Standing Committee on Climate Change, Environment and Water

Inquiry into Ecological Carrying Capacity of the ACT and Region

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Introduction

This submission to the [“Inquiry into Ecological Carrying Capacity of the ACT and Region”](#) outlines an approach for our community to achieve ecologically sound resource consumption goals.

The Carrying Capacity of a region can be defined as the capacity of ***the Commons***, in its broadest sense, to support the community. The difficulty of exploiting ***the Commons*** sustainably is described in Hardin’s “The Tragedy of the Commons”.

“The tragedy of the commons is a dilemma arising from the situation in which multiple individuals, acting independently, and solely and rationally consulting their own self-interest, will ultimately deplete a shared limited resource even when it is clear that it is not in anyone's long-term interest for this to happen. “

The idea has been expressed in various forms with references by Aristotle and Thucydides in the Greek Classics, the 16th century School of Salamanca, and William Forster Lloyd in the 1833. The idea has become popular in recent times with the emphasis on sustainability of common resources such as fish, water, energy, and forests.

The problem can also be formulated as a multi player “Prisoners Dilemma”.

A modern solution - in the absence of enlightened self interest - is to institute some form of authority to solve the collective action problem. This takes many forms from regulation, assignment of ownership, enforceable agreements, to economic approaches of pricing the undesirable outcomes of exploitation.

Economic approaches are typically arranged as financial market mechanisms such as putting a price on carbon emissions or trading of water rights.

These modern solutions have mostly proven to be ineffective.

The few successes that have occurred have happened when the system gives a tangible immediate benefit to cooperating individuals.

A Solution to the Tragedy of the Commons

The following is a general solution to the Tragedy of the Commons that gives an immediate tangible benefit to individuals who agree to work with others for the long term common good.

To achieve sustainability of any resource and in particular to determine the ecological carrying capacity of the Canberra Region we do the following.

1. We Reward people who consume less of a resource.
2. We require the Reward to be invested in ways to increase the utility of the resource.

With this approach people have an incentive to consume less of the Commons and when they do consume less their Rewards are invested in ways to increase the utility of the resource.

This sets in place a feedback loop where targets for the utilisation of the resource can be set and achieved - whatever they may be. We know that investment increases productivity. That is through investment we do more with less, hence we can achieve any target required for sustainability by varying the amount of Rewards and hence investment. We monitor the results of our actions and adjust the Rewards, from experience, to meet our targets.

Some examples follow.

Water Sustainability

Let us decide that sustainability of water usage is achieved if the net usage of water is, say, x megalitres of water per day. That is, the amount of water used by Canberreans minus the amount of water discharged into the Murrumbidgee from Canberra is x megaliters per day.

ACTEW can estimate the amount of investment needed to achieve our goal over a period of say ten years. We Reward householders with interest free credit in inverse proportion to their amount of mains water consumption on a per head basis with a maximum amount for zero consumption. We set up an investment market place where individuals can invest in such projects as the Cotter Dam, or local ponding, or household recycling or reclamation of storm water or sewerage treatment and reuse. We measure the savings obtained from our investments and we adjust the Rewards to meet the targets. The loans are repaid from the profit generated by the sale of water and from the savings in water consumption.

It is estimated that Rewards of $40 million a year will be sufficient to remove the need for water restrictions. How much is required to meet any particular discharge target will be found from observing the system outcomes. The objective, whatever is set, can be achieved without the need to impose water restrictions nor increase the price of water nor increase borrowings or put any financial burden on the community - because the price of water to users in the ACT is higher than the cost of investing in water infrastructure to increase the utility of rain water.

If we have an increase in population or if there is a decrease in flows because of climate change we adjust the amount of investment through issuing more Rewards.

Zero Green House Gas Emissions

Let us decide that as a city we want to have Zero net ghg emissions within ten years. It is estimated that we can achieve this goal if we each invest - on average $3,000 a year over 10 years. Assuming a population of 360,000 this is about 1 billion each year for the next ten years.

To be equitable we could distribute the investment funds in inverse proportion to some surrogate of current consumption. The household consumption of mains electricity per head is such a measure.

Each person receives the right to take out interest free loans to be invested in ways to save ghg emissions. The loans must be invested through a market place of investments and we must put in place a compliance regime to ensure the money is invested appropriately. How to do this is discussed elsewhere but it can be done and achieved for less than 1% of the funds invested.

This will not cost the ACT government anything as the credit is allocated to the citizenry and is repaid from the profits on energy sales and energy savings. We know that almost all forms of renewable energy are profitable at today's prices - if we repay the loan over the life of the asset and we do not pay interest on our credit.

We know that the energy market will grow and we know that energy production is an essential part of achieving any sustainability goals so finding alternative sources of clean energy and investing in ways of saving energy should be a high priority.

A Sustainable Public Transport System

A sustainable public transport system is one where the total cost of transport for the citizens of the ACT continues to decrease year by year.

Let us set the goal of reducing the cost of transport per person by 5% per year. Let us measure the amount of money we currently spend on transport including public transport, walking, cycling, our cars, our roads and the cost of running our vehicles.

Let us now put in place a Rewards scheme that Rewards people for using methods of transport - including walking - that cost less than the average cost of transport. Let the Rewards be used to invest in projects that reduce the cost of transport including ways to make car use more efficient such as car pooling.

Obtaining the Funds for Rewards

A challenge facing governments is where to obtain the credit to issue as Rewards. A tried and proven method was used 100 years ago by the first Governor of the Commonwealth Bank - Sir Denison Miller. Miller lent money into existence - even though at the time the CBA did not have Reserve Bank responsibilities. The article by Ellen Brown http://www.huffingtonpost.com/ellen-brown/escaping-the-sovereign-de_b_669564.html outlines how Miller lent the government of the day the money to pay for the First World War and build much of the early Federation infrastructure. Miller achieved investments of hundreds of millions of pounds from a Capital Base of 10,000 pounds. The ACT government can do the same 100 years later to build a sustainable society. Reinstituting Miller's funding approach would be an appropriate activity to celebrate Canberra's Centenary.

Technology advances make the task much easier today than it was 100 years ago - but the principles remain the same. The ACT government with the assistance of a commercial bank, or of the Reserve Bank, or if neither of these will assist, with a bank of its own, can back interest free credit supplied to its citizens as Rewards for well defined community purposes.

This will not cause inflation because the credit will be used to create new goods and services of greater value than the credit issued.

The funds will be invested efficiently because they will be invested through open transparent market places.

Compliance will be high because citizens who cheat or abuse the system will be named and excluded from future distributions of credit.

The approach will be socially progressive because those who consume the least will get the greatest Rewards. As the poor tend to consume less they will obtain more Rewards.

Distribution of credit this way is itself a solution to the “Tragedy of the Commons” which has resulted in the Global Financial Crisis. Wealth is a Commons and our system of ownership and financial markets works to distribute wealth. With the scheme outlined we:

1. Reward those who have little wealth, and hence little consumption, with Interest Free Credit.
2. The Credit must be invested in ways to increase wealth by building new assets.

This will complement the current system, which remains in place, where:

1. We Reward people who have wealth by giving them access to interest bearing credit.
2. People mainly use their credit to purchase existing assets and so consume assets not create them.

The existing system of increasing the money supply results in an unstable financial system because credit is not only issued to those who have tangible assets but also to those who own loans. That is, we permit the expansion of the money supply by issuing credit on the basis of other credit. This must, and does, lead to an unstable supply of money. By introducing another method of increasing the money supply we have a tool to control the instability inherent in the existing system.

Distributing Rewards

For the system to be successful it is necessary for the distribution and control of Rewards to be well managed and efficient. This is best done through the use of open market places where suppliers of investments compete for investment dollars. We have many examples on the Internet where open markets work well and deliver excellent results. EBay, Amazon, Google are well known brands with open market places. The approach of these companies, and others like them, can be adapted and used in existing market places but where Rewards are permitted for investment.

Starting Rewards

The key to the Rewards approach is funding with interest free credit. The ACT government should first establish an appropriate process to create interest free credit for community use. This can be achieved in various ways and the most appropriate for the ACT should be chosen. This will involve the ACT government at the highest levels.

One area to start using funding is the issuing of Rewards for Water. Rewards can initially be used to purchase some of the debt from the commercial lenders to repay the funds being used to build the Cotter Dam. Rewards holders repay their loans from water sales when water is saved in the new Cotter dam and continue to receive payments after repayments are completed. Rewards can also be used for household and industrial water savings and reuse as well larger ponding and recycling projects.

Another area to start as soon as possible is Energy Rewards as a way to finance large scale solar, wind or geothermal energy plants that will supply the ACT and Region with bulk power. It can also fund household and industry building investments to reduce energy consumption. This will assist the government achieve or surpass its goal of 40% emissions reduction by 2020.

The Cost to set up a system can be funded through Interest Free Credit issued to Canberra Citizens who invest in companies that can build these systems. This credit can be distributed through a body modelled after the very successful Epicorp Incubator where the government purchased equity in companies who produced new innovative products. This investment will become an income generator for the ACT government as the systems can be sold throughout Australia and the world.

Research and Development to detail the ideas would be an ideal candidate for Innovation Funding from the Federal Government. The ACT government could support an application for funding to develop implementations for Water Rewards and Energy Rewards.

Summary

The ideas expressed here can be applied to many other areas of government. It is a different approach to controlling and directing Community Capital expenditure. This approach has been used previously in many societies particularly when they have been faced with building or rebuilding their communities. Modern technologies enable us to efficiently apply the ideas to larger groups and for a greater range of resources.

The approach of Rewarding people for reduced consumption of ***the Commons*** and using the Rewards to increase the utility of ***the Commons*** is a general approach that can be used for most areas of government expenditure. As well as the physical resource areas the technique can be used in areas as diverse as maintaining biodiversity, supply of health services, funding education infrastructure and encouraging innovative industries to locate to Canberra.

Initially we can start the process by using it to achieve ecologically sustainable targets for the Region. By channelling and focusing our investment dollars we can achieve sustainability without imposing financial burdens on the community. Rather the process will increase the wealth of the whole community.

Availability

I am available to appear before the committee or to expand on any of the ideas or application of the ideas outlined in this submission both before, during and after the hearings.