Salinity: a major environmental crisis in Australia

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Despite the fact that salinity has been destroying the productive capacity of land in Australia for decades, it is only relatively recently that governments have recognised the extent of the problem and made the first limited proposals on a national scale to slow the process.

According to recent surveys, some 2.5 million hectares of land has already been affected by salt rising from the water table. The area is comparable with that of a number of small countries including Switzerland (4.1million hectares) or the Netherlands (3.8 million hectares). Dr Tom Hatton from the CSIRO Land and Water Department warns that the area affected by salinity is likely to increase to 15 million hectares in the coming decades. Western Australia the worst affected state has 1.8 million hectares increasing at the rate of one football field an hour. Much of the land that has been affected is in the most productive agricultural areas.

The National Land and Water assessment found that dry land salinity puts 5.7 million hectares of current farmland at high risk and predicts that a total of 17.1 million hectares could be affected by 2050. Also at high risk are some 19,800km of roads, 1,800km of railways, 11,801km of streams and lake frontages, 360 towns and 80 important wetlands. The entire water supply of the state of South Australia, which is drawn from the Murray-Darling river system, is under threat as well.

According to Alex Campbell, chairman of Australia's National Dryland Salinity Program, 80 regional town and cities have costs related to salinity and even Sydney is being affected. The costs include damage to buildings, bridges, pipelines and roads. John Conor, director of the Australian Conservation Foundation (ACF), estimates the costs at $1 billion a year—including agricultural losses of over $130 million, infrastructure costs of more than $100 million and lost water resources of $100 million.

Salinity has mainly been studied as an agricultural problem so there is very little information about the effects on other aspects of the ecosystem. But Dr Paul Bailey from Monash University has commented that the impact of salinisation on loss of biodiversity and ecological damage is likely to be very high as well.

Soil salinity is directly related to the extent of land clearing and removal of the trees. The native vegetation in Australia evolved so as to be salt-tolerant with deep roots and a high demand for water. But large areas of forest and woodland have been replaced by commercial crops and pasture plants with shorter roots and less demand for water. As a result more water flows into the groundwater and causes the water table to rise to the surface, bringing with it dissolved salts.

There are two kinds of soil salinity: dryland salinity and irrigated land salinity, which is the product of using groundwater for irrigation. One estimate put the minimum number of trees cleared over the past century from the Murray Darling basin alone at 15 billion, with similar numbers cleared in Western Australia. The same study calculated the rate of land clearing at 300,000 hectares per year in 2001.

It was believed that much of the land degradation in Australia was a product of hundreds or even thousands of years of erosion. However, new research by the CSIRO Land and Water Department in several catchment areas suggests that much of the deterioration has taken place comparatively recently—over as little as the last 30 or 40 years. This is consistent with the fact that the Western Australian wheatbelt, one of Australia's youngest farming regions producing a large annual wool clip and 40 percent of the Australia's grain, is also one of the most degraded.

The problem of salinity was first described by Walter Ernest Wood as early as 1924. But it was completely ignored until 1970s when some steps were taken to scientifically study it. The first national attempt to deal with the issues of land degradation, salinity and sustainability—the National Landrace Program—was only established in 1992, following negotiations between the National Farmers Federation (NFF) and the Australian Conservation Foundation (ACF).

The National Landrace Program was limited to the education of groups of volunteer landowners in what was called sustainable production. But for many farmers facing financial difficulties, the allocation of land to alternate uses with lower incomes was simply not an option. One farmer commented scathingly in the *Australian Farm Journal* of the "greening officers" who "thanks to an alternative income in the preaching game they don't face the compromises necessitated from trying to earn a living of the land."

In 1997, the Federal Government established the Natural Heritage Trust with funding of $1.5 billion over six years, to promote the conservation and sustainable use of the natural environment. Like the National Landrace Program, the trust is based on the voluntary involvement of landowners on a piecemeal basis. Even federal agriculture minister Warren Truss who was responsible for the program indicated in an article in the *Farm Journal* last year that degradation problems are getting worse in many areas.

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The first national proposal to address the issue of salinity and water quality directly—the National Action Plan— was only endorsed at the Council of Australian Governments (CAG) last November. Its combined funding from the Commonwealth, states and territories amounts to just $1.4 billion over seven years, or $200 million a year.

The government's "Action Plan for Salinity and Water Quality in Australia" claims that it will provide the necessary skills, information and substantial funding to community-based organisations for the development and implementation of integrated catchment or regional, natural resource management plans. It suggested that 20 catchments/regions highly affected by salinity be addressed first.

The funding, however, is grossly inadequate. The NFF and ACF estimate that at least $65 billion is necessary over 10 years to deal with salinity and water quality issues. According to ACF director John Conor, it is like buying a health insurance policy for 50 cents a week. Commenting on the individual components of the plan, CSIRO scientist Dough Cocks said: "Most are just very small relative to the size of problem they address. None of these programs have more than a token program to understand and combat the treat."

The real source of the problem of salinity and land degradation lies in the basic operations of the capitalist market. Vast areas of land have been cleared and exploited for agriculture not on the basis of any rational planning but solely according to its ability to return a short-term profit. As a result the long-term consequences are inevitably sacrificed to the immediate expediencies of the market. Even when they are aware of the dangers, farmers are constantly caught in the bind of trying to make ends meet.

An article in the *Australian* newspaper entitled "Drying out a thirsty industry" referred to a case in point involving farmers in the Wakool region where rice-growing has contributed to devastating dryland salinity. "Only financial imperatives keep people such as Mr. Vial in the game. Just 6 percent of his 3,000 hectare property is under rice cultivation, yet that crop represents an average 70 percent of his annual income."

Under conditions of declining commodity prices, many farmers face similar dilemmas. According to recent figures, 70 percent of farms are not making any profit. In the Western Australian wheatbelt, the area most heavily affected by salinity, the average wheat farm produces only 37 percent of the income required for a family to live on and operate with bank debts of between $300,000 and $500,000.

With the best of intentions, many farmers are simply not in a financial position to take part in salinity control programs, which involve the reduction in the area devoted to crops and thus a further loss of income. For instance, one proposal to control salinity—the perennial pasture production system—would involve an estimated fall in return per hectare from $600 for land under crops to $100 for pasture land.

The Australian Bureau of Agriculture and Resource Economics (ABARE) in a document entitled "Alternate policy to natural resource management" released in February tacitly acknowledged the role of the market but then sheets the blame home to individual farmers. "A major cause of the decline in the condition of our natural resource is market failure, where individuals using natural resources fail to take into account of the off-site effects of their actions on others or on the resource base itself. This is generally because prices do not provide the incentive for landlords to act accordingly as they do not take into account the full costs and benefits arising from those activities."

Translated from the turgid language of economists, ABARE is arguing is that agricultural prices determined by the market do not take into account the broader costs and long-term impact on the environment. According to the bureau, the difficulty is "inappropriate institutional arrangements and poorly defined property rights". It proposed an elaborate Natural Resource Management (NRM) trading system and NRM Credit Pool, which are supported by the ACF and NFF, to rectify this anomaly of the capitalist market by providing alternative incomes to landlords for delivering particular environmental outcomes.

All such schemes, however, ignore the fact that the failure of the market to take into account the long-term costs to society is not an anomaly but fundamental to its operations. Moreover, any attempt to top up the income of farmers to assist in dealing with salinity or other land use problems will inevitably founder on the same difficulty—the anarchy of the market. Any assistance will be undermined by commodity price falls, comprising the viability of the farms and driving farmers to boost their immediate return through dubious land use practices.

The obvious solution to the problem is more rationally planned land use, both to provide the food necessary for the survival of humanity and to ensure that the production is ecologically sustainable. Such proposals are technically possible—agricultural scientists have devised various schemes to minimise the risk of salinity and engineers have developed various methods of salt interception. But within the framework of the profit system any attempt to implement such a scheme invariably runs up against the anarchy of the market and the restrictions of the nation state system.

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