SUCCESSFUL APPROACHES TO WORKING WITH THE AGRICULTURE SECTOR TO REDUCE GREENHOUSE GAS EMISSIONS AND MINIMISE THE LOSS OF VALUABLE RESOURCES

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Australian agriculture has only a 200 year history, but in some areas, cultivated land use extends back only a matter of decades. This presents an unusual, if not unique set of challenges and opportunities amongst Annex I countries for managing greenhouse gas emissions from farming systems. As elsewhere, land managers in Australia are currently moving rapidly through a number of distinct stages relating to capacities, motivations, and priorities, but in Australia these are firmly superimposed on rapid changes in land use from natural (or virgin) ecosystems to highly managed production units.

At the present time, Australian farmers possess an unprecedented capacity to impact – both positively and negatively – on the environment, and they are driven by the dual motivations of achieving a competitive return from resources while maintaining or improving the real asset value of the land. An important feature of this phase is the emergence of a large range of advisory services and management tools designed to assist with meeting the responsibilities and priorities of modern-day land managers. *Environmental Management Systems* and similar tools are already generating multiple benefits – for the individual farmer, for the wider community, and for the environment. At times, such outcomes have been purposely engineered, while at other times they have arisen much less deliberately.

While the reduction of greenhouse gas emissions is a relatively new environmental issue for Australian agriculture, it lends itself well to being managed as a part of an holistic approach such as an *EMS*. Regardless of the farming system, it is clear that emissions of greenhouse gases represent an escape of valuable resources from the farm – whether these emissions are related to organic carbon, nitrogen, feed energy or inefficiencies in the use of fuel or electricity.

Emissions of nitrous oxide and methane alone from Australian agriculture account for about 18% of Australia's total emissions, and hence mechanisms to reduce emissions from agriculture have the potential to contribute substantially to reductions in the national emissions profile. The Australian Government's *Greenhouse Challenge Plus for Agriculture Programme* is presented to demonstrate the way that EMS-type approaches in agriculture can be utilised to better manage and reduce greenhouse gas emissions at both the farm and sectoral level. These approaches are based on increasing the efficiency of resource use, while at the same time recognising and harnessing the factors that drive change within agriculture. Improved on-farm management is being implemented for multiple production, financial, and greenhouse gas benefits.