PhD Case Study – Dr Charles Warren

Senior Lecturer, Geography and Sustainable Development, University of St Andrews

A childhood fascination with glaciers led Charles Warren into a career as a geography lecturer, enabling him to pursue his twin interests in glaciology and environmental management. He set up the UK's first interdisciplinary sustainable development degree, which was phenomenally successful, and his work on renewable energy, conservation and land use has had a significant impact on government policy.

"Most glaciologists get into the subject because they like mountains, and I'm no exception," says Charles. "I've always loved cold, snowy places." The lure of snow and ice took him to Iceland for his undergraduate geography dissertation, before embarking on an MSc in natural resource management and then a PhD in glaciology, funded by NERC.

The PhD involved two summers in West Greenland, mapping and surveying glaciers and interpreting aerial photos. As well as skills in fieldwork, mapping and expedition logistics, Charles had a crash-course in disaster management when the engine of their only boat failed early on, so that the whole project had to be redesigned.

"It was an extraordinary roller-coaster," says Charles. "Three years of work with no guarantee of success at the end tests your confidence to destruction." But he succeeded in testing a new model of how glaciers break up when they reach the sea, which has important implications for sea-level rise. The model is still in use today and has just received a large grant for further development.

Charles went on to lecture in geography at the University of St Andrews, where he set up specialist honours courses in both glaciology and environmental management, and then the UK's first undergraduate degree programme in sustainable development, designed within a radically interdisciplinary structure. This started with a new first year module on sustainability in 2001, triggered by a partnership with Forum for the Future, which rapidly grew into a full programme.

"It was really exciting – it took off way beyond expectations," explains Charles. "The student enthusiasm was electrifying. We expected 20 students, but by the end of the first week we got 75, and they were demanding a full degree course." This was complex and stressful to set up, involving staff from 11 departments and three faculties. However, it resulted in the UK's first genuinely multidisciplinary undergraduate course, combining divinity (ethics), international relations, history, geography & geosciences, social anthropology, biology, chemistry, physics, maths & statistics, and winning a number of awards including the Times Higher Award for sustainable development in 2006.

Meanwhile, Charles' own research has had an influence on policy. His book *Managing Scotland's Environment,* published in 2002 and reprinted in 2009, has been widely cited and is a course book in many

universities both in the UK and the United States. The book pulls together a wide range of hot topics including land reform, the future of farming and forestry, moorland conservation, public access, birds of prey, deer management and the control of alien species, and has influenced both policy makers and NGOs. His work on re-wilding – including the potential for re-introduction of species such as wolves and beavers - continues to inform the public debate on the future of Scotland's wildlife.

He tackles another controversial topic: public attitudes to renewable energy, especially wind farms. A study showing that community involvement in wind farms can improve their acceptability has been cited on the government website and covered by the BBC, as well as receiving the dubious honour of provoking hate mail from the anti-wind lobby.

His work on the effectiveness of regulations to cut nitrate pollution from fertilisers has also affected policy, after he showed that the first version of the legislation had little effect on farmers' behaviour. The Scottish government cited his research in their review, which resulted in tighter regulation and more effective control over the timing of fertiliser application.

Combining his passion for cold, wild places with his interest in sustainability, Charles is a trustee of Plateau Perspectives, a charity that helps local communities and government leaders promote sustainable livelihoods in the Tibetan Plateau region of China.

Career timeline

1982-1985	MA Geography, University of Oxford
1986-1987	MSc Natural Resource Management, University of Edinburgh
1987-1990	PhD Glaciology, University of Edinburgh, funded by NERC
1990-1993	Post-doctoral research, University of Edinburgh
1995-2003	University of St Andrews, Lecturer in Physical Geography
2003-present	University of St Andrews, Senior Lecturer and Director of Teaching for Geography & Sustainable Development