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Green Economic Development as an evolutionary process

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To understand how to influence economic development in a territory to make it “greener”, one needs to appreciate how change happens in the economy in general. At Mesopartner, we understand the economy as a complex adaptive system (see Annual Reflection 2014) and we study the way change happens in such systems. Based on scholarly literature and through practical insight we have gained through our work, we subscribe to the view that the economy is an evolutionary system that is far from being in equilibrium. We do not believe in the traditional economic view that the economy is a system that tends towards an imaginary equilibrium of supply and demand.

This means that our approach to economic development in general and to green economic development in particular needs to be informed by how we can influence this evolutionary process in a given country or territory and change the system’s evolutionary path.

Evolution is a very powerful, generally usable and

naturally pervasive mechanism for finding solutions to complex problems¹. Evolution finds, from a diverse range of possibilities, the designs that are most appropriate for achieving a particular purpose. In biological terms, the purpose is reproduction and fitness. In the economy, the purpose is to cater to human needs and preferences and create wealth.

Three interdependent evolutions

The mechanism of evolution to achieve this is to increase variety and select appropriate and fit designs, and to amplify them. In the economy, evolution occurs in three interdependent domains²:

- **Physical technologies** are methods and processes for transforming matter, energy and information from one state into another in pursuit of a goal or goals; they enable people to create products and services that are worth trading.

¹ An extensive description of why the economy is an evolving, complex system, what this means for economic theory, and why evolution is the main force for wealth creation in the economy can be found in Beinhocker (2006).

² See Beinhocker (2006: 15)



- **Social technologies** are methods and designs for organising people in pursuit of a goal or goals; they smooth the way for cooperation and trading these products and services.
- **Economic technologies** are business plans made by enterprises and other organisations that are competing with each other for resources and buy-in in the economy. These business plans typically combine physical technologies with social technologies.

One simple rule of evolutionary theory is that evolution is more effective than designers in finding solutions to complex problems. To intentionally design solutions for complex problems and select the most desirable combination of options will most likely not lead to the optimal outcome. The chances are fairly small that one or a few individuals will find the ultimate design solution to the given problem that can bring about transformational change in the performance of a regional economy. The more promising strategy is to tap into the evolutionary process itself, and to accept the reality that we do not know before the time which ideas will work and why. The economy itself is a mechanism in which a variety of different solutions are created, selected and amplified, and where the efforts of many solution developers are tested, chosen and refined.

To tap into this evolutionary process in the economy, we have two complementary starting points. Firstly, we can directly or indirectly increase the number and variety of things that are tried. Secondly, we can try to get an understanding of and influence which options are selected and amplified and why.

Increasing the number and variety of things tried

To increase the number of things tried, we as development agents can introduce options into the system ourselves.

This approach is often chosen for technical cooperation projects that promote the uptake of a particular technology such as solar power or biogas in a given region. The advantage of this is that we can select which options are more in line with our development goals and values, for instance, to promote green local manufacturing. It requires us, however, to bear in mind that our designs may not really provide a diverse enough variety, and may reduce the chance of one of the designs being successfully selected to be introduced into the system and amplified. Furthermore, introducing sophisticated solutions into a context might displace local learning and innovation, even if it is at a much lower level of sophistication.

Alternatively, we can stimulate existing enterprises to try new things or new combinations, i.e. to innovate. This will require that the risks for innovators of trying novel ideas be greatly reduced. We can also encourage and support new entrants to enter the market and try new combinations of physical and social technologies in new business models. In this approach, we do not have control over all the experiments that are done, but we can be sure that the things that are tried are much more in line with the local

realities and the context. They therefore have a greater chance of succeeding. In addition, as development agents we have limited resources, which allows us to try only so many things. If we manage to get many different firms to do the same and try new things simultaneously, we achieve a much greater breadth in what is tried – and correspondingly a greater chance that something will be found that works.

The central key to fostering the development of better technologies and business plans is to recognise the importance of knowledge. Knowledge is important because it makes development of and experimentation with new ideas easier and more effective. While knowledge is being developed in developing countries, the pace of knowledge accumulation and development is much slower than it is in industrialised countries, where knowledge development through scientific exploration and practical experimentation is much faster. In practice, we can for example work with local research, technology or education institutions to try and stimulate more research to capture and articulate local requirements and specifications as a means of highlighting local demand.





Or we can support experimentation with technology by supporting a laboratory where enterprises can try to combine new technologies with their current technologies, thereby reducing their risks of trying new ideas.

Influencing what is selected and amplified

We can influence what is selected and amplified among all the things that are tried, for example green technologies and business models. This requires us to intervene in industrial policy and the business environment (see article *Shaping a climate smart and eco-friendly business environment*). In evolutionary terms, we are trying to influence the fitness function of physical technologies, social technologies and business plans in a given region. This can be done in different ways, as outlined in other articles in this publication. Importantly, though, selected interventions should not specify exactly which technologies or business plans will be successful, so enough room must be left for variety and experimentation. Promotion of specific solutions may hamper the ability of the economy to creatively develop novel ideas in the future.

Markets are deeply embedded in society. Societal beliefs, attitudes, norms, rules, etc. – i.e. a society's culture – as well as the region's history, shape the fitness function of what is successful in markets. They influence both preferences of the consumers as well as what is being tried by companies or allowed through regulations. They shape things such as risk-taking behaviour, relationships between companies, the state and companies, companies and customers, etc.

Market systems are an expression of the underlying societal system and they are highly complex. They are also highly unpredictable. As a consequence, what influence leads to which result cannot be said with



certainty. Interventions to shape the fitness function of a region can lead to contrary and unexpected outcomes. For example, influencing a fitness function in a region to strengthen the competitiveness of alternative energy production, e.g. through subsidies, can lead to the use of technologies that are not appropriate for the context, e.g. solar power in regions where wind would be more appropriate. Approaches to market and green development need to be complexity sensitive as has been described in previous editions of the Annual Reflections. Essentially, practitioners need to build their interventions on a portfolio of safe-to-fail experiments rather than to define one particular path in advance and then keep following it blindly. The experiments need to be closely monitored to capture early signs of success or failure, including unexpected effects.

With such an approach we can also make sure that technologies are not only chosen because of their greenness, but also because they are otherwise appropriate in the given context. For example, they could be chosen because they reduce wastage, energy consumption, or otherwise positively influence the competitiveness of a given business plan or plans. Such positive side effects are difficult to see when solutions are designed, but they are easily found by

allowing self-selection of solutions. To foster a green transformation, an indirect approach might be more effective.

Key questions to ask here are how we can influence the fitness function so that greener technologies and business plans become more competitive. How can we make these technologies more acceptable, affordable or attractive?

Another important question to ask is how we can ensure that this interference does not negatively affect the competitiveness of the region overall or compromise other targets, e.g. the inclusiveness of the economy. This question is addressed in the article *Competing priorities: trade-offs between “green” and other topics* in this Annual Reflection.

Reference

Beinhocker, E. D. (2006). *The origin of wealth: evolution, complexity, and the radical remaking of economics*. Harvard Business School Press: Boston, Mass.