Digitalisation, energy and healthcare

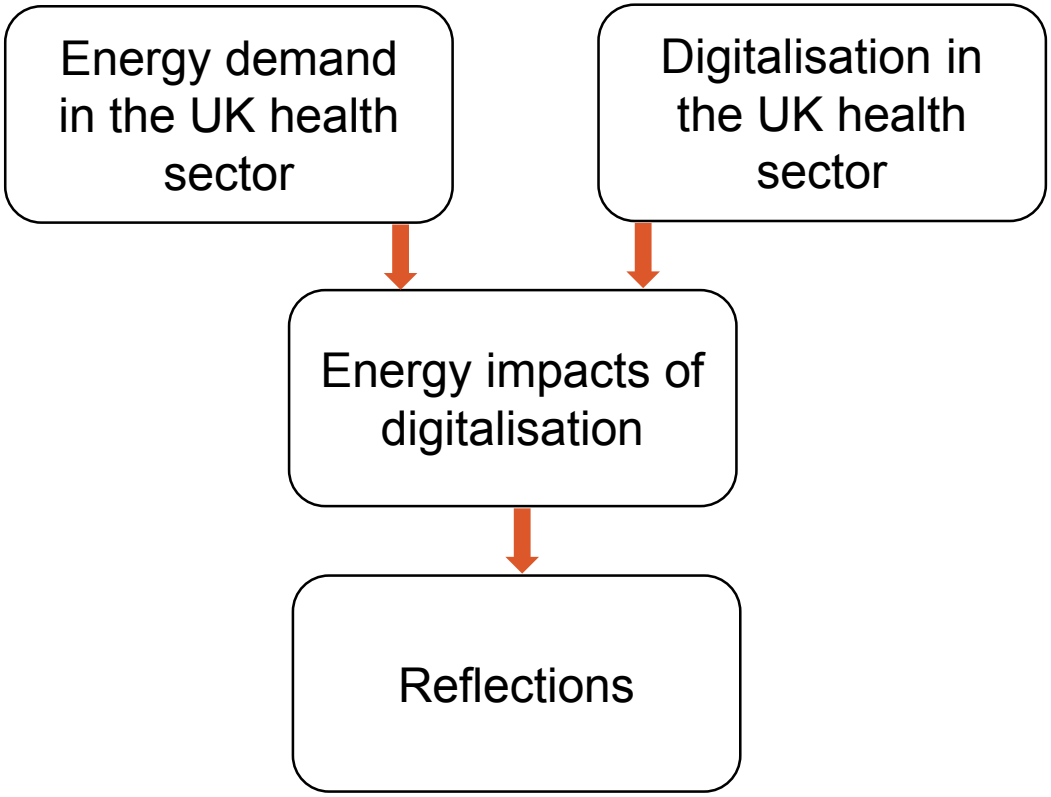
Sarah Royston, University of Sussex

Energy
For a Low Carbon Future

UNIVERSITY OF SUSSEX

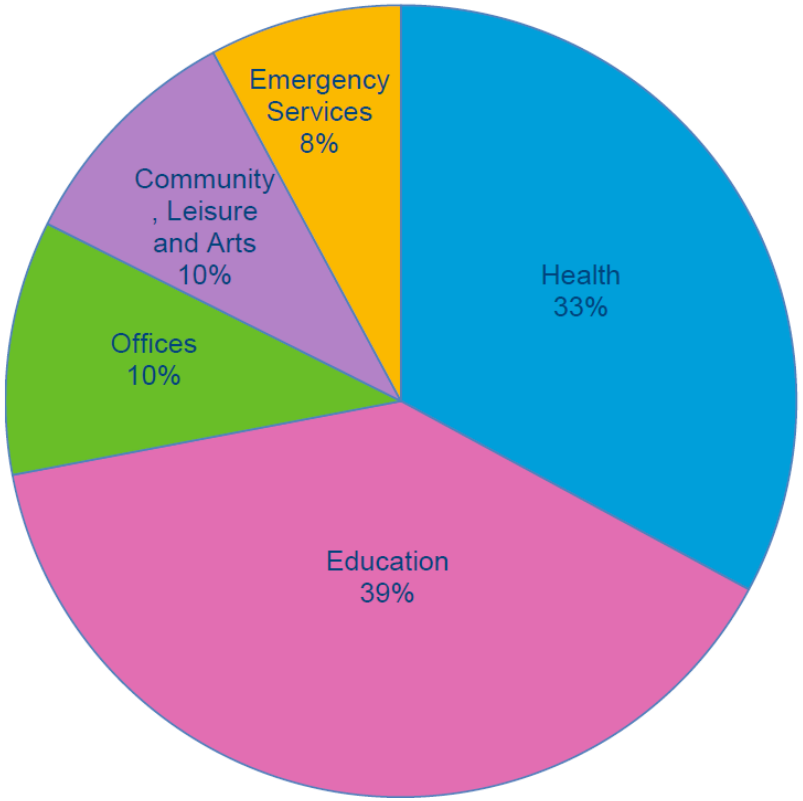
DEMAND
DYNAMICS OF ENERGY, MOBILITY AND DEMAND

Overview


Energy demand in the UK health sector
Digitalisation in the UK health sector
Energy impacts of digitalisation
Reflections

Energy demand in the UK health sector

Figure 1: Total UK Wider Public and Higher Education Sectors Energy Consumption by Sub-sector



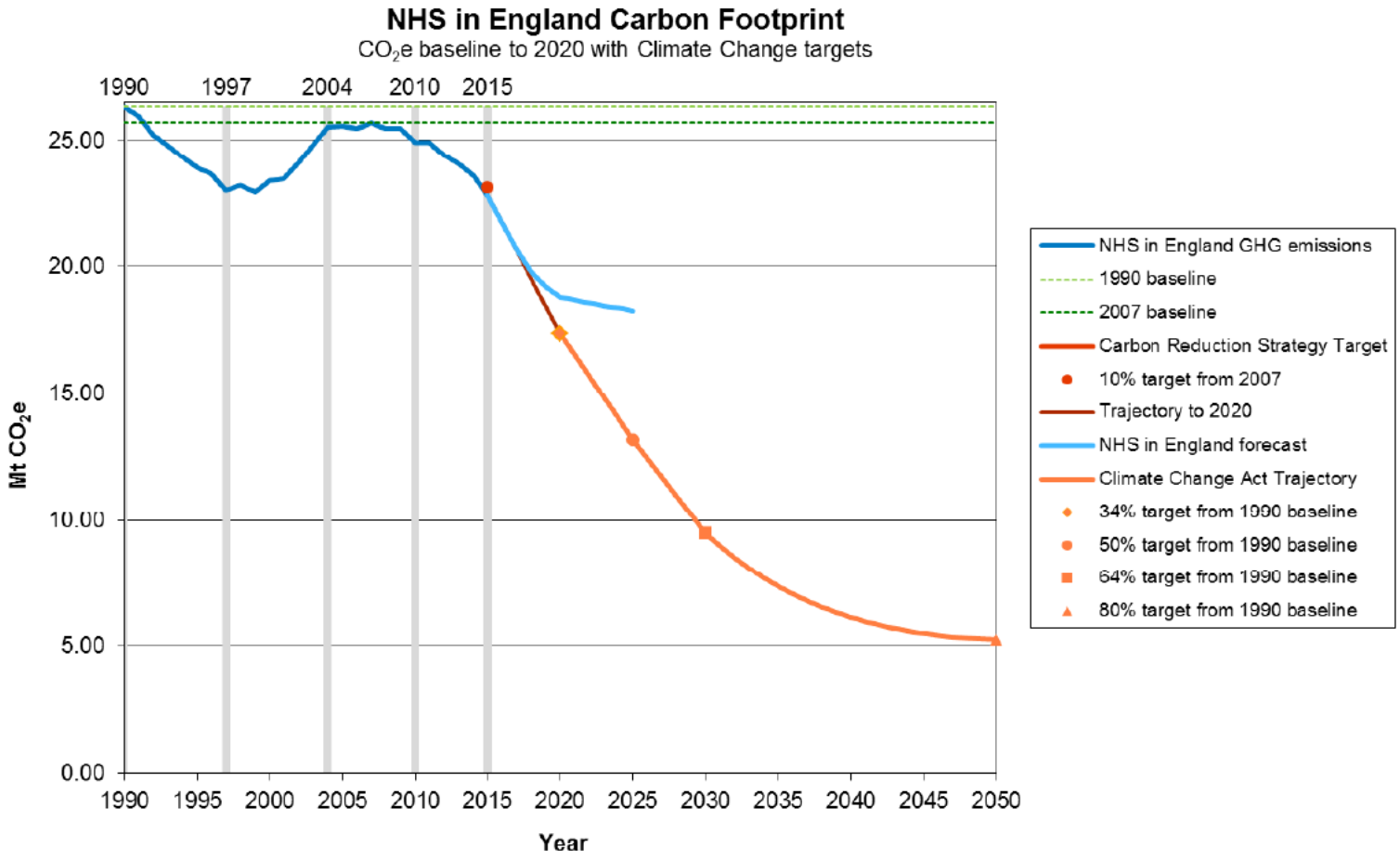
BEIS, 2018, p4

Energy demand in the UK health sector

91kg CO_2 e
(SDU, 2012)

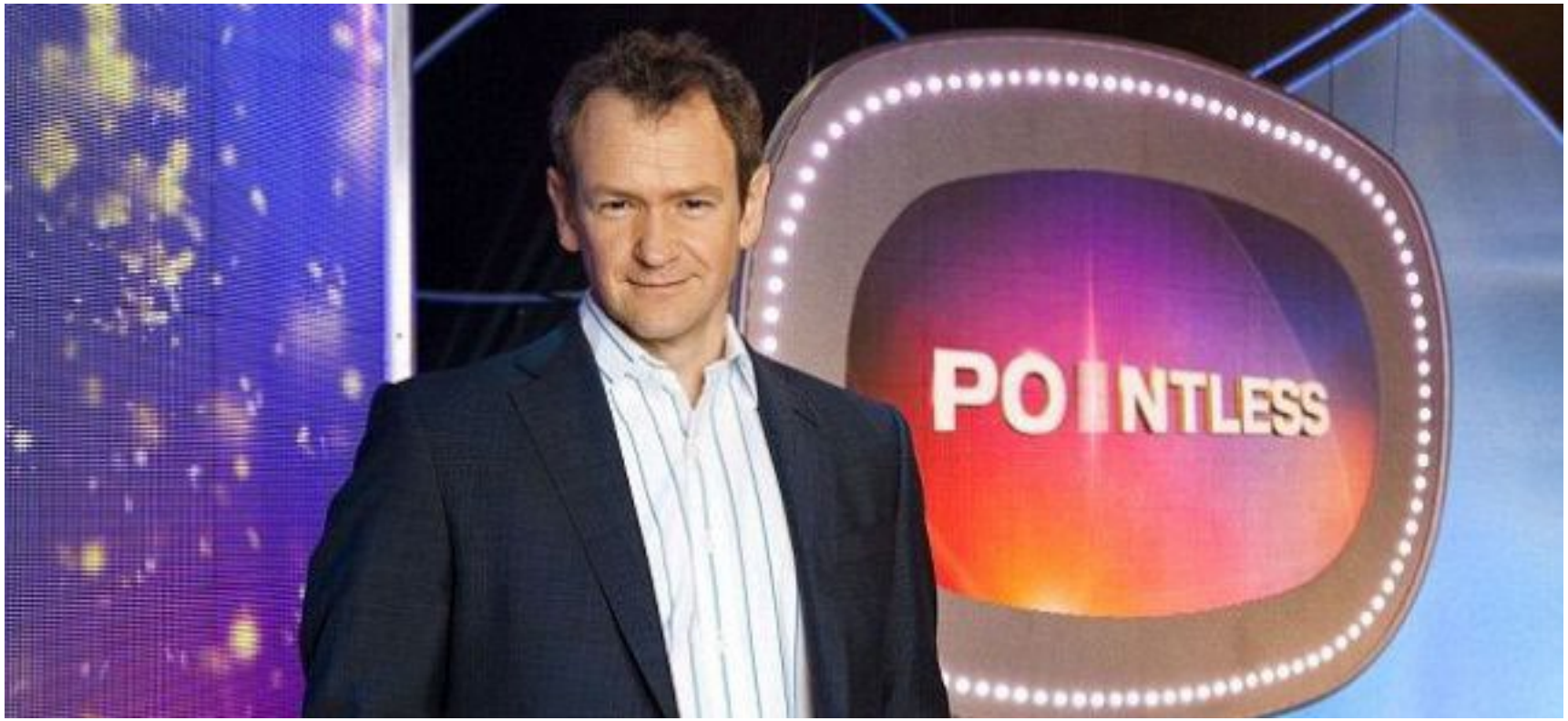
5% of road traffic in England (SDU, 2018)

Energy demand in the UK health sector



SDU, 2015

Let’s play a game…



How can hospitals use less energy?

I - S - L - T - T - E W - - - S

U - G - A - E T - E B - - LD - - G M - N - - E - - - T S - S - - M

I - S - - L - LE - L - G - T - NG

PR - M - TE P - B - - C T - - N - P - - T

How can hospitals use less energy?

I - PR - VE PS - - HI - T - - C C - - - IN A&E

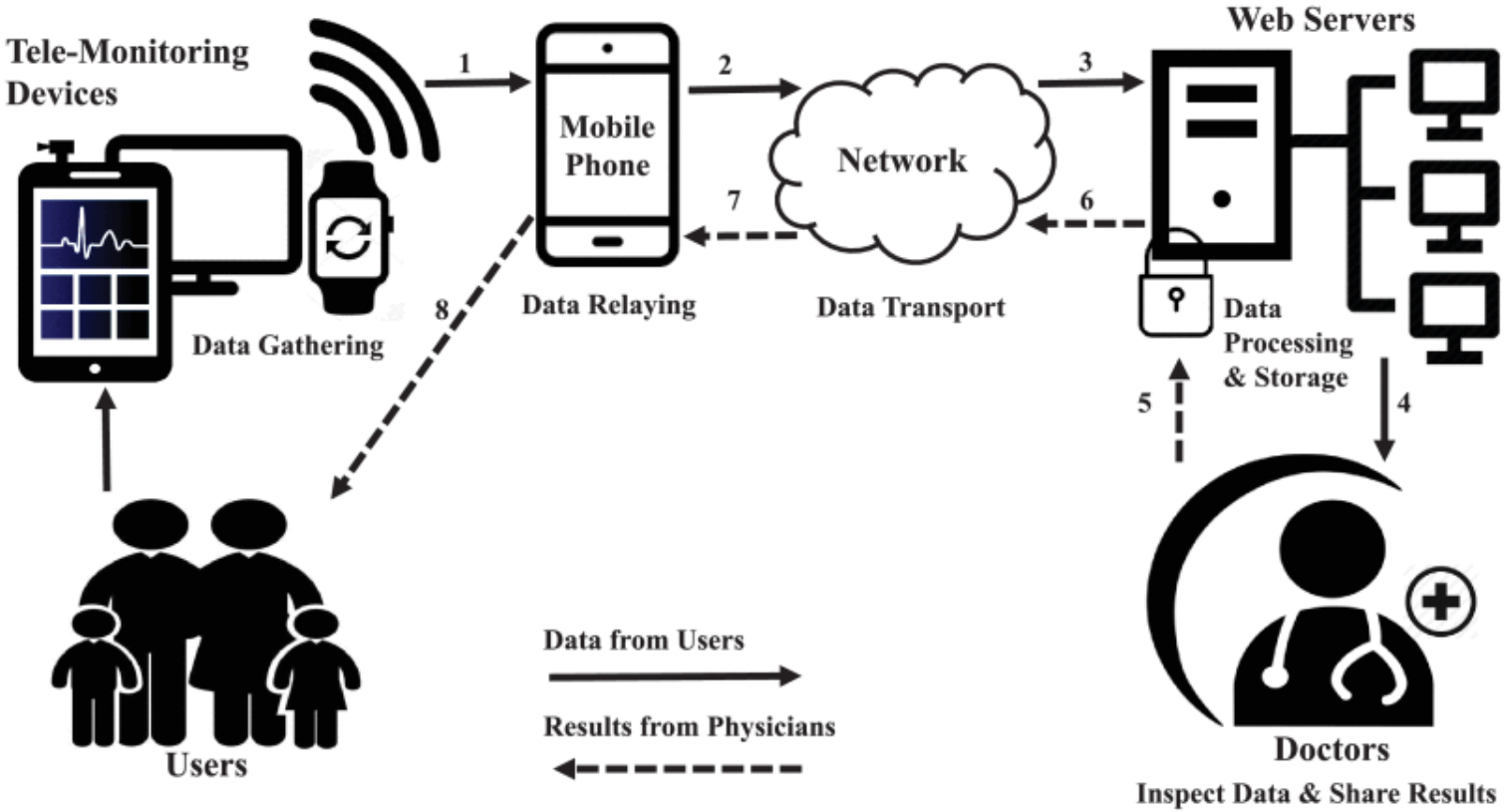
O - F - R P - O - - A - P - I - T - - - - S

M - N - T - R P - - E - - K - - S R - M - T - - Y

Rank £/tCO2e	Name	£ / tCO2e	tCO2e saved in 2020	£000s saved in 2020
1	Theatre kits in hospitals - reducing packaging	-31,600	329	11,500
2	Sugar reduction in soft drinks	-7,380	1,420	0 (saving in 2026: 32,200)*
3	Combined Heat and Power (CHP)†	-6,340	3,750	26,400
4	Reducing medicine waste	-4,430	7,030	37,500
5	Active staff travel	-3,790	4,180	0 (saving in 2026: 19,500)*
6	Psychiatric liaison	-2,000	84,500	259,000
7	Biomass boilers	-1,870	28,400	4,690
8	Effective use of long-acting injections	-1,620	166	297
9	Driver training for fuel efficiency and safety	-1,570	3,960	1,480
10	Reducing social isolation in older people	-1,320	62	0 (saving in 2026: 421)*
11	Teleconferencing	-981	4,100	5,020
12	Furniture reuse scheme	-527	175,000	425
13	Telehealth/Telecare for long term conditions	-341	6,740	2,550
14	Solar - photovoltaic	-261	2,690	1,030
15	Variable speed drives	-231	10,300	3,930
16	Staff energy awareness & behaviour change	-210	75,100	21,500
17	Lighting - controls	-167	2,250	863
18	Building Management System (BMS) - optimisation of existing systems	-153	14,100	3,440
19	Lighting - high efficiency	-141	18,800	7,190
20	Optimising office electrical equipment	-125	11,100	4,250
21	Temperature set points - '1 degree C'	-111	46,200	6,260
22	Building Management Systems (BMS) - new systems	-93	29,200	4,440
23	Heating upgrade	-91	18,200	2,470
24	Decentralisation of hot water boilers	-87	18,000	2,430
25	Boiler plant optimisation	-76	2,050	278
26	Dry recycling of general waste	-45	1,240	387
27	Building fabric - glazing, insulation & draft proofing	-24	11,400	1,540
28	Reducing waste anaesthetic gases	-15	11,900	201
29	District heating	-15	27,900	3,780
30	Boiler replacement	-3	6,160	834
31	Smoking cessation	-1	42,200	0 (saving in 2026: 248)*
32	Solar - thermal	0	2,350	319
33	Prescribing non-propellant inhalers for asthma	0	341,000	0
34	Travel planning	1	48,900	23
35	Reducing fuel poverty through referrals for home insulation	1,480	17,400	0 (saving in 2026: 171,800)*

SDU, 2016:11

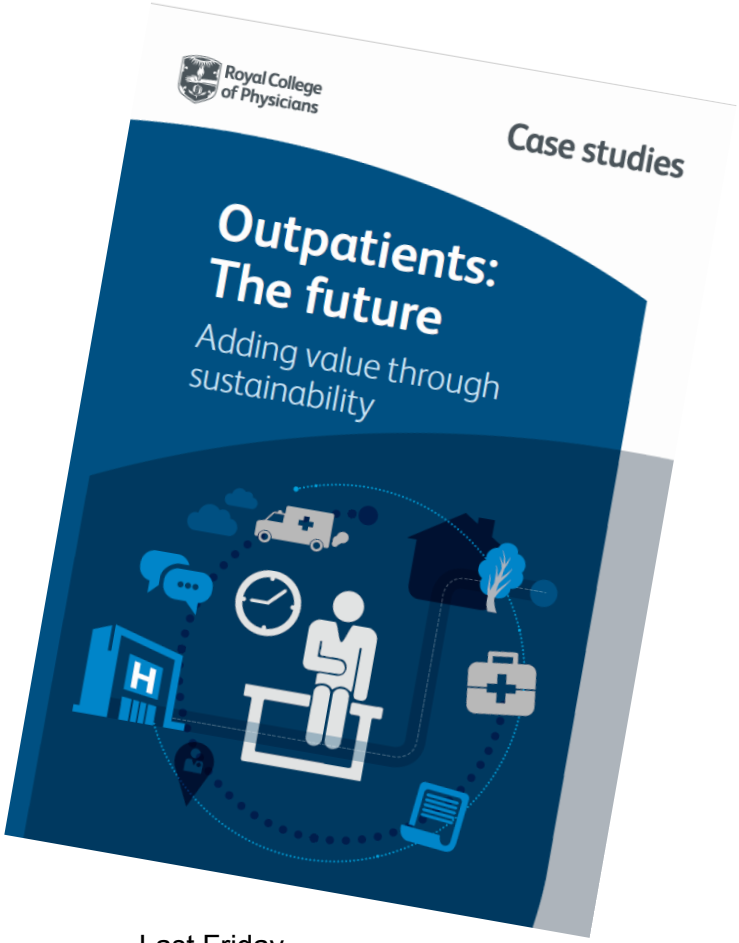
Digitalisation in health



Latif et al., 2017

Digitalisation and energy use in health: Benefits

2016



Last Friday

Digitalisation and energy use in health: Costs

Telemedicine clinics for older patients in rural north Wales

...a high-definition monitor with a video conference (VC) system and camera, all Wi-Fi enabled, a VC-enabled laptop, digital stethoscopes and digital spirometry devices... Additional bandwidth and wireless router upgrades were required...

The size of the VC screen was increased following patient suggestions.

(Isherwood and Porter, 2018)

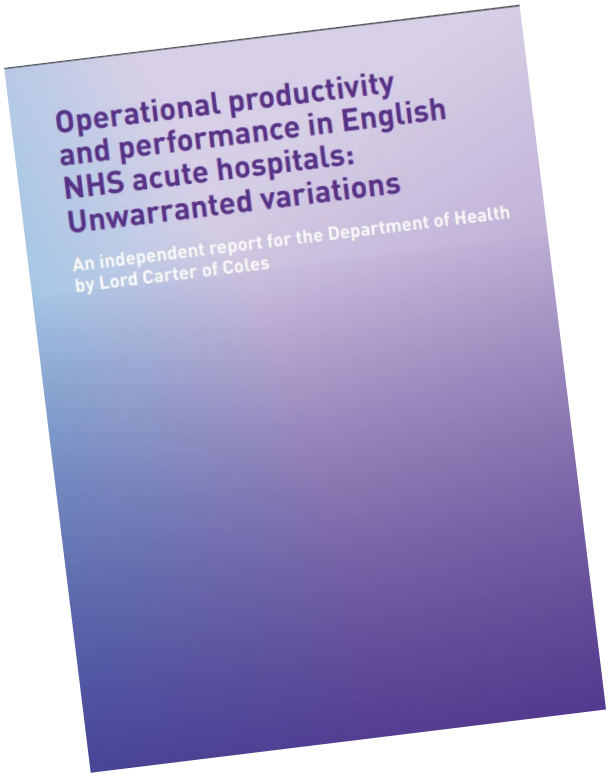
Digitalisation and energy use in health: Costs

We need to think not just about these buildings...

...but also these ones.

Digitalisation and energy use in health: Costs

Reflections: Digitalisation as invisible energy policy?



2016

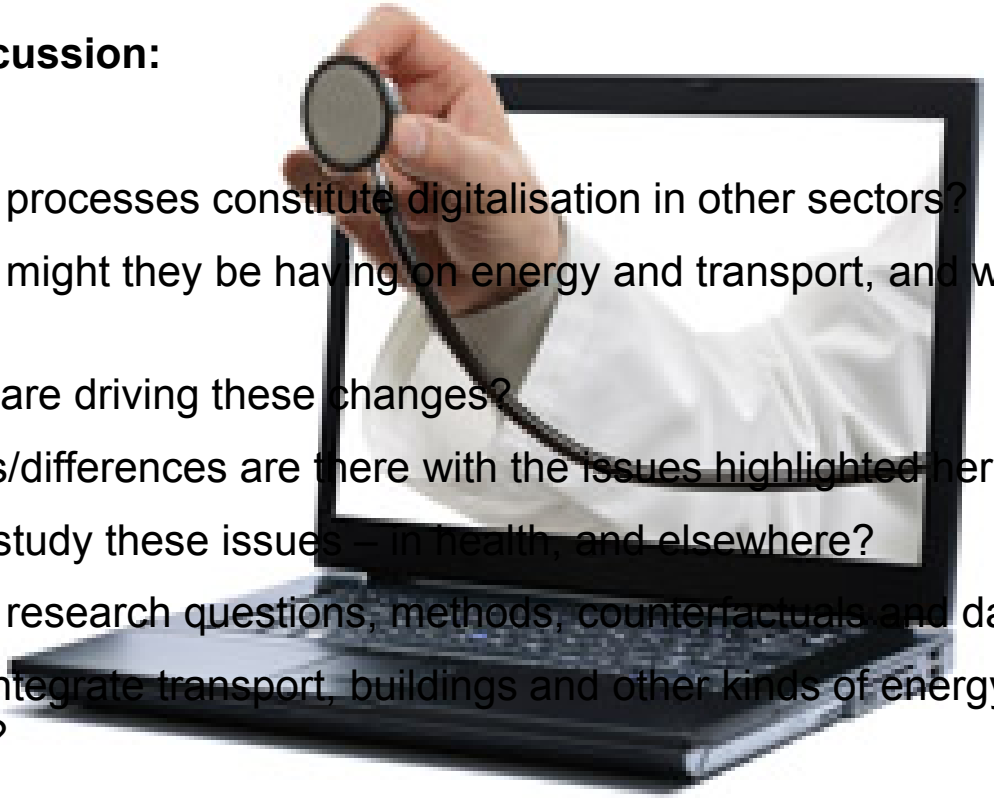
Inspected and rated

Good

CareQuality Commission

Reflections

Ideas for discussion:



What kinds of processes constitute digitalisation in other sectors?

What impacts might they be having on energy and transport, and what do we know about these?

What policies are driving these changes?

What overlaps/differences are there with the issues highlighted here?

How can we study these issues – in health, and elsewhere?

What kinds of research questions, methods, counterfactuals and data, can we employ?

How can we integrate transport, buildings and other kinds of energy use into our assessments?

References

BEIS (2018) Emissions Reductions Pledge 2020 – Potential assessment. BEIS: London.

Carter, P. (2016) Operational Productivity and Performance in English NHS acute hospitals: unwarranted variations. Report to the DoH. DoH: London.

Isherwood, J. and Porter, K. (2018) Outpatients: The future. Adding value through sustainability. Case studies. RCP: London.

Latif, S., Rana, R., Qadir, J., Ali, A., Imran, M.A. and Younis, M.S. (2017) Mobile Health in the Developing World: Review of Literature and Lessons From a Case Study, IEEE Access: Special section on health informatics for the developing world. Digital Object Identifier 10.1109/ACCESS.2017.2710800.

SDU (2012) Goods and services carbon hotspots. SDU: Cambridge.

SDU (2015) Carbon Footprint update for NHS in England 2015. SDU: Cambridge.

SDU (2016) "Securing Healthy Returns: Realising the financial value of sustainable development" (and background methodology report by NEF). SDU: Cambridge.

SDU (2018) SDU website: www.sduhealth.org.uk/areas-of-focus/carbon-hotspots/travel.aspx. [Viewed 18th November 2018].

Thanks for listening!

s.royston@sussex.ac.uk
www.demand.ac.uk

UNIVERSITY
OF SUSSEX