A 4 A biosensitive Australia: biophysical characteristics

The three background papers in this series[1] explain why the future well-being of humankind and of the natural environment will depend on far-reaching changes in human societies the world over. We must move into a new ecological phase of human history which is sensitive to the processes of life that underpin our existence. That is, we must move towards a biosensitive society.[2]

The new biosensitive society will not only to bring about a new relationship between human populations and the natural environment, but will also provide a better quality of life for all peoples. The essential features of this biosensitive society can be summed up in the catch phrase: *Healthy people on a healthy planet*.

In Australia we have the opportunity to play a leading role in this transition and, by example, to contribute to desirable social change and environmental restoration across the globe. The sooner we embark on this transformation, the easier and more effective will it be.

What, then, will be the essential biophysical[3] characteristics of a new biosensitive Australia? Before attempting an answer to this question let us summarise, in light of information discussed in the three background papers, the ecologically unsustainable and otherwise bio-insensitive features of our present society.

Unsustainable and unsatisfactory features of present society

The ecological unsustainability of our society today is largely a consequence of the massive intensification of intensity of resource and energy use and waste production by humankind.

The most critical ecological and health issues at present are as follows:

- *The enhanced greenhouse effect* leading to global climate change[4]
- *Thinning of the ozone layer* leading to increased ultraviolet radiation and consequent damage to living organisms and ecosystems[5]
- *The toxic effects on wildlife and humans* of persistent organic pollutants (POPs) used as pesticides and in industrial processes [6]
- *Widespread land degradation* involving especially loss of organic matter, soil salinisation and soil erosion associated with removal of native vegetation, overgrazing and ploughing[7]
- *Disruption of natural nutrient cycles* due to non-return of nutrients to farmland[8]
- *Accelerating loss of biodiversity on land*, due to all the above changes and the excessive destruction of native forests and grassland[9]
- *Accelerating loss of biodiversity in the oceans* due to over-fishing, ocean-warming and changes in acidity
- *Major and avoidable disparities in health and well-being* across different sections of the Australian population[10]
- *Much preventable ill health* associated with bio-insensitive behaviours (e.g. tobacco smoking, over-consumption of food, lack of physical activity, lack of sense of purpose, etc.).[11]

Essential biophysical characteristics of a biosensitive society of the future

At a general level, we can say that the prevailing conditions in the biosensitive society will be consistent with the health of the natural environment (see Addendum 2) and will aim to satisfy the health needs of all sections of the human population (see Addendum 1). More specifically, the biosensitive society will have the following essential characteristics

- There will be greatly reduced rates of use of extrasomatic energy
- There will be greatly reduced rates of use of consumption of material resources (e.g. minerals, paper, water, building and construction materials)
- There will be greatly reduced use of fossil fuels in all sectors of the economy (e.g. electricity generation, manufacturing, construction, transport, households, commercial)
- There will be greatly increased use of clean energy sources (e.g. solar, wind, tidal and geothermal power)
- Recycling of material resources will be an essential and all-pervasive feature of the economy
- There will be no release into the environment of persistent organic pollutants (POPs) or other harmful chemical compounds in quantities that interfere with the integrity of ecosystems or the health of people
- There will be no release into the environment of radioactive substances of a kind, and in quantities, that interfere with the integrity of ecosystems or the health of people
- Farming, forestry and mining practices will not cause progressive soil degradation. Farming practices will encourage the bio-enrichment of soil. Areas degraded in earlier periods will be progressively rehabilitated
- Nutrients in organic wastes will be returned to the soil, ensuring that natural nutrient cycles are intact and greatly reducing dependence on artificial fertilisers
- A much higher proportion of the food consumed in Australian communities will be produced nearby, reducing the energy cost of transportation and providing local employment
- Large areas of natural wilderness will be preserved to maintain biodiversity and as a source of human enjoyment and understanding
- Biodiversity will also be protected in agricultural systems and human settlements.
- Fisheries will be organised in a sustainable fashion, protecting the diversity of marine life.
- Prevailing conditions will provide healthy conditions of life for all sections of the human population
- There will be much greater emphasis on psychosocial health-promoting experiences (e.g. creative activity, sense of personal involvement, conviviality) and much less emphasis on the purchase of material goods (consumerism) as sources of pleasure and status.

Keith: Malcolm felt that this para should be the other way round (i.e putting the psychosocial bit first). I am not quite sure that it works. What do you think?

- There will be no gross social disparities in health and well-being
- The human population of Australia will be at a level that does not exert harmful pressures on the continent's ecosystems. This level will depend in part on the proportion of food produced that is exported overseas. The greater the amount of food exported (at present around 70%), the smaller the ecologically sustainable population.

Conclusion

We contend that all these human and ecological requirements for a biosensitive society can theoretically be met, but not without profound changes in the economic and institutional arrangements of our society. Nor can they be met without strong action on the part of government.

However, appropriate governmental intervention will not come about unless there is support for such action from an informed and concerned electorate that understands the absolute necessity for, and the desirability of, this radical societal transformation.

The transition will also demand enlightened action on the part of businesses, NGOs, educational authorities and local communities.

ADDENDUM 1

Human health needs

The new biosensitive society must satisfy the biologically determined health needs of people in all sections of the community, but it must do so in ways that are consistent with the satisfaction of the health needs of ecosystems (see Addendum 2).

The following human health needs are especially important:[12]

Physical health needs

Clean air (not contaminated with hydrocarbons, sulphur oxides, lead etc.)

A natural diet (that is, calorie intake neither less than nor in excess of metabolic requirements; foods providing the full range of the nutritional requirements of the human organism, as provided, for example, by a diverse range of different foods of plant origin and a little cooked lean meat; a diet that does not contain an excess of any particular kind of chemical constituent or class of food; foods with a physical consistency of that of natural foods and containing fibre; foodstuffs devoid of potentially noxious contaminants or additives)

Clean water (not contaminated with chemicals or pathogenic micro-organisms)

Absence of harmful levels of electromagnetic radiation (e.g. alpha, beta, gamma, ultraviolet, microwaves and x-rays)

Minimal contact with parasites and pathogenic micro-organisms, but natural contact with non-pathogenic micro-organisms in the environment

Protection from extremes of climate (temperature, wetness)

Noise levels within the natural range

Levels of sensory stimulation similar to those of the natural habitat

A pattern of physical activity which involves some short periods of vigorous muscular activity and longer periods of medium and varied muscular activity, but also frequent periods of rest.

Psychosocial health needs

An environment and lifestyle conducive to a sense of personal involvement, purpose, belonging, responsibility, challenge, comradeship and love

An environment and lifestyle which do not promote a sense of alienation, anomie, resentment, deprivation, boredom, loneliness, or chronic frustration.

An emotional support network providing a framework for care-giving and care-receiving behaviour and for exchange of information on matters of mutual interest and concern

Opportunities and incentives for creative behaviour, co-operative small-group interaction, learning and practising manual skills, active involvement in recreational activities and spontaneity in behaviour

Variety in daily experience

The experience of conviviality

ADDENDUM 2

Ecosystem health needs

In light of our knowledge of various human activities that are interfering with ecosystem health at the present time, we can put together a list of the health needs of terrestrial ecosystems as follows:

- The absence of polluting gases or particles in the atmosphere which interfere with living processes
- The absence of polluting gases or particles in the atmosphere which significantly change the climate
- The maintenance of an intact ozone layer in the stratosphere protecting living organisms on the Earth's surface from the harmful effects of ultraviolet radiation from the sun
- The absence of levels of ionising radiation that can interfere with the normal processes of life
- The maintenance of organic matter and biodiversity in soil
- The absence in the soil of salts or other chemicals in concentrations that interfere with photosynthesis or that are harmful to living organisms
- A rate of soil loss no greater than the rate of soil formation
- Intact nutrient cycles
- The maintenance of regional biodiversity

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[1] PAN Papers A.1 'Our place in nature', A.2 'Ecological issues in Australia today' and A.3 'Health and civilisation'.

[2] A biosensitive society is defined as a society that is sensitive to, and that satisfies, the health needs of the ecosystems of the natural environment and of all sections of the human population.

[3] The word 'biophysical' as used here means biological, chemical and physical, as distinct from 'cultural'.

[4] See PAN Paper B.1.1.

[5] See PAN Paper B.1.2.

[6] See PAN Paper B.1.3.

[7] See PAN Papers B.1.4, B.1.5, B.1.6 and B.3.3.

[8] See PAN Papers B.1.7 and B.3.2 .

[9] See PAN Paper B.1.8.

[10] See PAN Paper B.2.1.

[11] See PAN Papers B.2.2.and B.2.3.

[12] For the rationale underlying this list of heath needs, see PAN Paper A.3. Attention is drawn to the less tangible psychosocial items in the second part of the list. They are more difficult than the physical health needs to describe and measure, but are very important for human health and well-being.