

HOW RESOURCE-CHEAPLY COULD WE LIVE WELL? A CASE STUDY.

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The quest for more sustainable lifestyles usually focuses on better ways of producing to meet existing demand in existing society. However this study proceeds from a different perspective, i.e., from the belief that the solution to sustainability problems must involve transition to much simpler lifestyles and systems. The case that the required degrowth is very large is sketched and the resulting radical implications for the form that sustainable society must take is outlined. The main concern of the article is to provide evidence on the very low dollar and resource costs associated with a particular example homestead functioning according to Simpler Way principles. While these might be lower than most people in present rich-world societies would embrace at present they indicate the feasibility of dramatic reductions should global conditions deteriorate and enforce severe degrowth. It is stressed that the alternative lifestyles and systems described would not jeopardise a high quality of life or maintenance of socially-useful modern technology. The main conclusion is that the large scale degrowth required for sustainable, just and satisfactory lifestyles and systems is achievable but only if there is transition to some kind of Simpler Way.

Introduction

Much of the discussion of the global sustainability predicament focuses on the search for ways of providing the inputs necessary to enable continuation of present rich world lifestyles and systems with reduced resource demands and environmental impact. Relatively little attention is given to sustainability strategies focused on shifting to lifestyles and systems which do not involve high resource and ecological costs. There is now considerable reason to believe that technical advance and efforts to improve efficiency and productivity are not likely to enable growth in GDP while resource and ecological impacts are brought down to sustainable levels. Extensive reviews involving hundreds of studies show that such a goal is not being achieved and is not likely to be. (See below.)

The basic premise within The Simpler Way perspective (TSW 2021a) is that solutions to the global sustainability and equity/justice predicament must be sought in terms of shifting to lifestyles and systems which enable dramatically reduced resource demands and environmental impacts. The first section of the following discussion indicates the reasons for believing that the reductions must be large, probably much greater than 50%. It is argued that these could only be achieved via radically unconventional social forms.

These considerations set the context for the main issue to be discussed in this study, which is how resource-cheaply it might be possible to live in these new ways while enabling a high quality of life. Reference will be made to Lockyer's study (2017) of a Missouri ecovillage, and the theoretical study of a Sydney suburb (Trainer 2019) which found that reductions in per capita consumption rates of the required order can be made without reducing the quality of life. However the focus in this article is to report numerical evidence on the ways practiced in a

particular homestead which seeks to proceed according Simpler Way principles and functions as an illustrative example within a sustainability education venture.

The magnitude of the required reductions.

The abundant literature on “limits to growth” and “planetary boundaries“ has established that rates of production and consumption are now far beyond levels that are sustainable. Rich world per capita levels are many times those that can be kept up indefinitely or could be generalized to all the world’s people. (Trainer 2021.) The World Wildlife Fund’s “Footprint” measure (2022) indicates that the amount of productive land required to meet the demand of the average Australian is around 6 ha. This means that if the 10 billion people likely by 2050 rose to Australian “living standards” we would need around 60 billion ha. But the planet has only about 12 billion ha of productive land. Thus if we leave one-third of it for nature the per capita amount available would average only 0.8 ha. In other words Australians today are using over 7 times the per capita amount that would be available to all in 2050.

Several other considerations reinforce this general conclusion, including biodiversity loss, increasing scarcity of minerals, water, farm land and even sand, forest loss, deteriorating ecosystems, increasing “material footprints” and the exceeding of “planetary boundaries”.

To this must be added the implications of economic growth. If the Australian GDP was to rise at the long term goal of 3% pa and by 2050 10 billion people had risen rise to the “living standards” Australians would then have, each year the global economy would be producing and consuming about almost twelve times as much as it does now. Yet according to the World Wildlife Fund the global footprint is now 70% higher than the planet could sustain if stocks and thus capacity to provide were not being run down.

The common assumption that technical advance can solve the resource and ecological problems without impacting on affluent living standards and economic growth, ie., that ecological impact can be “decoupled” from GDP growth, has now been contradicted by a large amount of evidence. Many studies show that despite constant effort to improve productivity and efficiency the growth of GDP continues to be accompanied by growth in resource use. Decoupling is evident in a limited number of domains but extensive reviews, for instance by Hickel and Kallis, (2019), Parrique et al., 2019, and Haberle (2021), would seem to decisively invalidate the belief of many “tech-fix”, “Green Growth” and Ecomodernist believers. The WWF finds that the global biological footprint is approaching two times a sustainable level and urgently needs to be reduced, yet Lenzen et al. (2022) find that the global material footprint is growing at 2.3% p.am

The above multiples have profound implications for thinking about sustainability and desirable social forms. The Simpler Way perspective (TSW 20) is that solutions to the global predicament cannot be found on the supply side but must be sought in terms of a degrowth transition to lifestyles and systems involving far less consumption. This in turn requires transition to radically different social forms. It is now necessary to indicate the kind of lifestyles and systems required to enable this.

What social form might enable such large per capita reductions?

The Simper Way argument is that the foregoing perspective on our situation determines that a sustainable and just world cannot be achieved unless the basic form of social organisation has the following characteristics:

- Mostly small and highly self-sufficient and self-governing local communities in control of zero growth local economies.
- Strong cooperative and collectivist values and arrangements (e.g., commons, working bees, cooperatives), ensuring for example that there is no unemployment and all have a valued livelihood.
- A minimal role for market forces. A needs-driven economy rather than a profit-driven economy; i.e., basic production, distribution and development decisions made by town assemblies focussed on maximising the welfare of all.
- Community self-government via thoroughly participatory processes (such as town meetings and referenda.)
- Above all a culture of willing sufficiency, collectivism and especially frugality, in which life satisfactions derive from non-material pursuits.

These ways do not imply that there could be no cities, professional services and training, universities, high tech research, modern health care, or mass production of basic necessities etc. (For the detail see TSW 2020, and TSW 2021b.)

The dramatic reductions in resource and other costs evident in these kinds of settlements are due primarily to the smallness of scale, integration and proximity of functions within small and highly self-sufficient settlements. These economies enable intensive recycling, overlapping functions (e.g., “wastes” become fertilizer for nearby gardens), reductions in overheads (such as offices, packaging, transport), and synergism.

These effects are illustrated by a study of egg supply finding that localized production and cut resource and dollar costs to minute proportions of conventional supply chains. (Trainer, Malik and Lenzen, 2019; See further below.) This example makes clear that the need is for both simpler lifestyles and simpler systems. This and the Remaking study (Trainer 2019) show how the agribusiness system for providing food can be replaced by localised systems based on home gardens, collectives, commons, “edible landscapes” and small farms. Smaje explains how Britain could feed 80 million people with 15% of the workforce on small farms. (2020.) Similarly the example shows how most sewer and garbage disposal systems could be eliminated and replaced by closed nutrient loops whereby all animal, garden and human “wastes” are recycled to nearby soils eliminating the need for artificial fertilizers, while feeding fish and producing methane for cooking.

Attention needs to be drawn to the synergistic, “knock-on” or negative feedback effects within integrated systems. In conventional economies adding one new product adds dollar, resource and ecological costs of many kinds. More trucks need to be used to distribute it, meaning more road wear and accidents, more emergency wards and insurance offices and legal costs etc. However as the egg supply example illustrates, shifting to local supply paths can not only reduce or eliminate costs in many areas, such as less road accidents, but also generate benefits such as providing fertilizer. This reflects the Permaculture principle of designing systems to maximise the number of overlapping functions each element performs.

These brief indications of the Simpler Way approach set the context for the following case study showing how extremely low per capita resource costs might be in viable and attractive communities.

Method

Despite the significant number of Ecovillages that now exist there is little numerical evidence published on their functioning, especially on their resource and ecological effects. Lockyer's study (2017) is a notable example. Therefore it is not possible to document possible reduction achievements by referring to statistics summarising effects averaged across multiple ecovillages. The logic of the present study is somewhat different, being concerned not to generalize from several cases but to show what is possible based on observation of a particular case on which there is considerable evidence.

Evidence from Pigface Point homestead.

Since the mid 1980s Pigface Point has been developed as an educational site in the Sydney region introducing visitors to Simpler Way ideas and practices. It is an isolated homestead plus caretaker's cottage within 100 ha of bushland, rather than a community although at times around ten people have lived in the two households. It is not connected to normal power, water, sewage, garbage or postal services. The following per capita evidence refers to the practices and consumption levels of the main long term residents. In a few instances costs are estimated assuming circumstances that do not exist at the site but which could if the surrounding locality took the form being advocated, e.g., if neighbourhood workshops and community orchards were close by. In these cases reference is made to findings from the Remaking Settlements study (Trainer, 2019) which explores how an outer Sydney suburb might be restructured to maximise self-sufficiency and minimize per capita dollar and resource costs for individual households.

The findings describe what at first sight most would probably regard as unrealistically austere lifestyles. However no deprivation or hardship is experienced. It is a matter of finding alternative ways of providing what is needed for a quite satisfying life via practices, pastimes and values that do not involve conventional resource-intensive activities or supply paths. Obviously the extent to which most people in consumer society could be persuaded to adopt these ways and to find them satisfying is problematic since they involve levels of consumption, travel and possessions that would be regarded as unacceptable in present consumer societies. The prospects for transition to simpler ways depends on whether a very significant cultural change reversing the present obsession with growth and affluence can be achieved. But that is not the concern in the following discussion. (It is addressed in Trainer 2020b.) The intent here is to show the potential for achieving very low material resource consumption rates through action on the demand side.

Food

Although vegetable gardens, orchards and poultry meet some of the site's food demand these sources have not been maximized due to the priority given to conducting the educational tours. They have been developed as indicators of what is possible, just as the site has several small examples of earth building as examples of alternative ways. It is therefore more meaningful to discuss the food sector in terms of the potential which the Remaking Settlements study derived,

with some reference to practices at this site.

The study found that if the nearby outer Sydney suburb was designed on Simpler Way principles almost all food could conceivably come from within its boundaries, via home gardens, community gardens and neighbourhood commons. A much less intensive design would be possible if suburbs and towns were surrounded by small farms as Smaje (2020) details. His book Small Farm Future shows how a UK population of 80 million could be fed by 15% of the workforce on small farms. Small farms have the higher yields and more ecologically acceptable practices than agribusiness, along with many social and ecological benefits not captured by conventional economic measures. Some would be community-owned cooperatives. Little food would need to be exported from the region or imported into it.

Following are some of the ways whereby resource and dollar costs of localized agriculture would be far lower than those associated with the agribusiness-supermarket path. Several of these are practiced at the Pigface Point site.

All household "wastes", including from kitchens, gardens, flush toilets and animal pens would be recycled to gardens via fish ponds, compost heaps and methane digesters producing useful gas. This could completely eliminate the need for use of artificial fertilizers. None are used at this site. Fish would be produced in small cement tanks and local ponds, linked to aquaculture, hydroponics and gardens taking the nutrient rich waste water. Poultry can free-range, clearing and fertilizing orchards and gardens.

Within settlements there can be many community owned and run "commons", e.g., fruit and nut orchards, olives, herb patches, bamboo clumps, woodlots and forests, ponds, dams and tanks. Many of these would be developed on roads that had been dug up, given the greatly reduced need for transport. (See below.) Committees could organise the maintenance of the commons, and working bees would do the "work". These public spaces could contain many forest gardens and "edible landscapes", providing free mulch, fuel wood, timber, craft materials, honey, nuts and fruits.

The commons would also produce various materials as inputs to local small firms and hobby production, including timber, reeds, leaf oils (e.g., lavender, eucalyptus) and other plant-based chemicals, vines and rushes for baskets, creosote, and clay and earth for pottery and building. They would also provide grazing areas within orchards. The community would build and operate cooperative fish tanks, ponds, processing and storage sheds, and greenhouses to enable some production of bananas, winter tomatoes etc.

Produce would go to kitchens with almost no packaging, preserving, marketing, fertilizer, transport cost, energy or waste removal and treatment costs and with no advertising or marketing cost. Almost all transport could be via hand baskets, bicycles, and horse and cart from nearby farms. There would be little need for energy intensive storage such as refrigeration, because fresh food would mostly go straight from the gardens to the kitchen when needed. A few neighbourhood freezers might be used, meaning that not every house would need a refrigerator.

A significant amount of grain and dairy products might have to be imported, ideally from farms within only a few kilometres. Permaculture principles, such as intensive use of permanent and

tree crops, would almost eliminate the need for ploughing, possibly enabling horses and donkeys to do most of the cultivating and carting needed (given the short distances), as well as being leisure resources.

Ideally far less meat would be eaten, greatly reducing the land areas, infrastructure and resource costs. Meat could mostly come from small animals such as rabbits, fish and poultry, living within settlements and benefiting from free-range conditions.

These practices would mean that there might be very little need for energy inputs into the food producing sector of the economy. For the home garden, commons and edible landscape sectors there would hardly be any dollar and energy costs. The small farm would be where items such as shared tractors would involve relatively low costs.

In the conventional US food supply system energy costs per person are high, around 26 GJ/person p.a., when the 20% of food exported is disregarded. (The Choose Energy Team, 2019.) Half of this is incurred beyond the farm gate and therefore to be added to the production cost. If the energy costs embodied in trucks, silos, ports fertilizer and chemical factories etc. were added the figure would be further increased significantly. In addition there are large ecological costs associated with the agribusiness path whereas the alternative improves soils while yielding co-products such as methane, fertilizers and pest control along with social benefits such as community cooperation, interaction and cohesion.

The Remaking Settlements study estimated that the total running energy cost plus embodied energy cost for a localised agriculture might be 192 MJ/person/y, in the region of 0.52% of the agribusiness path, and again the percentage would be lower if embodied energy costs were included in the estimates for the conventional path.

The study of egg supply by Trainer, Malik and Lenzen, (2019) makes clear the magnitude of the resource and dollar cost reduction potential and the reasons for these. It was found that both these costs per egg were in the region of 1-2% of those for the agribusiness-supermarket path. The supermarket egg has a vast and complex global input supply chain involving fishing fleets, agribusiness, steel mills, coal mining, power stations, shipping and trucking transport, silos, warehousing, chemicals, infrastructures, supermarkets, storage, packaging, marketing, the finance, advertising and insurance industries, waste removal and dumping, computers, a commuting workforce, and highly trained managers and technicians. It also involves the damage to ecosystems and soils associated with agribusiness, including carbon emissions, nitrogen run off, non-return of nutrients to soils, acidification and toxicity from use of artificial fertilizers and pesticides.

However eggs supplied via backyards and community cooperatives can avoid almost all of these costs, while enabling immediate use of all "wastes". Recycling of kitchen scraps along with free ranging can meet total poultry nutrient needs. Poultry and other animal manures, including human, can be directly fed into compost heaps, methane digesters, algae and fish ponds, thereby eliminating the need for inputs to village food production from the fertilizer industry. No transport, packaging, chemicals, feed mills, marketing or expert personnel or waste removal need be involved. Management, care and maintenance of systems can be largely informal, via spontaneous discussion and action. No dollar labour costs need be involved. In addition

cooperative care of animals adds to amenity and leisure resources and facilitates community bonding.

These effects are enabled by the smallness of scale, the proximity of functions (e.g., gardens close to animal pens), design for integrated and overlapping functions (free ranging fertilizes orchards and reduces fruit fly larvae), and cooperative social organization. These concepts can apply to many other domains, including other food items, dwelling construction, clothing supply, many services, and especially to provisions for leisure, entertainment and education.

Water

Within-house use of potable water at Pigface Point is around 8 litres/pp/d, from rainwater tanks, and another 65 litres/pp/d is used for toilet flushing and irrigation pumped from a wetland. The potable figure is around 4% of the US and Australian averages. (Water Footprint Calculator, 2020, National Poly, 2018, Indoor Water Use at Home, (2020.)

By far the most important issue regarding water is not household use but the demand generated by the conventional agribusiness system. Australian farm water use (ABS, 2021a) corresponds to 820 litres per person per day, even when exported food is excluded. This is around 16 times the Pigface Point figure, although the latter does not include all food consumed at the site.

In a localized food supply system water demand would be greatly reduced by use of many permanent crops, especially trees, mulching, recycling of water from households to gardens, and much reduced meat consumption. (Blazey, 2020) estimates that it can take 2,000 times as much water to produce a kilo of meat as it does to produce a kilo of vegetables in home gardens. There would therefore be large reduction in need for big dams, mains, large pumping stations, and the bureaucracies to run them. Windmills and small electric pumps would do most of the pumping of fresh and waste water, as is the as at Pigface Point..

Settlements would be landscaped to retain rainfall through use of earthen bunds, swales and ponds, eliminating the need for concrete sewer and storm water drains and pipes. Storm runoff would be channeled above ground to ponds and soak-in areas where trees were planted. Few if any underground pipes, mains or concrete works would be needed. Above ground systems are easily monitored and repaired, unlike underground systems.

All water used on the site is collected there, so no water rates are paid.

Garbage and wastes

Apart from packaging from purchased food items almost no non-biodegradable garbage is generated at the site. All kitchen and garden "wastes" go to compost heaps etc. Almost all clothing and footwear is old and patched/repared, and eventually becomes cleaning rags and is then composted. Worn out devices are dismantled and components placed in the workshop storage racks. In a sensibly designed settlement household and animal pen "sewage" would be piped to productive ponds and methane digesters which recycle all nutrients. Thus there would be very little need to transport garbage to dumps or to deal with solid waste, and none for dealing

with sewage. No water, sewage or garbage rates are paid this site (although occasionally a small amount of material is taken to the local tip.).

Clothing

All “work” at the site, both physical and at a desk, involves no travel, so tough old items are suitable and therefore expenditure on clothing and footwear is negligible. A pair of trousers might be worn every day for a month or more. Approximately one pair of sandals per person is purchased each year. Slippers and sandals are home made and repairing, darning and patching are winter fire-side hobbies. Total clothing and footwear costs are in the vicinity of 30 c/pp/d. The national average is \$2.5/pp/day. (A.B.S. 2017.)

Housing and buildings

The main house built in 1946 was a modified army storage igloo, but has since been modified to fairly normal house appearance. The conventional “fibro” caretaker’s cottage was home built in around 1970. If built from new materials today it would cost approximately \$13,000, excluding labour. However the site uses small animal shelters to illustrate forms of low cost alternative housing possibilities.

Dwellings, storage sheds, community buildings and small business premises can be built from local earth, local stone, wood, or straw bale, at negligible dollar and resource cost, and with lifetimes of hundreds of years. Floors can be made from rammed earth surfaced, e.g., with turpentine and beeswax. Some roofing can be earth (sod) over a waterproof membrane on timber supports, or domes and vaults from mud bricks requiring no reinforcement or supports. (For images and techniques see Rodriguez, 2014.) Weather proofing can be provided by a thin layer of cement over chicken wire reinforcing. Most roofing might eventually be ceramic tiles made from local clay and wood-fueled kilns. Research would go into the production of durable sealers and paints from local plant, earth and animal sources. For example, earth walls can be sealed with the traditional whitewash made from lime and milk.

In the alternative local economies envisaged people would have much more time for home-making, and therefore for cooking on wood stoves equipped with hot water jackets and tanks. A more vegetable based diet would reduce the amount of cooking needed. Rugs mostly made from wool could replace most carpets, eliminating the need for vacuum cleaning. Matting, seating and screens as well as baskets and hats can be woven from local reeds, rushes and willows.

Following are costings for a quite small dwelling constructed according to these kinds of principles and practices, illustrated by a model at Pigface Point. This is a fairly conventional house with rammed earth walls and floors and corrugated iron roofing, with a floor area of approximately 65 square metres. (For detailed specifications and costing.) Walls and the ground floor would be made from rammed earth taken from what would become an underground cement-lined water tank with a volume of 23 m³. Corrugated iron roofing is assumed but might be replaced eventually by tiles from a local wood-fired pottery. To be built today paying retail prices for new materials the construction cost would be around \$7,000, or 9.6 cents/pp/d assuming a 100 year life time and two occupants. This does not include labour as building could be carried out by the owners with the assistance of friends and an expert builder who could be paid by

working on his other projects.

This construction cost compares with \$155,000 for the low end of the range for Australian houses, and \$450,000 for the highest end, (Home Guide, 2021.) The average conventional house area is 186 square metres, 2.9 times as large, with a cost of construction per square metre of \$1,393 (Delahunty, 2020), compared with \$108 for the alternative, a ratio of around 13/1.

It is important to recognize the effect of bank loans and tax. If building a medium sized conventional house costing \$250,000 involves a loan of \$160,000 then \$240,000 might have to be paid back eventually. To be able to do this might require \$320,000 to be earned because about 30% of income will have to be paid in tax. The total to be earned to pay for the house would therefore be around \$395,000. The foregoing cost of the alternative house is so low that a loan is unlikely to be necessary, and for very low income earners negligible tax would be levied on income. Thus the amount needing to be earned to obtain an average conventional dwelling is c. 56 times that for the alternative. For houses of equal area the ratio would be 20/1.

Ten years ago Milne (2013) estimated the embodied energy cost of materials for the average conventional house at 1000 GJ, (i.e., not including the energy cost of construction) so it is likely to be significantly higher now. The alternative described above has an estimated energy cost of 40 GJ, or about 11% of the cost per square metre of a conventional house.

Two thirds of the cost of the alternative is due to the cost of the corrugated iron roofing. This can be completely avoided by use of domes and vaults made from mud bricks, which is common in the Middle East. The cross section is approximately parabolic; walls rise sloping inward on a smooth curve to become the roof. Construction requires no scaffolding. Some domes are 20 metres across. Exterior surfaces can be waterproofed by a sealer, or a thin layer of cement, or a periodic coating of mud. These dwellings and community buildings can be large and apart from door, windows and the fitting out of interiors, involve almost no dollar or energy costs. (Rodriguez, 2014.)

Premises for most local firms, shops and community facilities such as libraries and community stores, workshops and meeting centres, could be built following these sorts of principles; mostly tiny, simple, built from mud, straw bale or rammed earth etc. plus locally grown and milled timber. Many such structures are still in use in Europe, especially the UK, although constructed several hundred years ago. These houses can be beautiful, decorated in a wide variety of styles, making the landscape unique and interesting. For many people, designing and building their own home at a relaxed pace would be one of life's most satisfying adventures.

In present affluent-consumer societies many would not be attracted to the kind of alternative housing described above but it should be considered in relation to the context of severely limited planetary resources, and the enormous unmet need for housing in rich and poor countries. What kind of house might the planet be able to provide for 10 billion people? Even in Australia in 2019 there were 148,500 families on the waiting lists for public housing. (Institute of Health and Welfare, 2020), large numbers who will never be able to afford a conventional house, and 120,000 homeless on any given night, including about 18,000 children under 10 years of age (Sheltered by Grace, 2021.) Yet the average new house being built in the country has the biggest floor area in the world, around 245 square metres. (ABS, 2021b.)

Tools, appliances, hardware and materials

The site's workshop has a 12 volt bench drill, grinder and lathe, all home made, but no other power tools. Hand tools are mostly used, many of them around 80 years old. The gas stove is about the same vintage. The fridge and two gas water heaters are the only other appliances, apart from the home-made open fire and washing machine.

Because most new buildings could be made from earth, straw bales, stone, bamboo and wood there would be little use of energy-intensive metals and plastics. There would be research into plant sources for chemicals, adhesives, medicines, paints, lubricants and fibres and fabrics. Most of the questionable synthetic chemicals in use today would not be necessary. Design would focus on minimizing problematic materials. For instance furniture and sheds can be made without metal fasteners, by use of wedge and dowel-peg joints. (Mikey77, Undated).

Some materials would be produced in bulk in large regional or national factories, such as fabrics, light steel, plastics and chemicals, and distributed to many small factories, hardware stores and workshops. Demand for paper would be greatly reduced and might be met from local forests and recycling. Eventually roofing iron could be slowly replaced by ceramic tiles made from local clay.

Transport and travel

These very significant energy and dollar items could be greatly reduced in the alternative lifestyles and systems envisaged. There would be little need for transport to move people to work places because much less work in offices and factories would be done, and most work places would be localised and accessible by bicycle or on foot. The few large factories would be close to towns and railway stations. Fewer goods would need transporting and distances would be shorter. Neighbourhoods would be leisure-rich, reducing long distance travel. (See below.). The vehicles in most use would be bicycles, with some but relatively little use of buses and trains. Horses could be used for some transport, especially carting food from farms to towns and returning nutrients to farms. They consume no oil, can refuel themselves, reproduce themselves and do not need spare parts or expensive roads. Most urban roads and freeways would be dug up and the space used for gardens and other commons.

The typical Pigface Point travel distances are 1-3 km to local shops by bicycle, car or train each week plus an infrequent 20 km train trip to the city. For households within bicycling distance of towns there might be almost no transport costs. The Australian per capita expenditure on transport by members of the average household has been estimated at about \$14 /pp/d by the ABS (2017) and \$19 by Beck and Newman (2016), which corresponds to a household total of \$17,000 p.a. These figures do not include holiday travel, which is dealt with below

IT

The way of life being described has little need for information technology, apart from the half of each day spent at a desk writing, emailing, browsing and maintaining a minimal website. No use is made of electronic media for leisure purposes. According to Mccrindle Research (2018) Australians average ten hours nineteen minutes each day at work and in leisure time attending to electronic media. Jacobo (2019) reports that Australian teens spend more than 7 hours a day

watching screens, not including school work.

IT would be useful in running small firms and farms and keeping community records, and at the wider level of larger regional factories, hospitals, railways, universities and research establishments etc. Electronic media would be important information sources, especially locally run radio. But ideally the currently vast amount of time, talent and resources going into providing and consuming trivial electronic entertainment would be dramatically reduced, because most people would have more important and rewarding things to do. There would be hobbies, arts, crafts, community issues to discuss, working bees, activities in the community workshop to engage in or watch, committee meetings, mini-cafes and common rooms nearby, many friends within a few metres, the drama and poetry etc. groups, and the many sources and activities organized by the leisure committee.

Leisure

Leisure and entertainment are major cost items in consumer society, and major sources of savings in the alternative. It has been partly dealt with above, in terms of developing leisure-rich communities and far less time given to paid work enabling much more time to pursue leisure interests. At present leisure time in mainstream society is mostly spent in the passive consumption of fleeting entertainment produced by corporations or professionals, especially via TV and IT, in travel and in purchasing and consuming goods and services. The quality of most electronic entertainment material is “spiritually” miniscule if not negative, evident in TV content, game shows and especially the violence and destruction of computer “games”. In addition much leisure time and expenditure at present goes into purchasing; shopping is a major form of entertainment. These phenomena are due in large part to the existence of dormitory suburbs which are “leisure deserts”, also lacking arrangements such as committees and working bees that would engage people in community activities.

Simpler way settlements and lifestyles would be leisure-rich. The community would be a spontaneous leisure resource. A walk around a typical eco-village involves one in conversation with familiar people, observations of activities in familiar firms and farms, and the enjoyment of an enthusiastically gardened landscape. In the new towns the leisure committee would organize events such as festivals, celebrations, concerts, dances, visits, field days and holiday options. Locally focused and operated media, especially radio, could further enhance leisure resources. The many local artists and crafts people would be keen to display and teach their skills. Thus the leisure and cultural committee would be one of the most important in the town or suburb. For these reasons it is likely that there would be far less desire than there is now to purchase leisure and entertainment, or to travel for leisure, let alone to travel overseas.

At present any town or suburb includes many talented musicians, singers, storytellers, actors, comedians and playwrights, unable to do much performing because the globalised entertainment industry only needs a few super-stars. These people would have several days a week to practise their skills and would be appreciated for their (largely unpaid) contributions to the many local gatherings, concerts and festivals. Much of the time spent in productive activities such as gardening, making things and arts and crafts will be enjoyable, as would involvement in working bees.

This is the context in which the leisure and holiday situation at Pigface Point is to be understood. The main resident does not leave the homestead for holidays or watch TV and rarely goes to a restaurant or theatre. He has not boarded an aircraft in the past forty years, and has never done so for leisure. There is no distinction between work and leisure on the site; all repairs and construction are enjoyable creative activities. The site is isolated without any connections to surrounding settlements, so if it was linked to a local community with an energetic leisure committee then leisure options would be even more abundant. Consequently apart from small amount on hobby materials there is almost no expenditure on leisure, although the above occasional travel to the city might be regarded as partly leisure activity. In 2016 the average person in Australia spent \$63 each week on "recreation". (ABS, 2017.) About 6.3 million Australians travelled abroad in 2019 for leisure purposes, at an average expenditure of \$4,750 per person. (Budget Direct, 2020.)

It should be stressed that these large scale reductions in expenditure do not involve any sense of burden, deprivation or sacrifice in order to save the planet. They are consequences of ways that are chosen for their quality of life benefits. Further, costs and quality of life benefits could be significantly improved if the site was close to a thriving local economy.

Energy

In Simpler Way communities energy demand would be greatly reduced, primarily because far less would be being produced and consumed, and because systems would be far simpler.

Most of the wood cutting, pumping, electric welding and freezer boosting would be carried out when the sun or wind was high. The many small local dams might enable most of the (much reduced) electricity storage required, via mini-pumped hydro systems. Hydrogen and biomass might meet the small need for fuels for transport and storage. However some dependence on national renewable energy sources coming into the town via the old grid might continue.

A more vegetable based diet would reduce the need for cooking and enable more use of efficient wood stoves. These could be fitted with water jackets to contribute to water heating. All biological wastes would go to methane digesters providing energy. Communal earth ovens would be used for regular community baking parties. Earth buildings are well insulated so will cut space heating demand. Fridges and freezers are energy-costly, accounting for 15% of household demand, but a diet based more on vegetables fresh from gardens would cut the need. Community fridges might be located nearby enabling many households to function without one.

In much smaller and zero-growth economy resources and energy going into infrastructure construction and maintenance would be a very small proportion of current figures.

At Pigface Point use of electricity is about 0.28 kWh/pp/day, from PV panels. No energy goes into ironing, vacuuming or floor polishing, TV, air conditioning or clothes drying. The national household average consumption is around 7.6 kWh per capita per day, 59 times as much as at the homestead. (Ryan and Parvia, 2016, ABS, 2019, Living Energy, 2018), even though that figure does not include the water pumping included in the Pigface Point sum, which makes up 43% of electricity used at the site. The small refrigerator uses about .15 kWh/pp/d of solar electricity. The space heating open fire accounts for around 1 kWh/pp/day averaged over the

year. The total energy use at present is approximately 1.63 kWh/pp/d. The Australian household average total energy consumption is 16 kWh/pp/d, (ABS 2019), around 10 times as high. Operating energy costs (as distinct from embodied costs) might be close to zero, given that if left in the woodland the space-heating firewood would decompose and release as much carbon as the fire releases.

Discussion

The foregoing evidence indicates the magnitude of per capita resource saving achievable at the homestead and village level. These reductions have major implications for regional and national social and economic affairs.

Implications for economic functioning and social cohesion

Large numbers of people in even the richest societies suffer levels of deprivation, insecurity and stress that are producing declining rates of social cohesion. Loneliness and depression might now be the major health problems. In the settlements described above the incidence of these problems is likely to be negligible. Evidence from ecovillages indicates a higher than average quality of life. (Grinde et al. 2017.) High national savings in dollar, resource, ecological and human costs could therefore be achieved in this domain.

The conditions for a high quality of life require little in the way of material consumption. Consider, having adequate food, shelter and clothing, having good health, good family and friends and a pleasant environment, being secure from poverty and violence, living in a supportive community, being freed from oppression, struggle and stress, having worthwhile work at a relaxed pace, having meaning, interests and purpose, being appreciated and respected, having a sense of place or home, and some degree of peace of mind.

With the possible exception of health none of these requires a significant level of personal income, property, material wealth or GDP. Many in intentional communities live well on very low levels of consumption. (Lockyer, 2017, Grinde et al, 2017, Dancing Rabbit ecovillage .)

Beyond the household; the local economy

Many of the above low per capita resource consumption rates could be achieved only if unconventional arrangements were in place beyond the household level. For instance very low leisure and holiday expenditures are made possible by development of leisure-rich communities, national travel to work is reduced by localizing production of goods and services, the need to build and run sewer systems is eliminated by recycling nutrients to nearby soils, which also reduces the national need to produce fertilizers. Thus the most significant considerations for sustainable development are to do with settlement design and economic systems. These implications are discussed at length in *The Simpler Way* (Alexander and Rutherford, 2019 and TSW 2020.) Following are some other central themes.

As noted above, settlements must mostly be small in scale, highly self-sufficient and self-governing, basically cooperative and collectivist and geared to achieving a high quality of life for all despite frugal resource use. Most goods and services for frugal lifestyles must come from within the town or the nearby region. The local economy must have undergone significant

degrowth to be steady-state and to be needs-driven, not profit or market-driven, although a role for the market and private enterprise could remain. Control of economic and social affairs must be largely in the hands of the community, not centralized state agencies. The latter cannot make appropriate decisions for vast numbers of small communities with their varied and unique conditions. The socio-political focus would be localisation not globalisation. Thus there would be relatively little international trade, industrialization, centralization, urbanization, travel and transport or need for mass production or the finance industry.

However there need be no reduction in socially valuable high tech systems, R and D, universities, modern health care etc. The extensive reductions enabled by the above changes could free increased resource inputs for these.

The primary role of the small remnant "state" agencies would be to facilitate and serve the local communities and regions, for instance ensuring that all towns have small industries enabling export into the national economy of some of the items towns cannot provide for themselves. The town's income from its export activities would pay for its importation of items it needs to import. States would provide national systems such as for railways, communications and law, but would involve little legislative activity as final decisions would best be devolved to the level of the town assemblies.

This vision stresses the necessity for system change and for cultural change. Although this would be a variety of "socialism" it is better labelled "anarchism" as power is not centralized and almost all significant decisions, policies and development would be under the control of town assemblies via thoroughly participatory democracy. Communities would have to be highly cooperative, egalitarian and collectivist, and determined to minimise power relations. The situation would tend to automatically generate these forces because all would realise that their individual welfare depended on how well the town was thriving, not on personal wealth. They would have strong incentive to make sure all people and ecosystems were well provided for. They would therefore make sure there was no unemployment or poverty. Discontent over social justice, equality or inclusion would be destructive of the cohesion necessary to make working bees, committees, town government and social responsibility work well. The situation would require high levels of care and concern for the town, and it would reward these. Thus, the profoundly different culture compared with the present consumer-capitalist culture would be self-reinforcing and not so difficult to maintain if it could be established.

Conclusion

The per capita dollar and resource cost reductions indicated above are remarkably large. Compared with national averages they are in the range of, for food expenditure in general potentially 1/30+, household water use volume 1/25, clothing 1/8, housing 1/20 and household energy use 1/9, travel reduced from \$17/pp/d to almost zero, and much the same for IT and leisure.

It is not being assumed that the fugal ways evident at Pigface Point would be regarded as acceptable in the near future. They might be more "austere" than will become necessary. The point of the foregoing analysis has been to show firstly that very significant reductions on the demand side are necessary for sustainability to be achieved, and secondly that these can be

achieved by shifting to the kind of lifestyles and systems evident at Pigface Point and to settlements designed according to Simpler Way principles. Reasons have also been given to support the case that these changes could be accompanied by improvements in the quality of life. It hardly needs to be pointed out that these ways could not be adopted without extreme cultural change from currently predominant world views and values.

The possibility of attaining this vision will depend significantly on the near future of the global system. Simpler Way transition theory (Trainer 220b) is based on the expectation that the accelerating “poly-crisis” is leading towards a catastrophic breakdown of global systems. This might be terminal for Western “civilization” but it will force people to shift towards localism as states, corporation and super-markets become unable to provide for them. Initiatives of this kind are emerging in Ecovillage, Transition Towns, Degrowth and related movements. One impressive example among many is the Catalan Integral Cooperative, involving thousands in elaborate networks providing many goods and services, entirely organized and run by cooperatives of “ordinary” citizens determined to have nothing to do with the market or the state. The equity, participation and absence of centralized control evident in this cooperative indicate that the new way is a form of Anarchism, not Socialism. (See An Anarchism for today.)

There is obviously no guarantee that the new ways being developed will become the norm. At this point in time the challenge is daunting. Yet there are grounds for optimism. Awareness of the need for transition to simpler lifestyles and systems is increasing. The contribution this study makes is in showing that these ways can enable remarkably large reductions in resource use and ecological impact.

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