

Pathways to integrate sustainability and climate resilience in the hospital estate

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2024 first year to pass 1.5C global warming limit



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Hottest start to May on record as temperature hits 29.3C in London

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The warmest UK weather records for June and will it be broken this year

Story by Ian Jones • 8m • 2 min read

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News > UK News > Heatwave

UK heatwave maps turn deep red as 38C scorcher predicted to hit 13 regions

New maps show exactly when temperatures in 13 areas could rise as high as 38C this month following a Met Office warning over scorching heatwaves similar to the summer of 2022

Comments 0

NEWS By [Ethan Blackshaw](#) Deputy News Editor
05:00, 19 Jun 2025 | Updated 05:38, 19 Jun 2025



Air above the UK is set to heat up dramatically later this month (seen here on June 30) (Image: WXCHARTS)

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News > UK News > Weather

UK could see 45C temperatures and extreme month-long heatwaves, warns Met Office

A new study by the Met Office has revealed the UK could see more extreme summer weather with temperatures possibly rising up to 45C - and this could pose a public health risk

Comments 1

Climate change impacts health



**Increased
Mortality and
Morbidity**



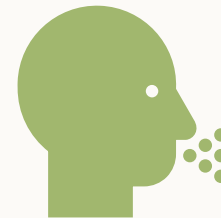
**Rise in
Infectious
Diseases**



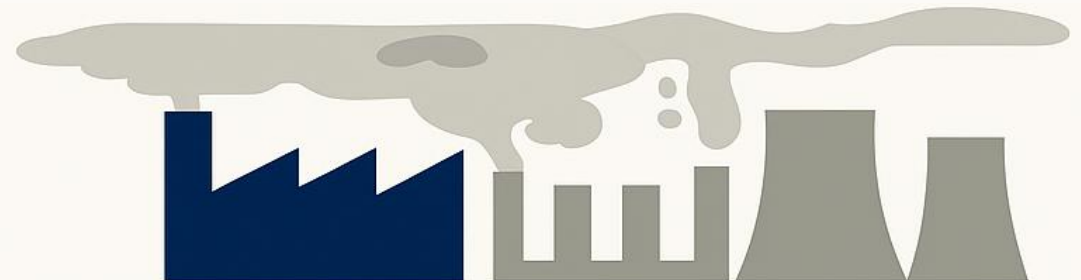
**Mental
Health
Impacts**



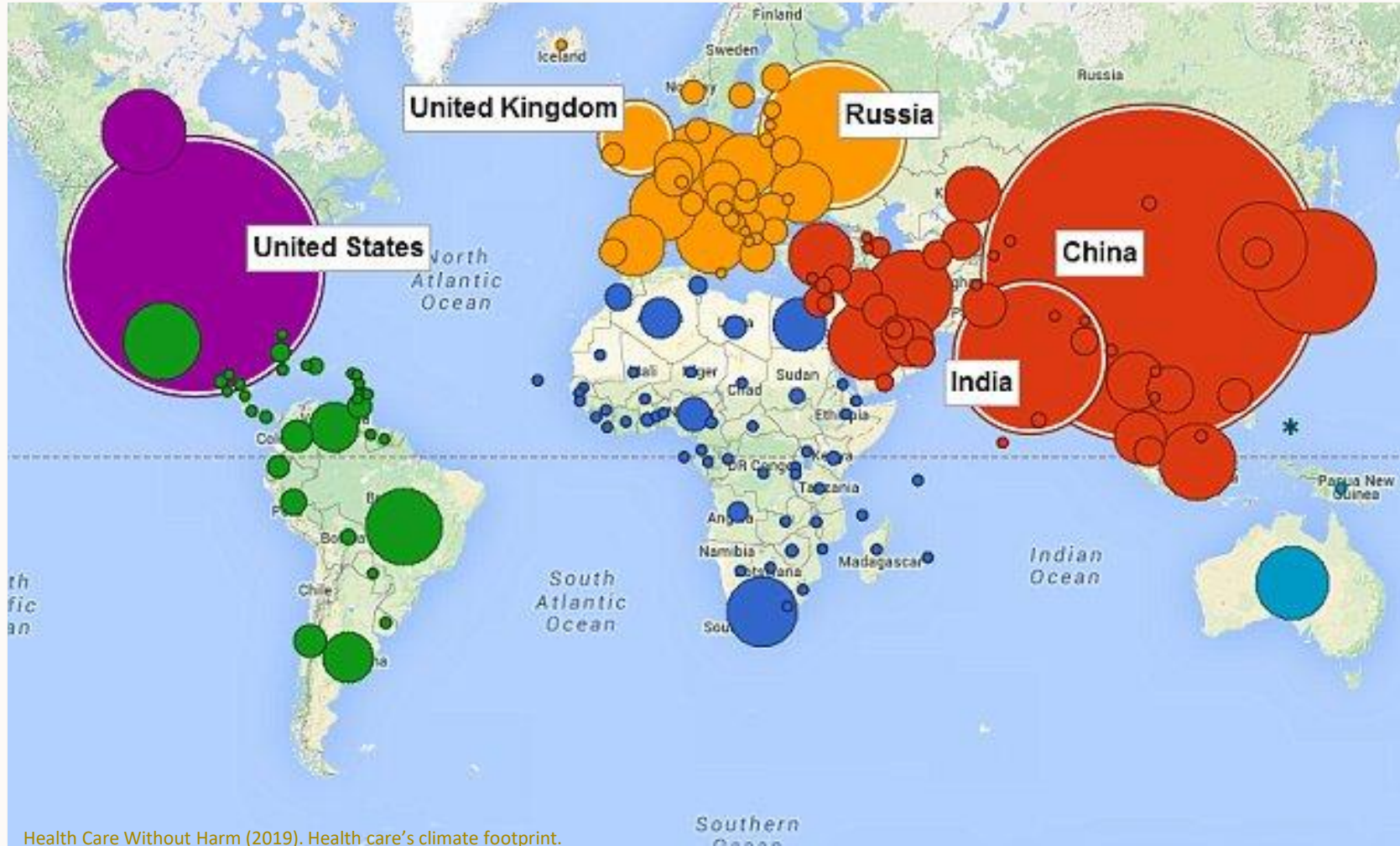
**Air Pollution
and Respiratory
Illnesses**



**Heat-
Related
Illnesses**

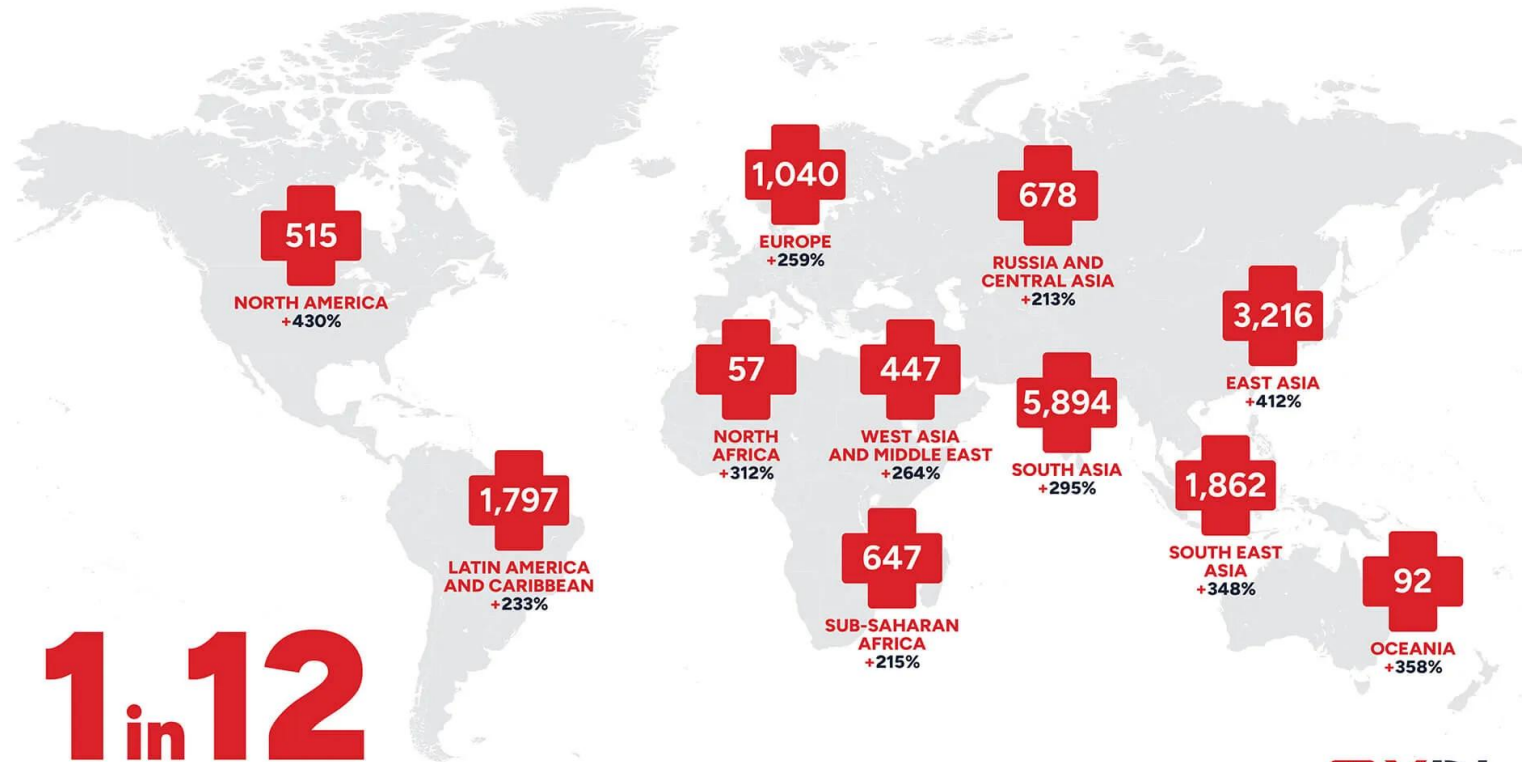


Healthcare is both a contributor to and a casualty of climate change



Healthcare is both a contributor to and a casualty of climate change

Number of high risk hospitals and percentage increase in risk of damage to hospital infrastructure 2020-2100 at RCP 8.5.

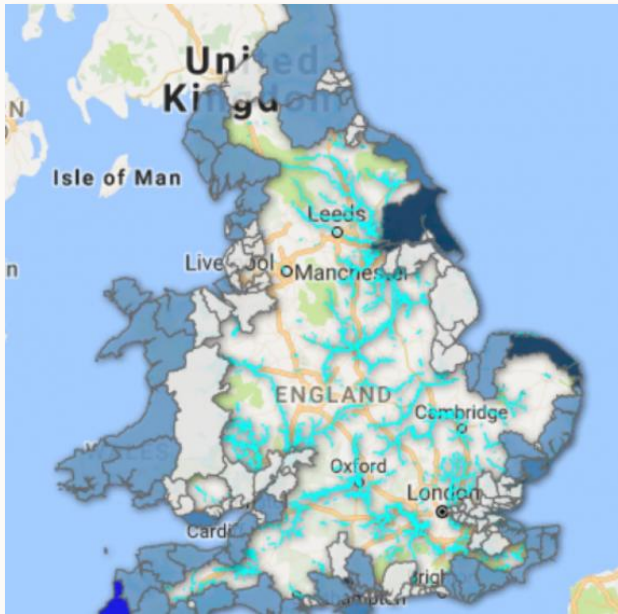


1 in 12

hospitals around the world will be at **high risk** of total or partial shutdown under RCP 8.5 by 2100.

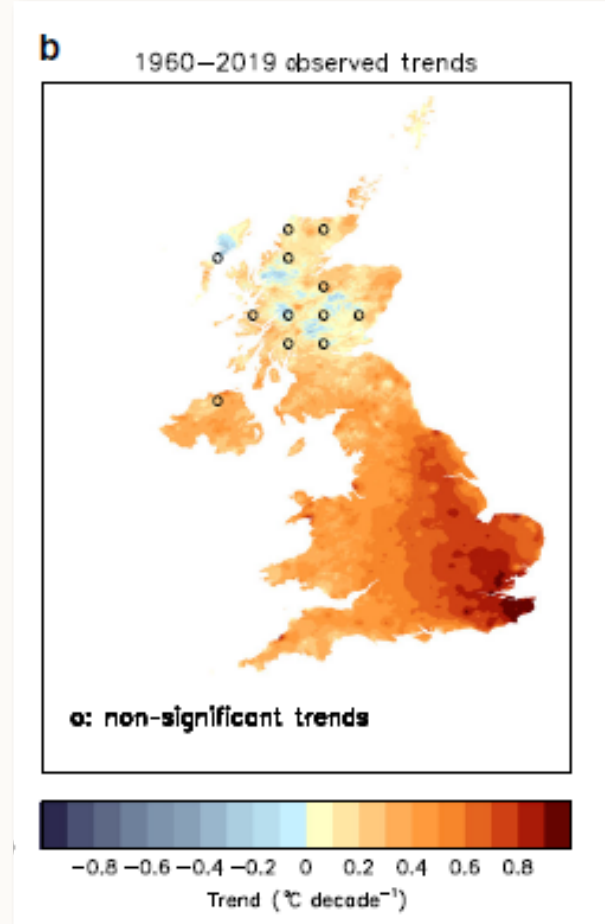


Healthcare is both a contributor to and a casualty of climate change



10% of all hospitals in England are at high flood risk.

43% of all hospitals in London are at high flood risk

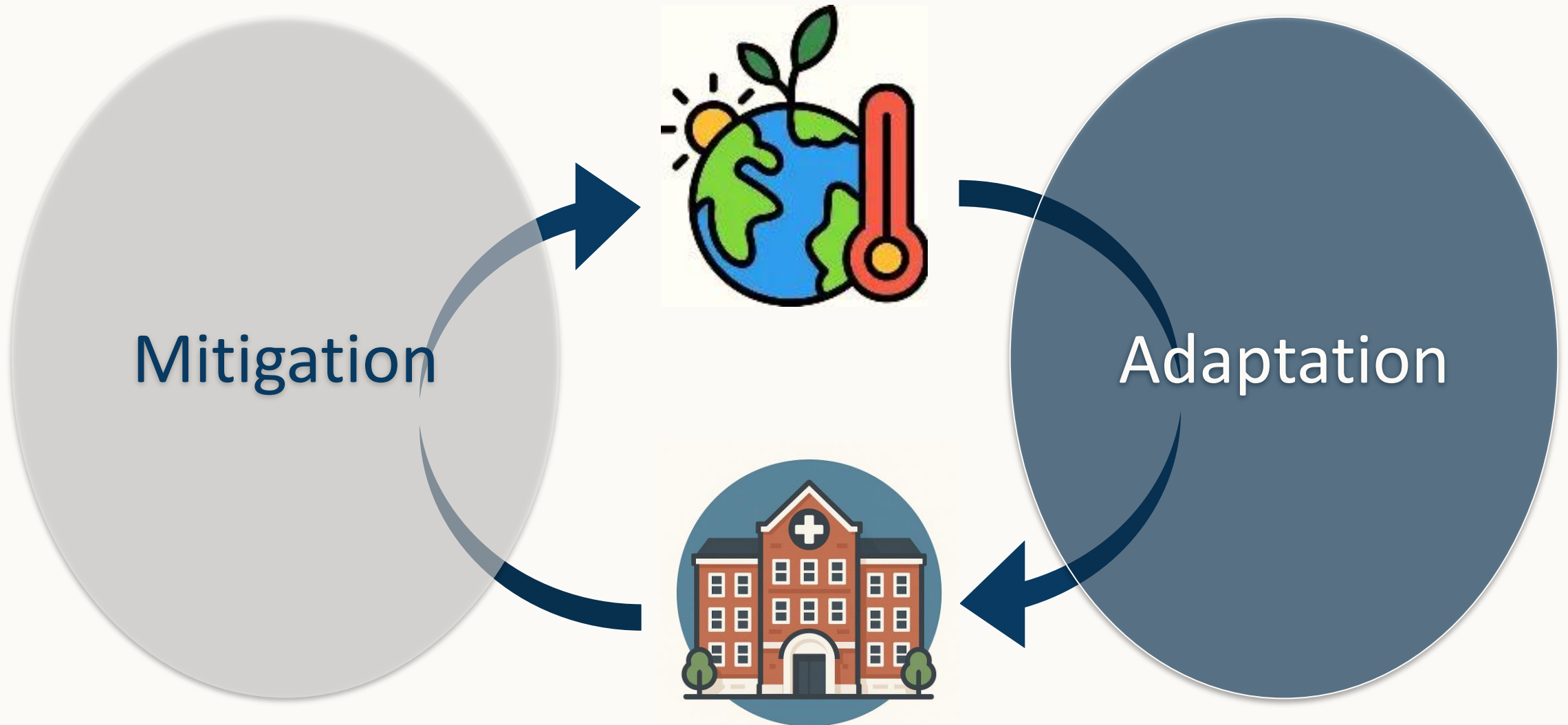


The 2022 heatwave led to one-fifth of UK hospitals cancelling operations over three days of extreme temperatures.

Overheating incidents within hospitals have almost doubled in the last 5 years.

90% of hospital wards are at risk of overheating.

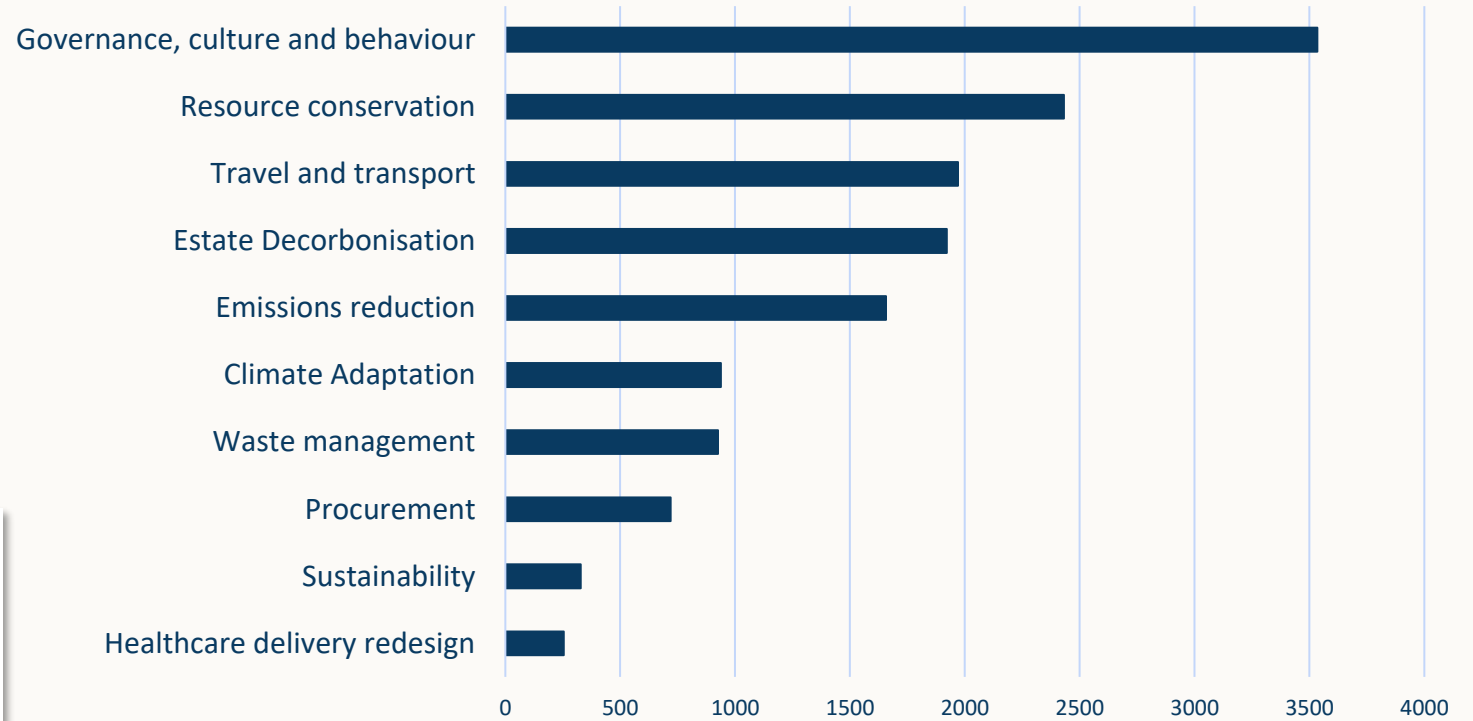
Healthcare must mitigate and adapt



NHS England approach to mitigation and adaptation



Areas of mitigation and adaptation in the NHS trusts



Article

Decarbonizing the Healthcare Estate: Lessons Learned from NHS Trust Green Plans in England

Federica Pascale ^{1,*}, Petar Tabakov ² and Mahmood F. Bhutta ^{2,3}

Healthcare must mitigate and adapt

Estate Decarbonisation Strategies

1. Reaching Net Zero through Built Asset Management

1.1 From Planning to Implementation

- Defining objectives
- Assessing Energy Consumption and Footprint
- Funding
- Net Zero Lead

1.2 Built Asset Management Strategies

- Maintenance
- Refurbishment
- New Design
- Repurposing and Decommissioning Buildings

	Completed	Ongoing	Planned
Improving lighting	41%	23%	26%

1.3 Monitoring and understanding asset

- Monitoring KPIs

	Completed	Ongoing	Planned
BEMs	4%	3%	7%

2. Heat Decarbonisation

1.1 Heat Decarbonisation Plan

1.2 Interventions on Heating Systems

	Completed	Ongoing	Planned
Boilers	6%	2%	26%
De-steam System	2%		4%
HVCA	2%	1%	9%
Chiller Units	2%		4%
Ventilation Systems	3%		9%

1.3 Low Carbon Heating Technologies

	Completed	Ongoing	Planned
Heat Pumps	6%		28%
CHP	18%	5%	11%
District Heating	1%		11%
Biomass and Biofuel	2%		3%
Solar Thermal			4%

1.4 Improving Building Fabric

- Building Fabric Upgrade *Limited information provided!*
- Windows and Doors

3. Switching to Renewable Sources of Energy

3.1 No-renewable energy sources divestment

- Fossil Fuel Divestment
- Gas Divestment
- Low and Zero-Carbon Energy

3.2 Generating Renewable Energy On-Site

	Completed	Ongoing	Planned
Generic Strategies			
Solar Photovoltaic	17%		33%
Wind turbine	1%		8%
Geothermal energy			3%
Solar farm			2%

3.3 Purchasing Renewable Energy

	Completed	Ongoing	Planned
100% renewable electricity	34%		
PPAs			38%

Healthcare must mitigate and adapt

Climate Adaptation



1. Planning

- 1.1 Developing a Climate Adaptation Plan
- 1.2 Appointing a Climate Change Adaptation Lead
- 1.3 Creating Climate Change Risk Assessment
- 1.4 Investments



2. Implementing Climate Change Adaptation Strategies for the Estate

- 1.1 Consider climate change in design and refurbishment
- 1.2 Design for extreme temperatures
- 1.3 Design for flooding
- 1.4 Improving Air Quality



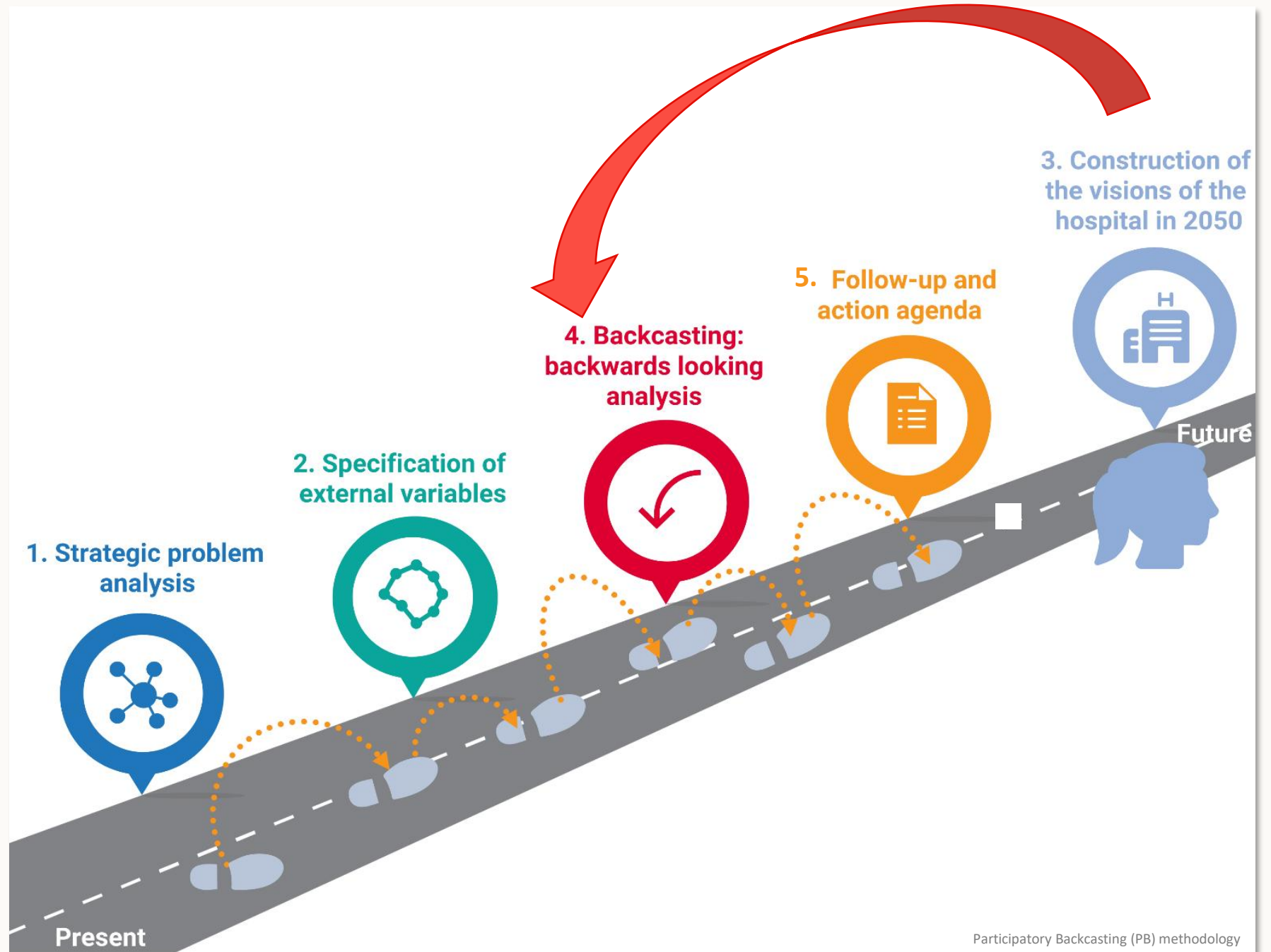
INSURE HRE

**INtegrated SUstainable and
REsilient Healthcare Real Estate**

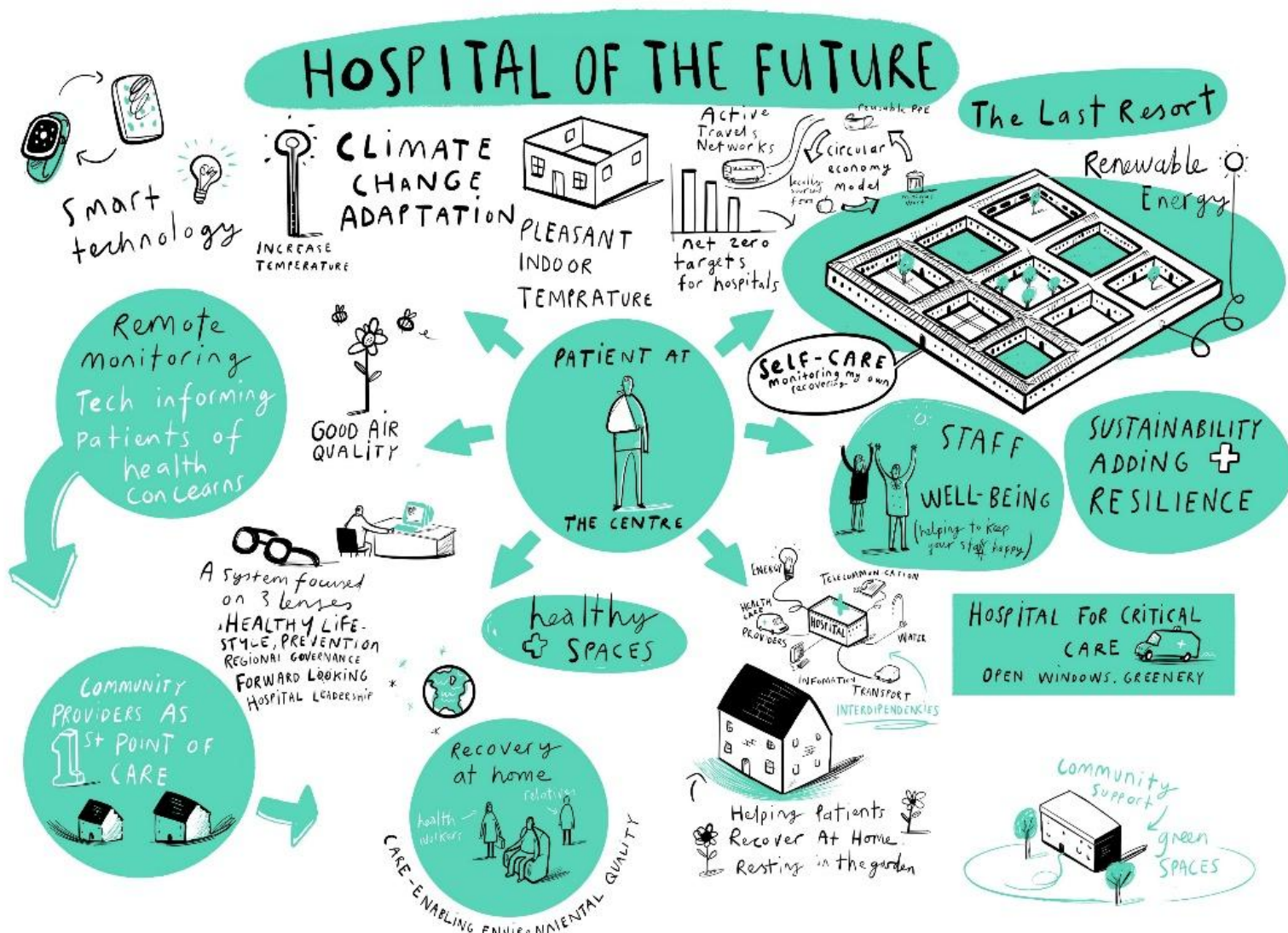


INSURE HRE

INtegrated SUstainable and REsilient Healthcare Real Estate



Starting from the future...



Graphic recording of Hospital of the Future. Created by Tom McLaughl based on the results of the INSURE HRE research project

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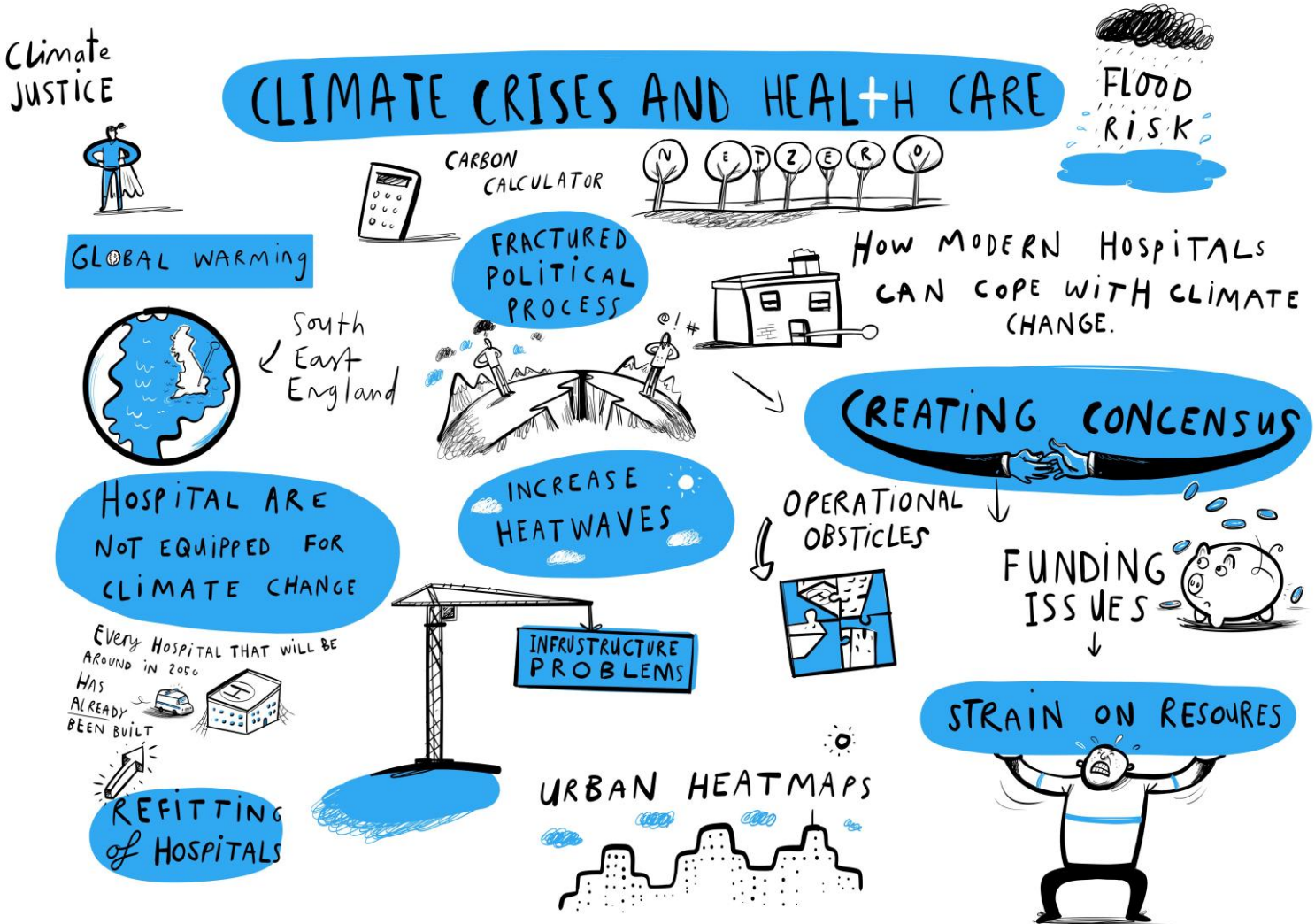
Themed paper - original research

Envisioning the sustainable and climate resilient hospital of the future

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Can existing hospitals reach the vision of the hospital of the future?



Facilities

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Existing hospitals' journey into a sustainable and climate-resilient future: barriers and opportunities for estates and facilities management

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School of Engineering & the Built Environment, Faculty of Science and Engineering, Anglia Ruskin University, Chelmsford, UK

Graphic recording of Hospital of the Future. Created by Tom McLaughl based on the results of the INSURE HRE research project.

The adaptation of the future hospital vision to the existing estate

Estate management

Estate management strategies:

- Planning
- Targets and KPIs
- Knowledge of the estate
- Maintenance strategies

Retrofitting and upgrading the existing estate:

- Net zero estate
- Climate adaptation of the estate
- Suitability for retrofit

Financial Aspects

Financial resource management:

- Funding availability
- Funding Sources

Facilities management commercial services:

- Investment appraisal strategies
- Procurement
- Contracts and agreements

NHS Organisational Development

Leadership:

- Hospital leadership
- System leadership
- Role of EFM in the leadership structure

Challenges internal to Facilities and Estates:

- Divergent views between FM and clinical staff
- Recruitment

Existing hospitals' journey into a sustainable and climate-resilient future: barriers and opportunities for estates and facilities management

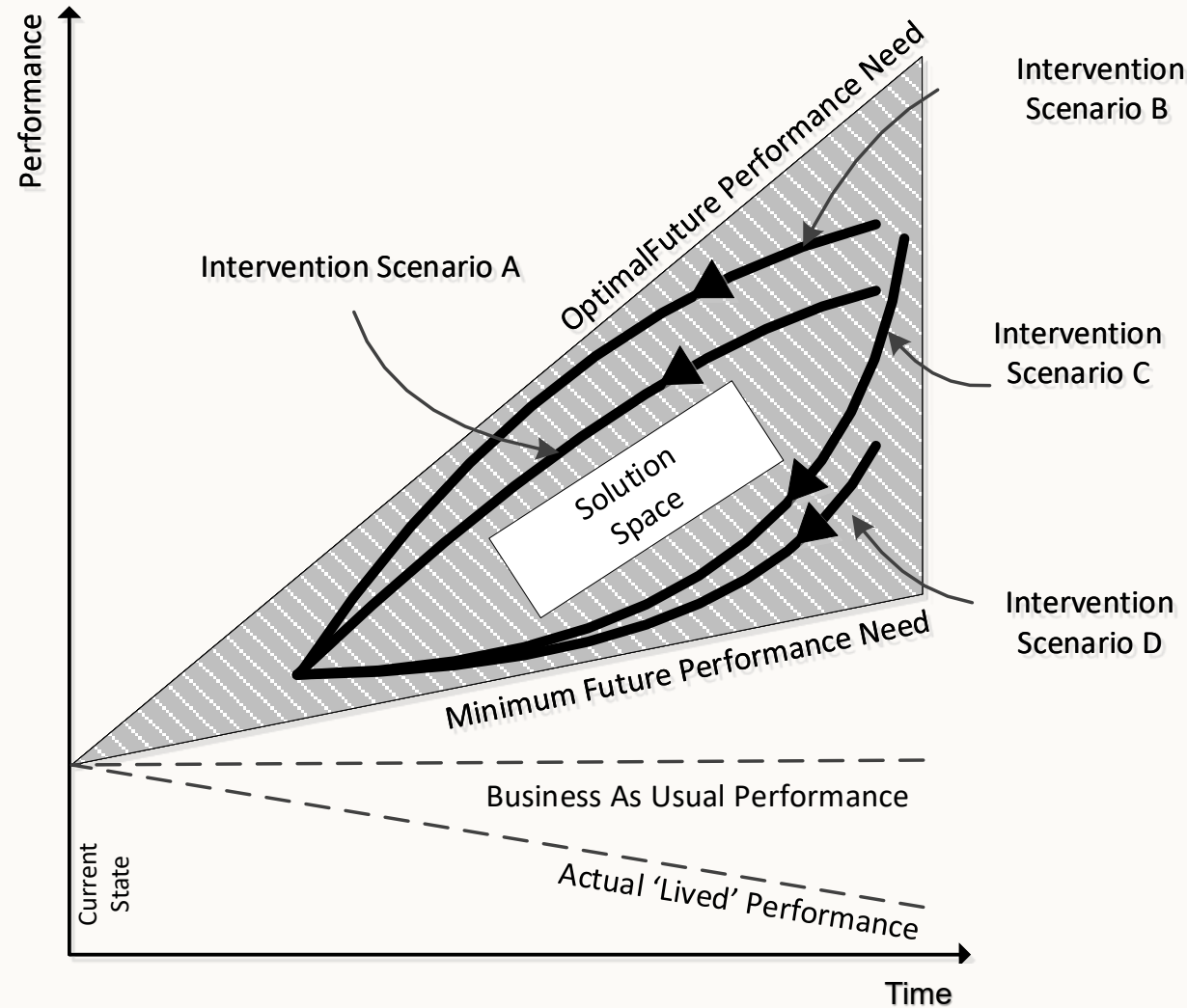
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Backcasting: backwards looking analysis



Conclusions

- Climate change is reshaping healthcare, and hospitals must respond as both contributors to and casualties of climate impacts.
- A balanced approach combining mitigation and adaptation is critical for climate resilience.
- Participatory Backcasting offers a powerful tool to envision sustainable and climate-resilient futures. However, longstanding barriers need to be addressed to enable an effective implementation.

Thank you for your attention!

Any questions?