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# Implementing a new human settlement theory

## Strategic planning for a network of regenerative villages

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### Abstract

**Purpose:** Whilst the energy transition from fossil fuels to renewables offers significant environmental benefits, the other transition – from a centralised to a distributed energy system – underpins a disruptive model for planning cities, towns and villages. A local energy micro-grid can power a local water micro-grid, which in turn can irrigate a local food system, offering a community the opportunity to harvest, store and distribute food, water and energy within their immediate catchment. A distributed network of regenerative villages, connected virtually and with shared electric vehicles is offered as an alternative vision for future cities. The paper aims to justify this as a preferred model for human settlements and develop an implementation process.

**Design/methodology/approach:** This paper asks: Is it inevitable that large cities will keep growing, while rural communities will continue to be deprived of resources and opportunities? Is the flow of people into cities inevitable? To answer this question, the adopted methodology is to take a systems approach, observing town planning processes from a range of different disciplines and perspectives.

**Findings:** By contrasting the current centralising city model with a distributed network of villages, this paper offers ten reasons why the distributed network is preferable to centralisation.

**Research limitations/implications:** It is argued that in this time of dramatic technological upheaval, environmental destruction and social inequality, business-as-usual is unacceptable in any field of human endeavour. This paper presents a sketch outlining a new human settlement theory, a different way of living on the land. It is an invitation to academics and practitioners to participate in a debate. Originality/value – The information and energy revolutions, both distributed systems, are reshaping cities.

**Keywords:** Circular economy, Energy transition, Healthy built environment, Information revolution, One planet living, Regenerative development

**Paper type:** Viewpoint

## 1. Introduction

Smart Cities, Livable Cities, Green Cities, Biophilic Cities, EcoCities and Regenerative Cities add to the mix Transition Towns, Eco-Villages, Intentional Communities and Place-Making, and it seems everyone is talking about cities and what cities of the future could, or should, be like. Yet, in all this conversation, there is little to no discussion about what a city actually is. Before adding an adjective, let us try to understand the thing we are trying to describe and change. What is a City?

Most commonly, the “city” refers to “urban settlements”, where urban implies non-rural. However, while the United Nations Department of Social and Economic Affairs (2014) was widely quoted, reporting that 54 per cent of the world’s population now lives in urban areas, the same report acknowledged that “there is no common global definition of what constitutes an urban settlement” and indeed “the urban definition employed by national statistical offices varies widely”. In this paper – prepared as contribution from a land development practitioner – it is argued that given the availability of affordable clean energy technologies as well as the need to reconnect humans with the environment on which we live, the fundamental separation between urban and rural areas is inappropriate and that food systems can and should be integrated with the built environment.

For the purposes of this paper, the original Greek and Roman concept of the city as simply “a community of citizens” will be adopted. Taking this as a starting point, we ought to ask: what do all citizens need? The natural needs are a good place to begin; water, food, energy and shelter. Then, given advances in technology and knowledge more generally, as well as awareness of human impacts on ecosystems, how would we design a new city to provide these basic needs? How big would it be and how many citizens would it support? Recognising various options for tele-commuting, the future of electric vehicles (EV) and car sharing, how would this city connect with other cities? How might we design an energy system using renewable energy to generate, store and distribute energy in a micro-grid? Significant research in water sensitive urban design and cities as water supply catchments, suggests that it is also possible to reimagine our systems for harvesting, storing and distributing water. Then, of course, water can generate energy and also store both potential energy and heat energy. There are substantial opportunities to increase efficiency by integrating the energy and water systems. What if we then include a food system – an expanded form of diverse urban agriculture – also using it to clean water, while saving the energy used for packaging and transport?

Can we therefore create places where citizens can collaborate to efficiently provide each other with their basic needs and so form a solid platform from which to engage in the broader economy and society? Rather than connecting detached houses to the energy and water grids, how do we integrate food, water and energy into the built system? Can a local energy micro-grid power a local water micro-grid to irrigate a local food system, offering a community the opportunity to harvest, store and distribute food, water and energy within their immediate catchment?

A key aspect of the development approach is that it is applicable in rural areas, offering significant opportunities for rural and regional Councils who are seeking to attract people and investment to their localities. Land is less expensive, large parcels are available and farming communities are looking for options not only to attract investment and people but also to regenerate the land that has been so degraded by the chemical-based, industrial-scale monoculture practices that have been imposed on them over the past 50 or so years.

The proposed new human settlement theory has previously been proposed by the author in “Rethinking the City” (Liaros, 2014) and described for general audiences in a number of online articles (most recently Liaros, 2019a,b,c). The proposed “Regenerative Villages Network” model is described by reference to a range of different bodies of literature that inform the development of cities. The purpose of this is to illustrate the need to broaden the town planning debate about decentralisation and base it on the feasibility and acceptability of a particular development model.

Section 2 provides a general overview of the development model, developing various aspects of the approach by reference to academic literature, emerging land development practices including new business models and technological developments across a range of industries.

Central to the development of this model is the question: What would cities look like if our societies transitioned from a “take, make, use dispose” linear economy, with its many consequent externalities, to a zero waste Circular Economy? It is argued that the consequent shift to systems thinking and life cycle planning would require the integration of town planning policy with policies related to energy, food, transport, health and economics.

Other areas of research, public debate and emerging practice that are discussed include:

- decentralisation in town planning;
- regenerative development and regenerative agriculture;
- life cycle planning;
- characteristics of healthy urban design as developed by public health experts exploring the impacts of the built environment on health outcomes;
- one planet living and striving to live within the limits of our ecological systems;
- the future of work due to technological change and the consequent demand from a social justice perspective for a universal basic income (UBI);
- population flows and how the internet is creating opportunities for remote work, sometimes referred to as the e-change;
- affordability of housing and cost of living pressures; and
- efficiency of economic agglomeration in cities.

The question that this paper poses is: Is it inevitable that large cities will keep growing, while rural communities will continue to be deprived of resources and opportunities? Is the flow of people into cities inevitable?

Accordingly, to answer this question, the adopted methodology takes a systems approach, observing town planning processes from a range of different perspectives. By contrasting the current centralising city model with a distributed network of villages, it is possible to provide ten good reasons why the distributed network is preferable to centralisation.

Having set out the reasons why this form of development is necessary and appropriate, an outline of how the model may be practically implemented is offered in Section 3. The planning framework of NSW (Australia) is used, identifying the specific strategies, policies and development plans that would need to be created or amended to enable this form of development. This is essential to provide certainty for investors and future residents.

The purpose of this paper is therefore to describe why the proposed distributed network of villages should be, and how it could be, implemented given revolutions in information and energy and potential transformations in transport and agriculture. It is hoped that this will open a debate and ultimately broaden the range of approaches to strategic planning and land development.

## **2. Literature review**

### *2.1 Efficiency of economic agglomeration in cities*

Paul Krugman won a Nobel Prize for developing the field of New Economic Geography by asking the question: “Why and when does manufacturing become concentrated in a few regions, leaving others relatively undeveloped?” (Krugman, 1991, p. 484). The centrepiece of New Economic Geography was the so-called core-periphery model. This model illustrates that agglomeration, the

clustering of businesses together yields pecuniary benefits for all the businesses in the cluster. By focussing on these pecuniary or financial interests, Krugman was able to develop a mathematical model and find equilibrium conditions. Examining the relationships between, amongst other things, economies of scale and transportation costs, the model illustrated that equilibrium can occur either through concentration or decentralisation of communities. The two-region model suggests that if the production and costs in the regions are the same, then nothing much happens but if there is a slight difference “population will start to concentrate and regions [...] diverge; once started, this process will feed on itself”(Krugman, 1991, p. 487).

The unanswered question in this field is: under what circumstances might settlement patterns tend towards the other equilibrium condition of decentralisation or the even distribution of settlements? As a society, we measure success in terms of monetary wealth and calculate the success of the economy in terms of gross production. Accordingly, economies of scale lead to productive efficiency but there is no measure of the efficiency of distribution. Indeed, fossil fuels are subsidised and the more resources and goods are moved around, the higher the value added to gross domestic production. Distributive efficiency is not properly accounted for. Whereas it would be more energy efficient to minimise the distance between producer and consumer, global supply chains are now the norm. To maximise distributive efficiency the spatial arrangement of human settlements would be such that commuting distances were minimised, preferably walkable, while the transport of goods, especially foods, would also be kept to a minimum.

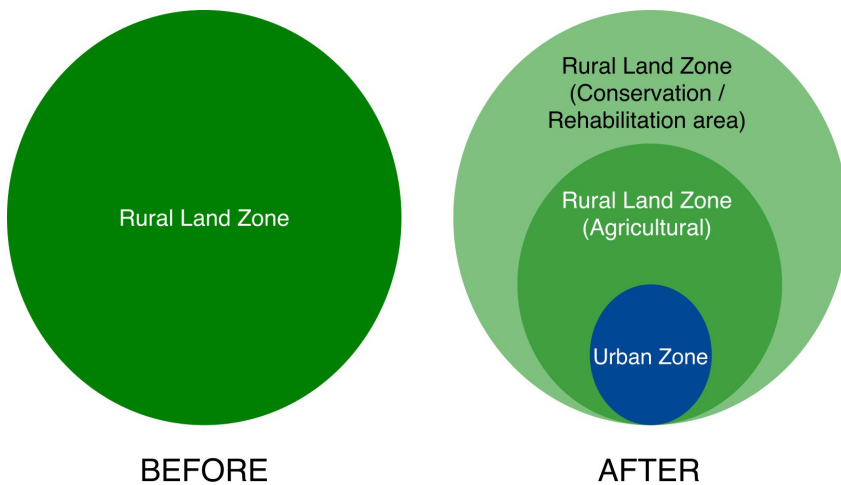
Increases in the efficiency of distribution can also be achieved by transporting information via the internet rather than transporting material resources, goods and people. Rather than an economy based on fossil fuel extraction, mass production, warehousing, distribution and retail, the internet enables an altogether more efficient supply chain. Local 3D printers could create any product or part on demand. The sale would occur online, with the blueprints then securely transferred directly to the consumer’s nearest 3D printer. Examples of this strategy already exist, including the disruption by Amazon of the book publishing industry. What would cities look like if our mega-factories, warehouses and transport logistics infrastructure were significantly reduced in scale or became redundant?

Krugman’s core-periphery model attempts to explain why industries and people must “naturally” agglomerate in cities. Yet industry after industry is being disrupted by online platforms and more efficient business models that use new technologies, internet sales and renewable energy. Highly centralised mass production is being disrupted by production on demand.

If economics is indeed about optimising the production and distribution of goods and services, then any economic model must acknowledge the spatial dimension by reference to the efficiency of distribution.

## *2.2 Decentralisation in town planning*

There has been extensive debate in town planning regarding decentralisation, with a number of models for new cities proposed. The Ville Radieuse (Radiant City) proposed by Le Corbusier in 1930 proposed tower buildings that disconnected people from the land and natural systems, also creating a wasteland between the buildings. The immense scale of the buildings and population housed within it reflects the mechanistic thinking prevalent at the time that saw man as separate from nature. The Broadacre City proposed by Frank Lloyd Wright in 1932, essentially represents the automobile dependent suburban sprawl, which is standard practice in the planning of greenfield subdivisions. The proposed model aims to create walkable environments, perhaps also with electric carts within the precinct, surrounded by large areas of food and natural systems. **Figure 1** provides a schematic illustration of the layout.

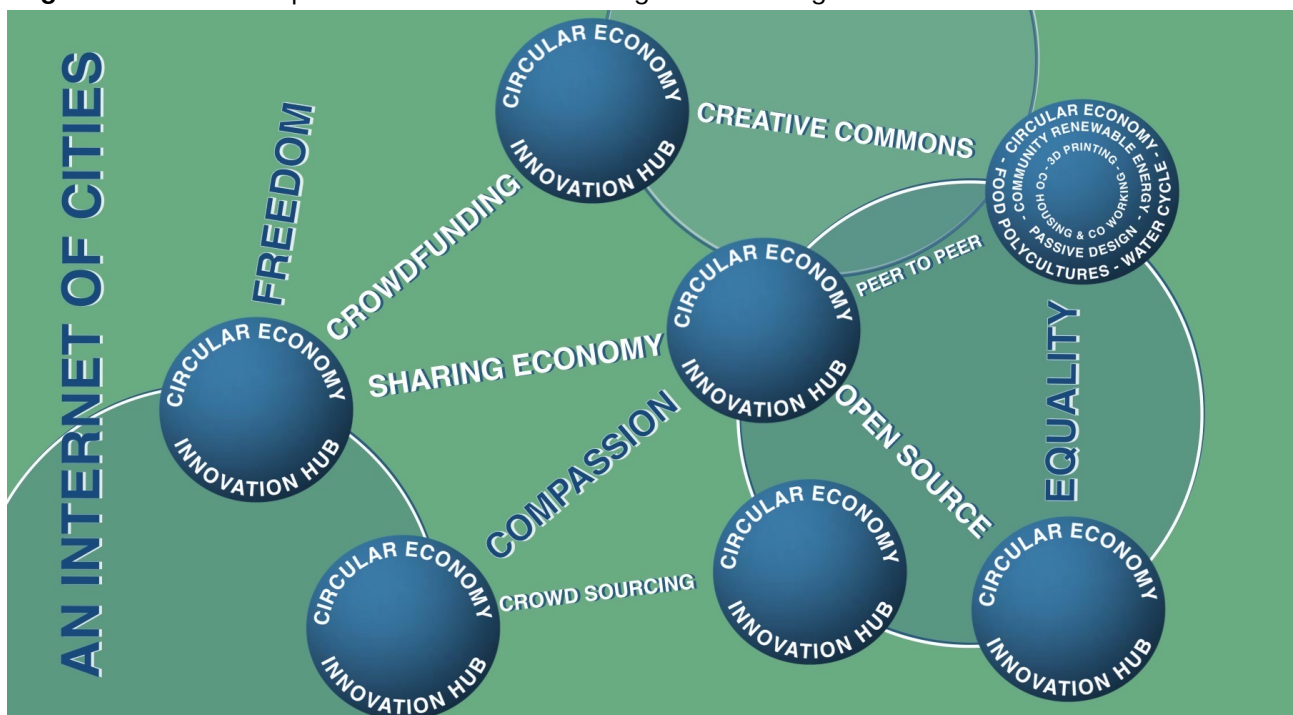


**Figure 1.** Division of land into three precincts, including rezoning required for urban zone

Each village would be the scale of a small community of no more than 200 people. This figure emerges from anthropological research by Robin Dunbar. Dunbar’s number “is a suggested cognitive limit to the number of people with whom one can maintain stable social relationships – relationships in which an individual knows who each person is and how each person relates to every other person”. This allows us to acknowledge that the community, not the nuclear family, is the basic unit of society. The regenerative villages model is explicitly not about isolated villages but must be conceived as a network with villages perceived as nodes in that network.

Each village should not be imagined as a gated community but would remain connected with, and a part of, the broader society, complying with its laws and participating in the local, regional, and global economy in an open and transparent manner. This model should essentially be viewed as an alternative to greenfield subdivisions. Additionally, the aim is not just to build a single village but to create a replicable process that can be implemented by other land developers to eventually create a network of similar villages. Given that they are designed in accordance with the principles of the Circular Economy, the regenerative villages are sometimes referred to as “Circular Economy Innovation Hubs”. **Figure 2** provides a schematic illustration of the network.

**Figure 2.** Schematic representation of network of regenerative villages



One of the earliest and perhaps most influential town planning models for decentralisation is Ebenezer Howard's (1896) *Garden Cities of Tomorrow*. For Howard, the flow of people into cities reflected the various attractions of city life and so he proposed the development of Garden Cities – a blending of the best aspects of town and country life – which would act as an alternative attractor outside the existing towns. These would draw people out and reverse the flow.

Yet the solution is not as simple as reversing the flow because the problem has now changed and the total population of non-food producers in urban areas has grown dramatically. Although, Howard sought to relieve congestion by redistributing populations in the landscape, his Garden Cities did not address the relationship between people and food production. The reference to gardens was to landscaped open space rather than to food production.

Regenerative villages aim to dispel the arbitrary separation of urban areas from food producing rural areas and so reconnect people to food production and natural systems. This is not to suggest a return to an agrarian lifestyle for all, as improved technologies related to energy and water management and vastly improved understanding of ecosystem management would make food production far more efficient than in the past. According to Grigg (1987, p. 93), the changes in agricultural practices arising from industrialisation transformed the role of agriculture in the economies of the Western world. "In the early eighteenth century farmers and farm workers made up three-quarters or more of the labour force in nearly every country". Yet by the late twentieth century this had fallen to as low as two per cent of the workforce in Sweden, Switzerland, the UK and the USA, while in Europe it employs about 8 per cent (Grigg, 1987, p. 95). It is argued that perhaps 10–15 per cent of the population would need to be directly involved in food production as a result of a shift from industrial to regenerative agriculture.

### *2.3 Regenerative development and regenerative agriculture*

The urban environment as we know it and the growth of large-scale cities was made possible by the industrialisation of the agricultural system. The production of the food needed to sustain urban populations is entirely missing from the planning of cities. A systems approach would require the incorporation of food as an essential part of the planning system.

Yet industrial agriculture in Australia is under severe stress. The effects of a warming climate on agriculture are clear, with increased incidences of extreme weather conditions including droughts, floods and bushfires. These extreme conditions are further compounded by excessive extraction of water from creek and river systems and consequent damage of water systems. Deforestation has resulted in soil depletion and increased salinity. Industrial farming practices over the past 100 years have decreased biodiversity in landscapes and soils (where topsoil has not been lost altogether). This has resulted in falling productivity and increasing risks to food production.

Forward thinking farmers like Charles Massy in "Call of the Reed Warbler" are advocating for a revolution in farming practices, calling the new approach "regenerative agriculture". Massy (2017, p. 9) identifies the principles of regenerative agriculture as follows:

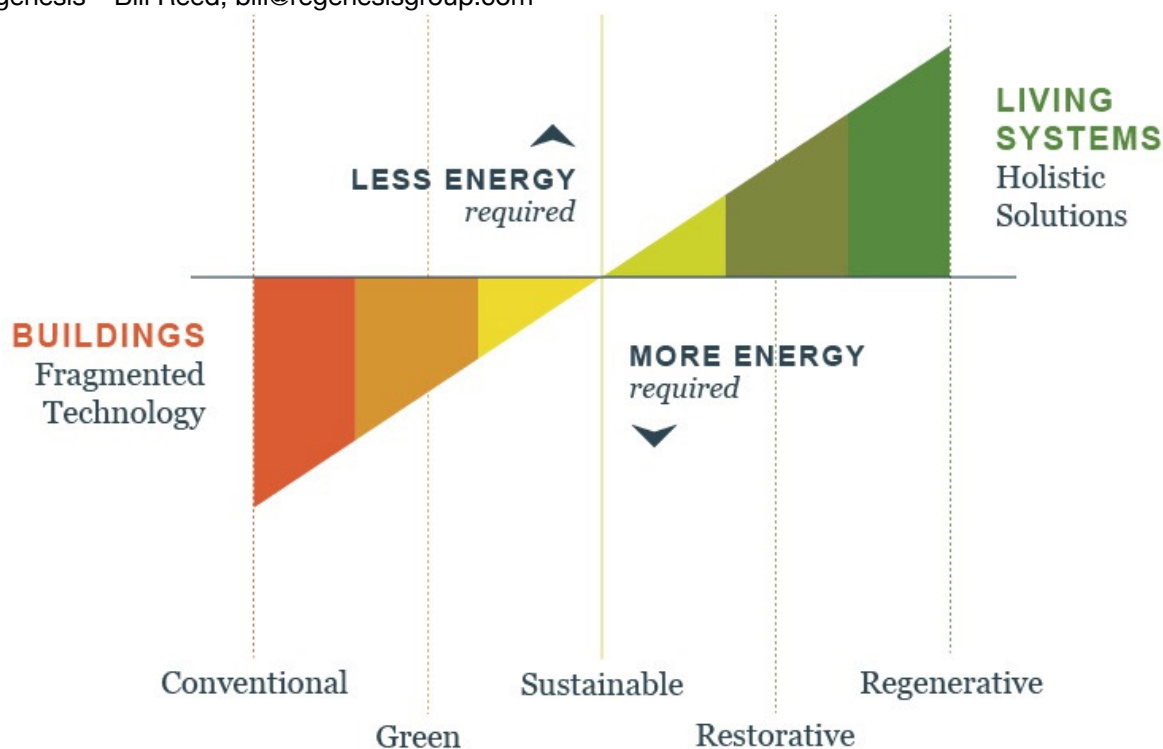
- maximising the capture of solar energy by fixing as many plant sugars as possible via photosynthesis;
- improving the water cycle, maximising water infiltration, storage and recycling in the soil;
- improving the soil-mineral cycle by creating healthy soils that contain and recycle a rich lode of diverse minerals and chemicals; and
- maximising biodiversity and health of integrated, dynamic ecosystems at all levels.

Massy argues that a fifth principle is needed – a change in human attitudes. Only human agency can trigger landscape regeneration by working in harmony with natural systems. The necessary shift in attitude is from an extractive to a regenerative mindset. Instead of just taking from the land, we take and give back in equal measure. This concept of regeneration is equivalent to the "closing the loop"

narrative of the circular economy. Closing the loop implies thinking in systems and striving for zero waste because there is no waste in nature.

The principles of regenerative agriculture and of the circular economy provide the basis for a new human settlement theory. First, think of the city as a community of citizens with a regenerative attitude that ensures their actions have a positive impact on the land. Then, capture as much solar energy as possible, manage the water cycle, improve soil health, maximise biodiversity and think in systems so that there is no waste. This approach not only guarantees food but also energy and water. Meanwhile, the concept of regenerative development is emerging as a new approach to land development. Proponents argue that we need to move beyond sustainability – sustaining ourselves and the environment – to regenerative development where we have a positive impact on land and ecosystems. This is best illustrated in **Figure 3** by Bill Reed from Regenesi, which also shows that less input energy will be required if we take a systems approach and harness the work and energy of natural systems.

**Figure 3.** Trajectory of ecological design (image used with permission) Source: © All rights reserved Regenesi – Bill Reed, bill@regenesigroup.com



The proposed regenerative villages integrate regenerative agriculture with the regenerative development of co-living and co-working spaces to create an integrated system.

#### 2.4 From a linear to a circular economy

Each village and the network as a whole would be designed according to the principles of the Circular Economy. The proposed transition from a linear to a circular economy has gained significant momentum in recent years, receiving the support of the European Parliament Briefing (2016), EIB (2015) and numerous major banks and corporations. Following is a useful definition of the Circular Economy, originally developed by the Ellen MacArthur Foundation, a leading European Advocate of the Circular Economy:

*Looking beyond the current “take, make and dispose” extractive industrial model, the circular economy is restorative and regenerative by design. Relying on system-wide innovation, it aims to redefine products and services to design waste out, while minimising*



*negative impacts. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural and social capital.*

From the above definition, we can extract some of the key design principles of our proposed land development model, such as life cycle planning, systems thinking and striving for zero waste. The Circular Economy is underpinned by renewable energy, therefore, taking a systems approach, an energy micro-grid will generate, store, monitor and distribute renewable energy on-site. The energy system will power a water system that will be cycled through the site, providing for residents, irrigating crops and watering animals. The living and work spaces will be passively designed to minimise energy demand and more generally, the energy, water, food and built systems will be integrated to maximise efficiency.

The development is not a dormitory suburb but will integrate living spaces with work spaces, incorporating a work hub that supports the transition from the work commute to tele-commuting. There will also be a significant amount of work available in the management and maintenance of the water, food and energy systems and the shared spaces and facilities. All these eliminate the extensive waste in time and energy involved in the daily commute to work.

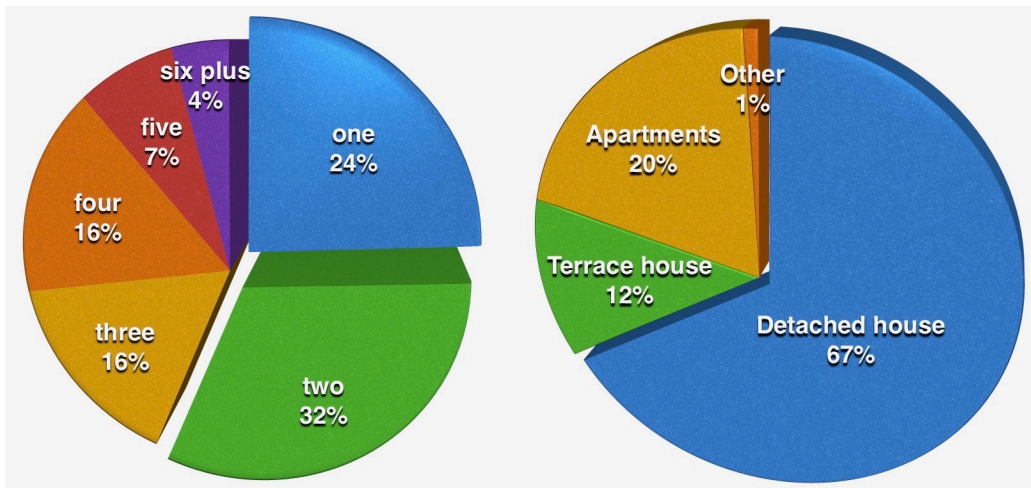
It is also proposed to incorporate innovative product development and business models to advance the notion of the Circular Economy. This primarily involves the inclusion of waste to resource micro-factories as currently being developed by the Centre for Sustainable Materials Research and Technology (SMaRT) at the University of New South Wales. The SMaRT Centre refers to green materials as those that “are made entirely, or primarily, from the rubbish we throw away”.

The idea of developing a network of villages that provide residents and visitors with water, food, energy and shelter aligns with the indigenous view of the landscape as a network of waterholes connected by songlines. Watson (2015), in describing indigenous law, refers to a distributed system, with obligations for people in each place to renew the land. The relationship with the natural world involves a way of being that is cyclical – aligning with natural cycles – rather than our current linear worldview. This is discussed in more detail in the article “Becoming Indigenous: Future cities as a network of waterholes connected by songlines” (Liaros, 2019c).

### 2.5 Life cycle planning

Designing at a village scale also enables more efficient delivery of living and work spaces, allowing shared spaces to be used for multiple purposes and enabling residents to move to different parts of the village as their housing needs change through different life stages. Current failure to plan for different household sizes, coupled with significant transaction costs involved in moving houses, have resulted in a significant misalignment between dwelling structures and household occupancy rates as illustrated in **Figure 4**.

**Figure 4:** Comparison of household occupancy rates with dwelling types in NSW. **Source:** ABS Census of Population and Housing, 2016, tables G31 and G32.



This has been exacerbated by demographic changes in the Australian population over the last half century – an aging population, later marriages and increasing divorce rates. These have all contributed to a falling number of occupants per household. Currently in NSW, 56 per cent of households have only one or two occupants, while 67 per cent of houses are detached dwellings, essentially designed for families.

The proposed regenerative villages would design for a microcosm of the NSW age demographic and household size demographic, providing spaces appropriate to different household structures, with access to a wide range of shared spaces. These ideas are already being developed through flexible house designs and in co-housing and co-living development forms. Indeed, this approach of designing for a range of household structures is particularly suited to build-to-rent managed estates, which have witnessed significant uptake in recent years by the development industry.

### *2.6 Healthy urban design*

According to research by public health professionals, the built environment has an important role to play in supporting human health. In a review of the literature in the field of Healthy Urban Design by Kent et al. (2011), three key interventions were identified that could support human health. These are: getting people active, connecting and strengthening communities and providing healthy food options.

The design of Regenerative Villages integrates a food system of significant scale into the built environment, providing not just healthy food options but the opportunity to collaborate with others in the community to provide that food. Participation in food production and a walkable environment that connects a wide range of daily activities also allows people to get more active. This development model therefore has the potential to significantly improve health outcomes for the resident community.

### *2.7 One planet living*

The health of individuals is intimately connected to the health of the natural systems in which they live. Kate Raworth (2017) argues that “wellbeing depends on enabling every person to lead a life of dignity and opportunity, while safeguarding the integrity of Earth’s life-supporting systems”. Raworth argues for a new approach to economics that operates between an ecological ceiling and a social platform. Raworth calls this living within the doughnut.

To achieve both these goals it is necessary to create an economic system that provides people with their basic necessities, thus creating the required social platform, while at the same time living within the carrying capacity of natural ecosystems.

The best way to achieve both these goals is to create a living environment that allows people to have a positive impact on the land by increasing biodiversity, improving water systems and soil health as the means by which food is produced on a daily basis. A key design approach for the development of regenerative villages is to aim for one planet living, that is, to match the population to the capacity of the land and supporting infrastructure. The approach is to design for a maximum of 200 people but the final design size may be reduced to ensure capacity is not exceeded. The land footprint required to feed 200 people will significantly influence total land requirements, so a research project is currently being developed to determine land and water requirements for different nutrition plans.

### *2.8 The future of work and the universal basic income*

Modelling included in a 2015 report by the Committee for the Economic Development of Australia (CEDA) suggested that “around 40 per cent of the [Australian] workforce face the high probability of being replaced by computers in the next 10 to 15 years”. It is difficult to comprehend the transformative effect that the Information Revolution might ultimately have on our society. The closest comparison is the massive changes caused by the Industrial Revolution described above

when the proportion working in agriculture reduced from over 75 per cent of the population to as low as 2 per cent in some countries.

The study of city planning over the last century or so has evolved to address the problems of congestion and pollution caused by the agglomeration of manufacturing and factory workers in cities. It is no longer appropriate for the planning of cities and towns to be based on the consequences of agglomeration and centralisation, ignoring food production and the possibilities for decentralisation offered by the internet. Planning should extrapolate the future from the world as it is today, rather than from the world of the Industrial Revolution. As technology continues to advance, making many traditional jobs obsolete, it is important to start creating resilient places where people can work to directly satisfy their basic needs, relying less on jobs that provide an income to satisfy these same basic needs.

There is growing interest in the concept of a Universal Basic Income (UBI) as a means of addressing the likelihood of future job losses as well as a means of addressing inequality in wealth distribution. Rather than debating how to fund a basic income in monetary terms, a far more effective and efficient strategy would be to create places that provide people's basic needs directly.

This also addresses a significant gap in the UBI debate, which aims to address the inequality in the distribution of wealth but does not address how that wealth is created. Regenerative land development complements the UBI debate as it aims to increase our natural capital through restoration and maintenance of land and water, and also plant and animal life, while minimising waste and other negative impacts.

### *2.9 Population flows and the e-change*

Over recent decades, much of the migration from the cities to rural and regional areas has been attributed to individuals seeking a more relaxed lifestyle, that is, a sea-change (to coastal towns) or a tree change (to rural or farming areas). In a Media Release 2016 for NBNCo, Australia's National Broadband Network provider, demographer and business analyst Bernard Salt is quoted as follows:

*We are witnessing a quiet lifestyle revolution in suburban Australia. The fusion of a relaxed lifestyle in tree-change and sea-change locations combined with super connectivity provided by the NBN network, is giving people even greater scope to take greater control of where they live and how they work.*

*I predict a cultural shift or "e-change movement" which could see the rise of new silicon suburbs or beaches in regional hubs as universal access to fast broadband drives a culture of entrepreneurialism and innovation outside our capital cities.*

Embracing this e-change represents an important economic development strategy for rural and regional councils, targeting e-changers, digital nomads, grey nomads and those who can no longer afford housing in the cities. The Regenerative Villages development model, with internet co-working spaces and waste to resource micro-factories, can be imagined as a resilient, low-cost platform for innovators and entrepreneurs willing to relocate to a rural or regional area as part of an e-change movement.

### *2.10 Housing affordability*

The housing affordability crisis is a symptom of much broader structural issues. Housing affordability is not just about house prices, it is also about access to and availability of work, transport costs and other costs of living. These issues can no longer be addressed in isolation but need to be tackled holistically.

With regards to the cost of living, the village would be designed to provide food, water and energy for a discrete population. Having a known and fixed population allows the design process to provide for an abundance of these basic necessities. An over-supply of food, water and energy – the demand for which does not vary significantly with price – drives their price towards zero. Whilst work is

still necessary and so a fair system for allocating responsibility for this work will be required, food, water and energy – having zero marginal cost – would not be market exchange commodities. The passive architectural design of the built environment also reduces energy demand and therefore cost.

The design of a village as a live and work hub also substantially reduces transport costs by having work opportunities within walking distance of living environments. A compact design with up to 200 people makes vehicle sharing more feasible as access to the shared vehicles will be within walking distance. Quality internet connection at the co-working spaces enhances the option of telecommuting. Meanwhile, the local energy micro-grid would be designed to incorporate an Electric Vehicles (EV) charging station – a shift to EVs drives fuel costs towards zero.

In addition to these cost of living and transport factors, tackling housing affordability requires that the various components of house prices be addressed. The first component is land value, which can be minimised by purchasing rural land and capturing the land value uplift when it is rezoned from rural to urban purposes, as illustrated in Figure 1. There is a substantial history of suggestions for how to capture land value uplift in the literature of political economy, perhaps beginning with Henry George's (1879) *Progress and Poverty*. Much of this literature points to the need for a broad-based land tax. Rather than taxing the land owner and requiring government to then provide appropriate infrastructure and services, the approach here is to ensure that the development process ensures that appropriate infrastructure is provided on-site.

Housing construction costs would also be reduced by creating smaller private spaces. Unlike a tiny house village, the reduction in house sizes is compensated by access to a wide range of shared community spaces, such as for work, cooking and eating areas, entertainment facilities, swimming pools and the like. Such regenerative villages, built through a single integrated construction process for 200 people, would be far more cost effective to build than the current approach to greenfield subdivision and subsequent construction of the 75 dwellings needed to house the same number of people. Infrastructure costs are kept to a minimum by the compact design, which is more like a resort or campus than like current residential subdivisions.

Further work is now being undertaken with respect to land tenure and investment structures to minimise property transfer costs and land speculation. Given that residents would have access to various shared spaces and assets provided in different parts of the site, a collective ownership arrangement would be preferred. The Community Land Trust (CLT) model developed for the Australian context by Crabtree et al. (2013) would be an appropriate structure. CLTs provide for collective ownership of the land, which is held in trust in perpetuity to avoid land speculation. Platforms enabling the fractional ownership of real estate are now also available enabling collective ownership of a regenerative village.

### **3. Implementation through the NSW planning system**

#### *3.1 Strategic planning*

In order for Regenerative Villages to be financed, developed and replicated, the development model must be clearly articulated in local government strategies as a desired form of development.

In accordance with Section 3.9 of the Environmental Planning and Assessment Act 1979 (EP & A Act, NSW), all Councils must prepare a Local Strategic Planning Statement (LSPS). This will set out a 20-year vision for land use in the local government area. This is a recent amendment to the EP & A Act and regional councils must have their first statement in place by 1 July 2020.

The LSPS provides an ideal opportunity for Councils – in consultation with their community – to introduce this development model into their local planning framework. The LSPS should explicitly refer to Regenerative Villages (or equivalent terminology) and should include objectives such as for future land development to be regenerative in character, that development integrates regenerative

agriculture and that it provides for all the energy and water needs plus a specified proportion of food for a discrete population. The LSPS should also:

- identify the general localities (not the specific sites) where this development would be permitted; and
- refer to a policy document or chapter in the Development Control Plan (DCP) for more information.

### *3.2 Policy document or chapter in DCP*

The policy or plan should clearly describe the development form and the process through which this development outcome could be achieved. As a minimum, the following should be included:

- requirements to prepare Concept Development Application in accordance with Division 4.4 of the EP & A Act together with a Planning Instrument Amendment in accordance with Division 3.5 of the EP & A Act;
- requirements at different stages prior to the rezoning of land (e.g. what must be done on land that is not to be rezoned, what must be done before Council resolves to refer to the Department of Planning, prior to advertisement, prior to final resolution, prior to referral to Minister for signing and publication);
- the minimum total land area and the proportions of the site area for the three precincts (i.e. conservation/rehabilitation area, agriculture and live/work hub);
- minimum requirements for harvesting, management, storage and distribution of water, food and energy;
- design principles for buildings; and
- preparation of a transport plan for the site as well as impacts on the surrounding road network.

A useful approach would be to first identify one site for a pilot project, the development of which would assist in refining the development controls and wording in the strategy.

### *3.3 Voluntary planning agreement policy*

The proposed development will include various facilities, assets and open spaces to service the population within the development site. Some of these will also be available to the proximate township and other communities in the broader area. It would therefore be appropriate to prepare a Voluntary Planning Agreement (VPA) policy, including a standard template VPA that provides a framework for the delivery and management of infrastructure, both on the subject site and the surrounding area. This should address:

- effect on any development contributions required pursuant to Sections 7.11 or 7.12 of the EP&A Act;
- effect on any charges for water supply, sewerage and storm-water drainage facilities under s64 of the Local Government Act 1993;
- requirement for the VPA to run with the land pursuant to Section 7.6 of the EP&A Act;
- effect on waste levies; and
- effect on ordinary rates or requirement for any special rates.

## 4. Conclusion

It is relatively easy to be dismissive of new visions for the future, describing them as utopian, impractical or idealistic or perhaps suggesting there is nothing new here, ecovillages have been tried and failed, so we continue with business-as-usual. Yet we are living in a time of dramatic technological change with the threat of the collapse of ecosystems due to climate change, land degradation and plastic pollution. In many countries, inequality is extreme with significant populations feeling politically disenfranchised and economically excluded.

This is not a time to continue with business-as-usual in any field of human endeavour.

This paper presents a sketch outlining a new human settlement theory. A different way of living on the land. It is an invitation to academics and practitioners to participate in a debate.

How do you imagine a future that is equitably distributed, where people everywhere can work with their neighbours to ensure all in the community have access to basic necessities? How might these necessities be provided as efficiently as possible to create the time and space for freedom from meaningless and unnecessary work – and freedom to pursue our own individual passions? How might human settlements be designed to be in alignment with cyclical ecological systems and so create no waste and other externalities? How do we rehabilitate, reinvent and regenerate ourselves, our societies and natural systems? How do we start thinking, planning, designing and living in systems rather than in the silo of our own worldview?

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