational competency profiles	
	Director of medico-social establishment	Purchasing manager
<b>Proficiency in procurement processes and sustainable supply chain management<sup>(2)(3)</sup></b> <ul style="list-style-type: none"> <li>• Skills in evaluating and analysing the carbon footprint of products.</li> <li>• Proficiency in resource management: minimizing waste and optimizing procedures to reduce consumption</li> <li>• Communication skills to raise awareness and train staff</li> </ul>	✘	✘

### Recommendations

Current occupational competency profiles for directors of medico-social establishments and buyers should be updated to integrate **modules on sustainable procurement practices and supply chain management into initial training programs.**

Furthermore, mandatory continuous training programs should be established through professional training centres.

Additionally, **collaborating with regional and federal health authorities to set eco-responsible procurement policies is crucial.**

These policies must mandate carbon footprint assessments for purchased products and services and incorporate environmental criteria into tenders and supplier selection processes.

(1) Statbel Labour Force Survey (2023)

(2) The Shift Project (2023). *Décarboner la santé pour soigner durablement*

(3) The Shift Project (2022) *Fiche métier – Achats & logistique. Assurer le fret dans un monde fini*

# Focus 3: Eco-design of healthcare services: care with minimal ecological and energy impact

- Downstream actions: Adapting practices to consume **less medical equipment and materials** (quality/safety/financial efficiency vs carbon cost), reduce **the use of medications** and decrease the amount of unused medications, and reduce the **use of medical devices** and encourage reuse (instead of single-use items)
- Medical practitioners play a pivotal role in sustainable healthcare through their decision-making authority, determining treatment types and prescribed medications. They establish and adhere to clinical guidelines that emphasize sustainable practices and advocate for eco-friendly healthcare policies at both institutional and governmental levels.
- Nursing professionals and healthcare assistants, given their significant numbers and direct patient contact, can drive sustainable practices by adopting eco-friendly methods, monitoring treatments, and ensuring efficient resource use without compromising care quality.

Key skills to possess	Actual occupational competence profiles		
	Generalist/ specialist medical practitioners	Nursing (associate) professionals	Healthcare assistant
<b>Eco-design of care</b> <sup>(1) (2)</sup> <ul style="list-style-type: none"> <li>• Responsible and ethical use of medical (including medication) and energy resources in healthcare facilities</li> <li>• Assessment of the environmental impact of healthcare services and medical examinations (e.g. eliminate the use of high greenhouse gas anaesthetist, promote use of environmentally friendly inhalers,...)</li> <li>• Reducing low-value and ineffective care</li> <li>• Skills in <b>telemedicine</b> and remote care delivery</li> </ul>	✗	✗	✗
<b>Eco-prescription</b> <sup>(2) (3)</sup> <ul style="list-style-type: none"> <li>• Optimization of <b>medication prescriptions</b></li> <li>• Adopt a bio-physio-social approach in the patient-doctor relationship for holistic patient care (allows for prescriptions based on specific needs, consideration of medical history, regular evaluation of treatment efficacy, etc.).</li> </ul>	A mention to understanding the patient's living environment ✗	A mention to adapt care to the individual's personal situation ✗	✗
<b>Reducing waste</b> <sup>(2)</sup> <ul style="list-style-type: none"> <li>• Managing medical waste (including infectious healthcare waste) which environmental and ecological impact is way higher than residual waste.</li> <li>• Utilization of durable and reusable medical devices</li> </ul>	✗	A reference to working in environmental standards ✗	A reference to working in environmental standards ✗

## Recommendations

Essential competencies in environmental assessment, eco-prescription and waste management should be integrated in the profiles of doctors, nurses and assistants..

Furthermore, **mandatory continuing education programs should be established and tools must be provided to help assess the carbon footprint of practices.**

Moreover, **implementing mentorship programs will facilitate the sharing of best practices.**

Finally, **it is essential to develop national guidelines for eco-design in healthcare, including recommended practices to reduce environmental impact.**

(1) Columbia mailman school of public health. Global consortium on climate and health education. (2023). Climate & health core concepts for health professionals

(2) The Shift Project (2023). Décarboner la santé pour soigner durablement

(3) Sorensen, C and all (2023). Core competencies to prepare health professionals to respond to the climate crisis

## Focus 4: Prevention and health promotion

- Prevention and health promotion directly contribute to a reduced impact of healthcare on climate change by lowering the demand for intensive healthcare services, enhancing resource efficiency, minimizing waste generation, and fostering a culture of sustainability within healthcare systems. This integrated approach not only improves population health but also supports the global effort to mitigate climate change <sup>(1)</sup>.
- General/specialist medical practitioners directly influence individual patient health through clinical advice, disease screening, and personalized prevention strategies. Their ability to prescribe medications and treatments gives them a direct influence on patient health behaviours and lifestyle changes.
- Nursing professionals engage closely with patients to reinforce preventive measures and educate them on daily health practices, providing continuous support and monitoring.
- Public health advisors develop, implement, and evaluate strategies for health promotion and disease prevention. Additionally, they influence health policies, educate the public, and promote healthy lifestyles. Furthermore, they create guidelines focused on prevention, assess program effectiveness, and adjust strategies accordingly. By using data, they identify public health needs and develop targeted interventions. Finally, they collaborate with various partners to maximize the impact of public health

Key skills to possess	Occupational competency profiles		
	Generalist/ specialist medical practitioners	Nursing (associate) professionals	Public health advisor
<b>Prevention and health promotion</b> <ul style="list-style-type: none"> <li>Understanding primary, secondary, tertiary, and quaternary prevention<sup>(1)</sup></li> <li>Skills in educating patients about healthy lifestyles, including nutrition, exercise, and mental health, cancer screening<sup>(2)</sup></li> </ul>	✓	✓	✓
<b>Skills in communication and awareness raising<sup>(3)</sup></b> <ul style="list-style-type: none"> <li>Ability to educate and engage patients/people on the interconnections between energy use, climate change and health</li> <li>Ability to involve long-term, self-treating chronic patients in sustainable practices, such as waste sorting and other proper use and potential reduction of self-administered medication</li> </ul>	✗	✗	✗

(1) Columbia mailman school of public health. Global consortium on climate and health education. (2023). Climate & health core concepts for health professionals

(2) The Shift Project (2023). Décarboner la santé pour soigner durablement

(3) Sorensen, C and all (2023). Core competencies to prepare health professionals to respond to the climate crisis

### Recommendations

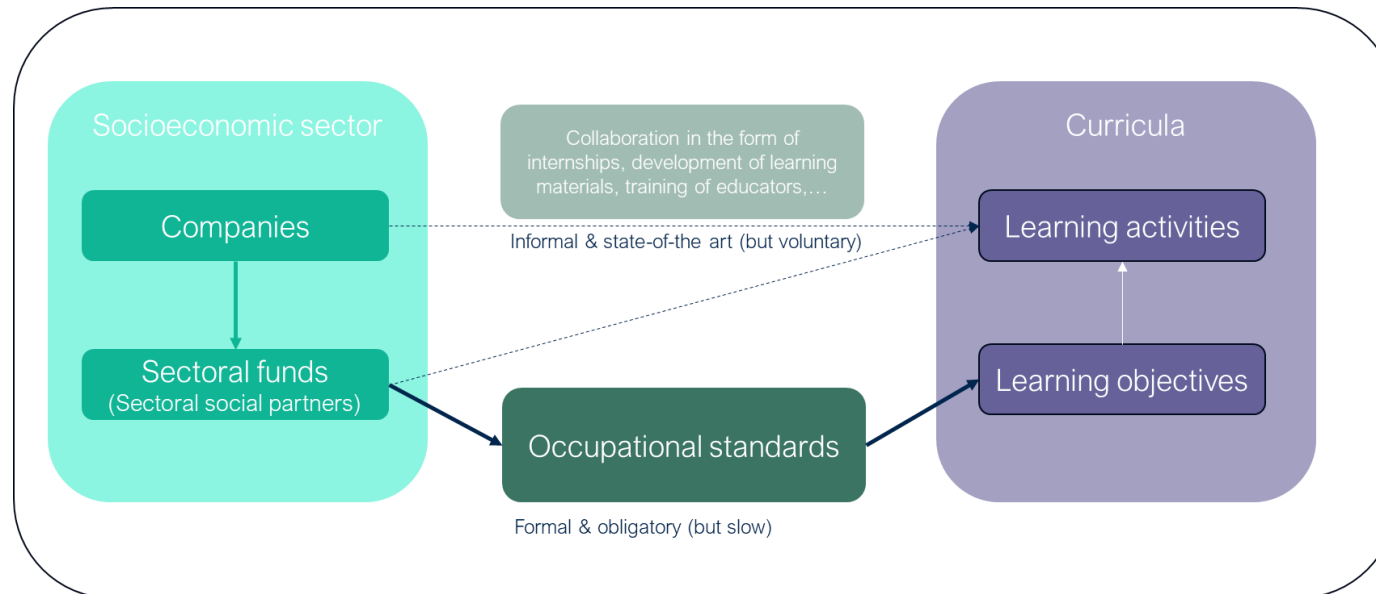
To reduce the healthcare system's climate impact and promote a preventive health system, it is essential to enhance the skills of healthcare professionals, including doctors, nurses and public health advisors.

To maximize the impact of public health initiatives, **collaboration and partnerships among healthcare professionals, government agencies and community organizations must be supported.** This includes **promoting intersectoral practices to encourage prevention and health promotion.**

Moreover, regional and federal health authorities must work together to integrate sustainability criteria into public health policies. **Developing national guidelines for prevention and health promotion**, including recommended practices to reduce environmental impact, is crucial.

# Generic recommendations to bridge the green-skills gap

- **General principle:** occupational competence profiles are created by the sectoral social partners and Synerjob (VDAB, Actiris, Bruxelles-Formation, Le Forem and ADG) as a reference framework for education and training.
- **Challenge:** the procedure for creating these standards is lengthy due to the involvement of many actors, and these profiles do not always translate directly into education.
- **Solution:** for learning activities to align with company ( hospital ) needs, also informal collaboration (such as internships, development of learning materials, training of educators,...) between schools, training providers, sectoral funds and companies ( hospital) is essential.
- **Recommendation:** updating competency profiles is important, together with effective collaboration to develop and implement state-of-the-art training programs.



For each job (and in each sector), these principles remain the same.

Only the actors that need to be involved (sectoral organisations on the one hand – education and training providers on the other), are different.

# Appendix 1: Healthcare system's levers to cut transport-related emissions

Lever from healthcare sector	Category	Behavioural change?	Impact on freight or mobility	Lever	Description
Telemedicine and Remote Consultations	Energy	Y	Mobility	Passenger distance	Reduces the need for patients to travel to healthcare facilities, decreasing vehicular emissions from personal and public transportation.
Green Procurement Policies	Energy	N	Freight	Technology evolution	Ensures suppliers use low-emission transportation methods for delivering medical supplies, reducing overall transportation emissions.
Electrification of Medical Transport Fleet	Energy	N	Freight	Technology evolution	Transitioning ambulance and medical supply transport vehicles to electric models reduces fossil fuel consumption and emissions from freight transport.
Location Optimization of Healthcare Facilities	Energy	N	Mobility	Passenger distance	Strategically locating healthcare facilities closer to residential areas reduces travel distances for patients and staff, lowering transportation emissions.
Implementation of Mobile Health Clinics	Energy	N	Mobility	Passenger distance	Mobile health clinics provide routine care services locally, reducing the need for patient travel to central facilities and thus reducing emissions.
Promotion of Active Transport for Staff	Energy	Y	Mobility	Mode of transport	Encouraging healthcare staff to use walking or cycling for commuting reduces vehicular emissions.
Employee Telecommuting	Energy	N	Mobility	Passenger distance	Allowing healthcare administrative staff to work from home reduces commuting-related transportation emissions.
Health Promotion and Prevention Programs	Energy	Y	Mobility	Mode of transport	Encouraging patients to engage in active transportation methods (walking, cycling) reduces reliance on vehicles and lowers emissions.
Deprescribing and Medication Reviews	Energy	Y	Freight	/	Reducing unnecessary medications decreases the frequency and volume of pharmaceutical deliveries, lowering freight transport emissions.
Role of Doctors in Encouraging Active Mobility	Energy	Y	Mobility	Mode of transport	Doctors and healthcare practitioners promoting walking, cycling, and use of public transportation to patients reduce car usage and emissions.
Preventive Health Screenings and Local Clinics	Energy	Y	Mobility	Passenger distance	Conducting preventive health screenings in local clinics minimizes the need for long-distance travel for medical appointments, reducing emissions.
Community Health Programs	Energy	Y	Mobility	Mode of transport	Implementing community health programs that include physical activities promotes active transport and reduces vehicular emissions.
Virtual Health Workshops and Training	Energy	Y	Mobility	Passenger distance	Conducting workshops and training sessions online reduces the need for travel, minimizing transportation emissions.
Integration of Health and Transportation Policies	Energy	Y	Mobility	Mode of transport	Coordinating health and transportation policies to promote active transport and public health leads to reduced transportation emissions.

## Appendix 2: Healthcare system's levers to cut food-related emissions

Lever from healthcare sector	Category	Behavioural change?	Impact on agriculture	Description
Reducing Food Waste in Healthcare Facilities	Material	N	Crop Production	Reducing food waste decreases the demand for food production, thereby lowering the environmental impact of agricultural activities.
Promoting Vegetarian Meals	Material	Y	Livestock Management	Increasing the availability of vegetarian meals reduces the demand for livestock products, decreasing emissions associated with animal farming.
Sourcing Local Food	Energy	N	Crop Production	Procuring food locally reduces transportation emissions associated with long-distance food supply chains.
Promoting Seasonal Food	Material	Y	Crop Production	Encouraging the consumption of seasonal food reduces the need for energy-intensive farming practices like greenhouses and refrigeration.
Sourcing Organic Food	Material	N	Pesticide and Fertilizer Use	Sourcing organic food reduces the use of chemical pesticides and fertilizers, promoting sustainable agricultural practices.
Sensibilizing Patients to a Less Meat-Based Diet	Material	Y	Livestock Management	Educating patients on the benefits of a less meat-based diet reduces the demand for livestock products, decreasing emissions from animal farming.
Encouraging Patients to Consume Local Food	Energy	Y	Crop Production	Advising patients to consume locally sourced food reduces transportation emissions and supports sustainable agricultural practices.
Promoting Seasonal Food Consumption	Material	Y	Crop Production	Encouraging patients to consume seasonal foods reduces the need for energy-intensive farming practices and supports sustainable agriculture.
Educating Patients on the Benefits of Organic Food	Material	Y	Pesticide and Fertilizer Use	Encouraging the consumption of organic food reduces the use of chemical pesticides and fertilizers, promoting sustainable agricultural practices.
Sustainable Waste Management	Material	N	Soil Management	Efficient waste management practices in healthcare promote the use of organic waste as compost in agriculture, enhancing soil quality.
Community Health Programs	Material	N	Crop Production	Implementing community health programs that include sustainable farming practices promotes eco-friendly agriculture and reduces emissions.

# Appendix 3: Healthcare system's levers to cut building-related emissions

Lever from healthcare sector	Category	Type	Impact on buildings	Description
Implementing Energy-Efficient Building Systems	Energy	N	Energy Use	Installing energy-efficient HVAC, lighting, and insulation systems in healthcare facilities reduces overall energy consumption.
Using Renewable Energy Sources	Energy	N	Energy Use	Transitioning healthcare facilities to renewable energy sources (solar, wind) reduces reliance on fossil fuels and lowers emissions.
Retrofitting Existing Buildings	Material	N	Energy Use	Upgrading existing healthcare buildings with modern, energy-efficient systems reduces energy consumption and emissions.
Thermal Renovation	Material	N	Energy Use	Enhancing the thermal efficiency of buildings through improved insulation and windows reduces energy consumption for heating and cooling.
Bio-Sourced Materials, Bio-Climatic Design	Material	N	Construction Practices/embodied carbon	Incorporating bio-sourced materials and bio-climatic design principles in building construction reduces environmental impact and enhances sustainability.
Promoting Telemedicine	Energy	Y	Occupancy Patterns	Reducing the need for staff and patients to travel to healthcare facilities lowers building occupancy rates and energy use.
Educating Staff on Energy Conservation Practices	Energy	Y	Energy Use	Encouraging staff to adopt energy-saving behaviors (e.g., turning off lights and equipment when not in use) reduces overall energy consumption.
Implementing Smart Building Technologies	Energy	N	Energy Use	Integrating smart technologies to optimize energy use in heating, cooling, and lighting systems enhances efficiency and reduces emissions.
Employee Telecommuting	Energy	Y	Energy Use	Allowing healthcare administrative staff to work from home reduces the energy consumption and emissions associated with commuting and office use.
Community Health Programs	Material	N	Sustainable Development	Implementing community health programs that include green building practices promotes eco-friendly construction and reduces emissions.
Promoting Sufficiency	Energy	Y	Energy Use	Encouraging minimal use of energy and resources within healthcare facilities to lower consumption and emissions.
Awareness of Use, 'Energy Referent' Role	Energy	Y	Energy Use	Appointing energy referents to raise awareness and guide energy-saving practices within healthcare facilities reduces overall energy consumption.

## Appendix 4: Inspiring examples - role of doctors in modal shift

Study	Healthcare professional	Promotion method	Targeted group	Results
Orrow et al. (2012)	General Practitioners (GPs)	exercise referral schemes, advice or counselling interventions	Sedentary adults	Promotion of physical activity to sedentary adults recruited in primary care <b>significantly increased physical activity</b> levels at 12 months as measured by self report
Petrella & Lattanzio (2002)	Physicians	Tailored exercise prescriptions and follow-up	Adults	All 7 studies showed <b>significant increase in exercising</b>
Calfas et al. (1996)	Primary Care Physicians	3-5min structured physical activity counselling	General adult population	Increased walking (+37min/week vs +7min/week for control patients)
Hillsdon et al. (1995)	GPs and Practice Nurses	Motivational interviewing and written advice	Healthy, free living adults	Previously sedentary adults can increase activity levels and sustain them. Promotion of these changes requires <b>personal instruction, continued support</b> , and exercise of moderate intensity which <b>does not depend on attendance at a facility</b> .
Elley et al. (2003)	Primary Care Physicians	Green Prescription program : oral and written advice on physical activity during usual consultations. Exercise specialists continued support by telephone.	Sedentary 40-79 y/o patients	34 min/week of exercise in intervention group vs control.
Elley et al. (2004)	GPs and Nurses	Exercise prescription with follow-up	Sedentary patients	Verbal and written physical activity advice given in general practice with telephone follow-up is an <b>inexpensive</b> way of increasing activity for sedentary people and has the potential to have significant <b>economic impact</b> through reduction in cardiovascular and other morbidity and mortality.

## Appendix 5: Use cases for buildings' decarbonization

**Case study 1: Low-carbon building— India** Kohinoor Hospital in Mumbai is committed to reducing its environmental impact while reducing costs to patients. The hospital opened in 2009 and is LEED certified, relies on low-energy light bulbs, uses photovoltaic power to heat its water, harvests rainwater, and treats its own sewage to reduce water use. Kohinoor Hospital also installed high-efficiency wall and window systems and an air-conditioning plant, resulting in an energy use intensity of 166 kwh/m<sup>2</sup> /year (53 kBTU/ ft<sup>2</sup> /year).

**Case study 2: Low-carbon building—Rwanda** Butaro Hospital, a collaboration amongst Partners in Health, the Rwandan Ministry of Health, and MASS Design, reduces its energy consumption by using narrow floor plates, natural daylight, and natural ventilation, along with high-volume, low-speed fans and germicidal UV lights to provide energy efficient ventilation while controlling the transmission of airborne diseases. Local materials from the nearby Virunga Mountains were also used to decrease carbon footprint and contribute to the local economy. The overall approach reduced the facility's price tag by 1/3, saving US\$2 million while producing over 4,000 jobs.\*

\* Mass Design Group, The Butaro District Hospital. <https://massdesigngroup.org/work/design/butaro-district-hospital>, last accessed 17 January 2017

**Case study 3: Building retrofit— South Africa** The Western Cape Government has eliminated the coal- and oilfired boilers at nearly all its 53 hospitals. Annual savings from Lentegur hospital's laundry efficiency measures alone include more than 19 million liters of water, over 550 metric tons of CO<sub>2</sub>e, and at least US\$62,000 in costs. Extrapolating for all Western Cape Government hospitals, the savings would add up to US\$3.3 million annually.

**Case study 4: Energy efficiency— South Africa** Victoria Hospital, Cape Town empowered hospital workers through its “switch it off campaign.” Cleaners and housekeepers in this 180- bed secondary facility seek to ensure that unused lights and hospital equipment are switched off. This project resulted in the small but not insignificant saving of US\$8,400 annually and boosted the morale of the cleaners and housekeepers, making them feel more recognized within the hospital.

World Bank Group (2017). *Climate-Smart Healthcare*. [World Bank Document](#)