

The implications of renewable energy exploitation in a National Park context

Tim Stokes

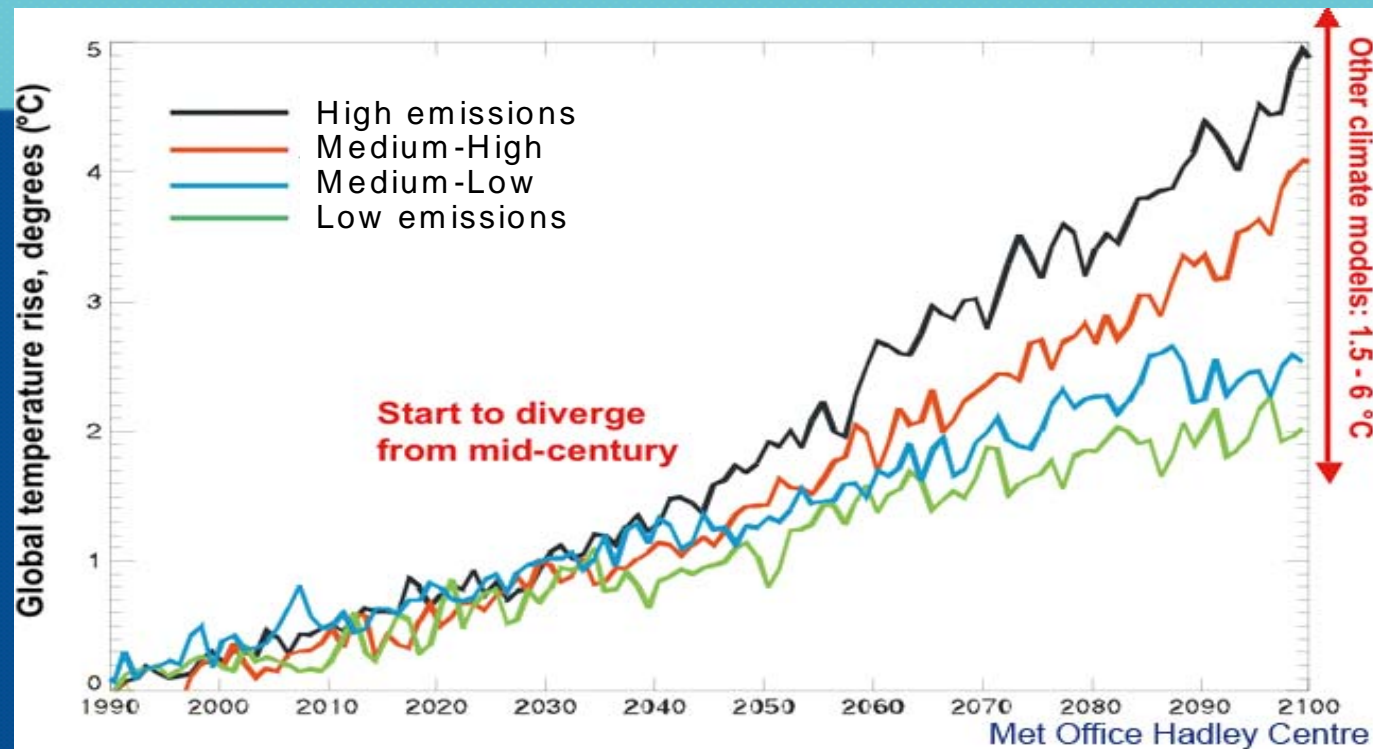
**Sustainability and Economy
Manager, Exmoor NPA**

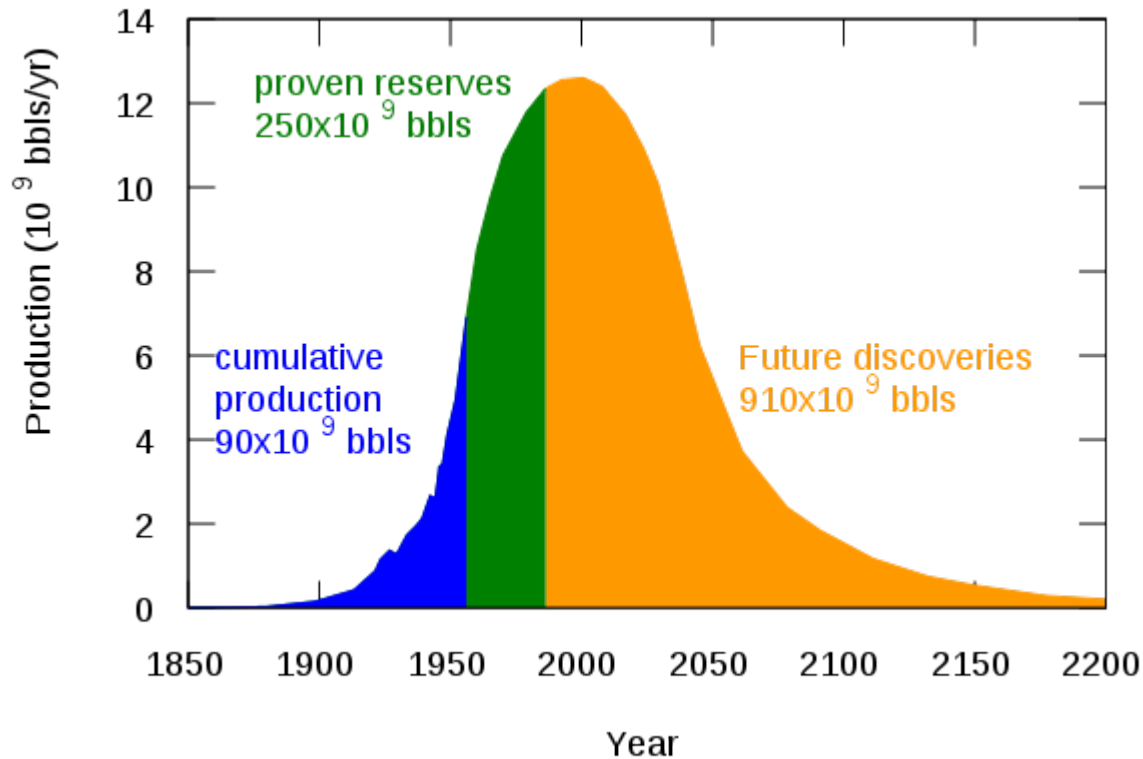
Workshop outline

- Key drivers for renewable energy deployment
- Exmoor 'Carbon Neutral Programme' case study
- Break-out session
- Feed back and discussion
- Summing up

Key drivers

Warming predicted by the Hadley model for 4 IPCC future emissions





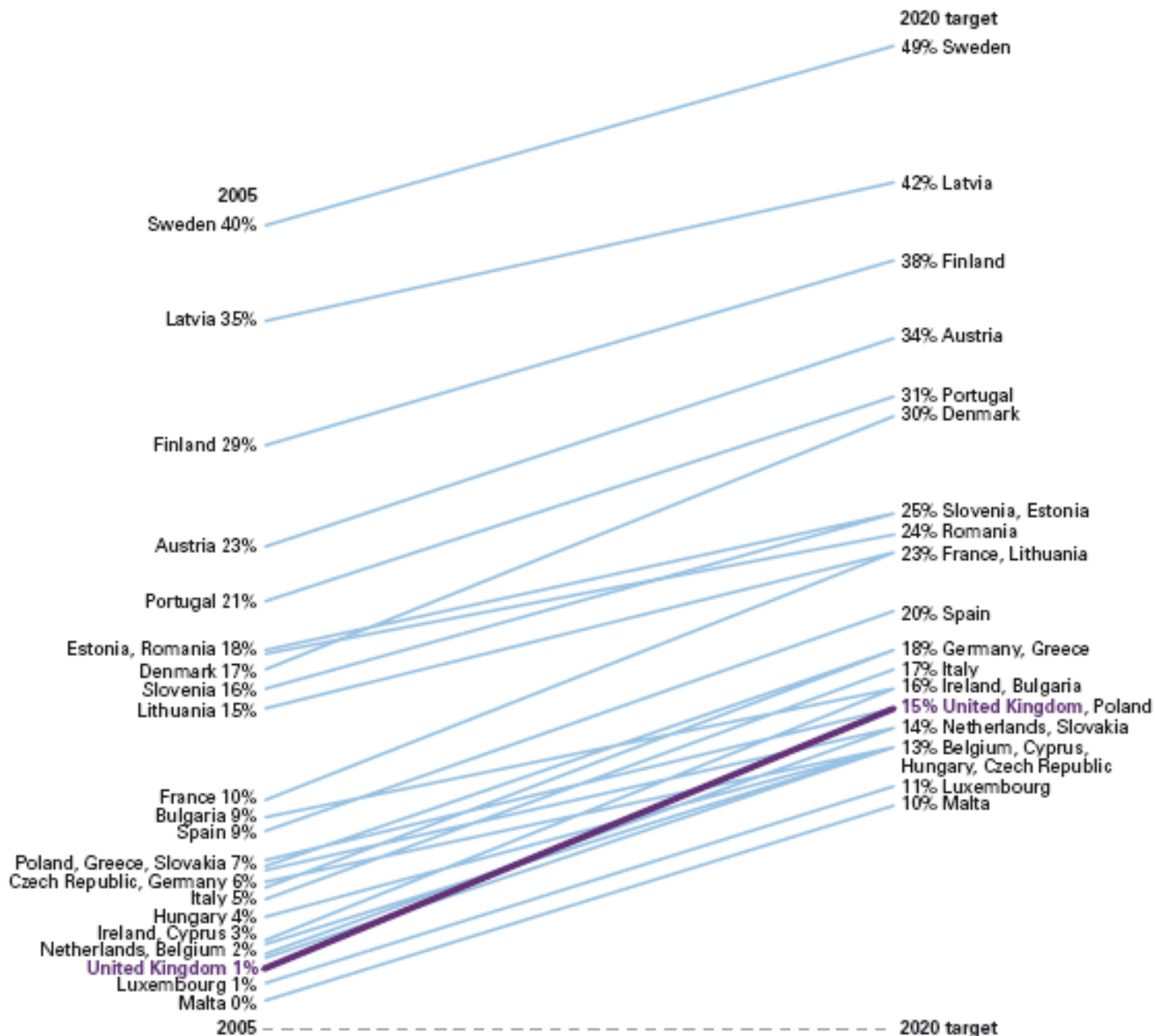
- “The problem of peaking of world conventional oil production is unlike any yet faced by modern industrial society” (US Department of Energy report)

UK Renewable energy strategy

- Office for Renewable Energy Deployment established to speed up renewable energy implementation
- Feed-in Tariff in April 2010
- Renewable Heat Incentive 2011
- New combined climate change PPS to be consulted on by end of year.
- Statement that the strategy does not change existing environmental protections for protected landscapes.
- Local Authorities seen as key leaders in delivering renewable energy

UK Renewable Energy Strategy targets

- 15% of energy used from renewable energy sources by 2020
 - 30% of electricity demand, including 2% from small-scale sources (117 TWh);
 - 12% of heat demand (72 TWh);
 - 10% of transport demand (49 TWh)
- Regions expected to set targets for renewable energy in line with national targets
- In South West 20% target
 - 847MW onshore
 - 400MW offshore



Exmoor Case Study



Enhancing
the qualities that make **Exmoor**
special

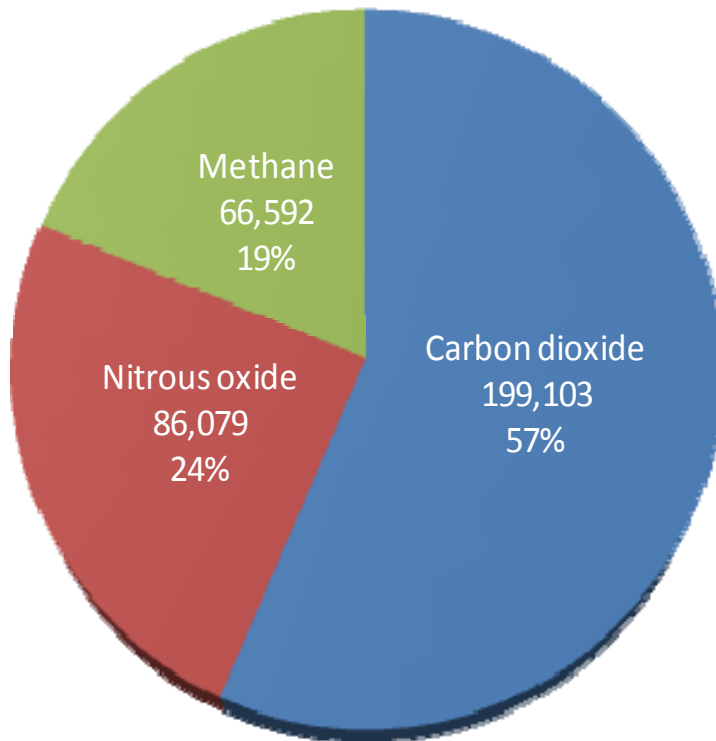


- **Moorland**
- **Steep-sided wooded valleys**
- **Farmland**



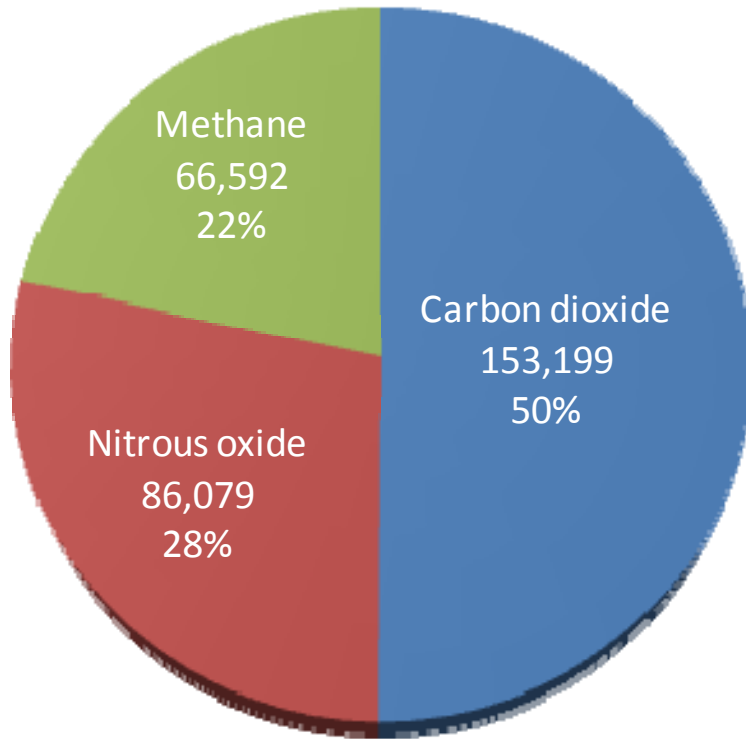


Exmoor's carbon footprint



	tCO ₂ e p.a.	%
Carbon dioxide	199,103	57
Nitrous oxide	86,079	24
Methane	66,592	19
Total	351,774	

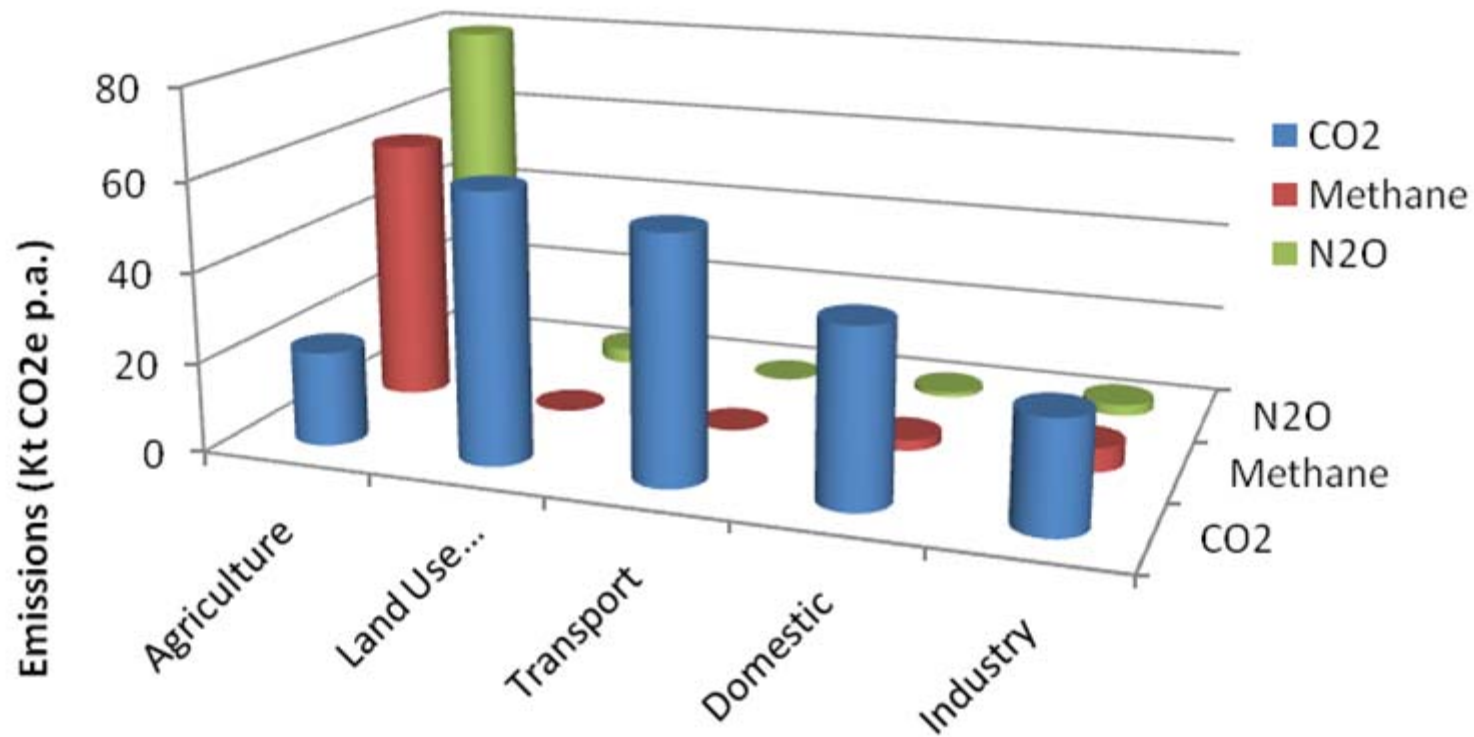
Exmoor's carbon balance



	t CO ₂ e p.a.
Emissions residents, businesses, visitors & biosphere (EMI)	351,774
Biosphere removals (REM)	45,904
Therefore net emissions	305,870

Per capita CO₂ emissions of 14.1 tonnes pa compared with UK average of 9.5 tonnes pa

Emissions by greenhouse gas and sector



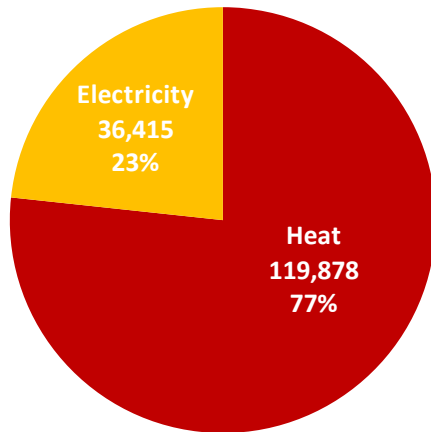
Why carbon neutral?

- Threat to Exmoor's special qualities
- Need to take radical action
- Moral duty to take responsibility for our emissions

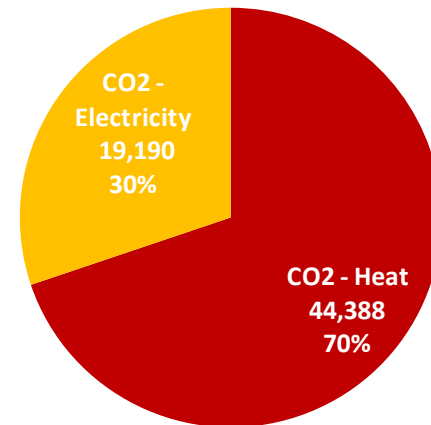


Exmoor's energy profile

Exmoor, total energy demand (MWh, per annum)



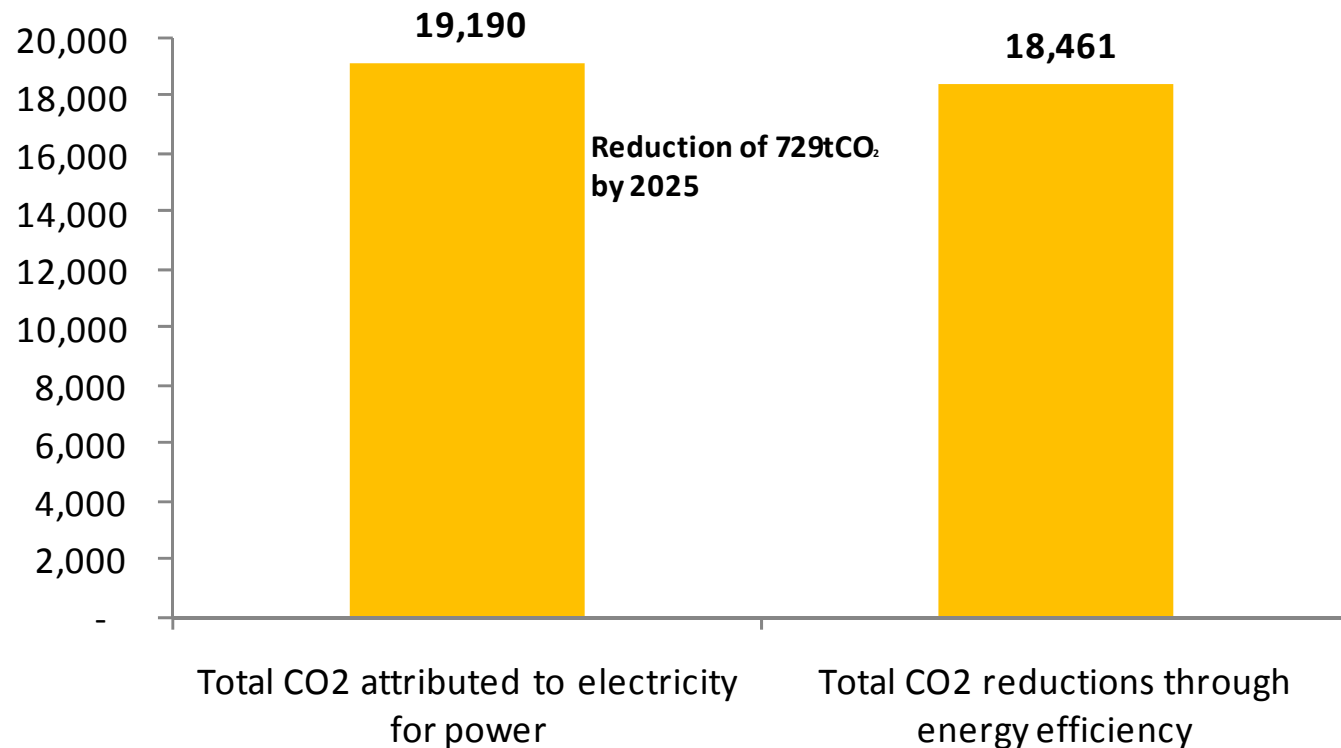
Exmoor, CO2 emissions attributable to energy use (tonnes, per annum)



- Exmoor spends an estimated £11.6 million on energy (excluding fuel for transport) every year.
- £7.4 million is spent by the domestic sector and
- £4.1 million by the industrial, business and commercial sectors.

Demand reduction - electricity

Exmoor - Estimated tCO₂ reductions through electrical energy efficiency measures by 2025

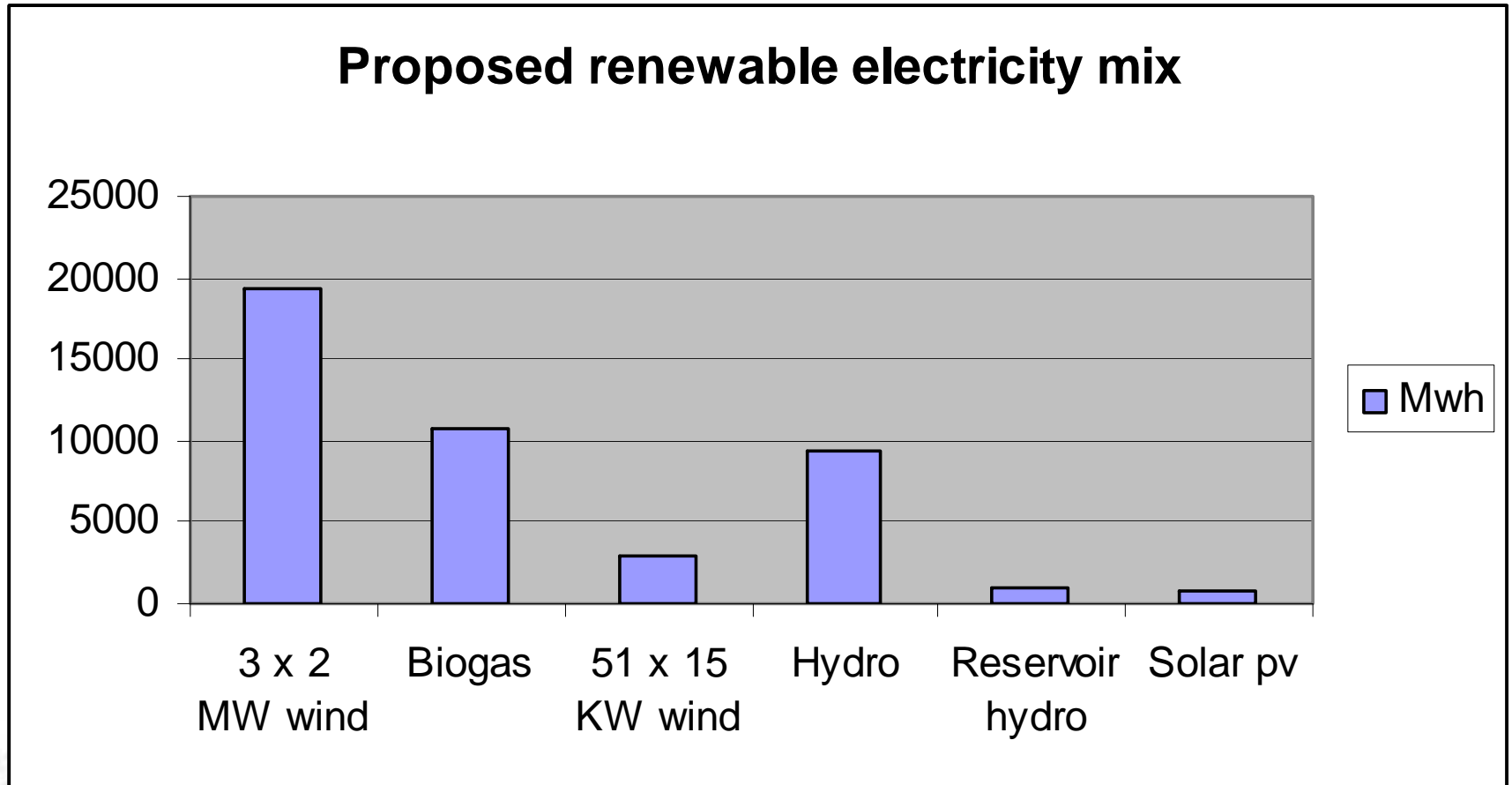


Meeting renewable electricity demand

- 3 x 2 MW wind turbines
- 51 x 15kw (15m) wind turbines
- 20 small scale biogas plants
- 100 hydro schemes
- 1 reservoir hydro
- 500 solar PV



Proposed renewable electricity mix



Wind

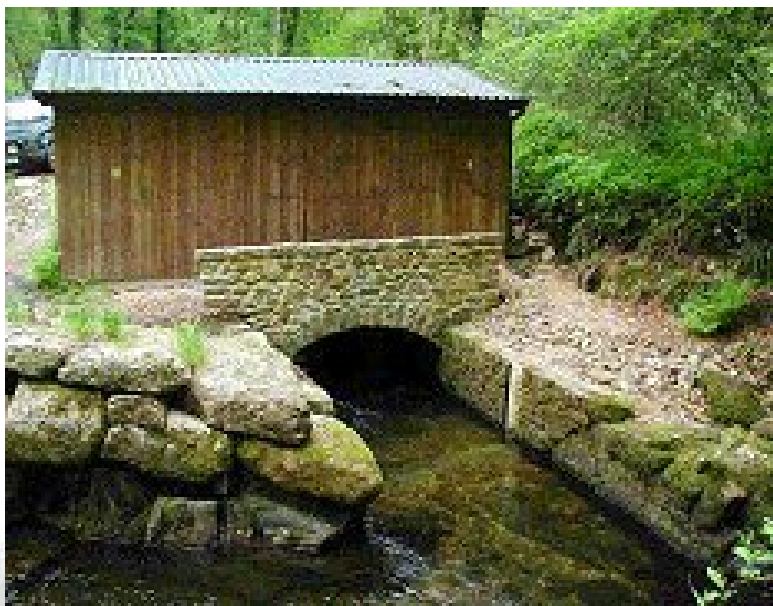


Micro-hydropower



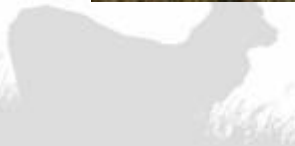
the qualities that make

Exmoor
special



Reservoir Hydro

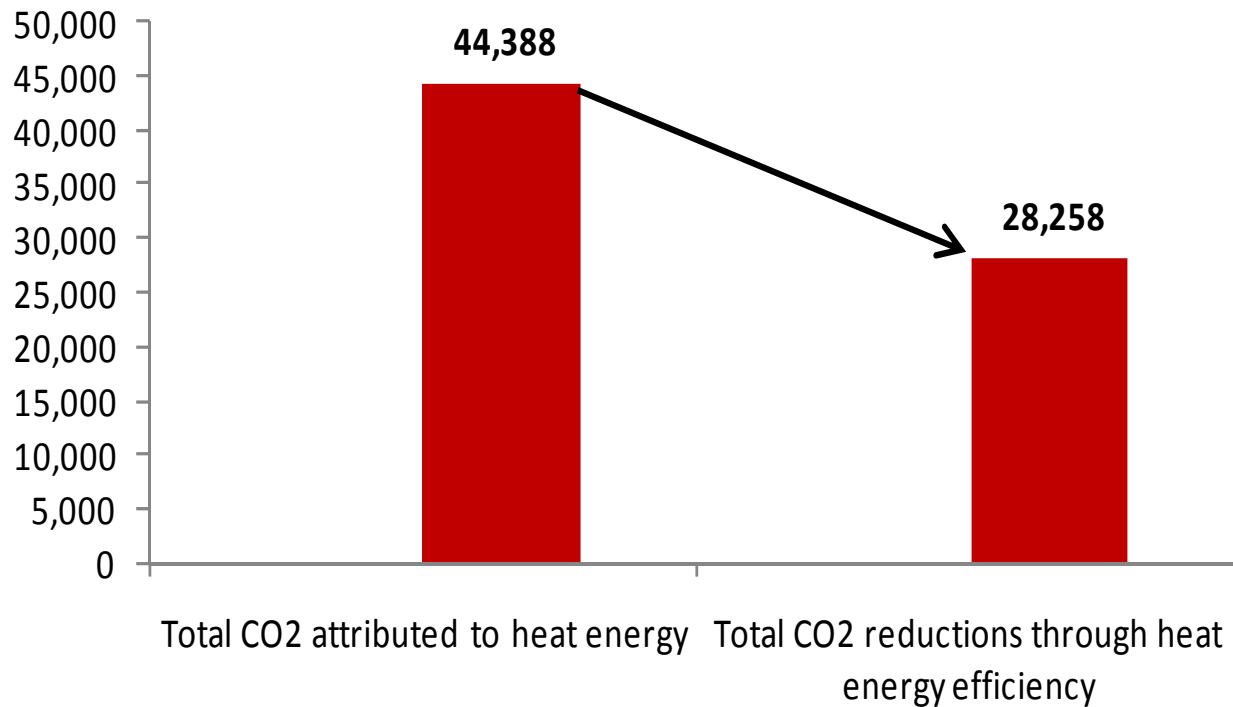




Solar Photovoltaics

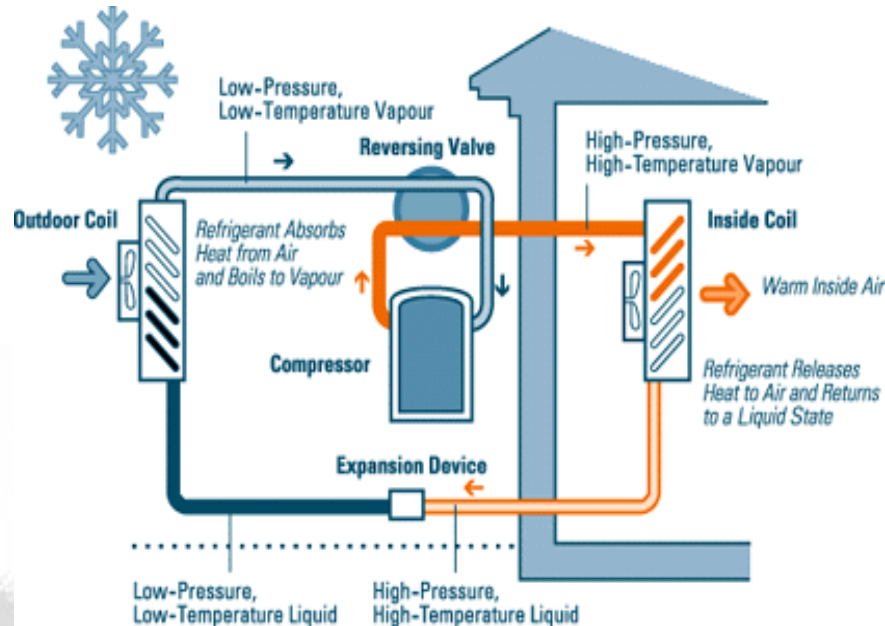


Demand reduction - heat

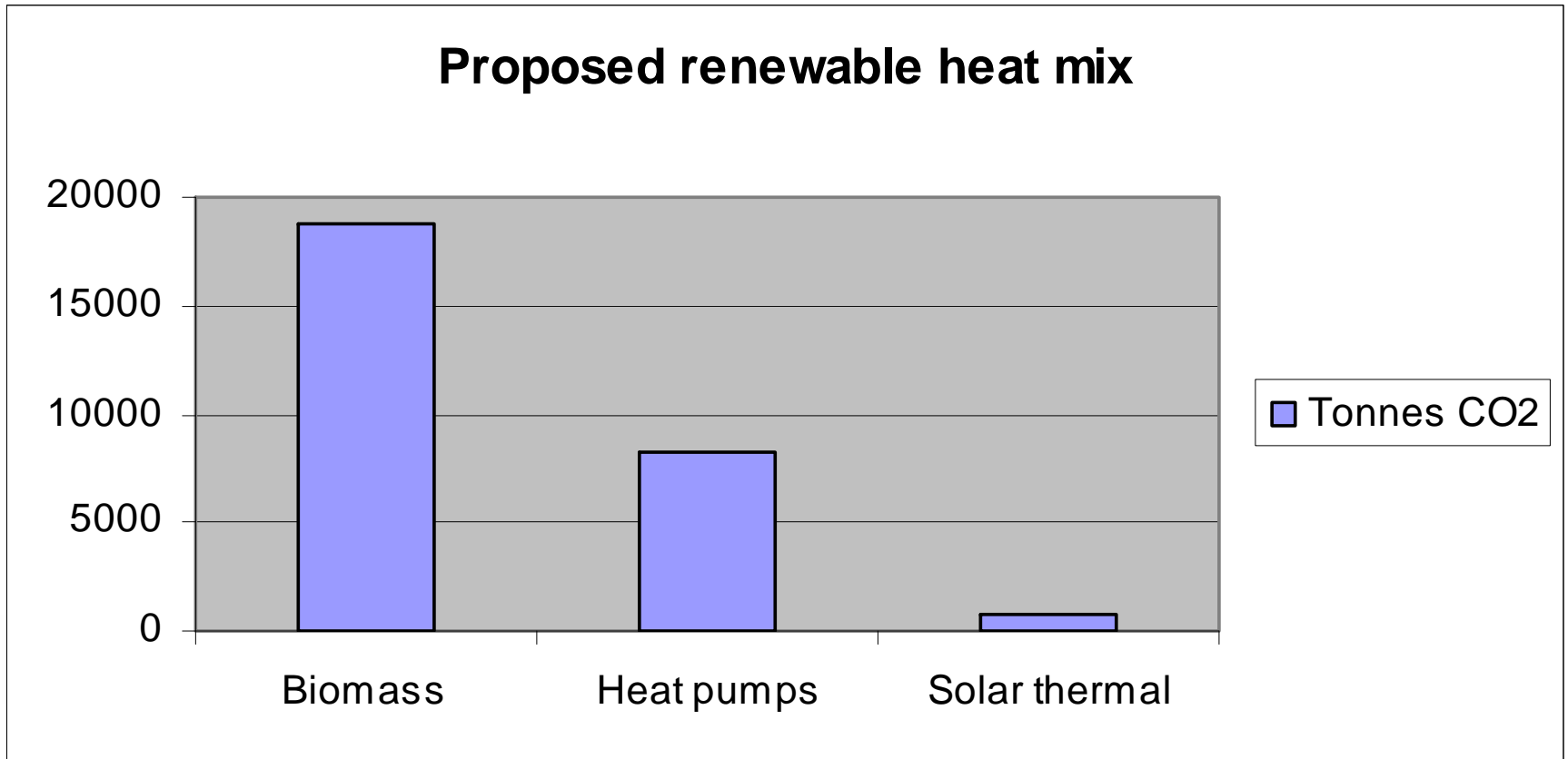


Meeting renewable heat demand

- 3,000 biomass boilers
- 2,000 heat pumps
- 1,000 solar thermal



Proposed renewable heat mix



The task:

- What are the implications of the suggested mix of measures for:
 - Natural beauty
 - Wildlife
 - Cultural heritage
 - Social and economic wellbeing
 - Other implications
- Don't like the mix or target? Suggest an alternative. Justify your choice. Undertake the same analysis.

The task (Cont):

- From the analysis and group discussion:
 - What are the key issues that we need to address? (max 5)
 - What further action/research/debate is required to address those issues?

