



Microgeneration in older housing

David Cameron
Chief Technical Officer

Some history...



St Monans Windmill



Kilmahog Water Wheel



Renewable
Energy: it's
more than
just wind...

The Forum for Scotland's Renewable Energy Industry



Renewable Energy Targets

Targets set to contribute to Kyoto agreement

By 2050

- Scotland 80% Green House Gas reduction

By 2020

- EU overall 20% renewable energy by 2020
- UK 15% renewable energy by 2020
- Scotland 20% renewable energy by 2020

Renewable Energy Targets

In Scotland this breaks down to

- 50% Renewable Electricity
- 10% Renewable Transport Fuels
- 11% Renewable Heat

by 2020

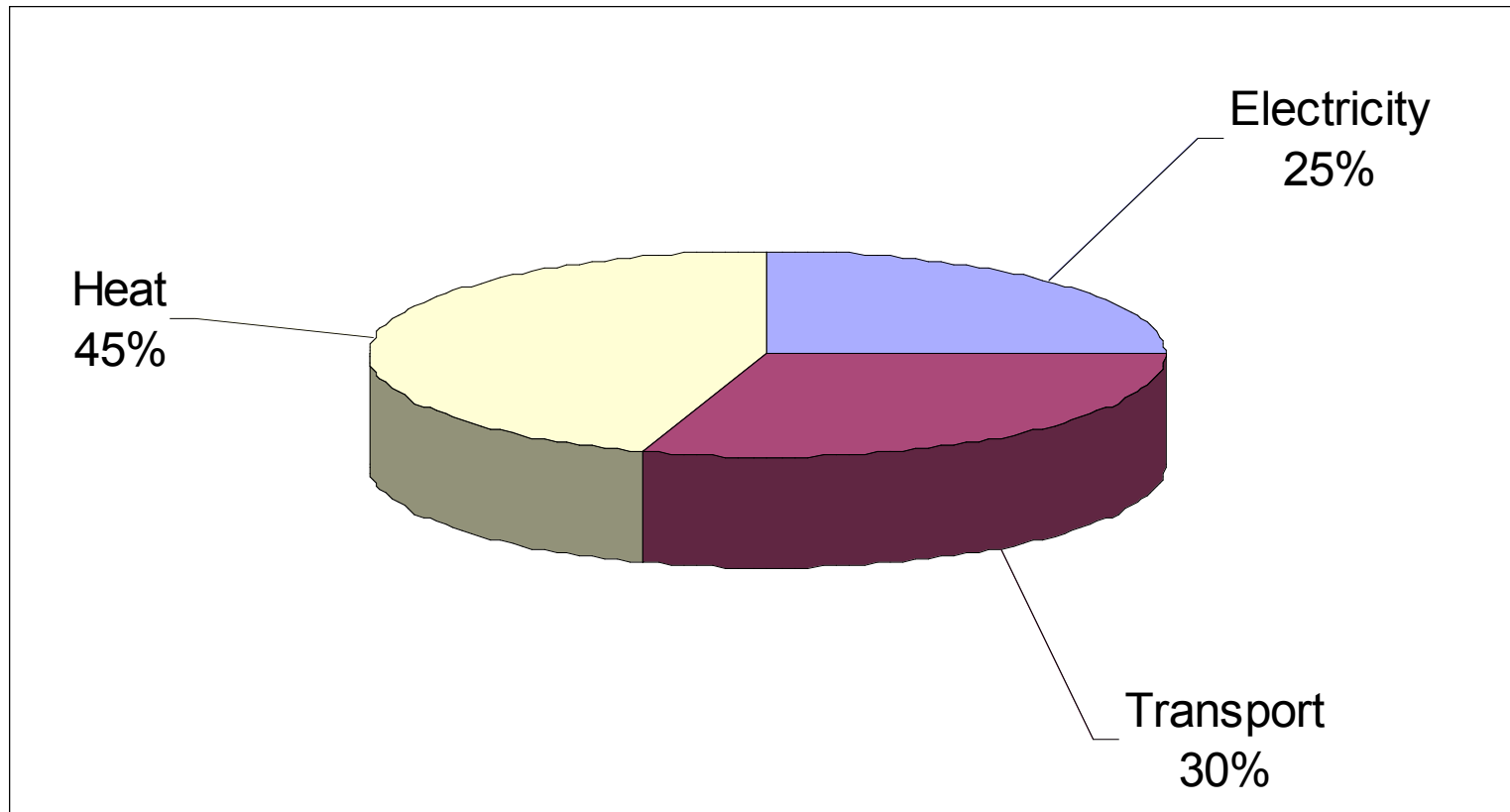
Energy Usage

Putting this in context

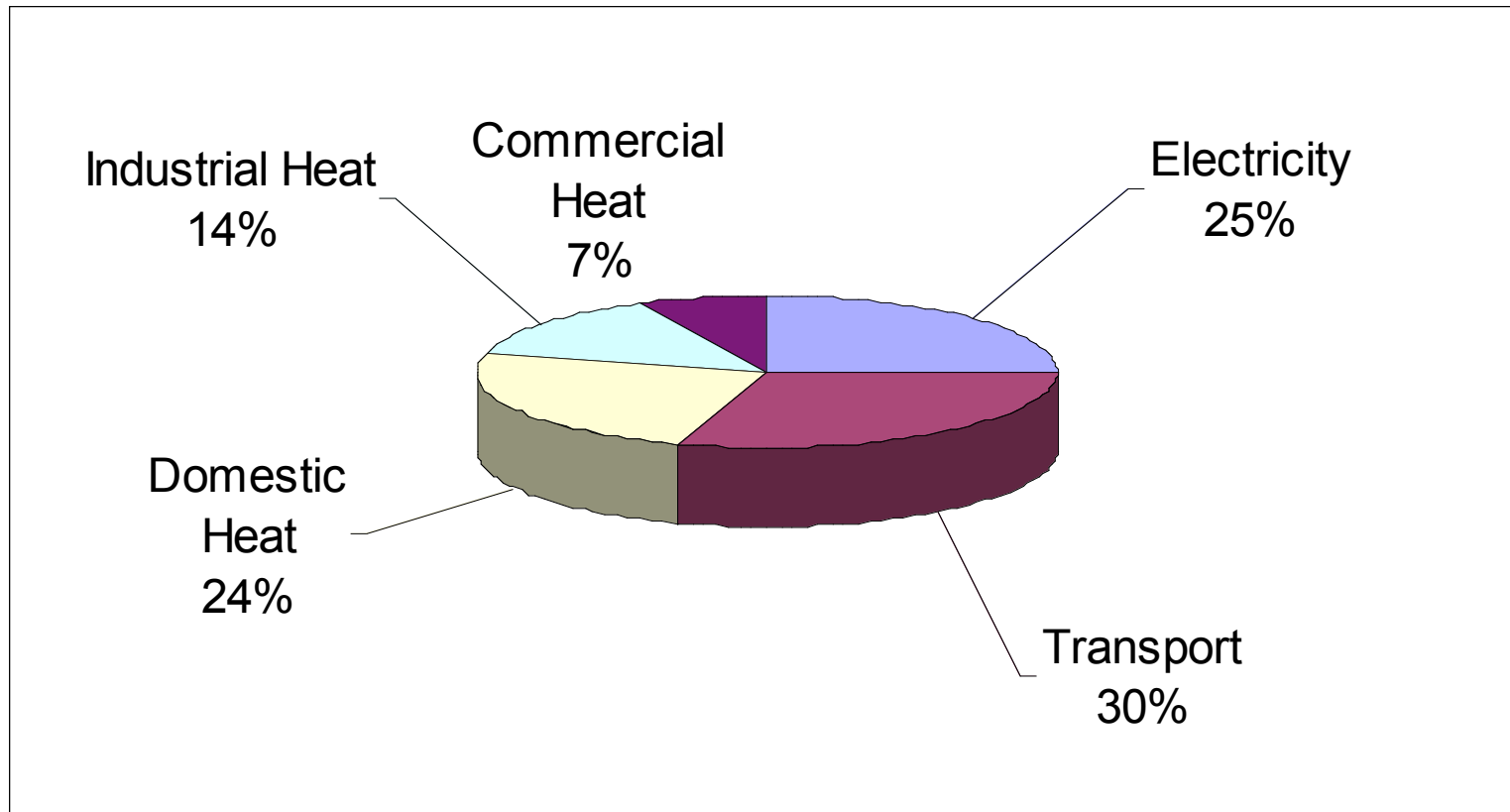
Of the total energy used approximately

- 25% for electricity
- 30% for transport
- 45% for heat (split 54:46 domestic and non domestic)

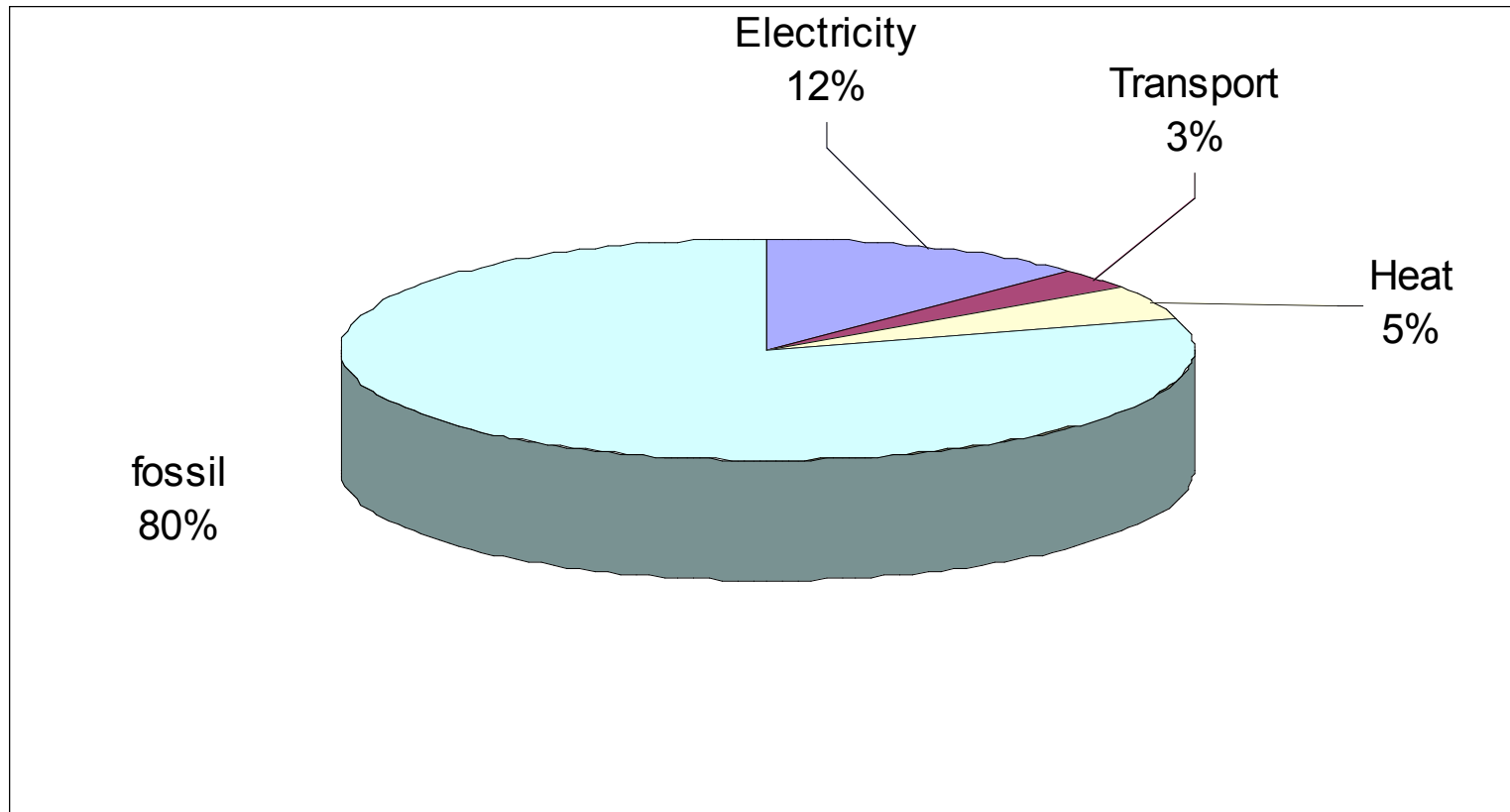
Scottish Energy Split



Domestic Heat Use



Renewable Generation



Potential for microgeneration in Scotland

We have the resources

- Wind and solar
- Forestry for biomass
- For heat pumps – space and climate
- Water ways – hydro schemes

Potential for microgeneration in Scotland

We have the need

- At a UK national level about 85% of households are connected to the gas grid, in Scotland that runs at 66%.
- Our location results in a colder climate and longer winter darkness.

Resulting in higher and more costly energy use.

Potential for microgeneration in Scotland

Developing – movement from small scale to mainstream

- Skilled workforce

- Trade bodies SNIPEF, Select, HVCA upskilling
- Summit Skills developed occupational standards
- Growth in number of colleges now providing training

Potential for microgeneration in Scotland

Developing – movement from small scale to mainstream

- New funding mechanisms
 - Feed-in Tariff (FiT) from 2010
 - Up to 5MW
 - Renewable Heat Incentive (RHI) from 2011
 - All scales

Potential for microgeneration in Scotland

Potential Demand by 2020

- Target means 275,000 renewable heat installations
- 550,000 boilers will be changed

Challenges of retrofitting to older housing

It is necessary to consider

- Energy demand for the building
- Type of building
- How it has been constructed
- Whether that construction method lends itself to particular technologies
- How the building is used
- Location and surroundings
- Space that is available
- Integration with existing systems

Challenges of retrofitting to older housing

For older houses

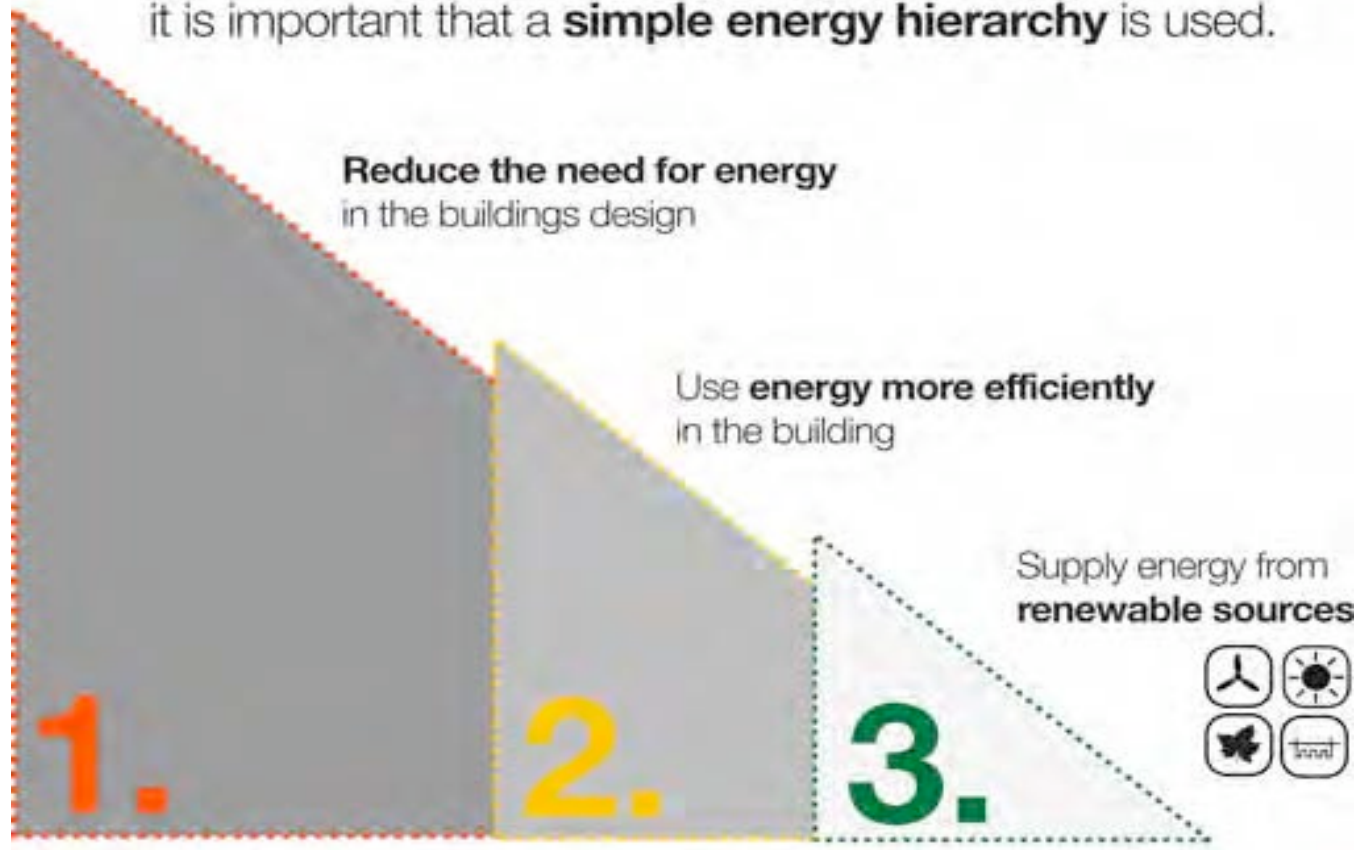
these factors will find different limits

to those for a modern house

The key is to ensure the technology is appropriate to the application

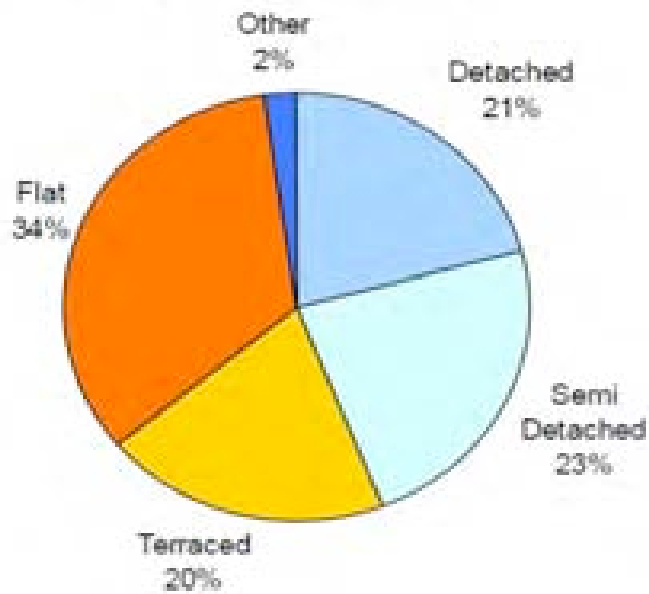
Manage the demand

To reduce a **buildings carbon footprint**, it is important that a **simple energy hierarchy** is used.

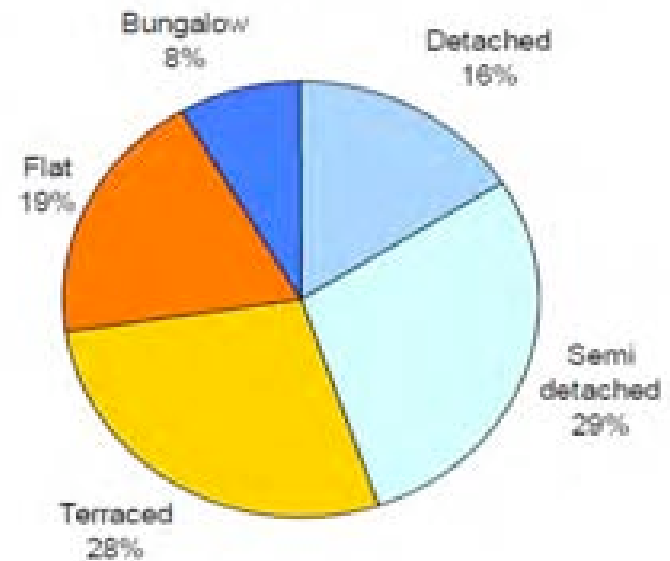


Renewable Generation

Scottish Housing Stock 2001



GB Housing Stock 2001



Specific technology challenges



Solar

- South facing location
- Access
- Shared ownership

Wind

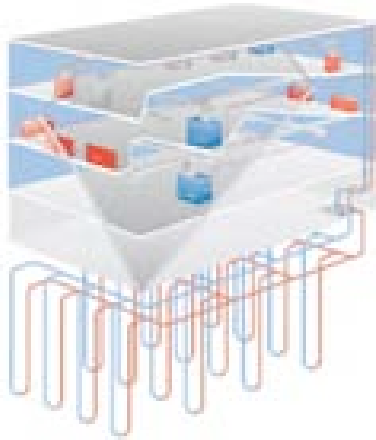
- Unrestricted wind
- Building strength
- Space

Specific technology challenges



Biomass

- Space for boiler
- Space for the fuel



Heat Pumps

- Space – ground loops
- Location – air source

Potential for microgeneration in Scotland

Summary

- Potential for micro renewables in Scotland is good
- Technologies to suit applications
- Older housing can adopt renewables
- Ensure they are appropriate



The Forum for Scotland's Renewable Energy Industry



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