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Introducing DOTE: A Development-Orientated Typology of (Enterprise) Ecosystems

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Abstract: This paper makes a contribution to the literature on the development of ecosystems. The orientation of this paper is developmental rather than descriptive, as it is the researcher's contention that (i) many ecosystems can benefit from external support; (ii) support for the development of ecosystems needs to be adapted according to their type and (iii) existing typologies of ecosystems are insufficiently elaborated for those involved in facilitating the development of ecosystems to plan their interventions. The DOTE Model (a Development-Orientated Typology of Ecosystems) introduces a typology with nine types of ecosystems that provide one of the following: (i) Capable Entrepreneurs, (ii) Innovation Leadership, (iii) Asset Exploitation, (iv) Value-Chain Re-Engineering, (v) World-Class Parity, (vi) Capability to Capture Future Opportunities, (vii) Profitable Upscaling, (viii) Networking Advantage and (ix) Benefits for People and Planet.

Keywords: Ecosystems; Clusters; Typology; Meta-Level Organisation Development; DOTE Model; intervention;

Introduction

It has been widely recognised that ecosystems play a role in facilitating the development of dynamic capabilities, accelerating innovation, providing requisite agility, promoting organisation development and targeting social change initiatives (Iansiti and Levien, 2004). Over the past forty years there have been many investigations into the nature and types of ecosystems (Biedebach and Hanelt, 2020) but fewer studies have focused on the intentional development of functional ecosystems, which is the focus of the research reported upon herein.

In this paper we use the term 'ecosystem' to refer to 'a form of meta-level organisation that enables enterprises to produce outputs more efficiently and effectively than would otherwise be possible'. Our definition is similar to that proposed by Adner (2017, p. 40) who defines a perspective as "ecosystem-as-structure, which views ecosystems as configurations of activity defined by a value proposition". As will be explained below, there are different types of ecosystems, each of which has some unique features and a distinctive function. The hypothesis presented by the researcher is that each type of ecosystem needs, at least in part, distinctive developmental policies and practices.This paper is organised in four sections, as follows. First, we explore the construct of an ecosystem in a literature review. Second, there is a brief description of the methodology

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used for this study. Third, the DOTE typology of ecosystems will be presented. Lastly, issues related to the development of ecosystems will be discussed.

Literature Review

That ecosystems are drivers of economic and social development has been known for millennia (Diamond, 1997; Epstein, 1998). Consider, for example, the Hanseatic League (Liggio, 2007) that dominated trade in many commodities across much of Europe during the Middle Ages for almost 500 years. The League was formed in the mid-fourteenth century and Liggio reports that it "developed into a unique entity, an association of cities… The Hansa comprised almost 200 maritime and interior cities (along rivers). It extended from Bruges and Ghent in Flanders and London in the west to the Republic of Novgorod in western Russia and Tallinn on the Gulf of Finland in the east; from Bergen in the north to middle Germany in the south" (p. 134).

This complex and powerful meta-level organisation had just one purpose - to benefit its members for, as Dollinger (1970, pp. xvii–xviii) explained, "(t)he secret of its long life is to be found not in coercion, which played no appreciable role, but in the realization of common interests which bound the members of the community together… The historical function of the Hansa was in fact to furnish western Europe with those products of eastern Europe which it needed and in return to provide eastern Europe with some basic necessities, above all cloth and salt, from western Europe. As long as this economic interdependence continued the Hansa survived".

The Hanseatic League was (i) a networked organisation that had (ii) self-regulating properties, (iii) fulfilled an economic function, (iv) defended its interests, (v) enriched in various ways all of its members, (vi) was capable of bold adaptation, (vii) took proactive steps to increase its power, (viii) had a structure of governance, (ix) managed interdependencies effectively and (x) required high ethical standards of operating. Today, we would recognise the Hanseatic League as being a type of ecosystem that has the function of enabling enterprises within it to create and capture opportunities and exploit them for advantage in ways that they could not have achieved by working alone (Francis, 2020). There is evidence that the League operated effectively because it was coordinated by a strongly reinforced collective ideology. Guzikova (2020) summarised this 'sociological glue' by stating that the principles of alignment were "relations built on the basis of reputation, reliability, reciprocity, and integration into a set of interdependencies and obligations" (p. 2).

Additional insights were gained into the nature of ecosystems as their economic advantages were investigated in depth. An early articulation of this perspective was Adam Smith seminal work entitled 'An Inquiry into the Nature and Causes of the Wealth of Nations' (1776) that is widely regarded as a key contribution to the development of economic theory (Samuelson, 1977). The book, usually simply described as 'The Wealth of Nations', is famous for an analysis of the economic merits of the division of labour amongst pin makers (Chandra, 2004) but Smith also drew attention to different aspect of economic organisation, namely the functions of an effective web of interconnected actors. Consider this description from The Wealth of Nations (2014, p. 8): "The woollen coat, for example, which covers the day labourer, as coarse and rough as it may appear, is

the produce of the joint labour of a great multitude of workmen. The shepherd, the sorter of the wool, the wool-comber or carder, the dyer, the scribbler, the spinner, the weaver, the fuller, the dresser, with many others, must all join their different arts in order to complete even this homely production. How many merchants and carriers, besides, must have been employed in transporting the materials from some of those workmen to others who often live in a very distant part of the country? How much commerce and navigation in particular, how many ship-builders, sailors, sail-makers, rope-makers, must have been employed in order to bring together the different drugs made use of by the dyer, which often come from the remotest corners of the world?"

Adam Smith's description of the range of actors involved in the making of a woollen coat may seems comprehensive but could have been expanded. If we draw from Actor Network Theory (commonly known as ANT) then we can think of actors as including processes, things, tools, ideologies, resources even (Blok, Farías and Celia, 2020, p. xx) "nanoparticles to bodies, groups, ecologies and ghosts… constituted and reconstituted in shifting and hybrid webs of discursive and material relations". Put simply, this wider perspective means that the agents that played a role in making the woollen coat will include topics such as the specialised equipment used, craft knowledge deployed, quality of relationships between actors, degree of required standardisation, prowess in making profitable financial transactions, facilitative processes, choices made by multiple actors and the wants and needs of day labourers themselves.

The extensive and purposeful combination of actors, competencies, technologies, flows and interconnectivities that are involved in providing a woollen coat for a day labourer can best be described a form of figuration (Sinclair, 2016). It provides a comprehensive description of a type of ecosystem. Notice that, in this case (unlike the Hanseatic League mentioned above) many of the actors never meet and may be unaware of other's contributions. It is likely, for example, that a shepherd knows little about the craft of the dyer and a weaver will be ignorant of how cloth is fashioned into a coat but, because there are conventions as to what each specialist contributor supplies they combine into a value-chain. This type of ecosystem has the characteristics of a network, as the whole is more than the sum of the parts (a characteristic that can be described as a 'gestalt' (Greenwood, 2020)). In this article we will consider all types of ecosystem to be 'social facts', as described by Durkheim (1982, p. 69) who wrote: "social phenomena are things and should be treated as such". In other words, we will view ecosystems, in a sense, as 'having a life of their own'.

The making of the woollen coat required some, but not all, of the ecosystem characteristics that were found in the case of the Hanseatic League, namely it was (i) a networked organisation that had (ii) self-regulating properties, (iii) fulfilled an economic function, (iv) enriched in various ways all of its members, (v) managed interdependencies effectively and (vi) required predictable and adequate standards of operating. However there are significant differences between the two cases. Those involved in the making of the woollen coat worked as components in a value chain and only needed to compete their specialist tasks on time to an adequate standard and at an acceptable price. Some other types of ecosystem cannot operate in this way as their components are not self-contained. Rather interdependence is required. A simple example makes the point. When a film is made a temporary ecosystem must be created to make the most of the script, which requires that lighting specialists interrelate closely with set

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designers and sound engineers work closely with camera operators. In such cases output emerges from a process in which interactivity is a core process (Hemmingway, 2006).

Bringing the discussion up-to-date, the nature of ecosystems changed as the pace of innovation in the 20th century increased, with ecosystems some becoming became creative and agile hubs, empowered by smart machines and technologies that enabled enterprises to be inventive, fast adopters of scientific and technological development and gain from a deep specialisation of capabilities (DeBrusk, Bhatt and Farah, 2018). In the 21st century the Internet and Internet of Things became major change drivers, as these enabled complex ecosystems to be developed virtually as well as physically (Oliveira, Fleury and Fleury, 2021). In fact, some ecosystems have become almost entirely machine-based, including in military capabilities, where, for example, many missile defence systems are now almost totally automated (Aitoro, 2019).

Clusters

Some ecosystems gain added value through proximity. This is especially true when an ecosystem serves to facilitate the development of innovative outputs, such as new concepts, policies and policy deployment. An example makes the point. In about 1766, close to the developing industrial city of Birmingham in the UK, a group of leading scientists, engineers and industrialists began to meet monthly for an afternoon's discussion and a fine dinner (Schofield, 1966). The group became known as the Lunar Society, as they met when the moon was full, so as to be safer as their carriages took them home. During their discussions ideas were shared, issues debated, and social and economic problems were discussed. In effect, the Lunar Society became a policy think-tank where leading thinkers could air their views and be tested by equally accomplished others. The Society facilitated strategic opportunity seeking as it set policy decisions into a broad social, moral, technological and economic context. It served as an innovation ecosystem to help those present become wise and informed industrial statesmen.

An early explanation of the role of geography in interdependence-orientated ecosystems was conducted by Alfred Marshall who published (in 1890) the 'Principles of Economics'. In a later edition Marshall (1920, p. 271) wrote that "when an industry has thus chosen a locality for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighbourhood to one another. The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously. Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organization of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus, it becomes the source of further new ideas. And presently subsidiary trades grow up in the neighbourhood, supplying it with implements and materials, organizing its traffic, and in many ways conducing to the economy of its material".

Marshall provided an early social science description of the combination of factors that we now describe as industrial districts or clusters. This meta-organisational format has ancient roots. Two examples make the point. A study (Quinn *et al.*, 2017) of the range of technologies used in the making of the Terracotta Army in the mausoleum complex of Qin Shihuang, the First Emperor of China, concluded that "(t)he production of ceramics,

metals and other artefacts deposited in the First Emperor's mausoleum clearly reflects a degree of organisation and efficiency that characterised many aspects of the empire and laid the foundations for imperial China" (p. 976). In 16th century Venice (Crowley, 2015, p. 2) "(t)he Venetians (had) analysed every stage of the manufacturing process and broke it down into a prototype of assembly-line construction. Galleys were built in kit form by craftsmen who specialized in the individual components, so that in times of crisis ships could be put together at lightning speed".

Marshall's contribution was an explanation of how history and geography become actors in the development of the specialised competences in an ecosystem that can enable it to develop a momentum of its own ('if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas'). This generative quality is important as certain types ecosystems (like the Lunar Society) have the capacity to act as wellsprings of innovation (Engel, 2015). Ashton (2008) helpfully takes a sociological perspective and he elaborates the valuable concept of 'Industrial symbiosis' in which "beliefs, values, and norms develop within a social system and… these, in turn, influence an organization's behavior and function. Industrial ecosystems may constitute new organizational fields that are based on geography, compatible material flows, and coordinated resource management rather than industry classification" (p. 36).

It was in the 1970s that substantial progress was made by studies in Italy with Harrison (1994, p. 164) describing a case of textile makers as follows: "after the mid 1950s, a prodigious number of independent merchants, some from old, rich families but a surprising number of newcomers, who proceeded to organize in the valleys and villages of the area a set of production arrangements that would come to be known around the world as the 'Prato system'. For a time, they were immensely successful. From 1970 to 1981, textile exports from Prato increased in value by 137%, after inflation (compared with a rate of 93% for the entire Italian textile sector as a whole). The number of local firms grew by 35%, and employment by almost 20%. In 1970, Prato employers had accounted for about one-third of all the woollen industry's jobs in the country; by 1981, that share had risen to well over 40%". Studies such as these were transformational. They demonstrated that if dysfunctions could be avoided, and developmental factors were in place, then functional ecosystems provided economic and social advantages that could not be achieved in other ways.

The major contributor to our understanding of the broader economic significance of clusters was Porter who wrote (1990, pp. 73–74) that "(c)ompetitive advantage is created and sustained through a highly localized process. Differences in national values, culture, economic structures, institutions, and histories all contribute to competitive success. There are striking differences in the patterns of competitiveness in every country; no nation can or will be competitive in every or even most industries. Ultimately, nations succeed in particular industries because their home environment is the most forward-looking, dynamic, and challenging". Previously innovation researchers had often focused on firm-specific capabilities (Penrose, 1960; Burns and Stalker, 1961), national systems of innovation (Nelson, 1993) or societal-level factors (Sweezy, 1943; Terborgh, 1950). That ecosystems can function as engines driving progress proved to be a missing link in scholarly understanding of how innovation can be accelerated, strengthened and rendered more productive.

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Subsequently, the conditions that surround interlinked enterprises, policies for systemic governance and networking connections became topics of even greater academic interest and, importantly, matters of political concern, as economic analyses had demonstrated that outstandingly productive ecosystems, such as Silicon Valley, are wealth-creating engines (Engel, 2015; Audretsch *et al.*, 2019). Latterly, many nations made ecosystem development a key dimension of economic policies. For example, in 2019 the EU commissioned a survey to investigate what needed to be done to create (Barrera, 2020) 'A Robust Innovation Ecosystem for the Future of Europe".

Functional and Dysfunctional Ecosystems

It is correct to state that ecosystems can provide uniquely beneficial meta-level organisational solutions to one or more of five requirements (i) developing collective productive competence to world-class levels; (ii) completing complex tasks efficiently and effectively; (iii) gaining political power and influence, thereby enhancing the probability of receiving favourable treatment and superior resources; (iv) releasing optimism and aspiration and (v) alignment through competent leadership. However, the word 'can' in the first sentence of this paragraph is important as ecosystems can also be dysfunctional. Two examples demonstrate this point.

The first example is that of Nokia, which, in the early phase of the development of mobile telephony had developed a highly competent ecosystem so that "by 2002, Nokia had emerged as the strongest brand in the mobile handset industry (and had a highly distinctive ideology that contributors were expected to adopt), as the policies of the company aimed at creating, what the company called, 'an inclusive environment', i.e., a culture which seeks to uphold and benefit from diversity. The R&D system was also an open one where any idea, no matter how absurd it sounded initially, was given due consideration" (Regani, 2003, p. 2). For about a decade this form of ecosystem proved to be an organisational asset but it was not to last, as the more controlled product development ecosystem of Apple Inc succeeded in developing a superior device. After Apple had introduced the iPhone in 2007 Nokia's market share declined rapidly which Lamberg et al (2019, p. 22) explained was largely because in Nokia "the agility-based management ideology simply stopped working when serious competitive threats emerged. Although Nokia's top management was acutely aware of the major competitive threats that it faced, it is paradoxical that few opportunities were available to make major strategic interventions without risking even more organisational dysfunction". We can conclude that the principles of the managerial philosophy that shaped the Industrial Symbiosis in Nokia was dysfunctional when faced with strong competitive threats.

A second example of the dysfunctions of an ecosystem is that of the UK newspaper industry in the 1980s when the hot-metal machinery, then used for printing, could be replaced by computer-driven technologies that offered superior quality, reduced costs and required fewer workers. At that time print workers' trade unions were strong and Holloway's (1987) described years of conflicts as traditions of working, some dating back 200 years, characterised an industry that Henley (2011, p. 2) provides an account of an incident when "Andrew Neil, a former Murdoch editor, described as 'all that was wrong with British industry: pusillanimous management, pig-headed unions, crazy restrictive practices, endless strikes and industrial disruption, and archaic technology". The ecosystem in the newspaper industry was viewed differently by employees and

employers and this cleavage in viewpoints greatly inhibited innovation for decades and was dysfunctional.

Methods

Since 2002 the researcher has undertaken six projects to facilitate the development of productive ecosystems for commercial and not-for-profit enterprises. This form of engaged scholarship (Van de Ven, 2007) required that interventions be delivered. In order to do this the construct of an 'innovation ecosystem' had to be repurposed to provide a framework to enable a meta-level organisation development methodology to be developed. Early findings showed that productive ecosystems need type-specific support for developing apt flows of innovation and requisite agility.

Various researchers have published valuable research into the processes and functions of ecosystems. This included the development of alternative typologies of ecosystems. For example, a model developed by Guggenberger et al (2020, p. 9) defined five types based on principles of governance, explaining that 'our typology proposes ecosystem types alongside two central dimensions, namely the organization and the focus" (p. 11).

Typologies are of practical value for interventionists. Collier et al (2012, p. 271) explained that "(t)ypologies - defined as organized systems of types - are a well-established analytic tool in the social sciences. They make crucial contributions to diverse analytic tasks: forming and refining concepts, drawing out underlying dimensions, creating categories for classification and measurement and sorting cases" later observing that "(t)hinking in terms of kind hierarchies brings issues of conceptual structure into focus, addresses challenges such as conceptual stretching, and productively organizes our thinking as we work with established concepts and seek to develop new ones" (p. 222). O'Raghallaigh et al (2010, p. 373) describe that a 'theoretical typology should 'establish the domain', 'define who or what are included', determine whether 'ideal types' or 'multiple uni-dimensional constructs' are used and 'the conditions when the typology is valid'.

Taking the advice of Collier, O'Raghallaigh and their co-authors the researcher developed a set of criteria for identifying types of ecosystems, recognising that it would not be possible to meet the requirements of social science validity as the available case studies had not been prepared sufficiently rigorously. Hence, the typology presented in this paper should be regarded as hypothetical and speculative.

In total, 27 ecosystems were reviewed in various countries (Perú n = 9, UK = 6, Denmark n = 4, Spain n = 3, Vietnam n = 2, Colombia n = 2, China n = 1) of which the researcher had direct involvement with 16 and indirect access using case studies for the other 11. In each case, the researcher mapped the core advantages sought to be gained, using a structural functionalist sociological perspective (Potts *et al.*, 2016) to determine the mission or key function of different types of ecosystem. It is important to note that the sample size was too small for reliable conclusions to be made and the cases were chosen according to availability of data rather than being randomly selected. Accordingly, the findings presented below should be considered as input for further research rather than a definitive model.

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The DOTE Model: A Development-Orientated Typology of Ecosystems

Although each individual ecosystem will have its own character, it is helpful to identify types of ecosystems, as each type has distinctive generic development needs. The DOTE typology presented below is based on deliverables, meaning that it differentiates between the different primary advantages (or 'value added') that an ecosystem delivers. Nine types are identified, namely ecosystems for providing:

I. *Capable Entrepreneurs*

II. *Innovation Leadership*

III. *Asset Exploitation*

IV. *Value-Chain Re-Engineering*

V. *World-Class Parity*

VI. *Capability to Capture Future Opportunities*

VII. *Profitable Upscaling*

VIII. *Networked Enterprise using Business Ecosystems*

IX. *Benefits for people and planet*

Type One: **Ecosystems for Providing Capable Entrepreneurs:** these succeed in facilitating the development of individuals who have the personal qualities, motivation, knowledge assets, skills and connections to act as competent entrepreneurs in commercial and/or not-for-profit enterprises. This type of ecosystem focusses on personal development, providing those that are potential entrepreneurs with opportunities to develop real-world skills, developing intrapreneurs (people who use their entrepreneurial talents within an organisation) and supporting the long-term development of established entrepreneurs.

Type Two: **Ecosystems for Providing Innovation Leadership:** this type of ecosystem is sometimes known as 'STI' as it often uses scientific knowledge / methods, combined with technological advances, to enable enterprises to be successfully innovative (i.e., where their innovations add value faster than cost). Innovative enterprises fall into two main categories: (i) those that develop new-to-the-world inventions and (ii) those that exploit existing technologies and capabilities in new ways. This type of ecosystem focusses on bringing together experts and needed technical resources, increasingly including machine intelligence, to create new products or services.

Type Three: **Ecosystems for Exploiting Assets:** these succeed in finding ways to extract greater value from existing assets. Assets include land, minerals, living things, heritage assets, buildings, artifacts, climate, people skills, artistic assets, geographic location etc. For example, in London the Abbey Road recording studio became famous as the place where the Beetles recorded many of their songs. This reputation was recognised as an asset that is now exploited as a tourist destination. This type of ecosystem focusses on recognising potential of assets, marketing, sales, promotion and development of strategic differentiation.

Type Four: **Ecosystems for Value-Chain Re-Engineering:** these succeed in reconfiguring value chains for advantage which, in the digital age, often means using platforms but other ways of positioning differently in value chains can be beneficial. For example, some farmers provide weekly deliveries of fresh vegetables to customer's homes, thereby making a superior margin on their products. This type of ecosystem focusses on understanding value chains, seeing where value is, or could be, created of improved, evaluating platforms, studying customers' buying practices and using advanced technologies for targeting potential customers.

Type Five: **Ecosystems for Achieving World-Class Parity:** succeed in developing a wide range of capabilities across an ecosystem so that it becomes capable of parity with leading ecosystems of a similar type internationally. Benchmarking processes are often used to clarify where improvement can be made and reviewing the history of how successful ecosystems achieved their capability provides important learning opportunities. This type of ecosystem focusses on comparative analysis, learning from sector-specific leaders, benchmarking, focused improvement programmes, unblocking and ongoing organisation development to achieve parity.

Type Six: **Ecosystems for Capturing Future Opportunities:** these succeed in creating the capacity to be a first or early mover in an industry or sector that is either currently non-existent or is in an early stage of development but can be predicted to become significant in the future. Examples include commercial space exploration, quantum computing and climate engineering. This type of ecosystem is often speculative and science-based, therefore may require considerable funds that governments or large enterprises can provide. However, there can be opportunities for small venture enterprises who can become first or early movers in newly emerging fields.

Type Seven: **Ecosystems for Facilitating Profitable Upscaling:** these succeed in creating the conditions by which economies of scale can be achieved. This type of ecosystem is needed as enterprises often fail to find ways grow successfully. The reasons for difficulties in managing upscaling include a need for organisations to change radically as they develop, meaning that their current ways of operating must be unlearned. Also, resource shortages are a common problem. This type of ecosystem provides capabilities that increase the probability that growth will be profitable and sustainable.

Type Eight: **Ecosystems for gaining Networking Advantage:** these succeed by enabling multiple enterprises to align their activities so as to gain advantage for all. For example, a website that sells the right to use photographers' images for commercial use will present from work of thousands of photographers, which provides benefits for buyers who have a large selection available and gives individual photographers access to clients that they could not otherwise reach. It is important to note that this type of ecosystem can be problematic to manager as individual enterprises often need to depend on others, meaning that new categories of risk are created.

Type Nine: **Ecosystems for Benefiting People and Planet**: these succeed in making improvements in social and the natural environment realms. Frequently, this type of enterprise is a form of social enterprise although it can be large in scale and scope. For example, UNICEF, Oxford University, Médecins Sans Frontières and the Mi Sangre Foundation, a Colombian children's charity, are all examples of this form of ecosystem. Distinctive attributes of this type of ecosystem include (i) it must find effective ways of

acquiring funds and other resources; (ii) some of those who work for the organisation are likely to be volunteers and (iii) there is often a political dimension so effective influencing strategies are required core competencies.

Developing Productive Ecosystems

The DOTE Model of distinctive types of innovation ecosystem has proved useful although further research is needed to validate the efficacy of the model. It can be used to design developmental interventions as each ecosystem type requires a distinctive theory of change. Three examples make the point; (i) an ecosystem may be formed to increase the quantity of able entrepreneurs in a region; (ii) or to enable small-scale enterprises to upscale (as happened in the Harris Tweed Industry in Scotland (Serdari, 2018)) or (iii) to facilitate state-of-the-art innovation as occurred in the Cambridge Cluster (Viitanen, 2016).

Deliberately taking action to develop productive ecosystems is important as the presence or absence of helping conditions and facilitative resources makes a big difference. If positive, they greatly increase the probability that enterprises will thrive. If negative, the opposite happens. Ecosystems, therefore, can be functional or dysfunctional. More recently, it has been realised that productive ecosystems can have additional roles. Some improve the fabric of society and do much to protect environmental and biological ecosystems. These dimensions of ecosystem functionality are currently evolving and the DOTE framework, described in this document, adopts the principle that development means ‘being good for people, planet and profit’.

Although much can be done to improve ecosystems it is important to realise that they need to be inner-directed and self-healing. People with power within an ecosystem need to construct, nourish and energise their own ecosystem, as this dynamic cannot be provided from the outside. Often, if generic and local conditions are favourable (for example, government policies actively support enterprise and local conditions are favourable) then enterprises take action themselves, as it is in their own self-interest to have well-developed ecosystems.

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