

Andrew Doyle / Mark Schofield

Opportunities for road verges and greenspaces



Who are Plantlife?

- Founded in 1989 with over 20,000 members and many more supporters
- 24 nature reserves; 4,500 acres across England, Scotland, Wales & the Isle of Man
- Species-rich grassland, temperate rainforests, nitrogen, species-recovery, horticulture

and...

Road Verges and Greenspaces

- Provide best practice guidance to local authorities and key stakeholders across the UK.
- Develop the research, resources, and case studies to make the case for a systemic change in road verge and greenspace management.





‘Grasslands amongst the most threatened habitats in Britain’ (BSBI, 2023)

- ↓ Devil’s-bit Scabious (*Succisa pratensis*)
- ↓ Pasqueflower (*Pulsatilla vulgaris*)
- ↓ Sheep’s Sorrel (*Rumex acetosella*)

‘UK's flying insect population has declined by as much as 60% in the last 20 years’ (Kent Wildlife Trust, Buglife 2021)



‘More than half of our flowering plants have decrease in range in the last 50 years’ (State of Nature Report, 2023)

Statutory drivers of change:

England

- 25 Year Environment Plan
 - Nature recovery Networks
 - Green Infrastructure Framework (GIF)
- Environment Act 2021
 - Strengthened Biodiversity Duties
 - Local Nature Recovery Strategies (LNRS)
 - Biodiversity Net Gain (BNG)

Wales

- Environment (Wales) Act 2016
 - Biodiversity Duties
- Wellbeing of Future Generations (Wales) Act 2015

Scotland

- Scottish Biodiversity Strategy to 2045
 - Nature-based solutions
 - Nature network in each LA by 2030
- Natural Environment Bill
- Wildlife and Natural Environment Act 2011
 - Biodiversity Duties

Northern Ireland

- Wildlife and Natural Environment Act 2011
 - Biodiversity Duties
- Climate Change Act 2022
 - Net-zero by 2050

A whole 'Cornwall's-worth' of land hidden in plain sight

UK Road verges:

>400,000km length

260,000ha in UK (1.2%)

(Phillips et al. 2021)

- approximately the size
of **Dorset**

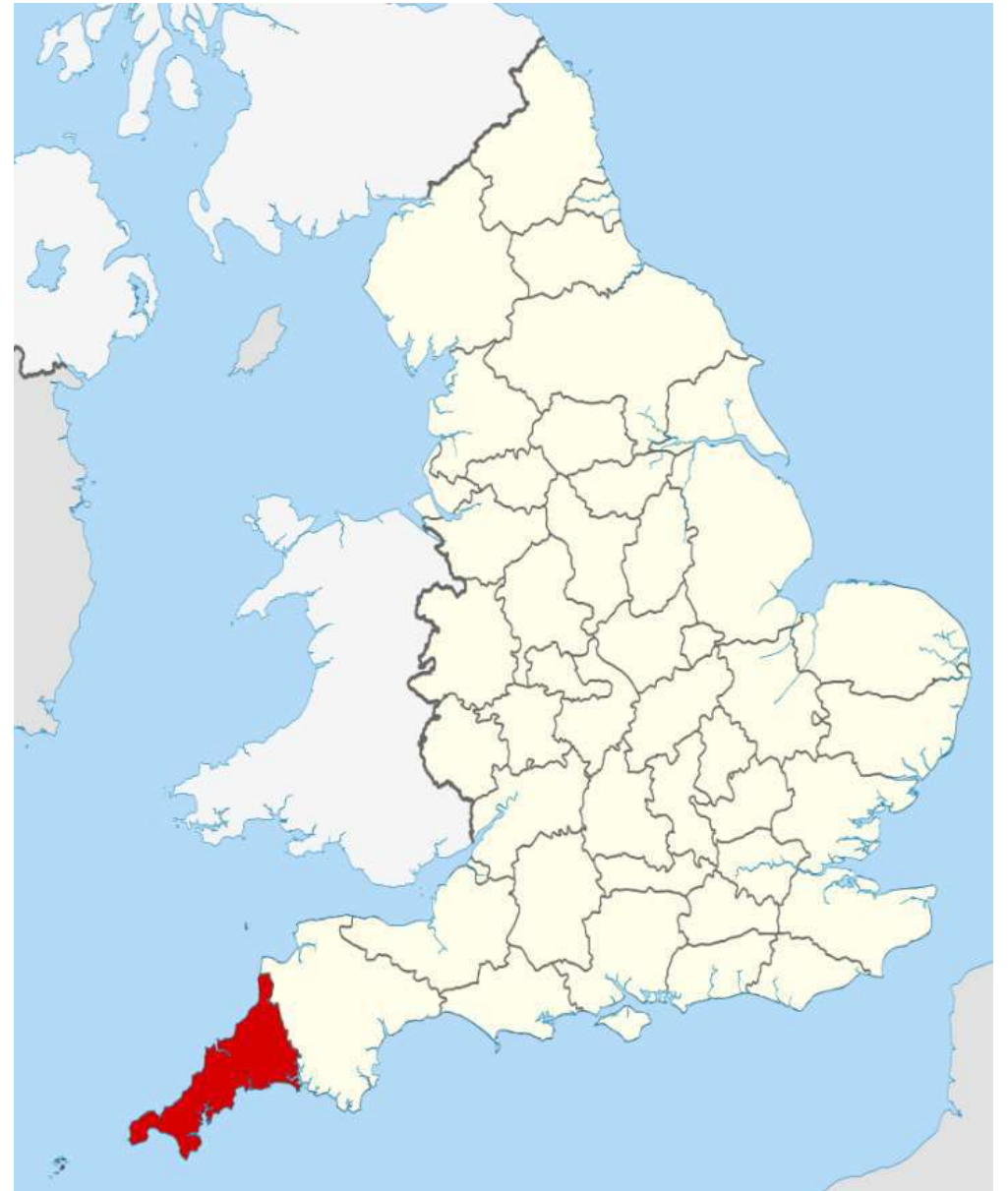
UK green space (public):

43,550 sites

85,847ha

> 2x size of **Rutland**

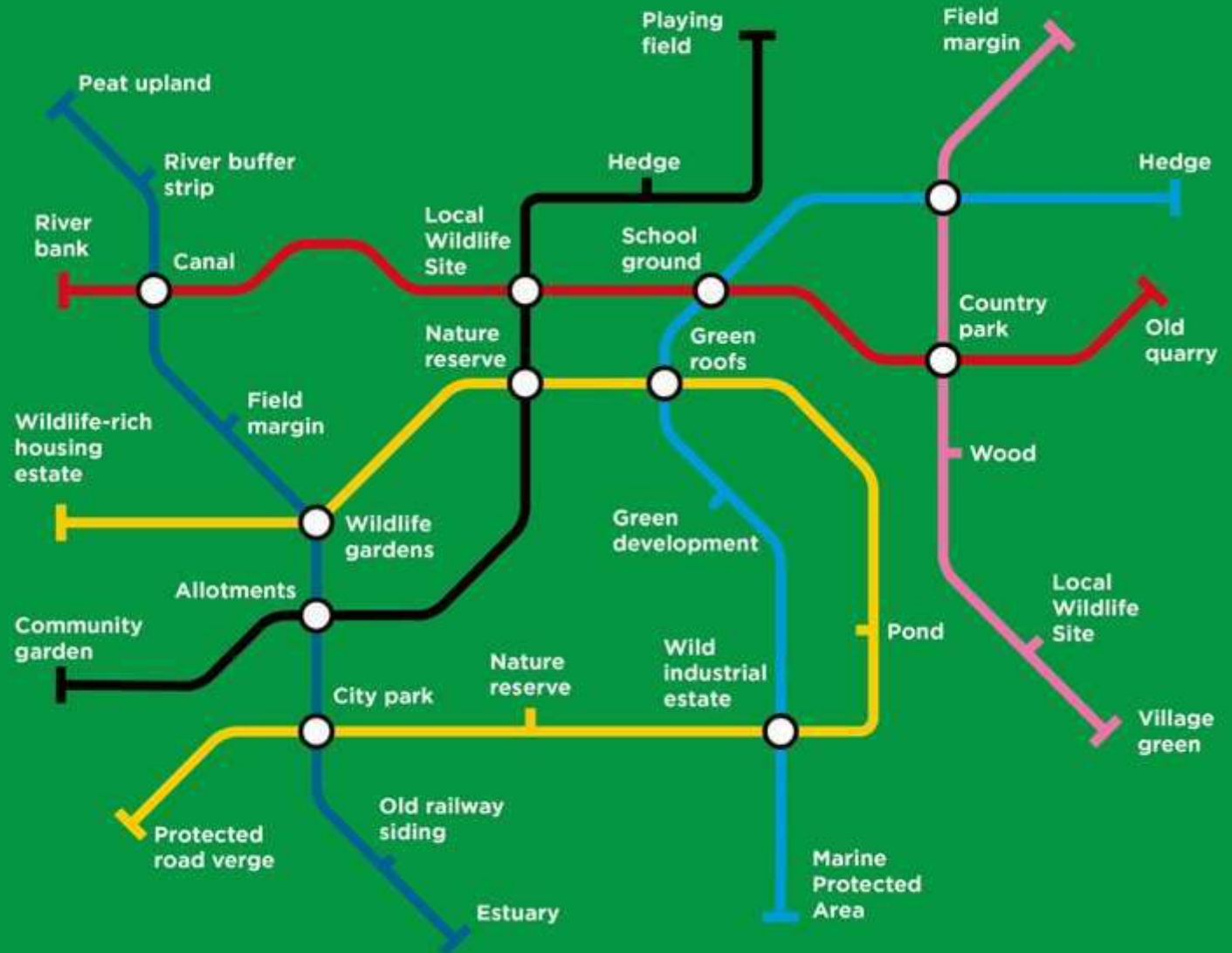
Totaling the size of **Cornwall**



Connectivity

Bridges not barriers

Linear green infrastructure and public green spaces can provide:
Ecological connectivity



Principal pressures on public grassland

**Cuts too frequent
or too infrequent**



Too many cuts:
- interrupted lifecycles
No cuts:
- vegetation succession

>2 cuts per year / no cuts

Smothering mulch



Physical barrier to regrowth
- only vigorous minority of
species survive

No collection of cuttings

Accumulating fertility



**Chemical inputs from industry,
agriculture, vehicle emissions**
- competitive species gain
advantage

Cuttings rot down in situ

Timing of management is key

A two-cut method is ideal – grassland depends upon disturbance

Management option		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
One cut									full cut				
Two cuts	Summer and autumn cutting							partial cut		full cut			
	Late winter and autumn cutting		full cut							full cut			
	Dry verges (short vegetation)	regular cuts								regular cuts			
	Species-rich verges with mown edge		1m strip							full cut			

Remove cuttings where possible

Dorset cut-and-collect case study

– delivering savings



Cuttings disposal
into hedgerow bases
where species-poor

Cut and collect scheme:

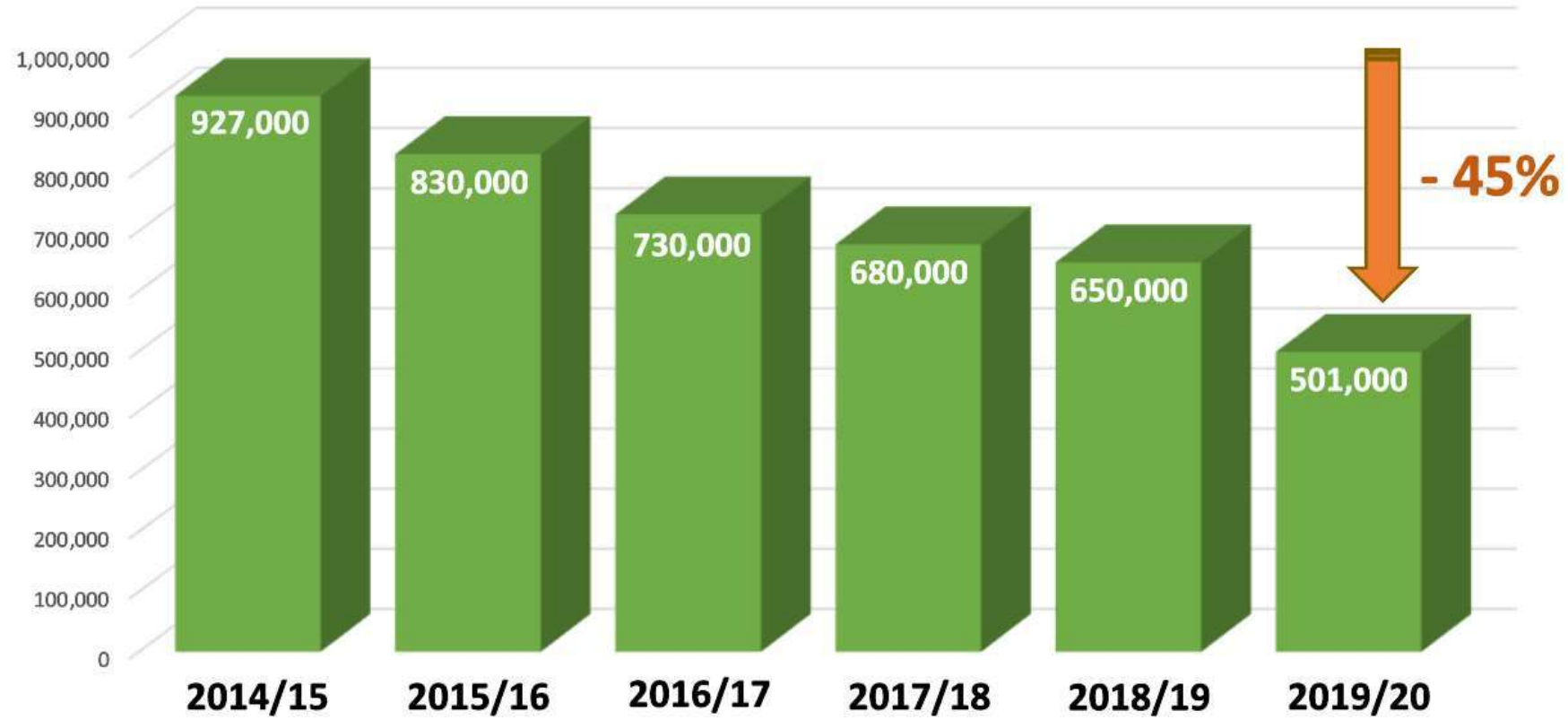
- Significantly reduced fertility
- Reduced cutting frequency by 50% (within 2-3 years)
- 5-year payback on cost of new cut-and-collect machinery



Dorset
Council

Dorset Council verges budget

45% cost saving for road verges over 5 years since introduction of cut-and-collect system



Best practice publications for verges



- Low-nutrient soils approach to construction for increased safety and ecosystem benefit
- Management to reduce long term cost, reduce carbon footprint, enhance biodiversity

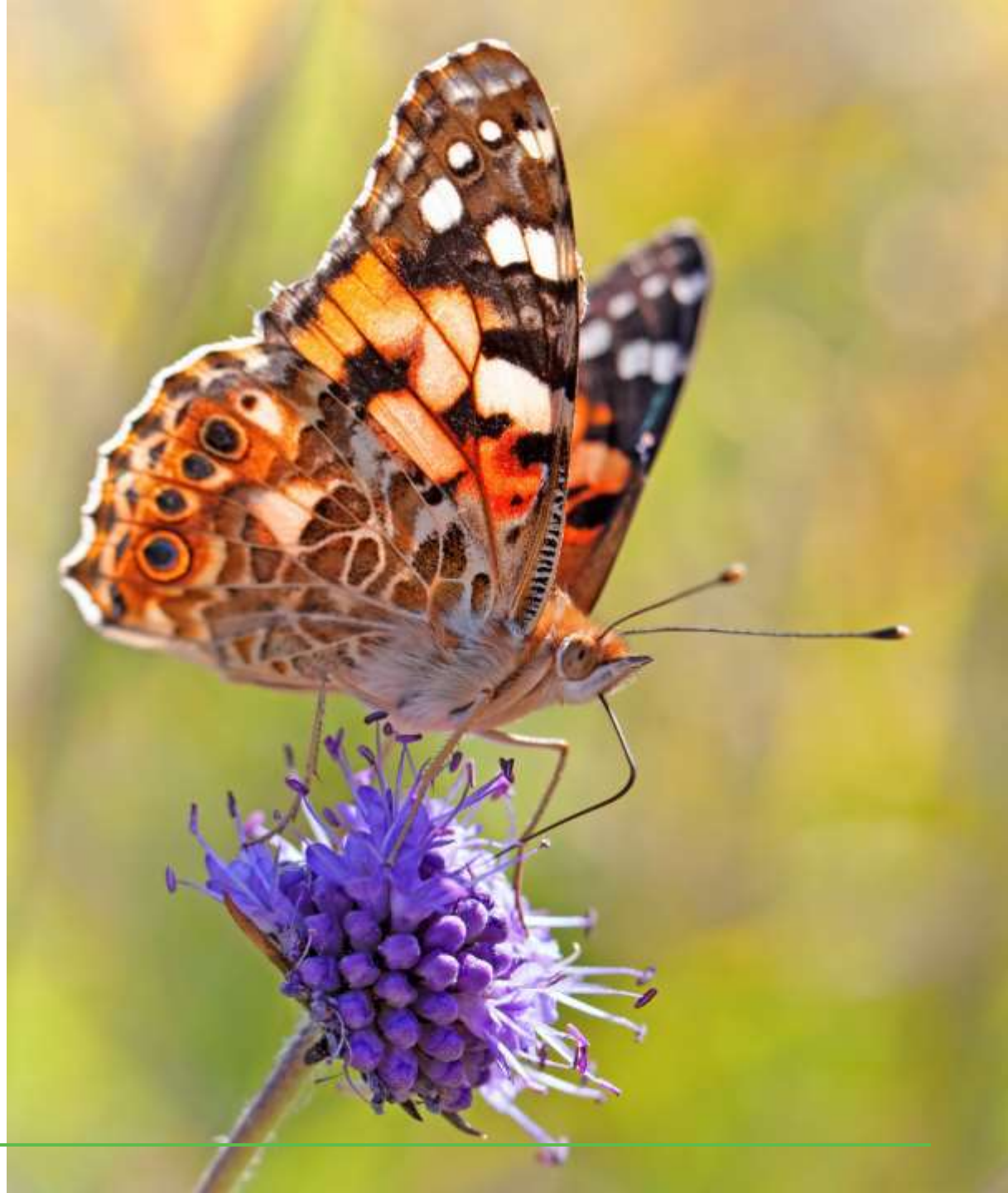
Preparing for No Mow May 2024

A registration form in January 2024 to sign up for updates and information on:

- How a change in management can deliver for nature, people, climate and reduced costs.
- Management best practice guidance
- Key case studies for change
- Resources

The information to make the change for nature from January to May and crucially beyond.

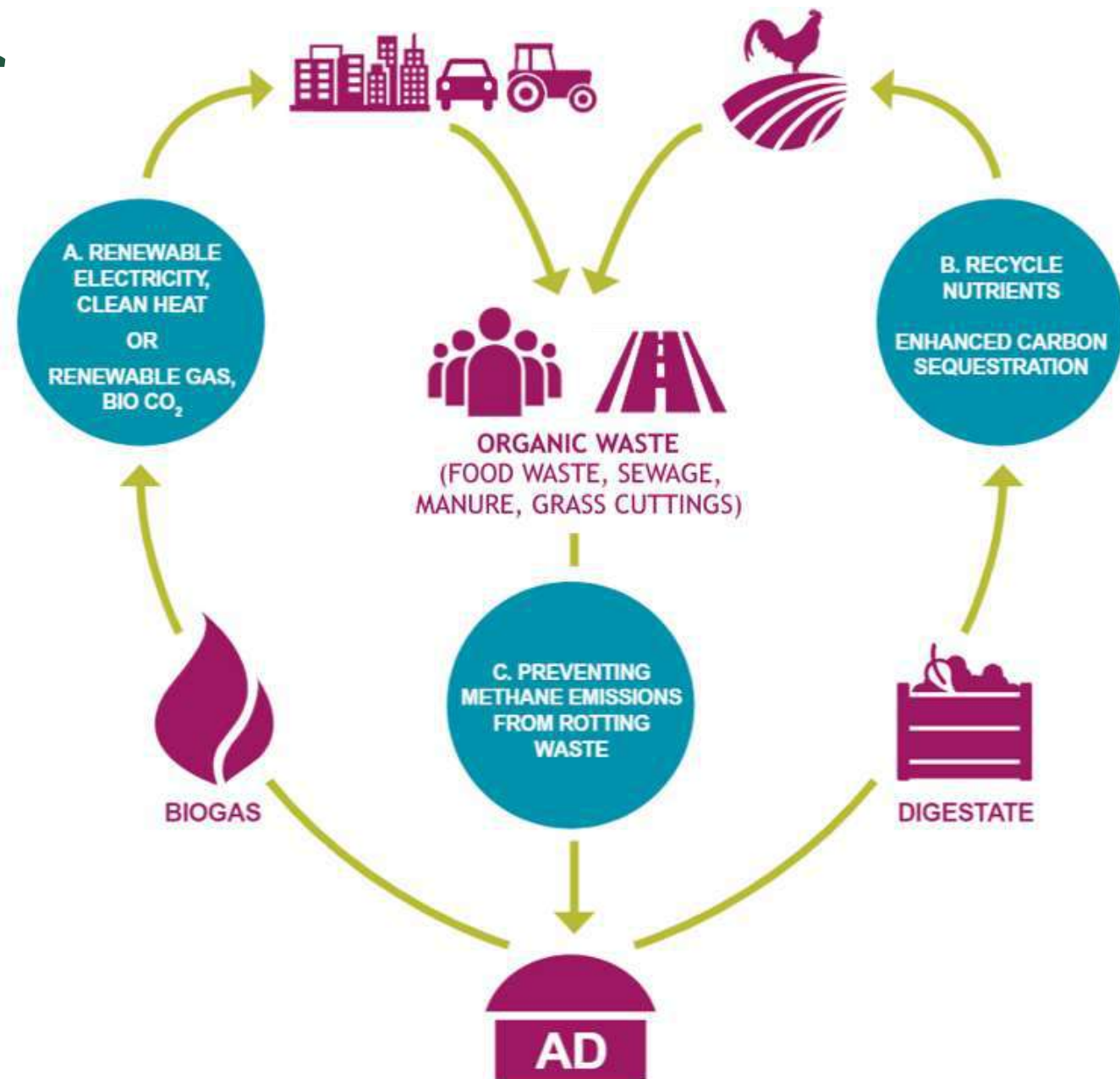
launch of the No Mow May registration and sign-up in January 2024



Bio-circular approach

Can we recycle grass cuttings?

Can we valorise the green waste we generate when we manage vegetation on public assets?



Organic Waste Management Options: The Waste Hierarchy

Unsustainable

Linear economy promoting the single use of resources

Landfill

Least favourable



- Responsible for over 30% of methane emissions in the UK.
- Toxic leachate contaminates water systems.
- Landfill tax makes it an expensive option for food waste management.

Incineration



- Expensive for organic waste.
- Managed by strict environmental regulation.
- Emits GHGs.
- Can lock cities into producing high volumes of waste to 'feed' the incinerator.

Sustainable

Circular economy promoting the recycling of resources

Compost



- Converts food waste into a valuable fertiliser.
- But emits CO₂ as waste decomposes.
- However, it does not generate any green energy...

AD

Most favourable

- Captures methane emissions, to produce renewable energy.
- Recovers nutrients in the form of digestate, an organic biofertiliser.
- Concentrates biogenic CO₂, suitable for industrial use or permanent storage, actively reversing emissions.
- Most economic.

Substituting an ecological agent

Replacing the aurochs with biomass harvesting and anaerobic digestion



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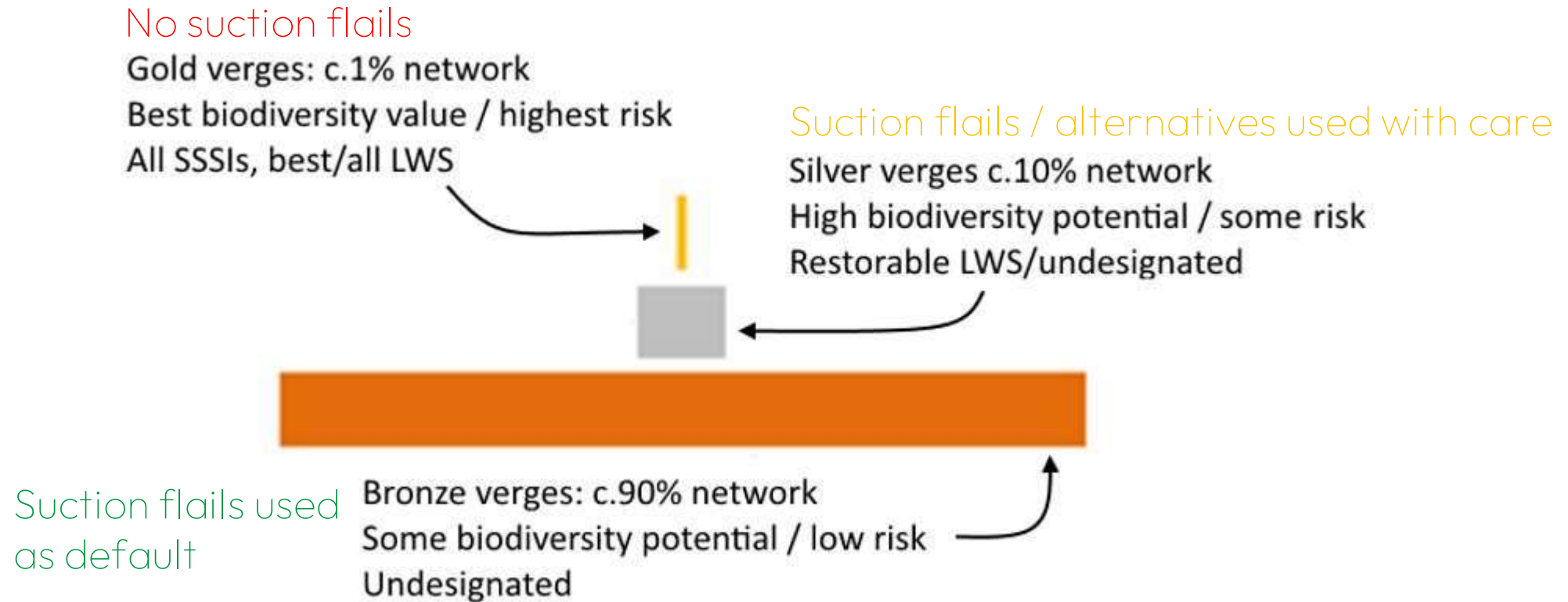


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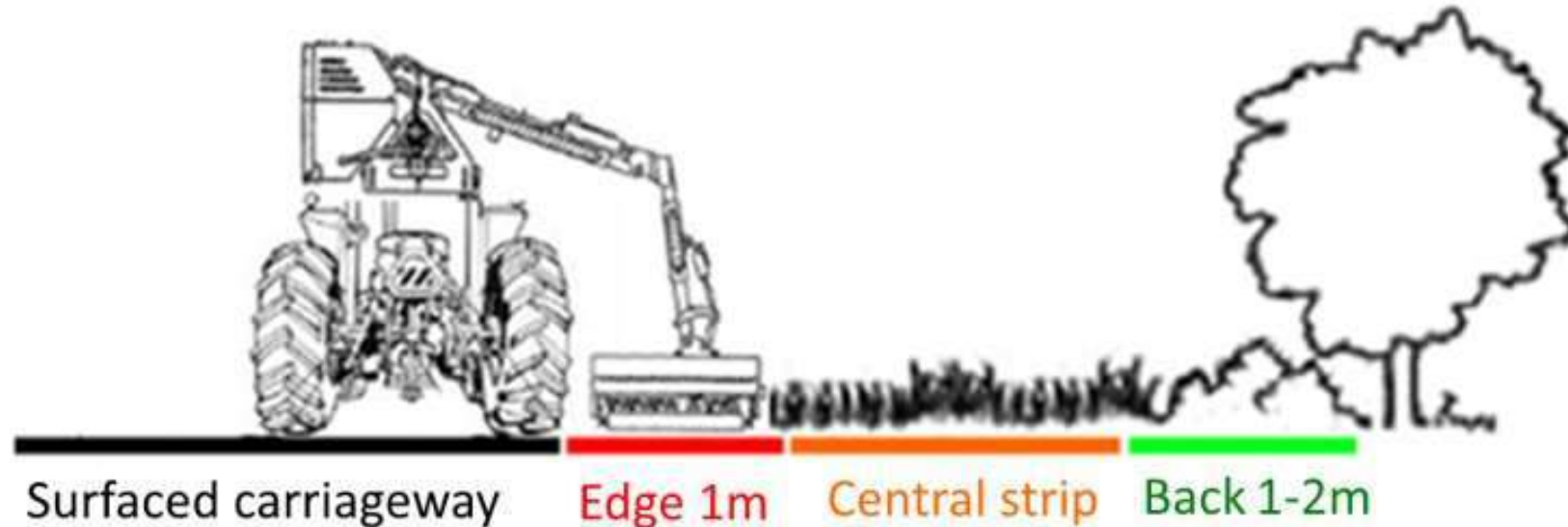
The verge 'quality pyramid'

Summary of results – citizen science surveys, Lincolnshire



Linear mosaic cutting

Decreasing frequency of vegetation towards the back of the verge



Edge: Cut and collect in May and August

Centre: Cut and collect in August only (also in May if productive)

Back: Cut with/without collection only once (Aug-Oct) every 2-3 years (alternate sides where possible)

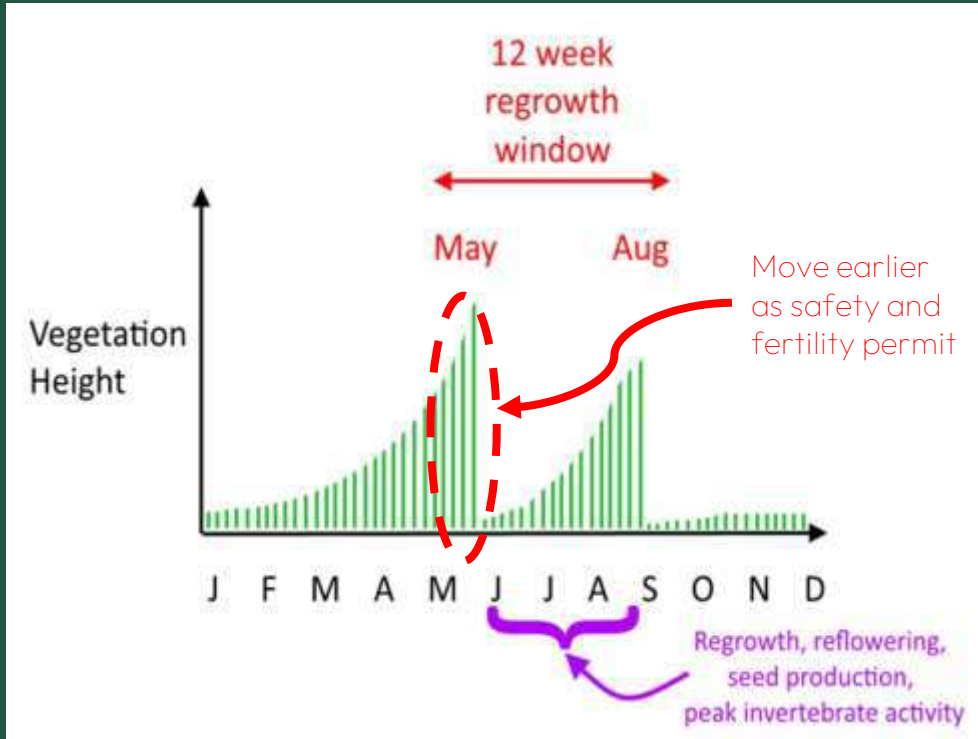
Sanctuary strip mowing

Maintenance of undisturbed structural grassland at hedgerow bases (Lincolnshire)



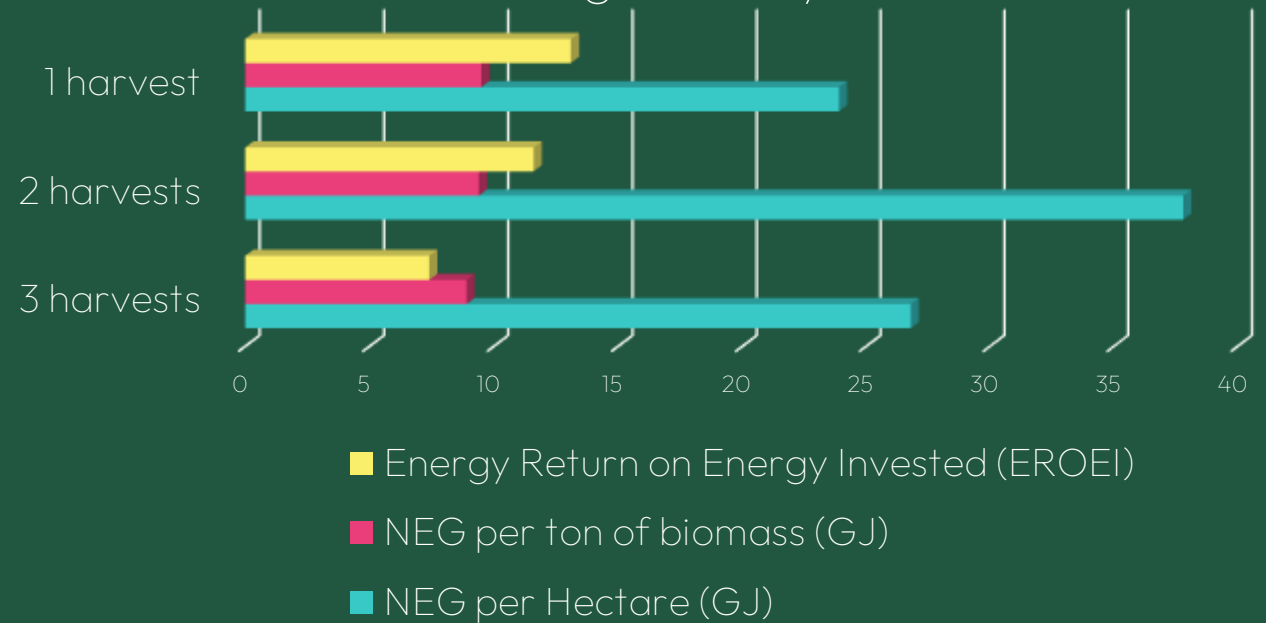
The 'two-cut sweet-spot'

A happy coincidence of biodiversity benefit and energy efficiency



2 cuts/yr with collection best for biodiversity
- Jakobsson et al. 2018

Energy efficiencies and net energy gains for 3 semi-natural grassland management systems



2 harvests/yr best net energy gain / area
- Arodudu et al. 2013

Carbon-negative vegetation management



The carbon case for Great Britain's road verges

Reduction of more than 45% mowing costs, 50% emissions



Replace diesel with biomethane cutting HGV emissions 2%



Bioenergy from roadside grass: 800M kWhrs

Power for 260,000 homes equivalent

Equivalent to 130 onshore wind turbines



Road verge grassland soil contains 160M tonnes CO₂e

Could be increase by up to 10% if verges managed for grassland biodiversity.

Equal to 1/8th total annual domestic transport emissions



Suction-flail trials

- Montgomeryshire & Lincolnshire
- 11t/ha fresh weight
- Bespoke design
- >30t/day at 3-5km/hr
- Contaminant levels all favourable
- Harvest cost less than value of grass

FAQs:

- Options for handling litter
- Waste Regulations permitting
– next challenge!

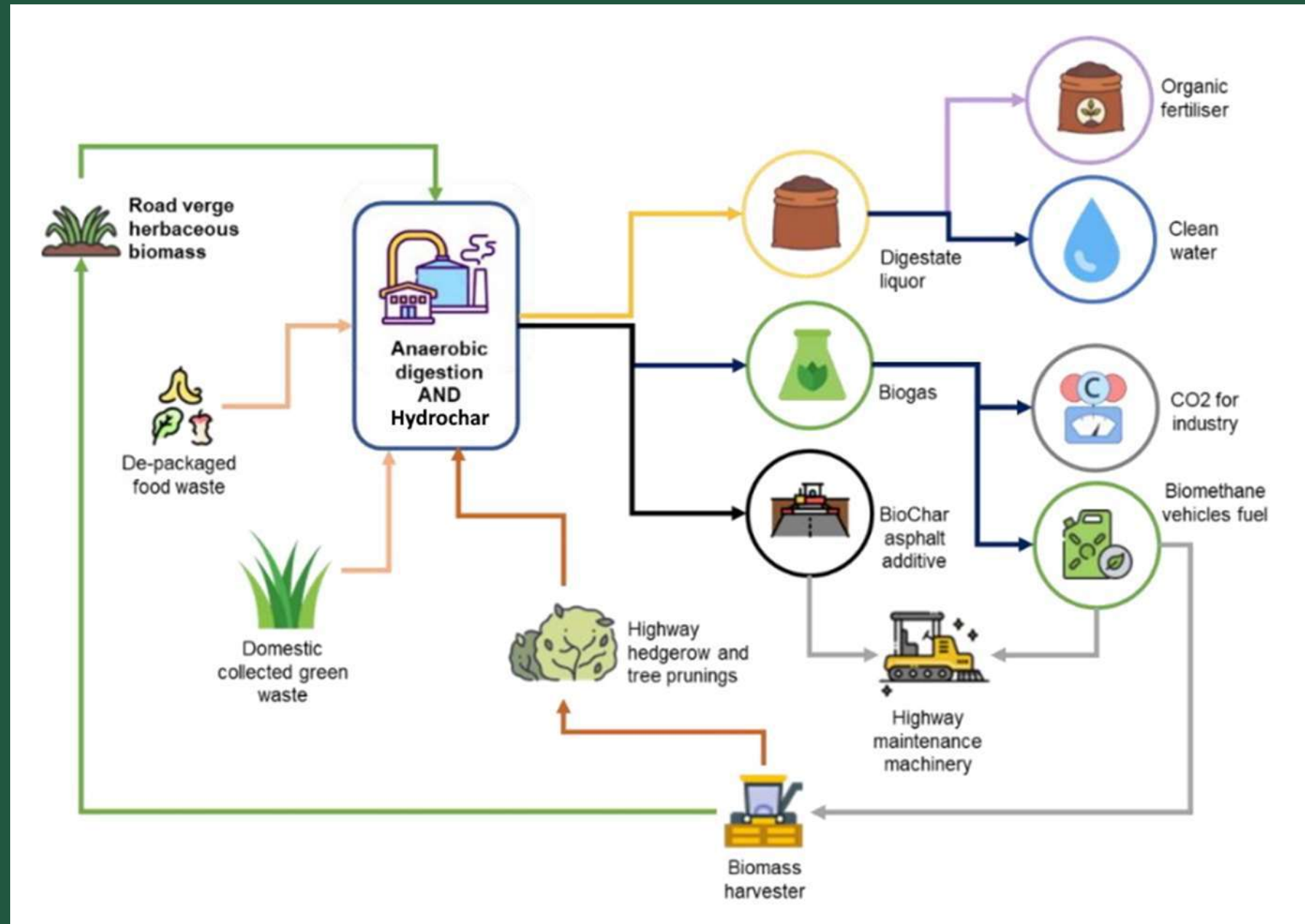


GreenPrint (LiveLabs2)

£3.9M DfT funded

Mowers that...
'feed' themselves

and roads that...
'grow' themselves





The global voice for
wild plants and fungi

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