

Military Emissions Gap Conference 2023

MILITARY AND CONFLICT GHG EMISSIONS: FROM UNDERSTANDING TO MITIGATION

Tuesday 26 September, University of Oxford, and online

CONCRETE
IMPACTS



Conflict and
Environment
Observatory



Scientists
for Global
Responsibility



UNIVERSITY OF
OXFORD



Queen Mary
University of London



The Minor Foundation
for Mass Challenges

Professor Neta Crawford

Department of Politics and International Relations
University of Oxford

THE MILITARY EMISSIONS GAP

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UK military carbon emissions: assessing organisational data`

Dr Stuart Parkinson



Scientists
for Global
Responsibility

Download slides from: <https://www.sgr.org.uk/>

About Scientists for Global Responsibility

- UK research/ advocacy organisation
- Membership includes hundreds of scientists and engineers
- Concerns include:
 - climate change; militarism in science & technology;
military greenhouse gas emissions
- Publications on military GHGs
 - 3 reports on UK, EU & global military GHGs
 - 2 technical papers on UK military GHGs
 - Main partner: CEOBS



- Some SGR/CEOBS findings & recommendations – especially on GHG emissions from military bases – echoed in UK parliamentary report
- Published in August 2023



House of Commons
Defence Committee

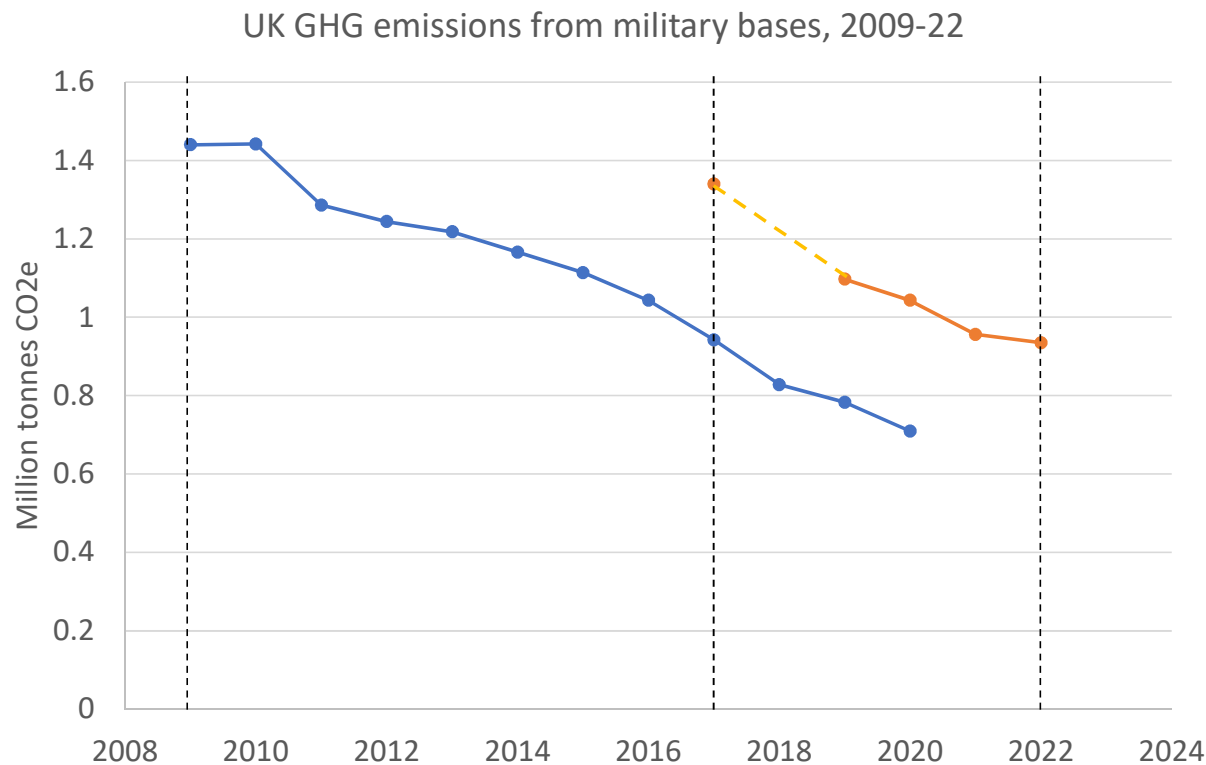
Defence and Climate Change

Eighth Report of Session 2022–23

*Report, together with formal minutes relating
to the report*

*Ordered by the House of Commons
to be printed 4 July 2023*

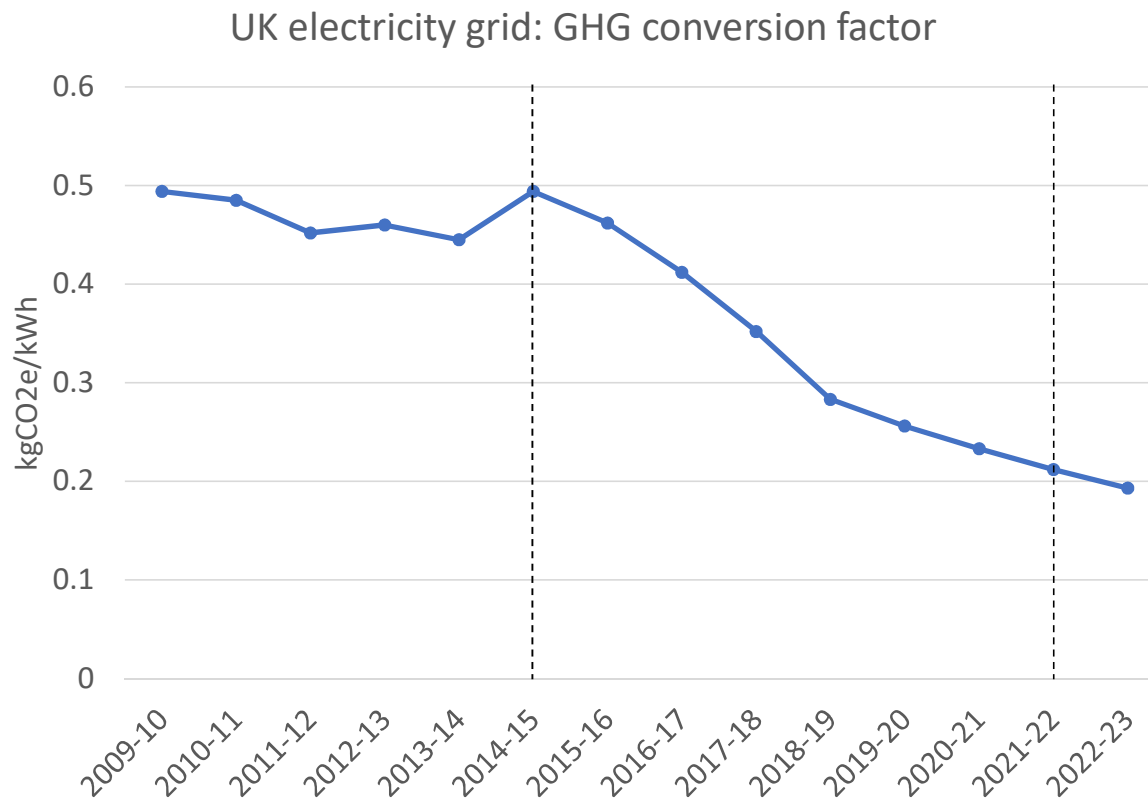
UK military GHG emissions: estate/ stationary



- Data collection practices revised in 2022
 - Shown in orange
 - >40% increase
- Percentage change (2009-17):
 - **35%**
- Percentage change (2017-22):
 - **30%**

Data: Ministry of Defence (2023a; 2023b)

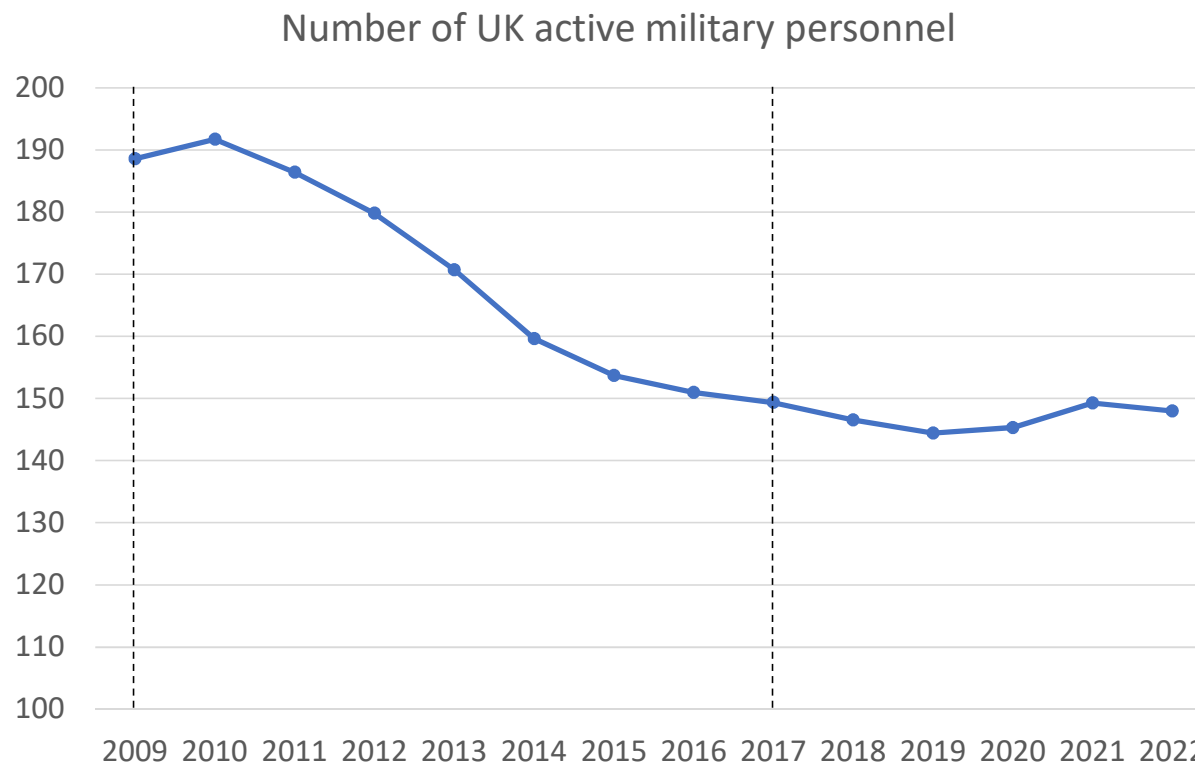
Estate – key influence: national grid (civilian)



- Percentage change (2015-22):
 - **57%**
- Major decreases due to:
 - Reduction in coal use
 - Expansion of renewables

Data: DESNZ (2023a)

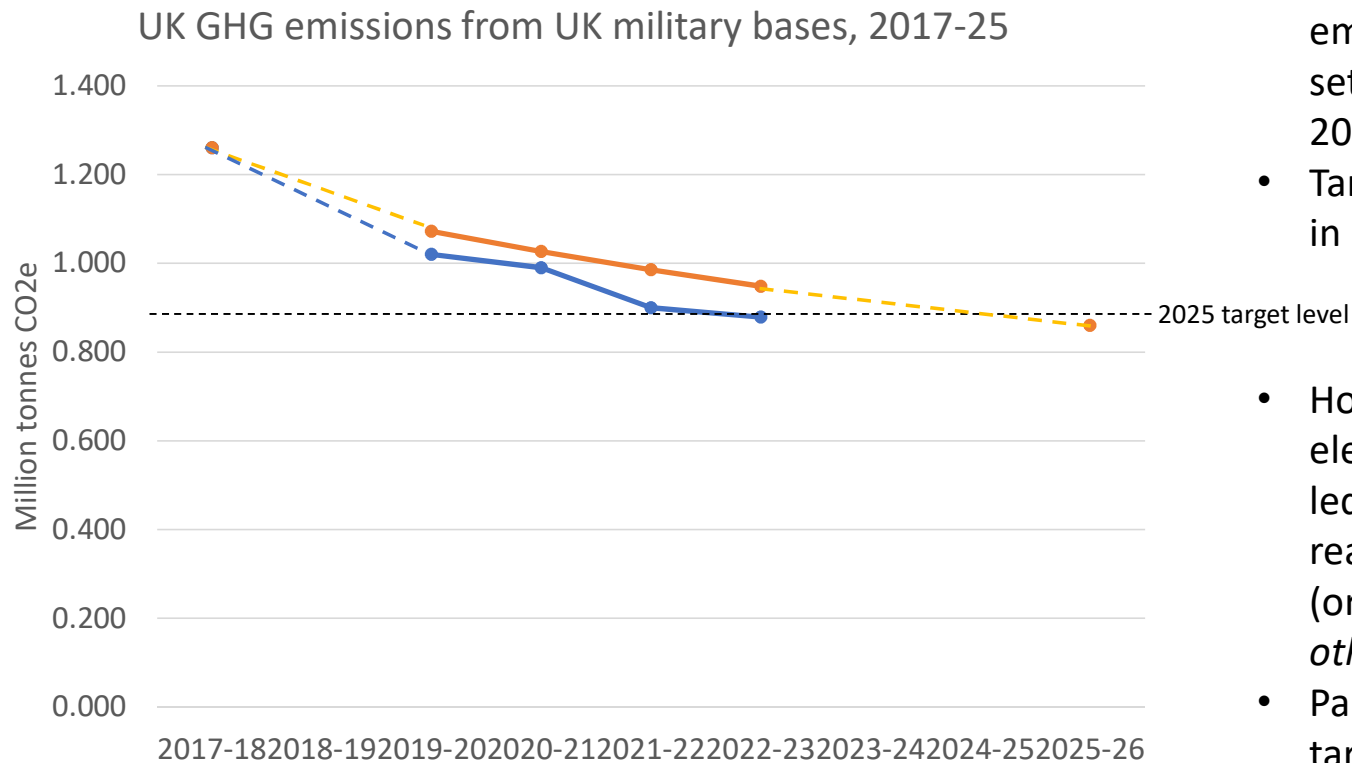
Estate – key influence: personnel numbers



- Military cuts announced in 2010
- Percentage change (2009-17):
 - **21%**

MOD (2023c); DASA (2013)

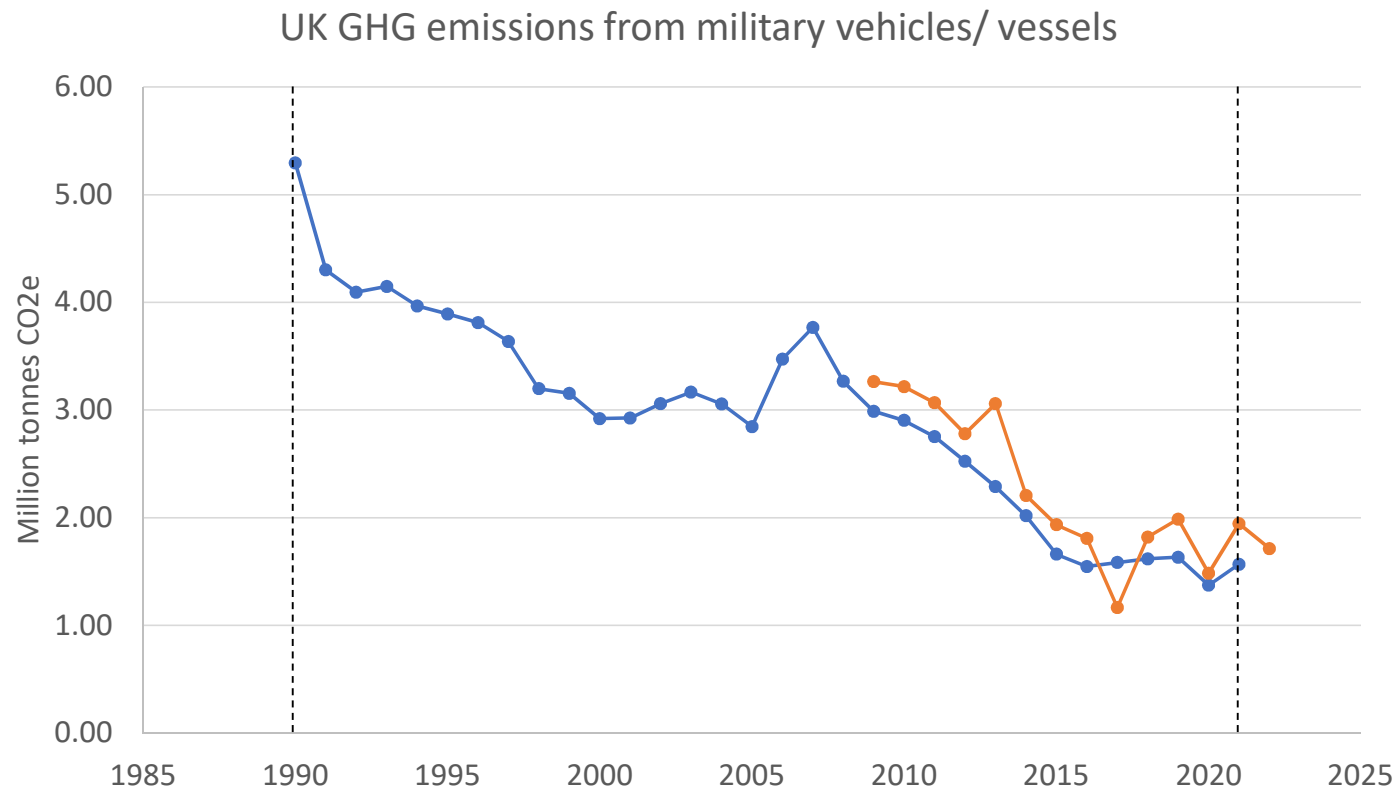
Estate – 2025 target



Data: MOD (2023a); SGR (2023)

- 2025 target level for emissions reductions set at 30% relative to 2017
- Target level reached in 2022 (blue)
- However, decarb. of elec. grid would have led to target being reached in 2025 (orange) – *without any other action*
- Parliament report: target “**insufficiently demanding**”

UK military GHG emissions: capability/ mobile



- Percentage change in GHGs from aircraft & ships (1990-2021):
 - **-70%**

Data: DESNZ (2023b); MOD (2023a; 2023b)

Capability – key influences: military spending/ activity



Graph: MOD (2022)

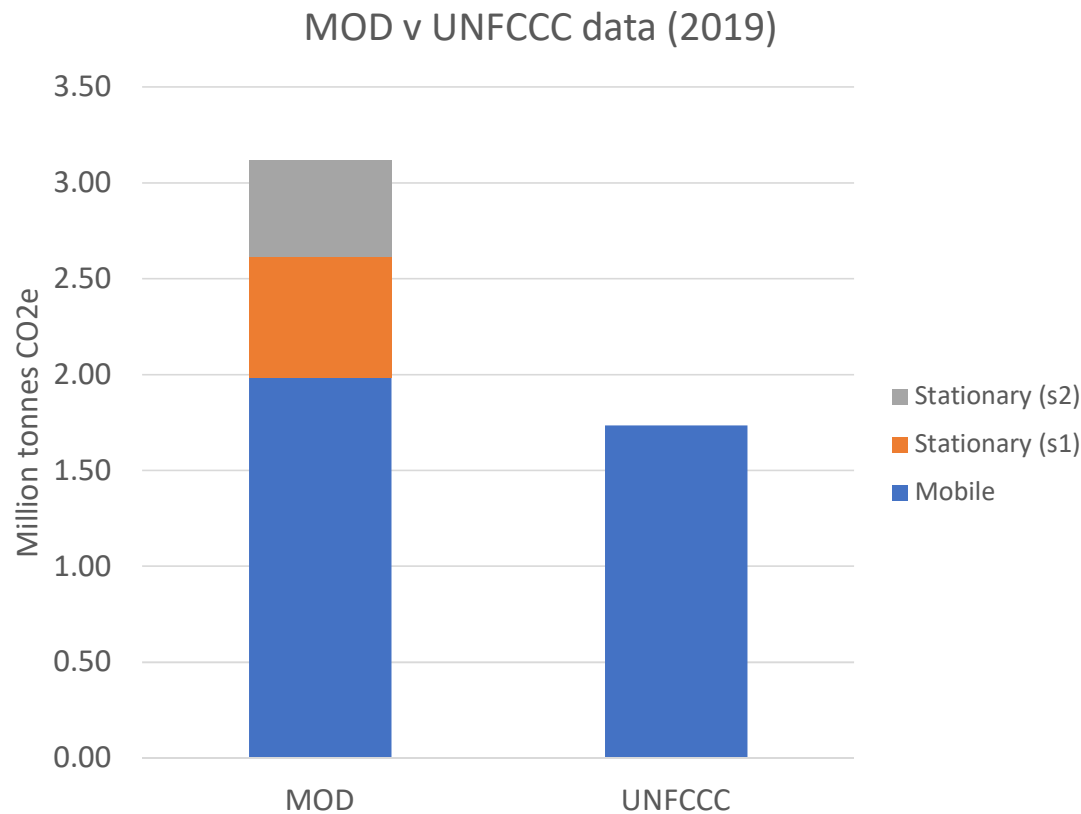
Capability – key influence: major equipment

Vehicles/ vessels	Number (year)	Number (year)	Percentage change
Large warships	52 (1990)	20 (2022)	-62%
Main combat aircraft	389 (1990)	167 (2022)	-57%
Main battle tanks	521 (1997)	227 (2022)	-56%

Data: IISS (2022); DASA (2008)



UK military GHGs – comparing official data



UNFCCC military categories:

- 56% of MOD scope 1+2
- 66% of MOD scope 1

Sources: MOD (2023a); UNFCCC (2021)

Key conclusions

- UK military 'stationary' emissions
 - Decline of around 65% over past 13y (but level much higher than originally thought)
 - Mainly due to:
 - decarbonisation of civilian electricity grid; decline in no. of military personnel/ base closures
 - 2025 targets are "insufficiently demanding"
- UK military 'mobile' emissions
 - Decline of around 70% over past 30y
 - Mainly due to:
 - decline in military activity; decline in nos. of energy intensive vehicles
 - Unlikely to fall further without major changes in tech/ strategy/ policy
- Little evidence that military energy efficiency/ climate measures contributed to historic falls
- UN data under-reports UK military emissions by at least 1/3
 - Need for greater transparency in reporting

Further thoughts

- GHG emissions from military bases have clear reduction pathways
 - Tech is widely available, e.g. insulation, LEDs, solar panels, heat pumps
 - Fuel/ cost savings
 - Recommend target of 90%+ reductions 2020-30
- GHG emissions from military equipment very difficult to reduce
 - International arms races/ military spending increases
 - Major technical obstacles to low carbon tech – early stage of development; high cost; environmental/ human rights side-effects; security issues
 - Need to explore changes to military/ security strategies – especially more emphasis on tackling roots of conflict

References

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DESNZ (2023a). Government conversion factors for company reporting of greenhouse gas emissions. <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

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SGR/ CEOBS (2021). Under the Radar: the carbon footprint of Europe's military sectors. Report. <https://www.sgr.org.uk/publications/under-radar-carbon-footprint-europe-s-military-sectors>

SGR (2022). Comparing official UK statistics for military greenhouse gas emissions. <https://www.sgr.org.uk/publications/comparing-official-uk-statistics-military-greenhouse-gas-emissions>

SGR/ CEOBS (2022). Estimating the military's global greenhouse gas emissions. <https://www.sgr.org.uk/publications/estimating-military-s-global-greenhouse-gas-emissions>

SGR/ CEOBS (2023). UK military GHG emissions and the Greening Government Commitments. <https://www.sgr.org.uk/publications/uk-military-ghg-emissions-and-greening-government-commitments>

UNFCCC (2021). Greenhouse Gas Inventory Data - Detailed data by Party. (Search terms: UK; all years; 1.A.5 other; aggregate GHGs; kt CO₂e) https://di.unfccc.int/detailed_data_by_party

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ViTAL Living Lab

A Partnership to conduct and assess experiments at RAF Leeming to quantify efforts towards Net Zero

Prof. Dr. Dipl-Ing. Oliver Heidrich
Newcastle University



From Newcastle. **For the world.**

A bit about me

Qualified **Civil Engineer** (1999) with an interest in the environment

PhD in Psychology in 2006 (with engineers in Newcastle)

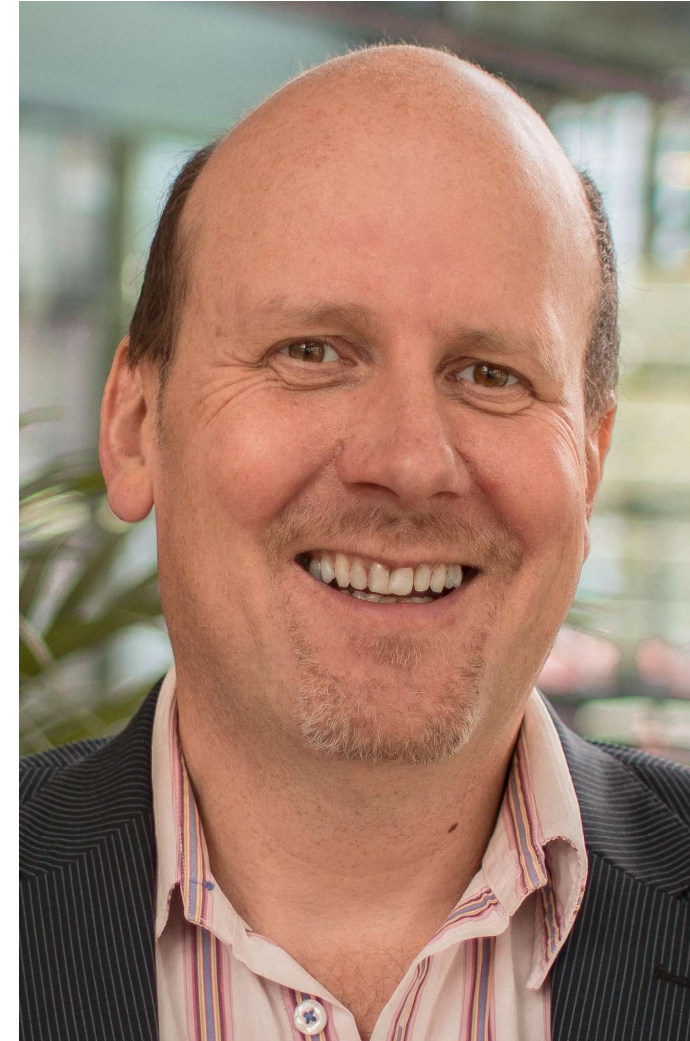
12 years as a Director of Manufacturing and Consultancy businesses

Working on Climate Change Mitigation and Adaptation- IPPC, CCC, IEA, Insurance and banking as well as construction a.o. sectors

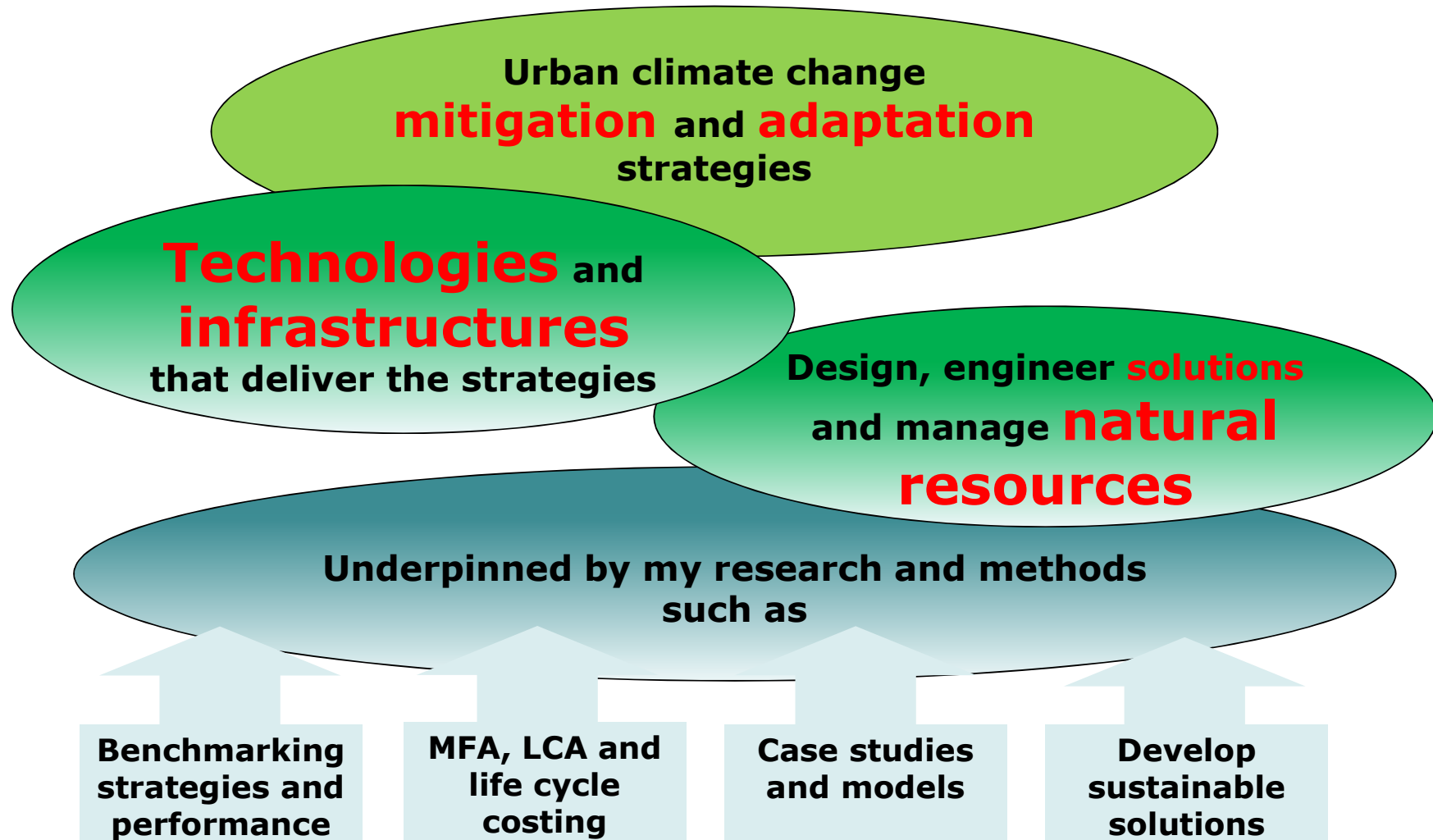
Professor in Civil and Env. Eng. and Director of ViTAL Living Lab

Develop **theories** and provide **tools** to respond to the **challenges** and **opportunities** we are facing...

...WITH YOU....



What research do I do



Why am I doing this...

I want society,
industry and
governments to
appreciate the
impact of their
actions (inactions)

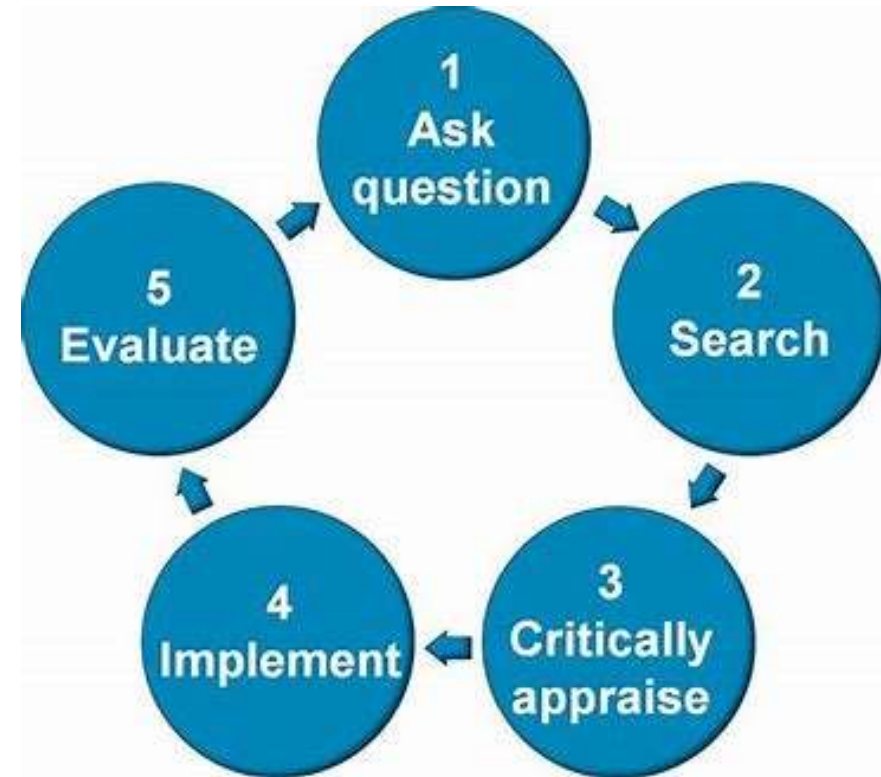
To make this
world an even
better place

Is “evidence- based decision making” dead?

If we **cannot measure** things, we
cannot manage them

Complex systems but **Simple
messages-** underpinned by **data and
robust science**

But our understanding of it can be so
different.....



What is 1+1?

Engineer

Obvious it is ..

Physics

Cant be anything else but 2 (Whitehead and Russell, Principia Mathematica)

Psychologist

Interesting question...

Architect

As long as it looks good..

Economist

What do you...

Statistician

High probability it is ... (Taleb 2007)...

Military- two answers-

in Time of conflict- what keeps me...
in Peace times- whatever my...

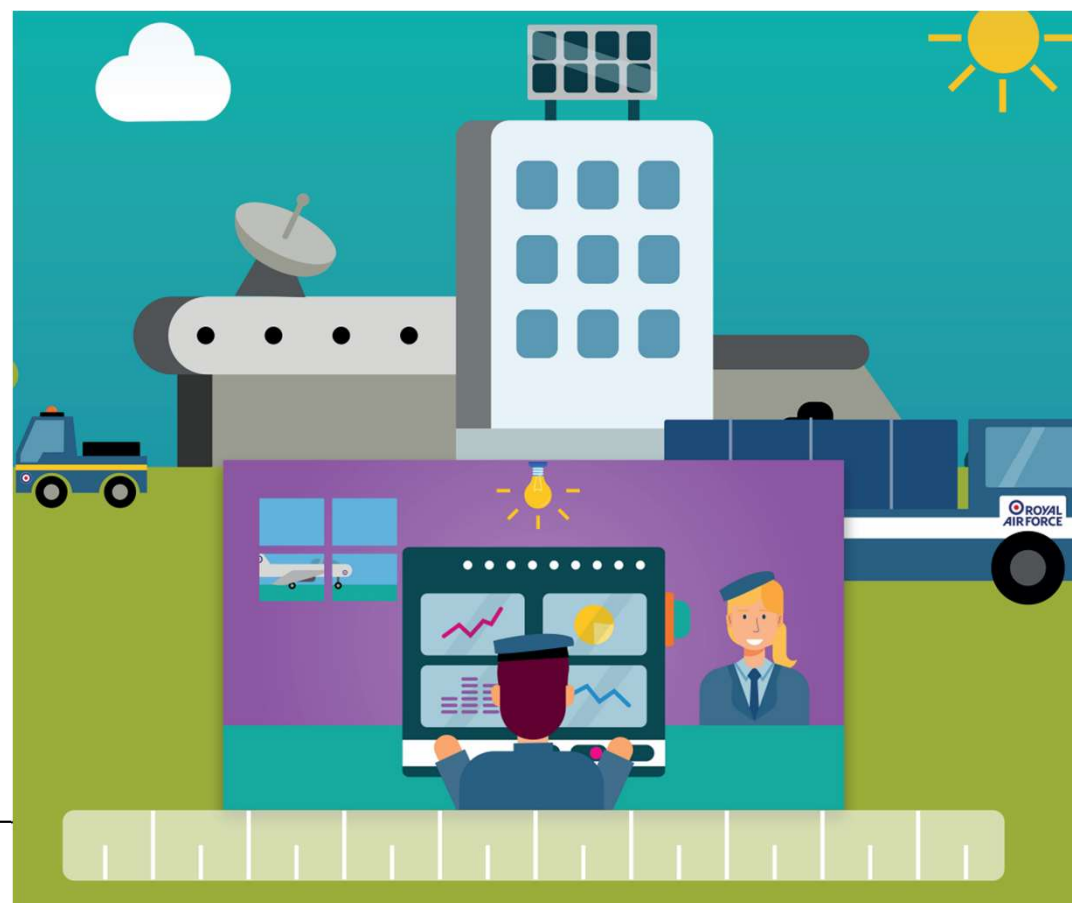
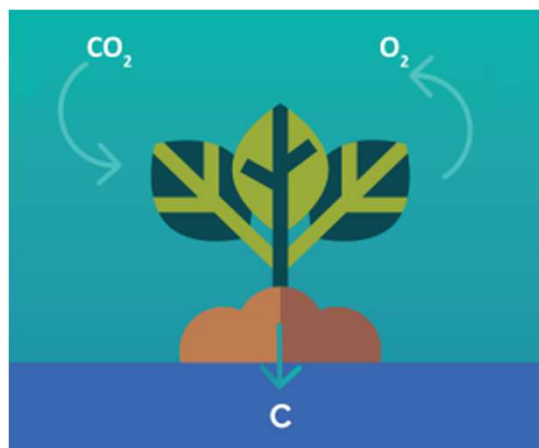
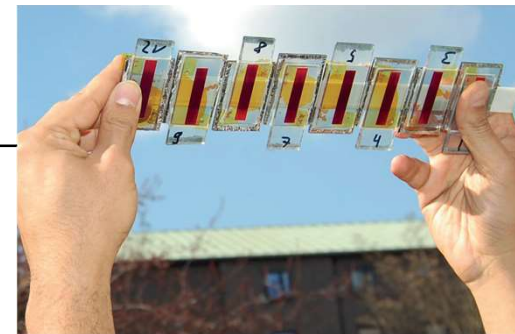
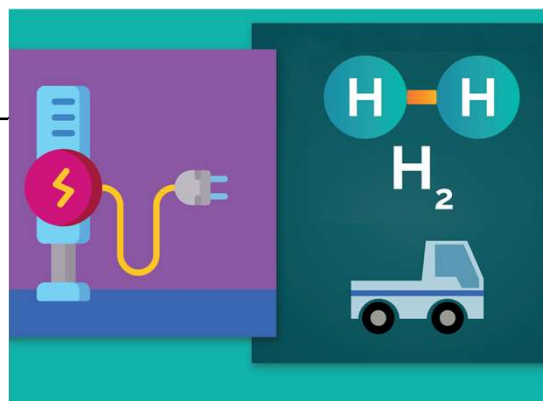
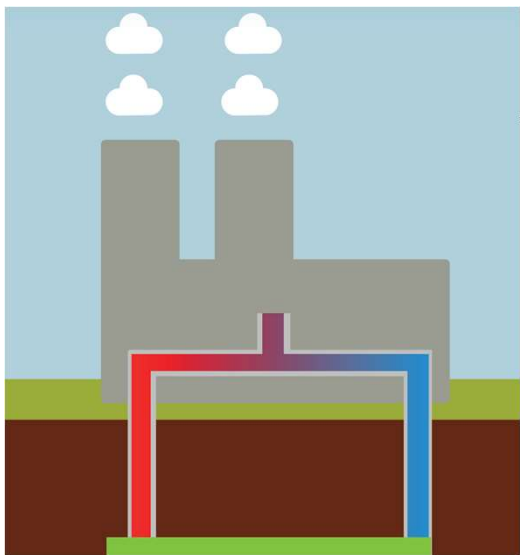
Conducts and assesses six experiments at RAF Leeming

Quantifies carbon reduction at RAF Leeming and beyond by conceiving, designing, testing and evaluating zero carbon interventions (see conceptual framework)

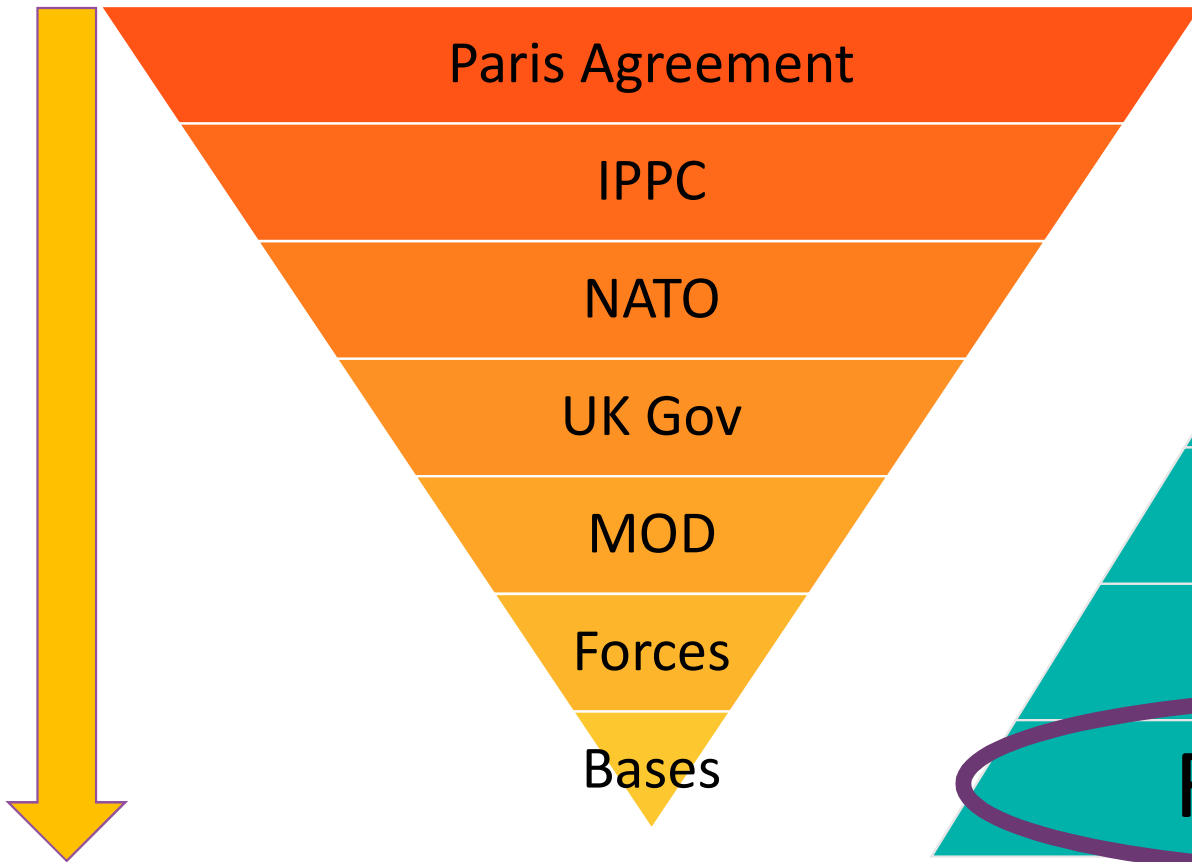
Funded by DfE- TRL 6 and below, i.e. we are **not changing light bulbs**, installing standard equipment or telling people how to recycle.

Provides a **backbone to design and assess interventions** towards Net Zero

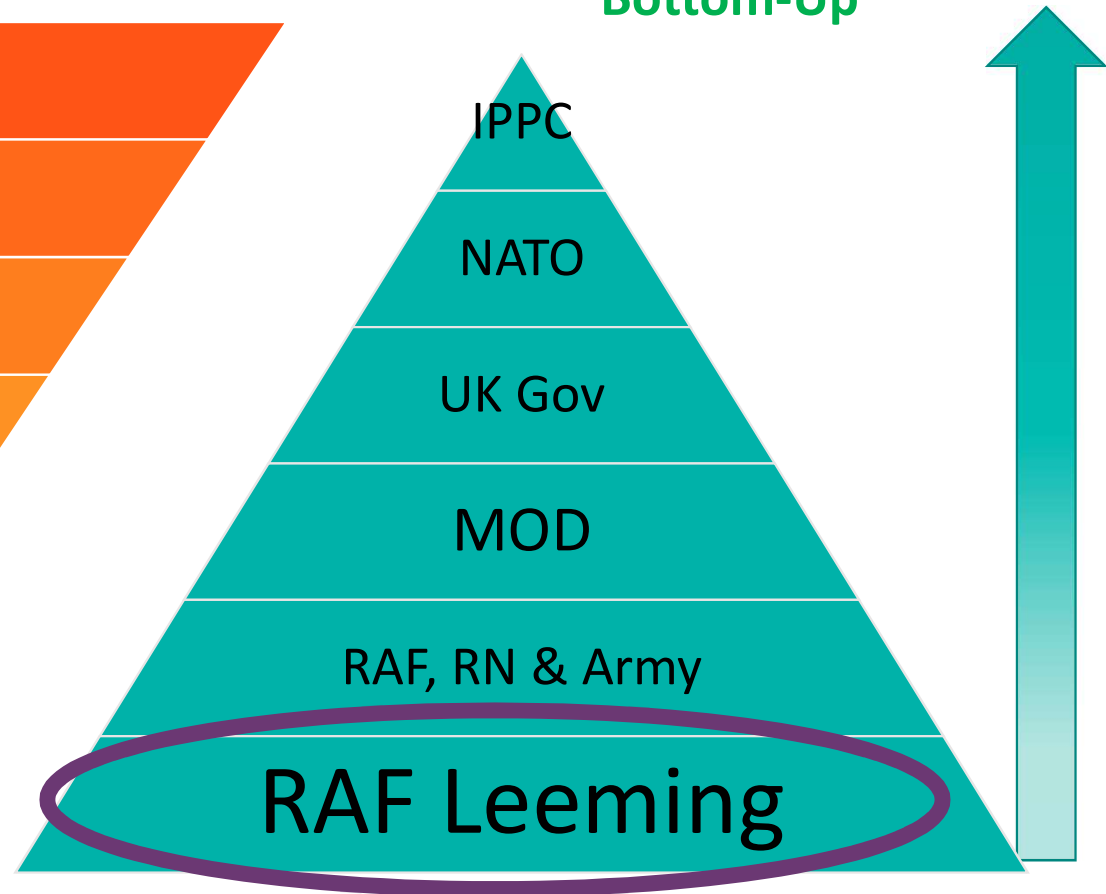


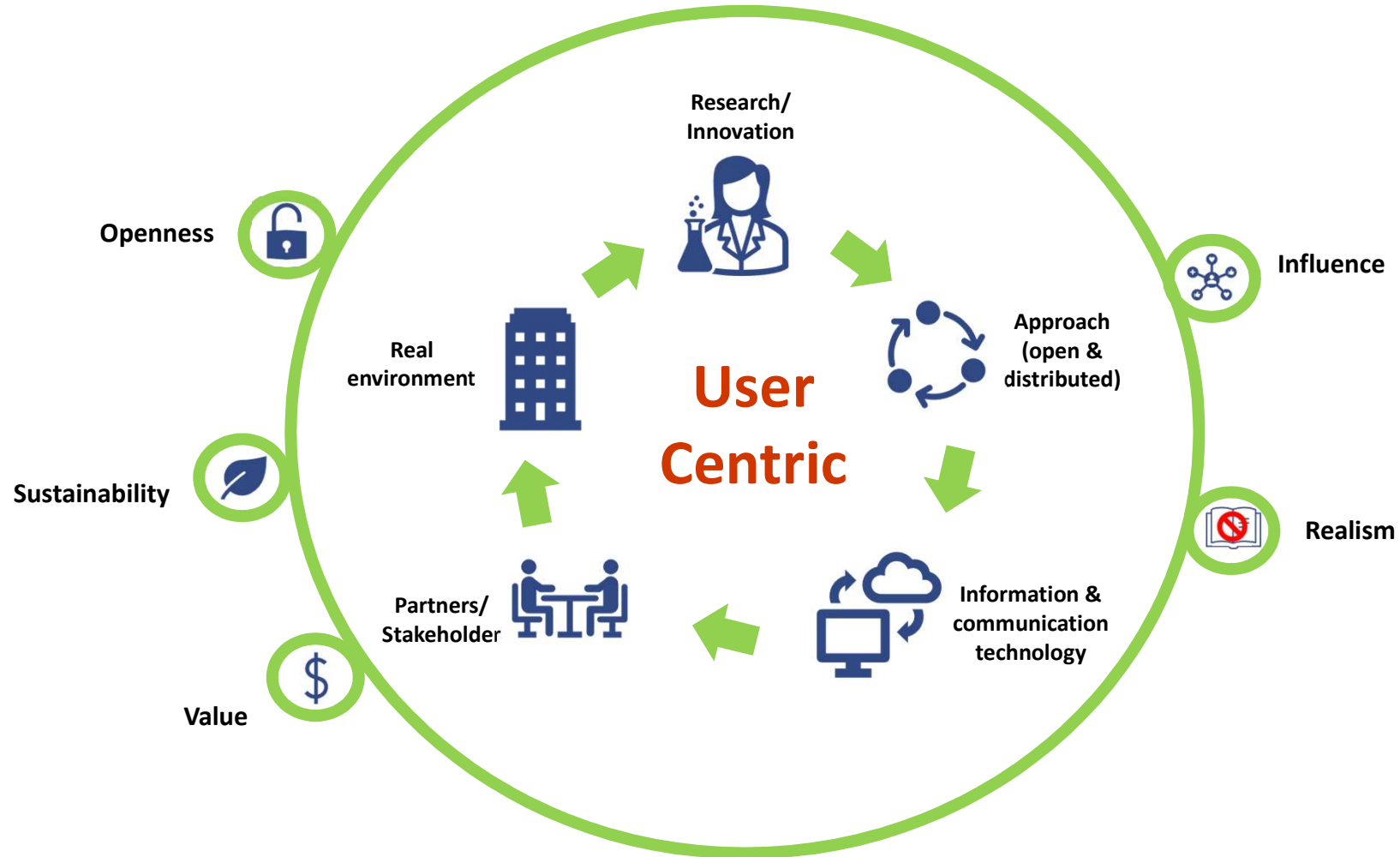


Top-Down

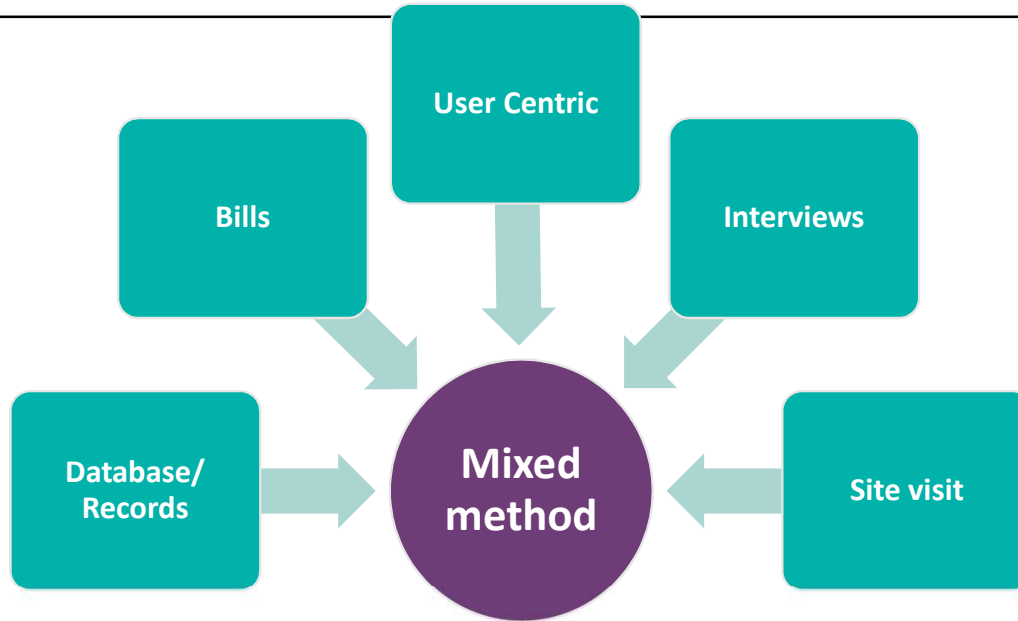


Bottom-Up





Methodology



Principles



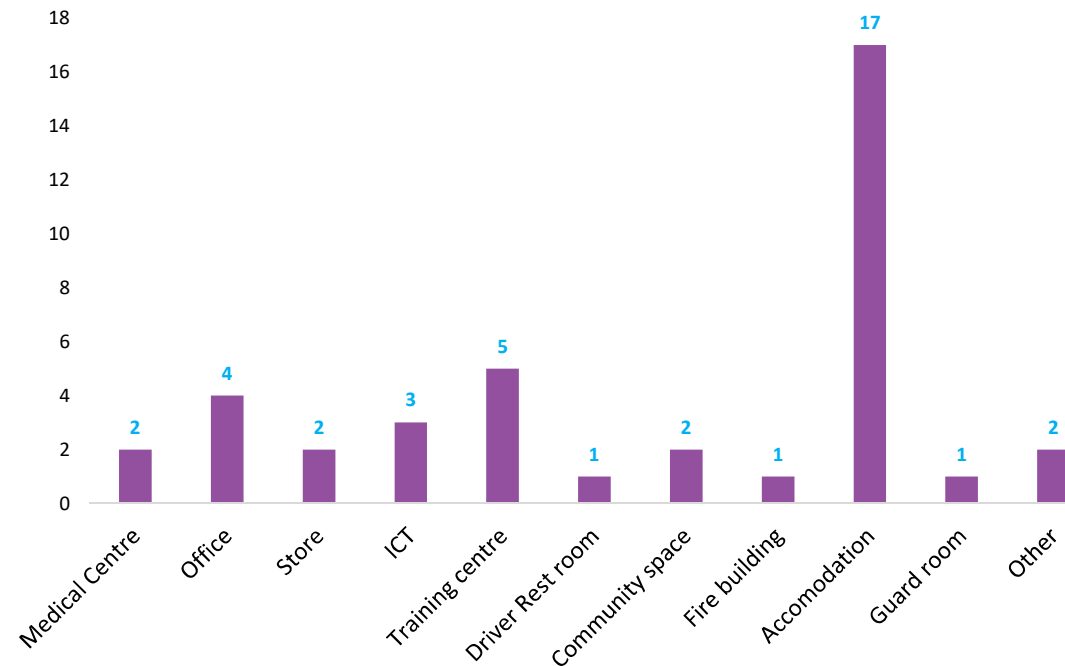
Stages



Standards

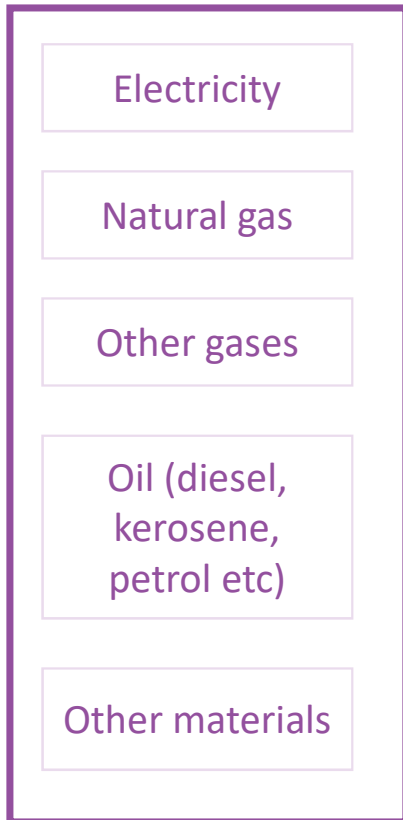
ISO/TR 14069	ISO 16745	PAS 2080	ISO 14066	MANY OTHERS e.g. CDP, IEA, GRI and more
ISO 14064-1	ISO 14067	ISO 50002	ISO 14065	
GHG Protocol	ISO 14064-2	ISO 50001	ISO 14064-3	

- RAF Leeming base = 534 hectares
- ~ 3000 people work and live on the base
- Buildings and housing stock range from 1938-2000
- Over 400 buildings, hangers and SLAMs- not all are buildings
- Everything – medic centre, to barracks



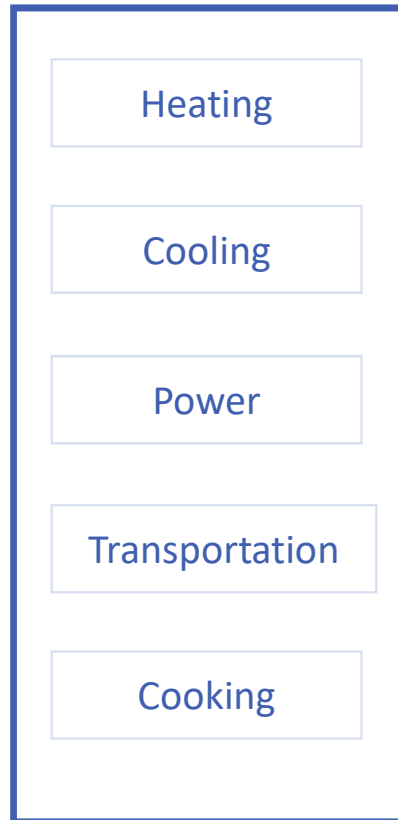
Input

What enters the base & who supplies them



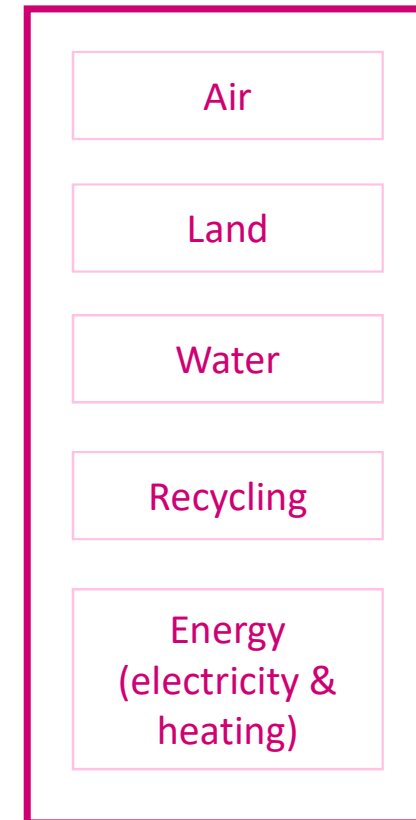
Consumed

What is utilised on the base & by whom



Output

What is released from the base and to what



Inventory data collection plan.xlsx • Last Modified: Just now

Search (Alt+Q)

Shalini Nakkasunchi SN

File Home Insert Page Layout Formulas Data Review View Automate Help Acrobat

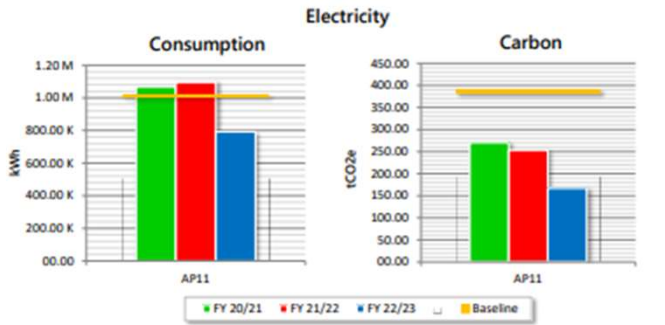
Clipboard Font Alignment Number Styles Cells Editing Analysis Sensitivity

BLG No.	Grid Ref	List of facility	Nature or function of the facility	List of equipments and devices used at the facility, their power rating and number of working hours	Type of heating	Power rating of the heating	Red diesel use & quantity	Kerosene use & its quantity	Propane (LPG) use & its quantity	Nitrous oxide use and its quantity	F-gas use & its quantity	SF6 gas use and its quantity	Gas oil use and its quantity	Type of light bulbs used
1	12I3H	Hangar 1/NUAS/Mobility/Locker Rooms/Annex												
2	12HII	Hangar 2/Portacabin/GEF												
3	12IJJ	Hangar 3/Boilerhouse/EWS Tank Hydraulic Plant Room/RTP Toilets-Locker Room/AMPEC												
4	11K	Hangar 4 /Boiler House/NDT/BABCOCK 100 SQN Dpst/Portacabins												
5	11I2K/L	Hangar 5 /34 SQN Annex/Ablution Portacabin 34 SQN/MT Refueller MT Flight/MT Trade Trg/34 SQN Armoury												
6	14H	HPS												
7	14H	Fire/Crash Building												
8	10 13H	Cloud Searchlight Pillar												
9	11 13H	NUAS Line Control												
10	12 14I	Fire Section Store												
11	13 14I	BFI 1 (Unused Except Clearway)												
12	14 12K	Standby Generator - DSS V												
13	15 13H	Standby Generator - DSS P												
14	16 13H	NUAS HQ (NEW BUILD)												
15	17 13I	C4 Flr Store												
16	18 15M	SSAFA												
17	19 13I	C4 Flr/Int Cell/Hub												
18	20 13/14J	DCMH / Dental Centre Physiotherapist Portacabin												
19	20.4 13/14J	Med Store												
20	21 14J	HTF - Historical Trg Facility												
21	22 13/14K/J	Works Team Offices/Water Tower/Low Storage/WT MTC Accommodation/Boxer Cabins & Mast/TFM Portacabins												
22	24 13J	Barrack Stores												
23	24abc 11J	FP RTC ARTS Facility Cabins												
24	25 12H	Storage Garages - GEF/NUAS/AEF/SERCO												
25	27 12I	Motorcycle Club												
26	27a 12I	Oil Separator F13 SE of HGR 2												
27	28 12I	Oil Separator F13 SE of HGR 2												
28	29 13I	Cormorant Support-90SU												
29	31 13I	Store (SWD)												
30	32 13IJ	Logs SQN HQ												
31	33 12I	Armed Ejection Seat Store												
32	34 12/13J	AEF(Armoury)												
33	35 13K	MT Fuel Facility/MT Washdown Facility												
34	36.1 12JK	Station Workshops												
35	36.2 12JK	Battery Area												
36	37 13K	Inflam Store												
37	38 13I	Logs SQN - Rubb Shelter												
38	38A 12K	Rubb Hangar (Logistics)												
39	39 13K	MTMS Crewroom (Portacabin)												
40	41 12K	MT Trailer Shed												
41	42 12K	MT Servicing Bays and Stores												
42	43 12K/L	MT Servicing Bays & Garages												
43	43A 13K	Brake Test Unit												
44	44 13K	MT Control & Drivers Rest Room												
45	45.1 13K	Personnel Development Flight												
46	45.2	RAF Regiment Training Flight												
47	45.3	Learning Centre												

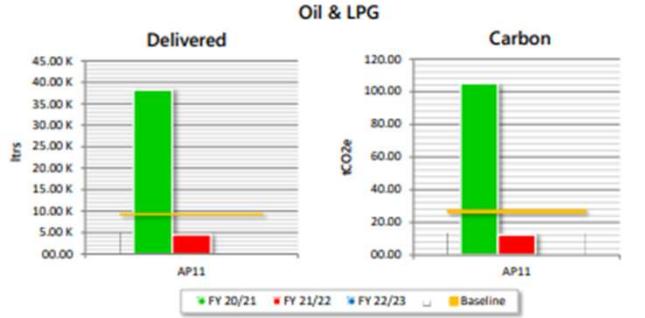
Inventory of the Leeming buildings

Source identification by site visit, interview and database

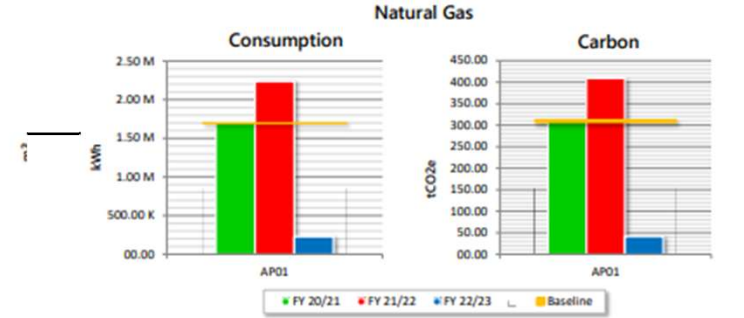
Inventory categorisation



Utility	Unit	Baseline (FY 17/18 - 10%)	FY 20/21	FY 21/22	FY 22/23
Electricity	kWh	1,011,106.80	1,067,052.00	1,095,481.00	792,301.00
			5.53% ▲	2.66% ▲	-27.68% ▼
	£	£ 110,210.64	£ 128,046.24	£ 155,131.17	£ 118,179.22
			16.18% ▲	21.15% ▲	-23.82% ▼
AP11 - February compared with the year before					
	tCO2e	388.70	270.17	253.19	167.23
			-30.49% ▼	-34.86% ▼	-56.98% ▼
Converted carbon equivalence against the baseline					



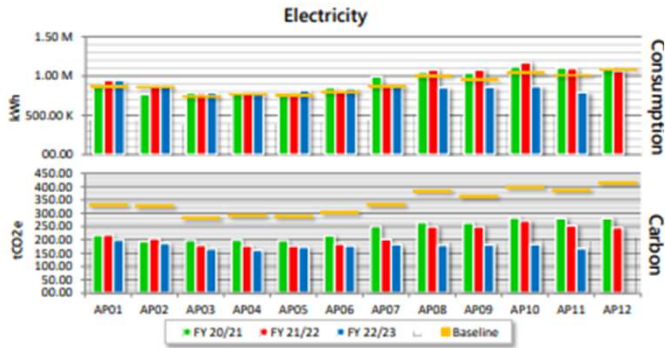
Utility	Unit	Baseline (FY 17/18 - 10%)	FY 20/21	FY 21/22	FY 22/23
Oil & LPG	ltrs	9,252.34	38,238.00	4,518.00	-
			313.28% ▲	-88.18% ▼	-100.00% ▼
	£	£ 4,653.00	£ 19,229.89	£ 2,272.10	£ -
			313.28% ▲	-88.18% ▼	-100.00% ▼
AP11 - February compared with the year before					
	tCO2e	27.31	105.04	12.41	0.00
			284.58% ▲	-54.55% ▼	-100.00% ▼
Converted carbon equivalence against the baseline					



Utility	Unit	Baseline (FY 17/18 - 10%)	FY 20/21	FY 21/22	FY 22/23
Natural Gas	kWh	1,694,646.00	1,711,964.00	2,235,352.00	228,560.00
			1.02% ▲	30.57% ▲	-89.78% ▼
	£	£ 50,839.38	£ 37,663.21	£ 49,177.74	£ 6,646.98
			-25.92% ▼	30.57% ▲	-86.48% ▼
AP01 - April compared with the year before					
	tCO2e	312.09	314.78	409.43	41.86
			0.86% ▲	31.19% ▲	-86.59% ▼
Converted carbon equivalence against the baseline					

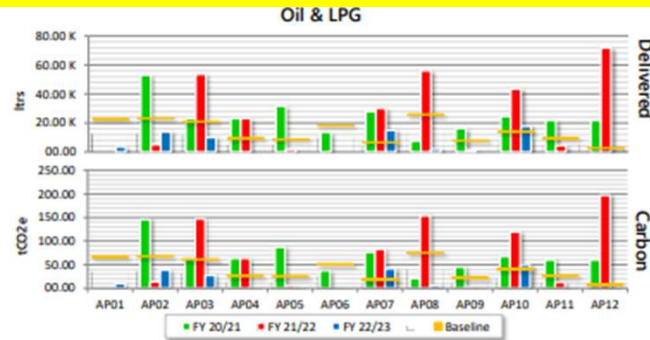
EXAMPLES from DIO

Year to date consumption

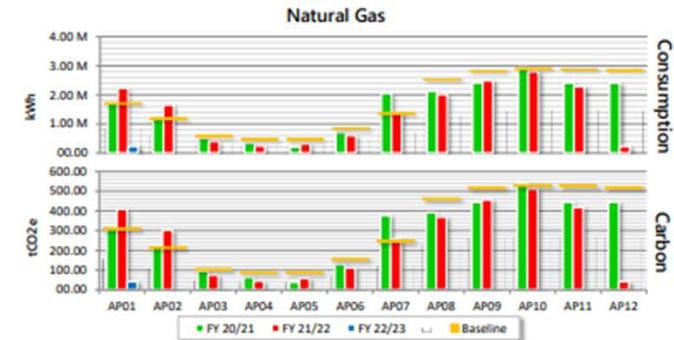


Utility	Unit	Baseline (FY 17/18 - 10%)	FY 20/21	FY 21/22	FY 22/23
Electricity	kWh	9,660,248.64	10,144,595.00	10,245,172.00	9,287,371.00
			5.01% ▲	0.99% ▲	-9.35% ▼
	£	£ 1,052,967.10	£ 1,217,351.40	£ 1,450,819.78	£ 1,385,299.61
			15.61% ▲	19.38% ▲	-4.52% ▼
AP11 - February compared with the year before					
	tCO2e	3713.69	2568.51	2367.86	1960.29
			-30.84% ▼	-36.24% ▼	-47.21% ▼
Converted carbon equivalence against the baseline					

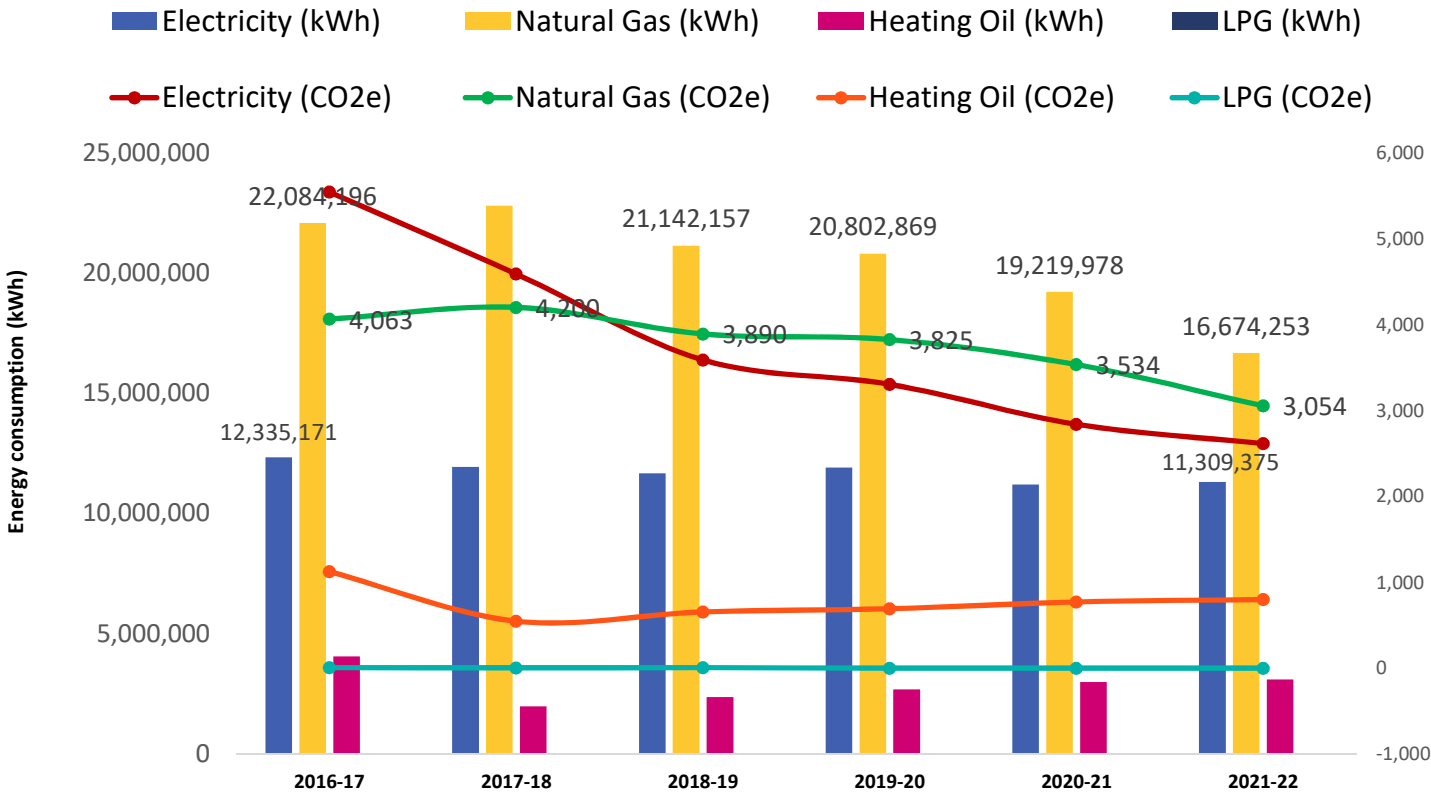
om AP01 - Apr to AP01 - Apr



Utility	Unit	Baseline (FY 17/18 - 10%)	FY 20/21	FY 21/22	FY 22/23
Oil & LPG	ltrs	165,795.45	242,142.00	218,709.70	62,275.00
			46.05% ▲	-9.68% ▼	-71.53% ▼
	£	£ 83,334.41	£ 121,773.21	£ 109,989.11	£ 31,318.10
			46.13% ▲	-9.68% ▼	-71.53% ▼
AP11 - February compared with the year before					
	tCO2e	486.51	665.14	600.92	171.11
			36.72% ▲	23.52% ▲	-64.83% ▼
Converted carbon equivalence against the baseline					



Utility	Unit	Baseline (FY 17/18 - 10%)	FY 20/21	FY 21/22	FY 22/23
Natural Gas	kWh	1,694,646.00	1,711,964.00	2,235,352.00	228,560.00
			1.02% ▲	30.57% ▲	-89.78% ▼
	£	£ 50,839.38	£ 37,663.21	£ 49,177.74	£ 6,646.98
			-25.92% ▼	30.57% ▲	-86.48% ▼
AP01 - April compared with the year before					
	tCO2e	312.09	314.78	409.43	41.86
			0.86% ▲	31.19% ▲	-86.59% ▼
Converted carbon equivalence against the baseline					

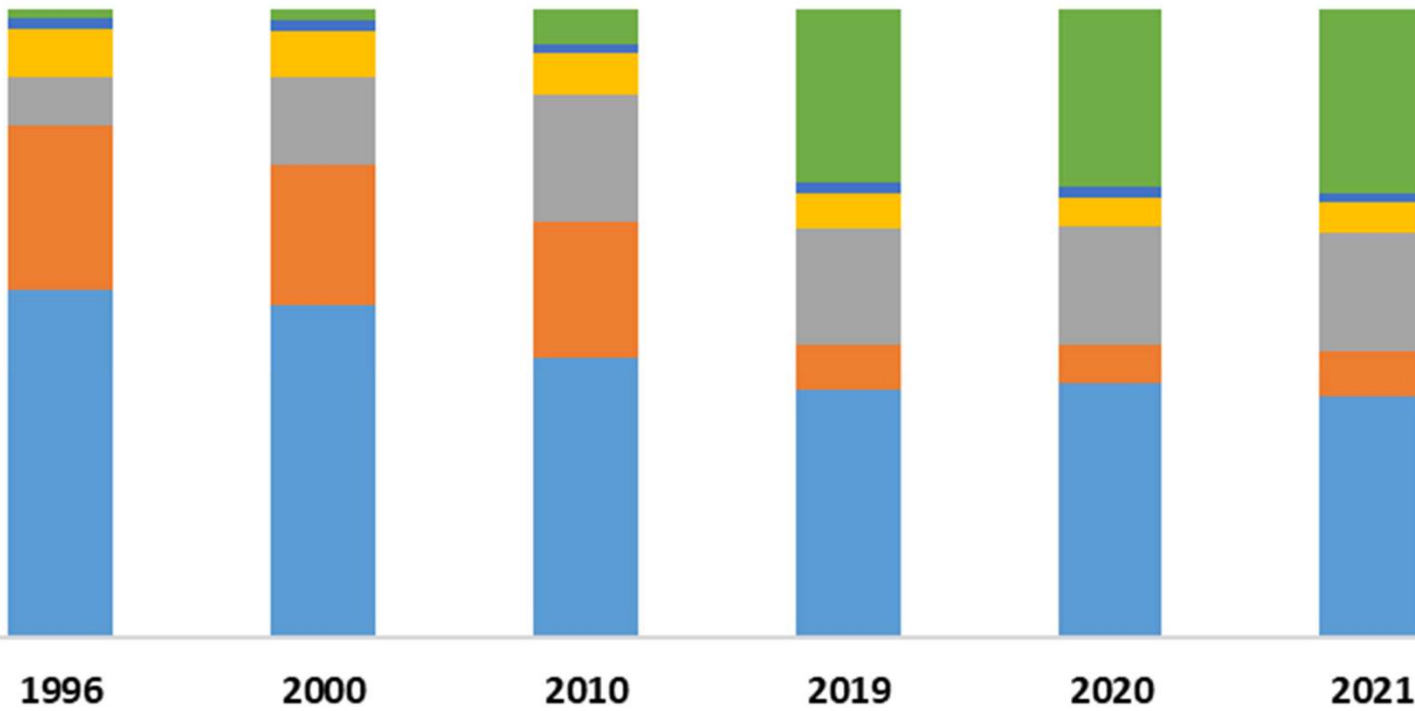
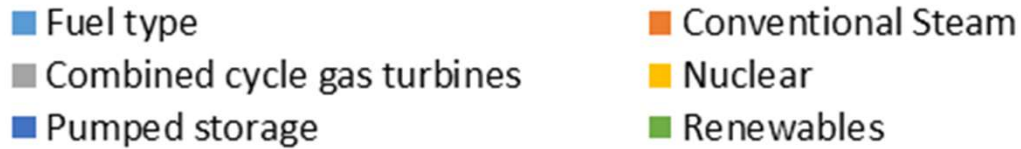


- Currently ~ 2.54 tCO₂e/y/person (excluding supply chain, ground and air transportation)
- Pre-COVID: High emissions from electricity use (reason unknown-studying)
- Post COVID: High emissions from natural gas use (district central heating)
- GHG emissions reduced from 9,800t CO₂e (2016/17) to 7,633 (FY 21/22)
- Due to Emission factors- not consumption!!!!

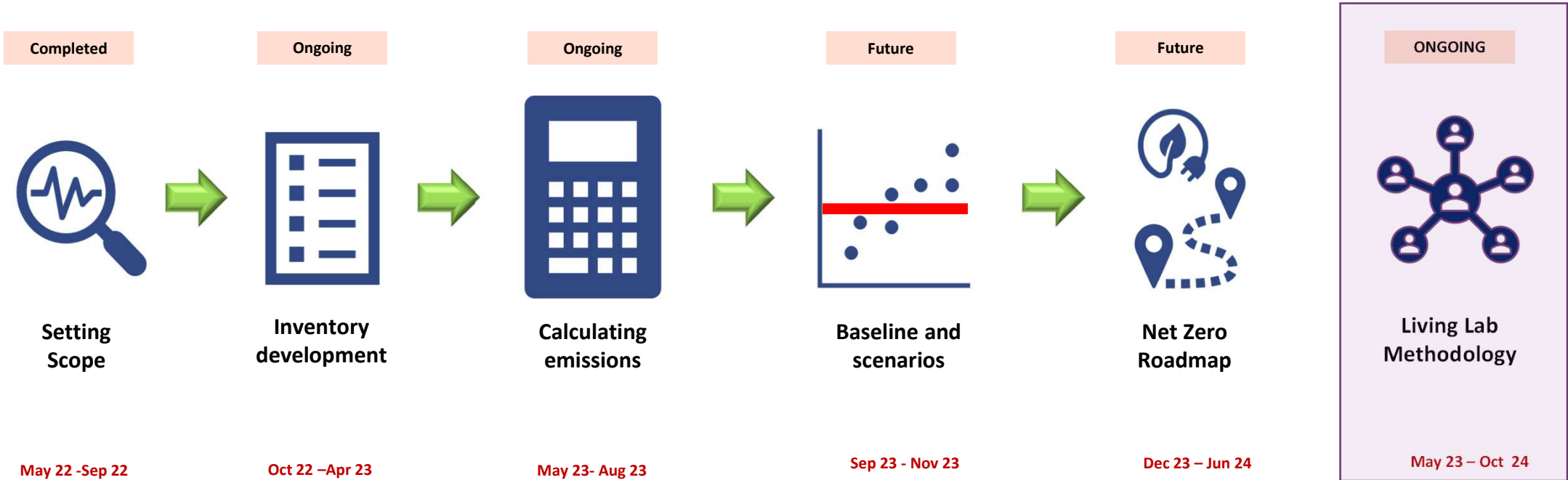
Emission factor (kgCO₂e/kWh)

Electricity	0.44932	0.38443	0.3072	0.2773	0.25319	0.23112
Natural Gas	0.184	0.184	0.184	0.184	0.184	0.183
Heating Oil	0.27631	0.27588	0.27652	0.25676	0.25672	0.25679
LPG	0.21458	0.21451	0.21448	0.21447	0.21448	0.21449

Emission factors are important



- Proportion of electricity generation from renewables is constantly increasing since 1996
- Renewables include wind, solar, tidal etc.
- Conventional steam sources- coal, natural gas, oil or mix



- My work around Cities and EU countries show that we were leaders in terms of Climate Change ambitions and actions
- But maybe just due to emission factors?
- Since Paris other countries are decarbonising much faster and as ambitious
- In the Military context we are still leading- we know- collaborate with US, Japan and Germany
- But we are jeopardising this position- great work by Sarah Ashbridge
- Global Stocktake- great work by Stuart, Doug and Lynsey!



**WITH POLICY
MAKERS**

Want to talk to

IPPC
NATO
UK Gov

**Commit
Measure
Design
Engage**

**Consequences
Implement
Review
Adjust**

PDCA- Demining Cycle

**WITH THE
USERS!**

Want to engage with
Personal
BASES



“The UK process of adaption to extreme weather is not at the required scale and there is an urgent need to translate plans into actions.

See CCC Adaptation report 2023 put in front of Parliament

**But we need to convince them that
1+1=2**

THERE IS MORE- SO MUCH MORE...

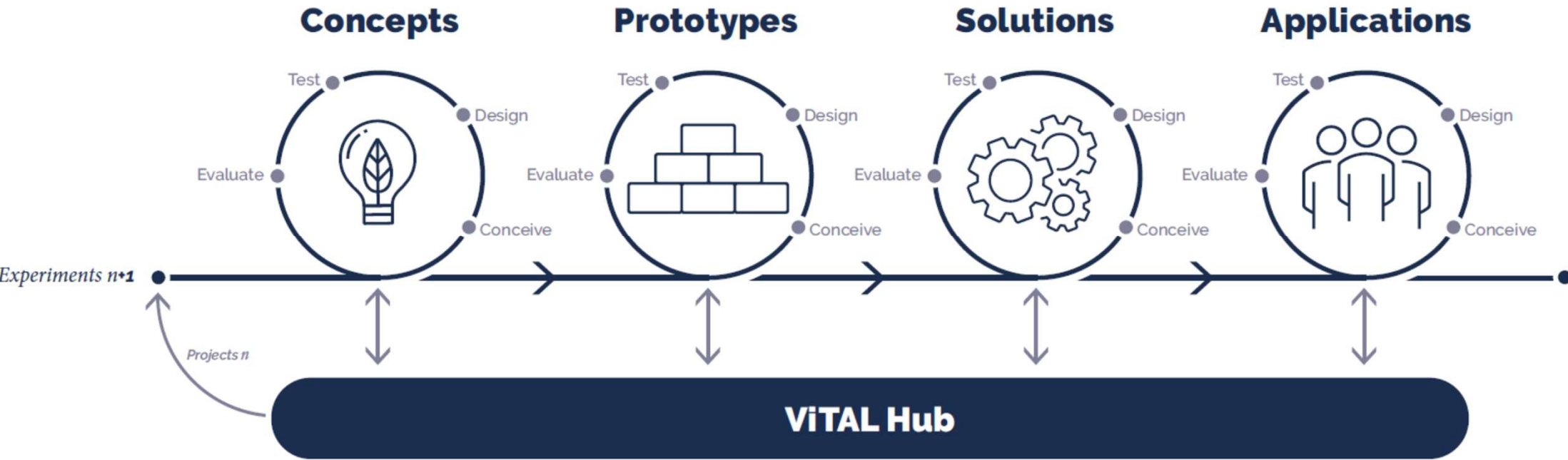
Get in touch- talk to me- oliver.heidrich@ncl.ac.uk

To make this
world an even
better place

- UK Defence accounts for 50% of government emissions \approx **1.7 MtCO₂e/y**
- UK Defence occupies **2%** of the total land in the UK
- \sim 390K people work for the UK Defence
- They want to reach Net Zero by 2040

If we cannot measure it, we cannot manage

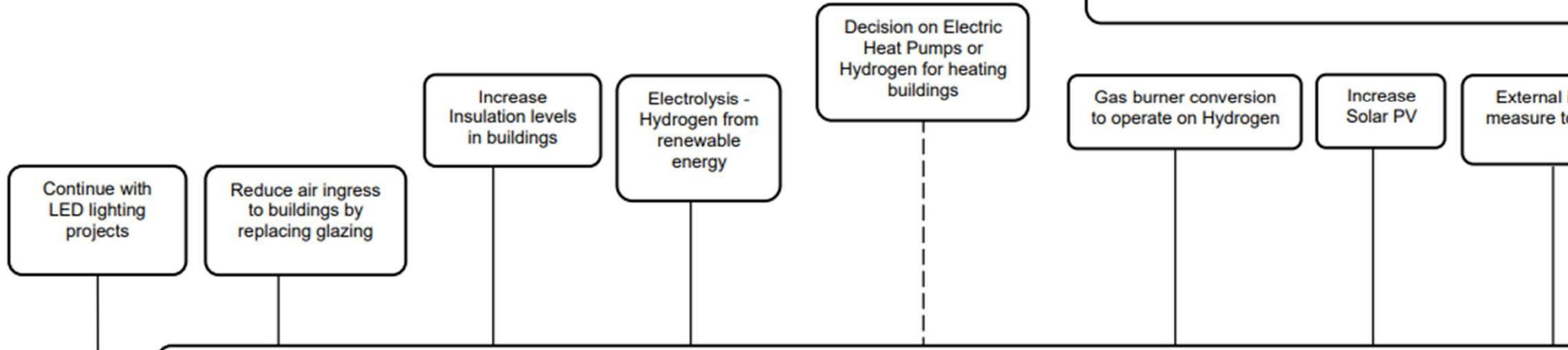




Measure and record all energy consumption for all buildings

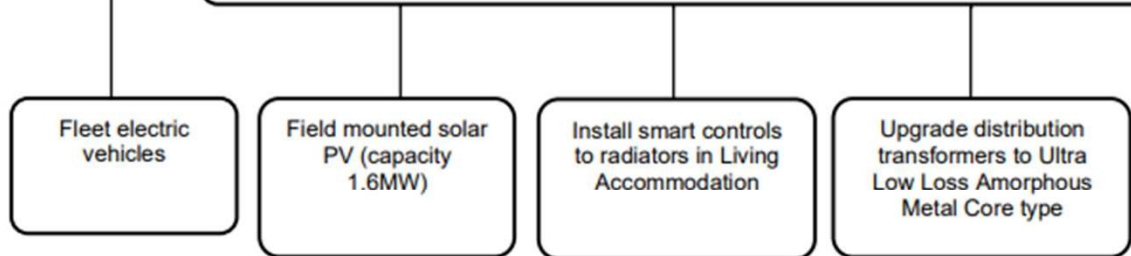
Consultancy reports and ambitions- thanks to Humphrey Consultants
They are great and show which lightbulbs/networks needs changing!

HEATING FROM HYDROGEN



2022

RAF Leeming to become Estate Demonstrator by 2025 utilizing a selection of the technologies listed



Others investigate trialled technologies- shout out to Vivo/Equans
All these are great- We ask questions and show the wider context-

I WANT TO PROVIDE THE EVIDENCE TO SHOW THAT 1+1=2

HEATING FROM ELECTRICIFICATION

All new projects to be

Reduce reliance on

1. NATO is taking us serious (US, Germany etc)
2. UK has/had a leadership position
3. Established network and working procedures
4. World-leading research
5. Still high-risk high gain experiments
6. CPD courses for Defence
7. Continue great working relationships
8. We are not consultants- we are working with them and do not want to compete





Future proofing can't happen in isolation:

1. Living Lab enables stakeholder engagement through academic networks
2. Enables horizon scanning and plugging into cutting edge R&D
3. Provides sense checking of decisions and company pitches to RAF
4. Testing early stage innovation with academia and industry is feasible – i.e. R&D needs to be separated from timelines of MOD commercial procurement

Decisions now need to be future proofed:

1. Extreme weather impacts and climate change (*It doesn't have to be extreme to have a big effect!*)
2. Cables melting in extreme heat (onward operations)
3. Flood damage to ground mounted solar farms
4. Flood damage to electric recharge points
5. Storm damage to wind farms (*wind and flood events are highly correlated!*)
6. Stranded assets



- Progress for some experiments- remember allowed to fail!
- Impact of nationality on delivering research
- Complexity of Defence – responsibilities and processes
- Multiple problems- want a single solution
- High level of turnover of Defence Personnel /decision makers



Still same problem - RAF needs to be Net Zero by 2040

- Legal requirement to be Net Zero by 2050
- Wider recognition NATO member states – UK current leader

Problem sets at bid development stage

- Gp Cpt Blythe Crawford, Station Commander RAF Leeming
- Wg Cdr Nicky Sinclair, Air Rapid Capabilities Office
- Cecil Buchanan, RAF RCO Hd Science

Funding opportunity identified – DIF (Sep 2020)

Nicky Sinclair:

“Be high risk, be ground breaking. Focus on the backbone.”

“Measurement, framework, rather than individual projects”

“Main focus for Leeming, not just for Air but for Pan Defence”

“What is going on in academic community? How can we be plugged into this?”

“We don't understand as a service what would have biggest impact for us... where we would like to place our effort. We need a space to try it out – investigate it and see the sum of all the parts”

The Defence Innovation Fund TLB Ideas Scheme – FY20/21 is looking for:

“...Innovation ideas that will result in processes, goods or services in use at the end of the project. Examples include a **pilot or small-scale experimental** deployment...”

“...solution to a priority issue for which **no solution is currently known** and requiring an approach to the marketplace...”

High risk, high gain- allowed to fail

1. Carry out User centric research – test a new method of doing research
2. Living Lab at RAF is uniquely positioned behind the wire- Petry dish- town
3. RAF closer relationship with government decision-makers who can influence policy for the national interest
4. Increase awareness within RAF of the scale of the challenge, support and reduce the risks of poor decision-making in the here and now
5. Reduce the risks of creating unintended consequences impacting national security and future energy security

Military Emissions Gap Conference 2023

MILITARY AND CONFLICT GHG EMISSIONS: FROM UNDERSTANDING TO MITIGATION

Tuesday 26 September, University of Oxford, and online

CONCRETE
IMPACTS



Conflict and
Environment
Observatory



Scientists
for Global
Responsibility



UNIVERSITY OF
OXFORD



Queen Mary
University of London



The Minor Foundation
for Mass Challenges

Addressing military emissions in the Global Stocktake and reforming their accounting under the UNFCCC

Axel Michaelowa

Research director, Perspectives Climate Research

Military Emissions Gap Conference 2023, Oxford, 26 September 2023

Topics

- **Tasks of Global Stocktake**
- **Looking backwards:**
 - how did military and conflict-related emissions develop over time?
 - How have such emissions been accounted for under the UNFCCC?
- **Looking forward:**
 - how can we ensure that UNFCCC emissions accounting properly takes military and conflict-related emissions into account?
- **Recommendations for COP28**



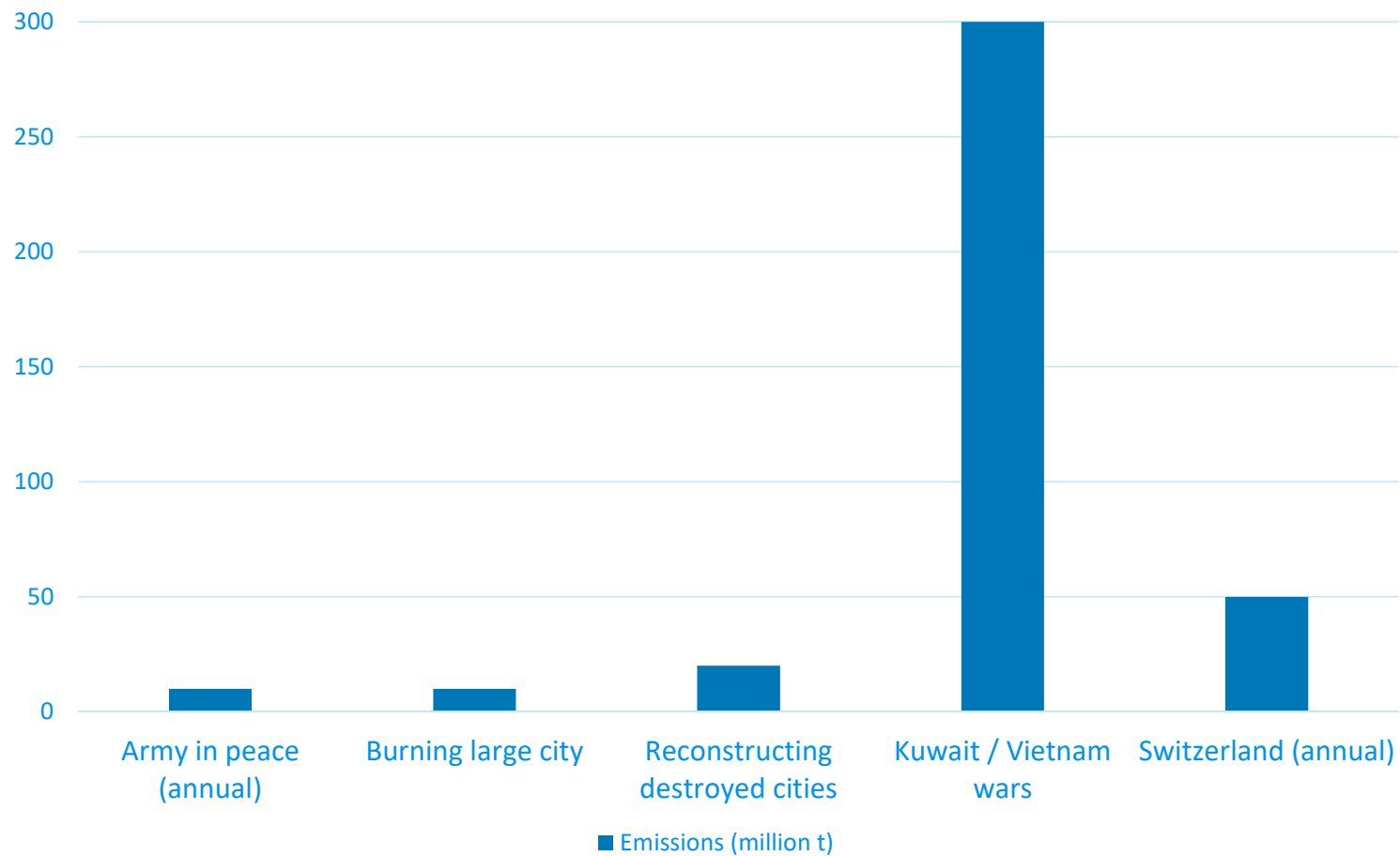
Tasks of Global Stocktake

- **Assessment of collective progress towards meeting the long term goal of the Paris Agreement**
- **Looking backwards: how far is the world away from an emissions path in line with 1.5°-2°C?**
 - **UNEP Emissions Gap Report: the emissions gap has not become smaller in the last decade**
- **Looking forward: roadmap with ‘solutions pathways’ for the future**
 - **Increasing mitigation ambition, financing, ..., ...**
- **Progressive countries want to focus on the forward-looking elements**
- **Over 1000 submissions on the UNFCCC website!**

Looking backwards: significant emissions

- **Military emissions in peacetime and war are a relevant international emissions source, but data are patchy**
 - Under the UNFCCC countries do not have to publish data on direct and indirect GHG emissions related to overseas military activities, wars, and their side-effects
 - Only few countries have reported, and these reports are incomplete (see Neta's and Stuart's work)
- **Global estimate of military and conflict-related GHG emissions range between 3 and 6%, depending on the definition**
 - **Direct** emissions from peacetime **military operations (vehicles and infrastructure)** reach ~1% of national emissions (US and UK)
 - **Indirect** emissions, for example from war-related **destruction of carbon sinks, and infrastructure** can **significantly exceed** the direct emissions

Magnitude of military and conflict emissions



Military/conflict related emissions under UNFCCC

- So far, national accounting allows exclusion of military emissions due to confidentiality rules
 - Significant parts of military emissions relate to international bunker (transport) fuels not covered by the Kyoto Protocol/Paris Agreement
 - Decision 2/CP.3 of Kyoto COP in 1997 states that “multilateral operations pursuant to the charter of the United Nations” are exempt from calculation of national emission budgets
 - Military bases on foreign territory are accounted by the host country
 - Emissions of occupied territory
 - Moldova: uses statistical data from Transnistria to calculate its emissions
 - Ukraine and Georgia: claim emissions but do not report them in detail
 - Sovereignty concern trumps inability to control emissions
-

Looking forward: military emissions in the UNFCCC

- **Urgent need to report military and conflict-related emissions under the Paris Agreement**
 - Direct emissions from peacetime and war operations – fuel use
 - Indirect emissions from destruction of carbon reservoirs during conflicts

- **Inclusion of military and conflict-related emissions in national inventory guidelines under the IPCC**
 - Governments need to task IPCC to engage in this exercise, there are many precedents (e.g. 2019 “refinement”, 2013 wetlands supplement, ...)
 - Enable governments parts of whose territory has been occupied to choose whether to report the emissions from occupied territories or not

- **Work towards peace settlements that make aggressors responsible for war and occupation-related emissions**

Recommendations for COP28

- **Section in backward-looking part of Global Stocktake report covering level of military and conflict-related emissions**
 - COP28 presidency should engage with globally leading researchers on this topic to provide input to such section
 - Definitions and terminology
 - Estimate current share of military and conflict-related emissions in global emissions and their development since 2015
- **Section in forward-looking part of Global Stocktake (“roadmap”)**
 - Plan for inclusion of military and conflict-related emissions in national inventory guidelines under the IPCC
 - Deadlines for COP decision regarding accounting of conflict-related emissions
- **Coordinated push of organizations engaged in the topic!**

Preventing drowning in a cacophony of voices...



Thank you!
michaelowa@perspectives.cc

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