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Resilience io. A Smart way to mobilise more efficient and effective long-term investment in city regions.

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The author Malcolm Gladwell says that while power corrupts power point corrupts absolutely so to avoid any risk of corrupting you , I am not going to use power point today.

It's also the case that we can't talk ourselves out of policies we have behaved ourselves into. So I am going to describe in outline resilience io a web based decision making tool which will help us implement policies which will effect behaviour change. But first what's the problem we are trying to solve?

For years we've known that both our individual and collective health is determined by the social economic and environmental circumstances in which we are born live work play and die, circumstances which we now codify as the determinants of health. Compelling evidence, nicely summarised by Marmot in his report for the EU (1) and in Wilkinson and Pickett's the spirit level,(2) tells us that more equal societies provide the most health promoting social structures. The capacity to have a greater say in all aspects of our lives is an additional marker of good health. More equal societies do enable us to participate more fully in determining our destiny, and so reduce the influence of unelected elites on moulding policy.

Finally our health is ultimately dependent on our environment . This offers provisioning services such as food, water, wood and fibre, fuels , pollination and medicines.

It offers regulating services . Our climate is kept within habitable limits , water and air are kept pure , soil erosion is

limited , and flooding is guarded against. It helps maintain our habitat. So increasing genetic diversity, enabling photosynthesis , and enduring continuing soil formation. And it offers a space for aesthetics, for the evolution of our cultures , for our recreation and when we engage with untamed nature to help lift our spirits.

To ensure continuing human and planetary good health we must neither irreversibly deplete or overuse these environmental support systems essential to our wellbeing. We must live within planetary limits .The health promoting more equal societies we wish for must be evolved within these planetary limits .

Unfortunately we humans have , at least up till now, been unable to act on these insights. Many trends are going in the wrong direction. The gap between rich and poor widens. We have breached 5 of 9 planetary boundaries, including of course the amount of carbon dioxide in the atmosphere , the cause of anthropogenic climate change. And the increasing influence of big corporates and other elites on the political process means we have a decreasing capacity to mould our destiny.

Despite knowing what we humans need to do to create both short and long term human and planetary health, most of the political , social and financial signposts we see point in the wrong direction. Knowing is clearly not enough. We are still persuaded that unending growth is our salvation, that the resources needed to achieve this will always be available, and that we can somehow avoid environmental catastrophe.

We are persuaded that the corporates with their supposed capacity to innovate and maximise efficiency and profitability are a crucial engine in this endeavour. An engine we are told which runs most effectively when not thwarted by the muddling interference of an always ineffectual slow witted regulatory

state.

But there are glimmers of hope. The call for a circular, low resource human centred whole systems economy is getting louder, and there are everywhere islands of wonder showing just how exhilarating the transformation to such an economy can be. Think of the innumerable cooperative ventures (10% of Italy's economy) the community owned renewable energy projects , best developed in Germany the precision farming and stock rearing which leads to amazing soil restoration , the reforestation bringing jobs and self worth to millions in northern China, the pastoral restoration initiated by Alan Savory in Zimbabwe, the indigenous seed banks being created by Vandana Shiva in India, the heightened awareness of the importance of procurement as a transformational tool, put to great effect in the London Olympics. All these depend on the power of informed individuals working cooperatively, supported by long term investment.

These initiatives are partial and limited. What we need to is to extend the reach of these islands of wonder to coalesce them into continents of wonder. We need guidance and help using the best possible information linked in the best possible way and driven by insights from as many individuals and groups as possible.

And given that over half the world's population lives in cities ,it's sensible to focus on cities.

In parallel to the practical examples of islands of wonder there is a similar development in data . There are numerous agencies gathering environmental, social and economic data relevant to human health and well being . Geospatial data on climate, land use and soil quality, and on water availability exists at high resolution. So do complimentary human demographic and health data. There is also increasingly good data at the sub national and personal scale. All the above exemplify the islands of data wonder. But a recent review found that of the 17 different models for city development , resource planning and technology

system optimisation, none incorporated ecological systems and human wellbeing. So we need to extend the reach of these data, these islands of data wonder, and coalesce them into continents of data wonder. We need to do this in a way which enables us to model interactions which give the optimal solutions for planetary and human health.

This is where the Ecossequestration trust and our platform resilience io comes in. (3)

In the internationally respected modelling faculty of imperial college, and aided by a world-class team of scientists, engineers, planners, social and political experts and economists, we are developing resilience io, an agent based web model. This model starts with individuals or small communities as the autonomous agents, takes all these data sets and links them to outcomes which optimise the possibilities of narrowing the gap, constraining resource use to within planetary limits, and enabling communities to better influence their destiny, to mould their sought after outcome. From the complexity of interactions, these modelling systems will allow us to optimise the benefits of policies. Thus rather than taking on trust that a particular policy will deliver helpful outcomes, the model can give much greater certainty. In this way resilience io, as a decision support tool, will enable cities to plan and evaluate the business case for investment in projects that bring improved human wellbeing, resource efficiency, clean energy and renewable technologies which restore ecological and freshwater systems and secure the production of safe food.

By linking all the inputs into the best possible associations planetary and human health become emergent properties of the model.

Investors who recognise that this outcome is the only way we can ensure the future of humanity will be persuaded to prime the necessary policies with money.

To help populate the model, we are further defining and refining the many virtuous cycles which bring together the social, economic and ecological interfaces with human health. We are working with the modellers to ensure the rich bank of information from global national and personal data on which the model is based will reflect these virtuous cycles.

Our model is still under development, but we are already working with cities and regions which are interested in developing it with us.

One is Ulaanbaatar. The city is an important engine of growth and development for Mongolia which faces the many challenges of rapid urban expansion, such as pollution, overloaded infrastructure and inequality. Its development strategy envisions a city with a competitive and diverse economy, a healthy environment, and a population alleviated of poverty by 2030. A key issue will be finding affordable housing and infrastructure solutions for 60% of the population living in the informal “ger district”. One of the main problems defined by Ulaanbaatar inhabitants is poor air quality due to coal burning. They recognise this as a major factor in the high prevalence of lung disease and premature death of their young babies. Tackling air pollution by, for instance, building a geothermal power plant could reduce lung disease, create local employment, reduce carbon emissions, improve mental health (also impaired for those living in polluted cities) and enable all year round food growing even in the winter. In a recent world bank study (4) five of the scenarios for air pollution management in Ulaan Bataar generated a net benefit (avoided health costs minus abatement costs) in the range of \$393–\$1,635 million over a 15-year period. This suggests air pollution management can be carried out with a substantial economic gain of over 7% GDP when health costs are taken into account. This gain can then be used to construct eco friendly housing with the clear social, environmental and economic gains this will bring. Resilience is

will help decision makers optimise the gains from these interventions , and give investors confidence in the outcomes

As well as working in Ulan Bataar , we are prototyping resilience lo in Accra ,Ghana and Bournemouth in the UK . We are also presenting our work as an innovative way of bringing forward investment in sustainable projects at the Third International Conference on Financing for Development (FfD) in Addis Ababa in July and at the Climate Change Conference of the Parties in Paris in December. The Trust is a member of the RISE Initiative which is led by the United Nations Office for Disaster Risk Reduction (UNISDR). This Initiative aims to find new way of collaborating, to unlock the potential for public and private sector actors who are ready and willing to make a step forward and take leadership on disaster risk reduction. The resilience.io platform is considered a leading example of a practical approach of how best to take forward this initiative.

It's clearly a huge undertaking to develop a sophisticated responsive web based platform integrating the vast amount of local national and global social environmental and economic data. But this intelligent use of data to provide a decision making tool capable of speeding the transformation of city regions offers an important way forward. We are now within a year of testing the prototype , so well down the development phase . I thank you for coming to hear about this work in progress , and look forward to sharing your insights and experience which will surely enable us to create an even better decision making tool.

REFERENCES.

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