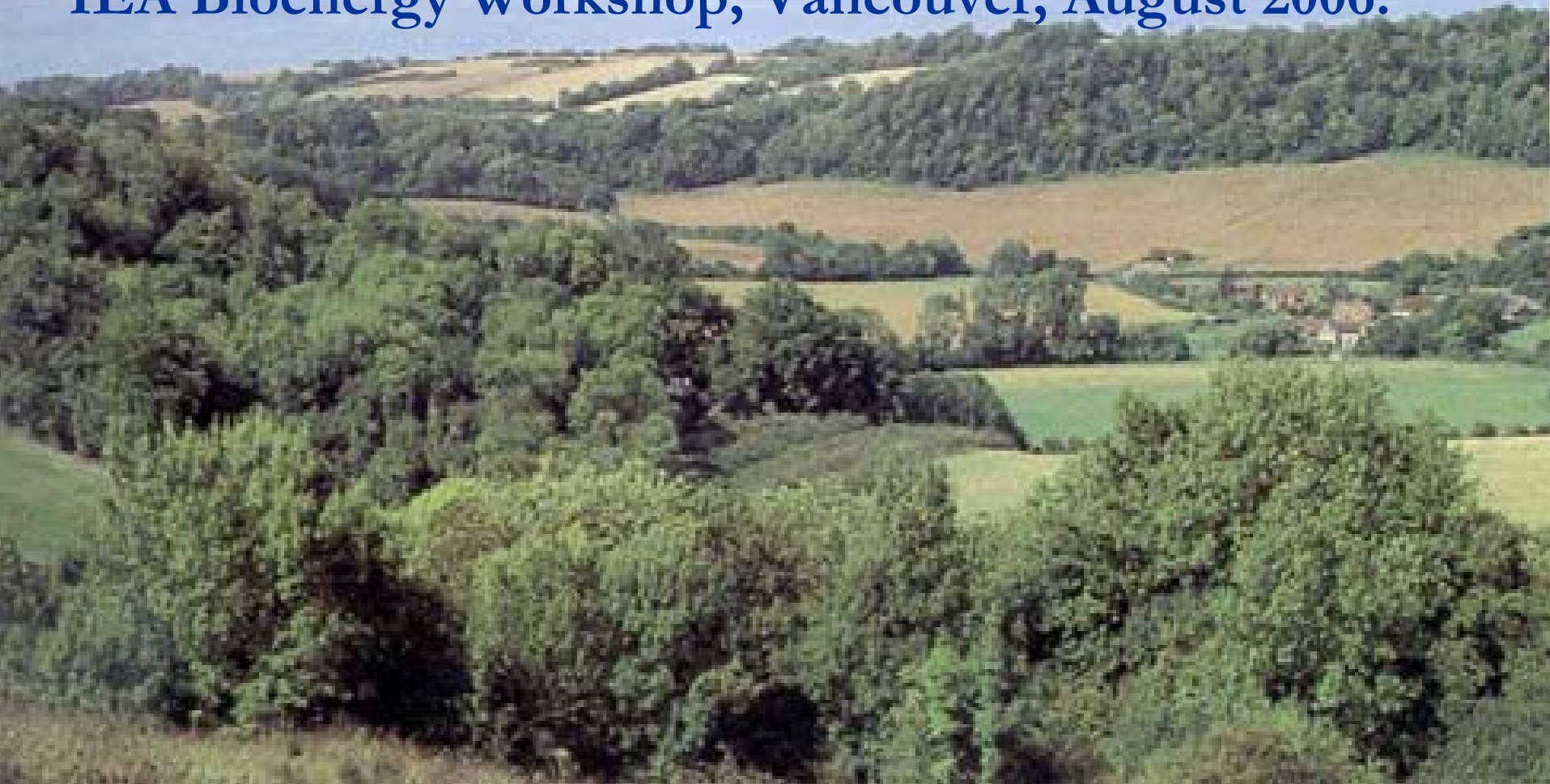


Increasing uptake of biomass energy via the energy services approach

Andrew Lamb, TV Energy

IEA Bioenergy Workshop, Vancouver, August 2006.



This presentation

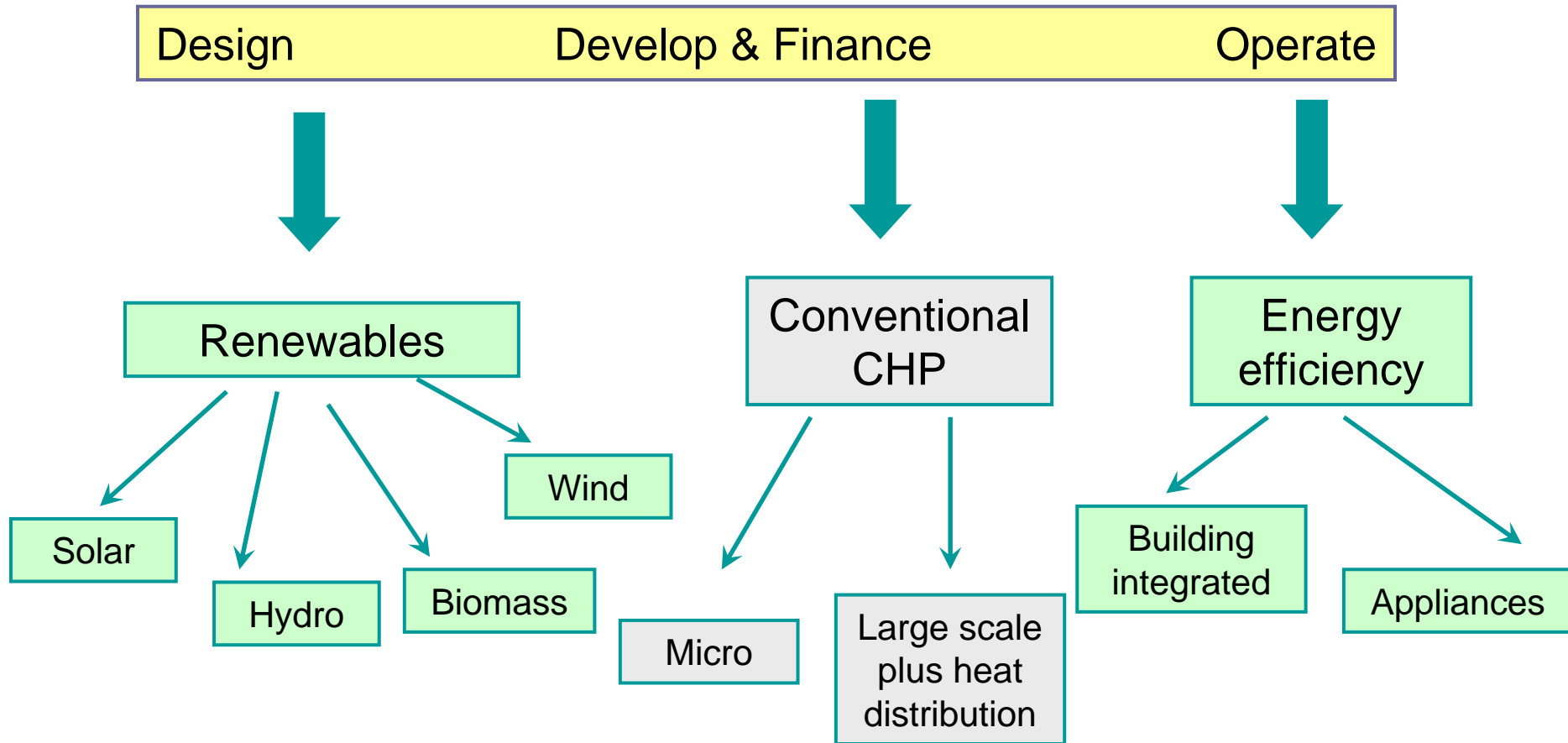
- The energy services approach
- Why the role for energy service companies?
- ESCos emerging in UK & elsewhere
- Immediate opportunities

Energy services

- Energy efficiency performance contracting is a well established industry.
- e.g. examined under IEA Demand Side Management Task X.
- We use the same concept applied to supply & demand.

“Local generation of heat, cooling & / or power coupled with energy efficiency measures, delivered from feasibility to operation by one company”

An illustration



What is an ESCo?

- A complete energy solution
- Energy generated locally, can include heat, cooling & electricity
- May include conventional as well as renewables
- Energy efficiency integral to the service
- Long term contracts with energy prices escalated according to an agreed formula
- Flexibility in governance
 - Full third party own/build/operate
 - Client owned with functions contracted out

Why is delivery of sustainable energy difficult?

- Uncertainties & risks – both real & perceived
- Capital costs are high & front loaded
- Energy is not core business for local authorities & other potential lead organisations
- Human capacity lacking
- Human resources lacking

...not a complete list!

A delivery gap at medium scale

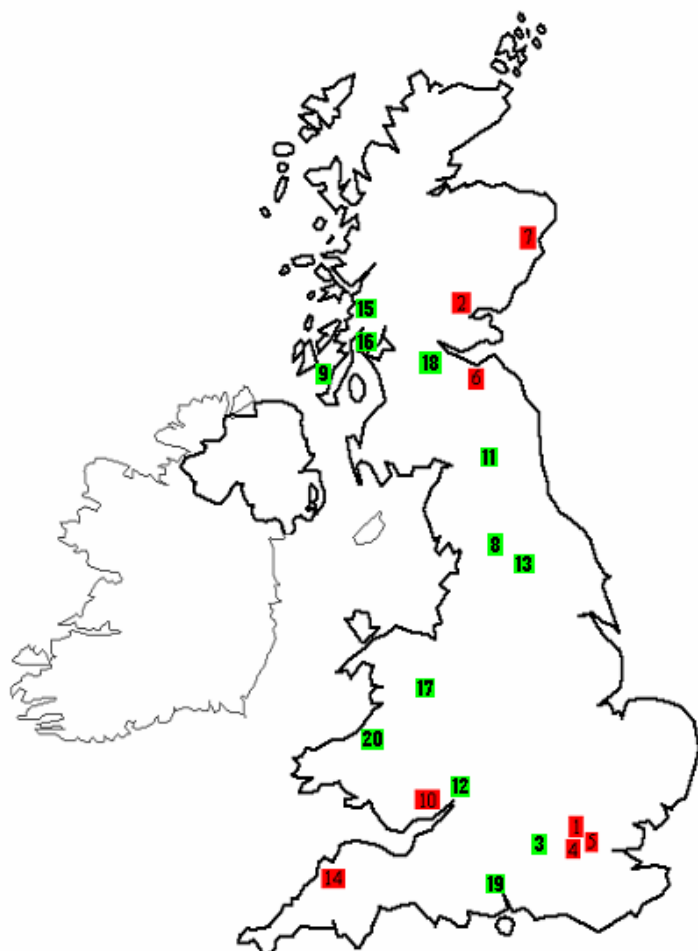
- Large scale projects
 - Favoured by utilities and finance organisations
- Small / micro scale
 - Householders to be supported
- Medium scale
 - e.g. LAs, housing associations, SMEs
 - Many opportunities
 - BUT potential hosts are unable to take them forward

What does an ESCo bring?

- All expertise required:
 - Technical
 - Financial
 - Commercial
 - Legal
- Takes on all or part of the risk by taking ownership
- Host has options for scale of their role & share of investment
- With experience, replication will be easier
- With increased no of projects, commercial benefits of scale & portfolio

ESCos emerging in the UK

United Kingdom of Great
Britain and Northern Ireland



1. London Borough of Waltham Forest
2. Perth
3. Woking Borough
4. Pimlico, London
5. Barkantine Estate
6. Edinburgh University
7. Stockethill, Aberdeen
8. Linthwaite, West Yorkshire
9. Gigha, Scottish Highlands and Islands
10. Lydney, Gloucestershire
11. Keilder, Northumberland
12. Worcestershire County Hall
13. Barnsley, South Yorkshire
14. Holsworthy, Devon
15. Glenshellach, Oban, Scotland
16. Lochgilphead, Scotland
17. Llanwddyn, North Powys
18. Carstairs Junction, Scotland
19. Southampton
20. Nant yr Arian, Aberystwyth

And the London EScO

MAYOR OF LONDON

Press Release

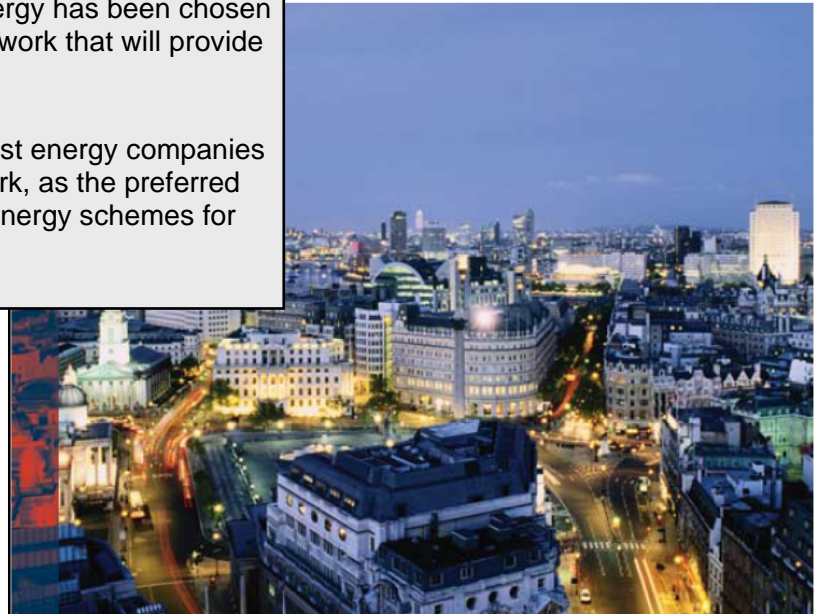
Mayor announces EDF Energy as partner to develop climate change initiatives for London

6-3-2006 142

The Mayor of London Ken Livingstone today (6 March) announced that EDF Energy has been chosen to work in partnership with the London Climate Change Agency to drive forward work that will provide decentralised, more efficient energy supplies for London.

The London Climate Change Agency has selected EDF Energy, one of the largest energy companies in the UK and the owner of London Energy and London's public electricity network, as the preferred bidder to set up a joint venture company whose remit is to develop sustainable energy schemes for London.

Green light to clean power
The Mayor's Energy Strategy



February 2004

Best practice in Europe

- In Finland, 1st schemes in mid-90s & now >250 in schools, municipal buildings, clusters of houses. 130MW of installed capacity using >400,000 m³ of wood chips. Turnover is Euro 7.6 million.
- Many Austrian boiler manufacturers offer leasing & ESCo packages
- There are several solar thermal ESCos in Austria e.g. Arnold Schwarzenegger stadium in Graz.

A number of project opportunities

- Local authorities (schools, leisure centres, housing)
- Private companies facilities
- Housing associations
- Business parks
- Community buildings

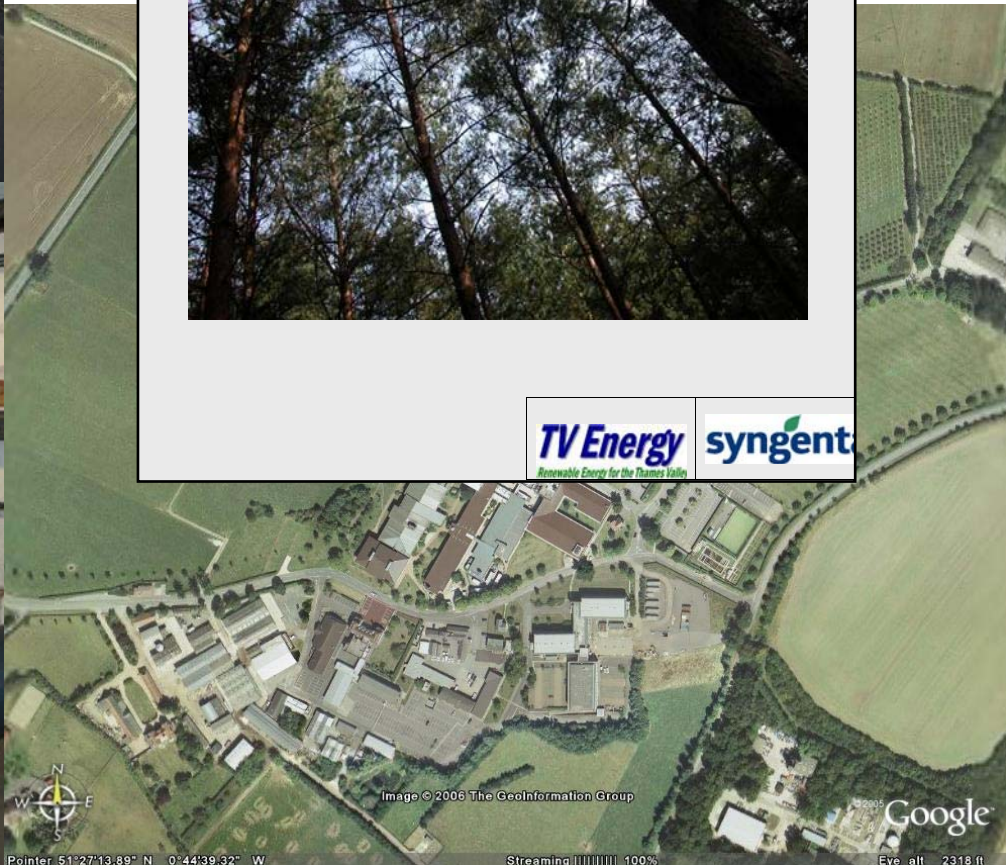


Syngenta, Jealott's Hill Renewable Energy Options

Project Reference: TVE 59

A Report to Syngenta, Jealott's Hill,
Building Services Management

April 2006



**District heating with biomass for Icknield Road,
Goring, Oxfordshire
Date: 5th May 2006
Client: Sovereign Housing Association
Author: Michael Beech, Technical Advisor**

This report explores the feasibility and is intended as an aid to discussions with the local planning authority in respect of using biomass in the form of locally supplied woodchip to fuel a boiler to provide heating and domestic hot water via a district heating network to a proposed new housing development at Icknield Road, Goring, Oxfordshire.

Summary

The key findings of the report are as follows:

- The energy plant required to provide heating and domestic hot water to the 24 properties proposed is one 60kW woodchip boiler and one 120kW natural gas or oil fuelled boiler. The woodchip boiler would be expected to provide around 90% of the annual energy demand.
- The boiler house required for the boiler plant and associated equipment will be single storey with a footprint of 3m x 4m.
- The fuel storage facility will be a covered below ground bunker 3m x 4m x 2.5m deep.
- There will be a need for an additional vehicular access point from Icknield Road into the site to allow for woodfuel deliveries.
- There will be a need to thermally connect the boiler house to individual properties via a district heating network of pre insulated flow and return pipes around 600mm below ground level.
- The capital cost of the system is estimated at £190,000 +VAT excluding additional vehicular access requirements and utilities connections to the boiler house.
- The operating cost of the system is calculated to be £2,765 per year including boiler fuels, electricity for plant within the boiler house and maintenance charges. The identical heat and DHW demands supplied from an individual gas fired combi boiler in each property would result in an annual fuel cost of £3,600 to tenants and around £1,200 in annual servicing to Sovereign Housing Association.

cutting the carbon

Oxfordshire County Council has signed up to an agreement to reduce its "carbon footprint" and set a green example to other organisations across the county.

The council, which has been successful in securing an opportunity to work in partnership with the Carbon Trust on the Local Authority Carbon Management programme, already gets all its electricity from renewable sources and is working to encourage and develop renewable energy generation on its sites, such as small wind turbines and using plant material as a heating fuel.



Oxfordshire's Sustainable Business Partnership can advise local businesses on what they can do to improve environmental practice. For more information

contact the council's Environment Manager, Nita Robertson, on 01865 810421 or the Oxfordshire Sustainable Business Partnership on 01865 810480.



ESCo development

- Currently examining ways to develop ESCos with such hosts
- Successful ESCos are up & running but initial establishment not easy
 - public procurement process and ESCo business model conflict
 - ESCos give hosts capital investment options but equity investors are still required

Market drivers

Government targets to reduce fuel poverty: community energy provides a way of delivering affordable energy

Affordable housing including new build (40% of 30,000+ homes pa in SE): single landlord, fuel poverty, elderly tenants, public accounting rules give opportunities.

Softening gas prices & rising electricity prices improving environment for CHP.

Local Authority planning requires developers to implement 10%+ renewables / carbon savings.

Fossil fuel prices high & volatile. Wood heat - albeit supported by grants - increasingly financially competitive, especially off gas mains, close to wood resource, buildings with high load factor.

Large		
Medium Public	Mixed	Private
Small		

Public estate (50,000 buildings in UK) required to cut energy demand, increase use of CHP, increase electricity from renewables.

Expect to see more ESCos

- With these & other drivers, expect to see this approach become more widespread.

Thank You!

andrew.lamb@tvenergy.org

