

# Examining Trade-Off Issues in the Development of Policies to Promote Sustainability

Neil McRoberts

SAC  
West Mains Road, Edinburgh, EH9 3JG, Scotland  
Email: Neil.McRoberts@sac.ac.uk

## Introduction

Sustainability is an elusive concept. There is consensus about the basic components of sustainable system. There is also consensus about the fact that sustainable systems involve conflicts between competing goals. Here we illustrate some methods for examining how the evolution of policy can be modelled in a way that allows different ways to resolve trade-off issues between different goals to be studied.



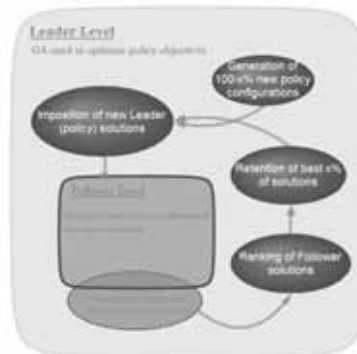
The bits of sustainability about which there is consensus



Where do we find the right balance between competing goals? There is less consensus about where sustainable systems lie in the space defined by the main components of sustainability

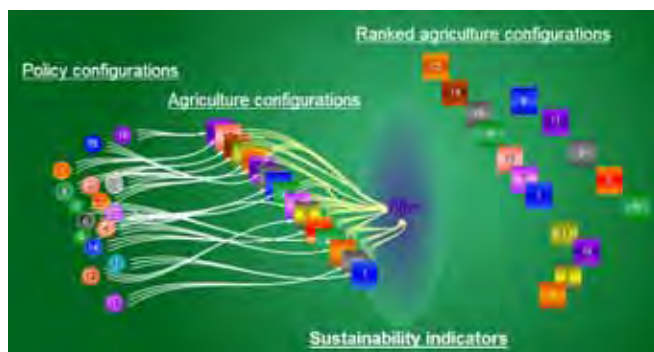
## Modelling Policy Evolution to Mimic the Real World

Nature deals with trade-off problems all the time in fitting organisms to their environment. Policy development can be studied in the same way; by using an evolutionary approach.



In the real world, policy-makers and farmers have different goals and operate at different levels. Policy makers depend on farmers to deliver agri-environment policy, but the goals of individual farmers only partly match those goals and will try to optimise their own situation given the context. The "best" policies are ones that produce both what policy makers want and what farmers want. We study whether good policies can be developed by using a model which mimics the structure of the real world problem.

## Sustainability Indicators Filter out Bad Policies

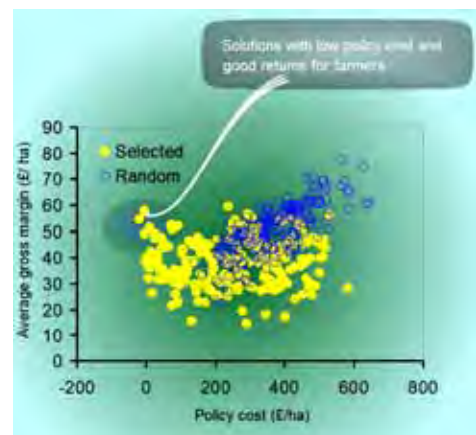


Different policy configurations lead to different behaviour by farmers and hence different configurations for agriculture. These different configurations for agriculture satisfy sustainability indicators to different degrees and this allows a mechanism to rank policies and choose from among the possibilities.



By looking at the values of indicators in a large number of different policy configurations in the model we can see how the different sustainability indicators are correlated in the world of the model. Analysis of the correlation structure allows integrated indicators to be identified.

## Policy Evolution Can Circumvent Trade-Off



A potential trade-off between policy makers' economic utility and farmers' economic utility can be overcome in some policy solutions

## References

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## Acknowledgements

Thanks to Andrew Barnes, Kostas Ververidis, Kairsty Topp, Alan Renwick, Clare Hall and Keith Matthews

Further information on this work is available from:  
Dr Neil McRoberts  
SAC  
Land Economy & Environment Research Group  
Edinburgh, EH9 3JG  
Tel: 0131 535 4154  
Email: Neil.McRoberts@sac.ac.uk



This programme receives financial support from RERAD