

Chapter 15

Social Engagement to Protect Multispecies Habitat: Implications for Re-Generation and Food Security



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Abstract This paper aims to explore policy possibilities for strengthening institutional capacity to address the UN 2030 Sustainable Development Agenda through ecological engagement based on a “one village, many enterprises approach” to development to reduce rural poverty, outmigration and better rural-urban balance. The paper outlines the way in which we can live differently by understanding that production, consumption, re-production/re-generation cycle that follows a natural ecological approach, rather than the current approach to extracting profit at the expense of future generations. Production and reproduction need to be conducted in ways that do not exploit people and the environment. Exchange practices need to ensure that the interests of the few are not expended at the expense of the many. The case is made for securing food chains to the advantage of the farmers through governance based on a priori norms and a posteriori measures of *wellbeing stocks* (in the sense used by Joseph Stiglitz) defined as a raft of socio-cultural, economic and environmental indicators. It advocates transformative-directed research in Indonesia and South Africa (which share high rates of urbanization) through a community of practice approach.

Keywords Rights · Relationships · Multispecies habitat · Re-generation

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Introduction: Area of Concern and Rationale

Urbanization has increased beyond expectations according to a recent UN report on urbanization (2014). By 2050 the majority of the world's population will be *located in Asia (52%) and Africa (21%)*, according to the UN (2014: 11). The Asian and African demographic growth provides both a dividend and a liability. The potential for investing in social and environmental justice through job creation that protects people and the environment is the focus for the paper.¹

Unemployment in cities and social exclusion (as highlighted by the Sendai Risk Platform) will pose a human security risk. Furthermore, two thirds of the under nourished people worldwide live in sub-Sahara Africa and Southern Asia, according to the United Nations and according to the same source, Asian and African Agricultural workers comprise the poorest workers worldwide.²

The world's poorest workers are involved in agriculture, it is hardly surprising that poverty (linked with climate change) is driving people into the cities. In East Africa for example farmers are plagued by locusts that have bred rapidly as a result of changing climatic conditions, according to Curtis and Kasire (2020: 9)³ who cite Abubakr Salih Babiker. "They stress that even a small swarm can consume enough food for 35,000 people in a single day".

World hunger is increasing at an alarming rate according to the Report by the Secretary-General.⁴ This is not yet the case in some parts of West Java where agricultural re-generation is a focus amongst young people who are making a success of farming through forming co-operatives, giving farming a good name as a vocation that can provide a good living. They make farming appear 'cool' by wearing uniforms and supporting one another in successful farming ventures. Another successful example

¹ According to the United Nations World Urbanization Prospects (2014) in 2014, to cite and paraphrase this report: "54% of the world population was urban and by 2050, 66% of the world's population is projected to be urban if current trends continue". Better urban governance needs to ensure that cities remain liveable and sustainable during and after the development process. Another central concern that urban governance schemes need to consider is the balancing of resources to meet both state and individual needs and goals. Land usage, either for agricultural production or for urban development, strategies and policies needs to be well informed to ensure not only optimal production is achieved but also elements of justice and equity prevail for a balanced development. The UN estimates that 71% will be in cities by 2030 and 80% in urban areas by 2050—if current rates are maintained (UN Report on Urbanisation, 2014, *Rand Daily Mail*, 26 May, 2015).

² https://www.un.org/sustainabledevelopment/wp-content/uploads/2019/07/E_Infographic_02.pdf.

³ Curtis, B. and Kasira, J. 2020 Swarms of locusts plague East African economy. *The Australian*, 27 January, page 9.

⁴ <https://sustainabledevelopment.un.org/sdg2>. Report of the Secretary-General, Special edition: progress towards the Sustainable Development Goals.

"An estimated 821 million people—approximately 1 in 9 people in the world—were undernourished in 2017, up from 784 million in 2015. This represents a worrying rise in world hunger for a third consecutive year after a prolonged decline. Africa remains the continent with the highest prevalence of undernourishment, affecting one fifth of its population (more than 256 million people). Consistent with the continued growth in undernourishment, 770 million people faced severe food insecurity in 2017...".

is the way that the entire community of Alamendah has worked together to support successful enterprises in line with Jokowi's notion of "One Village, One Enterprise Approach" (2014) decreed by the President of Indonesia, Jokowi. The successful intergenerational transfer of knowledge on bee farming in Cibeber from father to son spanning more than four generations. Through creating a community of practice network at a post-national level, we have considered the application of the "one village one enterprise" notion in the South African context to help share local wisdom to support local capacity building. The UN 2030 Agenda⁵ is:

the new global framework to help eradicate poverty and achieve sustainable development by 2030. It includes an ambitious set of 17 Sustainable Development Goals.... The 2030 Agenda for Sustainable Development sets out the global framework to eradicate poverty and achieve sustainable development by 2030.

In order to have a hope of achieving the UN Sustainable Development Goals (2030) this paper proposes a new approach to post national governance is needed to focus on food, energy and water security and to protect the forests and rivers that provide water security. Social, economic and environmental challenges are convergent.

The hypothesis is that highly urbanized regions face food and water insecurity and are at risk of becoming food deserts unless everyday strategies are explored with service users and providers to find better pathways to resilience and wellbeing for the most vulnerable members of the population.

What potential pathways can promote opportunities and redress the food and water insecurity associated with a growing population of vulnerable people in highly urbanized regions and vulnerable regional areas where informal housing areas predominate? What can Australia contribute with Partner Organisations to mitigate risk and maximise plausible pathways to resilience and wellbeing?

The Potential of Participatory Democracy and Governance to Support Habitat

The paper summarises the potential of small case studies and pilots on alternative ways of doing, being and interacting. Together they inform the conceptualization of a new architectures for democracy and better governance through addressing the issue of a priori norms and a posteriori measures for transformation towards re-generative living and preventing displacement of people, plants, animals.⁶ Profit is nothing less than energy extracted at the expense of people and the planet. Alternative forms of

⁵ http://europa.eu/rapid/press-release_MEMO-15-5709_en.htm.

⁶ More people are displaced today than during the Second World War. More animals and plants have been displaced than ever. According to the previous United Nations High Commissioner for Refugees, Guterres (UNHCR, 2014), for the first time since the Second World War, the global figure for displaced persons has now passed 50 million and, by 2050, this figure could be as high as 150 million (Rusbridger, 2015, 13).

organisation are possible to support ‘wellbeing stocks’ to cite Joseph Stiglitz on the nature of the problem.

The rate at which world hunger is increasing has been highlighted in the Report by the Secretary-General.⁷

Urbanization has increased beyond expectations according to a recent UN report on urbanization and (2014) and that by 2050 the majority of the world’s population will be in Asia and Africa. In these latter contexts unemployment in cities and social exclusion (as highlighted by the Sendai Risk Platform) will pose a human security risk.

- **Firstly**, this chapter refers to two published case studies in Manyeledi South Africa, North West Province (McIntyre-Mill, Corcoran et al., 2019, McIntyre-Mills, Romm et al., 2019) and Alamendah Indonesia (West Java, McIntyre-Mills, Corcoran et al., 2019) to enable local leadership and ownership of the project through setting up support networks. Manyeledi is an arid zone on the border of Botswana where goat farming has been extended by adding value to goats’ milk, turning it into cheese and developing some hardy herbs and vegetables that have enabled these resilient farmers to be less reliant on government social payments. Water and food insecurity is an issue in many parts of South Africa as is the need to address the rising challenge to provide education, training and employment. Currently, tertiary level education in South Africa is not meeting their demands. The opportunity to extend education and training in regional areas

Future scenarios need to consider the following factors: *Displacement of people and animals, Unsustainable way of life*—extraction of profit to the detriment of people and the planet, *Increased levels of competition and risk faced by the most vulnerable, Growing populations, Growing gap between rich and poor, Increased urbanisation increased pollution and waste. Neglect of food, energy and water. Competition for resources in an increasingly complex global economy and Food Deserts.*

⁷ <https://sustainabledevelopment.un.org/sdg2>. Report of the Secretary-General, Special edition: progress towards the Sustainable Development Goals

“An estimated 821 million people—approximately 1 in 9 people in the world—were undernourished in 2017, up from 784 million in 2015. This represents a worrying rise in world hunger for a third consecutive year after a prolonged decline. Africa remains the continent with the highest prevalence of undernourishment, affecting one fifth of its population (more than 256 million people). Consistent with the continued growth in undernourishment, 770 million people faced severe food insecurity in 2017. Stunting has been decreasing in nearly every region since 2000. Still, more than 1 in 5 children under 5 years of age (149 million) were stunted in 2018. Globally, 49 million children under 5 were affected by wasting and another 40 million were overweight in 2018. Strengthening the resilience and adaptive capacity of small-scale and family farmers, whose productivity is systematically lower than all other food producers, is critical to reversing the trend of the rise in hunger. The share of small-scale food producers in terms of all food producers in countries in Africa, Asia and Latin America ranges from 40 to 85%, compared with fewer than 10% in Europe. Government spending on agriculture compared to agriculture’s contribution to the total economy has declined by 37%; the ratio fell from 0.42 in 2001 to 0.26 worldwide in 2017. In addition, aid to agriculture in developing countries fell from nearly 25% of all donors’ sector-allocable aid in the mid-1980s to only 5% in 2017, representing a decrease of \$12.6 billion. A continuous downward trend has been observed in export subsidy outlays reported to the World Trade Organization (WTO). The total outlays fell from close to \$500 million in 2010 to around \$120 million in 2016. This reduction in export subsidies by Governments is leading to lower distortions in agricultural markets.”

is thus worth pursuing in more depth. Whereas Manyeledi is in an arid zone and Alamendah has previously had high rainfall, both areas are becoming more affected by climate change. In both instances social engagement in setting up support networks with local schools and universities, namely University of South Africa and Universitas Padjadjaran has enabled rural job creation. Both universities emphasise community outreach in their region. The paper refers to published case studies.⁸

- **Secondly**, the chapter proposes a new form of governance to support food security based on post national regional collaboration to support the global commons (see McIntyre-Mills, Corcoran et al., 2019, McIntyre-Mills, Romm et al., 2019). A multisite symposium held in 2018 (McIntyre-Mills Corcoran et al., 2019, McIntyre-Mills, Romm et al., 2019) in Adelaide, South Australia and Bandung, West Java explored the challenge of increased urbanization and movement towards cities and the implications it has for the life chances of unemployed women who become increasingly vulnerable to trafficking. In Indonesia, the rate of urbanization is faster than other Asian countries: According to the World Bank: “Indonesia is undergoing a historic transformation from a rural to an urban economy. The country’s cities are growing faster than in other Asian countries at a rate of 4.1% per year. By 2025—in less than 10 years—Indonesia can expect to have 68% of its population living in cities⁹”. In Indonesia, Java the one village, many enterprises approach has been successfully applied in a regional area of Bandung with Vocational Education and Training support from the Universitas Padjadjaran. Interest in marketing ecologically sustainable products has also been fostered in Kediri, East Java by the second author who is part of this network (Wirawan & McIntyre, 2019) which explores a pilot for village-based computing. The potential for the prototype pathways to wellbeing software to be developed with blockchain could help manage the food chain and ensure decentralized and distributed control of legers (Kshetri, 2018).
- **Thirdly**, the paper makes the case that rapid urbanisation and the decline of regional areas poses a human security challenge. In two Springer volumes an alternative approach is detailed.¹⁰ Hopeful case studies of ways to do things differently

⁸ The paper reflects on the content of two volumes, namely: *Mixed Methods and Cross Disciplinary Research: Towards Cultivating Ecosystemic Living*. Springer, New York. *Democracy and Governance for Resourcing the Commons: Theory and Practice on Rural-Urban Balance*. Springer, New York. Paper in the *International Journal of Transformative Research*, titled ‘Efforts to inspire transformative research with farmers in a small town in the North West Province of South Africa. **6**, **1**:10–19.

⁹ <http://www.worldbank.org/en/news/feature/2016/06/14/indonesia-urban-story>.

¹⁰ The particular field visits in South Africa and Indonesia (which informs this paper—namely, field visits in December 2017, July 2018 and October 2019) followed on from the multi-site mixed methods and cross-cultural research symposium held in Australia (in line with Australia’s Foreign Policy, 2017) and West Java, which underlined the importance of collaborative research as equal partners in the so-called “One Village, One Enterprise Approach” (2014) decreed by the President of Indonesia, Jokowi. Through creating a community of practice network at a post-national level, this paper considers the potential of the application of the “one village one enterprise” notion supported by governance at a post national level to protect the global commons on which food

are detailed on the volumes and some further local examples are suggested. This paper aims to explore policy possibilities for strengthening institutional capacity to address the UN 2030 Sustainable Development Agenda through the following:

- **Ecological engagement** based on a “one village, many enterprises approach” to development to reduce rural poverty and rural to urban migration and to support better rural-urban balance by securing the food chains to the advantage of the farmers.
- **Supporting food security** through governance based on a priori norms and a posteriori measures.
- **Advocating advocate for policy changes** and
- **Transformative-directed research** in Indonesia and South Africa (which share the high rates of urbanization) through a community of practice approach. The particular field visits in South Africa and Indonesia (which informs this paper—namely, field visits in December 2017, July 2018 and October 2019) followed on from the multi-site mixed methods and cross-cultural research symposium held in Australia (in line with Australia’s Foreign Policy, 2017) and West Java, which underlined the importance of collaborative research as equal partners in the so-called “One Village, One Enterprise Approach” (2014) decreed by the President of Indonesia, Jokowi.¹¹

and water security rests. The paper proposes an alternative cyclical economy based on eco-villages supporting urban hubs to re-generate rural-urban balance based on eco-facturing, to use Gunter Pauli’s concept. Africa and Asia are two of the fastest urbanising areas globally. The development of eco-villages supporting the ‘one village many enterprises’ concept currently applied in Indonesia relies on responsive design. The development of eco-facturing using local products such as cassava for bioplastics, bamboo for biochar and fair trade, free range Luwak coffee are discussed as three examples of eco-facturing that are currently being developed in Indonesia. The potential for eco-facturing to be applied in Southern Africa and Ghana is currently being explored using bamboo and cassava in appropriate areas and exploring a suitable cash crop. Coffee is one option, but many others such as red bush tea, aloe as well as a host of local herbs could be explored with Indigenous holders of wisdom. Some core design principles are suggested outlined by Christakis and members of Global Agoras community of practice and affiliates. Saliency, trust and engagement to protect *living systems and the people* who are affected need to be involved in the decision-making process. These principles are discussed in the paper together with the importance of ‘being the change’ through expanding pragmatism to consider the social, economic and environmental implications of choices. Systemic Ethical decisions honour ‘freedom and diversity’ to the extent that freedom and diversity are not undermined by power imbalances.

¹¹ A multi-site, cross cultural Mixed Methods Symposium was held in Adelaide and Bandung to explore the potential for vocational training, integrated development and ways to enhance the capabilities of institutions to develop eco-facturing by making use of environmental resources in ways that re-generate people and places. Three crops were explored, namely cassava for bioplastics, bamboo for biochar and building and ethical luwak coffee and fair-trade Indonesian coffee. The Alamendah case study (McIntyre-Mills, Corcoran et al., 2019) demonstrates low rates of out migration as a result of community engagement in sustainable living and re-generative activities. The potential for women to be further empowered through enhancing their representation and accountability is explored. Indonesia has a policy that fosters rural development. It is called the ‘Jokowi one village one entrepreneurial project’ to support poverty reduction. We explored examples of sustainability and then considered whether it could inform vocational education and training in South Africa. Collaboration followed on from the multi-site mixed methods symposium held in Australia (in line with Australia’s Foreign Policy, 2017) and West Java which underlined the importance of

- **Fourthly**, through creating a community of practice network at a post-national level, this paper considers the potential of the application of the “one village one enterprise” notion supported by governance at a post national level to protect the global commons on which food and water security rests.
- **Finally**, the paper makes the case for monitoring from below, because rapid urbanisation and the impact on human security pose a challenge for the region as stressed by Glasser and Barnes (2018). The global commons and the process of supporting the global commons (Bollier, 2011) can be defined as a process for enabling people to protect living systems of which they are a strand. Thus, the research contributes to a new area: namely the commons as a process and a sense of connection to living systems, rather than as a resource ‘held in common’, to cite Bollier (2011)¹²:

“**The commons is not a resource.** It is a resource plus a defined community and the protocols, values and norms devised by the community to manage its resources....

There is no commons without community—the social practices and norms for managing a resource for collective benefit”.

The Sustainable Development goals need to address the systemic interconnection across providing infrastructure development, the creation of decent work and the need to protect the fabric of life that depends on protecting multispecies habitats. Ironically the most important job, namely farming, is one of the lowest status and worst paid. The case that is developed in this paper for addressing both a priori *norms* as well as a posteriori *measures* to monitor social and environmental indicators for each region. In order to have a hope of achieving the UN Sustainable Development Goals (2030) a new approach to post national governance is needed to focus on food, energy and water security.

collaborative research as equal partners in the so-called ‘One Village, One Enterprise Approach’ (2014) decreed by the President of Indonesia, Jokowi. Through creating a community of practice network at a post-national level, we have considered the application of the ‘one village one enterprise’ notion in the South African context and we are learning from the experience in Indonesia. A colleague from South Africa attended the multi-site symposium which was followed up by setting up a community of practice with other colleagues which resulted in our working together in range of ways, namely sharing resources and making suggestions as to how to foster opportunities in regional areas, such as Manyeledi in the North West Province (McIntyre-Mills, Karel et al., 2019). In this region, unemployment for young people in the 15–34 age group is one of the highest and it resulted in civil unrest in 2018 which required Cyril Ramaphosa to return from a visit in the UK, to address these concerns. The aim of the research is to encourage the notion that we can earn while we learn and grow a future together and to explore relationships with service users to build the capacity of the providers and to provide a better understanding of what works, why and how with the hope that it will help to inform policy decisions.

¹² 07/15/2011 “I am always trying to figure out how to explain the idea of the commons to newcomers who find it hard to grasp. In preparation for a talk that I gave at the Caux Forum for Human Security, near Montreux, Switzerland, I came up with a fairly short overview, which I have copied below...:<http://www.bollier.org/commons-short-and-sweet>”.

Rights, Relationships and Responsibilities to Protect Habitat

We are the land. Our history and choices are written in the landscape (prologue to *Planetary Passport*, McIntyre-Mills, 2017a). The frontiers of justice for food security is the focus for this paper.

Indigenous people are all about place...land is our mother. This is not a metaphor. The natural world is in constant dialogue with us, although we do not always listen or respond ...". (Walker, 2013: 206, citing Manulania Meyer)

Previously the social sciences, were merely a study of human relationships. However, today it is a study of human beings' relations to one another (including sentient beings) and our ability to shape this generation of living systems and the next (McIntyre-Mills, 2017b, 2019; Romm, 2017, 2018b).¹³

Ecological Citizenship

The notion of extending a sense of 'ecological citizenship' in *Planetary Passport* (McIntyre-Mills, 2017a) could foster awareness of the need for democracy to revitalize the balance between the right to consume the planet to extinction and the responsibility to protect the common good. Rights need to be reframed as do responsibilities so that the economy and the market are seen not as an externality but as part of the global commons on which this generation and the next depends.

Nations currently refuse to take responsibility for the impact of their emissions on their neighbours—then we need to think about what that means for current forms of governance. If we can accept that climate, change is the result of collective decisions that constitute a normalization *of living beyond our limits* what does that mean for democracy and governance?

¹³ Food security requires both a priori norms and a posteriori measures to ensure local, national and post national support to ensure that the fabric of life is protected. Highly urbanised, environmentally affected regions have been selected as so-called 'canary cases' into address the projected 2050 scenario when most of the global urban population is expected to be located in Asia (52%) and Africa (21%) (United Nations, 2014: 11). The study areas selected take significance from the predictions made in this UN report. They are also the primary focus of this paper and the recent volumes (McIntyre-Mill, Corcoran et al., 2019, McIntyre-Mills, Romm et al., 2019) on which it draws, because they face substantial environmental change.

The social and environment challenges have been exploited by people traffickers in Africa, for example where slavery has become more visible than ever in Libya as desperate people fall into the hands of traffickers. The notion that sentient beings have rights is not even on the horizon in some socio-political contexts.

Rethinking Human Security and Resilience as Vulnerable Multispecies Relationships

The rate of displacement of human beings, animals, plants is likely to rise which makes it vital to develop and pilot alternative forms of democracy, governance, public education and development that protect multispecies habitats. This is the focus of my current research agenda. Thus, the aim of research is to explore taxonomies of rights, relationships and responsibilities across cultures to understand human, plant and animal relationships with a focus on understanding the implications for commodification and consumption.

‘Existential risk’ continues to escalate and the crime of ‘ecocide’ (Higgins, 2017) is not yet recognised as part of international law even though it poses a new form of ‘genocide’.

Politically fragmentation and populism have become the new order driven by capitalism, anthropocentrism, speciesism, nationalism and racism. The case is made that liberalism has progressed too far in undermining collective (cosmopolitan) responsibility. The research focuses on (i) strengthening institutional capacity and powers to address the UN 2030 Sustainable Development Agenda by drawing on local wisdom. (ii) extending Vocational Education and Training using a gender mainstreaming approach that foregrounds opportunities for marginalised women and children in remote, areas with few employment opportunities and high levels of poverty.

The following 4 goals are the focus for the study, namely: SDG’s 4 (Quality Education), SDG (Women’s empowerment), SDG 8 (Decent work), 10 (Reduced inequalities), SDG 11 (Sustainable communities & 1 SDG 7 (Partnering for the goals) will be addressed. These goals have been identified as applying to the Disability sector and strives to ‘protect all inhabitants of a territory’ as proposed by Gauger et al. (2013) to prevent ‘ecocide’, Nussbaum’s 10 Capabilities (2011) to support rights to a life worth living and Donaldson and Kymlicka’s (2011) notion of diverse habitats for domestic, liminal and wild life.

Large city populations become unstable when living costs are unaffordable. It is not surprising that the so-called Arab Spring started as a result of rising food costs. In Solo, Indonesia riots occurred when living costs and cooking oil become too expensive for the small street traders to survive. The demographic dividend namely high population growth and the rising number of young people could become the trigger for political unrest in rapidly urbanising cities in both Africa and Indonesia where the rising levels of unemployment and poverty result in the vulnerability of women and children to crime and trafficking. The need to link positive vocational training with positive digital engagement through social, economic and environmental pathways to wellbeing is very important for human security. Training in ‘joining up the social, economic and environmental dots’ could be facilitated by the pathways to wellbeing software.

As Donna Haraway stresses, ‘we are the boundaries’ and we can reframe the boundaries by changing hearts, minds and values. The socio-economic system of exploitation needs to be stopped before it is too late. The first step is the need to

de-entre taken for granted views on the world. My background is both sociology and social anthropology. The latter field was responsible in the past for curating the artefacts of ‘others’ as if they were collectable commodities. But worse the ‘specimens’ were often slaughtered to enable shipping and display in museums. The colonized people were seen as sources of labour and profit and in need of conversion by missionaries. Human cultures were regarded as objects of study.

More people, animals and plants are being displaced than ever before along with the habitats on which they depend. The research focuses on (i) strengthening institutional capacity and powers to address the UN 2030 Sustainable Development Agenda by drawing on local wisdom to ‘protect all inhabitants of a territory’ as proposed by Gauger et al. (2013) to prevent what Polly Higgins called ‘ecocide’ (see the ecocide website and blogs). The aim is to support Nussbaum’s 10 Capabilities (2011) to support rights to a life worth living and Donaldson and Kymlicka’s (2011) notion of protecting diverse habitats. How can regional social policy contribute to achieving the sustainable development goals within and beyond the nation state? The challenge for governing the Anthropocene ethically and wholesomely is one of moving away from disciplinary and functional differentiation, in order to span biological, psychological, social, cultural, spiritual, political, economic and environmental dimensions to support living ethically in ways that redress the worst aspects of modernisation (Berger, 1966; Berger & Luckman, 1974). Indigenous cultures teach us about stewardship and relationships with the land, but these relationships have been oversimplified (Langton, 2012, 2015) or lost in non-Indigenous cultures that tend to caricature the notion of stewardship without understanding the social and environmental justice implications for current and future generations.

According to Yeates (2014) regional organisations offer significant opportunities to both reshape policy through working on ways to try out different options. The research aims to address a user centric regionalist policy agenda (UNRSID, 2017) based on a learning network that strengthens institutional capacity to implement the UN 2030 Sustainable Development Agenda. Effective regional mechanisms need to initiate social, economic and environmental pathways with a focus on cross-border challenges.

How Can Regional Social Policy Contribute to Achieving the Sustainable Development Goals Within and Beyond the Nation State?

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The Case for Multilevel Governance to Protect Food Security

This section of the paper aims to:

- **Address** the complex needs of the most vulnerable¹⁵ and the interconnections across resilience, food, water and the innovation opportunity for social inclusion, in line with the UN Sustainable Development Goals (2017) and UNDRIP(2007).
- **Make** the case that critical agency is vital to understand, monitor and evaluate everyday social, economic and environmental strategies that enable sentient functioning (Nussbaum, 2011).

The Stop Ecocide Blog has stressed that the Amazon fires constitute ecocide as trees are vital for the health of the planet. and that trees are our lungs:

President Emmanuel Macron declared last Friday that “the Amazon is burning and this is an issue that concerns the entire world, because it is a source of biodiversity. We have a real ecocide that is developing everywhere in the Amazon and not only in Brazil”. While the

¹⁴ As Major Sumner, a Ngarrindjeri Indigenous elder from the periodically drought-ravaged lower Murray River in South Australia and custodian of the river stresses, we are the land and the land is us. Re-establishing relationships with the land is at the heart of effective cultural ecosystem management (see <http://www.mdba.gov.au/what-we-do/working-withothers/aboriginal-communities/ringbalin>) and sustainable employment.

¹⁵ The gender dynamic within culturally specific gender relations influences the status of, and opportunities for, women in a given community. Women’s political agency is vital. The policy priorities are also in line with the regional policy agenda (UNRISD, 2017) to map effective regional social policy pathways that span a wide range of sectors. In Indonesia the ‘One village, one product’ (OVAP, Morihiko Hiramatsu—Governor of Oita prefecture, 1979; Yogyakarta, 2014) was applied by President Jokowi in 2008–2009. In Alamendah, the learning organisation, community approach has been developed as a step towards empowering women in order to reduce their vulnerability to trafficking, but the process needs to be extended, in order to expand women’s role in the decision-making process and to introduce a range of opportunities that support the capabilities of women and the marginalised (McIntyre-Mills et al., 2018).

circumstances are clearly dire, we have to appreciate that the sheer scale of what is going on means the concept is becoming ever harder to avoid.¹⁶

The case is made that international security depends on enhancing the status of agriculture and food production enabling primary, secondary and tertiary level training along with universities to be co-located in regional and rural areas. This will provide twofold opportunities to enhance agency of the poorest people on earth and provide opportunity to enable the agency and literacy of women. The best way to achieve a demographic transition is through enhancing the education of women. Women who are literate and numerate and have a voice beyond the household context need to be empowered to act on food security. One of the ways to achieve this is through education so that people have control over their own lives and their bodies. Setting up digital villages that enable sustainable living so that people can earn while they learn and grow a future together would be a step in the right direction. Reducing the number of births and reducing consumption of energy intensive foods would be a step in the right direction. Foods should be grown, consumed and recycled in ways that minimize the size of our carbon footprint.

Researchers from Indonesia and Malaysia reported at the Food Security Conference (September, 2019) that they're focusing on producing plant based protein from a range of readily available sources such as algae and protecting mangrove areas in Serang so that plant based proteins can be grown amongst the mangroves, thus protecting the coastline from storm surges by advocating for the value of the mangroves for local farmers who wish to engage in new forms of agriculture. An added benefit from this form of eco-facturing is the production of multipurpose food proteins that also help to manage infections by being used as an alternative to treating antibiotic resistant infections. The many uses of mangrove forests thus can be raised as another policy rationale for preventing the clearance of mangroves and forests.

Douglas (2019) reports the concerns raised by Macron that the burning of rain forests for grazing constitutes a crime against humanity and the environment and that Brazil is one of the largest meat exporters¹⁷ This is neither sustainable nor necessary as a way forward to protect human security:

The horrific destruction of the Amazon rainforest under Brazil's far-right president, Jair Bolsonaro, raises a pressing question for the world community: do the prerogatives of sovereignty entitle a nation to destroy resources within its territorial control, when this destruction has global environmental consequences? The answer delivered by France's president, Emmanuel Macron, at the G7 summit is an emphatic no. It is time for the international community to build on Macron's lead and to recognize a right to environmental intervention patterned on the notion of humanitarian intervention.¹⁸

¹⁶ <https://www.stopecocide.earth/blog/bolsonaro-and-ecocide-in-the-amazon-some-questions-answered>.

¹⁷ <https://www.businessinsider.com.au/meat-consumption-linked-to-the-amazon-fires-2019-8?r=US&IR=T>.

¹⁸ Douglas, L. (2019) Do the Brazil Amazon fires justify environmental interventionism? <https://www.theguardian.com/commentisfree/2019/aug/31/brazil-amazon-fires-justify-environmental-interventionism>.

A few nation states have recognized ecocide and since the Vietnam War. Arthur Galston and other academics from Harvard campaigned in 1970 for a new bioethics and ending the use of the exfoliant agent orange which they said constituted a war related crime (Yale News, 2008). The Human Rights Consortium at the University of London has focused on ‘ecocide’ (Gauger et al., 2013) as the fifth (as yet, unacknowledged) crime against peace by individuals, organisations or nation states. A few nation states have recognized ecocide since the Vietnam War. Arthur Galston and other scientists from Harvard campaigned in 1970 for a new bioethics and ending the use of the exfoliant agent orange which they said constituted a war related crime (Yale News, 2008). Ecocide National Criminal Codes (2012) have introduced ecocide to include non-war related crimes against the environment and humanity:

“In these countries’ penal codes, the crime of Ecocide stands alongside the other four international Crimes Against Peace; Crimes Against Humanity, Genocide, War Crimes and Crimes of Aggression. These four core crimes are set out as international crimes in the Rome Statute.¹⁹

To cite this same reference: Vietnam²⁰ defines ecocide as follows: “destroying the natural environment”, whether committed in time of peace or war, constitutes a crime against humanity”²¹

In *Planetary Passport* (McIntyre-Mills, 2017a) it is suggested that a way to achieve rapid transformation is through enabling people to understand the importance of supporting a law that could help them to prevent the disruption of water, food and energy security through the introduction of more sustainable approaches through (a) on line engagement and (b) better balance between rural and urban areas. Higgins explains that the national or post national federal level could support the law and pursue it through the International Criminal Court. I suggest (McIntyre-Mills, 2017a, b) that the ICC could also support change through scaling up the Aarhus Convention (1998, see McIntyre-Mills, 2014: 21) and that this could remedy the way in which the nationalist social contract is currently framed by developing a planetary passport for ecological citizens who work together at multiple levels to protect their environment.

The case is made that international security depends on enhancing the status of agriculture and food production enabling primary, secondary and tertiary level training along with universities to be co-located in regional and rural areas. This

¹⁹ <https://eradicatingecocide.com/wp-content/uploads/2012/06/Ecocide-National-Criminal-Codes1.pdf>.

²⁰ What is the problem represented to be? (Bacchi, 2009). Given the current international relations between Russian and USA and its allies there has been little support for the proposed law. But the European Institute of Environmental Security (2013) has supported a citizen’s campaign to enable Europe to support the ecocide law, but the number of signatures has not been reached. The definition of ecocide has been recently reformulated (and extended from its original formulation) as follows by Higgins (2012) as the 5th Crime Against Humanity in her Tedex lecture as follows: “The extensive damage to or loss of ecosystems of a given territory, whether by human agency or other causes, to such an extent that peaceful enjoyment by the inhabitants of that territory has been severely diminished.” (see Higgins, 2016, 2018, Hague Peace Lecture).

²¹ <https://eradicatingecocide.com/wp-content/uploads/2012/06/Ecocide-National-Criminal-Codes1.pdf>.

will provide twofold opportunities to enhance agency of the poorest people on earth and provide opportunity to enable the agency and literacy of women. The best way to achieve a demographic transition is through enhancing the education of women. Women who are literate and numerate and have a voice beyond the household context. As Nussbaum (2011) has stressed the population rate decreases when women are given an opportunity to receive an education and to have a voice in public affairs along with respect in their own households. One of the ways to achieve this is through setting up digital engagement that enables people to earn while they learn and grow a future together.

International security depends on policy and public administrative changes, such as:

- A Global Covenant (Held, 2004) buttressed by an Ecocide Law (Gauger et al., 2013) law to protect habitat as well.
- Application of the Aarhus Convention in post national regions (not just in Europe where it is currently applied to support freedom of information, social engagement by participants and the responsiveness of government).
- Earth democracy and environmental security (Vandana Shiva, 2011, 2012) that is underpinned by re-generating the social and environmental fabric and then sustaining wellbeing stocks (Stiglitz et al., 2010).
- Building coalitions of the willing is becoming more difficult as nation states compete with one another for resources. More awareness is needed that Kenneth Boulding's (1966) warning that nation states should co-operate and that we are all part of Spaceship Earth. Thus, this paper develops a discussion on: Boundaries, Perspectives, Relationships and Systems.

The case that is developed for addressing both *a priori norms* as well as a *posteriori measures* to monitor social and environmental indicators for each region. International security depends on policy and public administrative changes.

Praxis and Process

The message is that it is possible to do things differently! "Wellbeing is an idea whose time has come" (New Zealand Dept of Public Health, 2007) and this has implications for policy and practice. Participation helps to match policy with practice. In 2019 Jacinda Ardern has followed through on the notion that wellbeing indicators should be measured by government departments, in order to ensure that "clean air and water, access to housing and health care, education standards, economic mobility, social harmony and community safety, and a safe climate, is the core of work of government" (Field, 2019: 32).

Service users and providers need to work with stakeholders to draw on local wisdom and combine it with some of the new digital potential. Three core axioms underpin the research. These are informed by and contribute to 7 axioms from Global

Agoras.²² Saliency, trust and engagement to protect living systems need to underpin the decision-making process.

Critical systemic research explores wicked problems in terms of the 12 is/ought questions (Ulrich & Reynolds, 2010) which need to consider social, economic and environmental dimensions together with those who are affected and involved (Table 15.1).

Wicked problems by definition are complex. They comprise many, interrelated variables that are perceived differently by different stakeholders and must be explored contextually (see Flood & Carson, 1993; Rittel & Webber, 1984, West Churchman, 1979, 1982). However, the collaboration across stakeholders needs to be guided by the axiom that: ‘We can be free and diverse to the extent that our freedom and diversity does not undermine the common good of both current and future generation of life’ (McIntyre-Mills, 2014). This axiom has been explored in depth in previous work (see McIntyre-Mills, 2006, 2014, 2017a, b). It explores the notion that our fate is determined by a realization of our interdependence. It aims to increase an understanding

their concerns, by honouring requisite variety of distinctions and perspectives as manifested in the Arena (Peter Jones).”

²² Participants included leadership by Ken Bausch, Tom Flanagan with participation by several colleagues including Norma Romm, Gayle Underwood. Leadership has continued through Peter Jones (2019) who sums up the seven axioms:

“1. The Complexity Axiom: Observational variety must be respected when engaging observers/stakeholders in dialogue, while making sure that their cognitive limitations are not violated in our effort to strive for comprehensiveness (John Warfield).

2. The Engagement Axiom: Designing complex social systems, such as for healthcare, education, cities, and communities, without the authentic engagement of the stakeholders is unethical and results in inferior plans that are not implementable (Hasan Özbekhan).

3. The Investment Axiom: Stakeholders engaged in designing their own social systems must make personal investments of trust, committed faith, or sincere hope, in order to be effective in discovering shared understanding and collaborative solutions (Tom Flanagan).

4. The Logic Axiom: Appreciation of distinctions and complementarities among inductive, abductive, deductive, and retroductive logics is essential for collective futures creation. Retroductive logic (referred to in design as backcasting) makes provision for leaps of imagination as part of value- and emotion-laden inquiries by a variety of stakeholders (Norma Romm, Maria Kakoulaki).” Contributions by McIntyre in the following publications (McIntyre-Mills, 2003; McIntyre-Mills, J., Bausch, K., Christakis, A. and de Vries, D. 2008, ‘How can we break the mould: democracy, semiotics and regional governance beyond the nation state’).

“5. The Epistemological Axiom: A comprehensive human science should inquire about human life in its totality of thinking, wanting, telling, and feeling, as indigenous people and the ancient Athenians were capable of doing. It should not be dominated by the traditional Western epistemology that reduced science to only intellectual dimensions (LaDonna Harris and Reynaldo Trevino).” Contributions by McIntyre in the following publications McIntyre-Mills (2008, 2017a, b), User centric policy design, McIntyre-Mills et al. (2014).

“6. The Boundary-Spanning Axiom: A science of dialogue empowers stakeholders to act beyond imposed boundaries in designing social systems that enable people from all walks of life to bond ...: Contributions by McIntyre in the following publications, McIntyre-Mills et al. (2008a, 2008b)

“7). A tradition within the community of practice is to identify the original contributor of the proposal by name, without reference to a specific work but by affirmation. Contexts of Co-creation: Designing with System Stakeholders 32 disciplinary barriers and boundaries, as part of an enrichment of their repertoires for seeing, feeling, and acting (Loanna Tsivacou and Norma

Table 15.1 The boundary critique and questions

Boundary judgements informing a system of interest (S)				
Sources of influence	Social roles (Stakeholders)	Specific concerns (Stakes)	Key problems (Stakeholder issues)	
Sources of motivation	1. <i>Beneficiary</i> Who ought to be/is the intended beneficiary of the system (S)?	2. <i>Purpose</i> What ought to be/is the purpose of S?	3. <i>Measure of improvement</i> What ought to be/is S’s measure of success	The involved
Sources of control	4. <i>Decision maker</i> Who ought to be/is in control Of the conditions of success of S?	5. Resources What conditions of success ought to be/are under the control of S?	6. <i>Decision environment</i> What conditions of success ought to be/are outside the control of the decision maker?	
Sources of knowledge	7. <i>Expert</i> Who ought to be/is providing relevant Knowledge and skills for S?	8. <i>Expertise</i> What ought to be/are relevant New knowledge and skills for S?	9. <i>Guarantor</i> What ought to be/are regarded as assurances of successful implementation?	
Sources of legitimacy	10. <i>Witness</i> Who ought to be/is representing the interests of those negatively affected by but not involved with S?	11. <i>Emancipation</i> What ought to be/are the opportunities for the interests of those negatively affected to have expression and freedom from the worldview of S?	12. <i>Worldview</i> What space ought to be/ is available for reconciling differing worldviews regarding S among those Involved and affected?	The Affected

Source Ulrich and Reynolds (2010: 244).

of life chances and dynamics of vulnerable population groups in areas most affected by climate change related areas. Significantly, the collection responds to complex ethical policy challenges posed by the Paris Agreement and the UN Sustainable Development Goals, in order to narrow the gap in living standards between rich and poor. Policy choices made by this generation shape the wellbeing of both current and future generations. The outcome of implementing VET programs to support an adapted version of ‘One Village, one enterprise’ (2014) adopted by the Indonesian president Jokowi could be a better understanding of socio-cultural discourses,

Romm).” Contributions by McIntyre in the following publications McIntyre-Mills, J., Bausch, K, Christakis, A. and de Vries, D. (2008).

“8. The Reconciliation of Power Axiom: Social systems design aims to reconcile individual and institutional power relations that are persistent and embedded in every group of stakeholders and

life chances and behaviour to inform policy and to improve public administration by learning what does and does not work and why from the most vulnerable populations.

In line with the Paris (2005) Declaration and Accra Agreement (2008) on harmonising development goals, development needs to take into account the values of the participants, based on long term trust. Engagement to address educational challenges needs to address indigenous wisdom and to avoid colonisation.

Theoretical Insights

Systemic intervention could help to extend the boundaries of knowledge to appreciate the implications of systemic interdependencies and the inadequacies of the social contract to protect the most vulnerable (sentient beings including the displaced, the dispossessed, the voiceless and the disabled). A non-anthropocentric approach requires an openness to new ways of knowing and an appreciation of the importance of moving to the next level of understanding as hinted by Boulding's (1956) skeleton of knowledge. Which should really have been a continuum of consciousness from inorganic to organic ways of knowing. This notion of continuity of knowing is developed in the metaphor of Mobius band (2008).

The government of things could be employed to support this rebalancing by enabling environmental citizens to shape decisions that protect biospheres, which are after all the basis for food security.²³

Human beings are animals that are co-dependent on other living systems. The biochemical make up of living systems can be understood as a Mobius band (McIntyre-Mills, 2008). A Mobius band is symbolic of string theory. Human beings are born, live, die and return to the elements which in turn re-generate life.

Praxis Approach to Support Social and Environmental Justice

Case Study: Manyeledi

The case study addresses transformation efforts in a drought-prone community in the North West (NW) Province by a team of resilient farmers, inspired and supported by Lesego Serolong from the Tiger Kloof Educational Institution in Vryburg who was inspired to contribute to the development of the region. The article describes the motivation for the project, the empowerment process of drawing on support from the wider community (as part of the learning process) and then describes one of the stages

²³ Through re-drawing the line based on engagement we could rebalance a sense of individual responsibility for the collective. We need to foster responsibility and stewardship through governance that protects the commons.

of the research. It discusses how facilitators; farmer practitioners and community members engage in re-generative agriculture and how they address climate change and water insecurity that was becoming more of a challenge and resulting on lower crop yields. The rationale for this article is to discuss community engagement and the potential for Vocational Educational Training (VET) and Research rooted in concerns regarding food and water security.²⁴ The engagement in one of the most arid areas, ‘Manyeledi’ on the potential of adding value to goat farming by suggesting the value of introducing cheese making, bee keeping, herbs and hardy vegetables was led by Lesego, a graduate of a nearby school who aimed to give back to the community by building leadership skills and links with the public, private and volunteer sectors within the region. Central support was provided by the University of South Africa which runs an outreach program to teach vocational education and training. Before the farmers could be trained, they needed to learn literacy and numeracy skills. The approach ensured that a gender mainstreaming approach was used to empower all age groups and to enable both men and women to take leadership roles. Although the community development approach has not yet achieved financial independence for the community, it has succeeded in raising skill levels and confidence in their ability to ‘put Manyeledi on the map’ and most importantly it has also reduced their reliance on government pensions.

²⁴ In this case, the VET is provided through the University of South Africa’s (Unisa’s) Adult Basic Education and Youth Development Department and through Bokamoso Impact Investments. The article focuses on the importance of addressing the needs of farmers in regions that are increasingly vulnerable to climate change. The IPCC (2018) report makes it clear that global warming will exceed the 1.5% benchmark and this has specific implications for Africa. Glasser (2018) stresses that globally we face cascading risks. One of these will be the impact of using unsustainable farming practices to produce large food crops in vulnerable food growing regions that face increased risks of drought, fires and floods. He then cites 45–80% of Africa will be affected by climate change and that this will impact food security. One such area is the North West Province of South Africa (just south of Botswana at the edge of the Kalahari Desert). It has a low average rainfall and climate change has made the farming on marginal farming land more challenging than in previous years. This article also considers the potential opportunities to address the challenge to support cross-sectoral collaboration by public, private and civil society partners to contribute to addressing the SDGs 1 (no poverty), 11 (sustainable communities) and 17 (partnerships to achieve goal 1 and 11). Challenges are intertwined across the social, environmental and economic spheres (UNRISD, 2017; Glasser, 2018; IPCC, 2018). South Africa’s unemployment rate increased to 26.7% in the first quarter of 2019. This is a 0.5% increase. The North West Province has an overall unemployment rate of 26.6%. It is worth pointing out that even though the overall unemployment in the NW Province is *lower than* in Gauteng which has an unemployment rate of 29% (South African Market Insights, 2019 it has the highest unemployment rate nationally, namely, 40,3% for young people aged 15–24 who are *not in employment or training*. This is based on the official statistics and shows the highest rate of employment for this age group in South Africa. One of the greatest challenges has been to address the so-called “not in employment education or training” category that covers young people aged 15–24 and to work with the wider community to ensure that this most vulnerable group is given more education, training and employment opportunities. Consensus exists within the Adult Basic Education, Training and Youth Development Department at Unisa about its identity as a facilitator of learning that is linked to scholarship and research to foster active community engagement and critical pedagogy (as Giroux, 2004, 2011, puts it).

Case Study: West Java

The case study is on the outskirts of Bandung in an area called Alamendah (meaning Beautiful Nature) on the potential for integrated development (in line with the One Village Many Enterprises Project). It provides an example of social inclusion, vocational training and opportunities for employment that reduced outmigration (McIntyre-Mill, Corcoran et al., 2019, McIntyre-Mills, Romm et al., 2019). The crops produced ranged from strawberry production for tourists to a range of vegetables Alamendah is based in Rancabali Subdistrict, Bandung District, West Java Province. It is one of the most resource rich agricultural areas due to its volcanic soil and provides us with a case study of successful rural development. Alamendah relies on agriculture with 95% of the inhabitants working as farmers. Apart from the agriculture sector, ecotourism can be supported further through visiting places of interests such as the tea and coffee plantations, the waterfalls, hot springs and strawberry farms. This case study demonstrates that it is possible to develop local agricultural industry not centred on rice production such as the production of berries, a range of vegetables, coffee, tea and bamboo.²⁵

While in the past there was an emphasis on bamboo production the Head of the Village informed us that the bamboo gardens, also included the production of coffee to provide biodiversity. Moreover, the expansion of local enterprise has led to a heavy dependence on active productive inputs and organization of women increasing earning potential and self-employment in an environment within which women's agricultural labour on the family farm goes unrecognized and unpaid. The loss of land and unpaid labour has resulted in driving young people to seek employment in cities. One village, many enterprises could provide opportunities in an extension of markets and possible solutions to the energy crisis in South Africa.

After attending the Food Conference in Serang (hosted by Universitas Sultan Ageng Tirtayasa in 2019), I visited Alamendah and Cibodas once again, they are now only an hour's drive from Bandung in West Java thanks to the infrastructure work undertaken by Jokowi to enable better rural- urban linkages. The road infrastructure throughout the region had made many of the sites previously visited much more accessible and this will make marketing the farm produce much easier. This is an example of progress, but the challenges for farmers have increased as a result of rising temperatures, reduced water supply, loss of forest and ground cover resulting in the loss of topsoil through erosion and wind. Whereas previously the temperatures in September required wearing warm clothing, the temperatures were around 33 degrees. The water insecurity in these areas was evident by the need to irrigate newly planted vegetables and to cover some of the crops or rely on green houses. The

²⁵ In 2013 in Indonesia there are 72 million 944 thousand villages and there are 32,000 villages in the eastern part of Indonesia. Of these 43% of the poor villages are in eastern Indonesia have limited support. This is one of the reasons for introducing the Ministry for Village and Less Developed regions. In 2013, 63% of the poorest of the poor are farmers and they make up 28.6 million farmers. Another point raised by Ida is that food insecurity in many parts of Indonesia is linked with the inability to grow rice.

green economy in West Java (like many other parts of the world) the so-called Green Revolution in the 1970's has resulted in deforestation for the production of cash crops at the expense of ground cover and the protection of water by the root systems and associated plants. As trees are lost, habitat for many species associated with food security it also lost. The pollinators (insects and birds) require trees such as the *Kaliandra (cabello de angel)* and *Kawung (Arengga pinnata)* as well as the coffee trees. For example, the apis cerana bees live in the forest near Cibeber. They live on *Kaliandra* trees and they also rely on *Kawung* trees as do the luwak (civet cats) who rely on the also eat the fruit from the Aren tree and help to fertilise the forest. The winds blowing across the deforested areas carried valuable topsoil and some of the team wore face masks so that they could cope with the high dust levels.

This vignette is on the potential of small interventions to prompt transformation. All change begins with thinking. This is why thinking matters: The green revolution in West Java spearheaded by Suharto's push towards modernization and the eradication of diversity has resulted in quite the opposite of what was intended, namely a decrease in crop yields. The fear that any form of communism could be re-surgent has resulted in caution as it is a narrative used by Jokowi's detractors.

A field visit to update the previous visit to Alamendah (McIntyre-Mill, Corcoran et al., 2019, McIntyre-Mills, Romm et al., 2019) revealed that further building had occurred and a new VET school had been built which provides opportunities for young people to make a contribution to agriculture and hospitality. The risk however is that the curriculum will be based on modernization, rather than re-generative agriculture. The headmaster stressed that the industry partners who support the school will wish the applied farming to be productive and the challenge will be to achieve both sustainability and growth. It was stressed that the increased temperatures would be managed by growing vegetables and strawberries under cover and that they would rely on watering the crops.

The clearance of forest in patches around Alamendah was evident as the hot wind blew the top soil off the increasingly eroded slopes, where crop yields were lower than in previous years, according to the spokesperson for the Reggae Farmers, known as the 'Regge' Group. This group had been formed by a father and son who has teamed with Uus, the leader of a successful co-operative to regenerate the region. They have given farming a positive name through showing that young people can make a success of agriculture. Their colourful tea shirts and vehicles to promote close co-operation have attracted many followers. There are now more than 50 leaders with followers of their own spreading the message of re-generation of farming through better methods implemented by the younger generation. This is hopeful, but it will need effort to ensure that progressive farming methods prevail, and that re-vegetation is encouraged, rather than massive deforestation. Current yields have decreased in recent months (Photo 15.1).

Photo 15.1 Irrigating the crops as the temperature is higher than usual exacerbated by dry winds
(*Source*, first author's photographs)







A visit to a bee keeper at Cibeber was also instructive. He explained that his grandfather, his grandfather's father and back through the generations has resulted in an oral history of beekeeping. He stressed that Indonesia has many bee species. They keep local *Apis cerana* bees as well as the wild Giant honey bee. The giant honey bee is known as 'Odeng' in Sundanese language, one tree can have 5–10 bee colonies. Each colony can produce 10–20 kg. The honey produced by the *Apis Dorsant* Bee is known as Odeng honey or forest honey (Photo 15.2).

He pointed out the *Kaliandra* tree which provides habitat for bees and the *Kawung* (local sugar/brown sugar trees) that provide habitat for both bees and the civet cat or

Photo 15.2 They rely on the coffee trees that produce white flowers



Luwaks and the bees. Kawung trees also produce brown sugar that can be used in coffee. The honey they produce from a range of bees enables them to sustain a family business which adds value to honey by producing a range of bee products including a jelly from tiny local hapisata bees. They manage to produce between 100–300 kg and have between 50 hives. *Apis Mellifera* is a favourite bee for beekeepers in Indonesia because 1 colony could produce 35–40 kg per year. They also have a good adaptation capability they could live in different regions in Indonesia. The *Apis mellifera* bees according to our informant will not remain in cool areas and need more nectar. The *Trigona* bees found in South Africa also need plenty of nectar which is why moving hives to follow the nectar supply can be very important. With reduced access to nectar or compromised sources of nectar, the bee populations can be impacted. The more chemicals that are used the more bees are affected.

The beekeeper stressed that they were facing challenges in his area as well as the forest was particularly dry and without nectar the bees move to other areas or die.

In South Africa, the impact of climate change and drought on crops has impacted on honey supply and in the north West province and Limpopo area crops are increasingly reliant on irrigation. The potential for communal efforts to support vocational education and training.

The initiative to develop ‘one village many enterprises’ suggested by Jokowi could be undermined not only by opposition to any form of social enterprise, but by the ripple effects of industrialized agriculture that is now jeopardizing West Java through impacting water security as forest cover exposes the region to erosion and a diminishing water table. According to Bevens (2017):

Historians estimate that beginning in 1965, between 500,000 and 1 million Indonesians were killed in Gen. Suharto’s bloody rise to power, the worst mass slaughter in Southeast Asia’s modern history after the Khmer Rouge killing fields in Cambodia.

But the impact of the purge has had far wider impacts as the notion of the commons and common good are undermined. The turnaround in the use of the military to protect the Citarum²⁶ river is however is good news story. Jokowi has managed to protect the first stage of the river with the help of the military staged all along the river system.

²⁶ The Citarum is the longest river in West Java and while once it was a source of water and fish, it is now polluted. <https://thediplomat.com/2018/04/indonesias-citarum-the-worlds-most-polluted-river/>.



Whereas once the river was clogged with plastic and debris all along the river, now at least the first stage has been successfully cleaned up. A visit with Dr. Ida Widaningsih (Executive Director of the Center for Decentralization and Participatory Development Research, Universitas Padjadjaran) was inspirational, because a year ago it was still heavily polluted according to her. A conversation with a Sundanese Wisdom Keeper who is an indigenous protector of the river, was instructive. This area had always been regarded as sacred, a place where the West Javanese King had meditated and sought solace from the troubles of public office. Our guide said that his family (back through the generations) had been responsible for protecting the river. He said that his role was to continue to educate people when they visit the area. He now has a position supported by the government to maintain this role. The education centre he runs is informal, but his story telling helps to maintain the connection with the past. The signage and history boards along with the presence of the military has succeeded. The fish, birds and plant life has returned to the river.

Although critics of the military said that they could do more harm than good the upper level of the Citarum river is a success story. The lower reaches of the river

remain riddled with plastic²⁷ and polluted by chemicals from the many factories along the riverbanks. On some days, the river turns red in sections from the red dye from the clothing factories. Fisherman who once relied on fishing to supplement their livelihoods ‘catch’ plastic and the health of villagers is eroded by the chemicals in the river.²⁸ As the river passes through villages such as Alamendah and Bandung the villages have no way to process plastic waste. According to Ida:

Previously the villagers used to dispose of the food wrapped in banana leaves on the ground and they would compost. Now with plastic it just leads to pollution and clogging the rivers.²⁹

‘Balancing Individual and Collective Needs’

In terms of exploring ‘policy possibilities for strengthening institutional capacity to address the UN 2030 Sustainable Development Agenda through ecological engagement’, one might want to ask whose voices are represented and which part of community we are talking about, and also what kinds of engagements and to what extent that all parties related to securing life define ‘security’

A noteworthy point coming up from research by Riswanda with some colleagues at Universitas Padjadjaran in Indonesia is related to water security. They are working on a collaborative research project on water security issue in terms of developing Multi-Stakeholder Forums (MSFs) adapting ‘the notion of wellbeing, namely social, economic and environmental’ wellbeing (McIntyre-Mill, Corcoran et al., 2019, McIntyre-Mills, Romm et al., 2019) to governing water usage management, water justice and mapping out potential water conflict.

The research addresses:

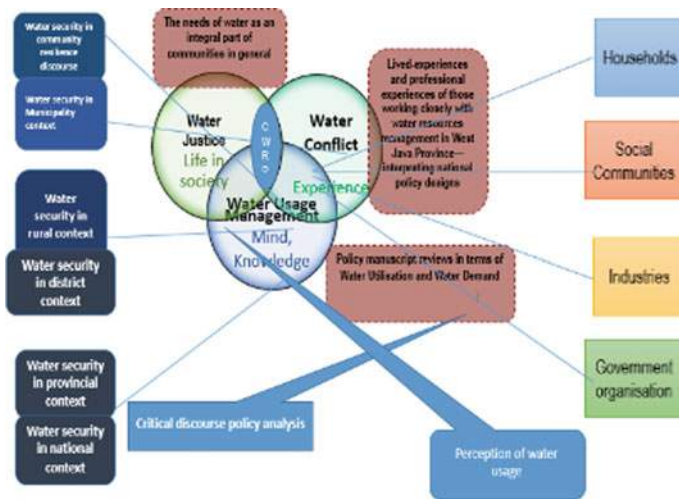
1. Who *are the actors* in actual fact and who *ought to be the actors* in the MSFs with respect to environmental perspectives in Indonesia?
2. How can the common interests be strengthened among the actors mentioned formerly; how can we overcome some of the differences in interest and ways of working? What are other options available?
3. What is needed to strengthen the influence of the least influential, how can empowerment be promoted in the view of environmental policy?
4. How can interdependence at the level of water access and control be realised?
5. Which capacities need/can be strengthened, how can power within be developed to lead to power to and power with?

²⁷ Pumps that produce bubbles can help to consolidate waste so that it can be more easily harvested see the Dutch prototype detailed at <https://www.theguardian.com/world/2019/nov/07/bubble-barrier-launched-to-keep-plastics-out-of-oceans>.

²⁸ <https://www.youtube.com/watch?v=GEH0lmcJAEk>.

²⁹ Worthy of note are the campaigns to return top using banana leaves for wrapping both in Asia and other regions of the world: <https://thenewdaily.com.au/news/good-news/2019/06/04/banana-leaves-used-wrapping-produce/>, <https://www.ernestpackaging.com/buzz/sustainability/banana-leaf-wrappers/>, <https://www.biobasedpress.eu/2019/09/processed-banana-leaves-an-eco-friendly-packaging-solution/>.

There has been a shift in development paradigm in Indonesia. A ‘rural-urban balance’ lesson learned from the research is that demands for participatory and inclusive policy-making are on rise, highlighting concerns for community resilience programs to be included in the making of policy responds on water security. The rise could be influenced by the current Joko Widodo’s regime having to do with the continuum of decentralising governance to regional development.



Source Conceptual images by Riswanda from a work-in-progress research report: Widianingsih et al. (2020)

The provincial government of West Java in this case is committed to water cycle and water sustainability and remarked its commitment by supporting Indonesian water law in 2014.

Water stewardship policy is also the main objective of watershed revitalisation in having this collaborative research. ‘Knowledge action’ is then termed out to make sure the objective could be met.

The government then came up with business sector involvement just regulated recently, including policy on ground water tax.

The provincial government has done a lot of conservation programs and forums developed showing their Community Engagements. However, campaigns on water scarcity by some NGOs in particular areas without understanding that groundwater is very much different with surface water usage. Social media management is the next issue relating water industries to the issue of Water Scarcity happened by nature and perhaps by merely misconceptions of water security.

Recent studies seem to have more discussion on ‘research-based policy making’ with respect to initiating partnership among government institutions-private sectors-community organisations. The initiation is expected to come across different sectors where Universities become a leading sector in many academic based public discussions. Government agencies today are not only taking roles as regulators of the

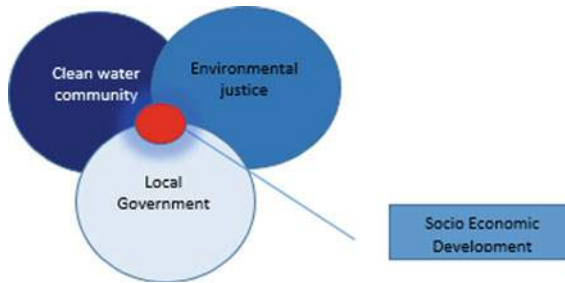
markets but also as beneficiaries from market domains to fill in spaces in public affairs which were before dominated by government domain. A typical policy-making is needed to give up spaces for facilitating and accelerating community organisations to have their own socio-economic capacity building.

Water Security and Water Justice towards Water Sustainability is systemic in Indonesia. The mapping of water-related stakeholders' perceptions, roles and capacity in water resource management is crucial in preparing for the structure for integrated water resource management. Water stakeholder varied in terms of their entity, roles, and functions. Some of them may also have competing perspectives, values and interests that are not easy to unite or have more power and resources to support their roles than others. The understanding of stakeholders in water resource management can provide valuable information about the weaknesses, strengths, challenges and potentials needed to prepare them to work more effectively and sustainably. Lack of coordination and integration between and among stakeholders; inefficiency, corruption and poor management among government agencies; and poor participation of low level of government's and community institutions in the planning and implementation stages have been documented as barriers of integrated water resource management. As an instance, refusal to save water for local people may jeopardize the sustainability of water entrepreneurs' business. On the other hand, the community's supply of water depends on the sustainability of water entrepreneurships. Apart from the contributions of co-production to the improvement of physical access, quality, and affordability, cooperation between local entrepreneurs and community members extends to conflict management.

Bio and socio environmental assessment are done by involving local universities in provincial regions where the water factory production established. The involvement is to stimulate local government initiatives in terms of community development issues (Photo 15.3).

Photo 15.3 Empowering local communities is a way.





Bounded Rationality calls for systemic intervention (Midgley and Ochoa-Arias, 2004; Ulrich, 2000)—whose voice counts and according to whose lenses, and what are the domineering views.

How differing lenses lead to different perception on water security; what kind of policy interventions needed—dependent of how and why policy makers and service providers have common grounds on what could be the roots of the roots policy issues.

The term water security can be viewed in differing perspectives that are grounded on the community’s ability to preserve proper access to acceptable quality water. The differing perspectives are likely to do with fulfilling various demands for the varied purposes of water. This requires managing water resources—including the river basin. Studies on water security today also discuss water-related disaster. Most attentions are given to key lessons for development considering the impact of and the need to discuss the issue of water security in a way that could contribute to protecting lives and environment.

Food Security and Energy Security

The issue of water security interconnects food security and energy safety since it relates to the balance of the usage of water resources for social-ecological resilience.

The management of waste in Alamendah has been encouraged through a point system linked with recycling and free care at the clinic. But the issue is that across Indonesia the management of waste is a local government responsibility that is not supported by local government funding. Thus, innovative approaches need to be developed to enable widespread waste management rather than dumping in the rivers or burning waste which simply adds to the pollution of water and the air.

The reliance on NGOs and volunteering has fostered reliance on foreign donors. Some of the donations have resulted in better infrastructure, but other donations come with political or policy strings attached. Another aspect is the increase in private sector investment in tourism and the extent to which international visitors have supported more conservative religious elements whilst cynically exploiting tourism in some instances calling it “Halal tourism,” where local prostitution is disguised as marriage with the support or least connivance of the local mosques.

In South Africa, the reliance on government could be alleviated through following the ‘One village many enterprises model’ as mentioned above.

As the first and third authors of this chapter drove from Thabazimbi back to Pretoria, we saw the mining areas and reliance on primary industry. Unfortunately the reliance on coal mining has impacted on carbon emissions and Eskom has been looted by the Guptas who took over the control of the board and promoted the use of poor grade coal in the coal mines they acquired (Hoffstater, 2018; Shai, 2017) Some would argue it is a long bow to connect carbon emissions with climate warming and the impact on the conveyor belt current carrying cold water to the equator from Arctic and the impact it has had on precipitation on the catchment areas in the Cape or the impact on the krill in the ocean. But the links between climate change and the warming of the ocean are being felt along the coast as whales and sharks move elsewhere for access to food.

Extending Solidarity Through Digital Engagement and Ecological Citizenship

Projects with potential are detailed in ‘Balancing Individualism and Collectivism’ and in the companion volumes for Contemporary Systems Series called: ‘Mixed Methods and Cross Disciplinary Research Towards Cultivating Eco-systemic Living’ and ‘Democracy and Governance for Resourcing the Commons: theory and practice on rural-urban balance to address loss and displacement.’³⁰ Since completing the volumes, the lead author has been researching the notion of human dependency on nature and the extent to which our entanglement with the things derived from a capitalist carbon-based economy have entrapped or blinded us to other options.

The affordance of the niches created by successful crop production made it possible to specialise and industrialise. This has resulted in a way of life that is no longer sustainable. The production of goods in the current prevalent economy uses energy supplies that are largely unsustainable. The Adani mine in Queensland Australia, for example will provide jobs at the expense of the environment (McIntyre-Mills, Romm et al., 2019) and will undermine the long-term liveability of the planet. The chapter summarises some of the key points from these volumes aimed at providing sources of ideas for policy makers and those engaged in strategic thinking³¹ to protect and re-generate living systems in terms of ‘wellbeing stocks’ a

³⁰ These volumes published in 2019 were based on a symposium hosted at Flinders and Uni of Padjadjaran. Colleagues from Uni of South Africa also attended and have provided papers.

³¹ The critical systemic approach takes into account many diverse ways of seeing and tries to find common themes that could underpin ‘lives worth living’, based on testing out ideas with those who are to be affected by the decisions and mindful of future generations of life (including sentient beings). This is a form of expanded pragmatism based on mindful decision making in the interests of living systems of which we are a strand (McIntyre-Mills, 2017a, b). We need to respond to systemic socio-demographic, cultural, political, economic and environmental challenges and the different needs of age cohorts in developed and developing and less developed parts of the world. Harper

concept adapted from Stiglitz et al. (2010: 15) to refer to a multidimensional measure of wellbeing. This requires re-framing not only economics but our relationships. Stiglitz et al. (2011: 15) use a multidimensional measure of wellbeing spanning:

1. Material living standards (income, consumption and wealth), 2. Health, 3. Education,
4. Personal activities including work, 5. Political voice and governance, 6. Social connections and relationships, 7. Environment (present and future conditions), 8. Insecurity, of an economy as well as a physical nature.

The aim of the ‘wellbeing stocks’ concept is to enable people to re-evaluate economics and to become more aware of the way in which we neglect social and environmental aspects of life. The pursuit of profit at the expense of people and the environment is a central problem for democracy and governance. The vulnerability of cities is a symptom of the lack of balance between individual and collective needs. Economic and environmental indicators of wellbeing were tested by means of a prototype.

In order to manage the commons mutual agreements, need to be negotiated and records need to be kept, in order to protect the interests of stakeholders. The commons need to be theorized as a legal concept (Marella, 2017) and as a transformative governance concept (see Planetary Passport (PP), McIntyre-Mills, 2017a, b and Systemic Ethics, McIntyre-Mills, 2014). The book ‘Planetary Passport’ provides a new epistemic narrative and responds to the 2030 Development Agenda by suggesting a way to enhance representation and accountability by extending the Millennium Goals and UN Sustainable Development Agenda. It reflects on studies of alternative architectures for democracy and governance and suggests a way to extend local engagement in social, economic and environmental decision-making.³²

Use values that currently commodify people and the environment and consumption choices that ignore the opportunity costs are unsustainable. This approach is not inevitable, it is possible to do things differently. The cycle can be a closed loop,

(2017) stresses that population change is below replacement levels in many parts of Europe where the population profile is one of low fertility and low mortality. So, population change needs to be viewed in terms of ballooning and shrinking populations. Added to this the life chances of young people need to be understood in different parts of the world. Basic concepts include, wellbeing, democracy, subsidiarity, capacity building, critical systemic praxis and wicked problems, complex decisions need to be made by complex decision makers. Others are: cultural studies, critical systems thinking, Informatics and modelling complex systems, sociology and public policy, management systems and governance.

³² The engagement processes (see ‘Balancing *Individualism and Collectivism*’, McIntyre-Mills et al. 2017) that enable protecting the commons are explored in the companion volumes in which the rationale for a new way of living is developed with participants in Africa and Indonesia, where risks associated with displacement and loss are explored in more depth. The rationale for a more ethical form of representation and accountability to support cosmopolitan transdisciplinary approach is detailed in Systemic Ethics (McIntyre-Mills, 2014). Then in *Planetary Passport for Re-generation: knowing our place through recognizing our hybridity* (McIntyre-Mills, 2017a, b) a case is made that the commons could be protected through working across conceptual and spatial boundaries to enable low carbon, virtuous living in which resources are saved, re-generated to protect current and future generations of living systems.

rather than extracting resources in ways that are destructive and lay waste to people and the environment, an alternative is possible.

Currently unemployment and lack of access to tertiary or vocational training are major human security challenges in a degraded urban environment. Highly urbanised, environmentally affected regions face the cascading social, economic and environmental challenges that impact on the habitat across the continuum from domestic, liminal, agricultural and wild animal life (to draw on Donaldson & Kymlicka, 2011). The greater the use of participatory design processes to address complex problems, the better the problem-solving outcomes for service users and providers.

Hodder stresses that our relationships with things are not static and that we can re-configure the assemblages. This requires the desire to do things differently, which requires a cultural shift in the way in which we currently live our lives. According to Hodder (2012: 4): “So, there are only flows of matter, energy and information” (Deleuze & Guattari, 2004; Ingold, 2010).

The point of the contribution is not to rehearse the current challenges associated with living in the Anthropocene, instead it makes a case for doing things differently in a non-anthropocentric manner (McIntyre-Mills, 2014).

Hannah Arendt emphasised the need to recognise patterns in behaviour, this is important for sociologists, but it is equally important to recognise the need to understand that human culture has the potential to adapt and change the environment, because of the scale at which the global economy operates. The Anthropocene is the product of human culture writ large. But by recognising the ‘banality of evil’ (Arendt, 1963) and the implications of the everyday choices we make, it is possible to do things differently. The way we think matters, it changes the way in which we relate to one another and living systems of which we are a strand. The assemblages we create through our desires can change. Our thoughts and emotions result in decisions and information that support cultural flows that re-generate our environment or lead to its de-generation:

The social contract protects people within the boundaries of the nation state, but the mantle of protection is given only to citizens and it is anthropocentric. It does not protect plants and animals or the living systems on which we depend. We need to do things differently and this will require training and engagement (using mixed methods to resource the commons and to protect habitat for multiple species.

This means that we will need to protect habitat for animals, plants in domestic spaces, liminal places, farms as well as wild spaces. This is important to address the United Nations 2030 Agenda. The commons is not a resource, it is a process for managing social practices and for collective benefit.

The rate at which species are disappearing is now linked with climate change and loss of habitat. The categorization of species in museums included humans, animals and plants and the re-claiming of family from the bowls of museums was the fate of many indigenous people. Donna Haraway’s recent work (2015, 2016, 2018) stresses the need to extend a sense of solidarity and care to other species. We need to move away from the sense of boundaries across-species and re-think our values and our relationships. This requires a new perspective on our place within living systems.

I have just received the latest copy of *Global Policy* and I have scanned the entries on topics ranging from the risks associated with Brexit to the rising level of conflict in regions such as Horn of Africa, North Africa and Middle East, the tensions in the Pacific as comments made by the Australian Deputy Prime Minister suggests that the residents of Tuvalu would survive the rising sea levels as they would be welcome to work in Australia.³³ This comment was made after the Fijian Prime Minister had asked for Australia to reduce its coal emissions. The challenges underpinning peace and security are focused on food, energy and water security. The news reports may not highlight these three core areas, but they are the subtext of most of the contested news items. The offer to purchase or take over Greenland by Donald Trump, is yet another example of a bid to access oil reserves and to build travel destinations. Fortunately, the Danish PM did not take the offer seriously.³⁴ Chulov (2019)³⁵ stresses that

“Iran views Trump with contempt, but on balance believes the economic war³⁶ launched by his administration, and military threats, are designed not to start a bombing war, but to shore up a negotiating position, vis-a-vis a bid to redraw the nuclear deal that was signed by his predecessor, and torn up by Trump last year.”

Extending Solidarity

We can redefine these boundaries because we are the boundaries—according to Haraway. The only problem is that some have more power to decide than others. The responsibility to protect children wrested from the arms of their parents at the Mexican border lies not with the children or their parents, but with the voters—the public and civil society who need to defend the rights of those who are outside the mantle of the social contract.

The responsibility to protect animals subjected to transportation as part of the so-called live meat trade lies with voters who need to redraw the boundaries of what is acceptable decent treatment of animals and what constitutes unacceptable commodification of sentient beings. John Scott (1998) in ‘Seeing like a State’ takes the approach at which Foucault hints by giving detailed examples of the way in which the state has crushed diversity—from designing monocultures in forestry to ironing out diverse political opinions. I argue that if we accept the concept of the banality of evil—the notion that everyday decisions by many can collectively result

³³ <https://www.theguardian.com/australia-news/2019/aug/22/australias-deputy-pm-apologises-to-pacific-for-fruit-picking-comments-if-any-insult-was-taken>.

³⁴ <https://www.bbc.com/news/world-us-canada-49423968>. “US President Donald Trump has called the Danish leader “nasty” after she rebuffed his idea of buying Greenland. He lashed out hours after Prime Minister Mette Frederiksen said she was “sorry” that Mr. Trump had abruptly called off a state visit to Denmark. She has dismissed the suggestion of such a land deal as “absurd”.

³⁵ <https://www.theguardian.com/books/2019/jun/13/oil-tanker-attacks-will-inflate-conflict-between-the-us-its-allies-and-iran>.

³⁶ <https://www.theguardian.com/world/2019/apr/23/us-toughens-stance-on-iran-ending-exemptions-from-oil-sanctions>.

in a normalization and acceptance of evil—then we have to re-think many of the aspects of governance and democracy that we take for granted today.

If we can accept that more people than ever before have been displaced, what does that mean for human ethics and the nation that neoliberal governments should close borders? If we can accept that it is now scientifically proven that genetically human beings share 98% of their genes with a lab rat and even more with the primates that are experimented on—how can we justify inflicting pain or denying rights to human beings and other sentient animals? If we can accept that the boundaries between people are constructed on the basis of will and power, then we can accept that people have the right and the responsibility to do something about injustice, because ‘we are the boundaries’ as Haraway (1992) stresses. The need for democracy to re-engage with critical thinking is vital. Is it possible for groups to be held responsible in the same way that an individual can be held responsible? Arendt’s notion that collective responsibility is upheld when each individual engages critically with the everyday decisions about who gets what when why, how and to what effect. Crowds formed without prior planning may act irresponsibly and the individuals in the crowd are individually and collectively responsible. Crowds orchestrated through political rallies are even more responsible and the political party per se can be called irresponsible.

According to the UN the majority of the world’s population will be in Africa and Indonesia. A recent United Nations report projects that by 2050 most of the global urban population is expected to be located in Asia (52%) and Africa (21%) (United Nations, 2014: 11). The study areas selected take significance from the predictions made in this UN report.³⁷

³⁷ According to the previous United Nations High Commissioner for Refugees, Guterres (UNHCR, 2014), for the first time since the Second World War, the global figure for displaced persons has now passed 50 million and, by 2050, this figure could be as high as 150 million (Rusbridger, 2015: 13). I argue that climate change impacts environments leading to displacement of plants, animals and people as cities encroach or droughts, floods, fires render areas unable to provide a liveable environment. This has profound ethical implications for everyday living choices. According to the Nuccitelli (2018 who cites Ricke) and correctly emphasizes that as a warm country it is in its interests to address global warming and climate change. Ricke et al. (2018: 1) explain: “Following the recommendations of the recent report by the US “National Academies, we executed our calculations of the social cost of carbon through a process with four distinct components: a socio-economic module wherein the future evolution of the economy, which includes the projected emissions of CO², is characterized without the impact of climate change; a climate module wherein the earth system responds to emissions of CO² and other anthropogenic forcing; a damages module, wherein the economy’s response to changes in the Earth system are quantified; and a discounting module, wherein a time series of future damages is compressed into a single present value. In our analysis, we explored uncertainties associated with each module at the global and country level. We focused only on climate impacts, and did not carry out a fully-fledged cost–benefit analysis, which would require modelling mitigation costs.”

Proposed Future Directions: from Fragmented Silos to Food Webs and Water Flows

The root metaphor of flows was used with Neporendi when undertaking research with care takers of the River Murray linked with Neporendi where I undertook research as part of an Australian Research Council Linkage Grant from 2004 (see McIntyre-Mills, 2008). The other (linked) metaphor of weaving strands of experience came about through conversations with the elders who explained the importance of the river grasses for removing salinity as the river ebbs and flows. The health of the Murray is dependent on the removal of toxins. The grasses can be seen to function as liver or kidneys. This has also been stressed by Weir (2009, 2015).

The idea that we now need to think of democracy in terms of weaving together strands of experience is important as is the notion of river grasses for removing salinity and water as a synecdoche of the sense of flow that the Intergovernmental Panel on Climate Change (IPCC) formula sums up to demonstrate that what we do in one part of society flows on to effect the environment on which we depend.

The binary oppositional thinking and commodification are core problems in Western neo-liberalism as stressed elsewhere (McIntyre-Mills, 2014) which has implications for ethics and addressing our polarising our relationship with living systems.

The realisation of both environmental flows and cultural flows rests partly with whether we can reduce the powerful influence of separation thinking, and this is also what thwarts our ethics for living lives in connection. Cultural flows are quickly trapped in the contradictory constraints of separation thinking and are more easily communicated as narrowly defined water allocation. (Weir 2009: 119–129 cited in Weir, 2015)

In ‘Planetary Passport’ (2017a), I propose a reframed form of governance which rests on supporting social, economic and environmental wellbeing monitored **from below** by engaged inhabitants of a region and stress the need for stewardship as detailed below (Table 15.2).

Table 15.2 Stewardship approach

Governance factors adapted from by Van der Waal (2016)	New architectures for people and the planet by McIntyre-Mills (2017a, b)
Accountability tools to protect	Living systems
Policy tools	Co-determination
Role of government	Steward eco-facturing
Style	Postnational cascade economics
Accountability for	People and the planet
Goal	Protection of wellbeing stocks

Source Adapted from categories suggested in column 1 by Zeger van der Wal, Flinders Symposium, 2016 and cited as Table 12.5 as an evolution of democracy and governance in McIntyre-Mills et al. (2017: 293)

Progress to Date on New Architectures for Democracy and Governance

This section makes the case that critical agency is vital to understand, monitor and evaluate everyday social, economic and environmental strategies that enable a life worth living (Nussbaum, 2011). Two architectures for participation and scaling up governance are discussed. These new architectures for democracy and governance use readily available tools and software to link local learning communities with regional and post national regional partners and networks. The policies that could make this approach possible already exist (Florini, 2003; McIntyre-Mills et al., 2014; McIntyre-Mills, 2014, 2017) (Table 15.3).

The area of concern which a proposed ‘Global Covenant’ (Held, 2004) and proposed *Planetary Passport* needs to address is poverty, climate change, displacement of people and destruction of habitat. The PP could strive to balance individual and collective needs in line with a Global Covenant. Post national regions could be protected in the form of a nested governance system spanning the local personal level to the household, community, regional and post national regional level. This could (perhaps) be achieved based on co-creating pathways (McIntyre-Mills & De Vries, 2011; McIntyre-Mills & Wirawan, 2017) to map and manage local resource

Table 15.3 Multi-level engagement architectures to protect living systems and to support the global commons

	Structure	Process	Action
Micro-level individuals	UN local Agenda 21 (1992) and Aarhus convention (1998)	Questions raised and posed to local government by individuals	Local government, NGOS and individuals
Meso States and regions	Aarhus convention linked to global covenant	On line moratory democracy and governance to address state/market/civil society concern	Networking NGOs and INGOS to address representation and accountability
Macro Cosmopolitan governance	Legal structures to support the global covenant, Aarhus convention and Biospheres convention	International Criminal Court United Nations	Global action to pass laws to protect social and environmental justice in overlapping biospheres

Source Adapted from Florini (2003) and Archibugi in Wallace Brown and Held (2010: 3: 22) cited in McIntyre-Mills et al. (2014: 92) and McIntyre-Mills (2017a, b: 7), ‘Reconsidering Boundaries Table 3.1. McIntyre-Mills (2017a, b: 148, 313) to address nodes (people, organisations) and to connect them to areas of shared post regional concern (Habermas, 2001) through an on-line Planetary Passport (PP) (The decisions are prompted by scenario guidelines. The daily living choices can be guided by means of an on-line engagement tool that helps decision making and enables the monitoring of social, economic and environmental choices. Positive and negative sanctions through monitoring could ensure that resources are fed forward to those in need and in the interests of future generations as detailed below)

systems (Ostrom, 2008) in context ‘from below’ based on self-reflection (through critical heuristics questions) to prompt decision making (Jackson, 2000).

Stiglitz et al’s (2010) wellbeing stocks could be supported by enabling people to ‘be the change’ on a daily basis through the way they choose to live their lives and making social contracts through the on-line system to protect local resource systems. Their footprint can be monitored locally, and they can generate transformation locally. The potential success of this approach is detailed (McIntyre-Mills & De Vries, 2011; McIntyre-Mills et al., 2014) and McIntyre-Mills (2019) explores the wider potential for redressing the cascading risks of climate change and how the way in which the management of risks was indeed achieved through the Cape Town Provincial Government’s use of a transparent water management application that succeeded in getting people to change their water usage in a very short period of time. The ‘monitoring from below’ approach achieved control by the people of a scarce resource. The potential for further monitoring by means of pathways to wellbeing software to achieve social, economic and environmental outcomes for social and environmental justice can be achieved. This is a way to achieve re-generation with people in and beyond the usual structures of governance. This approach extends the social contract to ecological citizens who can log on to a new post national form of governance and democracy. It includes those who are currently excluded from citizenship—the young and the displaced.

These new architectures for democracy and governance use readily available tools and software to link local learning communities with regional and post national regional partners and networks. Post national regions could be protected in the form of a nested governance system spanning the *local personal level* to the *household, community, regional and post national regional level*. This could (perhaps) be achieved based on co-creating pathways (McIntyre-Mills & De Vries, 2011, McIntyre-Mills & Wirawan, 2017³⁸) to map and manage local resource systems (Ostrom, 2008) in context ‘from below’ based on self-reflection (through critical heuristics questions) to prompt decision making (Jackson, 2000).

The policies that could make this approach possible already exist (Florini, 2003; McIntyre-Mills et al., 2014; McIntyre-Mills, 2014, 2017a, b).

The area of concern for a proposed Global Covenant (Held, 2004) and proposed *Planetary Passport to Protect People and the Planet* is to address poverty, climate change, displacement of people and destruction of habitat. The PP could strive to balance individual and collective needs in line with Held’s notion of a so-called ‘Global Covenant’.

Stiglitz et al’s (2010) wellbeing stocks could be supported by enabling people to ‘be the change’ on a daily basis through the way they choose to live their lives and making social contracts through the on-line system to protect local resource systems. Their footprint can be monitored locally, and they can generate transformation locally. The potential success of this approach is detailed (McIntyre-Mills & De Vries, 2011; McIntyre-Mills et al., 2014) on a pilot of the software and McIntyre-Mills (2019)

³⁸ See the demonstration of the pathways to wellbeing software at https://archive.org/download/pathway_DEMO_1 pathways to wellbeing <https://archive.org/details/VN860546ethicsanddesign>.

explores the wider potential for redressing the cascading risks of climate change and how the way in which the management of risks was indeed achieved through the Cape Town Provincial Government's use of a transparent water management application that succeeded in getting people to change their water usage in a very short period of time through a combination of shame and the wish to 'do the right thing' and to share resources in order to prevent 'day zero', the day when taps would run dry and the residents of Cape Town would need to stand in queues at approximately 200 proposed water collection points. The problem was caused by the high cost of implementing a desalination plant along with reservations about the appropriateness of such an option (despite the rising rate of in migration to the Cape). A further issue was the associated political friction between levels of government with different party-political affiliations. The use of structured dialogic design (SDD) across political interest groups has been shown to be both appropriate and successful (Christakis, 2006; Kakoulaki & Christakis, 2017).

The 'monitoring from below' approach achieved re-generation of control by the people of a scarce resource. The potential for further monitoring by means of pathways to wellbeing software to achieve social, economic and environmental outcomes for social and environmental justice can be achieved.

This is a way to achieve re-generation with people in and beyond the usual structures of governance. This approach extends the social contract to ecological citizens who can log on to a new post national form of governance and democracy. It includes those who are currently excluded from citizenship—the young and the displaced.

Pathways to Wellbeing

This application of the logic used in SDD extends the UN Local Agenda 21 which requires that socio-cultural, economic and environmental accounting and accountability (triple bottom line) be applied (McIntyre-Mills & De Vries, 2011; McIntyre-Mills et al., 2014). This would enable local residents and members of a wider post national region to have a say in matters that impact on social and environmental justice.

Representation, accountability and re-generation are the three major challenges of the day that need to be addressed by means of a cross boundary regionalist approach to address the big issues of the day, namely poverty and climate change. They require a new approach to democracy and governance to enable monitoring from below and above to ensure that those who are elected are held to account and that collective responsibility is indeed taken to protect the Planet. One of the issues that needs to be faced is that much power has been given to those who have been voted into power that they 'forget' that democratically elected leaders ought to be agents of the people and that the environment is of primary concern, not their personal, political careers.

Pathways to Wellbeing: A Way Forward to Protect the Marginalised?

By considering social, cultural, economic and environmental concerns in terms of:

1. What we have (material and non-material terms)
2. What we need
3. What we are prepared to think and do to add/create and share with the global commons
4. What we are prepared to think and do to discard/change to help the global commons
5. Turning points for the better and worse
6. Barriers
7. Drop down lists that grow shared resources linked with '*persons, entities, themes and actions*' (Marc Pierson, 2019, pers. comm, International Systems Sciences Blue Jeans Dialogue) at the personal, household, local, national and post national levels

This could provide the means by which to implement the Sustainable Development Goals from the local, to the regional and post national regions in order to resource the commons (Bollier & Helfrich, 2012).

Because blockchain is a distributed network that can provide tracking, monitoring surveillance from below it can provide a means to empower the landless and the disposed (Nir Kshetri, 2017; Wirawan, 2019). It can also provide a means to balance individual and collective needs (McIntyre-Mills, 2017a, b) and monitor the fair distribution of resources such as food, energy and water from below (McIntyre-Mills, 2019) trace the origin of foodstuffs and to protect the safety of voiceless sentient beings. According to Al-Saqaf and Seidler (2017: 340):

“blockchain ...ranges from finance to record-keeping and from tracking the flow of goods to verifying the identity of citizens. The fundamental common characteristic that all blockchain based services share is a design that depends on immutability and decentralisation in storing data. Yet, a system based on the community cannot work without the community.

Al-Saqaf and Seidler (2017) go on to stress that while much has already been written about blockchain applications and the potential for industry, little research has been undertaken to explore the extent to which user-centric governance and democracy can be enabled through alternative pathways. This section strives to contribute to the literature by exploring blockchain technology's potential to support social and environmental justice by considering to what extent can 'decentralisation, transparency, equality and accountability' (Al-Saqaf & Seidler, 2017: 338) be addressed and to what extent engagement could play a role in:

- (a) Limiting top down approaches to human rights and the abuse of power through enabling more surveillance 'from below' and through
- (b) Enhancing the stewardship potential to protect the voiceless, including those without citizenship rights, women, children and animals.

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- (a) Limiting top down approaches to human rights and the abuse of power through enabling more surveillance 'from below' and through
- (b) Enhancing the stewardship potential to protect the voiceless, including those without citizenship rights, women, children and animals.

This requires being guided by a priori norms for praxis and considering the consequences of one's choices through careful consideration aided by means of critical heuristics, also known as thinking in terms of 'if then scenarios. This process of ethical consideration is known as 'expanding pragmatism', in order to consider the consequences for self and other living systems. As stressed in McIntyre et al. (2014 and McIntyre, 2017, 2018: 13):

An early prototype to teach and engage participants in learning about ecological citizenship has been developed and tested (McIntyre-Mills and De Vries, 2011, McIntyre-Mills, et al., 2014).³⁹The evaluation of the level of importance of multiple (and simultaneously important issues) is important by reflecting on one's life in terms of different scenarios and the consequences of these choices, for example:

- *I have* the following things in my life—understanding of human rights, respect for biodiversity, responsibility to care for others.
- *I need* in my life—a home, a sense of safety, a place near public transport and hope for the future.
- *I will add* to my life—more community support from a range of services and/or more community engagement to lobby for resources; more connection to nature.
- *I will discard* from my life—a sense of hopelessness, a sense of entitlement, excessive consumption.
- Self-reflect on *the turning points* for the better or worse hope that consumption can be replaced with a greater sense of attachment to others and the environment.
- *Consider the barriers* that currently exist and consider what could be done to transform society and our relationship to the environment.

The transformative, transdisciplinary research (Darian-Smith & McCarty, 2017) proposed explores plausible pathways in line with the United Nations (UN) Sustainable Development Goals to enhance wellbeing and resilience for those at risk of displacement and those already displaced. Clearly, this has implications for public policy, human service governance and delivery and the way in which the Paris Climate

³⁹ See the demonstration of the pathways to wellbeing software at: https://archive.org/download/pathway_DEMO_1/pathway_DEMO_1 pathways to wellbeing <https://archive.org/details/VN860546ethicsanddesign>.

Change Agreement (2015), UN Sustainable Development Goals (2014) and the UN Sendai Framework (2015–2030) for Disaster Risk Reduction are addressed. Thus Goal 1 (end poverty) with specific implications for food, energy and water security, Goal 5 (gender inequality) and Goal 17 (creating partnerships) are particularly relevant to protecting the most vulnerable, whilst The United Nations Declaration of Rights of Indigenous Peoples (2007) provides a vital pathway for socially inclusive decision-making on habitat protection.

Indigenous thinkers such as Chilisa (2012, 2017) stress that our sense of who we are needs to be revised. We are vulnerable and reliant on a shared habitat. The ideas underpinning the UNDRIP stress that Indigenous people need to have the right to express their identity within a sacred space. The challenge will be to scale up this sense of stewardship not only at the local level but also at a post national regional level through understanding that we are stewards of one planet. The earth politics notion of Vandana Shiva is the only logical direction for securing the biospheres for food security of living systems.

We live in an increasingly commodified and competitive world. Our research focuses on balancing individualism and collectivism by exploring the food, water and energy consumption choices people make and how these relate to their perceptions on ‘wellbeing stocks’. Wellbeing stocks are defined by Stiglitz et al. (2010: 15) in ‘Measuring our lives’ as multidimensional.⁴⁰ In ‘Planetary *Passport*’ (McIntyre-Mills, 2017a, b) and *Wall Street to Wellbeing*’ (McIntyre-Mills, 2014) the link between wellbeing stocks and the need to develop everyday decision-making capabilities from:

- the micro household’s level to the meso level of organisations at the local government level and
- the macro level of regional and post regional decision making on food, energy and water consumption was stressed.

It is vital to measure a raft of social, cultural political, economic and environmental indicators that pertain specifically to everyday living. Thus, the multivariate research approach is also participatory, because it is important to find out whether the setting of Sustainable Development Goals through public engagement and recording pledges on an interactive digital site could make a difference to consumption choices and whether this public participation impacts on living ethically and well.

Instead of merely listing goals and asking people to meet them, the approach is to request people to make a personal pledge to address food, energy and water

⁴⁰ The definition is as follows: ‘1. Material living standards (income, consumption and wealth), 2. Health, 3. Education, 4. Personal activities including work, 5. Political voice and governance, 6. Social connections and relationships, 7. Environment (present and future conditions), 8. Insecurity, of an economy as well as a physical nature’. This definition of wellbeing stocks fits well with the way in which both Indigenous and Non-Indigenous Australians connect with Country in Australia and elsewhere and the way in which critical systems thinkers and complexity theorists understand inter relationships. The raft of concepts is necessary for defining wellbeing as stressed in several publications by McIntyre-Mills (McIntyre-Mills, 2003, 2006, 2008, 2014, 2016; McIntyre-Mills and De Vries, 2011).

consumption by thinking through the consequences of their choices in terms of three scenarios, namely *Business as Usual*, *Making Small Adjustments* and *Living Virtuously and Well* in terms of considering: what local residents have, what they need, what they are prepared to add or discard from their lives, the turning points for the better and worse, the barriers and the resources and or services which they could draw upon in their local government area or to which they could contribute.

This is important if living systems are to be protected. This requires stewardship based on humility and recognition that the Anthropocene is a result of human intervention. This has implications for social and environmental justice. It needs to be addressed through responses that take into consideration current and future generation of life. This requires the need to revisit the challenges of balancing individual and collective interests.

An easy way through is a recognition of the continuity of living systems as conscious interconnected systems. This is more than merely accepting our place in a post human system. It requires capability and agency to intervene in ways that are sustainable for the common good. This requires a post nationalist response to protect biodiversity in terms of a Global Covenant, rather than a *narrow social contract* within nation states (McIntyre-Mills, 2014).

Eco-Village Nodes and Eco City Hubs: The Way Forward?

Vocational Education in Rural Universities and Training colleges could help to promote the value of agriculture to students who could be tasked with the vital issue of food and water security. To enable lifelong engagement by active citizens requires action learning to address areas of perceived policy concern. The policy proposal is to develop more educational institutions that focus on teaching design skills from primary to secondary and tertiary level based on the blue economy and biomimicry in ways that draw on the lived experience of the learners. In rural and regional areas, the local plant materials, for example could be used for developing a range of products, according to Pauli (2010) including cosmetics, cleaning agents, building materials, plant dyes, bio degradable plastics, to name but a few examples. In urban developed areas the blue economy could be used to recycle and re-use materials for building sustainable housing powered by sustainable energy and supplied with carefully collected rainwater to support indigenous plants wherever possible in the urban environment.

VET curricula needs to address many ways of knowing spanning human logic, empiricism, dialectical thinking and pragmatism and extended to include spiritualism and appreciation of animal knowing, biomimicry and learning from nature. By valuing certain kinds of knowledge at the expense of others human beings have created a new age, namely ‘the Anthropocene’, characterised by rapid urbanisation and unsustainable development.

A Curriculum for VET Training

The chapter (Quan Baffour et al., 2019) reflects on some of the aspects of an educational program that responds to the call for an African Renaissance (Mbeki, 1999, Sesanti, 2016). In South Africa people have lost faith in the state because the elites in the public and private sectors are not accountable to the people they serve. The price of inequality—national and global—has escalated. The gap between rich and poor grows globally and in South Africa. The challenges are as follows to:

- **Design** places of learning to **match the educational content** to the **contextual needs** of a growing population in need of sustainable employment in liveable biodiverse environments.
- **Sustain** a system of education to prepare people across the life cycle to **protect diversity** and the land on which we depend.

Piketty (2015) stressed the importance of data on money trails and wealth to ensure fairness and reciprocity in his 13th Nelson Mandela Address. Although transparency is vital for public trust a further step is required, namely the need to protect the environment through everyday decisions, as stressed previously by Wangaari Maathai in the 3rd Nelson Mandela Lecture. This requires:

- **Addressing** resilient urban, rural and regional infrastructure by
- **Exploring** the implications of urbanisation, loss of territory, water insecurity,⁴¹ loss of species and the implications for living systems of which we are a strand.
- **Focusing** on the challenge of creating jobs that protect people and the environment
- **Developing** options for responding and adapting to the impacts of environmental change⁷ and
- **Contributing** to expanding knowledge through studies of human society by exploring culturally diverse ways of caring and stewardship through fostering values that protect biodiversity for social and environmental justice.

The Case for Vocational Education and Training to Reduce Migration to Cities and Restore Rural-Urban Balance

‘Earn while we learn and grow a future together’ is the slogan for working together with rural communities supported by vocational education and training in collaboration with a network of providers as suggested in this illustrative diagram:

⁴¹ Waughray, D. (2017) Water, energy-food: can leaders at Davos solve this global conundrum? Huge demands for water present complicated challenges, but leaders will not resolve these kinds of interconnected risks without a systems approach <https://www.theguardian.com/profile/dominic-waughray>, <https://www.theguardian.com/global-development-professionals-network/2017/jan/16/water-energy-food-challenge-davos>.



Source Wirawan, 2020, adapted from Chicago Clipart Source: PNGKIT, Arrows Source: Clipartmax
 Pile of Dirt Source Clipartkeyhe

Ecovillage

Sustainable future effortless utilising the latest technologies



ECOVILLAGE MARKETPLACE

- ECOVILLAGE CAFÉ
- ECOVILLAGE MUSHROOM
- ECOVILLAGE ICT
- ECOVILLAGE BAMBOO
- ECOVILLAGE CASSAVA
- ECOVILLAGE HONEY
- ...
- THE SKY IS THE LIMIT!



Wirawan (2020) adapted from Sustainable Future Image Source: Reinhart, Industry 4.0 Image Source: Logical Advantage, Blue Ocean Image Source: Why is the ocean blue?

The aim is to set up pilot VET hubs in Africa and Indonesia to

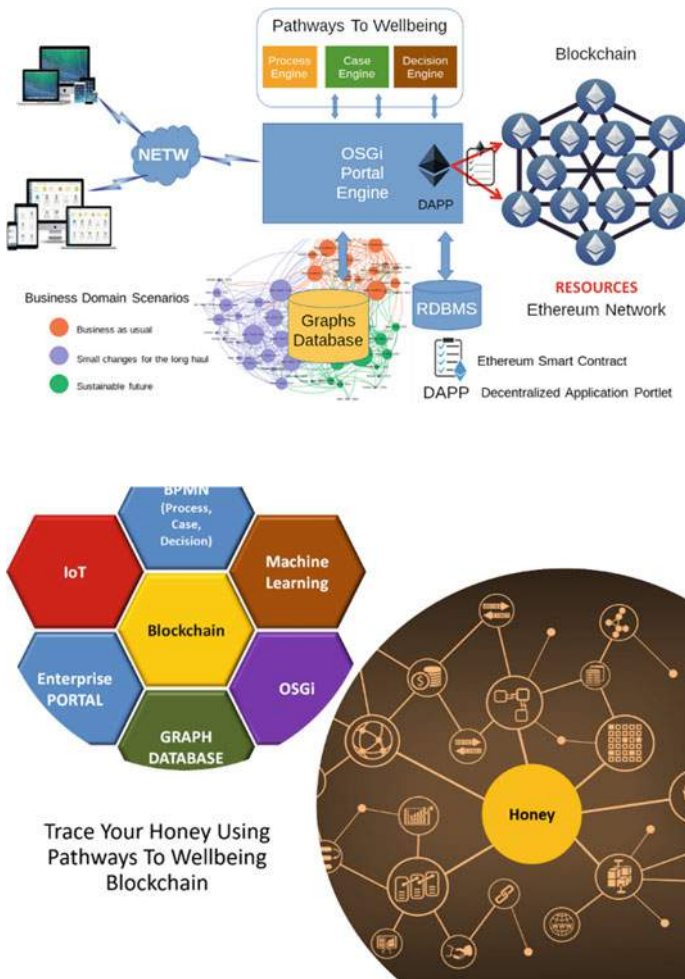
- *Explore* relationships with service users to *build the capacity* of the providers
- *Provide* a better understanding of what works, why and how
- *Inform* policy decisions

Vocational education and training to match resources to needs:



Kediri, East Java Smartvillage in Action

For Example: Trace Your Honey Using Pathways to Wellbeing



The software is detailed in “Transformation from Wall Street to Wellbeing” and ‘Planetary Passport and forthcoming in “Transformative Education for Regenerative Development: Pathways to Sustainable Environments”.



In Planetary passport the case was made that democracy needs to find new ways to engage people to think about their rights and responsibilities to their immediate family, their neighbourhood and the wider region by enabling them to think about different scenarios for the future and making informed decisions by enabling them to think through the implications of choosing one or another scenarios, such as ‘business as usual’, ‘making small adjustments’ or ‘living sustainably and well’. Participants are asked to consider (a) What they perceive they need to **add to** their lives to make a difference to mitigating or adapting to climate change, (b) What they perceive they need to **discard** from their lives to make a difference to mitigating or adapting to climate change (c) What they perceive are the **turning points** for the better or worse, what the barriers are and what services make a difference.

Telling a story and thinking about what we have and what we need and what we are prepared to add or discard from life is part of stepping into another conceptual space. The evaluation of the level of importance of multiple and a simultaneously important issue is important by reflecting on one’s life in terms of different scenarios and the consequences of these choices.

Source McIntyre-Mills and De Vries (2011; McIntyre-Mills et al., 2014), McIntyre-Mills (2017a, b), McIntyre-Mills et al. (2018), McIntyre-Mills (2018).

#	A	B	C	D
1	CreateDate	Domain	ConceptDesc	Total
2				
3	2012-10-16	Small Changes for the Long haul	greed and wasteful habits	1
4	2012-08-01	Business as Usual	7 rain tanks	5
5	2012-09-24	Small Changes for the Long haul	A home	7
6	2012-04-17	Small Changes for the Long haul	a house	7
7	2012-09-05	Business as Usual	a job	21
8	2012-10-03	Sustainable Future	A job that uses my education and challenges me	1
9	2012-07-20	Small Changes for the Long haul	A meaningful job on environment	1
10	2012-04-11	Small Changes for the Long haul	ability to adapt and change	1
11	2012-10-25	Small Changes for the Long haul	able to spend on social activities	2
12	2012-07-30	Small Changes for the Long haul	access to farmer's markets	1
13	2012-09-21	Small Changes for the Long haul	Air	1
14	2012-04-16	Small Changes for the Long haul	air conditioned	3
15	2012-07-30	Small Changes for the Long haul	air conditioning to heat home	2
16	2012-08-05	Small Changes for the Long haul	All family members have bikes	2
17	2012-09-24	Small Changes for the Long haul	altruism or protecting the planet for future generations	1
18	2012-09-05	Business as Usual	Beautiful surroundings provided by Bush	5
19	2012-08-10	Small Changes for the Long haul	Big business as usual	1
20	2012-10-03	Small Changes for the Long haul	Bike riding	1
21	2012-07-30	Small Changes for the Long haul	bike riding	2
22	2012-10-08	Sustainable Future	Blinds on the windows	1
23	2012-08-01	Business as Usual	build more safe walking paths at the local level	3
24	2012-04-13	Small Changes for the Long haul	Building temperature control	1
25	2012-07-20	Small Changes for the Long haul	care for elderly parent	1
26	2012-10-08	Small Changes for the Long haul	Chickens (free eggs)	1
27	2012-07-30	Small Changes for the Long haul	close enough to work that I can walk or bicycle	1
28	2012-10-25	Small Changes for the Long haul	comfortable house	1
29	2012-09-24	Small Changes for the Long haul	Community	2
30	2012-09-24	Small Changes for the Long haul	community activities	3
31	2012-10-08	Small Changes for the Long haul	Community parks, paths and recreation areas	1
32	2012-09-24	Small Changes for the Long haul	community services for elderly	1
33	2012-09-24	Small Changes for the Long haul	community walking paths	1
34	2012-04-16	Small Changes for the Long haul	compost bin	8
35	2012-08-10	Small Changes for the Long haul	Cost of adaptation	1
36	2012-10-25	Small Changes for the Long haul	cost of solar panels	1
37	2012-10-14	Sustainable Future	Curla/furla transport to work as often as possible	1

Pathway To Wellbeing Overview

Pathway To Wellbeing

Home Log Out

Create/Edit Pathway

Change Personal Details

Change Password

Edit Details

Profile: 2000

Number of Dependents Children: 0

Level of Education: 0

Employment Status: Employee

Country of Birth: Australia

Religion: Religion

Save Cancel

Change your password

Current password: _____

New password: _____

Re-type new password: _____

Save Cancel

Pathway To Wellbeing

Suggested Pathway for subject:

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100. You Can ...

4/6/2015 Commercial in Confidence. © Copyright 2015 Wirasoft Pty Ltd 15



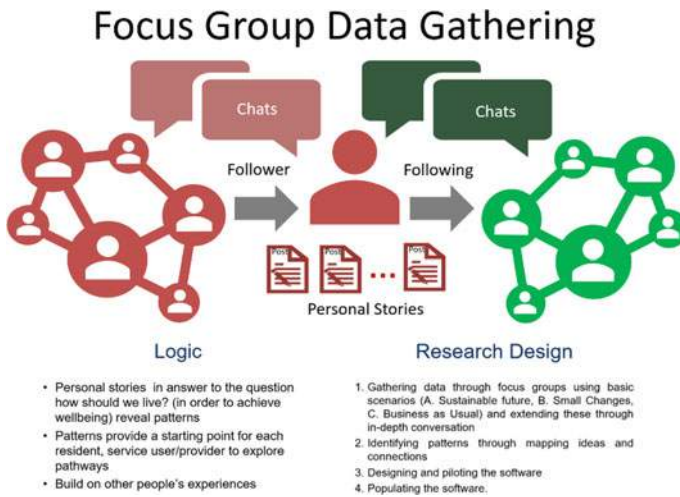
Source De Vries, D. 2008. Appendix on pathways to wellbeing in McIntyre-Mills, J.J. (2008) *User centric policy design to address complex needs*. Nova Science. New York, cited in McIntyre-Mills et al 2018, chapter 3 and cited in McIntyre-Mills, J.J. (2020) ‘Systems Research and Education: about a critical systemic approach to creativity and design’. In Metcalfe, G. *Handbook of Systems Science*. Springer. Cham. Also see https://ia801606.us.archive.org/20/items/pathway_demo_1/pathway_demo_1.mp4.



The implementation of the above concept is done in three phases as follow:

- Gathering written data by means of posting personal stories
- Analyse the data using AI, ML and NLP
- Gathering oral data by means of ChatBot

Gathering Written Data by Means of Posting Personal Stories

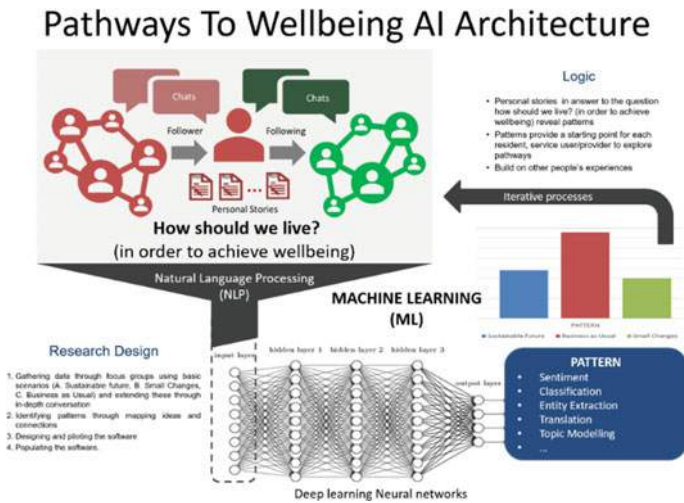


Source De Vries, D. 2008. Appendix on pathways to wellbeing in McIntyre-Mills, J.J. (2008). *User centric policy design to address complex needs*. Nova Science. New York

The above diagram depicts the data gathering module, in which the user can connect to or be connected from other users. Each user would be able to write their personal stories or chatting with other users to gain insight to their written stories. The collected data will be fed to a Natural Language Processing (NLP) and Machine Learning (ML).

These interactions will automatically generate user's profile which can be used to identify the user's pathway pattern by means of Artificial Intelligence (AI) as depicted in the following diagram.

Analyse the Data Using AI, ML and NLP



Source Gathering oral data by means of ChatBot

Whereas previously people had to choose between three options, which sum up their approach to living, namely:

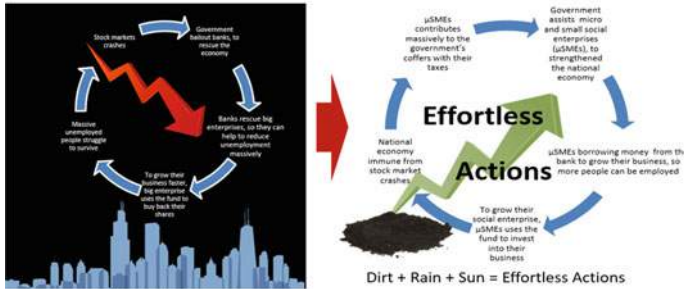
‘Business as Usual’, ‘Taking Small steps’, ‘Wellbeing’, the new design proposes telling a narrative first⁴² and then being prompted to consider ‘if then scenarios’, about the implications of their choices.

Source De Vries, D. 2008. Appendix on pathways to wellbeing in McIntyre-Mills, J.J. (2008) *User centric policy design to address complex needs*. Nova Science. New York

⁴² http://wirasoftfoundation.org/en_GB/web/smartenergy/bbb#_48_INSTANCE_M76iJ0dxS15w_=about%3Ablank%23blocked.

A Way Forward: Marketing from Farm to Door

Don't Ignore Pain Appreciate Its Message "You need to change now!"

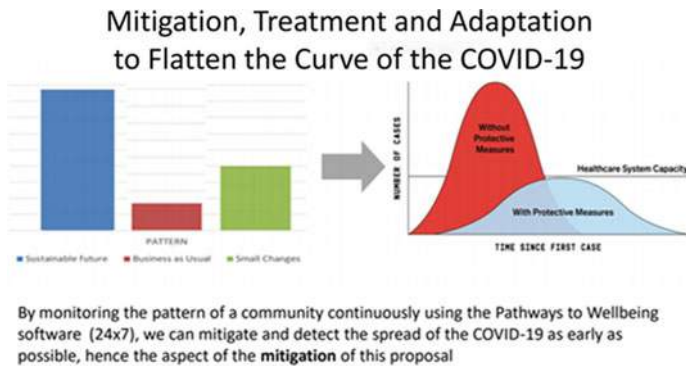


Source Of the slide above: Wirawan, 2020 User Centric Management to Manage Single Point Services

Responsive Delivery to People in Lock Down

Without a vaccine for Covid-19 the only way to manage the virus is by working together. Pandemics need to be redressed by international networks supported by coalitions. A new systemic approach is explored through learning communities (supported by pathways to wellbeing software) could enhance single point access to support mitigation and adaptation to flatten the curve.

The pathways to wellbeing software enables scalable engagement by individuals, households, public, private and voluntary organisations, neighbourhoods, local government, provincial/state and federal level. Each level can engage to enable complex needs to be met whilst in isolation.



Source Slide by Wirawan, 2020 drawing on <https://abcnews.go.com/Health/flattening-coronavirus-curve-happening/story?id=70119118downloaded23/05/2020> and adapted from ABC News Photo Illustration, CDC/The Economist

Architecture for Social Services and Single Point of Access

The aim of the participatory action research project using on line engagement is to help service users to mitigate, adapt and flatten the curve of Covid-19, by enabling participants by means of single point access to information, services and opportunities to earn while they learn and grow a future together. It addresses sustainable social, economic and environmental wellbeing (Stiglitz et al., 2010; Pauli, 2010; Mair, 2020; United Nations Office for Disaster Risk Reduction, 2017).

According to Yeates (2014) regional organisations are neglected partners in global efforts and that by working more collaboratively research can offer significant opportunities to strengthen action, protect and re-shape systemic policy agendas. The objective is to contribute to regional wellbeing. Case studies using comparative social policy methods (cross-national, cross-sectoral), need to build up a strong evidence base to inform policy analysis and policy making that integrates social, economic and environmental wellbeing.

Thus, this participatory action research draws on the policy agenda underlined by the UNRSID (2017) to strengthen action through regionalism to support a learning network based on user-centric policy design.

- The pathways to wellbeing software enables scalable engagement by individuals, households, public, private and voluntary organisations, neighbourhoods, local government, provincial/state and federal level.
- Each level can engage to enable complex needs to enable flattening the curve of the virus and managing it once social isolation ends.
- While much has already been written about blockchain applications in an industrial context, little research has been undertaken to explore the extent to which user-centric service delivery to address complex needs.

Design and Approach

The research question is: To what extent can ‘decentralisation, transparency, equality and accountability’ be addressed and play a role in managing Covid-19?

- Step 1: Enter demographic details and home delivery/care details
- Step 2: Select category of need: A. experiencing symptoms, B. recovering C. self-quarantine
- Step 3: Map your needs in terms of haves, needs, turning points for better and worse, barriers.
- Step 4: Select one of the services:
 - link to on line advice for health
 - link to pharmaceutical delivery services
 - link to food delivery services—Protective equipment and a range of rapid response delivery services’ to grow jobs and keep businesses open
- Step 5: Prevent further outbreaks by contracting to address social, economic and environmental wellbeing in line with Nussbaum’s 10 capabilities for sentient beings to prevent cross-species infection and in line with the Ecocide Law advocated by Gauger et al. of Harvard School Polly Higgins and Vandana Shiva—Information links to be provided⁴³

The software is open and has space for the people to develop their stories

It works on the same principle as the pathways to wellbeing software where people have to choose between

- A. Business as usual, denial and shifting the blame for the virus,
- B. Lame duck, making small changes that are too little and too late,
- C. Achieving wellbeing for people and the planet through understanding that ‘A is better off when B is better off’. This requires safe habitat for multiple diverse species as we are part of one interconnected web of life.

In the three options they will be prompted by stories that inspire change.

⁴³ Videos to add to the application, for example: <https://www.youtube.com/watch?v=Z-SyZiwXKs0&feature=youtu.be>. A letter from the virus. #LISTEN—YouTube.#coronavirus#planetearth #climatechange #pandemic Video made by Darinka Montico: <https://www.youtube.com/watch?v=a2gdztJU1zY>. I’m not the owner of this video. www.youtube.com, <https://www.cnn.com/videos/us/2020/03/19/coronavirus-jane-goodall-acfc-full-episode-vpx.cnn>. “Dr. Jane Goodall’s message of hope amid the coronavirus pandemic. Anderson Cooper talks with Dr. Jane Goodall, legendary conservationist, about humans’ interactions with animals and how we can avoid pandemics like the novel coronavirus.”

Data Collection

- I *have the* following needs. My own story is:
- I need the following: My own story is:
- I will add the following protocols to my life to keep myself and my community safe: Hand washing, wiping down surfaces with hospital grade disinfectant, leaving shoes outside
- My own story is:
- I will discard the following: non- essential use of public spaces. My own story is:
- Self-reflection on the turning points for the better or worse. My own story is:
- Consideration of the barriers that currently exist and consideration of what could be done to help. My own story is:

Balancing Individual and Collective Needs

- A. Business as usual, denial and shifting the blame for the virus, the problem is one that can be fixed by means of a technical solution, rather than changing my own life
- Lame duck, making small changes that are too little and too late. We want others to change, but we do not want to B. change our own lives
- C. Achieving wellbeing for people and the planet.

We understand that ‘A is better when B is better’.

This requires safe habitat for multiple diverse species as we are part of one interconnected web of life.

We will make changes, such as border control to prevent illegal trafficking of people and animals and pass laws to protect the environment and diverse habitats

- We will ensure that all sentient beings can live lives that are worth living
- We will promote Nussbaum’s (2011) 10 capabilities for all sentient beings [link to these will be provided]
- We will change our own lives by making adjustments at a personal, interpersonal and public level
- *I will add the following protocols to my life to keep myself and my community safe:*
- I will care for myself, others and the environment.
- Hand washing, wiping down surfaces with hospital grade disinfectant, leaving shoes outside, sorting rubbish, reducing, recycling and re-using to protect food, energy and water
- Achieving wellbeing for people and the planet

A simple way forward has been used during the Covid-19 epidemic where farmers in the Ciwidey and Alamendah areas are marketing their goods through Whatsapp messaging supported by Wirasoft and Universitas Padjadjaran.

Could Access to Online Control of Markets Such as Blockchain Provide a Way Forward to Protect the Marginalised?

Because blockchain is a distributed network that can provide tracking, monitoring surveillance from below it can provide a means to empower the landless and the disposed (Nir Kshetrim, 2017). It can also provide a means to balance individual and collective needs (McIntyre-Mills, 2017a, b) and monitor the fair distribution of resources such as food, energy and water from below (McIntyre-Mills, 2018) trace the origin of foodstuffs and to protect the safety of voiceless sentient beings.

blockchain ... ranges from finance to record-keeping and from tracking the flow of goods to verifying the identity of citizens. The fundamental common characteristic that all blockchain based services share is a design that depends on immutability and decentralisation in storing data. Yet, a system based on the community cannot work without the community. (Walid Al-Saqaf & Nicolas Seidler 2017: 340)

While much has already been written about blockchain applications and potential for industry, little research has been undertaken to explore the extent to which user-centric governance and democracy can be enabled through alternative pathways. This research is an effort to contribute to that body of scholarship by exploring blockchain technology's potential applications, and their limits, in areas that intersect with social impact, including human rights. To what extent can 'decentralisation, transparency, equality and accountability' be addressed and to what extent can it play a role in limiting top down approaches to human rights and the abuse of power through surveillance 'from below' and through enhancing the stewardship potential to protect the voiceless, including those without citizenship rights, women, children and animals.

The transdisciplinary research (Darian-Smith & McCarty, 2017) proposed here explores plausible rural-urban development pathways in line with the United Nations (UN) Sustainable Development Goals to enhance wellbeing and resilience for those at risk of displacement and those already displaced. Clearly, this has implications for public policy, human service governance and delivery and the way in which the Paris Climate Change Agreement (2015), UN Sustainable Development Goals (2014) and the UN Sendai Framework (2015–2030) for Disaster Risk Reduction are addressed. Thus Goal 1 (end poverty) with specific implications for food, energy and water security, Goal 5 (gender inequality) and Goal 17 (creating partnerships) are particularly relevant to protecting the most vulnerable, whilst The United Nations Declaration of Rights of Indigenous Peoples (2007) provides a vital pathway for socially inclusive decision-making on habitat protection.

Indigenous thinkers such as Chilisa (2012, 2017) stress that our sense of who we are needs to be revised. We are vulnerable and reliant on a shared habitat. The ideas underpinning the UNDRIP stress that Indigenous people need to have the right to express their identity within a sacred space. The challenge will be to scale up this sense of stewardship not only at the local level but also at a post national regional level through understanding that we are stewards of one planet. The earth politics

notion of Vandana Shiva is the only logical direction for securing the biospheres for food security of living systems.

The argument is that we need so-called hybrid methodologies (Hesse Bibber, 2018) to begin a discussion of what constitutes the nature of the problem (ontological issue) and how to go about researching the issue (epistemological concern).

We live as detailed by Stiglitz et al. (2010: 15) in an increasingly commodified and competitive world. Research on balancing individualism and collectivism needs to explore the food, water and energy consumption choices people make and how these relate to their perceptions on 'wellbeing stocks'. These are defined by Stiglitz et al. as multidimensional.⁴⁴ *'Planetary Passport and Wall Street to Wellbeing'* link wellbeing stocks explicitly to developing everyday decision-making capabilities on food, energy and water consumption made by households and organisations at the local government level. It is vital to measure a raft of social, cultural, political, economic and environmental indicators that pertain specifically to everyday living. Thus, the multivariate research approach is also participatory, because it is important to find out whether the setting of Sustainable Development Goals through public engagement and recording pledges on an interactive digital site could make a difference to consumption choices and whether this public participation impacts on living ethically and well.

Instead of merely listing goals and asking people to meet them, the approach is to request people to make a personal pledge to address food, energy and water consumption by thinking through the consequences of their choices in terms of three scenarios, namely *Business as Usual*, *Making Small Adjustments* and *Living Virtuously and Well* in terms of considering: what local residents have, what they need, what they are prepared to add or discard from their lives, the turning points for the better and worse, the barriers and the resources and or services which they could draw upon in their local government area or to which they could contribute.

To realise the so-called 'liberative potential' (Gouldner, 1971) of an ecological citizen we need to be trained to be mindful of the so-called 'enemies within', these are, according to West Churchman: "religion, politics, morality, aesthetics. "In his usual poetic turn of phrase, he was explaining that what constitutes so-called knowledge is filtered by our values. In terms of morality, the focus on anthropocentrism needs a great deal more attention, so that parallels can be learned from studying other populations that faced extinction.

Drawing the line becomes important if living systems are to be protected. This requires stewardship based on humility and recognition that the Anthropocene is a result of human intervention. This has implications for social and environmental

⁴⁴ The definition is as follows: '1. Material living standards (income, consumption and wealth), 2. Health, 3. Education, 4. Personal activities including work, 5. Political voice and governance, 6. Social connections and relationships, 7. Environment (present and future conditions), 8. Insecurity, of an economy as well as a physical nature'. This definition of wellbeing stocks fits well with the way in which both Indigenous and Non-Indigenous Australians connect with Country in Australia and elsewhere and the way in which critical systems thinkers and complexity theorists understand inter relationships. The raft of concepts is necessary for defining wellbeing as stressed in several publications by McIntyre-Mills (McIntyre-Mills, 2003, 2006, 2008, 2011, 2014, 2016).

justice. It needs to be addressed through responses that take into consideration current and future generation of life. This requires the need to revisit the challenges of balancing individual and collective interests. It requires capability and agency to intervene in ways that are sustainable for the common good. This in turn requires a post nationalist response and one that recomposes that ‘seeing like a state’ is linked with controlling biodiversity! It limits variety and controls forests by hacking down some varieties and promoting others (based on immediate profit) in the same way individuals and groups who do not fulfil the social contract—are barred from safe passage. Rights are accorded to those who work and who support the market. Responsibilities are defined in terms of serving the state. Seed banks that ensure continuity are as important as protecting the habitat that supports them.

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