Linking brownfields, bioenergy and biofeedstocks

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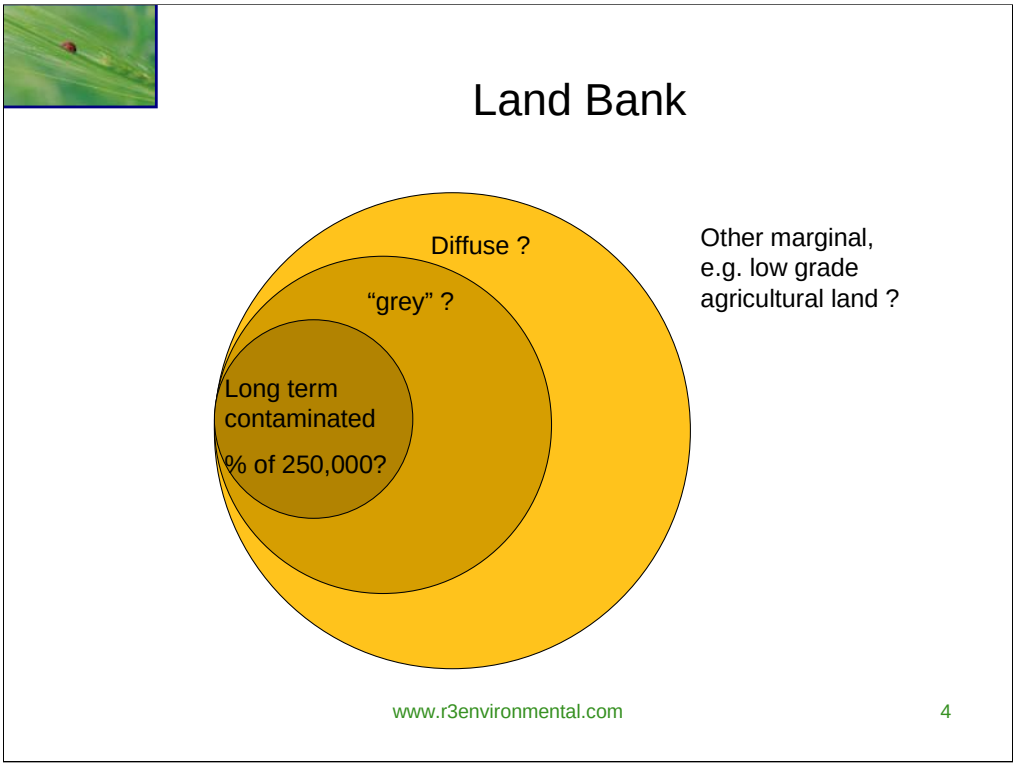
Contaminated sites in Europe

- August 2007 EEA concluded that soil contamination requiring clean up is present at approximately 250000 sites in the EEA member countries
- Possible increase by 50% by 2025
- A considerable share of remediation expenditure, about 35% on average, comes from public budgets
- The EEA concludes that it will take decades to clean up a legacy of contamination
  - "grey zone" of contamination that does not trigger clean-up
  - economic circumstances prevent clean-up
  - diffuse contamination
  - other marginal / under-utilised land



2005 NLUD, 2,200 sites; 17,000 ha sites over 2 ha

Refer to Envirolink NW study re neglected

•Research carried out by English Partnerships has identified more than 2,000 long-term or 'hardcore' sites nationally that have lain vacant or derelict since at least 1993. The majority are in the north of England and have an average size in excess of 8 ha (20 acres). These sites, totalling around 17,000 ha (42,000 acres), have failed to be regenerated because of a series of problems that include contamination, market failure, cost and planning difficulties.

•http://www.englishpartnerships.co.uk/page.aspx?pointerid=8C23CB9011F045EAB92C0CDD8E887076&thelang=001lngdef

•WRAP (2006a), which focused on the potential for the consumption of source segregated composts in regeneration projects. The survey identified almost 6,000 hectares of regeneration sites in the UK. The apparent discrepancy between the two is linked to the means by which the data were compiled. The data from the NLUD is based on input from Local Authorities, whereas that of WRAP (2006a) is derived from Regional Development Authorities. A further confusion arises over the definition and scope of Previously Developed Land and Brownfield land, which may not be synonymous, leading to discrepancies in the estimate of available land. Until there is clarification and a cross referencing of data from the two sources it will not be possible to compare the sources directly. A further issue is that the brownfield area referred to in WRAP (2006a) refers specifically to the area of regeneration projects within the RDA jurisdiction: by implication there are other brownfield sites which are not at present subject to restoration, which would probably include hardcore sites. Unfortunately this is not made explicit in the report but it could account for at least some of the discrepancy.

The Juniper report (Juniper, 2005) came up with a far larger estimate: 80,000 ha of derelict or contaminated land requiring remediation in the UK (excluding Northern Ireland).

This total is further substantiated by the total amount of derelict land potentially available to the Land Restoration Trust, estimated at 20,500 hectares

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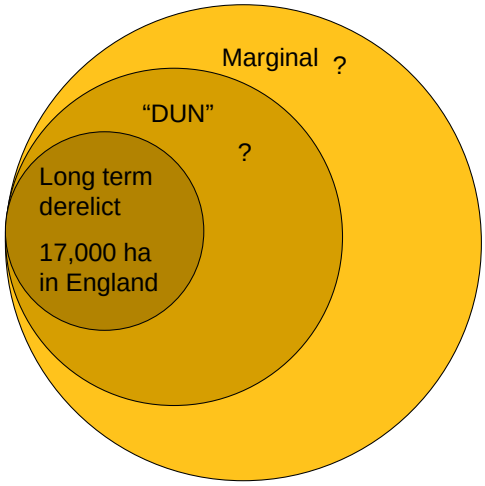
Land Bank in England?



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Land Bank

- PDL = previously developed land (encompasses brownfields)
  - National data collected
    - In England long term derelict – 17,000 ha unused for > 9 years - www.nlud.org.uk (sites ≥ 2 ha)
- DUN = "Under utilised" / neglected
  - Data has been collected in one region.
    - 2002/2003 FC / NWDA study identified 14,915 ha (over 1,627 sites) was PDL (sites ≥ 1 ha) BUT 26,385 ha of land across 3,893 sites as DUN Land. Of this 22,116 ha over 3,113 sites was thought to have potential to be reclaimed for soft end uses (community woodland focus)
- Otherwise marginal:
  - Diffuse contamination problems (e.g. around smelters); land "sterilised" for food production purposes
  - Low grade agricultural land in current use
  - Little data at this stage

TEP, (2003). *The Derelict, Underused & Neglected Land Survey of North West England, 2002: An unpublished survey report by TEP to the Forestry Commission and the North West Development Agency.*

Biofuels and other non-energy uses

- Bio-energy
  - Biomass
  - First generation biofuels (wheat, OSR, sugar beet)
  - Second generation biofuels (cellulosic)
- Biofeedstocks
  - plastics
  - cosmetics
  - cleaning products
  - pharmaceuticals
- Fibres
  - Hemp
  - Flax
- Often “commodities” also in the food market

Biofuels dilemma

- 10% fuel composition target call by EC
- NGOs such as Oxfam, Greenpeace and Friends of the Earth view “biofuel plans [as a] social and environmental threat”
- Significant sustainability impacts
  - Environmental issues: impacts on soil and water, limited C saving if any (e.g. N_2O), impacts on land-bank
  - Economic issues: global effects on commodity prices and land-use, subsidy driven market for unproven benefit; insufficient EU land bank for 10% target
  - Social issues: equitable access to food, uneven distribution of social impacts
- These sustainability impacts are largely linked to land bank and agricultural intensification

European Land Bank

- European Environment Agency Scientific Committee public opinion on the environmental impacts of biofuel use in Europe
- EU target to increase the share of biofuels used in transport to 10 % by 2020 should therefore be suspended
- 2006 report for EEA estimated the amount of available arable land for bioenergy production without harming the environment in the EU
- EEA Scientific Committee concluded the land required to meet the 10% target exceeds available land area even if a considerable contribution of second generation fuels is assumed
  - The assessment did not consider “marginal land”
  - The assessment did not consider organic matter re-use
- Can biofuel combined with marginal land re-use and organic matter return provide a more sustainable synergy

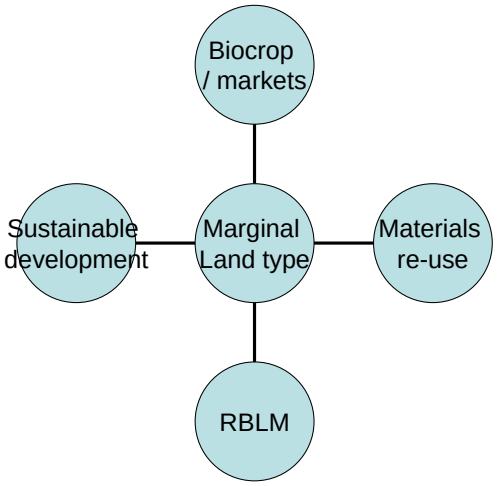
Mapping sustainability benefits? (examples – Markham Willows)

	Environmental	Economic	Social
core	• soil functionality • resources • land stewardship • carbon / energy	• self-funding • revenue generating	• removal of blight
wider	• biodiversity •Reducing pollutant fluxes (linkage with charcoal technology?)	• employment • capital appreciation • local business	• amenity • education & training

Our message

- In an overall sense the whole is greater than the sum of the parts
  - For example, even if there are doubts over the C-saving of the biofuel, there is a C-saving in the land management etc an other wider benefits

Rejuvenate Project Concept



“Opportunity Matrix”

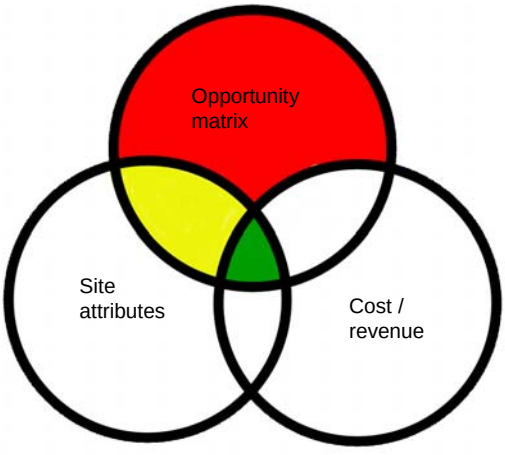
- Marginal land problems
- Risk management
  - RBLM approaches (extensive approaches?)
- Non-food crops
  - biomass, fuel, biofeedstock, fibre
  - markets – regional perspectives
- Materials re-use
  - organic matter return
- Carbon
  - Temporary – carbon sequestration
  - Permanent – fossil fuel displacement
- Wider sustainability

Evaluation approach

Green = solution

Amber = possible solution

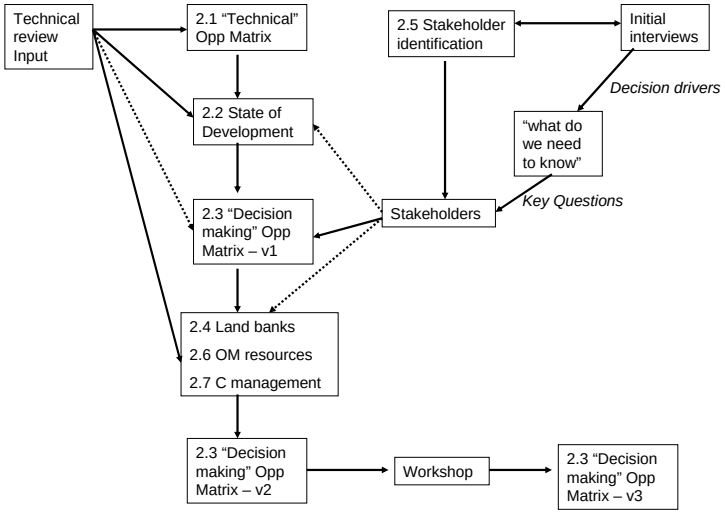
Red = inappropriate solution



Rejuvenate aim

- To identify generic opportunities for and barriers to combining non-food crop production with risk based land management for economically marginal degraded land (i.e. areas of degraded land that have remained under utilised for protracted periods of time)

Tasks


Technical review Input
2.1 "Technical" Opp Matrix
2.5 Stakeholder identification
Initial interviews
Decision drivers
2.2 State of Development
"what do we need to know"
Key Questions
Stakeholders
2.3 "Decision making" Opp Matrix – v1
2.4 Land banks
2.6 OM resources
2.7 C management
2.3 "Decision making" Opp Matrix – v2
Workshop
2.3 "Decision making" Opp Matrix – v3

Timetable

- Initiation imminent
- Project duration < 12 months
- Scoping study for hopefully bigger and better things

Getting involved

- Stakeholder consultations
  - Let us know if you are interested
- “Incubations” workshop
  - Putting different groups of people in touch with each-other to create the opportunity for real projects
- Web page of course

Thank you

- Please get in touch if you are interested:
  - paul@r3environmental.co.uk