

# **DETERMINANTS OF THE UPTAKE OF RENEWABLE ENERGY GENERATION PRACTICES ON UK FARMS**

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# BACKGROUND AND PURPOSE



Photo: Farmers' Weekly

- ❑ Past research found RE uptake disappointingly low
- ❑ Numerous barriers documented...
- ❑ Apply a modelling approach to identify factors that predict uptake, including their relative importance

# METHODS

## Online survey of 700 farmers from Farmers Weekly Database during May-June 2013

<i>Variables</i>	<i>Measurement</i>
<b>Uptake</b>	<b>Yes/No (RE = solar, wind, AD, biofuel, hydro, geo)</b>
<b>Age</b>	Up to 24 years, 25-44 years, 45-64 years, and $\geq 65$ years
<b>Gender</b>	Male/Female
<b>Education</b>	Secondary, FE/Apprenticeships, graduate, post-graduate
<b>Annual business turnover</b>	<£10,000, £10,000-19,999, £20,000-29,999, £30,000-49,999, £50,000-99,999, £100,000-199,999, £200,000-499,999, $\geq$ £500,000
<b>Farm size</b>	<20 ha, 20-99 ha, 100-199 ha, 200-499 ha, and $\geq 500$ ha
<b>Enterprise type</b>	Arable, livestock, mixed, and other (including forestry)
<b>Ownership status</b>	Owner, tenant, other

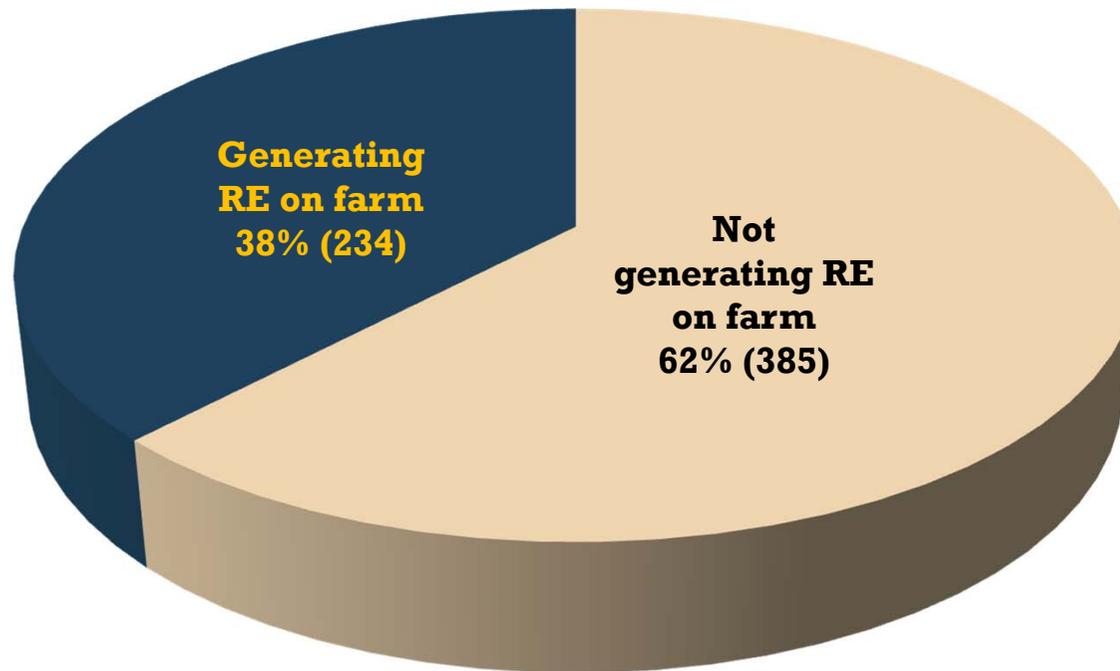
# METHODS...CONTINUED

<i>Variables</i>	<i>Measurement</i>
<b>Attitudes towards renewable energy enterprises</b>	<ul style="list-style-type: none"><li>▪ Likert's Method of Summated Ratings</li><li>▪ 10 statements – six positive, four negative</li><li>▪ Scale: Strongly Disagree to Strongly Agree</li></ul>
<b>Perceived institutional and market constraints in the business environment</b>	<ul style="list-style-type: none"><li>▪ Likert's Method of Summated Ratings</li><li>▪ Six constraints:<ul style="list-style-type: none"><li>✓ Raising start-up capital</li><li>✓ Getting planning permission</li><li>✓ Getting credible information</li><li>✓ Finding markets</li><li>✓ Getting community support</li><li>✓ Accessing grants</li></ul></li><li>▪ Scale: Five point from “very easy” to “very difficult”</li></ul>

**Model: Binary Logistic in SPSS 20**

# RESULTS – RE GENERATION ON UK FARMS

**Renewable energy generation on farm (N=619)**



# RESULTS – FACTORS AFFECTING UPTAKE

	B	S.E.	Wald	Sig.	Exp(B)
Constant	-3.733	1.325	7.934	.005	.024
Age (Up to 24 years) (ref category)			2.310	.511	
Age(25 to 44 years)	.653	.481	1.839	.175	1.920
Age(45 to 64 years)	.697	.466	2.232	.135	2.007
Age (65 years and over)	.678	.603	1.266	.260	1.971
Education (Up to Secondary) (ref category)			3.232	.357	
Education (FE or Apprenticeship)	-.351	.368	.909	.340	.704
Education (University Degree)	-.246	.428	.329	.566	.782
Education (Postgraduate Degree)	.612	.645	.899	.343	1.844
Gender (Male)	.151	.421	.128	.720	1.163
Enterprise (Arable) (ref category)			1.690	.639	
Enterprise (Livestock)	.202	.426	.224	.636	1.223
Enterprise (Mixed)	.421	.377	1.246	.264	1.523
Enterprise (Other, incl forestry)	-.240	.974	.061	.805	.787
Ownership (Owner) (ref category)			5.242	.073	
Ownership (Tenant)	-1.381	.603	5.239	.022*	.251
Ownership (Other)	-.121	.344	.123	.726	.886

	B	S.E.	Wald	Sig.	Exp(B)
Farm Size (<20ha) (ref category)			6.352	.174	
Farm Size (20ha-99ha)	-1.208	.585	4.274	.039*	.299
Farm Size (100ha to 199ha)	-.816	.630	1.674	.196	.442
Farm Size(200ha to 499ha)	-1.208	.654	3.410	.065	.299
Farm Size (500 ha or more)	-.551	.715	.593	.441	.577
Turnover (£<10k) (ref category)			11.712	.110	
Turnover (£10k to £19,999)	1.433	.831	2.974	.085	4.193
Turnover (£20k to £29,999)	.307	1.086	.080	.777	1.360
Turnover (£30k to £49,999)	1.479	.837	3.127	.077	4.390
Turnover (£50k to £99,999)	2.043	.782	6.819	.009**	7.710
Turnover (£100k to £199,999)	1.749	.808	4.685	.030*	5.746
Turnover (£200k to £499,999)	2.092	.790	7.019	.008**	8.105
Turnover (£500k or over)	2.435	.815	8.932	.003**	11.417
Attitude to RE enterprises	.106	.019	32.003	.000***	1.112
Constraints in business environ	-.122	.037	11.032	.001***	.885

**Pseudo R<sup>2</sup> = 24% (Cox & Snell R<sup>2</sup>) and 32% (Nagelkerke R<sup>2</sup>)**

# CONCLUSIONS

- ❑ Age, gender, education, enterprise type have nothing to do with uptake.
- ❑ Tenant farmers and those perceive higher constraints are less likely to adopt RE.
- ❑ Attitudes and income have positive effects.
- ❑ However, income is the strongest predictor.

# KEY LESSONS

- ❑ Reduce constraints and influence attitudes
  - ❑ Simplify processes and regulations for planning permissions
  - ❑ Community-based models to reduce resistance?
  - ❑ Increase credibility of information – time to rethink about public advisory services?
- ❑ Support low-income, small farmers
  - ❑ Promote small-scale technologies and create financial incentives for small scale RE producers
  - ❑ **Given the proposed FiT cuts, are small farmers going to be out of the show?**