

Submission regarding Central Plains Water Scheme

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To the CPW Commissioners,

My oral submission in relation to the CPW scheme is a personal submission and does not represent that of my employer the CDHB. The concerns that I would like to discuss are in relation to four issues, which are not likely to be covered in depth by other submitters. These issues include:

- (a) New Zealand is already falling far behind in becoming carbon neutral, with our greenhouse gas emissions nowhere near being matched by carbon sinks. Further increasing dairy production will render carbon neutrality an even more difficult objective.
- (b) One disadvantage of dairying is that it has high fresh water demands. Reputable data obtained by the CSIRO has demonstrated that other agricultural products can deliver greater profits for a fraction of the water requirements.
- (c) Dairying is a fertiliser demanding industry especially on marginal land. The expeditious use of chemical fertilisers, in particular phosphate, is recognised as a major driver in the rise of food prices in addition to oil. New Zealand already uses more phosphate per capita than any other country, and without the level of food calories produced to justify its rate of consumption.
- (d) It is also of concern that there is likely to be a rise in property prices in the area which are inextricably linked to commodity prices. A rise in property prices will place added pressure on the next generation of farmers, who will need to maintain high productivity to stay afloat, but who may struggle as fertiliser costs spiral upward. The experience in the USA is that many such farmers are being forced to subdivide their properties and encourage urban style developments on the land in order to pay off mounting debt. The net long term effect is that less and less farmland will be available for food production, a consequence that we can ill afford with a rapidly rising human population.

Further points to consider:

Farming practices that contribute to soil organic carbon sequestration (SOC) have been suggested as the best option towards long term food security, environmental protection, storage of atmospheric carbon, better nutrient retention minimising the need for finite agricultural inputs as well as reducing the need for irrigation. A number of soil experts around the world have suggested that increasing soil organic carbon is a critical step towards agricultural sustainability. The worldwide trend is

that SOC is being lost and not replenished largely because agricultural practices aim to increase productivity/profitability whereas long term soil sustainability is not a primary concern. Sequestering carbon in our soils, however, is not an overnight process, but one that takes many decades of sustained effort. The long term stewardship of the land towards such a goal is best achieved in the hands of families rather than short term joint stock investors. The latter are desperate to maximise short term profits, and are unlikely to give significant consideration to long term soil consequences.

A critical crossroad to the 21st century has arrived and we are being asked to reduce atmospheric greenhouse gas emissions. However the rate of newly planted forest carbon sinks has declined substantially in New Zealand over the past 5 years. One might expect that our response would be to substantially minimise agricultural greenhouse gas emissions. Instead, dairying increases carbon emissions to the atmosphere, pasture is not a valuable carbon sink, and little effort is being made in New Zealand to sequester soil organic carbon. Studies in the USA have shown that intensive pasture based dairy farming does not lead to the enrichment of soils with organic carbon. Livestock farming is responsible for more greenhouse gas emissions than the world's entire transport system put together (FAO "Livestock's Long Shadow"). Conventional tillage is also estimated to be responsible for one sixth of all anthropogenic greenhouse gas emissions. Perhaps a rethink in land use options and agricultural techniques may be in order.

As the cost of fertilisers such as nitrogen and phosphate are increasing, one might expect that our reaction would be to minimise their use in less intensive agriculture and develop ways of becoming less dependent on chemical fertilisers. One might also expect that our aim should be to stretch resources for future generations rather than deplete them as quickly as physically possible. The promotion of dairying on marginal land does the opposite, and encourages greater use of fertilisers. Many third world countries already cannot afford the luxury of phosphate. New Zealand's use of the resource is more focused in meeting the demands of the rich.

At a time when world hunger is increasing, phosphate is rapidly becoming depleted food prices are spiralling, conversion of precious forests to agricultural land is driving species to extinction, one might expect that we should be aiming to increase food calories per hectare. Dairy production is not the most efficient use of farmland for food production per hectare, nor with respect to water efficiency and yet New Zealand is increasing dairy production over other food commodities.

While the availability of clean fresh water around the world is becoming seriously limiting, one might expect that our response would be to become more efficient with the water we have and to protect ALL our aquifers not just town supply from contamination from nitrates. The expansion of dairying in Canterbury seems to be achieving the opposite i.e. encouraging greater fresh water consumption with the potential to pollute our aquifers and waterways with high nutrient load and leaching of nutrients into subsoil.

Most accountants would recommend that when investing money, the safest option is to spread the investment. Currently, the bulk of New Zealand's food calories ~two thirds emanates from dairy production. When the dairy sector is no longer profitable due to substantial rises in fertiliser costs, New Zealand may be in deep trouble by not having sufficient options to fall back on. Our future depends on agricultural diversification not on the further expansion of the dairy sector particularly in areas of Canterbury whose soils are poorly suited for the purpose. Our future is also dependent on adopting agricultural practices that increase soil fertility by increasing the soil organic carbon content in topsoil.

Below are some recent important news items and comments that have appeared internationally, but possibly not widely reported in New Zealand.

Quoted from the UK Business Times online

"Price of rock phosphate has leaped 700% in last 14 months"

"China has placed a 135% tariff on its rock phosphate"

"The soaring appetite for meat and dairy produce across Asia is stoking demand for phosphorus faster and further than anyone had predicted"

http://business.timesonline.co.uk/tol/business/industry_sectors/natural_resources/article4193017.ece

Soil management is the key to sustainable agriculture quoted from a review in the journal *Nature*:

*"We are already growing fatter (and hungrier), **depleting more soil organic matter**, drawing down more water tables, using more fertilizers and pesticides, losing more acres of forests and farmland." Consequently, he warns, "There is no longer the possibility of discrete failure; a collapse of one part of the system will have extraordinary ramifications for everyone else."*

Comment from Paul Roberts (Resource journalist and author of "End of Food").

"Furthermore, it is commonly recognised that the high quality reserves are being depleted expeditiously and that the prevailing management of phosphate, a finite non-renewable source, is not fully in accord with the principles of sustainability."

Ingrid Steen Phosphorus & Potassium, Issue No: 217