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SUSTAINABILITY-DRIVEN ENTREPRENEURSHIP AS A TOOL TO INCREASE RURAL RESILIENCE IN RUSSIA: FRAMEWORK FOR TRANSFER OF THE EUROPEAN EXPERIENCE

Direttore della Scuola : Ch.mo Prof. MARIO LENZI

Coordinatore d'indirizzo: Ch.mo Prof. VASCO BOATTO

Supervisore: Ch.mo Proff.ssa PAOLA GATTO

Dottoranda: ANNA KANSHIEVA

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ABSTRACT

A multitude of problems undermines resilience of rural areas in Russia demanding, among the others, urgent measures for revitalisation of rural economies. Meanwhile, novel models of rural entrepreneurship driven by the increasing concerns of sustainability are growing and expanding in rural areas of the European Union. They diversify and strengthen rural economy while do not compromise the social and ecological dimensions and, hereby, contribute to sustainable rural development.

In line with that, the thesis aimed at investigating the models of sustainability-driven entrepreneurship in the context of modern European rurality and suggesting the framework for their effective transfer to rural economies of Russia. The following results have been achieved.

The survey on sustainability-driven rural entrepreneurship has revealed a wide variety of novelties existent in rural enterprises in forms of completely new business models or innovation in one or several components, discovered three novel business model patterns, and found Business Model Canvas to be the most appropriate representation tool for transfer and further minnovation on the models and patterns collected.

A systems approach has been used for investigation of the Sustainability-driving rural entrepreneurship system as enabling environment for the novel enterprise models to emerge and nurture. By using structural analysis framework with participatory modelling approach the system's structure and network of its interrelationships have been mapped and each component's role in the short- and long-term dynamics of the system has been identified.

Framework for evaluation of a rural entrepreneurship system as the recipient environment for the transferred sustainability-driven enterprise models from Europe has been elaborated using the complex adaptive system and the resilience thinking approaches. As a result, it consists of three components: (1) the recipient system's analysis thorough the lens of the Sustainability-driving rural entrepreneurship system, (2) identification of the current phase of the system's adaptive cycle; (3) assessment of existing system's transformation strategies.

Application of the framework for a model rural entrepreneurship system in the Russian Karelia has shown that the current system is lacking key sustainability-driving components and cannot be considered capable of cultivating the entrepreneurial models if transferred. However, the system is currently proceeding through the reorganisation phase of its adaptive cycle, which uncovers increased system's ability for undergoing transformation. Still, lack of the objectives and actions in existing strategies aimed at key change-driving system's components does not contribute to system's transformability.

All in all, the results of the thesis in form of the collection of novel entrepreneurial models and the framework for evaluation of the sustainability-driving capacity of a rural entrepreneurial system are considered to become a valuable contribution into the generic fields of the knowledge transfer and rural entrepreneurship as well as to be further utilised in practice for disseminating the seeds of the pioneering European experience over rural economies of Russia and beyond.

ABSTRACT (in Italian)

Per affrontare il gran numero di problemi che nelle zone rurali della Russia compromettono la capacità di adattarsi e rispondere ai cambiamenti è necessario che vengano adottate con urgenza delle misure che rivitalizzino l'economia rurale. Allo stesso tempo, all'interno dell'Unione Europea si vanno sempre più affermando modelli innovativi di imprenditoria rurale caratterizzati da una crescente attenzione per la sostenibilità. Le iniziative ispirate a questi modelli contribuiscono a diversificare e rafforzare l'economia rurale senza scendere a compromessi per quanto riguarda gli aspetti sociali e ambientali, concorrendo allo sviluppo sostenibile nelle aree in questione.

Alla luce di queste considerazioni, la tesi si pone l'obiettivo di analizzare i moderni modelli di imprenditorialità rurale sostenibile sviluppatisi nel contesto dell'Unione Europea e di studiare le modalità per un loro efficace trasferimento alle economie rurali della Russia. Di seguito si descrivono brevemente i principali risultati raggiunti.

Un'indagine condotta sulle imprese rurali sostenibili ha rivelato l'esistenza di un gran numero di innovazioni – sia sotto forma di modelli di impresa completamente nuovi, sia sotto forma di modifiche in una o più componenti – e ha individuato il Business Model Canvas come lo strumento più appropriato per il trasferimento e la continua evoluzione dei modelli di impresa osservati.

Per lo studio del sistema imprenditoriale rurale come ambiente che consente alle nuove imprese sostenibili di nascere ed emergere si è utilizzato un approccio sistemico. Combinando analisi strutturale e un approccio di participatory modeling, si è potuto mappare il network di interrelazioni e identificare il ruolo di ciascuna componente nelle dinamiche di breve e di lungo periodo del sistema.

Il quadro di riferimento concettuale utilizzato nell'esaminare il sistema imprenditoriale rurale come ambiente che riceve i modelli europei di imprenditoria sostenibile è ispirato ai concetti di sistema complesso adattativo e di resilienza. Di conseguenza è costituito da tre componenti: 1) l'analisi comparata del sistema imprenditoriale ricevente; 2) l'identificazione di quale sia la fase del ciclo adattativo in cui il sistema si trova attualmente; 3) la valutazione delle attuali strategie di trasformazione del sistema.

L'applicazione di questo quadro concettuale al sistema di imprenditoria rurale della Karelia Russa dimostra che attualmente il sistema, mancando di alcuni elementi fondamentali per la sua sostenibilità, non è in grado di coltivare i modelli imprenditoriali che si decidesse di trasferire. D'altra parte, in questo periodo del suo ciclo adattativo, il sistema sta attraversando una fase di riorganizzazione e mostra una crescente capacità di trasformarsi. È vero altresì che l'assenza di azioni che abbiano come obiettivo le componenti cruciali del sistema non influisce in maniera positiva sulla sua trasformabilità.

Nel complesso, i risultati di questa tesi – in particolare il lavoro di raccolta dei modelli innovativi di imprenditoria rurale e l'elaborazione di un quadro concettuale per la valutazione della capacità, da parte di un sistema rurale, di promuovere modelli di sviluppo sostenibili – possono non solo rappresentare un interessante contributo all'ampia letteratura in materia di knowledge transfer e imprenditorialità rurale, ma anche dare un contributo pratico al trasferimento – verso la Russia, ma non solo – delle più interessanti esperienze maturate in Europa nell'ambito dell'economia rurale.

To my family and my homeland

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Chapter 1. INTRODUCTION

1.1. Problem statement

The role of rurality in the prosperity of a country is widely acknowledged. Meanwhile, today rural areas tend to loose their positions in increasingly urbanising world (De Noronha Vaz *et al.*, 2006). Despite the diversity of rural areas in terms of their socio-economic performances, natural characteristics, and cultural heritage, majority of them demonstrates intrinsic fragility in the similar social, economical and environmental aspects, and, consequently, different rural areas face nowadays common challenges and experience depreciation of their values and under-utilisation of the opportunities they are able to provide. Russia is not an exception.

Rural areas constitute particular importance for the Russian society. Rural population constitutes approximately 27% of total Russian population, and the contribution of the agricultural sector in the national JDP is more than 5%. These are just several reasons why rural life and situation in rural areas should be under continuous focus of scientific investigation and policy action. However, current state of affairs in rural society represents the deepening complex degradation. In spite of few examples of relatively prosperous rural 'spots', the general picture is far from optimistic (Lemetti, 2011; Starodubrovskaya and Mironova, 2010; Barlibaev *Canvas*., 2009; Patsiorkovsky, 2009; Morozova, 2008; Nefedova and Pallot, 2006; Bondarenko, 2005; Serova *et al.*, 2004):

- Between the population censuses of 1989 and 2002, the rural Russia has lost 10,700 settlements, and proportion of villages without permanent inhabitants has increased by 40%. Results of the population census of 2010 evidence intensively continuing process of rural settlements' disappearance. Due to increasing natural loss and out-migration, population cutback is traced in 75 out of 89 Russian regions. In accordance to the pessimistic forecast prepared by the state body of Russian Statistics, by 2021 rural population will decrease by 5,9% (2,2 million) compared to 2010 and result in 26,4% portion in total population of Russia.

Increasing depopulation of rural areas entails very high economic, social, and ecological costs: land abandonment, loss of indigenous traditions and cultural landscapes, human capital degradation and destruction of the evolutionary shaped rural settlement pattern, lands withdrawal from agricultural use and loss of social and economic control over many of the historically developed areas.

- 42% of all the Russian poor concentrates in rural areas. Social stratification divides rural society in three income-based groups with upper cluster of middle class constituting around 5%, transitional groups occupying 45%, and half of rural population lives in poverty.

- Decline in living standards in rural areas is accompanied by high unemployment rates. Despite the emerging employment and income growth in the last 3 years, standard of living remains low. The total unemployment rate in rural Russia in 2001 was 11.1%, registered - 2.6%. Most of the rural unemployed (74.8%) do not receive social benefits and are not socially secure. The most worried factor is an increase of unemployed among rural youth. It remains very high - 17.2% compared to 6.7% in 1992.

- Rural social environment is scaling down. Network of social infrastructure is collapsing herewith eliminates access of rural inhabitants to basic social services, education and public health, and strengthens social exclusion.

- Hunting, fishing and gathering remain to be the key sources of rural livelihood. Lack of permanent income sources for majority of rural population pushes people to active poaching, illegal collection of wildlife and medicinal plants, etc. and constitutes a real danger of excessive pressure on the unique flora and fauna. Unsustainable agricultural practices and intensified exploitation of natural resources entail biodiversity loss, water pollution, soil erosion, deterioration of landscapes, and increased risk of natural disasters.

- Alcoholisation, another widely spread scourge of rural areas in Russia, is considered to be at the same time a cause and a consequence of the current rural crisis.

The scale and depth of rural problems mentioned above do not only compromise sustainable rural development, but jeopardise the very existence of Russia's statehood. (Bondarenko, 2005; Abalkin, 2004; Bobilev, 2004). Major systemic changes need to be initiated in rural areas to ensure the revitalisation of the countryside and reconsideration of rural life. Obviously, current state of the art calls for new strategies and models of rural development to be found and applied so to turn lagging rural areas into resilient rural communities.

Reinforcement and diversification of rural economy through development of rural entrepreneurship can contribute to addressing described rural problems, and have been selected to become the object of particular investigation in this research.

Vitalisation of Russian rurality through sustainability-driven entrepreneurship means in various respects provision of alternative sources of employment while increasing effectiveness and sustainability of natural resources use, rediscovering of entrepreneurial potential and realisation of natural individual motive for self-actualisation. This is expected to result in higher quality of life, reduced unemployment rates, shortened out-migration rate, and is even capable of attracting more people to rural areas and remodelling the rural life's perception.

Survey on the practices and experience of the European Union countries has revealed existence of a growing number of examples of the entrepreneurs exploring novel opportunities in rural areas and creating effective ecologically- and socially-oriented entrepreneurial models. Models which give the entrepreneurs an opportunity to generate sufficient income while successfully meet modern demands. As a result, these findings were considered valuable for further elaboration with the overall aim to make these entrepreneurial models available for transfer and adoption in lagging rural communities of Russia.

1.2. Scope of Research

The key research questions under investigation of the thesis are:

What are the sustainability-driven practices in European rural entrepreneurship?

How can entrepreneurship models be effectively transferred to external context?

The questions result in a two-fold aim of this study as *to describe the benchmarking experience in sustainability-driven entrepreneurship in Europe and propose framework for its effective transfer to different context.*

The thesis aim has been specified into several sub-questions and, then, grouped into three modules with the research objectives stated for each module.

1. **Transfer content: Sustainability-driven novelties in Rural Entrepreneurship**

What are the sustainability-driven novelties in rural entrepreneurship within the EU?

Are there any novel patterns of rural business models?

What is the best way to represent such novelties for their transfer outside the EU?

Research Objective 1:

To identify existing sustainability-driven novelties in rural EU entrepreneurship.

Research Objective 2:

To propose the most effective mode for the external transfer of entrepreneurship models.

2. **Transfer context: Sustainability-Driving Rural Entrepreneurial System**

What is the structure of Sustainability-Driving Rural Entrepreneurial System?

Which are the key components for the System's dynamics?

Research Objective 3:

To describe the Sustainability-Driving Rural Entrepreneurial System and identify key components for its dynamics.

3. **Framework for evaluation of the recipient transfer context**

How to analyse the preparedness of receiving environment to accept transferred business models?

How to understand the readiness of receiving environment for transformational process to become a more appropriate for transferred content?

How the framework elaborated can be demonstrated in practice?

Research Objective 4:

To propose framework for evaluation of sustainability-driving capacity of the recipient Rural Entrepreneurship System and its potential for transformation.

Research Objective 5:

To provide an example of the developed framework's utilisation for a model rural region in Russia.

1.3. Structure of the thesis

This thesis is organised into four chapters:

The **First** chapter presents the review of the literature sources to trace the interaction between entrepreneurship and resilience of rural areas, and address sustainability-driven entrepreneurship as a gradually strengthening phenomenon emerged to meet the recent demands of sustainability. It then turns to observing the knowledge transfer as a tool to enhance lagging rural economies of Russia with business opportunities suited for challenging economical conditions and increasing environmental and social concerns, considers the existent approaches to the external knowledge transfer with focus on transfer mode and the receiving context, and concludes by framing the scope of the research still lacking investigation.

The **Second** chapter uses the qualitative survey for identification of the sustainability-driven novelties in European rural enterprises which are to become then the content of the potential transfer, and on searching for the best tool to present the enterprise models collected so to make them available also for potential manipulation and minnovation by the Russian recipients-entrepreneurs.

The **Third** chapter focuses on the rural entrepreneurship system as an enabling environment for emergence and growth of rural entrepreneurship with sustainability-driven nature. Examining the object through the complex systems lens, it investigates the integral structure of system's elements and inter-links and classify the system's components according to their role in dynamics of the system.

The **Fourth** chapter develops the threefold framework for evaluation of rural entrepreneurial system as a receiving transfer environment by supplementing general systems theory with resilience thinking approach, and demonstrates utilisation of this framework for the rural entrepreneurship system of Belomorsky district of Russian Karelia.

Chapter 2. LITERATURE REVIEW

Introduction

This chapter seeks to present the findings of the literature review and the concomitant author's reflections on the aspects critical to the study. The overall aim of this part of the thesis is to comprehend the context in which to position the research and create grounds for further elaboration on the issue.

In summary, the objectives of the literature review are as follows:

to identify the role of entrepreneurship in resilience of rural areas;

to describe the current position of entrepreneurship in rural Europe;

to analyse the modern situation with rural entrepreneurship in Russia;

to investigate the phenomenon of international transfer of knowledge.

2.1. Rural entrepreneurship and Rural resilience

2.1.1. Rural resilience

Rural resilience determines the capacity of a rural territory to balance ecosystem, economic and social functions and, thereby, adapt and maintain its satisfactory equilibrium through shocks and stresses or to reorganise itself around a new set of values (Heijman *et al.*, 2007). This concept is based on the acknowledgement that ecological, economic and social systems are integral overlapping constituents of the rural system, consequently, lack of resilience of any of these systems undermines the general rural resilience.

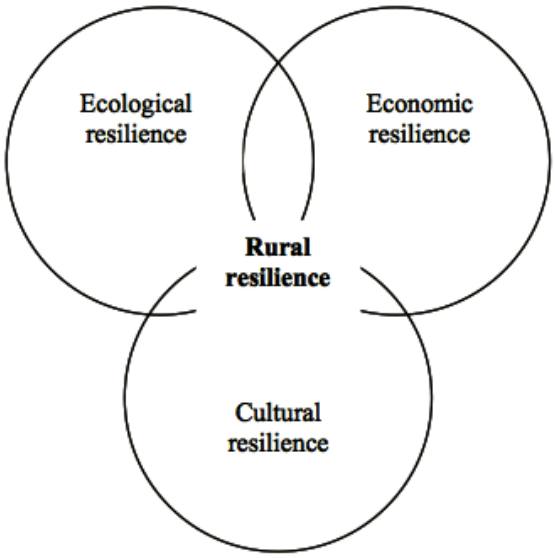
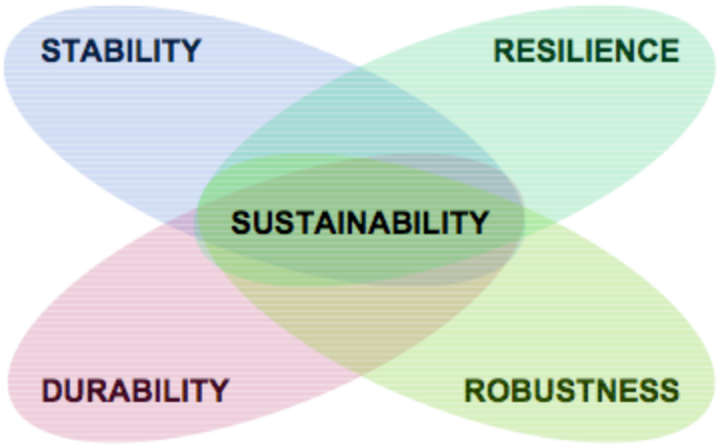


Figure 2.1. Rural resilience (Heijman et al., 2007).



In times of increasing uncertainty about the future and unpredictability of change such rural area's property as its resilience serves as one of the key conditions for territory's sustainability (Figure 2.2). This is because maintaining any set of qualities requires from the sustainability to possess dynamics with time and action (Stirling, 2008).

Figure 2.2. Four necessary and sufficient conditions for sustainable dynamics (Stirling, 2008).

Diversity, considering richness and variety among system's components, increases system's resilience and, therefore, constitutes one of the fundamental system's requirements in the face of

potential disturbances (Tilman *et al.*, 2005). In terms of economic resilience diversity may be regarded as the number of farm holdings operating in the focal rural area, or as the variety of income generated activities (Heijman *et al.*, 2007). Following this, diversification of economic activity through increasing of quantity of enterprises, sectors, and forms of entrepreneurship may contribute to economic resilience and, thereby, overall resilience of a rural area.

2.1.2. Rural entrepreneurship

Entrepreneurship has many definitions depending on the lens through which it is observed. This research utilises the definition proposed by Shane (2003:4) as 'an activity that involves the discovery, evaluation, and exploitation of opportunities to introduce new goods and services, ways of organising, markets, process, and raw materials through organising efforts that previously had not existed'. Rural entrepreneurship is referred to in this writing as the entrepreneurship practised in rural areas and for the purpose of this work is limited to the activity connected to rural environment and natural resources.

Evidence of an entrepreneurship possessing particular capabilities of driving economic development (Smallbone *et al.*, 2009; Karlsson *et al.*, 2009; Bosma and Levie, 2009; EC, 2008b; Audretsch and Keilbach, 2006; Parker, 2005; EC, 2003a; Carree and Thurik, 2002) has turned it to be one of the leading contributor to enhancing rural resilience (EC, 2008a; De Noronha Vaz *et al.*, 2006; Stathopolou *et al.*, 2004; Pezzini, 2001; Petrin, 1997) and an instrument for revitalisation of rural areas in many rural development programs (INTERREG, LEADER+) and projects (EMASE, ENABLE, ESoF, PRAXIS, PROBIOPRISE, IDELE) in recent decades. This understanding is shared also by the rural entrepreneurs themselves, whose opinions that, 'job creation, income generation, improved resource efficiency and environmental benefits are often closely interlinked', are reflected in the RAPIDO project report.

Building strong local networks, promoting utilisation of unique mix of local resources, and encouraging local community to proactively involve in finding and realisation of entrepreneurial opportunities, thus, being more locally embedded (Gulumser *et al.*, 2009) compared to urban entrepreneurship, rural entrepreneurship promotes exogenous model of local development. Entrepreneurial economy not only shapes the number of dynamic entrepreneurs and encourage creation and development of indigenous businesses, but also gives local communities an opportunity to decrease the reliance on state subsidies and dependence on external help, or, at least, to make this support working effectively to ensure future self-sufficiency of these communities (Petrin, 1997).

The proposition that rural areas, interpreting the words of Bosma and Levie (2009), are in need of

people with particular ability to recognise and exploit valuable business opportunities, is becoming widely accepted nowadays. De Noronha Vaz *et al.* (2006) provide the evidence of direct correlation between the sustainable development of the rural area and the level of small firms operating in there. Rural SMEs are argued to create local jobs, contribute positively to development of social services (including education, health, etc.) and transport infrastructure and, what is more, let keep territory's capital within the community and utilise these territorial resources for meeting the local demands.

Upon the adoption of Lisbon Declaration in 2000, there has been made a wide agreement on the importance of innovation and knowledge-based economy for sustainable development on national and regional levels. This 'new' economic model relies on knowledge, ideas, human and social capital and intangible and non-material assets as, among others, ability to innovate. Effective utilisation of these assets is crucial also for increasing competitiveness and sustainable development of rural areas. This fact emphasises the particular role of innovative forms of rural enterprises as the dominant actors in modern local development.

In line with the processes of transformation undergoing by the global economy, the systemic change is happening on the level of a firm. An increasing number of businesses are initiated and operated by the people capable of seeing the system's interactions, identify and attack 'unsatisfactory equilibrium', by those who believe, 'the best way to predict the future is to create it' (Elkington and Hartigan, 2008). The world faces increasing number of entrepreneurial pioneers 'can-do thinkers' who are leading the way by orchestrating the process of change - transition to a more sustainable equilibrium - and initiate chain reaction to promote, adopt and advance these innovative solutions throughout the community and beyond (Schumpeter, 1934).

2.1.3. Rural entrepreneurship and sustainable development

It is now when global environmental and social challenges are becoming an increasingly important part of economic policy and entrepreneurship and innovation are named among the most effective drivers of this transition to a greener economy (OECD, 2010). Daly's (2010) appeal to 'seek to develop qualitatively without growing quantitatively – to get better without getting bigger' becomes a slogan shared by the ever increasing number of people and organisations. Hamel (2002) goes even further claiming that nowadays change has changed itself, and calls for conventional 'getting better' concept to be turned to 'getting different'.

Finding a right balance between environmental, social, and economic objectives when taking on new opportunities (EC, 2003a) has become a growing challenge for all kinds of entrepreneurs in recent decades. This entailed an emergency of a new form of entrepreneurship - ecopreneurship -

and its further enlargement to sustainability-driven entrepreneurship, incorporating into the usual meaning a new principle of sustainable development. Some particular features of ecopreneurship have been traced by Schaper (2005), such as, firstly, entrepreneurial nature of the activity, secondly, positive influence on the natural environment along with sustainable future vision, and, thirdly, intentionality, that is, particular purposefulness of the business activity aimed at more sustainable equilibrium.

Lately the social aspect has been added to ecopreneurship resulting in a wider concept of sustainability-driven entrepreneurship, combining all three, environmental, social, and economic, ingredients of sustainability in a holistic way (Tilley and Parish, 2006) and positioning such enterprises somewhere in between of conventional businesses and charities. These are the enterprises that, for example, market carbon offsets and allocate profits to finance new renewable energy projects, family farmers, and local communities, or wholesale organic and fair trade food specialities from biodiversity-rich developing countries to the developed world (Parrish, 2009).

An ability to identify opportunities from what initially may be seen as an obstacle is found to be one of the key features of ecopreneurship (Tandoh-Offin, 2010). They have proofed to be capable of effectively transforming environmental wrongs into productive 'green' goods (Bowen, 2000; Anderson, 1998). This is of particular importance for rural economies, heavily connected to natural resources capital and inevitably dependent on the unique characteristics of ecosystems and quality of the surrounding environment (Dean and McMullen, 2007). Changed perceptions of a surrounding environment to be an interconnected system of natural and social elements have enlarged entrepreneurship to be not only about taking from nature, but also about learning from it and serving it (Pauli, 2010).

In rural domain sustainability entrepreneurship contributes to creation of sustainable rural livelihoods - 'the capabilities, assets and activities required for a means of living and to cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base' (Scoones, 1998). Today, when the territory's development is conditioned not solely by the critical quantity of the livelihoods in the area created for poverty eradication, the sustainability entrepreneurship can provide the complexity of diversified combinations of livelihood forms made available for locals to exploit while protecting nature environment and strengthening social sustainability.

2.2. Rurality and Entrepreneurship in the EU

Rural development concept has evolved significantly along the recent decades. From the one equal to agricultural development (until the 1970s) and aimed mainly at production growth via industrialisation (Harris, 1982) up to describing rural development as a territorial, multi-sectorial and dynamic concept aimed at making rural areas economically, socially, culturally and environmentally healthy (EC,2009).

Increased acknowledgement of deepening rural poverty along with growing understanding of the importance of non-income dimensions of poverty were among the driving forces of this transition from 'growth' to 'development' (OECD, 2003; Fernando, 2008). It has been inevitably influenced as well by increased environmental concerns and the wide recognition of sustainable development concept.

The EU rural paradigm has followed the same evolution – from sectorial (dominantly agricultural) approach to territorial development and, more recently, to sustainable rural development (Cork Declaration, 1996) resulting in a fundamental shift from prioritising economic growth to the quality of life preference. All this resulted in a new vision of rural development as a tool for improving the quality of life and well-being of rural areas (Mantino, 2010).

The LEADER programme, started in 1991, is considered to undermine the foundations of the old rural paradigm, having proposed an alternative way of development through reinforcing the regional identities and efficient networking of small rural localities (Nemes, 2005). The next change in the old paradigm has been forced by the adoption of the Cork Declaration in 1996, widely announced an urgent need for integrated rural development policy, again emphasising for the importance of endogenous rural development.

The Common Agricultural Policy (CAP) after its fundamental reforms in 2003 (Council Regulation (EC) No 1783/2003 of 29.09.2003), specifically its "Second Pillar", and the Rural Development policy for the period 2007-2013 (the Council Regulation (EC) No. 1698/2005 of 20.09.2005 on Support for Rural Development by the European Agricultural Fund for Rural Development) have established the current framework of the EU rural paradigm, aimed at increased competitiveness of rural areas, improved environment, and enhanced quality of life via development of various economic activities and encouragement of relevant bottom-up approaches through complex

involvement of local actors (EC, 2009).

Generally acknowledged sustainability concept is one of the fundamental ones also for modern rural development paradigm. This implies the focus of rural development policy to be on three dimensions of sustainability – economic competitiveness, environment preservation, and improvement of the quality of life in rural areas in line with principles of inter-generational, as well as intra-generational - 'in our local actions, we must be aware of our global responsibilities' (Cork Declaration, 1996) - justice.

Multifunctionality constitutes one of the guiding principles of the modern EU rural paradigm. This is when the same activities provide for different outputs, categorised by Van Huylenbroeck *et al.* (2007) as "green" (landscape and bio-diversity management), "blue" (water resource management and flood control), "yellow" (vitality of rural areas, historical and cultural heritage, rural amenities), and "white" functions (food security and safety). In terms of agricultural activities, as well as forestry and fisheries, it implies the use of farm's resources for production of raw materials along with non-commodity outputs (OECD, 2001), like landscape, organic products, biodiversity conservation.

Another conceptual principle of the current rural development in the EU is a diversification of economic and social activity. It refers to self-sustaining private and community-based initiatives on the wider, rural, scale, rather than an agricultural. This principle enlarges the forms rural land and resources are utilised for to include production of non-agricultural goods and provision of services (rural tourism, production of energy), thereby, environmental function replaces the agricultural one (Aguglia *et al.*, 2009).

The postulates of current EU Rural Development policy are in line with and can significantly contribute into achieving the objectives of new-coming EU 2020 Strategy – a successor of the Lisbon Strategy - which will aim, among the others, at creating a competitive, connected and greener economy. To succeed in this, the EU rural areas have been advised to increase promotion of sustainable "green" technologies and innovations, invest in entrepreneurship, manage natural resources in a sustainable way, produce renewable energy, reduce negative impact of agriculture, and utilise the complex potential of rural areas (Marino, 2010; Pezzini, 2001).

These above mentioned principles of sustainability, diversification, and multifunctionality and rural development action lines encourage utilisation of emerging entrepreneurial rural opportunities in all the variety of economically, environmentally and socially sustainable forms like agritourism, energy production, social farms, etc. (Polman *et al.*, 2010). At the same time, the priority of endogenous development and bottom-up approach promote maximisation of business initiatives utilising a complexity and integrity of each particular local territorial capital.

In addition, by identifying such focus-areas for rural development programmes as the preservation of biodiversity and valuable landscapes, sustainable water management, mitigation of climate change, and renewable energy (EC, 2008a; Marino, 2010), the EU has especially encouraged diversification of rural farming and entrepreneurship by turning these challenges into entrepreneurship opportunities. Thereby, more than third of EU-27 family farmers (36.4%) became engaged in gainful activity other than farming, and 12% of EU-27 holdings have turned to be farms with diversified activities (EC, 2008c).

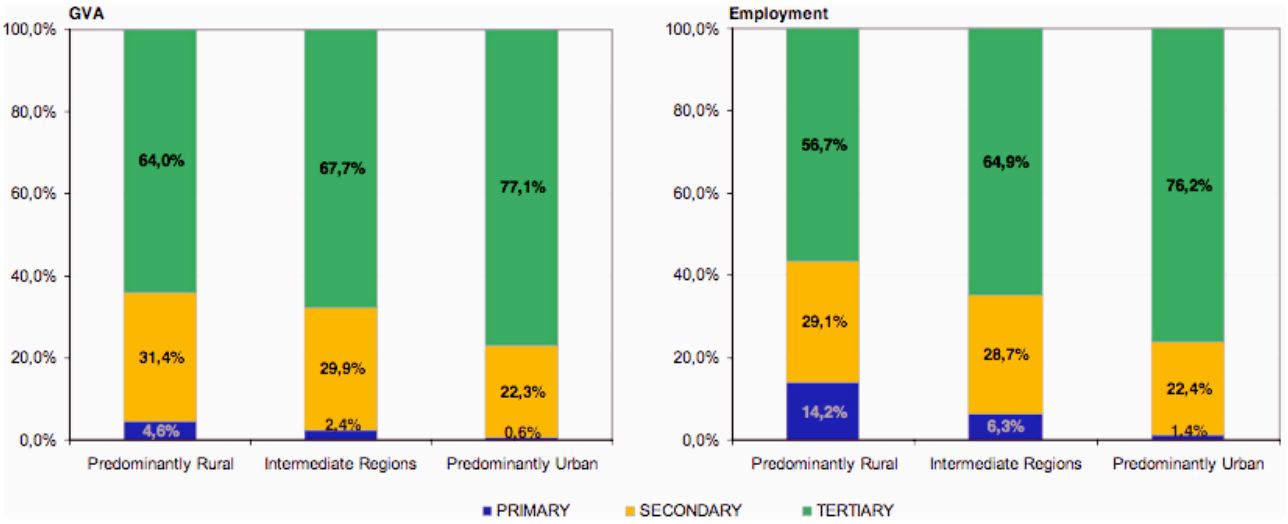


Figure 2.3. GVA and Employment by branch, 2007 (EC, 2010).

As it is shown on the graph above (Figure 2.3), service sector is becoming increasingly dominating in the economic activity of rural areas. Diversification of the rural economy to sectors other than agriculture in the period of 2002-2007 has decreased the proportion of the primary sector by 1.9 percentage points in terms of employment and by 0.8 percentage points in terms of value added while the average annual increases of both employment and added value in the non-agricultural sector showed around 1.3% and 2.5% per year (EC, 2010). As a result, by 2007 86% of employment and 95% of value added in predominantly rural areas of the EU-27 have come from the non-agricultural sectors.

This demonstrates a growing number of novel rural enterprises in rural areas which creation was shaped by the values of sustainability and opportunities of multifunctionality and diversification. And, this as well indicates increasing numbers of rural entrepreneurs exploring novel opportunities that successfully meet modern demands, create sustainable livelihoods for themselves and other community members, protect environment, and address social challenges.

2.3. Rurality and entrepreneurship in Russia

Dramatic changes of 'perestroika' period had disruptively and profoundly challenged the manner rural life used to function. Post-'perestroika' economic reforms of the 1990s did not succeeded in transformation of rural areas, but rather turned them into rural 'laggards' with increased social disappointment and tension (Bondarenko, 2005), large-scale degradation of social and engineering infrastructure (Serova *et al.*, 2004) with major population seeking for survival tactics (Nefedova and Pallot, 2006) while a farming institution playing a marginal role due to its non-acceptance by social rural system (Efimov, 2009).

Reforms have planned to build new legislation and institutions for the agrarian sector based on changed property rights institution, new organisational forms of rural enterprises, and a freedom to choose from alternative forms of land management. However, the majority of farmers had not become market-oriented producers (Morozova, 2008), but rather survival entrepreneurs aimed exclusively at improving individual households (Wegren, 2004). At the same time, rural self-employment is a perspective way out of rural poverty only if it is profitable, rather than just self-sufficient (Nefedova and Pallot, 2006).

70 years of planned economy and forbidden private entrepreneurial activity had diminished general entrepreneurial competence and weakened business culture. When land reforms turned large-scale collective agro-enterprises into privatised, majority of them had even failed to survive within new conditions. Loss of employment forced many rural dwellers to independently cope with new-facing challenges of economies of scale and select among survival tactics (IFAD, 2002).

This entailed profound dependence of villagers on their private 'peasant' farms while distress-push factors urged some of them to seek for additional sources of livelihoods, such as, providing services for rural peers (construction, plowing gardens, etc.), for incoming tourists (collection and sale of wild plants, rental of rural premises). In majority cases they remain temporal and informal sources of income (Serova and Zvyagintsev, 2006) for the 'ascending adapters' (Shabanova, 2003), those who have managed to adapt to new conditions and find ways of life's improvement by utilising a variety of unique local potential.

Today in rural Russia agricultural production has ceased to be the main source of employment. If, in the early 1990s, agriculture employed more than half of all able-bodied rural population, later this share was constantly diminishing and, by 2002 reached the rate of only one third of the employed population. The share of non-agricultural activities in rural areas has grown significantly, although, not because of increase in the absolute number of non-agricultural jobs, but rather due to dramatic decrease in agricultural employment started after 1995, especially in agricultural organisations (Figure 2.4). Thus, if in 1999, the economy employed about 18 million of rural inhabitants, of whom about 10 million - in agriculture, in 2002, employment declined to nearly 13 million people, of whom only some over 4 million worked in agriculture. (Serova and Zvyagintsev, 2006:4).

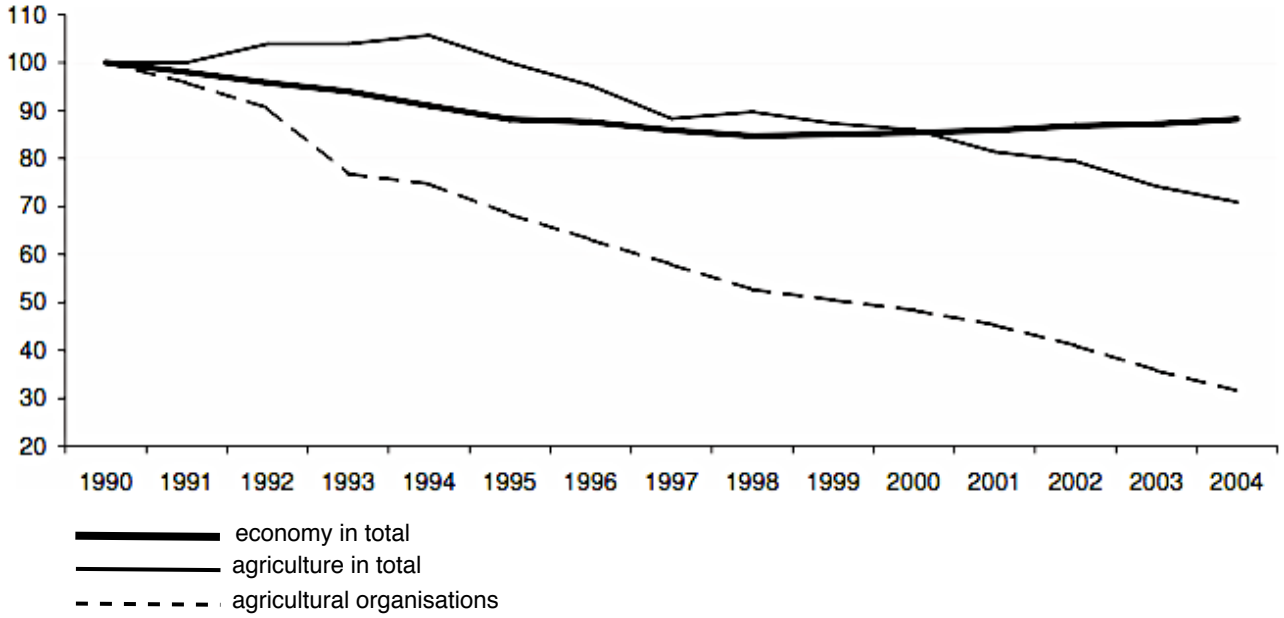


Figure 2.4. Dynamics of employment in the economy and in agriculture, 1990 year=100% (Serova and Zvyagintsev, 2006).

In Russian rural economy, deeper embedded in social life than an urban one, there coexist three types of institutional structures, which qualitatively differ from each other and regulate economic relations, the movement of resources and wealth in rural communities. They are the re-distributive, the market, and the reciprocal (the economy of the gift, or a network of mutual help) economies. Following this, any entity of rural economy (be it a family farm, rural enterprise or local administration) has to act simultaneously under these different institutional structures (Barlibaev *et al.*, 2009).

Rural policy in Russia still closely corresponds to agricultural sector. There coexist three approaches, a territorial development approach has been recently declared as a priority, while sector-based and convergence-directed approaches continue to prevail in strategic actions. Regional rural anti-poverty policies concentrates around support for agriculture with absence or lack of programs aimed at development of alternative non-agricultural sectors of local economy

(Serova *et al.*, 2004) and social development of rural territories, even considering that federal level programs particularly emphasise and support the latter (Starodubrovskaya and Mironova, 2010).

Target National Program "The development of agricultural sector" focuses on animal husbandry - unprofitable segment of agroeconomy and does not even consider solutions for such basic socio-economic problems of the Russian rurality as employment, gasification, road construction, etc. (Patsiorkovsky, 2007). As Kulakova (2007) argues, despite the announced objectives of the Program, it is hard to expect its positive influence over development of rural SMEs as the Program does not possess any effective working mechanisms in this direction.

Economic growth for a long period of time dominated the realm of Russian strategies and objectives, generally and for rural areas (Pshikhachev, 2005). Sustainable development concept, long ago widely acknowledged in the developed countries, has not until recently been part of the Russian agenda for rural development. Further procrastination and lack of ecological concerns in the policy coupling with strategic direction to GDP doubling within existing social-economic parameters could entail irreversible degradation of natural capital of rural areas and dramatically decrease their chances for recovery (Bobilev, 2004).

The Concept of sustainable development of rural territories in Russia for the period before 2020 was enacted in late 2010 with one of the key objectives to diversify rural economy and increase the sources of rural incomes. This is planned to achieve through multifunctionality and diversification of rural economy, increase of employment opportunities in non-agricultural sector, (especially recreational, nature protection, etc.), and more effective self-employment and co-operation. The same objectives and measures are stipulated in the Federal low on agriculture development (2006). Ecological rehabilitation and ecologisation of all sectors of rural economy have become the principle objectives of ecological policy.

Despite the policy attempts, rural areas continue to be the weakest link in the socio-economic structure of Russia. Absence of a distinct legislative framework, lack of effective enforcement mechanisms to implement the rights of private producer, underdevelopment of market institutions, and strong collectivisation tradition, all these undermine development of rural entrepreneurship institution in Russia and have not allowed to form any effective economic agent so far (Illarionova *et al.*, 2009; Morozova *et al.*, 2009).

Recent study of rural entrepreneurs in Russia (Morozova *et al.*, 2009: 163) has revealed existence of three conceptual groups based on differences in economic behaviour:

(1) "pure entrepreneurs" - represented by the owners of mature enterprises which have stable demand for their produce, are able to diversify production considering changing

market conditions, although experience temporary financial difficulties. They themselves have sufficiently high sectorial competence and are advancing its level through training and participation in Russian and international programs.

(2) "transitional entrepreneurs" - are the most represented, although, underdeveloped in terms of market culture. These are not quite mobile market agents who are ready to narrow production and change to consumer strategy in case markets fall or material resources become shorten. They require additional state intervention through modern support mechanisms - grants, loans, subsidies, subventions. Under these conditions, they are capable of increasing and intensifying production. At least half of them are potential 'green' family farms, active agents of agricultural production market.

(3) "consumers"- are formally farmers, but in reality do not differ from private 'peasant' farms. They are focused on internal family needs and enter the market occasionally, thereby, do not represent importance for the market.

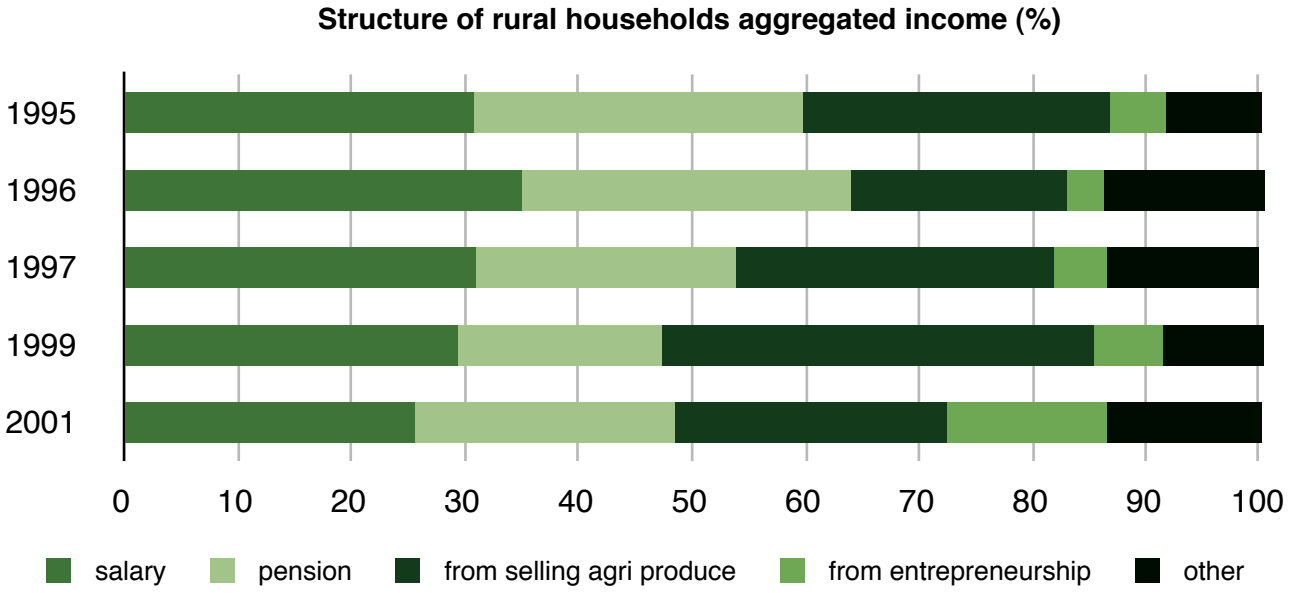


Figure 2.5. Dynamics of the structure of rural households aggregated income, in percentage to total (redesigned by the author from Lilova, 2003).

Another study of rural households (Lilova, 2003) indicates the portion of income from entrepreneurship in an aggregated household income. The dynamics traced on the graph above (Figure 2.5.) shows that such portion remained relatively within the same 4-6% borders during 1995 - 1999 and has more than doubled in two years by 2001. This shows increase in entrepreneurship activity among rural population most probably due to distress-pull factors of the crisis in 1999. Anyway, this provides some grounds for positive expectations about the potential of rural entrepreneurship development in Russia.

In addition to that, the findings on working strategies of motivated rural inhabitants (Morozova *et*

al., 2009 demonstrate substantial (19% and 14% respectively) orientation towards individual and joint entrepreneurship strategies. One third of the respondents considers entrepreneurship as a prevailing income-generating alternative.

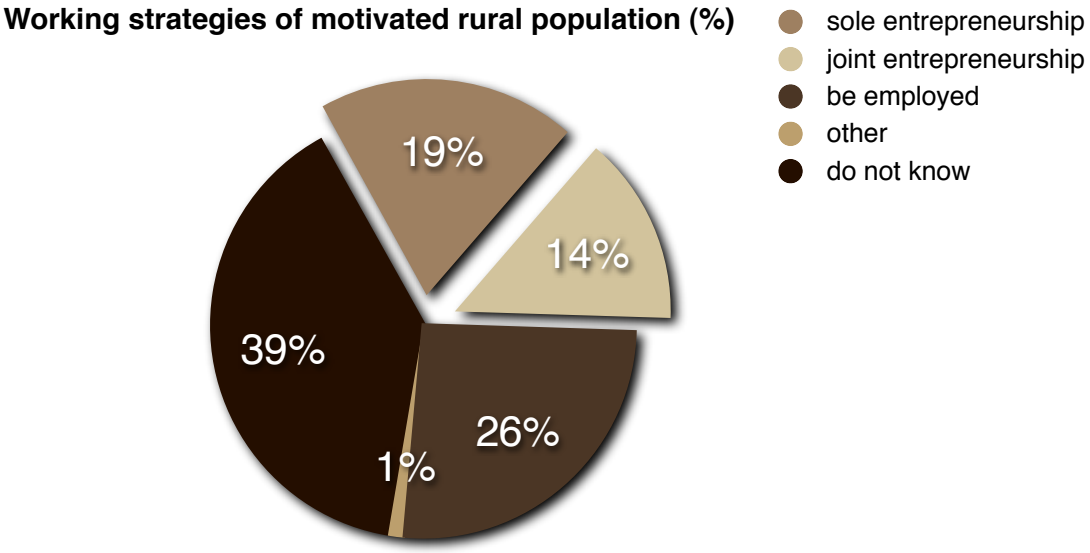


Figure 2.6. Working strategies of motivated rural population (Morozova et al., 2009).

In line with that, principle parameters of social-economic development of the Russian Federation for the period before 2020-2030 (MED Russia, 2011) indicate that the share of those employed in agriculture, forestry, fishery and hunting in total amount of employed in economy of Russia in 2020 will lower to 5,7% (against 7,9% in 2010). Without adoption of effective proactive measures the level of rural employment will decrease and entail deepening of rural-urban income disparities and worsening of all others rural problems, including social instability, ecological degradation, abandonment and general devastation of vast rural territories of Russia.

Taking into account the above mentioned trends and estimated prognosis, for the rural Russian economy to focus exclusively on agricultural sector can result in a losing position (Patsiorkovsky, 2007) while development of alternative income-generating activities and non-agricultural entrepreneurship as the forms of permanent and formal rural employment (Serova and Zvyagintsev, 2006) can lead to creation and maturing of a substantial portion of rural middle class - farmers and entrepreneurs (Nefedova and Pallot, 2006; Zaslavskaya and Kalugina, 2003) and, hereby, encourage positive transformations contributing to revitalisation on rural areas (Illarionova *et al.*, 2009; Kulakova, 2007; Davis, 2006; Ezhov, 2006).

As a result, potential of rural entrepreneurship development in Russia in the framework of diversification of rural economy becomes an urgent and important object of research with high prospects for further practical implication.

New greener and smarter economic system is gradually strengthening in the neighbouring Europe (Government of Ireland, 2008). Along with acknowledgement of profound principles of sustainable development, this poses to modern Russian rurality the challenge of development and diversification of entrepreneurship with sustainability-driven nature not allowing for a long-lasting experiment with conventional entrepreneurship. Consequently, the object of research should be refocused to constitute sustainable entrepreneurship models with neutral or positive influences over social, ecological, and economical context they are embedded to.

To encourage entrepreneurship development, rural area needs not only entrepreneurial-minded pioneers capable and courageous to test innovative business opportunities suited for changing economical conditions and increasing environmental and social concerns, and the catalyst of change, which can be already existing demand for alternative sources of livelihood and reconsideration of rural economy, but also the best examples of successful entrepreneurial practices available for these motivated visionaries (Lee and Phan, 2008).

Considering availability of European experience with sustainability-driven rural enterprises, they can be described and proposed as examples and role models for possible transfer and adoption in the Russian rural environment. This is believed to avoid duplication of efforts and promote greater overall impact by providing Russian rural entrepreneurs-to-be with inspiration, hand-on experience, and the best practice benchmarking.

2.4. Transfer of experience

2.4.1. The value of experience transfer

LEADER European Observatory (2001) identifies three possible sources of knowledge for development of rural areas:

(1) prior knowledge, already acquired and mastered and handed down from generation to generation;

(2) transferred knowledge, not existing *in situ* and transferred from elsewhere;

(3) tailor-made knowledge, not existing at all and are "tailor-made" using endogenous resources.

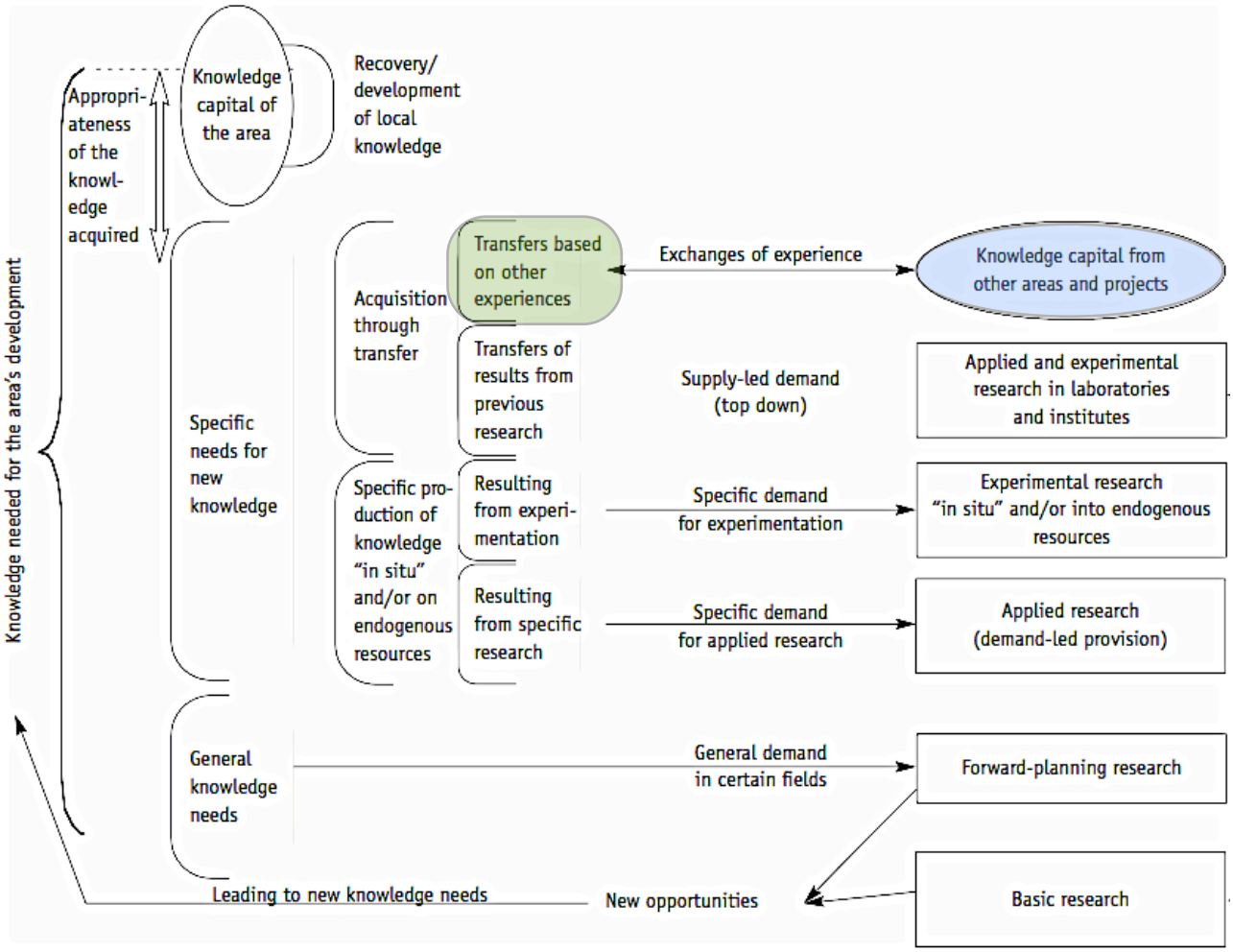


Figure 2.7. Knowledge needs, demand and provision for the development of a rural area (LEADER European Observatory, 2001).

Transfer of external knowledge through transnational co-operation plays an essential role in knowledge acquisition by rural areas and, hereby, contributes to "learning by imitation" and "learning by adaptation" processes performed to proceed with development of the areas. Access to experiences of others resembles access to global common knowledge reserve where a territory can select and acquire different mechanisms and tools to assist itself in transformation or adaptation measures currently needed.

This principle is the same as use the bacteria - by having access to the global genes reserve and being part of a highly complex and numerous network of exchanges they manage to survive through utilisation of these acquired knowledge for continuous building of adaptation mechanisms. Bacteria's success in surviving for millions of years can be seen the best evidence of effectiveness of co-operation and knowledge transfer tactics (Capra, 2002).

"Transfer" etymologically means to carry beyond or to "carry elsewhere", and is often defined as the use of information from a specific context in order to apply it to another context. It is a structured process of learning consisting of (a) the identification of solutions, (b) the matching of demand for learning with supply of experience and knowledge, and (c) a series of steps that need to be taken to bring about the desired change (Seaforth, 2008). Out of many types of transfer, this research is focused on an external transfer, from one country or region to another one (Reisman, 2005).

2.4.2. Experience transfer for Entrepreneurship development

To analyse the current state of affairs in external experience transfer field, the relevant projects and programs in the field of rural development and entrepreneurship development have been identified and their outcomes have been investigated to figure out the techniques proposed for experience/best practice presentation and transfer. Several relevant guidelines and brochures describing best cases or practices have been monitored as well. The following table demonstrates the information collected.

project/program	good/best practice descriptions	
PRAXIS project objective: Transfer of good practice on the development of rural development strategies and partnerships	15 rural entrepreneurs tell their stories! 2-pages descriptions of cases + photos + contact information	Praxis Rural Entrepreneurship Toolkit: A practical guide to stimulating entrepreneurship in rural areas Name of the good practice: Objective: Project title: Description: Website: Why did it work? Region and country: What could be improved? To find out more information contact: + Each practice's relevance to issues is indicated by colour coded symbols.

<table>
<tr><th>project/program</th><th>good/best practice descriptions</th></tr>
<tr><td>European Commission: Enterprise and Industry</td><td colspan="2"><u>The Secret of Success 2010. The Many Faces of European Entrepreneurship</u>

Entrepreneur's name
Country
Name of Company
Business Sector
Year of Business Launch
SME Support Scheme used
Age Range
Number of Employees
Company Website
Contact information

+ three paragraphs of description
+ answers to 4 questions like:
What were your biggest obstacles when starting your own business?
The person who inspired me to start my own business ...
+ Indication of Company Dimension:
Ethical / Social / Sustainable / Environmental / Appealing Design / Lifestyle Product / Others</td></tr>
<tr><td>RUR@CT

an operational network of exchange of good practices and transfer of experience</td><td><u>Description of good practice SHEET:</u>
Objectives
Descriptive details and implementation modalities
Owner of good practice, its purpose, its means :
Period and the main steps of the implementation of good practice :
Governance of good practice: the partnership and its operation :
Function description of good practice :
Results & prospects
Results (jobs, housing access, increased accessibility to services ...) :
Strengths and weaknesses of good practice :
Difficulties and solutions implementation :
Results of the evaluation (if any) and possible improvements :
Financing Plan
Period covered by the budget :
Expenditures :</td><td><u>Evaluation of transferability SHEET:</u>
Factors for the success of the best practice
Technical conditions (know-how, competencies, human resources, equipment, ...) :
Project governance (steering bodies, partnership, animation, communication,
participation, ...) :
Regulatory and legal framework :
Other factors for success (strong political support, prior experimentation approach, ...) :
Expenditure item that should not be forgotten or under-estimated for the success of the best practice :
Key factors associated with the local context
Points to be monitored
Within what period will the best practice produce all of its effects :
What are the unwanted effects that may occur as a result of the implementation of the best practice :
Conditions of collaboration for transfer
Requirement and wishes of the exporting Region :
Services proposed to the importing Regions :
CONTACT</td></tr>
<tr><td>PROBIOPRISE project</td><td colspan="2"><u>Handbook for developing and implementing pro-biodiversity business projects:</u>
1) a reference guide to PBB contexts for developing pro-biodiversity businesses
2) specific PBB opportunities across primary, secondary and tertiary sectors
Listing the examples of businesses for each sector (primary production, Secondary, and Tertiary) +
SME CASE STUDY:
name
Location:
Micro, Small or Medium:
Sector:
Ecosystem:
Overview:
3) practical advice and step-by-step guidance on how best to develop PBB activities</td></tr>
<tr><td>European Commission Enterprise DG</td><td colspan="2"><u>Responsible entrepreneurship. A collection of good practice cases among small and medium-sized enterprises across Europe:</u>

Issues:
Description:
Business benefit:
Benefit for society/stakeholders:

Awards:
Reports/further information:

Company name:
Activity:
Core business:
City/country:

Year of foundation:
Website:
Employees:
Turnover:</td></tr>
</table>

project/program	good/best practice descriptions			
LEADER+ program	Annual selections of Leader+ best practices			
	Country: Region: Project context: Facts about the territory:	Why is this project good practice? Project description Contact details	1. Brief history of the project 2. Main activities 3. Concrete outputs and results 4. Problems encountered/ lessons learnt	5. The 'Leader+ added value' of the project 6. Duration 7. Budget + photos

Table 2.1. Deliverables of projects, programs and organisations with best/good practices description.

Analysis of the six examples presented in the Table shows that all practices/business cases for transfer and knowledge sharing are presented in textual descriptions accompanied, in majority of cases, with relevant photographs. In two cases and the description of the good practice is supplemented with the information regarding the context of transfer (PROBIOPRISE) and the evaluation on transferability potential of this practice (RUR@CT).

This observation, of significance of the object of transfer as well as the environment receiving the transfer, is supported in the literature as well. Lado and Vozikis (1996) argue that in case of external (transnational) transfer the effectiveness of experience transfer for entrepreneurship development depends on both, the content and context of transfer, and contend that a conceptual model for transfer needs to incorporate three aspects of the content, the receiving context, and modes of transfer.

The content of the transfer has been already selected in previous sections and justified to be the sustainability-driven entrepreneurial opportunities for rural SMEs. In line with this conceptual model of transfer, the following sections of the review will address two remaining components - mode of transfer and recipient context - in mode detail.

2.4.3. Mode of transfer

The experience on the current practices of the transfer modes gained from the Table 2.1. above allows to conclude that the majority of them may explain 'how enterprises work' (Magretta, 2002: 3), and hereby they are sort of business model's descriptions. Although, from such case's descriptions one cannot easily comprehend 'the rationale of how an organisation creates, delivers, and captures value (Osterwalder and Pigneur, 2010: 14). They can rather better serve as the sources of inspiration and awareness raising about the examples of what is possible and role models of what can be achieved.

At the same time, what is considered equally demanding from the recipients when adopting practices is more practical and more specific knowledge. For this, transfer modes described in the

above table usually rely on provision of additional advice and support (in forms of visits, meeting, networks, etc) from the owners of best/good practices or special trainers entailing longer, more complicated, and more costly transfer procedure. Consequently, the question arises, whether there exist a mode for presentation and transfer of good practices (for this research the presentation of entrepreneurship models) that can eliminate or diminish the necessity for subsequent support and advice and, hereby, can lessen the costs of transfer and make the transferring practices available for bigger amount of recipients.

One of the solutions to this challenge can be to turn current textual descriptions of cases into sort of a tool kit able to be immediately utilised and, what is even more important, able to provide tools for manipulation with the given case as a basis. The importance of the latter property of transfer mode should be explained in more detail.

If to turn again to conceptual model of learning and knowledge acquisition for rural development (LEADER European Observatory, 2001), it argues that the necessity for different knowledge sources is changing following the changing demand for various type of knowledge.

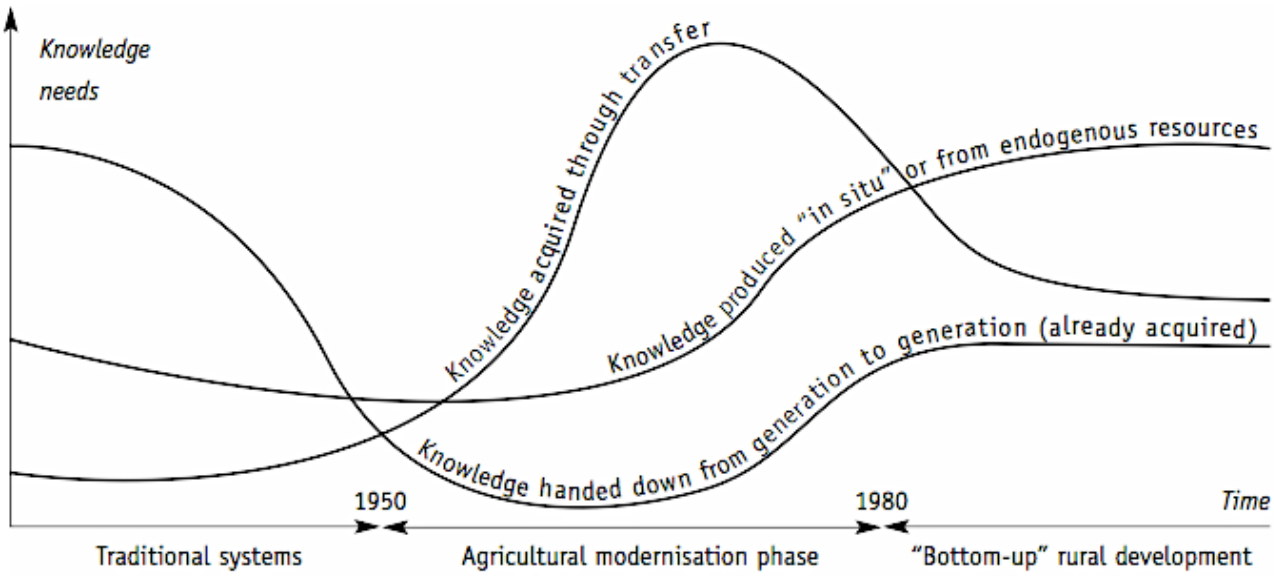


Figure 2.8. Changing needs for, and sources of, knowledge in rural areas (LEADER European Observatory, 2001).

During agriculture modernisation phase the importance of standardised transferred knowledge was high (Figure 2.8.). Afterwards, upon the emergence of surpluses and environmental problems, attention has been turned to "customised" knowledge required for tailor-made solutions suited for each particular rural context and entailed a shift from the supply-led demand for knowledge to one of demand-led. Thus, recent period is characterised by rediscovering the potential of local resources and emphasised role of local (prior and tailor-made) knowledge.

Therefore, In current phase learning process increasingly takes forms of the direct experimentation, 'learning by doing' and 'learning by trial and error'. However, transferred knowledge has not been removed completely, it rather was integrated into complexity of knowledge acquisition patterns resulting in such processes as 'learning by imitation' and 'learning by adaptation' (LEADER European Observatory, 2001). Although speaking about the technology transfer, Wei (1995) still emphasises what is as well important for the information transfer, that the criterion for success of the international transfer is the extent to which this transfer contributes to the development of indigenous capability of the recipient

In these circumstances, transfer of ready-made business solutions, even if they have proofed to be successful elsewhere, is not what the recipients need. Instead, the demand from rural entrepreneurs-to-be is for more knowledge for 'learning by imitation' and 'by adaptation'. As Isenberg (2009) appeals, the increase of entrepreneurs is due to minnovation, the process that combines imitation with innovation. As he puts it, 'More often than not you need that little twist on an existing idea, the tweak of the business model, the minor product adaptation.' This proposition has already been acknowledged and practised in business world in Russia. Entrepreneurs have tried to imitate successful foreign models and argue that such transfer of foreign experience for further imitation in local environment allows for necessary learning while at the same time gaining profit (Prokina, 2010).

Therefore, returning to the importance of the ability to manipulate with the transfer content for recipients, the mode of transfer should address this demand and, hereby, along with provision of entrepreneurship models it needs to supplement them with suitable tools for manipulation while make this all available immediately upon transfer desirably without additional requirement for assistance from transferrers. This seems to be quite a complicated task, although, the review of relevant publications shows that it is possible, if substitute current best business cases with business (or enterprise) models.

As Baden-Fuller and Morgan (2010) mention, business models can be utilised as the recipes in culinary as they provide the list of needed ingredients (components of business model) and the algorithm on how to work them out together to ensure the result comes out properly. Similarly to dishes made with the same recipes but by different chefs that go out in some way different, a business model utilised by another entrepreneur can proceed through transformations and come out differently, as this process is highly dependent on the tacit knowledge and creativity of each entrepreneur.

Indeed, the possibility of innovating based on the given business model constitutes its particular advantage for the transfer process. A recipient-entrepreneur can creatively translate the transferred enterprise model into local context, thus, adopt the primary 'recipe' to new conditions (Teece,

2010).

Sabatier *et al.* (2010) develop 'recipes' view further and generate the concept of business models' portfolios. Analogous to a dinner made of various but compatible dishes, they consider a portfolio to serve as a combination of diverse, but complementary and harmonised business models. This, they argue, can be effectively utilised by small-scale entrepreneurs to diversify business so to mitigate the risk of relying on only one or several but disconnected models. This property can be as well especially valuable for transfer to the unstable context of transitional economy of Russia.

Summarising the above, a business model is considered to be an effective description tool for sustainability-driven entrepreneurial opportunities selected as the transfer content. Its ability to more comprehensively describe how the enterprise works allows to diminish the necessity for support and assistance usually accompanying the transfer. At the same time, the question still lacking the answer is how to best present an enterprise model so to provide the recipient entrepreneur with an ability to manipulate with the model and, hereby, minnovate on the transfer content.

2.4.4. Context of transfer

Along with Lado and Vozikis (1996), Seaforth (2008) emphasises the importance of taking into account cultural, political, economic, etc., context of recipient and defines it as adaptability. Considerations about the receiving context evaluation and guidelines for development of an appropriate enabling policy environment can be traced also among the selection of projects and programs in the Table 2.1. above.

The two main issues arise in this regard are whether receiving environment possesses any challenges or poses any obstacles to the transfer process, and how to evaluate the readiness of the receiving environment to accept the transferring content. In case with the rural entrepreneurship, the object of this investigation and proposed transfer, the incoming environment can be considered as an entrepreneurial system of the recipient rural area, and the evaluation is to identify the entrepreneurial ecosystem's capacity to accept and adopt transferred entrepreneurial models.

A pile of publications on entrepreneurship ecosystem in general (Isenberg, 2010; Koch, 2011; Farr, 2011; Chapman, 2010; Bernardez, 2009; García Cabrera and García Soto, 2009; Aulet, 2008; Lee and Phan, 2008; Cohen, 2006; Mueller, 2005; Neck *et al.*, 2004; Spilling, 1996; Van de Ven, 1993), organisation's entrepreneurial ecosystem (Iansiti and Levin, 2004; Valdez, 1988;) and entrepreneurial community ecosystems (Salmons and Babitsky, 2005) as well as on entrepreneurship and innovation systems (Clark, 2010; Wessner, 2005) has been reviewed.

The analysis revealed that, entrepreneurial ecosystem is still an ill-investigated phenomenon with various approaches addressed and lens seen through. However, there exist a certain agreement on its definition and the principle components. It is described in general as a set of diverse interconnected elements and actors within particular geographical boundaries that shapes emergence of start-ups and successful development and operation of businesses (Cohen, 2006). It is also emphasised, that elements of such system (Figure 2.9.) are highly inter-linked, and these interrelations and partnerships among components along with essential properties of each component are what shapes the unique image of each particular ecosystem.

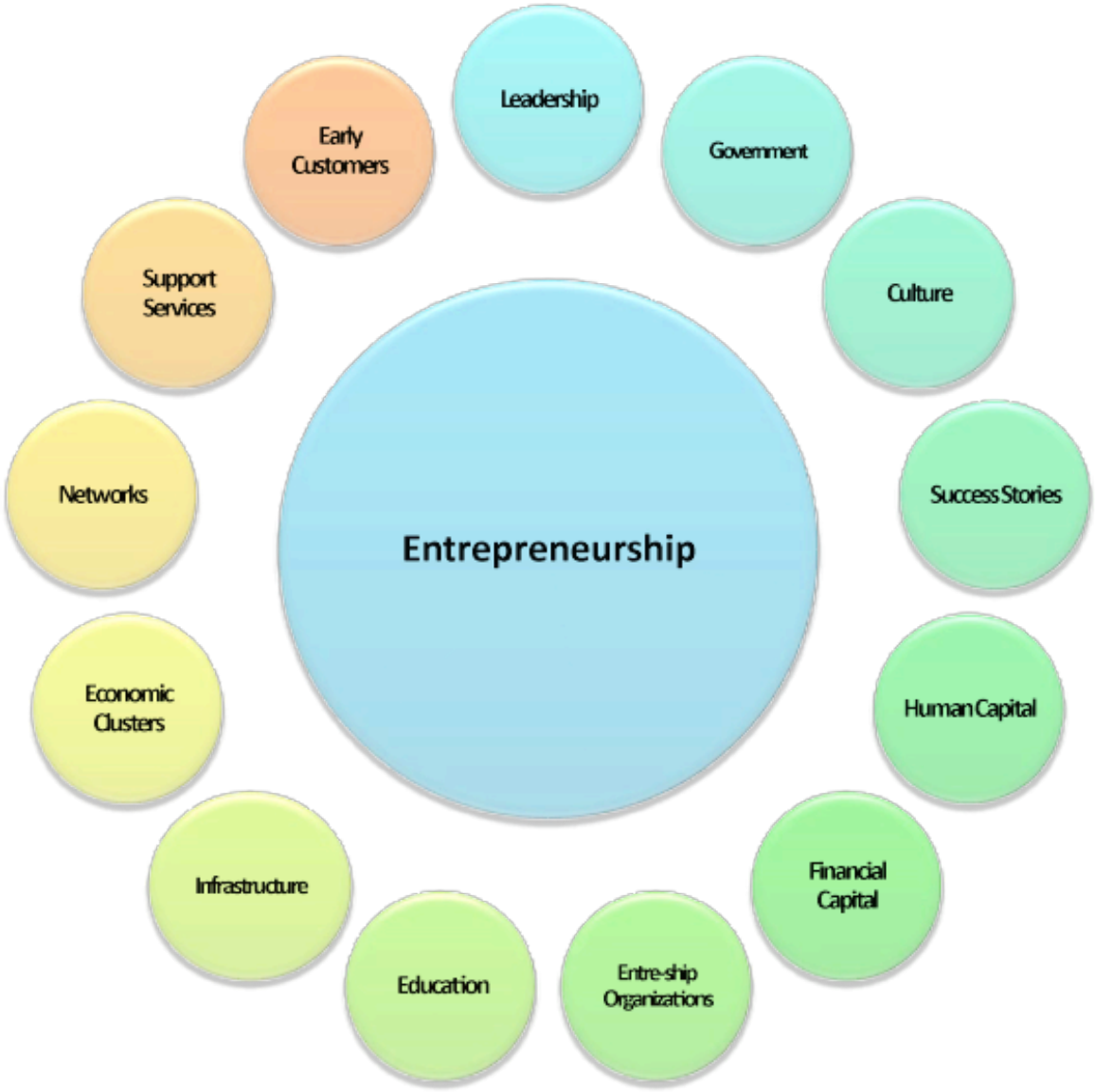


Figure 2.9. Entrepreneurial Ecosystem, developed by Daniel Isenberg, Babson Entrepreneurship Ecosystem Project, 2011 (http://entrepreneurial-revolution.com/)

At the same time, any of these authors have focused explicitly on rural entrepreneurship ecosystem or entrepreneurship ecosystem of any particular rural area, except Lee and Phan (2008) who undertake an attempt to elaborate on this topic. However, their approach based on literature review focuses on the obstacles to emergence of rural entrepreneurship ecosystem rather than on the systems' constituents, interdependencies between them, and the influence this structure

imposes on its internal dynamics.

Still, the literature review they undertook represents an interesting collection of factors that have been identified by 36 referenced sources to influence entrepreneurship in rural areas. This set of factors have been examined along with other publications analysing impediments and driving forces behind the birth and growth of rural enterprises (National Rural Network, 2010; Meccheri and Pelloni, 2006; Skuras *et al.*, 2005; Escalante and Turvey, 2006; Stathopolou *et al.*, 2004; EC, 2003a; Petrin, 1997).

Review of both groups of publications allowed to conclude that, the issue of rural entrepreneurial system from the perspective of interconnected system of components and interrelations has not been the object of any study known by the author. What is more, neither rural entrepreneurship system has been studied from the perspective of its capability to shape the emergence and growth of sustainability-driven enterprises.

Above findings allow to conclude that for the aims of potential transfer of sustainability-driven rural entrepreneurship models,

firstly, the rural entrepreneurship ecosystem (the transfer context) able to encourage appearance and development of such models is needed to be identified and,

secondly, the framework for evaluation of the transfer context's preparedness to accept transferred models and of its readiness for transformation, in case it does not represent an enabling environment, is required to be developed.

Chapter 3. EU SUSTAINABILITY-DRIVEN RURAL ENTREPRENEURSHIP

Introduction

Encouraged by sustainability agenda and new rural development paradigm, multifunctional agriculture and diversification of rural activities have resulted in appearance of many novel forms of entrepreneurship in rural European areas. This part of research considers separate examples of multifunctional agriculture and diversified entrepreneurship as smart combinations of mutually complementary business models or parts of them, and addresses the first two research objectives:

> To identify existing sustainability-driven novelties in rural EU entrepreneurship.

and

> To propose the most effective mode for the external transfer of entrepreneurship models.

To reach this objective, the research has been divided into three consecutive parts. With the first one dedicated to creation of the Inventory of novelties through qualitative survey, second part - to perform review of literature for figuring out which frameworks exist for business models' representation and their further comparison against selected criteria to identify the most appropriate one, and the third part to examine Inventory for existence of any novel patterns of rural business models.

3.1. Methodology

This section reflects on the general research methods proposed to answer the following research questions.

> **Research question 1**: What are the sustainability-driven novelties in rural entrepreneurship within the EU?

Qualitative survey is considered to be an appropriate strategy for collecting enterprises with novel business activities throughout the EU. The data are to be gathered from multiple sources, primary (company brochures and companies' web-sites) and secondary sources (relevant databases of European projects and particular project documents available in the internet, as well as from the conferences, seminars, and meetings participated in) and filled into the inventory of rural enterprises:

name and web address	short description	country	form/s of novelty	source of information	contact information

Table 3.1. The structure of the Inventory database.

Selection of the enterprises to be included in the inventory is based on a number of criteria:

1) (qualification criteria) *small and medium-sized* enterprises operating in *rural* territories of the *European Union* and connecting their activities with *natural resources/rural environment*;

2) existence of *novelty* conceptualised for this study as "any successful change in production, consumption, distribution routines" (Brunori *et al.*, 2008) other than conventional agriculture, forestry or natural resources use. Such novelty may constitute both, entire new business models or novelties inside existing (conventional) businesses.

3) *sustainability-driven,* including both *sustainable* (meaning, allowing for social and/or ecological benefits) and *neutral* (meaning, not imposing neither negative, nor positive influences in ecological and social terms) nature of this novelty.

Decision to pursue a time-consuming effort to search for real enterprises, rather than take as a starting point existing classification of already grouped and named novelties in rural enterprises available from other studies (agricultural diversification, multifunctional farming, etc.), is made for two principle reasons: first, to ensure inclusion of those novelties from outside of agriculture/ forestry activities, although, still connected to natural resources use, and, second, to identify rural entrepreneurs - owners of sustainability-driven rural businesses - and relevant experts for their further personal participation in the second part of this research.

As a result of this survey, analysis of the enterprises placed in the inventory is expected to provide classification of existing novelties and give grounds for identifying the sustainability-driven business activities for further analysis.

Research question 2: Are there any novel patterns of rural business models?

Business models with similar characteristics or arrangements of the business model components can be grouped into patterns. When repetition of these features or their positions, similar behaviors can be traced, it can be also outlined and presented. They provide interesting insight into the current dynamics of business models and can become a platform to base one's inspiration on when designing, minnovating or bettering a business model.

In business literature there can be found such general patterns as <FREE>, when one segment of customers receives a service, product free-of-charge, while the revenue stream goes from another customers segment (Google and Skype business models may serve as examples of such pattern), and <the long tail> pattern, based on the idea *selling less of more* (eBay and YouTube are well-known examples of such pattern).

For the aim of this research it is considered valuable to investigate if there exist any current patterns among rural business models that correspond to these general patterns, as well as if there can be derived any distinctive patterns of rural business models. To do that, all the novelties identified in the inventory will be monitored to group any patterns. They are then to be named and described using the technique selected. As a result, they are expected to be recommended as an inspirational and valuable foundation for creative rural business models' design.

Research question 3: What is the best way to represent such novelties for their transfer outside the EU?

Review of available literature is to be used to answer this research question. The main aim of this research is to make existing rural business models from the EU available, understandable in

different 'receiving' context, and capable of acting as a base for local entrepreneurial creativity and adaption to specific conditions. Following these concerns, relevant publications and research studies are to be analysed to identify the most appropriate presentation techniques against the following criteria:

1) simplicity - meaning, to comprehend the description a person should not possess specialised knowledge (this condition is important to deal with the high possibility of many entrepreneurs in receiving environment being without specialised business education);

2) visualisation - meaning, the technique should increase the speed and quality of comprehension via creative data design, because 'your message is only as good as your ability to share it' (Labarre, 2011);

3) comprehensiveness - meaning, the simplicity of description should not compromise the capacity to most fully reflect the overall meaning and key elements of a business model;

4) ease of manipulation - meaning, representation design should provide environment and tools for creative manipulation with business model structure.

As a result of this search there is to be selected one preferred technique, and several examples of business models of those enterprises from the inventory are to be presented using this selected tool.

3.2. The Data Collection

The qualitative survey has been started from examining research publications and relevant European projects, identified through the events attended and found through the internet-based directories and databases. These works and projects have been investigated to identify case studies and business examples presented, that can either being placed in the inventory of enterprises, or guide the search to other appropriate projects or directly to rural enterprises.

At the same time, the search undertaken for business, SMEs, environmental, and sustainability awards on European, national and regional levels has sufficiently contributed into the inventory's filling. It should be emphasise, that these sources represent special value for the inventory as the businesses found there – acknowledged nominees and the winners – have already proofed to be successful, in both terms, economically and value-based.

On-line business directories and databases, along with the brochures of collection of best cases and practices to follow, have been searched for and then utilised for the aim of the study. Participation in the relevant conferences and seminars has been also used for acquaintance with potential businesses for the inventory. Relevant events that were not able to be attended in person or been hold in the past years were monitored via proceedings, programmes, and lists of participants available in the internet.

After the trajectories of novelties have been identified via the sources mentioned above, the websites and publications of relevant associations and regional and local development agencies have been also searched for cases and business examples. In addition to this, "key word" internet-based search has been performed for each European country separately and for the European Union as a whole. The list of consulted sources is referenced in the Appendix 1.

Found rural enterprises were all listed into the Inventory. Its final version consists of 215 entities, although the relevant enterprises, identified during the search, have exceeded this number. To shorten the inventory, so for it to serve for time and resources limitations of the researcher, identical cases of enterprises in terms of the business novelties, their combinations and geographical location were not included. At the same time, where possible, the finding of a novel

business practice in one country/region was followed by the search for existence of similar practice in other regions/European countries, so to trace possible tendency or variability in business novelty.

The number of business model novelties identified do not proportionally correlate with the number of collected enterprises. This is because (a) many enterprises utilise in their business more than one novelty, also for the aim of diversification of profit activities (b) some enterprises utilise the same novelties (with or without some minor and major adjustments), although in different geographical or sectorial context.

Upon filling in the inventory, the novelties described in there have been compared to the findings of the European project RAPIDO (Work Package 1), which performed collection and analysis of best practice examples of innovation in rural areas, in the part applicable to rural SMEs (the project also involved cases of rural actors' co-operation, municipal and regional initiatives, etc). This intended to check, if any rural business novelty identified by the RAPIDO project is lacking in the inventory.

3.3. Novelties in European rural enterprises

The novelties in business models identified in the inventory have been grouped based on the type of principal resource they use, or upon which they based their activities, and access to which is therefore critical for operation of this business model (farm | forest | rural environment). Inside that groups the novelties were also classified (see Table 3.2.) with number of novelties (in brackets) corresponding to each group and class.

Farm-based novelties are those that require an entrepreneur to have land and farm facilities, forest-based novelties require an entrepreneur to have access to forest resources or they are connected to forest services, and environment-based novelties are those that either require rural land property or rent (ex., rural energy park or spa-centre) or are only based on general access to rural resources.

FARM (105):								
energy (6) :	on-farm bio-energy production: (barley and no-food triticale combustion)	fuel briquettes from straw waste	combined heat and power system for green-house resulting in zero CO_2 vegetables	zero emissions green farm (solar-panels)	on-farm electricity production (wind/micro-generation)	carbon-free winery		
NEW Natural - Eco-Wise (5) :	fibres for the production of thermal and noise insulation slabs	eco-packaging from straw	acoustic & thermal insulation material from straw grown on formerly disused land	open snail farms in full biological cycle	rearing of biological control agents for crop protection in organic agriculture and ICM			
therapy & health (9):	on-farm therapeutic activities with animals (donkeys, horses)	Vinothérapie Spa - on-farm health & beauty procedures/ production of wine- and grape-based cosmetics	on-farm mental practices and retreats	on-farm health club	on-farm therapy with natural and farm-grown products	cosmetics from organic farm herbs and flowers / IGP" certificated olive-oil cosmetic line / handmade farm cosmetics		

social (5):	social farm for disadvantaged people	on-farm children's home	a care farm for disabled, people with learning disabilities	farm experience for people affected by major life changes and traumatic experiences	on-farm tuition for pupils requiring SEN and support for emotional, behavioural and social difficulties			
education (19):	open farm for adults and children: visiting aqua-farm / meet animals / farm walks / pizza-farm	on-farm green-energy & eco-tours	courses & workshops: orienteering/ bird-watching/ natural kitchen/ traditional cuisine/ medicinal plants/creative courses	courses & workshops to pass forgotten crafts and traditions/ didactical activities on plants and creation of herbarium/ principles of organic gardening, harvest & production phases	take part in farm activities' scheme: making of cheese and typical specialities/ accompany shepherds and herds/ attend milking, feeding, shearing and births/ gathering of organic vegetables	on-farm extended-day class for school-children		
tourism& adventure (10):	on-farm accommodation/ rural eco-cottages on the farm	on-farm recreational fishing / horse-riding	ADVENTURE FARM: adventure centre & play area / Flower Park/ on-farm adventure and archeological trails / farm museum	farm based business park: residential study centre & conference facilities	on farm organisation of special eco-events: weddings, birthdays, meetings			
gastronomy (20):	farm tea-room /farm cafe / farm restaurant / farm brewery with ingredients grown on the farm	SPECIAL DIETS: farm organic restaurant / vegetarian food cafe / healthy organic range of vegi burgers	enotourism	NON-HUMAN: wild birds food / organic foods suitable for cats and dogs	HOME-MADE high-quality produce / ready-made food from the farm / frozen organic meals and parets of meals	NEW SPECIALITY: donkey milk-based products / berry&fruit wine/ rhubarb ice-cream/ hemp-oil / unusual jams	TRADITIONAL: local, great-tasting foods based on the original, ancient receipts / selling in old fashioned packing	
sustainable farming (19):	ORGANIC (incl. biodynamic): animal breeding / aquaculture / garden and vegetables / winemaking / aromatic and medicinal plants (oils) / growing arable crops for seeds	BIOLOGICAL: dairy sheep production / cultivation of herbs and medical plants and processing into homeopatic medicines	PERMACULTURE	ETHICAL: free range ducks and chickens	TRADITIONAL: native species breeding/ conservation of traditional sheep farming/ lease sheep for extensive breeding / 'forgotten' fruit&vegetable species	BIODIVERSITY: conservation aquafarm = bird sanctuary + a water purification plant/ conservation farm: on-farm habitat for wildlife/ produce seeds of herbaceous species	EXTENSIVE horse and cattle farming	agriculture waste utilisation for compost production

marketing/ selling (12):	BOX SCHEME: production and weekly delivery of fresh organic vegetables / premium beef boxes	eggs and milk vending machines	selling via local solidarity networks	FARM SHOP: local produce (own& neighbouring farms)	ON-LINE FARM SHOP of supply-products for a conscious gardener/ for nature lover (wormeries, composters, bird food, vegi ready made plots) / production and selling of ready-made vegetable beds and instant gardens	The Vegetables from my Garden' lets anyone build an organic garden right from their web browser	ADOPT A TREE scheme/ VINEYARD rental scheme: you become a Partner in a vineyard, which lets you share in the fun of 'owning' a vineyard, but without the hard work	a web page and an iPhone app, which allow customers to enter numbers from a milk carton's date stamp to learn about the local farmer who produced the milk
FOREST (12):								
energy (3):	high quality 100% natural packaged firewood product manufactured from by-products of woodland management / wood briquettes & shavings	energy production (wood-chips combustion, barley and no-food triticale combustion)						
adventure (3):	treetop walking routs	forest adventure park	Path of Senses (in the forest)					
biodiversity conservation & environment protection (4):	sustainable harvesting of Non Timber Forest Products (seeds)	collect & sell seeds of drought resistant dry grasses	biodiversity increasing woodland management	sustainable woodland management				
NEW Natural - Eco-Wise (1) :	biodegradable and eco-friendly pine oil based industrial lubricants							
social (1):	woodland social enterprise: education, training and employment preparation advice to disadvantaged young people.							

ENVIRONMENT (50):								
energy (6):	rural park of wind turbines	Renewable Energy Park: natural hotel + demonstration sites	a solar-powered boat for excursions in nature	consultancy services in all aspects of woodfuel production	Grow bio-energy fuel (Willow short rotation coppice) on other farmers' land	developing, managing and/or operating Anaerobic Digestion plants for a farm or co-operative of farms		
gastronomy (6):	organising tailor-made wine&food and cooking experiences in the countryside	rural Tea Room / local produce restaurant (vegetarian, vegan, etc) / restaurant with superb vegetarian cuisine / green cafes on the beach	collection, cultivation and marketing of macroalgae as food for human/animal consumption					
therapy & health (7):	Spa Retreat and Wellness Centre in country house	yoga and aromatherapy courses/ retreats in the countryside	rural spa centre: phytothermo-therapy	seaweed cosmetics & homeopathic medicines	seaweed spa therapy	naturally extracted sea-weed active ingredients for human or animal health		
tourism& adventure (22):	Eco-Nature & Seal Watching Cruises / coastal tourism: boat and fishing trips	nature trips: fauna-watching / Bog trips / Sea-kayaking / Rafting/ guided hiking/ snowshoe trips/ Cycle tours / wild mushroom trips/ recreational days / guided fishing and backpacking / bird watching/ Wildlife Tracking	designing and selling Rural tours: slow tourism/ personalised tours/ walking holidays in rural areas	ecotourism in natural reserve/ biodiversity protected areas: charters out kayaks, canoes and yachts/ camping facilities/ selling local products	rural park - outdoor action attraction	rural accommo-dation: holiday cottages		
education (1):	eco-education about natural reserve areas							
direct selling (2):	a one stop shop for pedigree cattle targeting nation–wide breeders	shop for eco products produced in rural farms, woodlands, areas						

environment protection (6):	nature conservation and development services in environmentally sensitive/ protected areas (mowing grasslands and wetlands, landscaping techniques	a forest certification and forestry consultancy operating on the basis that a biodiversity-rich mix of species is the best and most cost-effective tool for delivering the ecosystem services	LEASE SCHEME: buy degraded land and lease it to people that have the skills to manage it ecologically and would not otherwise be able to afford do so	sustainable harvesting (by hand, diving) of natural wild sea vegetables	natural and organically certified seaweed fertilisers and agricultural solutions for use in organic horticulture and agriculture	leasing of nature conservation & biodiversity improvement services (design of natural biotopes)		

Table 3.2. Novelties in rural enterprises.

As one can see from the Table, some novelties represent whole new business models, and some - only innovations in their parts. The majority of 177 novelties identified refers to farm-owners, although, used in minnovation process some of them may be modified and utilised also by forest-owners and those having general access to rural resources. Some of novelties repeat themselves with minor differences in two or even all three groups, meaning that such business models are more unified.

Some novelties in business models, for examples, 'box scheme', 'adopt a tree scheme', or other examples of direct selling (farm shops, on-line eco-shops, etc.) neither possess sustainability (social/ecological) value intrinsically, nor impose any negative impacts itself, at the same time, being combined or introduced into inherently 'green' or social business models (ex., ethical production of poultry, cosmetics from organic farm herbs and flowers, etc.), may constitute a competitive advantage for a sustainability-driven business model.

This piece of research does not intend to visualise and describe all the business models presented in the Table of this section. It aims at only proposing a suitable framework for their creative transfer to another geographical and institutional context. Thus, later in this chapter, there will be presented only business model patterns and some example business models that follow these patterns.

3.4. Enterprise Model Representation

After collecting novelties and novel business models, the next research question to answer is, *What is the best way to describe and represent business models for international transfer?*

The search for a suitable business model framework, via review of publications and on-line resources (specialised web-sites and thematic blogs) regarding business models, relevant projects and brochures aiming at identification and popularisation of business models and best business cases, has uncovered the following opportunities of business model presentation, grouped into three categories:

- **textual descriptions**

Usually such technique of business models and business ideas representation is utilised by thematic reports, brochures with potential business ideas, like "Innovation in the Countryside - 101 Ideas" (Young and McCarthy, 2008), awards publications, collections of good-practice cases, like "Responsible entrepreneurship. A collection of good practice cases among small and medium-sized enterprises across Europe" (EC, 2003b). For example, EU Commission report 'Innovative Business Models with Environmental Benefits' (EC, 2008d: 102) in its Case catalogue uses short textual descriptions:

Name	Brief description
Product Service System (PSS)	PSS = a pre-designed system of products, services, supporting infrastructures and necessary networks that: • fulfil a consumer's needs on the market • have a smaller environmental impact than separate product and services with the same function fulfilment • are self learning
PSS	Carpet producers sell a carpet-service. The carpet is sold with maintenance of the carpet, i.e. the cleaning with special products and the replacement of damaged parts of the carpet. After 2-3 years the producer takes the carpet back and takes care of reuse/end disposal. Environmental benefit is a more efficient maintenance and end disposal.
PSS	Computer manufactures sell a computer service instead of a product. The manufacture takes the old computers back. Computer parts are primarily reused - secondarily recycled. This has implication for the design of computers where parts shall be reusable.

- **graphical/illustrative representation**

Such frameworks illustrate how value is created and captured in the interaction between actors through relationships and transactions. Usually these are structure and/or pictorial representations with variously grouped business model components and traced relationships between them. Most common, available, and recent examples of such 'models of business models' are detected to be:

1) Business Model Canvas (www.businessmodelgeneration.com)

This framework has been developed by Alexander Osterwalder (Osterwalder and Pigneur, 2010) with the intention to propose a common illustrative framework to talk about and work with business models. The Canvas is a template to illustrate description of a company's business model based on nine building blocks, which Alexander Osterwalder has identified out of many perceptions of the business model components in recent scientific realm (Alexander Osterwalder, 2004). Value proposition, target customer segments, distribution channels, customer relationships, key resources, core activities, partner network, cost structure, and revenue model are the components of BM CanvasCanvas:

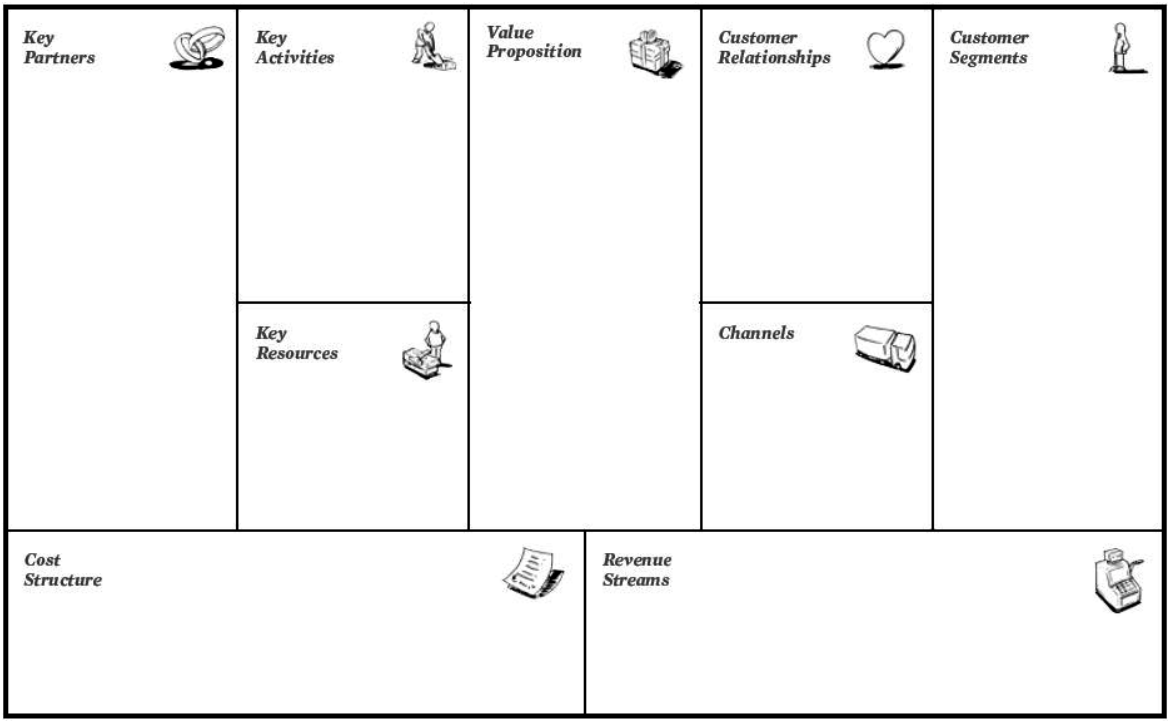


Figure 3.1. Business Model Canvas (Osterwalder and Pigneur, 2010).

Although the authors argue that the Canvas is used best when plotted on a large poster, it can also be drawn on A4 paper, using a clip-board, inside a .doc file, or designed via GoogleDocs. An online tool BM|DESIGN|ER has been developed to help in drawing and presenting business model Canvas as well as to enable users to manipulate and innovate on it.

Example of the framework in use: Apple business model.

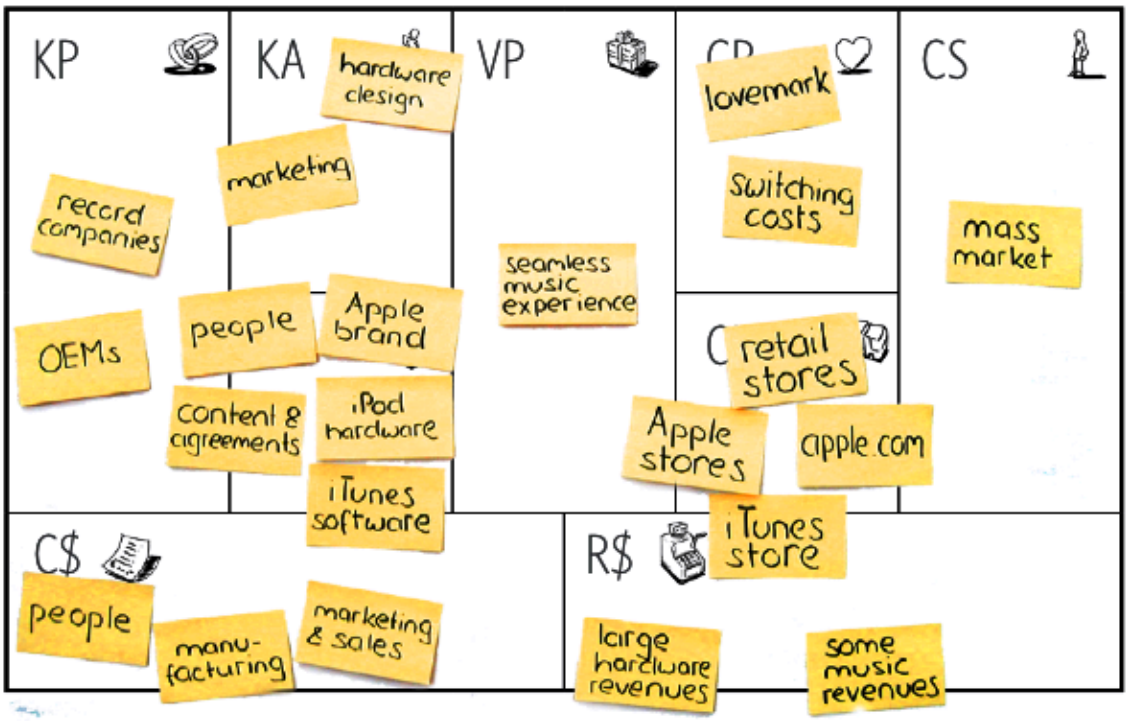


Figure 3.2. Apple business model (Osterwalder and Pigneur, 2010).

Apple offers users (mass market) the combination of portable media player (distinctively designed iPod devices) with special software (iTunes) and the online music store (iTunes), which conjointly result into customers' ability to easily search, buy, and enjoy digital music (seamless music experience). To create the world's largest online music library, Apple had to negotiate deals with record companies (key partners). Apple's revenue derives in the most part from selling hardware (iPods), and in less - from selling music via the online music store. Still, giving minor revenues iTunes music store lets Apple keep the consumers, and therefore, protect itself from other manufacturers of portable media players.

2) Business Model framework developed by De Mey and De Ridder (www.boardofinnovation.com)

The framework consists of 16 elements, divided into 6 players: and 10 objects to exchange:

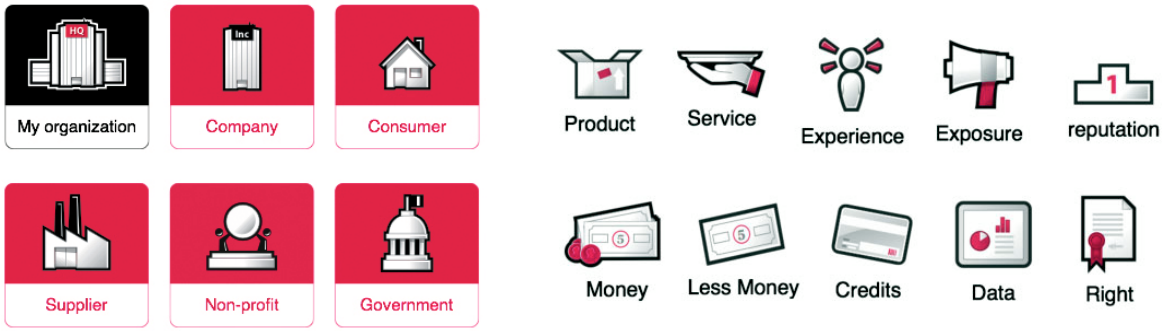


Figure 3.3. Business Model framework of De Mey and De Ridder (Source: www.boardofinnovation.com).

Free templates for business models visualisation using this framework are available via Goggle Drawing Tool, Slideshare, Powerpoint template.

Example of the framework in use: Niiu business model.

Niiu provides customised physical newspapers. The consumer selects sections from different newspapers and receives a unique paper version. The revenues go from the reader, who pay for the newspaper, and from the advertisers, who receive targeted audience based on content preferences.

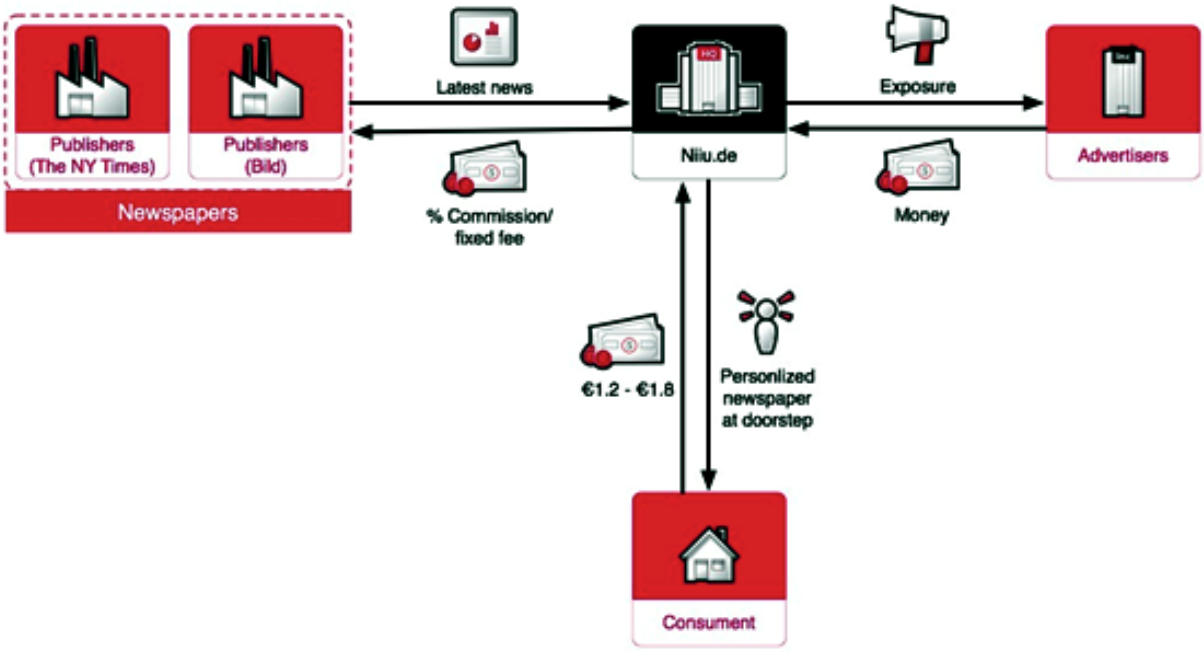
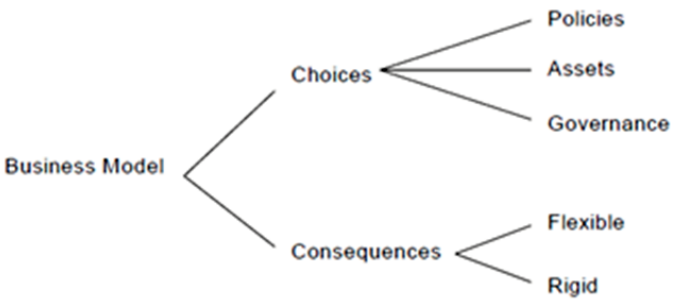


Figure 3.4. Niiu business model (Source: http://www.boardofinnovation.com)

- **Causal Loop Diagrams**

Such representation of business models has been proposed by Casadesus-Masanell and Ricart (2007). They suggest to consider a business model as sets of choices (how the organisation must operate) and consequences of these choices:



Policies - choices regarding the courses of action adopted by the firm.

Assets - choices regarding tangible resources such as manufacturing facilities.

Governance - choices regarding the structure of contractual arrangements that confer decision rights regarding policies or assets.

Flexible - consequences that are highly sensitive to the choices that generate them.

Rigid - consequences that does not change rapidly with the choices that generate them.

Figure 3.5. Business model framework of Casadesus-Masanell and Ricart (2007).

and to use a Causal loop diagram as a visualisation framework, where choices and consequences are linked by arrows based on causality theories (Casadesus-Masanell and Ricart, 2010). Still, they reasonably consider impractical to list all the possible management choices, the more unfeasible even is to list all the possible consequences of these choices and trace the linkages among these sets of choices and consequences. To overcome this challenge, Casadesus-Masanell and Ricart have introduced the third element - theories - hypothesis on how choices and consequences are related, and also propose to use aggregation and decomposability techniques.

Business models visualisation using Causal loop diagram may be drawn with almost any systems thinking (Vensim, MapSys, etc.) or diagram software (Gliffy, etc.).

Example of the framework in use: Ryanair business model.

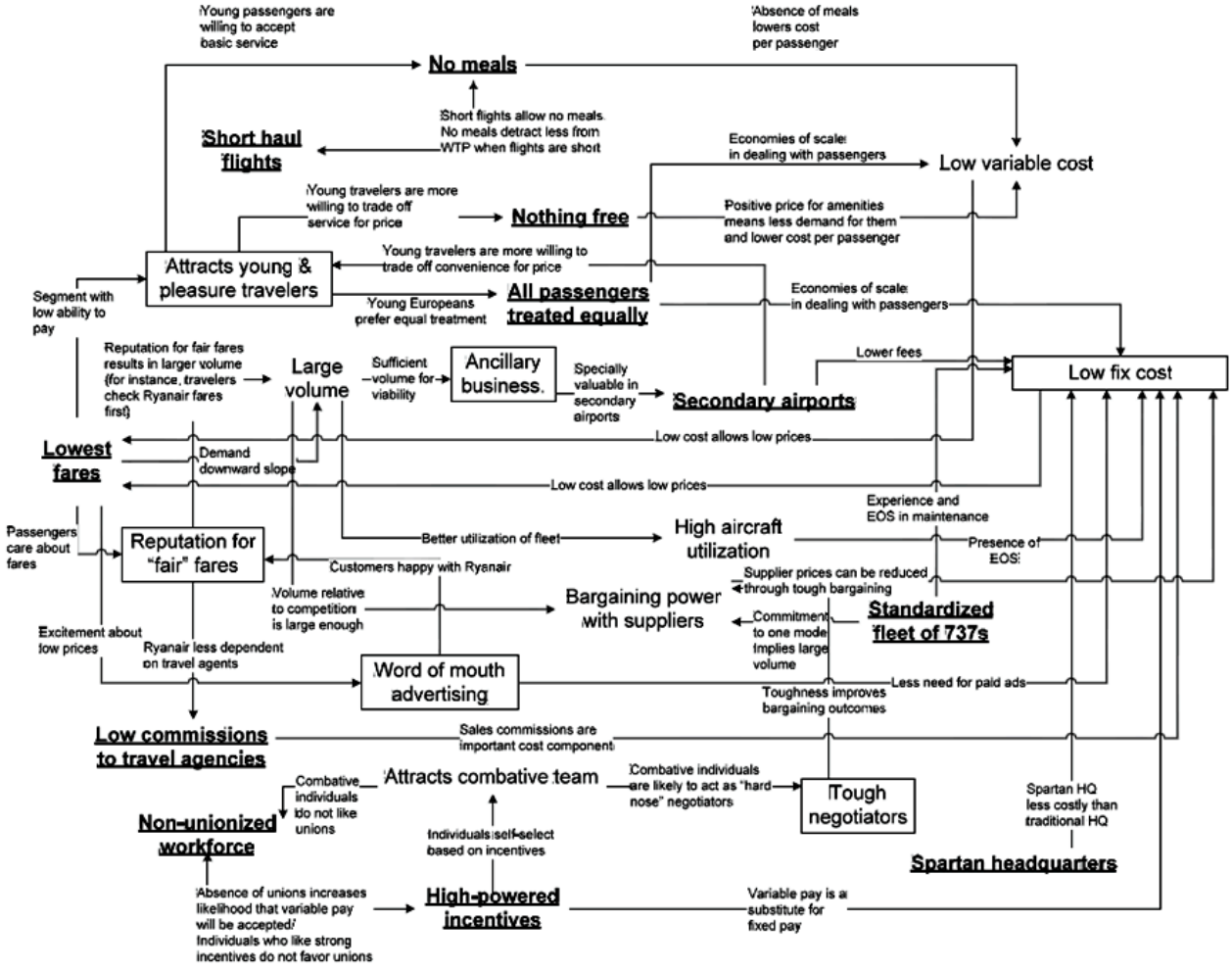


Figure 3.6. Ryanair business model (Casadesus-Masanell and Ricart, 2007).

In the Causal loop diagram above, Casadesus-Masanell and Ricart illustrate the business model of Ryanair using bold and underlined to indicate choices, with rigid consequences in boxes, and flexible consequences in plain text. After the aggregation and decomposability, the important choices include low fares, flying to secondary airports, all passengers treated equally, nothing is

free, no meals, short-haul flights, standardised fleet of Boeing 373s, low commissions to travel agencies, Spartan headquarters, etc. The consequences of these choices are: low variable and fixed costs, reputation for reasonable fares, combative management team, large volume, attraction for young and pleasure travellers, word of mouth advertising, etc. Arrows represent the theories. (In the diagram above the arrows come along with a short text to explain the theories, to make representation eye-friendly those accompanying texts can be skipped.)

Frameworks comparison.

If to compare all these frameworks against the criteria stated in section 5.2. above (simplicity, visualisation, comprehensiveness, and ease of manipulation), the following evaluation may be given, where the plus refers to <in place>, minus - <not in place>.

	simplicity	visualisation	comprehensiveness	ease of manipulation
textual description	+	-	+	-
bm Canvas	+	+	+	+
De Mey & De Ridder framework	+	+	+	+
causal loop diagram	-	+	+	-

Table 3.3. Evaluation of the Business Model description frameworks.

Textual description as a tool to represent business models has played back other frameworks on *visualisation* (even the photos usually accompanying the text do not provide an eye-friendly vision of a business model) and *ease of manipulation* (plain text does not let any manipulations, but another plain text) criteria.

Causal loop diagram, on its turn, has not scored high on *simplicity* (it seems quite complex, even if from the first site only, to 'read' such diagram; this framework requires some more introductory explanations comparing to others, and, maybe some preparatory work with the audience as well) and *ease of manipulation* (necessity to understand systems dynamics might complicate creative manipulation process over this framework).

BM Canvas and the framework of De Mey and De Ridder, both score equally against the whole set of criteria. Therefore, the more detailed considerations on advantages/disadvantages of one over the other, and addition criteria - popularity among current scientific and practical realms - have revealed the most appropriate framework, BM Canvas.

There is one additional, although principle for this research, advantage of BM Canvas framework over the others. Through its design it can visualise ecological and/or social benefits of a business model, thus giving a powerful tool to specifically point out those constituents of business model,

that give it a validity to be named a sustainability-driven one.

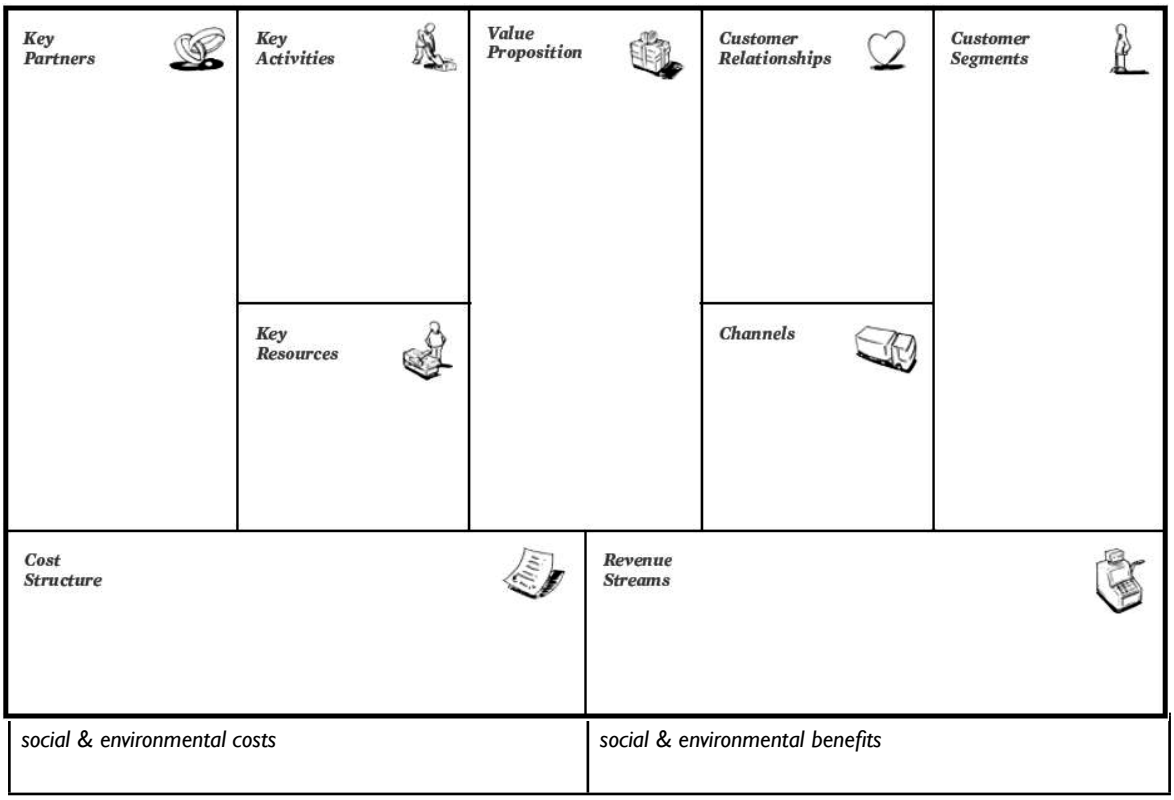


Figure 3.7. Triple Bottom Line business model representation Canvas (Osterwalder and Pigneur, 2010).

Nine modules of the Canvas together represent comprehensive logic of each business model. Two additional boxes below the main Canvas are incorporated to reflect on ecological and/or social costs that the business model imposes on nature and society (negative impact), and ecological and/or social benefits that it provides for nature and society (positive impact). 'Just as earnings are increased by minimising financial costs and maximising income, the triple bottom line model seeks to minimise negative social and environmental effect and maximise the positive' (Osterwalder and Pigneur, 2010: 265).

3.5. Rural enterprise model patterns

Monitoring of rural business models inventory has revealed three business patterns presented in the Table 3.4. below. Each column represents some example business models that follow the pattern. They are marked with color distinguishing to which group depending on the key resource they are ascribed to: 'green' for farm-based, and 'blue' for forest-based.

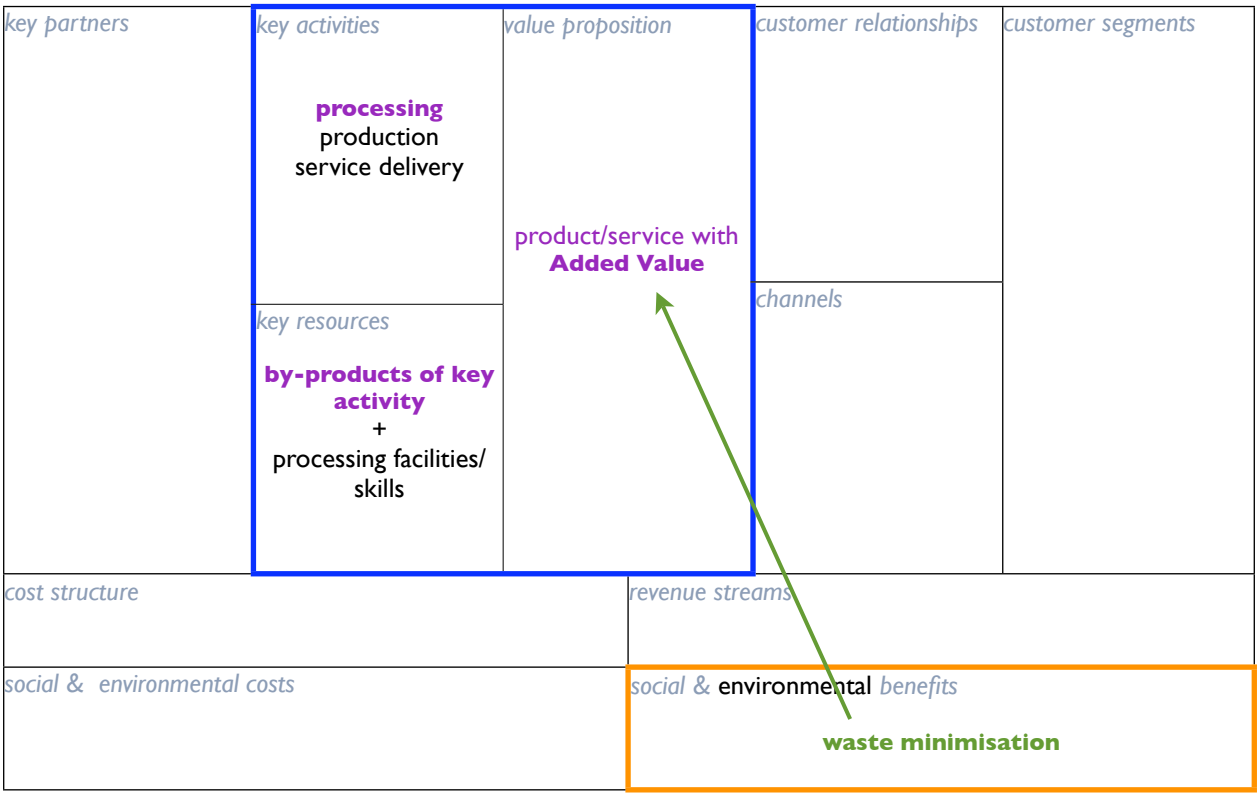
waste as a resource	profit as a by-product	consumer as a sponsor
on-farm bio-energy production (biomass, barley and no-food triticale combustion)	conservation aquaculture farm = bird sanctuary + a water purification plant	'The Vegetables from my Garden' lets anyone build an organic garden right from their web browser
straw briquettes from waste to be used as fuel	conservation farm: creating on-farm habitat for wildlife	ADOPT A TREE scheme / vine rental scheme: you become a Partner in a vineyard, which lets you share in the fun of 'owning' a vineyard, but without the hard work
eco-packaging from straw	social farm for disadvantaged people	BOX SCHEME: production and weekly delivery of fresh organic vegetables / premium beef boxes
acoustic & thermal insulation material from straw grown on formerly disused land	on-farm tuition for pupils requiring SEN and support for emotional, behavioural and social difficulties	
waste utilisation for compost production	on-farm children's home	
Vinothérapie Spa (mineral water+grape/wine) / wine& grape-based cosmetics	small woodland operating as a social enterprise: education, training and employment preparation advice to disadvantaged young people	
high quality 100% natural packaged firewood product manufactured from by-products of woodland management /wood briquettes & shavings		
energy production (wood-chips combustion)		

Table 3.4. Rural Business patterns.

Following are the patterns in more detail and corresponding business models represented in form of BM Canvas. Presented Canvas do not provide for comprehensive description of all components of business models, but rather emphasise only those components which descriptions are principle for understanding the business model. These parts are highlighted with blue frames.

3.5.1. <Waste as a resource> (Farm|Forest)

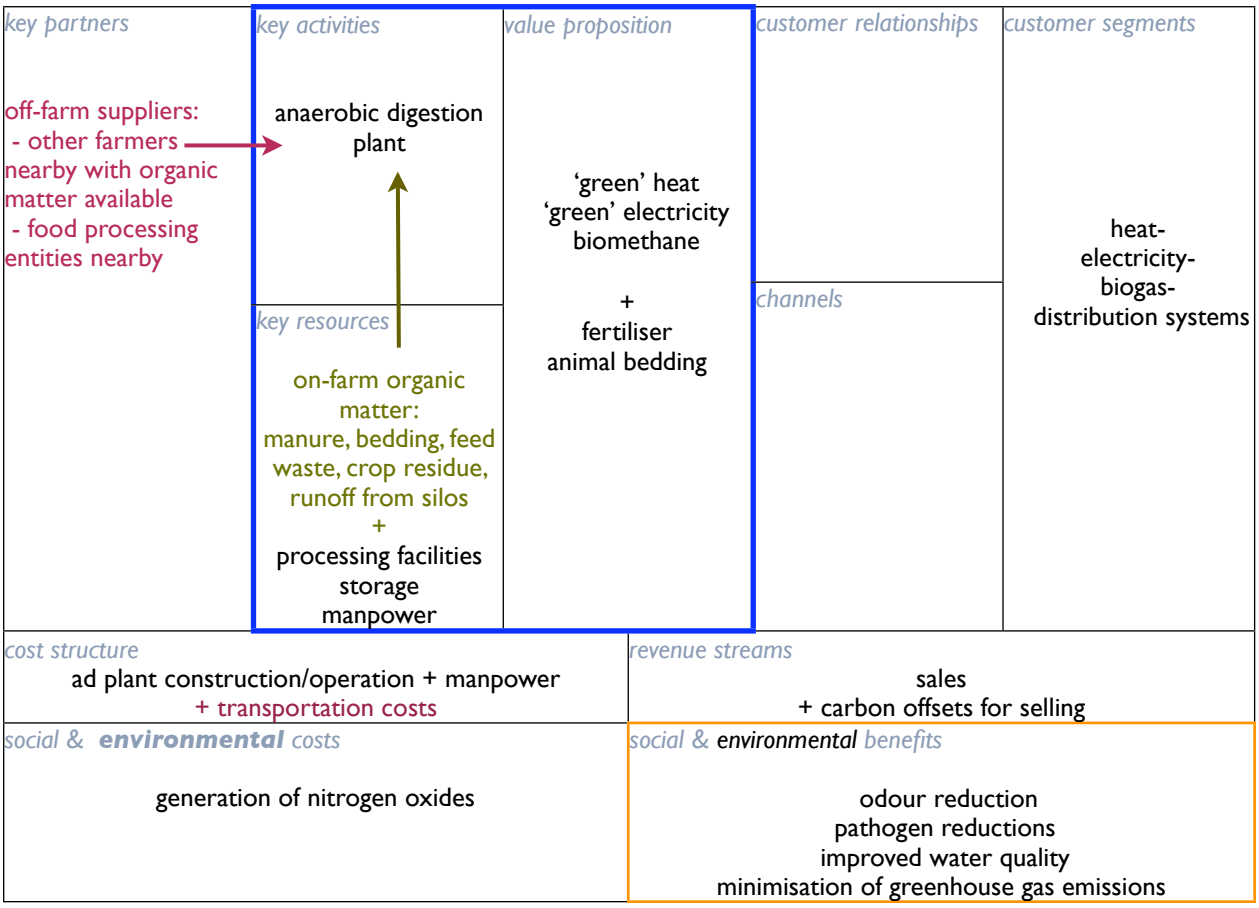
A cattle-breeding farm using cow-manure to produce electricity and heat for the neighboring community; a wine producer using residue of wine making (pips and pulp) for operating a vinotherapy on the farm; a farmer using a by-product of cereal crops (straw) for producing packaging, insulation, or even a carbon-neutral energy source in forms of straw-briquettes; an entrepreneur using by-products of responsible woodland management for producing high-quality firewood, all these are examples of the same pattern in business activity - transforming waste from key activity (livestock, grain farming, wine making, forest management, etc) into the resources for another profitable activity.



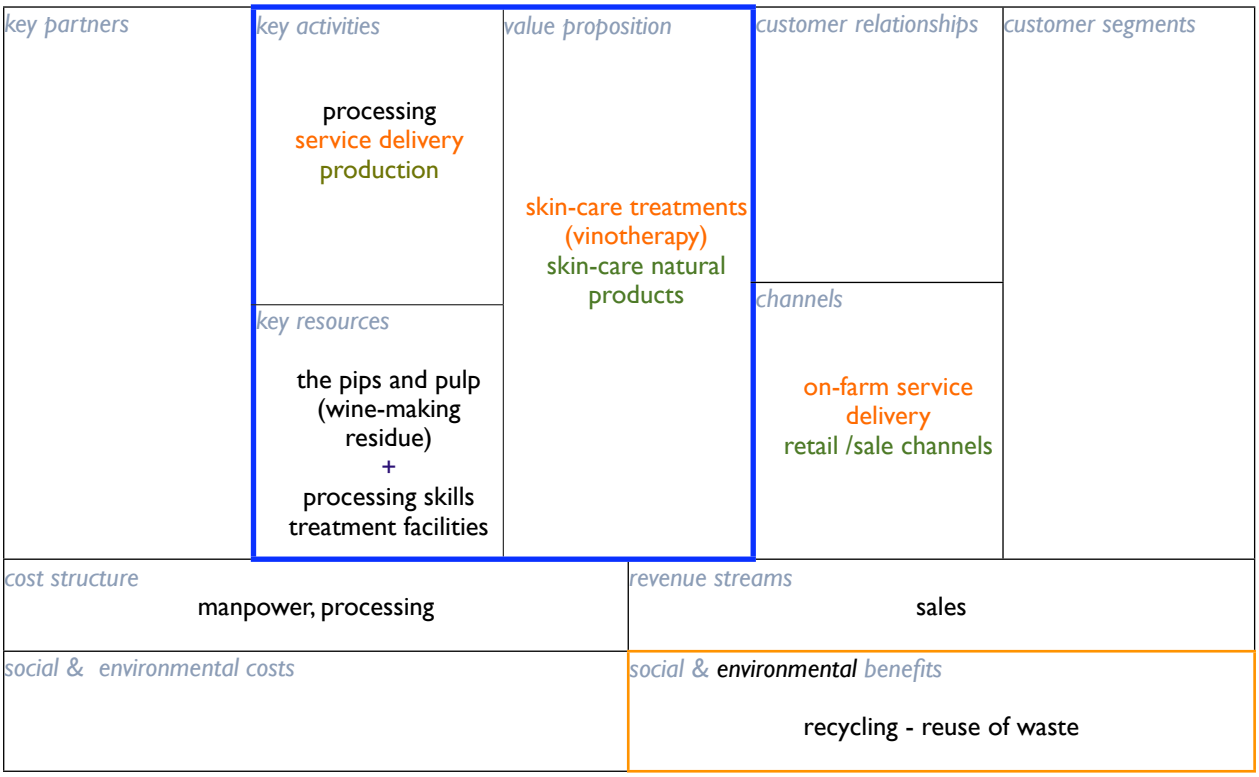
The key feature of this BM pattern are resources - various by-products of agriculture or forestry - which are transformed (key activity) to propose to potential customers a product/service/ experience with added value, which is derived from being produced from reused materials, hence, with the benefit of lower environmental impacts associated with waste minimization.

Below some rural business models executing this pattern are presented in forms of BM Canvas. Their presentation is based on the information about relevant organisations from the Inventory gained from open sources (company's web-sites and publications). Where additional sources have been utilised, they are acknowledged respectively.

‹energy farm›



‹vinotherapy›



‹reuse of straw›

key partners	key activities processing production key resources straw (by-products of crops farming) + processing knowledge & skills	value proposition compostable packaging insulation carbon-neutral energy source - straw-briquettes	customer relationships channels	customer segments
cost structure processing means			revenue streams sales	
social & environmental costs			social & environmental benefits recycling - reuse of waste lower climate change impact (compared to fossil fuels)	

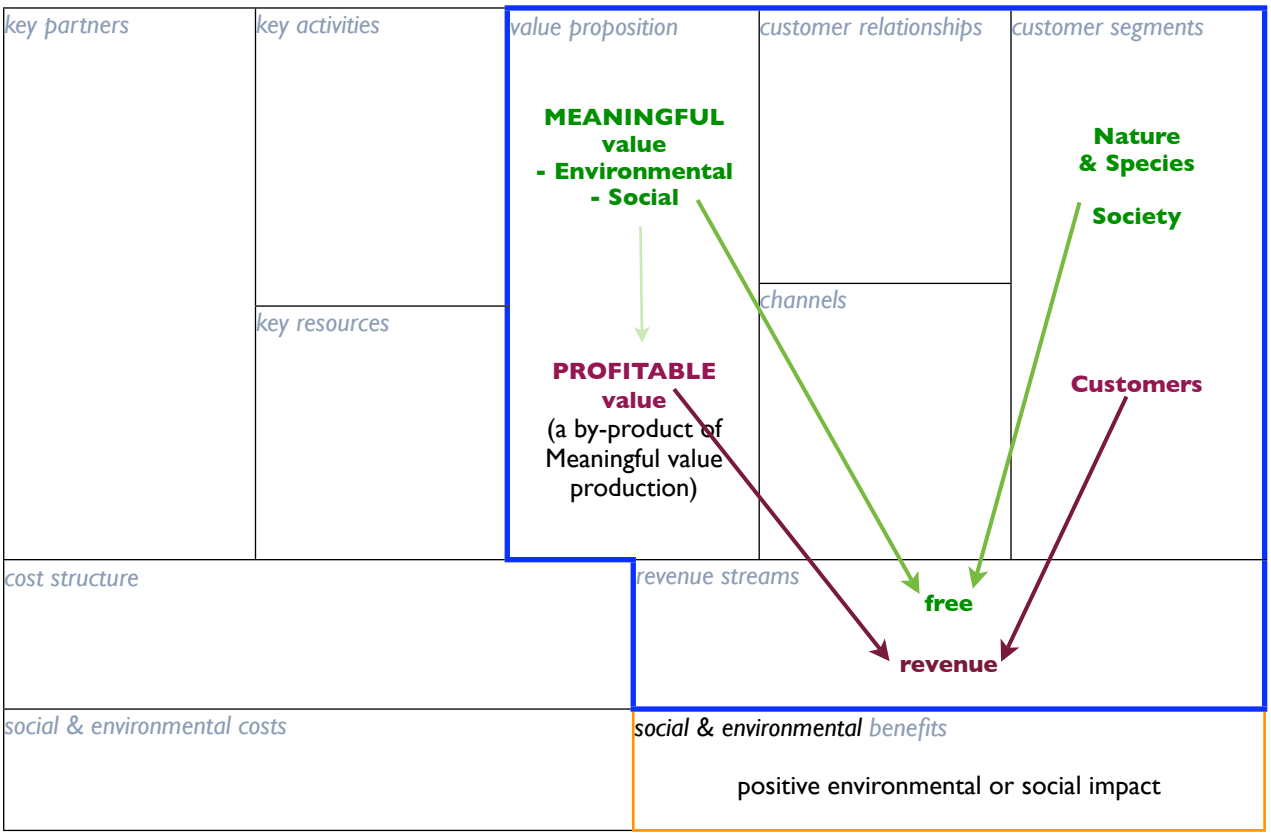
‹wood fuel›

key partners	key activities processing: densification drying key resources wood-chips (by-products of responsible forest management) + processing facilities	value proposition biofuels: wood pellets firewood	customer relationships channels	customer segments
cost structure processing means			revenue streams sales	
social & environmental costs			social & environmental benefits recycling - reuse of waste lower climate change impact (compared to fossil fuels)	

3.5.2. <Profit as a by-product> (Farm|Forest)

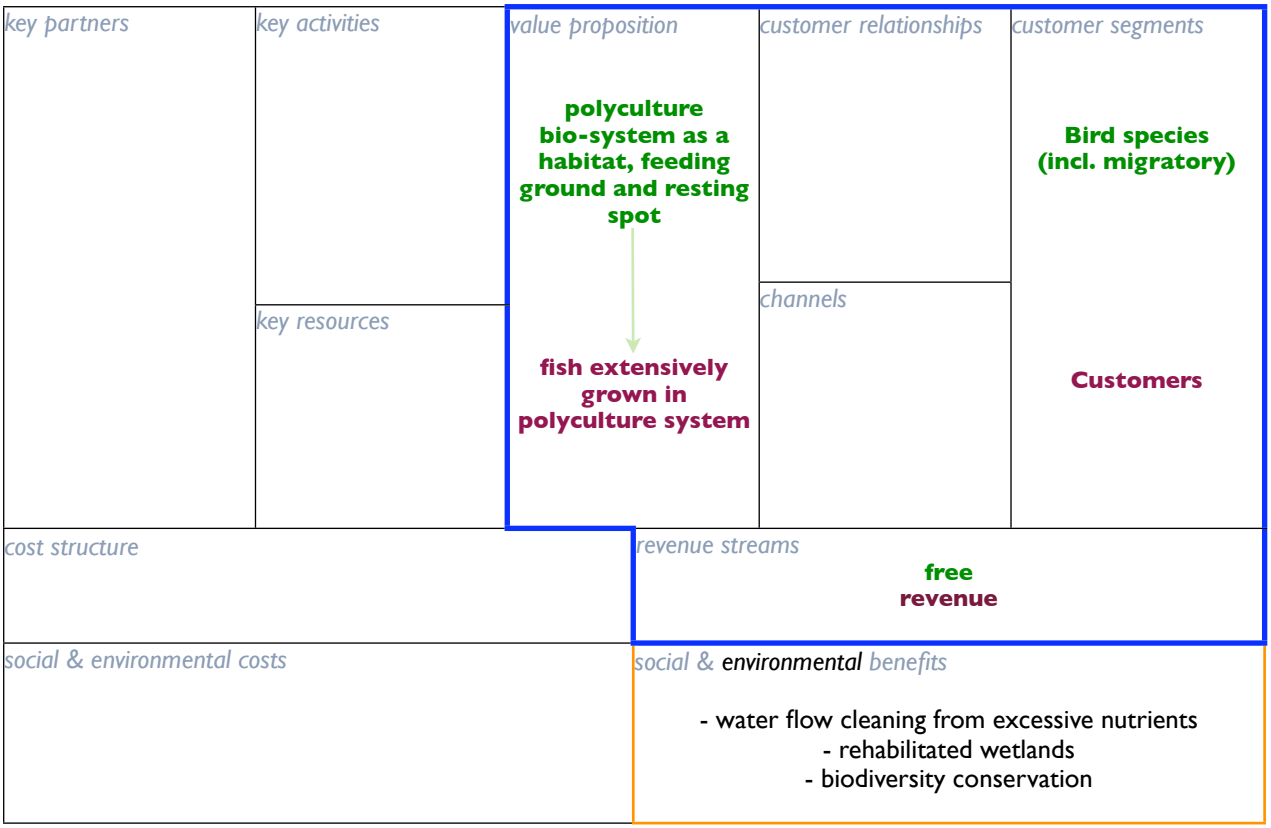
An aqua-farm or a farm producing livestock which turns to be a bird sanctuary, or a small woodland turning to act as a social care centre to give support for disadvantaged people, these are examples of a rural business model pattern that can be named 'business as a by-activity'. The core idea is, in general, similar to well-known FREEmium business pattern, where one segment of customers receives a service or a product free-of-charge, while the revenue stream goes from another customers segment.

In <profit as a by-product> pattern one segment (nature or society) receives value (environmental or social) for free, while owner receives revenue from other profitable activity, but the difference with the general FREEmium pattern is in not only in positive environmental and social impacts, but in the additional characteristics a *meaningful* value endows a *profitable* value with. This *added* profitable value (ex., fish and cereals from the biodiversity conservation farm, or agricultural produce grown by the hands of disadvantaged people) make a difference also for customers who buy this products, as by doing this they may consciously contribute into better social or environmental conditions.

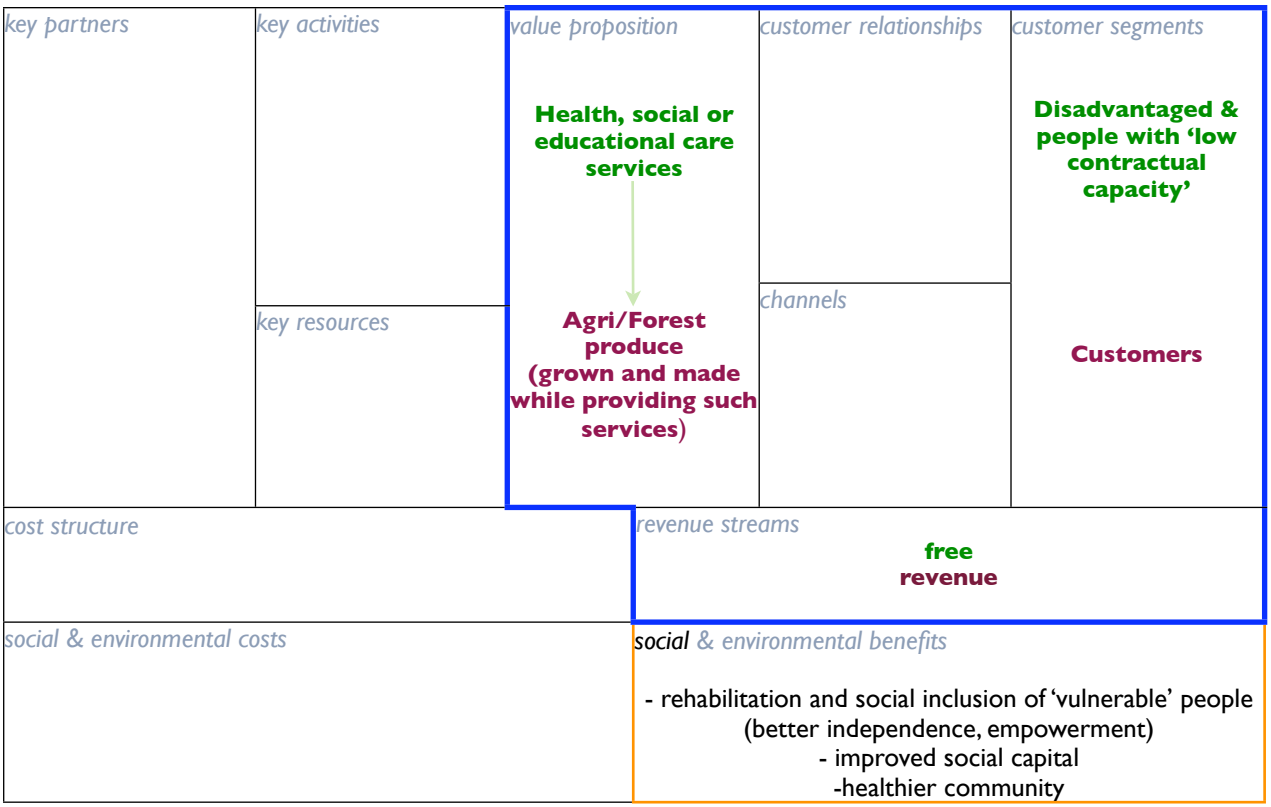


The following are the example business models of <profit as a by-product> pattern.

〈conservation aquafarm〉



〈social farm〉

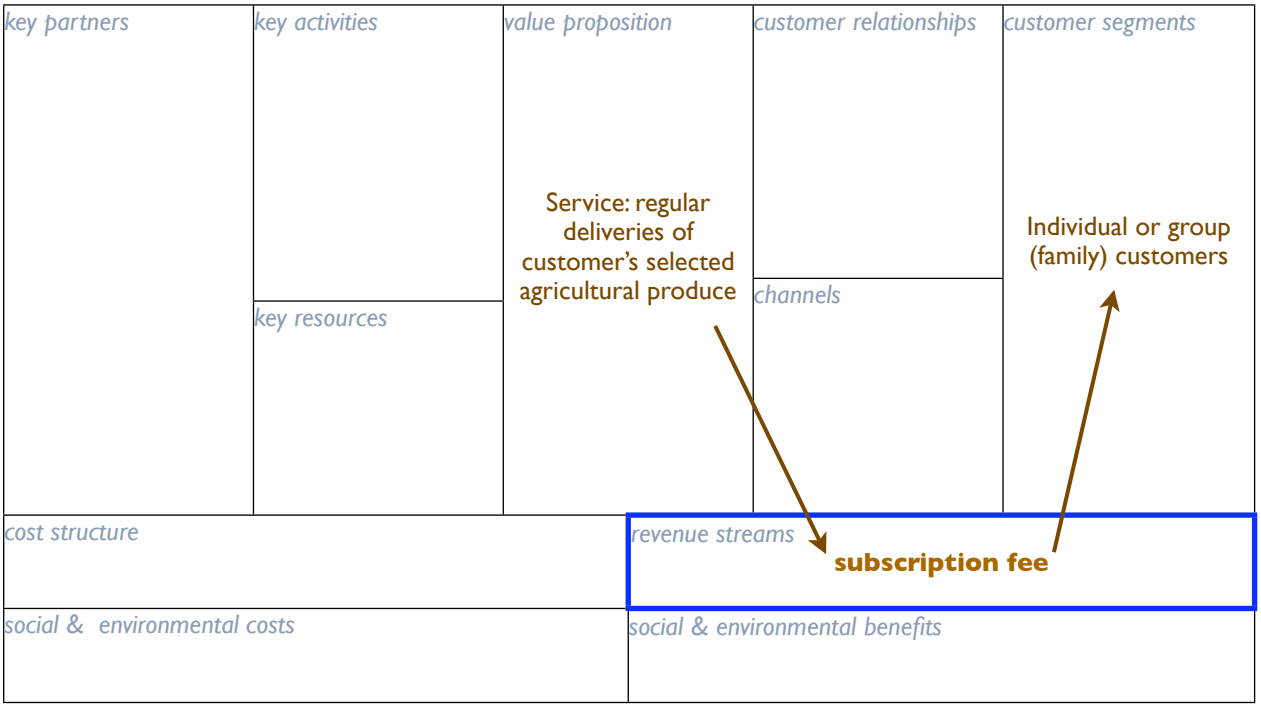


Description of a social farm business model Canvas is based also on the Di Iacovo and O'Connor (2009).

3.5.3. <Consumer as a sponsor> (Farm)

Starting from a box-scheme (when one regularly receives a box with selected or seasonal agricultural products for a fee), and adopt-an-olive-tree or adopt-a-vineyard (when one for a prescribed fee receives temporal access to resources this tree/vineyard produces) and up to a 'remote farmer' scheme (allows anyone for a fee to enjoy major benefits of owing a real garden, but without real work on the land), these examples are similar to direct selling of vegetables, olive oil or wine but, instead, this represents innovation in a revenue part of business model.

The value proposed to customers by this business pattern is not the agricultural produce itself, but rather a service of having this produce fresh regular and/or personalised during the defined time period. And for this service a customer pays subscription fee. Usually this pattern is considered as a form of community supported agriculture where the customer acts as a sponsor of agricultural producer by making the fee for future produce available in advance of the production process itself.



Examples presented in the Inventory and below are of a farm-based entrepreneurship. Still, this pattern may be considered similarly appropriate for a forest- or environment-based enterprises.

Below are several examples of business models following <consumer as a sponsor> pattern.

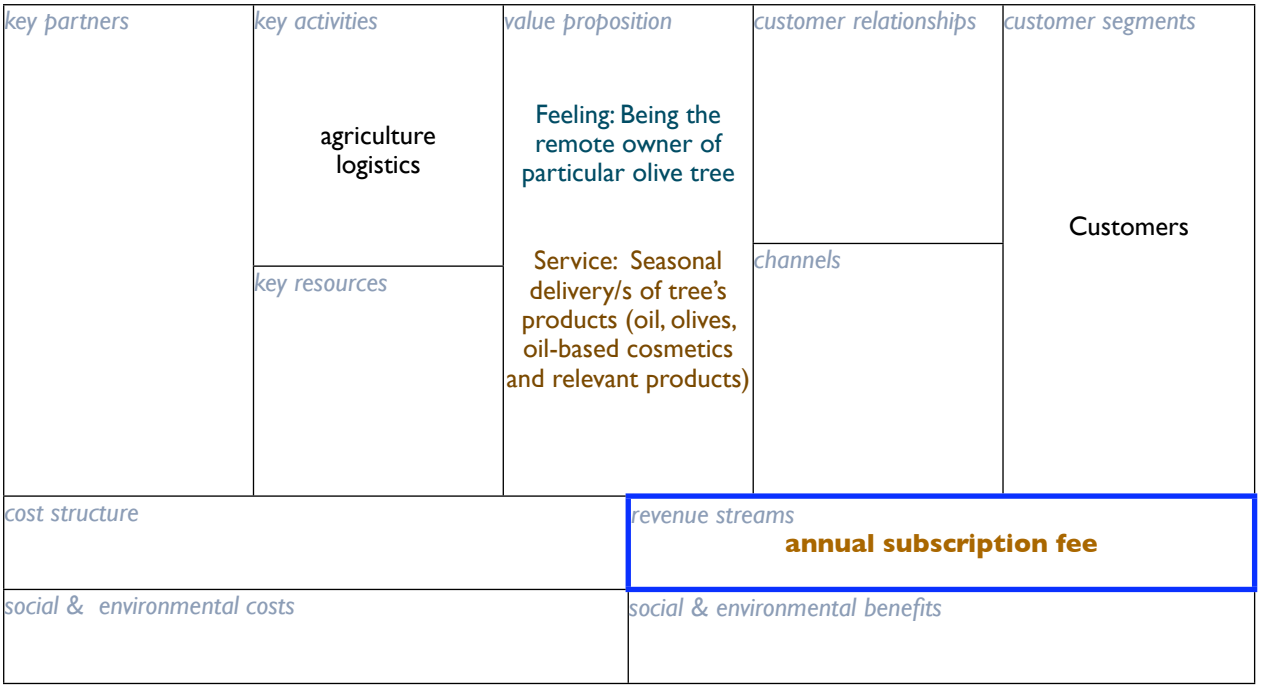
〈remote farmer〉

key partners	key activities	value proposition	customer relationships	customer segments
	agriculture logistics	Feeling: Being the remote owner of tailor-made garden (without real hard work)		Individual or group (family) short-distance customers
	key resources	Service: Regular provision with fresh vegetables/fruits of customer's choice	channels: dedicated web-site	
cost structure		revenue streams: **annual subscription fee**		
social & environmental costs		social & environmental benefits: SOC: reconnect with the nature/roots; educate on the origins of food; promote artisanal farming. ENV: encourage farming of local plant species		

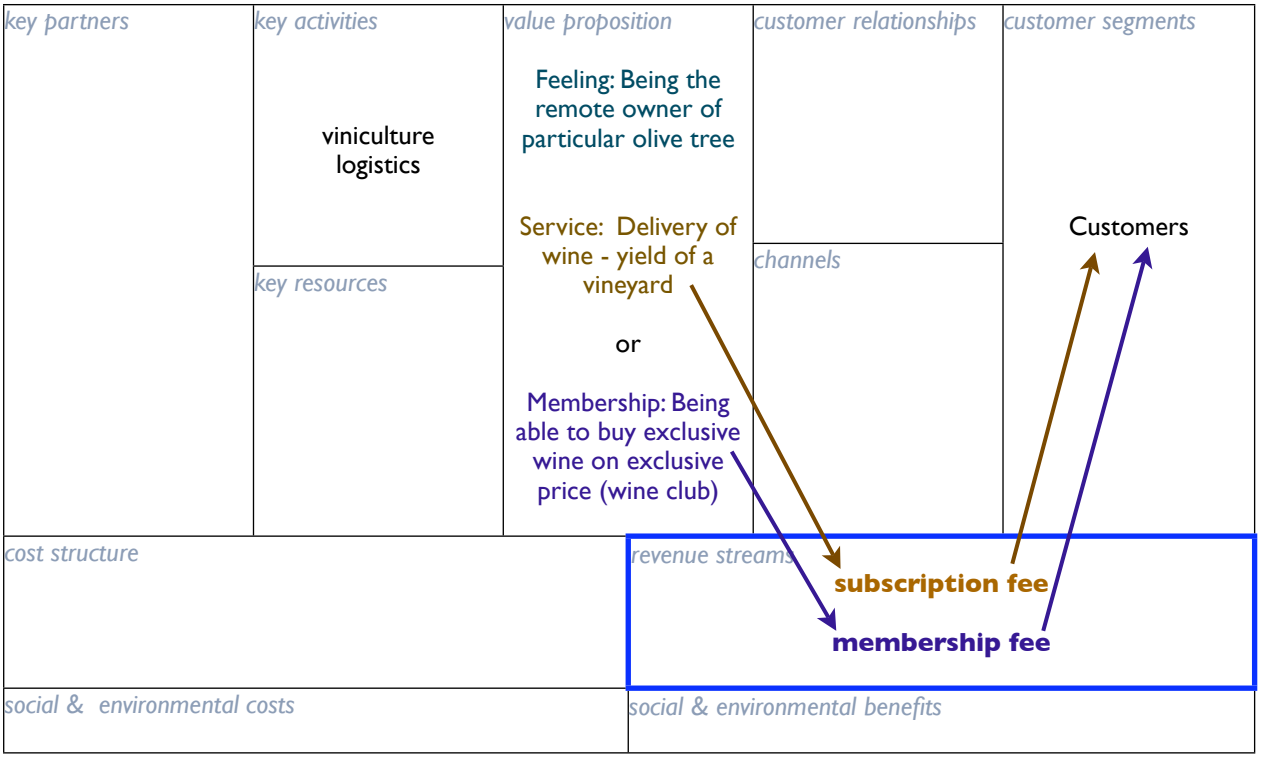
〈box scheme〉

key partners	key activities	value proposition	customer relationships	customer segments
	agriculture logistics	Service: Weekly/ monthly deliveries of seasonal garden or livestock produce		Individual or group (family) short-distance customers
	key resources		channels	
cost structure		revenue streams: **subscription fee**		
social & environmental costs		social & environmental benefits: SOC: promote artisanal farming. ENV: encourage farming of local plant spescies and traditional livestock		

‹adopt an olive tree›

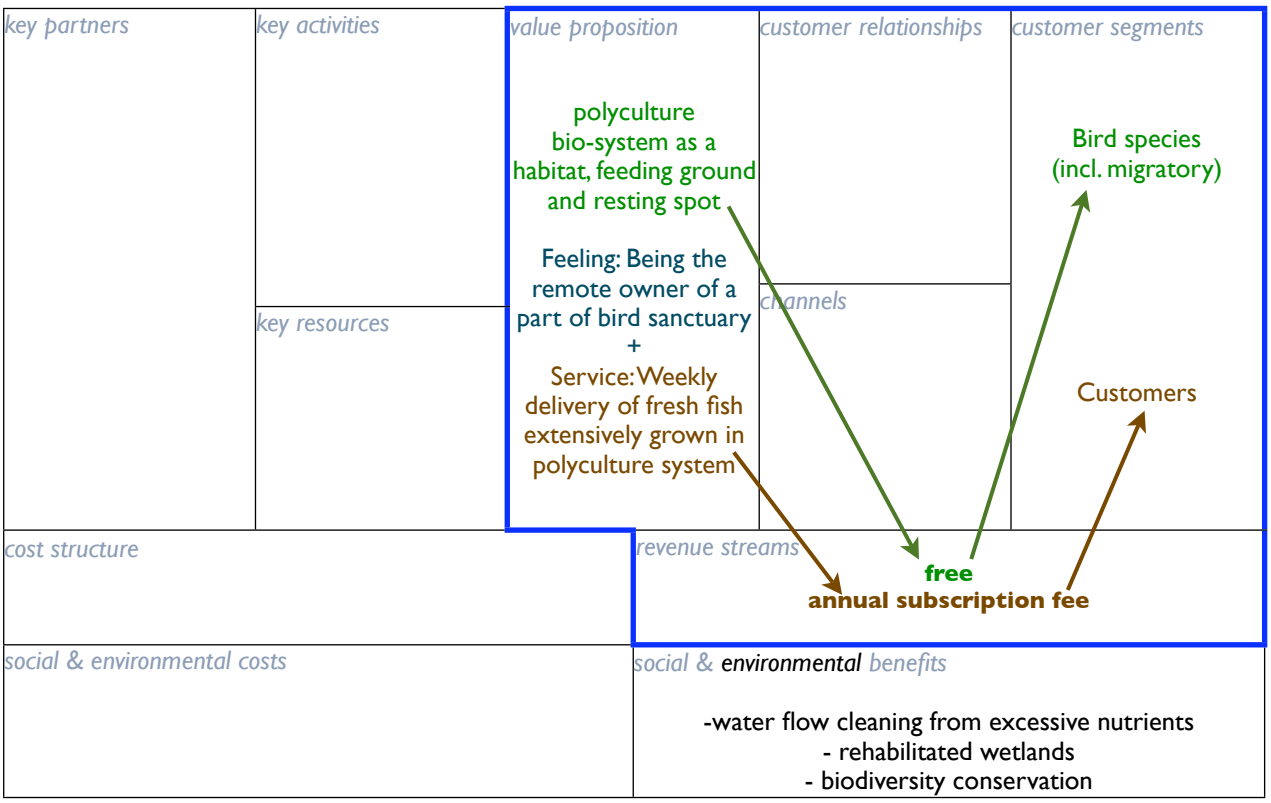


‹adopt a vineyard›



These patterns described above can be used to (a) exercise business model innovation taking pattern as a starting-point or (b) apply a pattern to some existent business model.

To make an example, the ‹consumer as a sponsor› pattern can be taken to introduce it into the ‹conservation aquafarm› business model. The resulting business model can be named ‹adopt a pond› and represented in form of BM Canvas as the following.



3.6. Discussion and Results

This part of the research was aimed at identifying sustainability-driven novelties in rural EU entrepreneurship and proposing the most effective representation framework for their creative transfer outside the EU, and has concluded into the three portions of results:

Sustainability-driven novelties in EU rural entrepreneurship.

Qualitative survey has allowed to find 177 novelties in rural enterprises, in forms of complete business models or their parts. They have been grouped based on the key resource - farm, forest, or rural environment. The business models and their parts presented are both with *sustainability-driven* (ecological and/or social benefits) properties, such as, energy production from by-products of woodland management, ethical (free-range) poultry, carbon-free winery, or social farming; and *neutral* social-ecological properties, such as, seaweed spa therapy, online farm shop, or rural cafe. Still, even the neutral business models and parts are argued to being able to serve for sustainability, especially when combined with other sustainability-driven business models and parts.

Patterns of rural business models.

Monitoring of the Inventory has revealed presence of three business models patterns named ‹waste as a resource›, ‹profit as a by-product›, and ‹consumer as a sponsor›. Along with the business models, two first patterns incorporate sustainability benefits already in their components, and the third pattern may be utilised in another sustainability-driven business model, and, herewith, also contribute to sustainable development.

Pattern's function in the proposed transfer and adoption of entrepreneurial models can be twofold. First, similarly to business models, they can be used by the recipients as the basis for business models redesign and minnovation. For this, the pattern can function as a starting framework with further supplementing it with suitable components of business models, or, vice verse, taking an existing business model and modifying it with a business pattern. Second, they may serve to trace the dynamics of business models modifications in the recipient environment in response to arising necessities and changing paradigms.

The very presence of these patterns indicates that rural enterprises in the EU tend to evolve by

adjusting to novel demands of sustainability through developing some variety of similar business models with repetitive principles which results in sustainability-driven patterns. Therefore, further study of continuing evolution of rural business models patterns may yield interesting results and unravel the story of rural entrepreneurship co-evolution along with changing demands and shapes of sustainability.

Enterprise models representation: Business Model Canvas.

Literature review has discovered four existing frameworks for business model representation, which were described and compared with each other against a set of proposed requirements - simplicity, visualisation, comprehensiveness, and ease of manipulation. As a result, the Business Model Canvas framework has been found to meet the most criteria.

It is short and simple, still the information is structured and BM components are visualised in the way that allows for a user to comprehend how the business operates. What is of particular importance for the transfer process, Canvas represents itself a toolkit for business model's adaptation and minnovation for receiving business context. The business model in Canvas can be redesigned by various manipulations with the components: substitution of existent ones with new components, combination of parts from different business models to create a new business model, herewith somehow mimicrying the symbiogenesis - key force of evolution in nature (Capra, 2002), and so on.

BM Canvas is shown to be also an appropriate language for intercultural communication, which is an important aspect for international transfer. Being structured and visualised, the information able to describe the business model is relatively short compared to written descriptions or verbal explanations, thus, allows to save on translations while increase intuitive understanding.

Another aspect is that, Canvas is quite an independent and self-sufficient tool which directly does not require much accompanying materials or field-visits. (Meaning that, to grasp the business model, for example, of Google through its Canvas one does not necessary need to visit its office and meet the head personal.) However, additional information, advices or an insight into existent entrepreneurial practices (via extensive learning materials or by direct site-visits), even if in another context, can be useful, although, remain at the discretion of the transfer managers.

Being quite simple, BM Canvas still requires some basic knowledge on business management for efficient utilisation of all its benefits, therefore, it can be insistently advised as a prerequisite for transfer to provide the recipients-entrepreneurs with basic training on general questions of business modelling with specific examples from ample Inventory provided.

Chapter 4. SUSTAINABILITY-DRIVING RURAL ENTREPRENEURSHIP SYSTEM

Introduction

This chapter addresses the following research questions:

What is the structure of Sustainability-Driving Rural Entrepreneurial System?

Which are the key components for the System's dynamics?

and aims to reach the following Research Objective:

> To describe the Sustainability-Driving Rural Entrepreneurial System and identify key components for its dynamics.

4.1. Methodology

This part of research is based on the system thinking framework and applies structural approach to understanding and describing rural entrepreneurial ecosystem as a social-ecological system through participatory modelling utilising structural (impact) analysis and causal loop diagramming.

4.1.1. A Systemic View

System thinking is the ability to see things as a whole. This approach elaborated by Forrester, Senge, and Sterman (Forrester, 1961; Senge, 1990; Sterman, 2000) has its roots in the idea of holism, concept which implies that the whole is more than mere sum of its parts, and it is the whole that determines behaviour of its parts. The system thinking addresses complexity of systems in three-folds: quantity (elements involved), connectivity (interrelationships between the elements), and functionality (inter-functional connection between the elements of the systems) (Sterman, 2000).

As this approach is based on the argument that a system cannot be analysed, because the properties of its parts are not their intrinsic properties, they can be understood only in the context of a whole. System thinking is a contextual thinking. Consequently, no characteristic of its component is fundamental, they all are the result of the characteristics of other components, and this very co-ordination of their interconnections is what defines the system. (Capra, 2003).

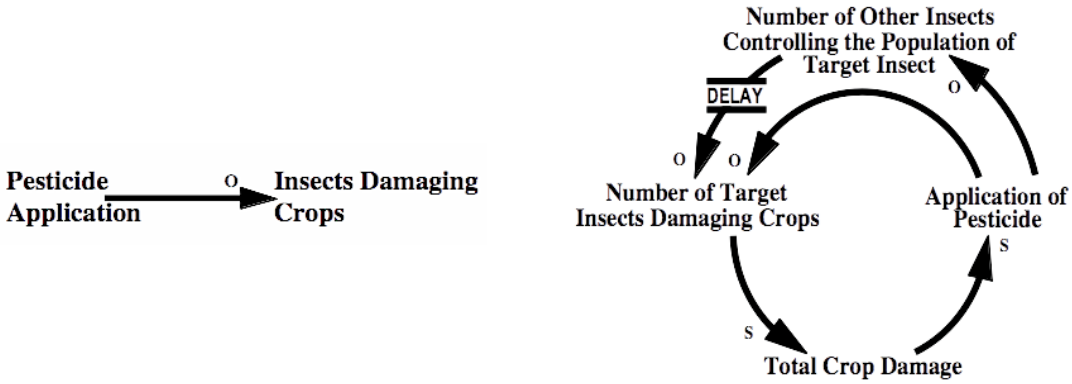


Figure 4.1. Comparison between linear (right) and non-linear (left) thinking described as different approaches to pest control (Aronson, 2003).

Increasing non-deterministic components with hardly predictable behaviour and sustainability paradigm transform modern problems and conceptions to become more complex and uncertain, and phenomenon more and more interconnected (Hjortha and Bagheri, 2006). This redefines

methods of problem-solving and scientific inquiry. Consequently, conventional linear thinking was not able to cope with interdependence, partnerships, flexibility, and diversity in almost every aspect of our life (Capra, 2003), and a shift to non-linear cyclical thinking, where a variable is both the cause and effect of another, took place.

Development of systems sciences started from system dynamics, which was applied to industrial engineering and business systems management (Forrester, 1961), then more system sciences have been elaborated (refer to Figure 4.2. for examples) and applied to consider complexity, understand and model various complex systems and solve complex problems in many different fields. In this thesis some of complex systems and resilience approaches are utilised.

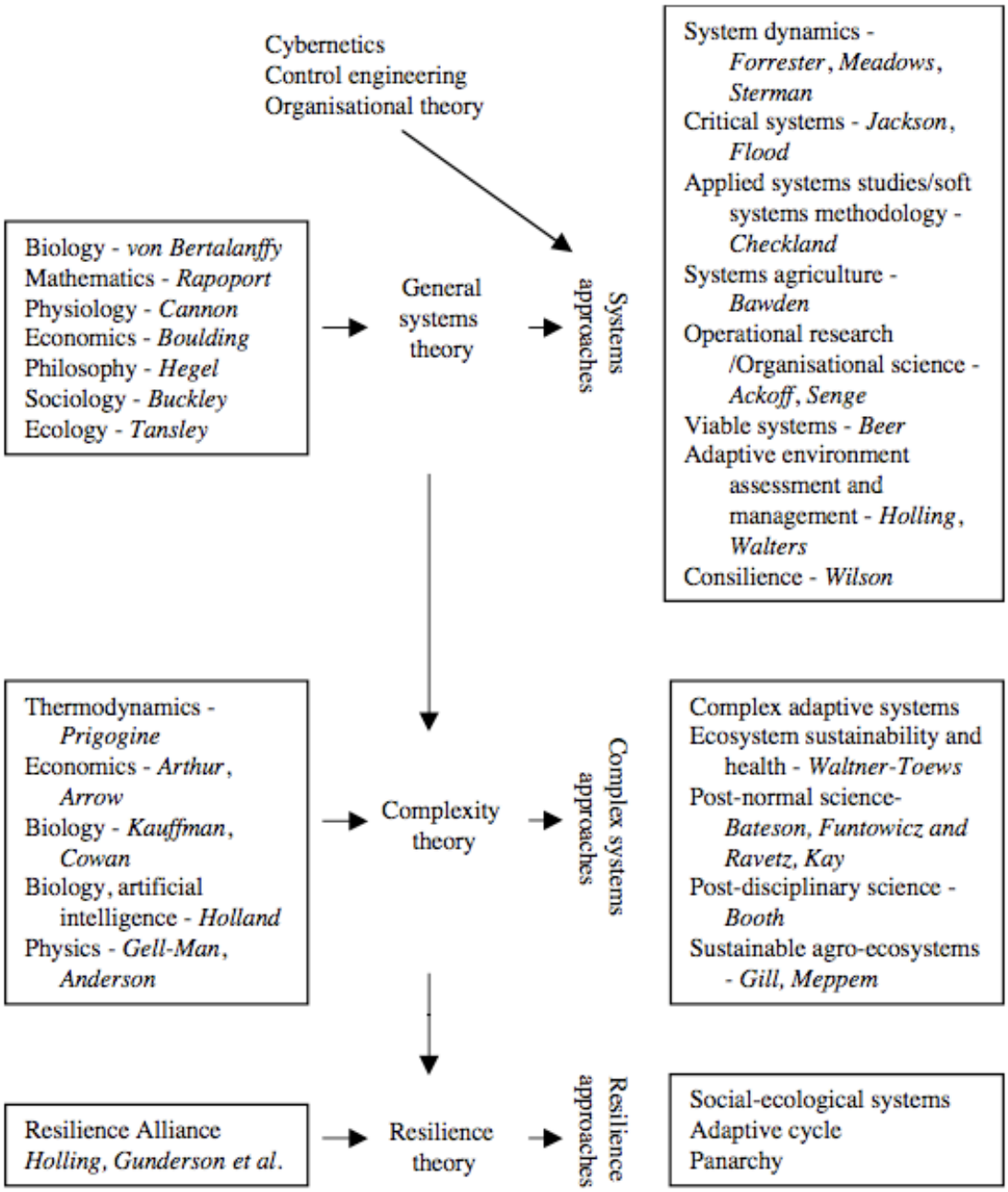
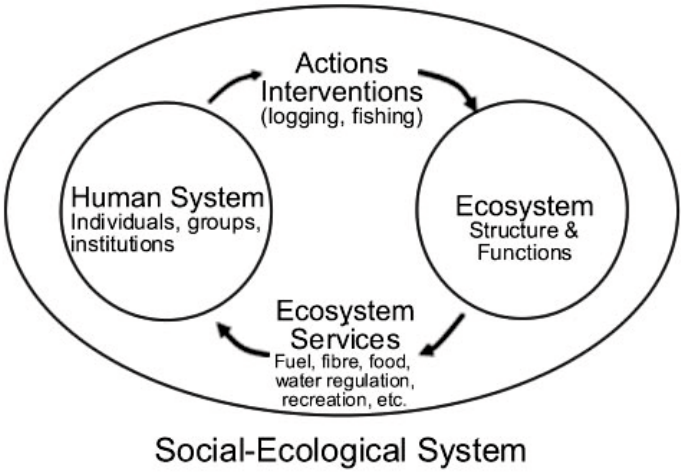


Figure 4.2. A genealogy of systems science (Allison, 2003).

4.1.2. Social-Ecological System

Interconnectedness and interdependence between nature ecosystem and human society are getting more obvious, as Jahn *et al.* (2009:2) put it, "a new epistemic constellation has emerged, one marked by complex human-nature relations at its centre". This understanding results in the hypothesis that nowadays neither nature, nor society may be comprehended in separation, and providing growing scientific realm for concept of social-ecological systems.



Following systemic thinking described above, a social ecological system is more than just the mere sum of its parts, society and nature, but as well the complexity of dynamic feedback mechanisms between them and their mutual constitution (Berkes *et al.*, 2001, 2003; Folke *et al.*, 2005).

Figure 4.3. Conceptual diagram of elements of a social-ecological system (Source: http://wiki.resalliance.org).

These systems are complex and adaptive, and all general principles of complex adaptive systems, those of self-similarity, complexity, emergence and self-organisation (Holland, 2006; Sterman, 2000) apply in particular to the social-ecological ones (Gunderson and Holling, 2002).

Investigations of rural areas as complex and interactive social-ecological systems 'resulting from the multiplicity of interrelations between local agents and resources in a rural area' (Ambrosio *et al.*, 2008:3) are still quite rare although increasingly developing in science (Ambrosio and Bastiaensen, 2010; Schouten *et al.*, 2009; Heijman *et al.*, 2007). Figure 4.4. is the representation of a rural social ecological system where the boxes are components and the arrows trace dynamic interactions.

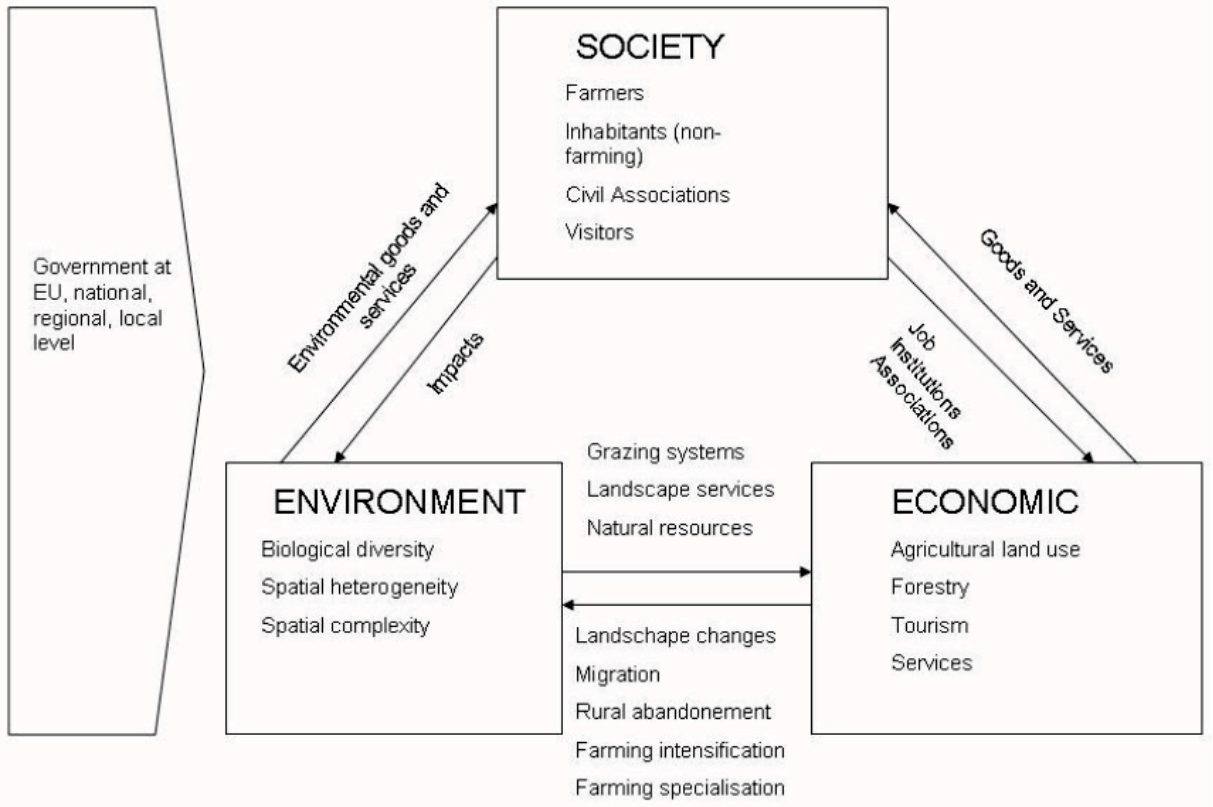


Figure 4.4. Components of the rural social-ecological system (Schouten *et al.*, 2009).

Described frameworks, along with the concept of entrepreneurial ecosystem described and visualised in this thesis before (Section 2.4.4.) allow for considering Rural Entrepreneurial Ecosystem, firstly, as a component of a wider rural social-ecological system, and secondly, as a social-ecological system itself as this is a system where human activities and their effects on ecological ecosystem cannot be coupled from the nature and the services it provides for and effects it bears from society. Major rural entrepreneurial activities (farming, tourism, etc.) are based on various uses of natural resources, (land, forest, waters, etc.), and in such system social and natural components cannot be delineated.

4.1.3. Structural Approach

Structural approach studies the system's components and inter-linkages among them that together provide for system's functioning. The objects of examination under this approach are topological structure and pattern of relationships between system's elements (Jahn *et al.*, 2009). Therefore, those techniques able to describe these interactions and the structures emerging out of this dynamics, are to be considered as appropriate research methods.

Out of five major phases of system thinking approach to system modelling (Cavana and Maani, 2000) for this research objective - to describe the Rural Entrepreneurial Ecosystem able to drive creation and development of sustainable rural enterprises - two first phases with some transformation will be proceeded through:

1) problem structuring phase: identify issues of concern and collect preliminary data;

2) causal loop modelling phase: identify main variables, develop causal loop diagram (explained in more detail in section 4.1.6.), and interpret variables through structural analysis (explained in more detail in section 4.1.5.).

4.1.4. Participatory modelling

Much of the information about system structure and dynamics is stored in mental models - internal representations of external reality - of stakeholders and process participants created in the process of observing the world (Ford and Sterman, 1998). Consequently, modelling process of a real-life system echoes the process of creating a shared mental model of this system. Personal mental models are mostly qualitative in nature, and there have been proposed various quantitate (Ford and Sterman, 1998) and qualitative (Luna-Reyes and Andersen, 2003) methods of their capturing and use in modelling process.

Building shared mental models based on participants - competent researchers and key system's actors - involvement in the modelling process is valued in system sciences (Andersen *et al.*, 2007; Rouwette *et al.*, 2002; Andersen *et al.*, 1997) and particularly supported for the research of social-ecological systems (Resilience Alliance, 2010; Jahn *et al.*, 2009). Starting from late 1990s such group modelling approaches have been utilised in many fields of knowledge (ex., organisational development (Venix *et al.*, 1996)) and for various problems (ex., environmental conflicts (Elias, 2008)).

Following the logic described above, in this piece of research development of a shared model of Rural Entrepreneurial Ecosystem is to be performed with inclusion of key actors (entrepreneurs) and relevant experts into the modelling process through structural analysis.

4.1.5. Structural (Impact) Analysis

Structural analysis (Godet, 2006; Godet, 1994), or impact analysis in other sources (Cole, 2006), serves to describe a system through identifying main system's elements and comprehend the relationships between them. These methods allow for ranking system's factors on their influence and dependence over one another and, thereby, figure out the key impact factors able to optimise the system (Fried and Linss, 2009).

Structural (impact) analysis started as an adjustment of forecasting techniques (Gordon and Hayward, 1968) and since then has been utilised for many objectives. It functions as part of the strategic foresight methodology (Godet and Durance, 2011), and has been utilised also in sustainability values calculations (Cole *et al*, 2007), and as a methodology for rural development

programming (Ambrosio *et al.*, 2009). This piece of research was inspired by all three examples.

The process of structural analysis is designed to proceed through 3 steps (Godet and Durance, 2011; Ambrosio *et al.*, 2009; Godet, 2006):

(1) identification of variables -> Inventory of system's components.

First step aims at creating the list of variables which define the system under study. They need to be gathered by a collective action from internal stakeholders and external experts and precisely described. The inventory in overall should not exceed 70-80 variables to guarantee reasonable time for filling in the influence matrix (second step) consisted of these variables.

For this research the object of study is entrepreneurial ecosystem, and the group for participatory gathering of its components and, then, modelling of this ecosystem should consist of entrepreneurs, as they are the principle agents able to reflect on the ecosystem they operate in, and experts in the field.

(2) describing the relationships among the variables -> Influence matrix.

In the framework of system thinking approach system's components exist only in integration and mutual influence to one another. Second step of structural analysis provides a qualitative method for identifying influence relationships through collective action on completing the double-entry matrix of components identified in the previous step (Table 4.1). This matrix is advised to be filled in by the same participants as in the step one.

To build the matrix template the list of variables (system's components) is filled in the first column and, keeping the same order, in the first row. The cell on the conjunction reflects on the nature of influence of a row variable over a column variable in the following mode. If there is no influence relationship, one assigns 0 or, alternatively, lives the cell blank. If there is influence relationship, then there are three options: assigning 1 for weak relationship, 2 for average relationship, and 3 for strong relationship. There may be also assigned 4 for potential influence relationship, meaning that it does not exist now, but has the potential to exist in the future.

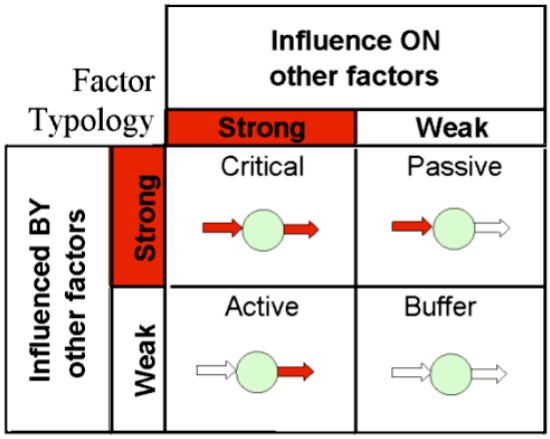
	v1	v2	v3	v4	v5	v6	v7	v8
v1								
v2								
v3								
v4								
v5								
v6								
v7								
v8								

Table 4.1. Double-Entry Matrix example.

It is advised that the matrix being filled in during the group workshops with all the participants from the first stage. At the same time, practice (Cole, 2006) shows that in some circumstances (lack of resources to gather participants together for real-time joint work) the double-entry matrices can be scored by the participants individually and, then, combined mathematically to produce an average matrix. This approach is to be utilised also for this part of research.

(3) classifying variables -> MICMAC diagram.

The evaluation of influence matrix involves calculation of direct and indirect influence indices, so to quantify the importance of each components in the system based on criteria of influence and dependence as shown in Figure 4.5.



Calculation of *direct* influence indices can be done using row and column sum scores for each variable. For a matrix of 15 rows (i) and columns (j):

$$\text{the row sum} = \sum_{i=1}^{i=15} M_{ij}$$

$$\text{the column sum} = \sum_{j=1}^{j=15} M_{ij}$$

Figure 4.5. Influence matrix factor typology (Cole, 2006).

The row sum calculates the influences imposed by this variable on other variables (active sum), and the column sum calculates the influence received by this variable from other variables (passive sum). Variables can be then ranked based on their passive and active sums. Still, direct influence indices can trace only direct impacts (first order relationship) between two variables (v_1 --> v_2), as a result, some important system variables may be left unrevealed. Therefore, to calculate also the indirect impacts (second order relationship) between two variables v_1 and v_2 (v_1 --> v_4 --> v_2) more complex mathematical methods are required.

As a result, there have been developed methods capable of addressing indirect impacts through matrix multiplication (Godet, 1979). When the first order impact matrix is multiplied on itself, the resulting (second order) matrix which contains the numbers of indirect impacts with the chain length 2. Successive multiplication and raising the chain lengths to 3, 4, 5 .. n will result in a matrix with a stable order of the impact variables (indirect influences matrix).

The MICMAC computer tool (Impact Matrix Cross-Reference Multiplication Applied to a Classification) developed as a part of *prospective* toolbox may be used also separately. It allows

to consider both, indirect impacts and impact strength. The MICMAC processes data using the properties of Boolean matrix and shows results on a two-dimensional graph with the x-axis corresponding to dependance and the y-axis corresponding to influence (Figure 4.6).

Each variable on this plot is visualised in the shape of a point identified by its sequential number with the variable's indicator of influence for an ordinate, and its indicator of dependence for an abscissa. Thus, variables plotted on this diagram can be classified according to their position with regard to the influence and dependence axes. The diagram allows for the following classification (Godet and Durance, 2011).

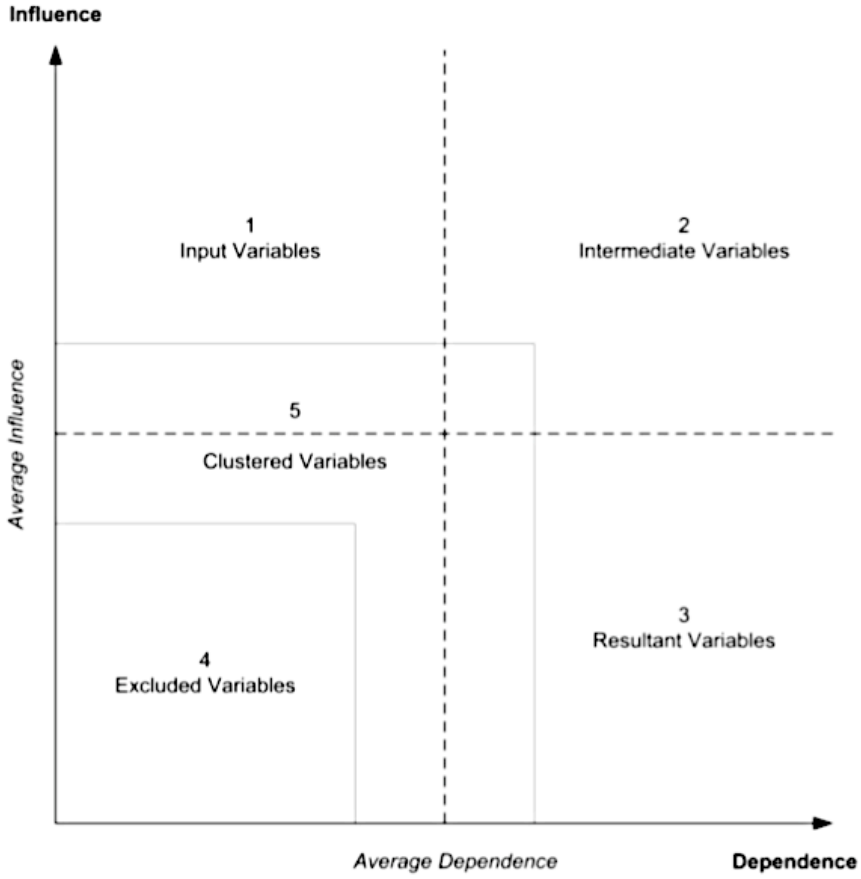


Figure 4.6. Types of variables on the matrix with axes of influence and dependence (Godet & Durance, 2011).

(1) Input variables - highly influential and independent. They can describe the system and define dynamics of the system.

(2) Intermediate variables - highly influential and highly dependent. These qualities make them highly unstable, and any action imposed on them will result in profound changes of system's dynamic.

(3) Resultant variables - not influential and highly dependent. They can act as indicators of influence imposed by other variables, mainly input and intermediate ones, and describe

the evolution of the system.

(4) Excluded variables - neither influential, nor dependent. They have little impact on the system and may be considered autonomous.

(5) Clustered variables - not sufficiently influential or dependent to be included in any of the among mentioned groups. Conclusions on their role and impact in the system are complicated to draw.

In the study of rural territory as a complex system Ambrosio *et al.* (2009) utilise modified approach to classifying variables on the MICMAC plot - the one discussed by Arcade *et al.* (1999) and Astigarraga (2006) and based on input-output logic and strategic logic and resulted in 8 clusters of variables (Figure 4.7).

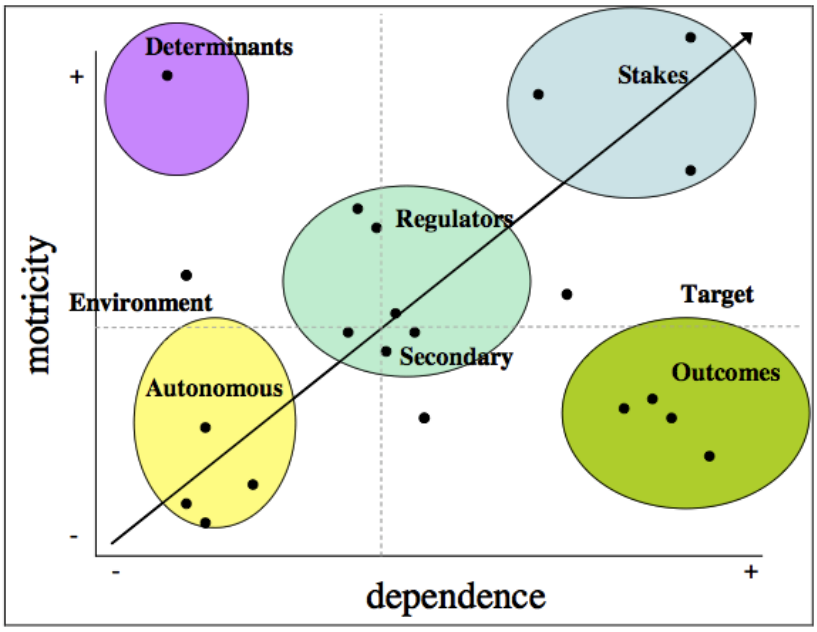


Figure 4.7. Types of system's variables (Ambrosio *et al.*, 2009).

Input-output logic derives *determinants* (highly influential and independent) and *environment* (medium influential and independent) as input elements, and *targets* (medium influential and dependent) and *outcomes* (less influential and highly dependent) as the outcome elements.

Strategic logic (strategic value of a variable is determined as the sum of motricity and dependence values -> $S_n=m_n+d_n$) identifies auto*nomous* variables (neither influential, nor dependent), *transmission* variables of two types - regulators (medium capacity to foster and experience change) and *secondary* (lower importance for system functioning), *stake* variables (important variables as due to high motricity and dependence they can provoke disruptive system change).

It should be emphasised that the variables located along the strategic diagonal are able to act as multipliers transferring influence received from input elements to *stakes*. The further they are from the diagonal's beginning, the more strategic nature they have.

To discuss the limitations of the structural analysis described above, one can argue for subjective nature of the data used - the inventory of variables and influence matrices reflect individual mental models of a system under study. Still, as it has been emphasised in the preceding section 4.1.2. and pointed out by Godet and Durance (2011), through participatory process the individual biases can be lessened and subjective data be transformed into participatory legitimate outcome.

4.1.6. Causal Loop Diagrams

While the Structural (Impact) Analysis provides description of system components, Causal Loop Diagram (CLD) may be utilised to identify and visualise the system structure. It is able to map circular cause-effect relationships among the components of complex adaptive systems - the task hardly feasible for verbal description as normal language describes interrelationships in linear causality (Kirkwood, 1998), and understating the feedback relationships is critical for understanding the system dynamics (Ford, 1999).

By visualising data we 'discover unimagined effects, and we challenge imagined ones' (Cleveland, 1993, p.1), and this gives us an opportunity to observe phenomenon from other angles, see it with 'new' eyes and, hence, interpret it from another perspective (Williams, 2009). CLD has justified its value also as an operational tool for critical thinking in policy (or action) construct and implementation (Cavana and Mares, 2004). Its visuality creates benefits also for researchers. It is a convenient tool to communicate the systems dynamics between proponents of quantitative and qualitative approaches (Niraj *et al.*, 2010), as well as an effective way to substitute a long narrative with one-page illustrative picture (Coyle, 2000).

To explain the Causal Loop Diagramming, it is worth to take an example of CLD (Figure 4.8).

CLD contains elements (texts) and arrows (causal links) linking these elements together. Each arrow includes a sign:

positive causal link (+) means that either (1) A adds to B or (2) a change in A produces a change in B in the same direction;

negative causal link (-) means that either (1) A subtracts from B or (2) a change in A produces a change in B in the opposite direction.

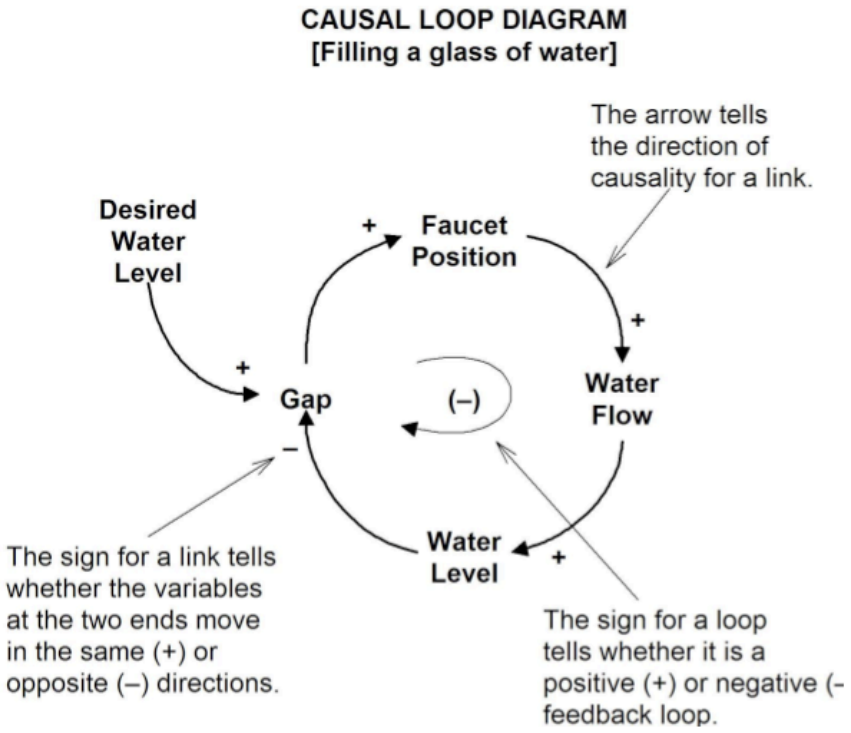


Figure 4.8. Annotated Causal Loop Diagram (Kirkwood, 1998).

Sign is also given to a complete loop. It is algebraic product of the signs of its links counted by the number of negative links. (Usually a small looping arrow is drawn in the centre of a loop with indication of -/+ or R/B.)

> Positive (Reinforcing) feedback loop contains an even number of negative causal links (zero also is even).
>
> Negative (Balancing) feedback loop contains an odd number of negative causal links.

In order to draw the CLD one can use causal matrices. The double-entry matrix template is the same as described in the preceding section (see Table 4.1), although this time it needs to reflect the mental model of causality. For this task the cell on the conjunction reflects on the nature of causality between a row variable and a column variable and the matrix is filled with polarity signs (rather than numbers) in the following mode. If there is no causal relationship, one lives the cell blank. If there is causal relationship, then one assigns <+> if it is positive or <-> if it is negative as explained above for causal links in general.

Individual matrices filled in by each participant (the same ones as for the structural (impact) analysis) are then to be aggregated together (by summing up the number of causal relationships) to result in the shared causal matrix, based on which the CLD of the shared model of system under study may be drawn (Sanò, 2009).

4.2. The Data Collection

The work on figuring out the structure of Rural Entrepreneurial Ecosystem has started from identification of its factors via creation and dissemination of a questionnaire among rural entrepreneurs and relevant experts.

Entrepreneurs:

Selection of entrepreneurs has been performed out of the inventory of novel rural enterprises (see Chapter 6 for details). The contact details (personal email, phone number) and personalities of the owners have been sought. As a result, 146 entrepreneurs from Spain, France, Denmark, UK, Slovakia, Finland, Belgium, Ireland, the Netherlands, Austria, Greece, Sweden, Bulgaria, Slovenia, Germany, Norway, Estonia, Italy, and Finland were listed to be contacted.

The following question has been emailed personally to 117 entrepreneurs (except of Italian origin):

> Which FACTORS are/have been MOSTLY INFLUENTIAL on the start-up success of your <enterprise>* / success of your <new social/ecological business activity>*?
>
> You can put one factor for each component below OR just write down those coming into your mind disregard the components below.
>
> Physical:
> Social:
> Ecological:
> Economic:
> Legal-administrative:

*In brackets the real name of an enterprise / particular activities of this enterprise have been put. The subsystems (physical, social, ecological, economic, and legal-administrative) were indicated in this question solely in order to encourage holistic vision and widen the look for factors.

Totally 15 answers (4 from UK, 3 - Ireland, 2 - Belgium, 1 - Slovenia, 1 - France, 1 - Greece, 1 - Estonia, and 2 from non-Italian-origin entrepreneurs residing in Italy) have been received. Here,

lower rate of answers from non-English speaking European countries may be explained by lower level of English-language proficiency (emails and question were all addressed in English).

At the same time the phone interviews were conducted in Italian with selected entrepreneurs of Italian origin to enhance answering rate. Out of 29 entrepreneurs contacted and asked the question above, 1 entrepreneur has refused to participate and 16 have given immediate answers during personal phone talk. Remaining 12 were not available (via phone-call), 7 of them (where email address was available) have been emailed with the same question, and 1 answer received.

Additionally, personal meetings with two Italian entrepreneurs during guided visits organised by the TESAF department to their farms have been considered as sources of factors identification process as the question above has arisen during those conversations. (Their enterprises were included in the inventory as well.). In total, Italian entrepreneurs resulted in 19 answers (2 interviews in person + 16 phone interviews + 1 via email).

Experts:

Experts have been sought through literature review and during compilation of the Inventory. Selection was run in two phases: 1) identify relevant organisations and projects (working in the general field of rural entrepreneurship or particular sectors/issues (organic agriculture, social farming, green energy, etc.); 2) identify appropriate contacts in these organisations - most knowledgeable on the issue and presumably available for devoting time to answer, whose personalised contact details may be found. As a results, 83 experts have been selected:

LAGs specialists;

rural business experts and advisors on rural entrepreneurship, bio-energy, educational farms, energy on the farm, women in rural businesses, agricultural food market;

researchers on social farming, organic agriculture, multifunctional agriculture, green-care farms;

specialists of national and European associations/initiatives on sustainable farming, care-farming, organic agricultural tourism, forestry, green tourism, agro forest energy, solar energy farms;

specialists of national and European associations/ unions of social entrepreneurs, rural youth, young farmers, agricultural producers, forest owners, farmers, women-farmers, bio-energy farmers;

co-ordinators and leaders of national and European projects (Supporting Business for

Biodiversity, Improving opportunities for entrepreneurship in rural areas, Developing Rural Women's Entrepreneurship in nature and tourism business, Improving competitiveness in rural areas, Innovation and Technology for young farmers, Social farming, Bio-Energy farming) and European Rural Development programs.

The question below has been emailed to 82 experts (in Italian to 21 of Italian origin, and in English to all the others) and 1 expert has been phoned.

> Which FACTORS, do you think, are MOSTLY INFLUENTIAL on the start-up success of a <rural enterprise>*?

*In brackets a particular, relevant to this expert's field of competence type of rural enterprise or rural business activity (social farm, green energy production, biodiversity conservation farm, forest adventure parks, etc.) has been put. Subsystems were proposed as well.

As a result, 13 answers have been received from 83 experts: 4 from Italy, and 1 from the UK, Ireland, Finland, the Netherlands, Belgium, Germany, Portugal, Norway, and Denmark each.

Answers received via email and via phone interviews have complemented each other. In the former the rate of respond was lower, although, the answers were more detailed (presumably because of more time available for reflecting) while in latter, the rate of response was higher, but the answers in many cases were shorter.

Projects:

Case studies and final reports of the European projects most relevant to the field of investigation (SOFAR: Social Farming, IN-SIGHT: Innovation in agriculture and in rural areas, PROBIOPRISE: The Use of Biodiversity by Small and Medium Enterprises, RAPIDO: Rural Areas, People and Innovative Development) have been examined to figure out any factors of rural entrepreneurial ecosystem, and then were added to the compilation.

The resulting list of components can be referred to in Section 4.3.

Describing the relationships: Double-entry matrices

The second step, to identify and describe the relationships among the components of the Ecosystem, has started from creation of a double-entry matrix. All 23 components have been listed in the first column and with the same order in the first row.

To fill in this matrix with 23 components 506 questions (n x n-1) are need to be answered. Taking into consideration the time constrains of entrepreneurs and experts, it has been assumed with

high probability that the majority may not agree to answer 506 questions. Consequently, 2 alternative matrices have been designed (a) with alphabetically ascending list of factors and (b) with alphabetically descending list of factors. First half of each matrix (11 and 12 components respectively) was marked with yellow, and proposition has been made for participants to complete only this part.

Thereby, the compilation of a whole matrix may be divided between two participants. This approach (if followed by participants)) will decrease the final amount of filled-in matrices, although, may reasonably increase the rate of participation. Taking into consideration quite long duration of the exercise and normal loss of concentration by the ending rows of the matrix, distribution of two matrices with opposite order of rows will also compensate and balance average precision with which every row in a matrix is filled in.

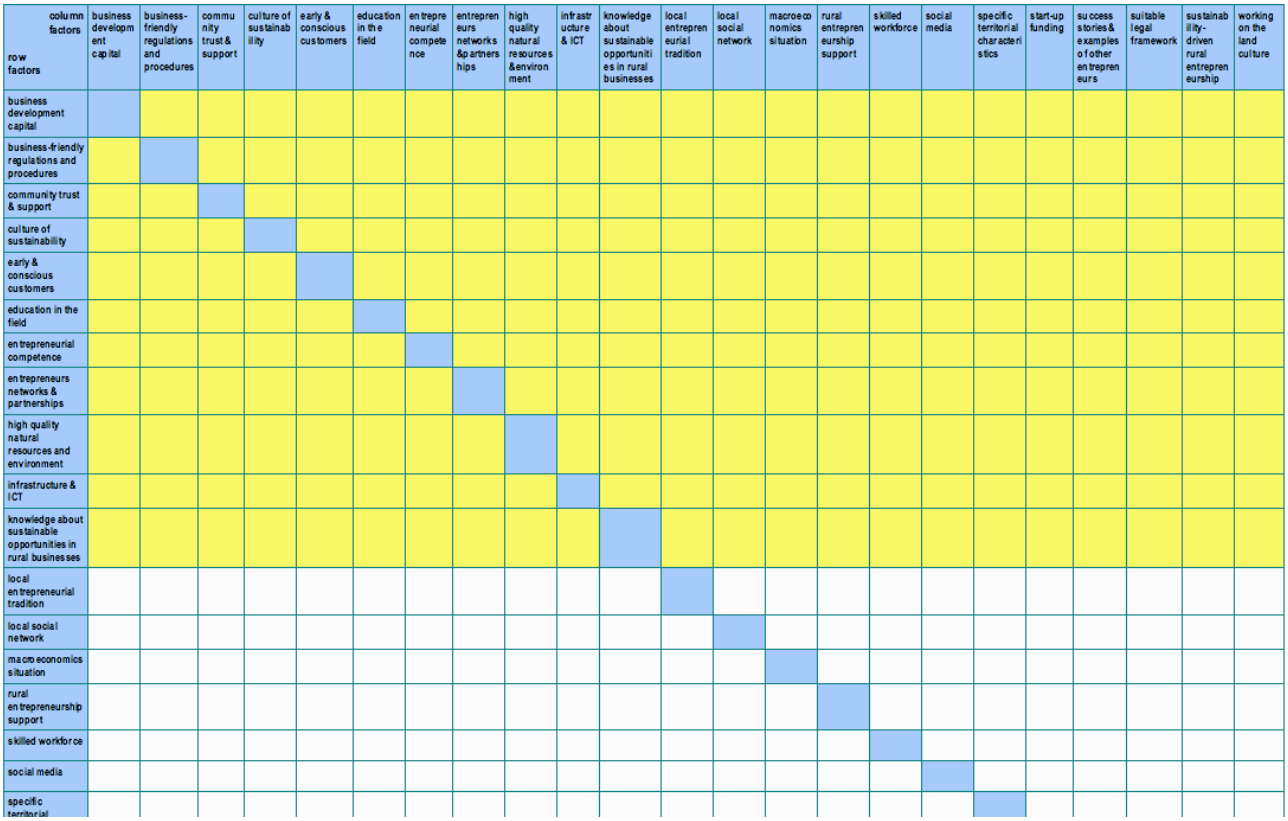


Figure 4.9. A Structural Analysis Matrix of REE components.

Each matrix has been distributed with the instruction on how to fill it in.

The following question has been asked for all cells:

Does a change in "row-factor" directly provoke a change in "column-factor"?

If the answer was NO, the respondent was asked to leave the cell blank.

If the answer was YES, the respondent was asked to evaluate the potential influence by assigning

the numbers (1-2-3) and polarity (+/-) of the influence in the following mode:

+ 1 – weak positive	+ 2 – average positive	+ 3 – strong positive
- 1 – weak negative	- 2 – average negative	- 3 – strong negative

Some clarifications on the polarity sign were provided as well:

positive = increase in "row-factor" causes an increase in "column-factor" (equally, decrease causes a decrease)

negative = increase in "row-factor" causes a decrease in "column-factor" (equally, decrease causes an increase)

And in case of hesitation over the answer (ex., there are certain circumstances for existence of such influence, or the respondent does not know the answer) it was recommended to leave the cell blank. The reasoning underlying this recommendation is based on the assumption that, if a person hesitates over particular interrelationship between two components, it follows quite high probability that such inter-link does not exist in this person's mental model of the system.

In case of insufficient time, the respondents were advised to fill in only the half of the matrix (in yellow) or/and assign only numbers without polarity. (The latter proposition would entail less data for mapping the REE, still could increase rate of return for complete matrices.) The matrix and compilation guidelines were accompanied by factors' descriptions (given after the matrix) for reference should any doubts on factor's meaning arise.

The matrix along with accompanying letter have been emailed to the same entrepreneurs and experts to whom the reference has been made during the first phase. Italian-speaking entrepreneurs and experts have received the Italian versions of the matrices. The sending process has been organised through alternation of (a) and (b) matrices to ensure that the same amount of each has been distributed.

The list of entrepreneurs and experts, first phase participants, has been enlarged to include some additional entrepreneurs (whose enterprises were added into the inventory after that phase) and experts. The decision was also based on the assumption that the rate of answers would be much lower considering much more complicated assignment. Therefore, the final list of participants to whom the matrices were successfully emailed constituted 154 entrepreneurs (including 34 of Italian origin) and 83 experts (including 20 of Italian origin).

As a result, 6 entrepreneurs and 5 experts responded as not being available due to different reasons, and 14 entrepreneurs and 10 experts returned the filled in matrices. Out of 24 received

matrices 14 were completed fully, 8 in half, and 2 in less than a half. They have been then mathematically aggregated to result in one shared impact matrix.

When performing aggregation, in those cases where two or more performances (meaning 0-1-2-3) had equal frequency, there have been tried two alternative approaches. First one, in which the minor one had been taken into account, resulted in the matrix with 11% of filled-in (56 out of 506 cells), and second one, in which the major performance had been taken into account, resulted in 18% of filled-in (92 out of 506 cells). Following the advice of Godet and Durance (2011) that ideal percentage of matrix to be filled-in is around 20%, further analysis was based on the second shared impact matrix.

Causal Loop Diagram

Due to low return rate and respondents' complains about the complexity of the task, the second appeal to fill in the matrices included an alternative matrix without assigning polarity for the relationships, and for the third appeal nomination of the polarity have been ceased. Therefore, out of all the 24 returned matrices only 12 reflect on the polarity of influence. They were then mathematically aggregated to one shared causality matrix (in cases where 'minus' or 'plus' had expressed equal frequency with zero, the latter had been taken into account) and, based on them, the causal loop diagramming was performed in Vensim PLE for Macintosh Version 5.11A as described and discussed in more detail in Section 4.1.6.

MICMAC analysis

Next step was to apply the MICMAC method to the shared influence matrix to calculate influence and dependence nature of each relationship identified. In order to do that the aggregated matrix with influence rates (0/1/2/3) has been incorporated into the MICMAC software (available free-of-charge at http://www.laprospective.fr) and analysed. Description and results of this analysis are provided in Section 4.5.

4.3. System components

Below there is a table of the Sustainability-Driving Rural Entrepreneurial System's (SRES) components identified during the first phase. The column <variables> includes summary of answers from primary sources (47 entrepreneurs and experts, and relevant projects). Here the wording is mostly kept as in the original answers. Then, to shorten the list of components for tracing relationships variables were further aggregated by the author into macro variables resulting in 23 components of SRES.

	short name	macro variables	variables
1	hqnr	high quality natural resources and environment	- suitable land, farm and facilities - wonderful natural conditions - good nature conservation - biodiversity - physical resources related with the line of businesses
2	stc	specific territorial characteristics	- unique nature - cultural heritage - advantageous location - attractions in the neighbourhood - particular natural resources - unique territorial characteristics - unique and particular context of enterprise operation
3	sw	skilled workforce	- experienced workforce - reserve of professionals - proactive and hardworking employees - trained staff
4	ec	entrepreneurial competence	- entrepreneurial experience - knowledge on how to start and operate an enterprise - training/education - legal-administrative, management and financing skills
5	eitf	education in the field	- specialised education in the field (agriculture, tourism, etc.) - scientific and technical knowledge - academic research experience - re-qualification
6	sse	success stories& examples of other entrepreneurs	- examples - experience in different environments
7	enp	entrepreneurs networks & partnerships	- eco/green/ethical/social business networks - partnerships - eco/social business associations - business clusters - suppliers-producers network
8	cts	community trust & support	- public support - local trust - social acceptance - recognition

	short name	macro variables	variables
9	lsn	local social network	- social networks - family influence /support - network of friends - local multi-actors networks - social capital
10	wlc	working on the land culture	- rural culture - working on the land movement
11	let	local entrepreneurial tradition	- local entrepreneurial culture - family business tradition - territory's business tradition
12	kaso	knowledge about sustainable opportunities in rural businesses	- awareness of multi-functionality in rural businesses - capacity to innovate - ability to see diversification opportunities
13	cos	culture of sustainability	- green/eco/social/ethical values in society - eco/social movements - education and knowledge on sustainable development issues - will to contribute to a better world - ecological concerns - awareness of social and ecological issues
14	ecc	early & conscious customers	- early customers - "green" consumers willing to buy sustainable/high quality products - producer-consumer ethical networks
15	ii	infrastructure & ICT	- accommodation suppliers - transportation - facilities - conditions on-site - internet access - communication technologies
16	res	rural entrepreneurship support	- community support for business development - supranational and state business development programs - rural development programs - support for multi-functional business opportunities - informational support
17	sm	social media	- communication with people, customers - use of social media
18	bdc	business development capital	- budget & time to invest in business - budget for developing the business - financial help programs
19	sf	start-up funding	- supranational financial support - governmental financial support (grants/ subsidies / bank guaranties) - crowd-funding - bank loans
20	ms	macroeconomics situation	- economic crisis - unemployment - out-migration - market fluctuations
21	bfrp	business-friendly regulations and procedures	- absence of legal barriers - easy procedures for approval - uniform state strategy - supportive and helpful authorities - flexible processes and rules - no over-regulation - timely and fast state-business relationships - easy procedure of starting a business - law enforcement
22	slf	suitable legal framework	- regulations for newly appearing businesses and services - state actions adaptive to emerging business demands - quality standards

	short name	macro variables	variables
23	sre	sustainability-driven rural entrepreneurship	- organic/ bio-dynamic farming - protection of environment while producing goods&services - social enterprise - being eco-sustainable enterprise - sustainable products & services

Table 4.2. SRES components.

There are two factors that have been mentioned by the respondents, but were not included in the inventory of SRES components. First one, ‹novelty of the idea›, although proved to be able to sufficiently influence the success of business, still was considered as the internal characteristic of the value provided by a business model. Secondly, personal characteristics and motivations, non undermining their importance, were not included considering them to be individual properties of an entrepreneurs rather than separate components of entrepreneurial ecosystem.

Component ‹sustainability-driven rural entrepreneurship› being itself the object of influence of these ecosystem, taking into account systems approach followed, was considered valuable to be included into the analysis to investigate also its influence (if any) on other factors and its role in the ecosystem of factors driving its development.

As one can find out from the table above, the inventory mostly consists of components with positive character of influence on rural entrepreneurship phenomenon and one another. For example, ‹*business-friendly* regulations and procedures› rather than simply ‹regulations and procedures›, such component as ‹suitable legal framework› is also from the first sight perceived as a factor of encouraging, rather of discouraging nature.

The reason for including only potentially positive components in the inventory has its grounds into two considerations. First, very objective, as to identify the ecosystem's components able to promote, encourage, nurture sustainability-driven businesses, has been taken into account. Second, the limitations of the approach utilisation under the scarce resources, meaning that inclusion of components with both polarity would eliminate the chances of having returned and completed matrices, hereby, undermining the very possibility of having research results on which to examine the shared mental model of the phenomenon.

Still, utilisation of mostly positive components does not necessarily entail that, if considered through systems thinking, their interrelationships will be discovered as all positive. The positive nature of a component itself does not necessarily mean its positive, reinforcing influence over another component, it can be diminishing as well, even between two positive, from general sight, components. Therefore, the causality matrices will reveal and causal loop diagram will visualise the shared mental model of the real nature of their relations as perceived by the entrepreneurs and experts participated.

4.4. Mapping of System

The following matrix is the result of mathematical aggregation of 11 returned matrices with displayed causality (as explained in Section 4.1.6. above). The percentage of the matrix filled-in with marked relationships is 16% (82 out of 504 cells).

	bdc	bfrp	cts	cos	ecc	eitf	ec	enp	hqne	ii	kaso	let	lsn	ms	res	sw	sm	stc	sf	sse	slf	sre	wlc
bdc								+											+				
bfrp																							
cts				+				+				+	+										
cos					+	+			+		+												
ecc																							
eitf							+				+					+						+	
ec	+			+				+			+											+	
enp							+					+	+										
hqnr																						+	
ii																	+						
kaso							+								+					+			
let	+		+		+		+	+			+		+					+					+
lsn			+		+			+			+				+	+				+			+
ms																							
res							+	+			+					+			+	+			
sw			+	+	+	+						+										+	
sm			+	+	+						+												
stc									+														
sf	+						+		+						+	+				+			
sse				+			+	+					+				+						+
slf																+			+				
sre				+	+		+				+					+							
wlc			+													+							

Table 4.3. Shared causality matrix of SRES components.

The participatory matrix reveals presence of only positive (reinforcing) relationships. However, separate matrices have indicated as well some negative links. This poses a question of whether the increased amount of participating causal matrices would change the resulting shared matrix and introduce negative links in the system.

The causal loop diagram build based on the shared matrix reflects the complexity of the SRES and its intensive interrelationships. Still, two components (*macroeconomics situation* and *business-friendly regulations and procedures*) have been left outside the diagram indicating that there are not neither direct, nor indirect relationships between them and other system's components. At the

same time, the shared impact matrix (with increased number of participating matrices) indicates incorporation of these two elements into the relationships network, therefore, this fact again poses a question of whether the data available are enough to validate the results of the causality diagramming.

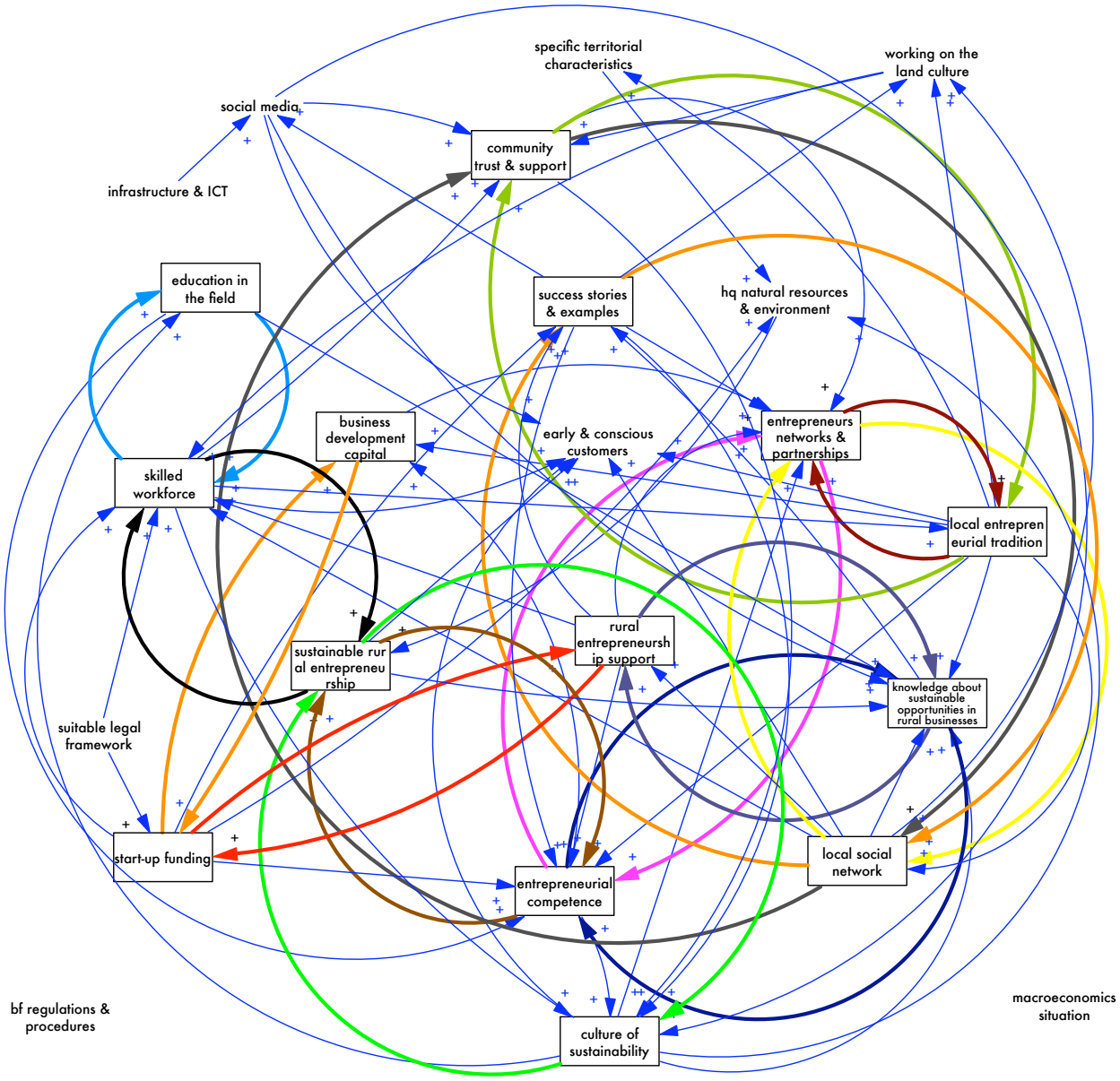


Figure 4.10. Causal loop diagram of SRES components (in squares) with highlighted reinforcing loops of the length one.

18 from 21 components in the diagram are connected to one another via reinforcing causality loos meaning, that any improvement or worsening of one factor will entail improvement or worsening on all other factors respectively. Thus, small improvement in one of these 18 factors will make improvement in others and will return with reinforcing improvement over initial component. In other words, the diagram reflects the system with exponential growth in most components.

4.5. Classification of System components

The following matrix of influences traced between the components is the aggregation of matrices received from the participants. As it was explained in the methodology section numbers refer to the intensity of influences of a row-factor onto a column-factor with <one> being weak, <two> - average, and <three> - strong, while <zero> indicates no influence.

	bdc	bfrp	cts	cos	ecc	eitf	ec	enp	hqne	ii	kaso	let	lsn	ms	res	sw	sm	stc	sf	sse	slf	sre	wlc
bdc								2											3				
bfrp																							
cts								1				2	3										
cos			1		2	2			3		3									1		3	
ecc																							
eitf				3												3						2	
ec				2				2			2											3	
enp							3					2	1										
hqnr				2																		2	
ii																	2						
kaso				2			3															3	
let								1			2		1									2	2
lsn			3		2			2			2					2						3	
ms				2																		2	
res	1						3	2			3								3				
sw				3			3					2										2	
sm			2	2	3						2		2										
stc									3													2	3
sf	3														2								
sse				3			3				2						1						1
slf		3													3	2							
sre			3	3	2	2	3	1	3		3	3	2			3		3		3			
wlc			1	2	2			1	3		1		2			2		3				3	

Table 4.4. Shared Impact Matrix of SRES components.

Based on this matrix the MICMAC has built the Matrix of Direct Influence (Figure 4.5.) on which the simulation has been performed.

This simulation aimed at investigating the nature of components in the dynamics of SRES that were indicated to influence the development of sustainability-driven rural entrepreneurship.

	1 : bdc	2 : bfrp	3 : cts	4 : cos	5 : ecc	6 : eitf	7 : ec	8 : enp	9 : hqnr	10 : ii	11 : kaso	12 : let	13 : lsn	14 : ms	15 : res	16 : sw	17 : sm	18 : stc	19 : sf	20 : sse	21 : slf	22 : sre	23 : w lc
1 : bdc	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
2 : bfrp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3 : cts	0	0	0	0	0	0	0	1	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0
4 : cos	0	0	1	0	2	2	0	0	3	0	3	0	0	0	0	0	0	0	0	1	0	3	0
5 : ecc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6 : eitf	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	2	0
7 : ec	0	0	0	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3	0
8 : enp	0	0	0	0	0	0	3	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
9 : hqnr	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
10 : ii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
11 : kaso	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
12 : let	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	0	0	0	0	0	0	2	2
13 : lsn	0	0	3	0	2	0	0	2	0	0	2	0	0	0	0	2	0	0	0	0	0	3	0
14 : ms	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
15 : res	1	0	0	0	0	0	3	2	0	0	3	0	0	0	0	0	0	0	3	0	0	0	0
16 : sw	0	0	0	3	0	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
17 : sm	0	0	2	2	3	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0
18 : stc	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	2	3
19 : sf	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
20 : sse	0	0	0	3	0	0	3	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	1
21 : slf	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0
22 : sre	0	0	3	3	2	2	3	1	3	0	3	3	2	0	0	3	0	3	0	3	0	0	0
23 : w lc	0	0	1	2	2	0	0	1	3	0	1	0	2	0	0	2	0	3	0	0	0	3	0

Table 4.5. The Matrix of Direct Influence (MDI).

The fillrate for this matrix is 18% (91 out of 506 cells, the diagonal cells are not valid) which falls within the usual average of 15-20% meaning that indirect influences should not have been mistaken with direct influences.

The most simple way to consider direct influence of a variable is by calculating its row-sum, which shows variable's influence exerting on other variables. Equally, to consider direct dependance of a variable one needs to calculate its column-sum which shows all influences exerting by all other variables on this variables. Then all variables can be classified according to amounts of direct influence and dependance.

The Table 4.6. demonstrates the gradation of SRES components. The left part identifies components starting with the most influential (sustainability-driven rural entrepreneurship) and consecutive clusters to the least influential. Meanwhile, the part on the right shows the components starting from most dependent (again, sustainability-driven rural entrepreneurship) and following clusters of components up to the least dependent ones.

Examination of this Table may reveal the roles each component plays in the systems. For instance, <culture of sustainability> is placed very high in both parts, providing evidence that this component is very influential as well as very dependent, and, as a result, according to strategic logic explained in the methodology, is a stake (or key) variable as any influence imposed on this component will cause change in the whole system's dynamics. The same logic can be followed for all other components.

N°	VARIABLE	ROW SUM	N°	VARIABLE	COLUMN SUM
1	sustainability-driven rural entrepreneurship	34	1	sustainability-driven rural entrepreneurship	27
2	working on the land culture	20	2	culture of sustainability	24
3	culture of sustainability	15	3	knowledge about sustainable opportunities in rural businesses	20
4	local social network	14	4	entrepreneurial competence	18
5	rural entrepreneurship support	12	5	entrepreneurs networks & partnerships	12
6	social media	11	6	high quality natural resources & environment	12
7	skilled workforce	10	7	skilled workforce	12
8	success stories & examples of other entrepreneurs	10	8	early & conscious customers	11
9	entrepreneurial competence	9	9	local social network	11
10	education in the field	8	10	community trust & support	10
11	knowledge about sustainable opportunities in rural businesses	8	11	local entrepreneurial tradition	9
12	local entrepreneurial tradition	8	12	specific territorial characteristics	6
13	specific territorial characteristics	8	13	start-up funding	6
14	suitable legal framework	8	14	working on the land culture	6
15	community trust & support	6	15	rural entrepreneurship support	5
16	entrepreneurs networks & partnerships	6	16	business development capital	4
17	business development capital	5	17	education in the field	4
18	start-up funding	5	18	success stories & examples of other entrepreneurs	4
19	high quality natural resources & environment	4	19	business-friendly regulations & procedures	3
20	macroeconomics situation	4	20	social media	3
21	infrastructure & ICT	2	21	infrastructure & ICT	0
22	business-friendly regulations & procedures	0	22	macroeconomics situation	0
23	early & conscious customers	0	23	suitable legal framework	0
	Totals	207			207

Table 4.6. Gradation of SRES components based on MDI row and column sums.

Still, to perform more thorough analysis of components' influence-dependence, graphs generated by MICMAC program may be much more effective tool. Each variable is visualised through its positioning as a point on the Cartesian plan with its indicator of influence for an ordinate, and indicator of dependence for an abscissa. Direct influence and dependence map for the MDI above is presented below and accompanied with descriptions of components' role in the SRES.

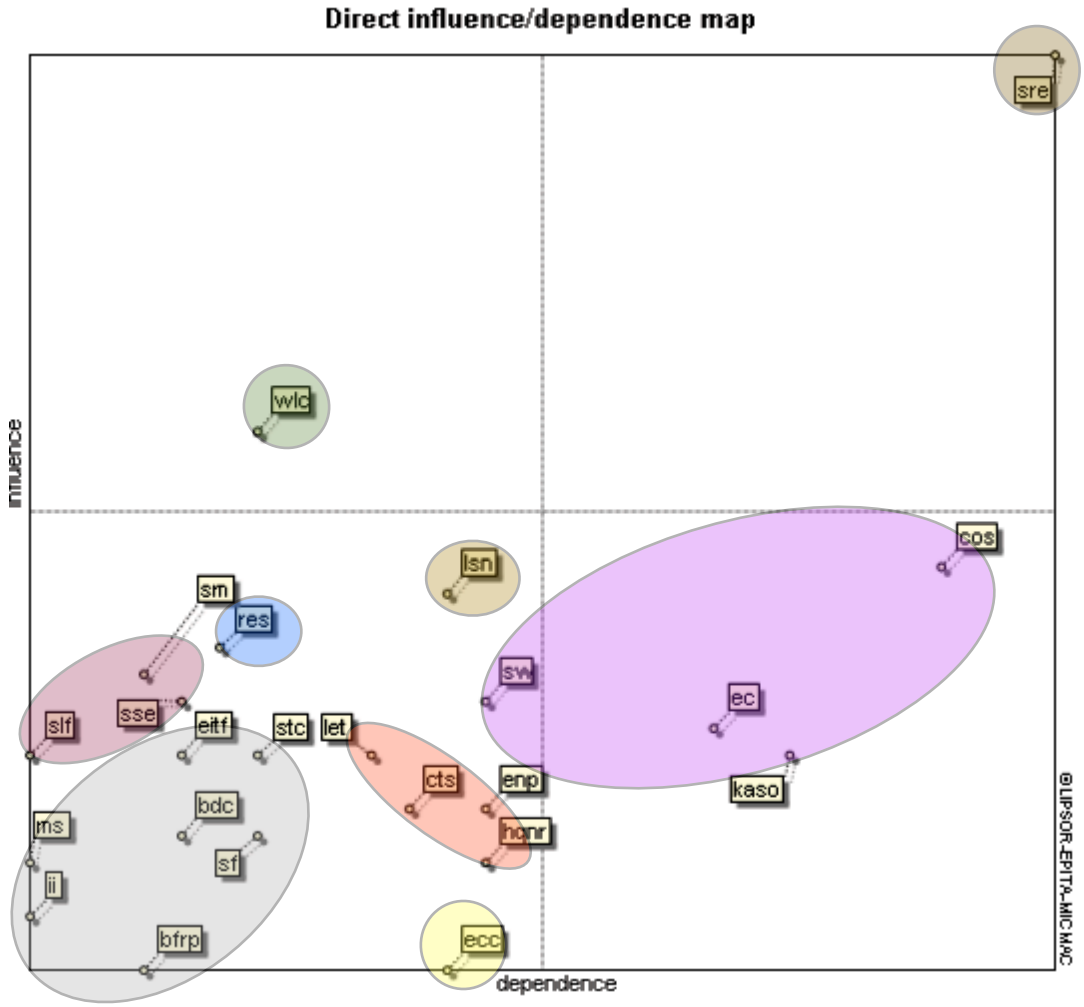


Figure 4.11. Direct Influence-Dependence map with clusters of components.

To initiate clustering some manipulations with MICMAC data have been performed (see Table 4.7. for details). First, strategic values of each component were calculated as the sum of influence and dependence proportions, following with percentage of strategic values' average. Those components with strategic values above or equal to 85% and below or equal to 115% of strategic values average are *transmission* variables. Within them there can be distinguished *regulator* variables as those with Influence Proportion above average (in Table 4.7. and in Figure 4.11. marked with blue colour), and *secondary* variables as those with Influence proportion below average (in Table 4.7. and in Figure 4.11. marked with red colour).

RANK	LABEL	DIRECT INFLUENCE PROPORTIONS	DIRECT DEPENDENCE PROPORTIONS	STRATEGIC VALUE	% OF AVERAGE
1	SRE	1642	1304	2946	339
2	WLC	966	289	1255	144
3	COS	724	1159	1883	217
4	LSN	676	531	1207	139
5	RES	579	241	820	94
6	SM	531	144	675	78
7	SW	483	579	1062	122

RANK	LABEL	DIRECT INFLUENCE PROPORTIONS	DIRECT DEPENDENCE PROPORTIONS	STRATEGIC VALUE	% OF AVERAGE
8	SSE	483	193	676	78
9	EC	434	869	1303	150
10	EITF	386	193	579	67
11	KASO	386	966	1352	156
12	LET	386	434	820	94
13	STC	386	289	675	78
14	SLF	386	0	386	44
15	CTS	289	483	772	89
16	ENP	289	579	868	100
17	BDC	241	193	434	50
18	SF	241	289	530	61
19	HQNR	193	579	772	89
20	MS	193	0	193	22
21	II	96	0	96	11
22	BFRP	0	144	144	17
23	ECC	0	531	531	61
	AVERAGE:	434	434	869	

Table 4.7. Classification of components for Direct influence-dependence map.

Upon identification of regulator and secondary components, remaining variables were clustered into groups according to their position based on the input-output logic and strategic logic as explained into the methodology part (see Section 4.1.5. for details). Each cluster has been distinguished with the colour and presented in the Table below and in Figure 4.11. above.

input-output logic		strategic logic	
determinant	outcome	stake	autonomous
- working on the land culture	- early & conscious customers	- sustainability-driven rural entrepreneurship - local social network	- macroeconomics situation - business development capital - start-up funding - business-friendly regulations & procedures - infrastructure & ICT - education in the field - specific territorial characteristics
environment	target	regulator	secondary
- suitable legal framework - success stories & examples of other entrepreneurs - social media	- skilled workforce - culture of sustainability - entrepreneurial competence - knowledge about sustainable opportunities in rural businesses	- rural entrepreneurship support	- local entrepreneurial tradition - community trust & support - entrepreneurs networks & partnerships - high quality natural resources & environment

Table 4.8. Clustering of components for Direct influence-dependence map.

It is worth mentioning, that for interpreting the quality of interrelations' dynamics, the findings of preceding part on causal loop diagramming (section 4.4.) are to be taken as assumptions for determining polarity of influence along with context-specific considerations of the researcher so to compensate any mismatches.

Starting from input-output logic, the following results have been identified:

- *Working on the land culture* (composed of rural culture and working on the land movement) is what conditions SRES dynamics. Being highly influential, this **determinant** variable still experiences some influence from other components as its position on the graph indicates below-average one, but still dependence.

  Its comparable independence may be grounded in its internal property as culture is a slow changing variable. Although, when in place, it is capable of sufficiently encouraging evolution of SRES, so it should be considered as a priority for any strategic actions over the system, as it experiences little influence from within SRES.

- Cluster of **environment** variables includes *suitable legal framework*, *success stories & examples of other entrepreneurs*, and *social media.* They are medium influential and little influenced. Within the group, suitable legal framework (meaning among the others regulations for newly appearing businesses and services, state actions adaptive to emerging business demands, and quality standards) is independent, thus, not having any influences from within the system.

  Out of remaining two components, *success stories & examples of other entrepreneurs* is the one to be slightly less influential and more dependent, while *social media* (meaning communication with customers and active use of social media for the aim of business) is more independent, and more influential.

- One component, *early and conscious customers,* acts as an **outcome** (exit variable) from the system, meaning that it is especially sensitive to the dynamics of determinants and stakes. It considers those consumers willing to buy sustainable and high quality products as well as producer-consumer ethical networks.

  This position also demonstrates that any direct action over development of 'green" customers or such networks can be hardly effective, as being 'fruits' of SRES dynamics they are highly dependent on existence and evolution of active system components (mainly stakes and determinants) which, in this case, act as prerequisites for development of early and conscious customers.

- **Target** variables constitute quite a group with four components, *skilled workforce, culture of sustainability, entrepreneurial competence,* and *knowledge about sustainable opportunities in rural businesses*. As they are more dependent than influential, they orient the system's evolution and their function in the system is close to outputs, only, they still execute some influence. This property allows them for being responsive to some wilful actions to orchestrate their evolution.

  Inside the cluster, components also show some variability. *Culture of sustainability* (meaning sustainability values in society, awareness on sustainability, general ecological and social concerns and particular movements) performs above average influence while almost triple average dependence representing one extreme of the cluster. Meanwhile, *skilled workforce* has a level of influence and dependence just slightly above average which bring its function closer to secondary variable. *Entrepreneurial competence* and *knowledge about sustainable opportunities in rural businesses* occupy medium position.

Continuing with strategic logic, the following results were obtained:

- **Stakes** of the SRES are two components, *sustainability-driven rural entrepreneurship* and *local social network.* They are crucial as highly influential and highly dependent key variables capable of disrupting the system. They are both placed along the strategic diagonal with relatively equal influence and dependence which mark their outstanding strategic nature.

  Placed at the highest right corner *sustainability-driven rural entrepreneurship* reveals that in the system for which it is expected to be rather an outcome, it appears to be a stake, and, what is more, the most strategic stake which imposes the biggest influence and experiences the largest dependence (though, the latter is obvious). This determines its unstable nature, and any action directed on it will provoke change in many other components as this component is connected via influence loops with the majority of system's components (see Figure 4.12).

  What is more, through these same influence loops, this chain of changes will result in a boomerang effect on *sustainability-driven rural entrepreneurship* itself. The diagram below distinguishes with clouds only those components that constitute strong influence loops with *sustainability-driven rural entrepreneurship* component (in square). And, already this demonstrates that the change in key stake variable will entail strong change in another stake variable (local social network), in determinant variable (*working on the land culture),* and major regulator and secondary variables, which, on their turn, will reinforce this change back to the *sustainability-driven rural entrepreneurship.*

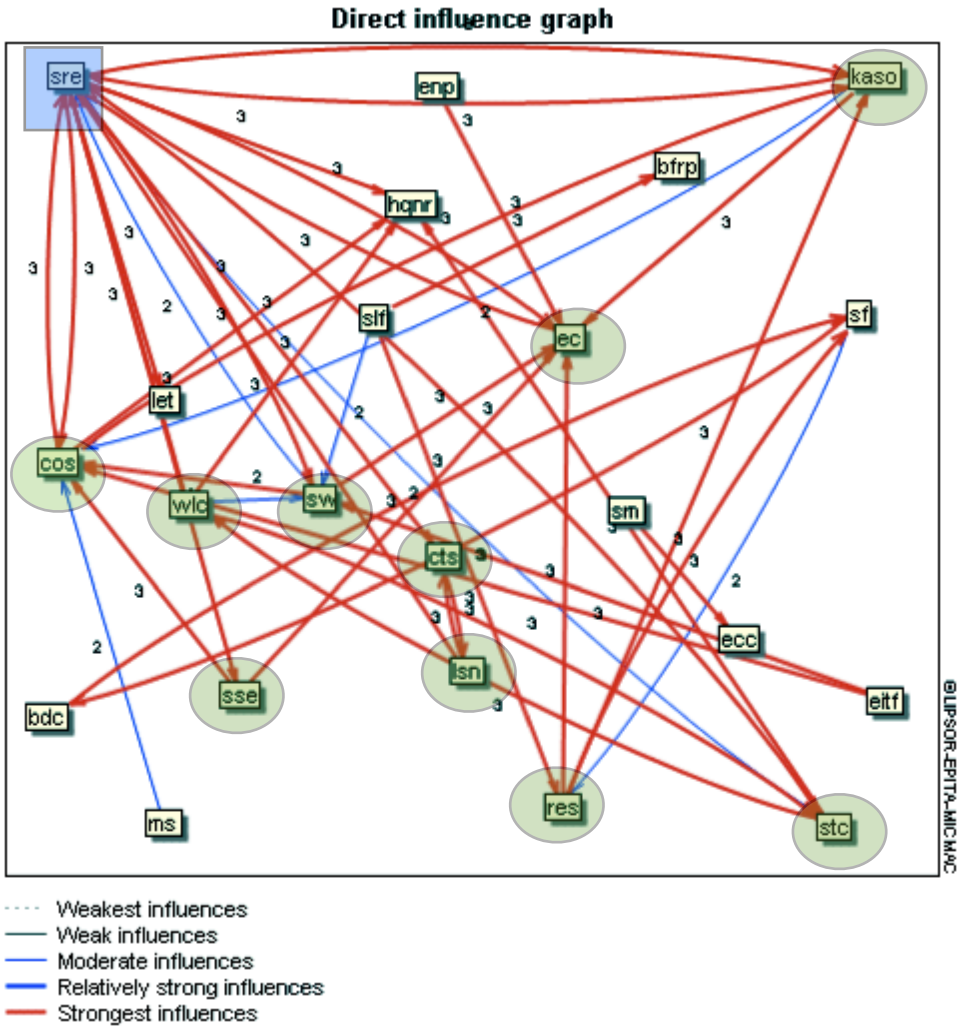


Figure 4.12. Direct Influence Diagram of SRES components (shows 50% of all influences).

If we follow the assumption that all the components in the SRES system have positive relationships and reinforcing loops, one can conclude than even small improvement in *sustainability-driven rural entrepreneurship* (in terms of quantity or quality) will entail improvements in majority of SRES components and reinforce more improvement in *sustainability-driven rural entrepreneurship.*

The second stake variable *local social network* positions itself within the same cluster, although, sufficiently closer to the graph's centre which reflects its less influence and dependence compared to the previously described macro variable. Still, it is also strategically important.

Local social network involves such elements as family influence and support, network of friends, local multi-actors networks, as well as social capital of the territory in general. And, all the properties described above for the *sustainability-driven rural entrepreneurship* variable are valid also for *local social network*, only in lesser part.

- **Regulator** variable, *rural entrepreneurship support*, is from the wider group of so called transmission variables, thus, following the pattern of stakes it is able to act as a multiplier and provider of change from determinant and environment variables to targets and outcomes.

  Consequently, wilful actions of such nature as community support for business development, supranational and state business development programs, rural development programs, support for multi-functional business opportunities, informational support will positively influence the dynamics of SRES.

- Group of **secondary** variables situation along the centre of graph section, but below the strategic diagonal provides them with less influence and, hence, less multiplier effect. They are *entrepreneurs networks and partnerships*, *high quality natural resources & environment*, *local entrepreneurial tradition*, *community trust & support*.

  Ecological variable *high quality natural resources & environment* (including such elements as suitable land, wonderful natural conditions, good nature conservation and biodiversity) possesses such little influence that an alternative of interpreting it as an outcome variable may be considered reasonable. This interpretation may go in line with the very underlying sustainability concept of the system under study when entrepreneurship results in better ecological and nature conditions.

  Out of remaining components of social realm, *local entrepreneurial tradition* (local entrepreneurial culture, family and territory's business tradition) is more influential and plays higher role in the multiplier hierarchy among secondary components. Two others, *entrepreneurs networks and partnerships* (general and eco&social business networks, partnerships and associations, as well as suppliers-producers networks) and *community trust and support* (including social acceptance and recognition) both have below-average influence, although, the former is slightly more dependent.

- **Autonomous** cluster demonstrates the highest number of components, *macroeconomics situation, business development capital, start-up funding, business-friendly regulations & procedures, infrastructure & ICT, education in the field,* and *specific territorial characteristics*. They are little influential and little dependent and, hence, are not capable of neither encourage, nor discourage the SRES evolution.

  Low strategic value of such components as *business development capital, start-up funding,* and *business-friendly regulations & procedures* seems counterintuitive as many conventional

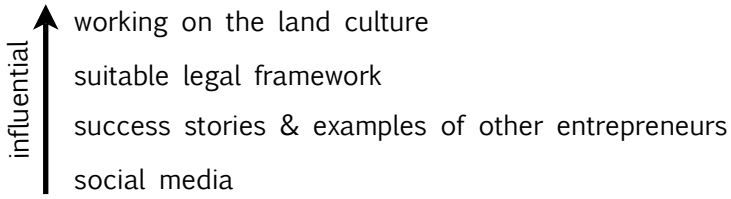
actions and policies, aimed at development of rural entrepreneurship, base their strategies on these instruments as those able to provide sufficient positive impact.

All in all, Direct Influence-Dependence Map with group of components' clusters interpreted above demonstrates their short-term role in SRES dynamics, and, therefore, can be utilised for short-term policy actions (3-5 years).

The clustering reveals that in strategic terms (capable of initiate reinforcing change in the system) the most important are the following components (in descending order):

The majority of strategic components is from the social subsystem, with two exclusions of sustainability-driven rural entrepreneurship (economic) and high quality natural resources & environment (ecological).

The preconditions for the system dynamics (able to provoke sufficient change in the system if are controllable by any wilful actions) are the following components (in descending order):



The majority is again from social realm, and one from legal-administrative.

Indirect Influences

Matrix of Direct Influence (MDI) allows taking into account only direct relationships (simple arrows). However, a component can exert influence on some component, which in turn strongly influences others. In this case, even if its direct influence is weak, it can be increased manifold through other strong variables. To consider relationships allowing indirect reproduction of the component's influence through a feedback effect (paths and loops), the Matrix of Indirect Influence has been elaborated in MICMAC through matrix iterations as explained in the methodology section.

Resulting Matrix of Indirect Influence is presented in the Table below.

	1 : bdc	2 : bfrp	3 : cts	4 : cos	5 : ecc	6 : eitf	7 : ec	8 : enp	9 : hqnr	10 : ii	11 : kaso
1 : bdc	31779	0	3134588	6294634	2940664	2256332	5149752	2477656	4189482	0	5644822
2 : bfrp	0	0	0	0	0	0	0	0	0	0	0
3 : cts	0	0	12963251	26473648	12118852	9307786	21368032	10393904	17396072	0	23605034
4 : cos	0	0	34618648	70126192	32446714	24910588	56616988	27528752	46399856	0	62757972
5 : ecc	0	0	0	0	0	0	0	0	0	0	0
6 : eitf	0	0	26643362	53957000	24980056	19174782	43518352	21215040	35716632	0	48347816
7 : ec	0	0	28755400	58131584	26972716	20695010	46871928	22886884	38534256	0	52159256
8 : enp	0	0	13748710	28121526	12847833	9876344	22722260	10999693	18454244	0	25009756
9 : hqnr	0	0	16403340	33219590	15384186	11803984	26751834	13089678	21989616	0	29803190
10 : ii	0	0	2849308	5727328	2674472	2048656	4624704	2260924	3809832	0	5151868
11 : kaso	0	0	28739400	58338952	26931780	20674420	47018552	22939732	38536636	0	52220104
12 : let	0	0	26683226	54065308	25007086	19191662	43622768	21253054	35762332	0	48406960
13 : lsn	0	0	31344400	63187716	29409590	22555684	51015432	24869706	41969848	0	56723608
14 : ms	0	0	16403340	33219590	15384186	11803984	26751834	13089678	21989616	0	29803190
15 : res	34749	0	17309280	35207972	16193665	12448396	28550638	13775818	23207906	0	31374056
16 : sw	0	0	30445796	61887256	28514812	21897060	49915288	24304810	40834732	0	55326756
17 : sm	0	0	17407050	35413152	16288670	12511296	28616274	13886876	23345376	0	31609576
18 : stc	0	0	26126152	52977760	24479914	18790218	42750736	20804748	35016376	0	47387680
19 : sf	18972	0	3564130	7210404	3341990	2562752	5803068	2924292	4769616	0	6550388
20 : sse	0	0	25190016	51282800	23574168	18115246	41431828	20081128	33791960	0	45739712
21 : slf	15093	0	9200432	18550604	8634799	6624888	14974347	7347618	12320880	0	16705539
22 : sre	0	0	66401724	134850224	62169864	47756040	109011488	52836432	89039248	0	120422552
23 : wlc	0	0	46640800	94583920	43699052	33547316	76343064	37159056	62530344	0	84644016

	12 : let	13 : lsn	14 : ms	15 : res	16 : sw	17 : sm	18 : stc	19 : sf	20 : sse	21 : slf	22 : sre	23 : wlc
1 : bdc	3247730	2693102	0	20466	3018290	182224	2178066	12150	2364170	0	7425838	1173908
2 : bfrp	0	0	0	0	0	0	0	0	0	0	0	0
3 : cts	13446570	11109705	0	0	12493038	808273	8739546	0	9689677	0	31489714	5259913
4 : cos	35737704	29623826	0	0	33345638	2093755	23648400	0	25983272	0	83111776	13552891
5 : ecc	0	0	0	0	0	0	0	0	0	0	0	0
6 : eitf	27477828	22778754	0	0	25645804	1612179	18178948	0	19987428	0	64010520	10447623
7 : ec	29619710	24572412	0	0	27664790	1730183	19652958	0	21575268	0	68963824	11218029
8 : enp	14284991	11797735	0	0	13269769	859282	9281466	0	10289210	0	33390492	5572278
9 : hqnr	16899334	14016756	0	0	15781322	993150	11182632	0	12297756	0	39447040	6443472
10 : ii	2928604	2436796	0	0	2740468	167804	1963416	0	2140288	0	6783968	1088872
11 : kaso	29669324	24587846	0	0	27676602	1751913	19561868	0	21543428	0	69248216	11357709
12 : let	27540384	22831188	0	0	25694132	1616397	18205224	0	20012004	0	64128488	10479833
13 : lsn	32267922	26795304	0	0	30157900	1865867	21518988	0	23543190	0	74855848	12089837
14 : ms	16899334	14016756	0	0	15781322	993150	11182632	0	12297756	0	39447040	6443472
15 : res	17964226	14850904	0	21546	16699392	1058952	11791272	22383	12992682	0	41694808	6845779
16 : sw	31470816	26057800	0	0	29329826	1865306	20684826	0	22814854	0	73468848	12094239
17 : sm	18026652	14909370	0	0	16774604	1070144	11809260	0	13039616	0	42035328	6943872
18 : stc	26982622	22369130	0	0	25172700	1584843	17831132	0	19598868	0	62805228	10265334
19 : sf	3656200	3032540	0	8100	3413664	215202	2412102	52245	2664576	0	8622490	1416424
20 : sse	26091604	21580164	0	0	24288728	1550083	17100952	0	18882176	0	60829324	10037373
21 : slf	9460222	7850901	0	7290	8840530	548433	6299301	32319	6907468	0	22019048	3562106
22 : sre	68707192	56859352	0	0	63991128	4055123	45187368	0	49797084	0	159897360	26269268
23 : wlc	48170164	39902556	0	0	44909684	2836391	31763018	0	34968672	0	112234048	18396186

Table 4.9. The Matrix of Indirect Influence (MII).

According to MICMAC guidelines, generally, 6-7 iterations is enough for a matrix with 30 components to converge towards stability. In this case the system shows stability on the 7th iteration (for the evolution of stability see Table 4.10.).

Iteration	Influence	Dependence
1	107%	102%
2	93%	96%
3	106%	100%
4	97%	100%
5	100%	100%
6	99%	100%
7	100%	100%

Table 4.10. The evolution of the Matrix's stability during 7 multiplications. (Calculated based on the number of permutations (bullets sorting) necessary to each iteration to classify, by influence and dependence, the whole set of the variables of the Direct Influence matrix).

Comparative visualisation of variables' classification with and without considering of Indirect influences can help to examine the differences between system's reflections in MDI and MII.

Classification of variables according to their

INFLUENCE

direct		indirect
Rank	Variable	Variable
1	22 - sre	22 - sre
2	23 - wlc	23 - wlc
3	4 - cos	4 - cos
4	13 - lsn	13 - lsn
5	15 - res	16 - sw
6	17 - sm	11 - kaso
7	16 - sw	7 - ec
8	20 - sse	12 - let
9	7 - ec	6 - eitf
10	6 - eitf	18 - stc
11	11 - kaso	20 - sse
12	12 - let	17 - sm
13	18 - stc	15 - res
14	21 - slf	9 - hqnr
15	3 - cts	14 - ms
16	8 - enp	8 - enp
17	1 - bdc	3 - cts
18	19 - sf	21 - slf
19	9 - hqnr	19 - sf
20	14 - ms	1 - bdc
21	10 - ii	10 - ii
22	2 - bfrp	2 - bfrp
23	5 - ecc	5 - ecc

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DEPENDENCE

direct		indirect
Rank	Variable	Variable
1	22 - sre	22 - sre
2	4 - cos	4 - cos
3	11 - kaso	11 - kaso
4	7 - ec	7 - ec
5	8 - enp	9 - hqnr
6	9 - hqnr	12 - let
7	16 - sw	3 - cts
8	5 - ecc	16 - sw
9	13 - lsn	5 - ecc
10	3 - cts	13 - lsn
11	12 - let	8 - enp
12	18 - stc	20 - sse
13	19 - sf	6 - eitf
14	23 - wlc	18 - stc
15	15 - res	23 - wlc
16	1 - bdc	17 - sm
17	6 - eitf	19 - sf
18	20 - sse	1 - bdc
19	2 - bfrp	15 - res
20	17 - sm	2 - bfrp
21	10 - ii	10 - ii
22	14 - ms	14 - ms
23	21 - slf	21 - slf

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Table 4.11. Classification of variables according to their direct and indirect influence and dependence.

In terms of influence, 8 variables have raised their position (green coloured lines) in the indirect classification with maximum of 5 steps, and 7 variables have lowered their positions (red coloured lines) with maximum of 8 steps.

In terms of dependence, 6 variables have raised their position (green coloured lines) in the indirect classification with maximum of 5 steps, and 10 variables have lowered their positions (red coloured lines) with maximum of 6 steps.

Even though upper 4 variables (most influential and most dependent) have kept their initial positions, 15 and 16 variables respectively for Influence and Dependence classifications have obtained new position, thereby, uncovered relations hidden from the first sight (can be traced on the Figure below with white dots referring to Direct classification and black dots for Indirect one).

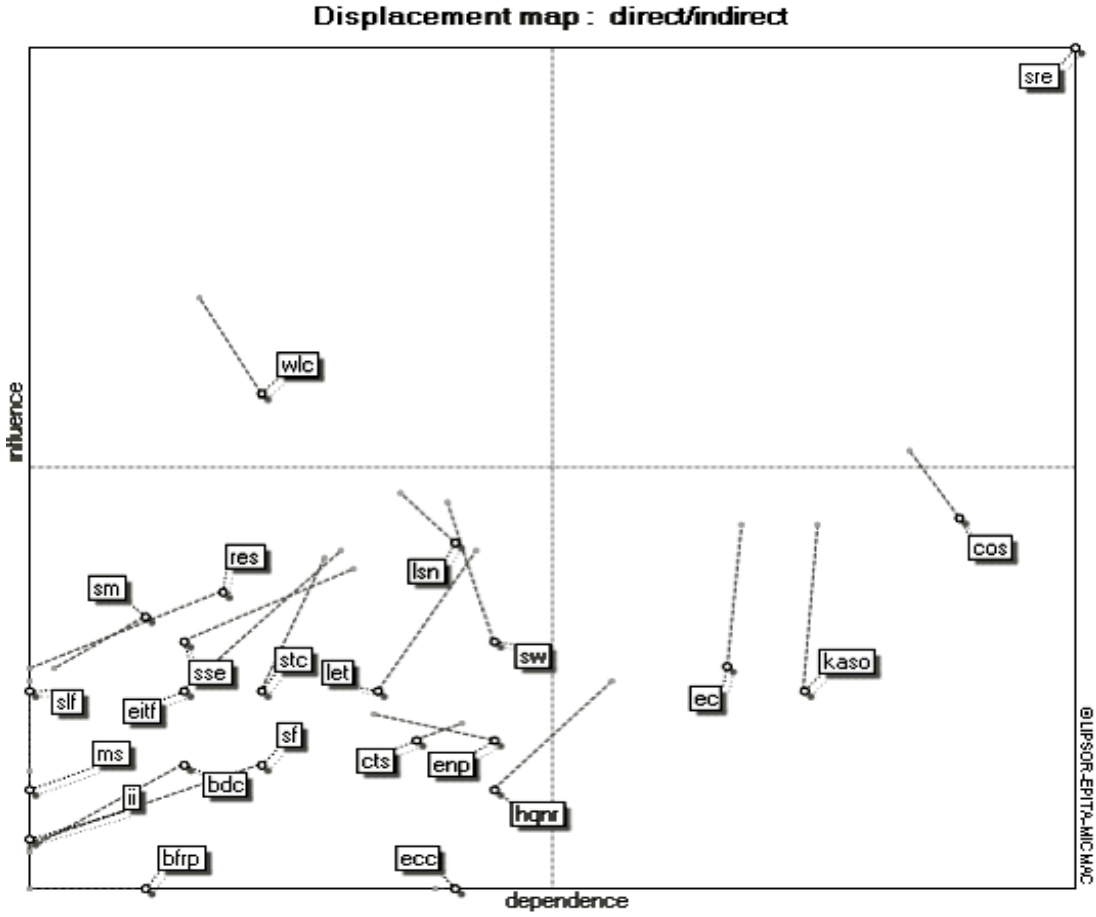


Figure 4.13. Displacement map of SRES components.

The resulting from the MII Indirect Influence-Dependence map is presented below.

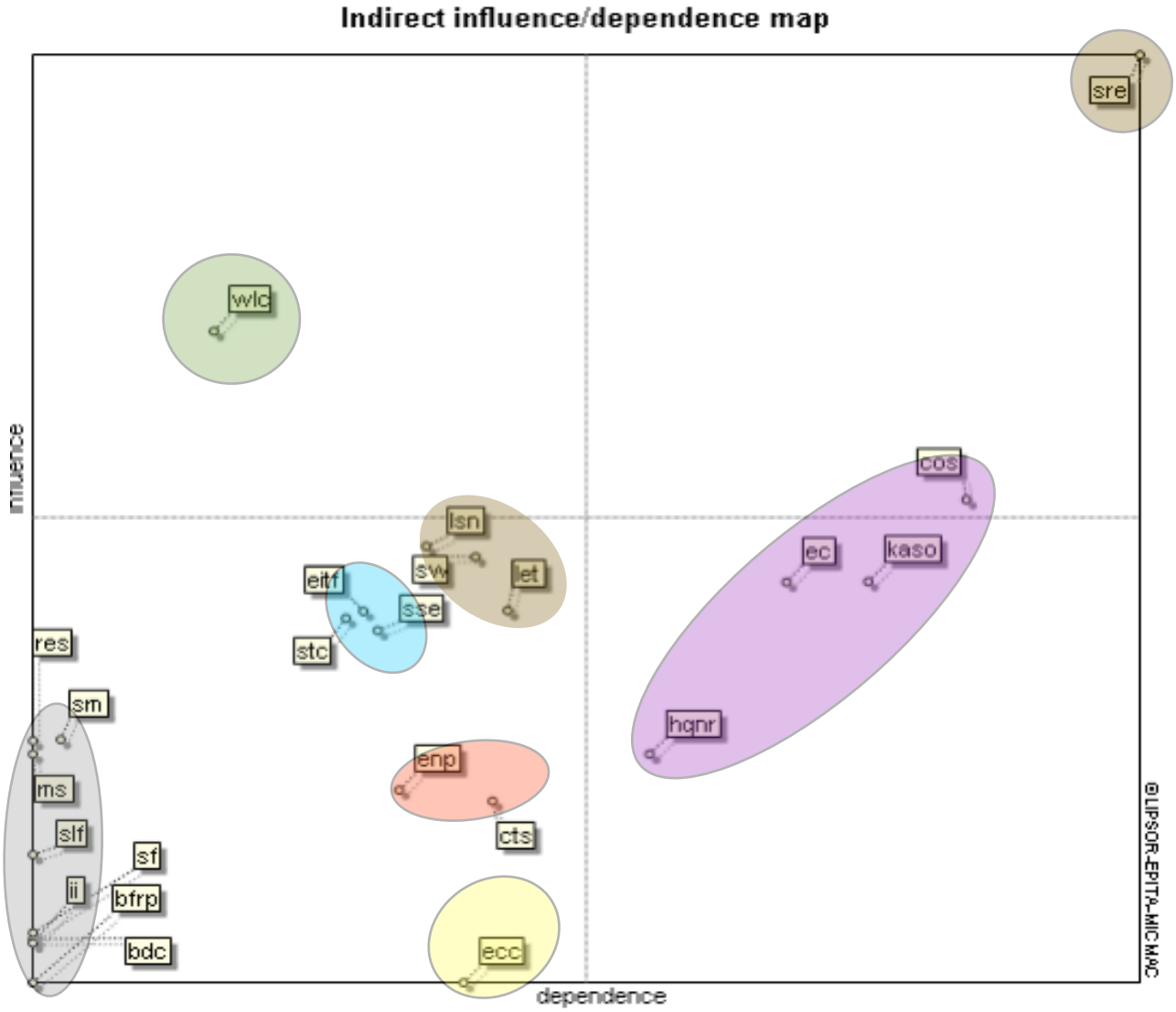


Figure 4.14. Indirect Influence-Dependence map with clusters of components.

To cluster variables' positions the same manipulations with MICMAC data as explained above have been performed (see Table 4.12. for details). Again, *regulator* and *secondary* variables have been distinguished and marked in Table 4.12. and in Figure 4.14. with blue and red colours respectively.

RANK	LABEL	INDIRECT INFLUENCE PROPORTIONS	INDIRECT DEPENDENCE PROPORTIONS	STRATEGIC VALUE	% OF AVERAGE
1	SRE	1371	1381	2752	317
2	WLC	962	226	1188	137
3	COS	713	1164	1877	216
4	LSN	644	491	1135	131
5	SW	629	552	1181	136
6	KASO	593	1041	1634	188
7	EC	592	940	1532	176
8	LET	550	593	1143	132
9	EITF	549	412	961	111
10	STC	538	391	929	107
11	SSE	520	430	950	109

RANK	LABEL	INDIRECT INFLUENCE PROPORTIONS	INDIRECT DEPENDENCE PROPORTIONS	STRATEGIC VALUE	% OF AVERAGE
12	SM	359	34	393	45
13	RES	357	0	357	41
14	HQNR	338	769	1107	127
15	MS	338	0	338	39
16	ENP	284	457	741	85
17	CTS	268	574	842	97
18	SLF	189	0	189	22
19	SF	73	0	73	8
20	BDC	64	0	64	7
21	II	58	0	58	7
22	BFRP	0	0	0	0
23	ECC	0	537	537	62
	AVERAGE:	434	434	869	

Table 4.12. Classification of components for Indirect influence-dependence map.

It was followed by clustering of the rest of variables based on the same two logic:

input-output logic		strategic logic	
determinant	outcome	stakes	autonomous
- working on the land culture	- early & conscious customers	- sustainability-driven rural entrepreneurship - local social network - local entrepreneurial tradition - skilled workforce	- rural entrepreneurship support - macroeconomics situation - social media - business development capital - start-up funding - business-friendly regulations & procedures - infrastructure & ICT - suitable legal framework
environment	target	regulator	secondary
	- entrepreneurial competence - knowledge about sustainable opportunities in rural businesses - culture of sustainability - high quality natural resources & environment	- success stories & examples of other entrepreneurs - education in the field - specific territorial characteristics	- entrepreneurs networks & partnerships - community trust & support

Table 4.13. Clustering of components for Indirect influence-dependence map.

The Table above also demonstrates the movements of components from one cluster to another. Colourful components are those positioned in new cluster comparing to the Direct Influence classification. The colour of each component equals to the colour of the cluster from which it originates. Thus, the following observations can be made from this new clustering.

For input-output logic variables, the **determinant** and **outcome** variables remained the same. Most changes occurred with **environment** cluster in which *success stories &*

examples of other entrepreneurs became more dependent and moved to regulators, while *suitable legal framework* and *social media* became autonomous variables.

Target cluster has been enlarged with previously secondary (strategic) *high quality natural resources & environment* component. Such transformation into target variable goes in line with the proposition (discussed during the clustering of Direct influence) that betterment of ecological and nature conditions are among the aims of SRES evolution.

For strategic components, significant changes happened with all clusters.

Two more variables entered the **stakes** cluster. *Local entrepreneurial tradition* increased its influence and dependence levels to upper the average, and *skilled workforce* substantially increased its influence level, herewith moved from targets to stakes. Still, the group of these two components and *local social network* (based on its influence and dependence) remained far from the extreme stake position of *sustainability-driven rural entrepreneurship*.

Transmission variables underwent major changes. Previous **regulator** *rural entrepreneurship support* lost its influence and became independent, hereby turned to autonomous elements.

On their turn, two previously autonomous elements, *education in the field* and *specific territorial characteristics,* advanced their influence level to above average and dependence level to close to average and, consequently, shifted to regulators. Previously environment component *success stories & examples of other entrepreneurs* slightly increased its influence and became more dependent, thus, turned to regulators.

Two out of four **secondary** variables remained the same. *Entrepreneurs networks & partnerships* has almost not change its position inside the cluster and community trust & support slightly decreased its dependence level, but remained within the borders of cluster.

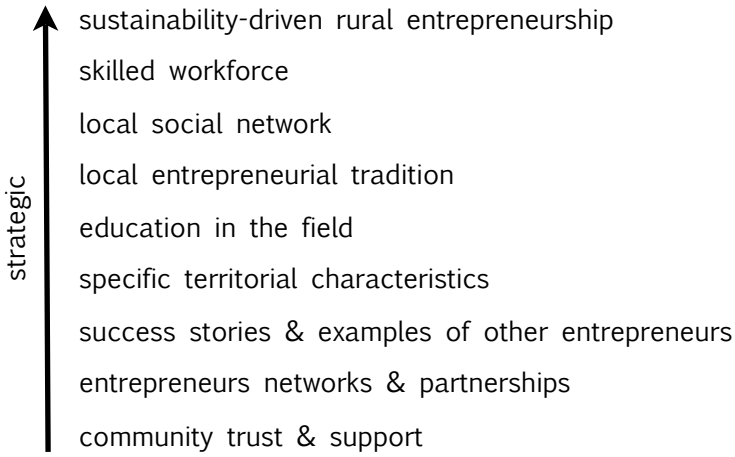
The cluster of **autonomous** variables became even more numerous, 8 components against 7 in the Direct influence classification.

Before summing up, it should be underlined that the Indirect Influence-Dependence Map interprets system's components base on the function they can perform in the long-term. This means that the results of this clustering can be utilised for long-term strategies (10-15 years).

In sum, the second (long-term) clustering has revealed that in long-term perspective:

working on the land culture remains sole precondition for the system dynamics and

in strategic terms, the most important are the following components (in descending order):



The majority of strategic components is from the social subsystem, with two exclusions of sustainability-driven rural entrepreneurship (economic) and specific territorial characteristics (ecological and physical).

SRES degree of determination

One more observation can be made from examining the positions of the clusters on the map, it is to evaluate the system's degree of determination (Arcade *et a*l., 1999). The shape of the cloud of dots (positions of components on the plane) can uncover the state of the system (Figure 4.15).

The L-shape cloud spread along the axes unravels quite stable system, meaning that system's evolution after wilful action over determinants can be foreseen with some degree of certainty. However, the cloud spread along the strategic diagonal indicates quite unstable system with more increasing instability the more cloud points are located in the end of the diagonal (highest right corner) as the components with ambiguous nature are prevailing and, hence, it is quite hard to predict system's response on the influence imposed by the determinants.

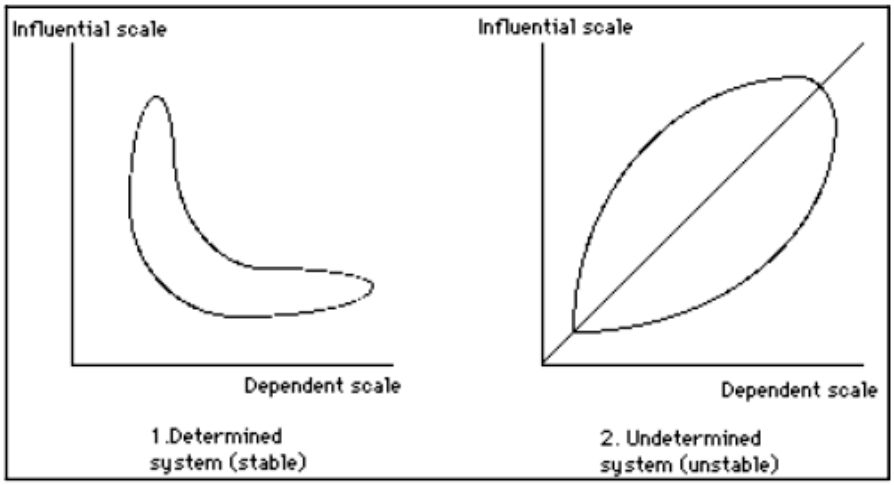


Figure 4.15. Variety of system's shapes (Arcade *et al.*, 1999).

As it is demonstrated in Figure 4.16. the system under study can be considered more unstable, than stable as the cloud of points is positioned more along the diagonal, although, being

concentrated in the beginning of conjunction of axes and beginning of the diagonal it shows relatively low level of ambiguous variables.

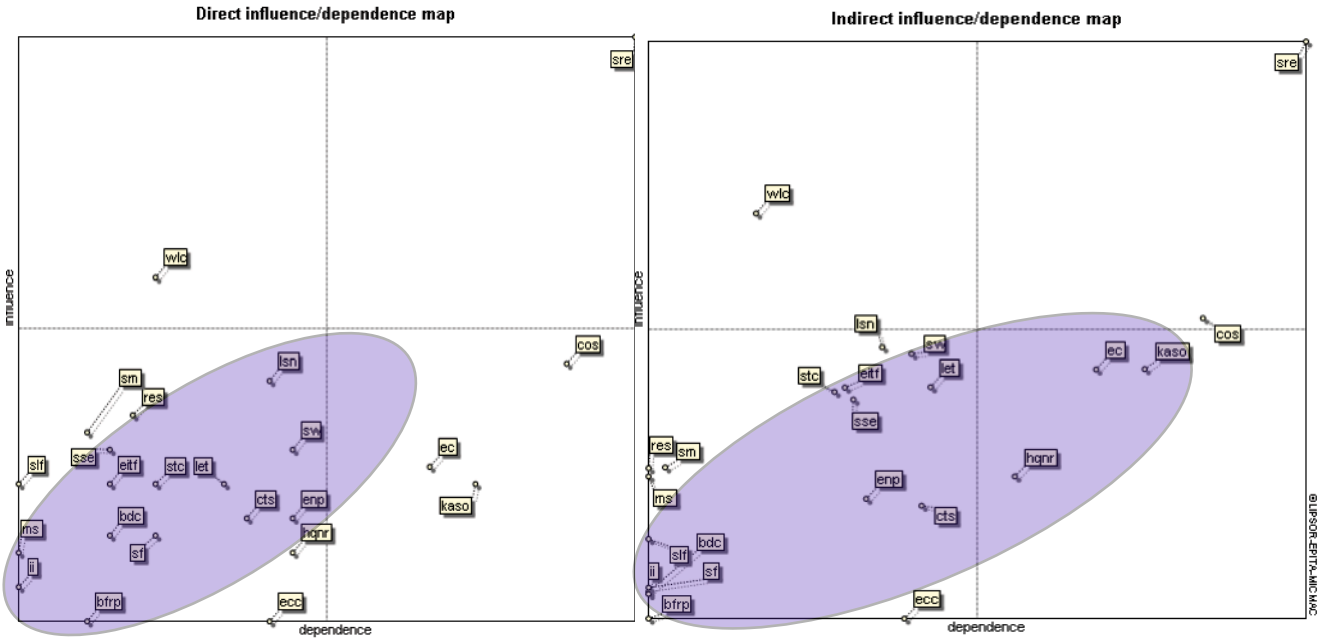


Figure 4.16. Direct (left) and Indirect (right) Influence-Dependence maps illustrating the shapes of the system.

If compared two systems against each other, the second one, considering indirect relationships and reflecting components' functions in the long-term, displays the cloud more prolonged in the direction of the strategic diagonal's end. Consequently, this can indicate its comparably more unstable nature.

4.6. Discussion and Results

This chapter aimed at describing the Sustainability-Driving Rural Entrepreneurship System (SRES), the one able to encourage creation and development of the enterprises with increased social and/ or environmental concerns incorporated into their business logic. For this task a complex system's approach has been applied to investigation of the generalised image of the entrepreneurial systems in the EU in which the enterprises from the Inventory collected in the previous chapter operate their activities.

The key novelty of this part of research lies in the alternative (systemic) approach it utilises for examining the environment that can or cannot encourage development of sustainability-driven enterprises. In conventional approach respondents usually evaluate a list of criteria based on their direct (real or potential) influence over the object of study with linear-thinking (that is, variable one influences the object more than variable two). This study, on the contrary, considers the object through the causal thinking, as it is argued to be more appropriate to rising complexity of modern reality.

The investigation performed allows for the following conclusions:

Structure of SRES

Utilisation of a complex adaptive system's approach to SRES investigation required identification of two aspects, system's components and system's dynamics. SRES components have been identified through a participatory modelling logic based on the data collected from the European entrepreneurs and experts, and resulted into 23 components.

SRES dynamics has been approached in twofold, interrelations' causality aspect and influence aspect, and the data were collected from the same entrepreneurs and experts via double-entry causality and influence matrices. The causality dynamics demonstrated in causal-loop diagram has shown disputable results due to lack of data, and was recommended for further investigation. The influence dynamics has been traced and served as a basis for SRES components classification.

Key components for the SRES dynamics

The SRES components principle for its dynamics have been discovered through application of the

structural analysis. The double-entry influence matrices have been processed by the MICMAC computer tool and resulted into the clustering and classification of SRES components according to their strategic and influential nature for system's short-term and long-term dynamics. This SRES components' classification is to be further utilised in the study.

Limitations and propositions for further research

The key limitation of data collection tactics has been the complexity of the task prepared and asked for from the respondents (entrepreneurs from the Inventory and experts in the field). Many respondents have claimed that, the matrix is too big (and it, actually, is, as it equals to 506 questions). In addition, some respondents experienced difficulties to understand the concrete task even though the matrices sent were accompanied with the detailed instructions and an example.

What is more, although the description of each component has been provided along with the matrix, there still exists a probability that some respondents were not able to devote time to consult them, thus, utilising this remote participatory approach the researcher cannot guarantee that all the respondents understand each component the same unified way as all the others.

Secondly, initial consideration was to identify particular classification of SRES components and dynamics of their relationships for separate clusters of enterprise models identified in the previous chapter. Though, the rate of returned and filled matrices has shown that there are not going to be enough data collected to meet this objective. Thus, the research object has been limited to a general SRES. Still, this can be recommended for further development of the study, as some entrepreneurs in their answers and personal emails have expressed particular concern that ecosystem might possess quite particular features depending on the type of business sector.

Thirdly, the same reason (lack of data) has undermined exploration of the SRES relationships' causality. Therefore, further investigation of this topic with more participating matrices is considered necessary to examine if there are presented the components that may hinder the development of others (negative influence) and how it would change the view on the current components' classification and the SRES dynamics as a whole.

Fourthly, potential impacts of personal and professional portraits of participant (entrepreneur's experience, business sector, etc.) over the identification of SRES components and interrelationships remained out of the focus of this study, still, can be found useful as such influences can entail differences in systems' perception and evaluation of interrelations.

As far as verification of these findings is strongly recommended with different method of data collection, the following approach can be proposed. Instead of collecting data from entrepreneurs

and experts sparse within the EU, it can be advised to take some (3-4-5) model provinces or regions (preferably those that have advanced rate of sustainability-driven enterprises) and proceed with structural analysis following the same stages, although in a real-time group work. Influence and causality matrices from separate provinces/regions might be further aggregated and resulted in more unified picture of SRES.

Alternatively, if the different influence matrices are to be made for each model territory (with different characteristics and rates of sustainability-driven enterprises development) and then comparison of the components across the matrices to be proceeded according to their functionality, this can as well provide some interesting insight into whether there exist any patterns in endogenous nature of rural entrepreneurship system's dynamics disregard the context it operates in.

Advantages of this approach are such that participants may be more willing to participate because they see immediate outcomes for themselves, as they can use the results for developing programs and projects for their territory. Additionally, group-work and knowing the others who participate may increase the level of participants and guaranty more accurate identification of system's components (what is in, what is out of the system borders), their aggregation into the list of variables, and evaluation of matrices as during a real-time group work participants can ask questions and clarify the component's meaning and anything else immediately in the process.

At the same time, there are the limitations of this proposed approach, like more costly and time-demanding procedure and need for locally trustful co-ordinators. They were the main reasons why another data collection tactics has been selected for this piece of research.

Chapter 5. FRAMEWORK FOR EVALUATION OF TRANSFER CONTEXT

It is not the strongest of the species that survives,
nor the most intelligent, but the one
who is most responsive to change
Charles Darwin

Introduction

Previous chapter's findings describe the environment, in other words, rural entrepreneurship system (RES) capable of encouraging sustainability-driven enterprises in rural territories. The assumption is followed that similar environment is needed to increase the effectiveness of transfer and adoption of the business models identified in the first part of this research. Therefore, the concluding cluster of research objectives is based on the questions:

How to analyse the preparedness of receiving environment to accept transferred business models?

How to understand the readiness of receiving environment for transformational process to become a more appropriate for transferred content?

How the framework elaborated can be demonstrated in practice?

Research Objective 4:

To propose framework for evaluation of sustainability-driving capacity of the recipient Rural Entrepreneurship System and its potential for transformation.

Research Objective 5:

To provide an example of the developed framework's utilisation for a model rural region of Russia.

5.1. Methodology

This part of research continues to utilise qualitative framework of system thinking and consider rural entrepreneurial system as a social ecological system (SES), both explained in the Methodology section of previous chapter, with further specifications according to the research questions posed:

> **Research question 1**. How to analyse the preparedness of receiving environment to accept and absorb transferred business models?

In order to answer the question, research follows structural approach to complex adaptive systems. Data are to be collected via review of relevant publications, and the findings of the preceding chapter on sustainability-driving rural entrepreneurship system are to be utilised for analysis.

> **Research question 2**. How to understand the readiness of receiving environment for transformational process to become a more appropriate for transferred content?

Investigation of this research question is grounded on resilience theory. This concept, introduced by Holling (1973) and further elaborated by Berkes *et al.* (2003), Walker *et al.* (2004), Olsson *et al.* (2004), Folke *et al.* (2010) and *Resilience Alliance,* addresses the dynamics and development of complex social-ecological systems. Two properties that govern the dynamics of SES are resilience, being "the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks" (Walker *et al.*, 2004), and transformability as "capacity to cross the thresholds into new development trajectories" (Folke *et al.*, 2010).

Review of the corresponding literature sources performed through 'resilience lens' allows to comprehend the rural entrepreneurship system's evolutional dynamics and, consequently, propose instruments on evaluating system's potential to reorient to a more desired sustainability-driving one. Such methodological approach provides opportunity for evolutional system analysis (Ambrosio and Bastiaensen, 2010; Abel *et al.*, 2006; Simmie and Martin, 2010), thus, gives grounds for identification of concepts to evaluate system's transformation potential.

Research question 3. How the framework elaborated can be demonstrated in practice?

Rural area of Belomorsky municipal district in the Republic of Karelia of Russia has been chosen as a model area for this objective. Several reasons guided the selection. Relevant knowledge of the region by the researcher, reasonable accessibility of the area (in terms of time and distance), and personal interest of the investigator in the region have influenced the decision.

Data are to be collected from multiple sources. Firstly, collection of materials, publications, and document available online are to provide with the initial grounds and prepare researcher for further phases. Next step, field work will allow to collect data from interviewing of relevant local stakeholders and direct observations of rural area. Finally, data collected during two phases will be complemented with documents and materials in print collected during the field work.

Data on the model region are then to be analysed using the framework proposed, and conclusions about the potential influence of sample rural entrepreneurship system on transferring of sustainability-driven entrepreneurship models in the region are to be drawn.

5.2. Data collection

As it has been explained above in the methodology section diverse data collection techniques have been utilised for two research objectives. For the first one:

> To propose framework for evaluation of sustainability-driving capacity of the recipient Rural Entrepreneurship System and its potential for transformation

qualitative review of literature sources in the field (publications and guidelines) has been proceeded. While for the second research objective:

> To provide an example of the developed framework's utilisation for a model rural region of Russia.

the data have been collected through many ways. Out of six potential sources of evidence (Yin, 2008) only three, documents, interviews, and observations, were considered relevant for this research question.

Initially, data have been collected through reviewing of primary (regional and municipal strategies and programmes, official reports, and related documents) and secondary (publications, newspaper articles, etc.) materials available online. Valuing documents as exact sources of the events and actions happened in relevant past (Yin, 2008), review of these sources has allowed to acquire insights into descriptive characteristics of the territory and evolution of the investigating system, opinions and analytical judgements of regional experts about past and present dynamics of this system, as well as to build contextual grounds for subsequent interviews.

More thorough understanding of the rural entrepreneurial system dynamics, context of its operation, and network of its relationships has been achieved via field observations and a series of interviews with key local actors (Luna-Reyes and Andersen, 2003). The latter were identified, firstly, in advance during the first stage of data collection and, secondly, during the field work using the so-called hydra model principle, when those stakeholders identified in advance were asked to identify other important actors, and such iterative process continued until all stakeholders identify each other (Sanò, 2009).

Segueing the advice of Reid (1996) to ensure the maximum availability of the selected interviewees assistance has been sought from the local 'gate-keepers', those who can act as a contact persons for getting to know the interviewees and encourage more-welcomed environment for conducting the interview. The circumstances of researcher's originating from the investigating region and vast family ties have helped in finding both, 'gate-keepers' and relevant stakeholders, as well as in establishing trustful relationships with the respondents.

Totally, 21 respondents were intensively interviewed (in Russian). Out of them there were 6 entrepreneurs, the head of the municipal district, the head of municipality, one employee of municipal Centre for employment responsible for self-employment and business support program, the head of rural co-operative, two representatives of republican business support organisations, and locals. Some were interviewed once, some on several occasions throughout the field work period. Several interviewees recommended were not accessible due to summer vacations (mostly, authorities).

The overall aim of the interviewing process was to understand the current entrepreneurship system functioning in the area and also examine it through historical lens. Consequently, semi-structured in-depth interviews covering such themes as entrepreneurship in the past, current state of affairs, elements of the RES, influences and interactions between them, personal opinions about the present and future of entrepreneurship in the area, were performed with multiple stakeholders identified.

Interviews were structured in forms of guided conversations with in-depth nature to obtain not only factual information on the issue, but also interviewee's opinions and interpretations (Yin, 2008). Along with that, active interview approach was practised to generate useful information about the phenomenon by special attention to both the interviewing process and the given answers, thus, to unfold both the "hows" and "whats" of the interviewee's experience and opinions (Holstein and Gubrium, 2004).

'Focused interviews' (Yin, 2008) were designed with the aim to give the interviewee maximum flexibility in giving more complex and deeper reflections on the issues. The 'topic guide' has been elaborated, although, with the sole intention to orchestrate the interview process, so to ensure it did not leave the focused area. Thus, the respondents were allowed to talk freely. To guide the data generation during an interview open-ended questions were used to evoke meaningful and rich answers and provoke responses unanticipated by the researcher.

Interviews were combined with field observations (Taylor-Powell and Steele, 1996, Patton, 2002, Yin, 2008) used to document people's activities and physical aspects of the surrounding natural and man-built environments in order to verify and complement the information received from the

respondents. Observations were performed in three-fold,

everyday personal engagement in rural routine;

visits to various villages to observe conditions of roads, buildings, individual houses, equipment, etc. as well as gender and age composition of population, their interactions and engage in conversations with locals;

visits to several locations of operations and those enterprises whose owners or employees participated in the interviews (or were not available for interviewing).

During the field work and further upon its completion, an extensive review of other information sources (local and regional web sites, online and printed newspapers and magazines, documents and materials, acquired from local authorities, organisations and entrepreneurs) was continued to complement the data collected from interviews and observations. Especially important for understanding the historical developments and particularities of the regional entrepreneurship were online materials and publications of the associations of pomors (indigenous people of the White Sea area) and several rural villages.

5.3. Framework for Rural Entrepreneurship System evaluation

This section develops a framework to evaluate the sustainability-driving capacity of Rural Entrepreneurship System (RES) as well as system's readiness for transformation. It proposes three constituents of the framework and provides elaboration on each component.

5.3.1. Sustainability-Driving capacity

Absence or lack of examples of sustainability-driven rural entrepreneurial activities may evidence weakness and low capacity of local RES to encourage such activities as they constitute an integral part of the sustainability-driving RES itself.

Presence or absence and essential nature of each element together with dynamics of interrelations within RES, all these form systems unique image in present.

Furthermore, identification of presence or absence of SRES components in any RES under investigation may provide for conclusions about its ability to encourage sustainability-driven enterprises. Using the findings of this research, capacity of a RES to accept and adapt sustainability-driven rural entrepreneurship models can be assessed via comparative analysis - against the list of components identified for the sustainability-driving RES in the previous chapter.

Still, it is considered more important and valuable to learn and structure the existing RES in full detail, meaning to map current RES dynamics - all components and causality relations between them - via causal loop diagramming. It allows for further RES comparison with the structure and dynamics of SRES as well provides thorough system's analysis for further transformation process.

What is more, the system's mapping is capable of not only helping in revealing the components that from the first site are hard to think of, but also demonstrate the relationships that interconnect and influence components and that can provide for substitution of functions (influences) of lacking (comparing to the desired SRES) components.

The process of identification of system's components and mapping of system's dynamics has been explained and demonstrated in the previous chapter, and will be practised again for the model

RES of Belomorsky region later in the Section 5.4.3.

5.3.2. Readiness for Transformation

In case identified current RES structure and dynamics compared to the SRES one have confirmed that RES needs change, next step is to evaluate the system's transformative capacity - 'the capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable' (Walker *et al.*, 2004:3).

Resilience theory (Holling, Gunderson, Folke) considers a system can be represented by a set of components, which entails that one state of a system is represented by one combination of values of system's components. There is a multitude of each possible combination of system's states and one state of stability (attractor), towards which the system directs itself while remaining within the basin of attraction - all possible configurations of variables around one attractor. Alternative basins of attraction constitute together the stability landscape with thresholds serving as boundaries between the basins. (Walker *et al.*, 2004; Ambrosio and Bastiaensen, 2010).

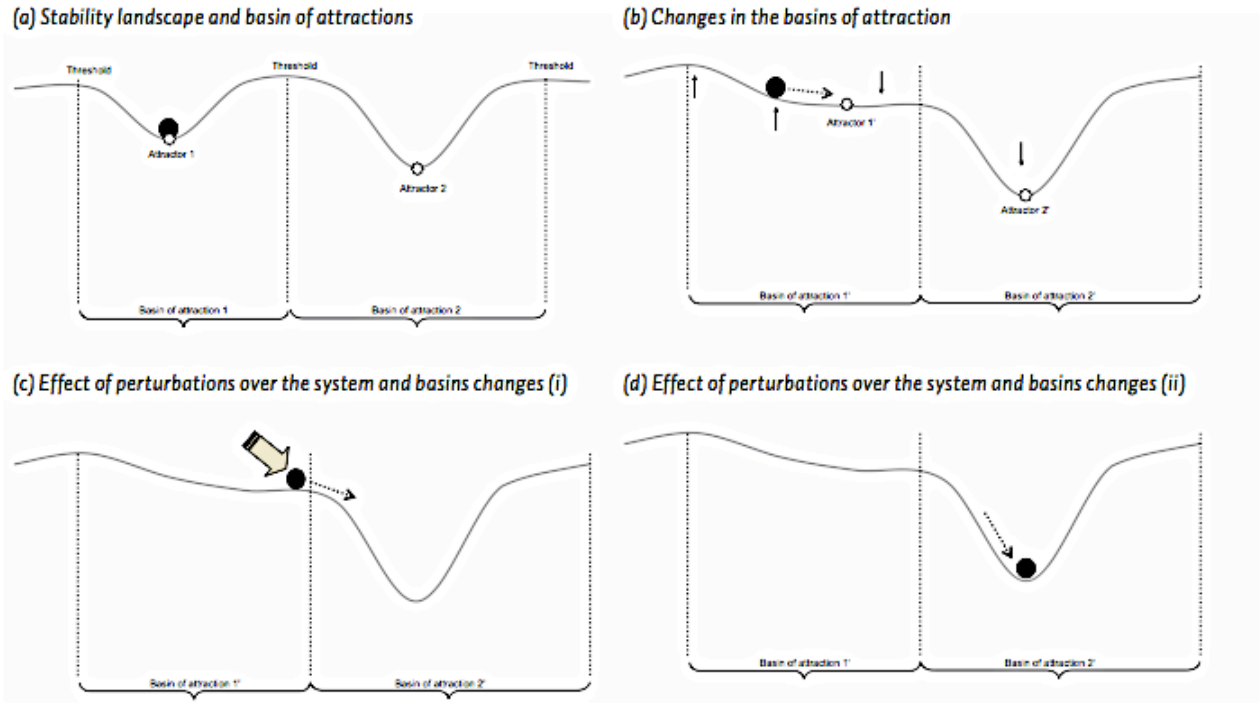


Figure 5.1. Perturbations, states of stability and basins of attraction (Ambrosio and Bastiaensen, 2010).

Following resilience thinking logic, when RES founds itself unable to create and nurture sustainability-driven entrepreneurship within the current system's stability landscape it needs to proceed through transformational process of this stability state, by substituting or supplementing old system's state variables with new ones, and become a different system with new set of variables defining such system (Folke *et al.*, 2010).

Transformational change of a social-ecological system may be forced, when transformation is imposed by changing environmental or social-economic conditions, or deliberate, when initiative of change comes from a social component (Folke *et al.*, 2010). The latter type represents 'social transformation that moves away from unsustainable and undesirable trajectories, towards new social-ecological trajectories that strengthen and enhance management of desired ecosystem states and associated values' (Olsson *et al.*, 2004).

RES transformation to SRES can be stimulated by various internal actors and institutions via adaptive co-management process (Olsson, 2004; Arıkan, 2010). However, further investigations on this process and its particular mechanisms remain out of the objectives of this research. Instead, it is considered valuable to focus on whether there exists a concept to be utilised for evaluation of system's responsiveness to transformation.

Analysis of works on social-ecological system's dynamics (Holling, 2001; Walker *et al.*, 2002; Resilience Alliance, 2010) has revealed presence of cycles of system's development providing for different level of system's potentiality, internal controllability, and resilience attributed for each stage of a cycle as shown in the Figure below.

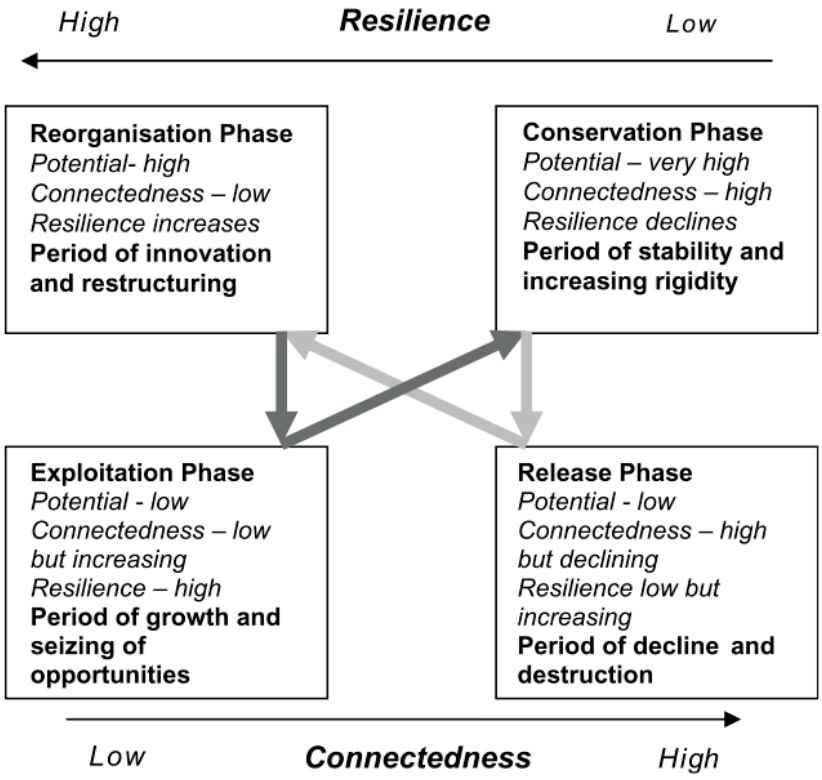


Figure 5.2. A four-phase adaptive cycle model (Simmie and Martin, 2010).

The adaptive cycle phases may not follow the sequence shown in the Figure above, still, many systems' dynamics traces them through the periods marked by establishment, development, stabilisation, and, finally period of reorganisation driven by rapid change.

Citing of Ambrosio and Bastiaensen (2010:31):

> 'potentiality is the wealth of the system, the potential array of assets that is "available for change as they determine the range of future options possible". Internal controllability refers to the "degree of connectedness between internal controlling variables and processes". Resilience is "a measure of its vulnerability to unexpected or unpredictable shocks (…) can be thought of as the opposite of the vulnerability of the system" (Holling, 2001)',

reveals that, to consider the systems' transformation capacity and such its property as responsiveness to change through the lens of adaptive cycle concept, the following proposition can be made. Ideally, a system is most responsive to change when the potentiality is high (provides more alternatives for future system's states), the controllability is low (connectedness decreases providing for higher instability and resulting increased acceptance of new system variables), and the level of resilience is low (high vulnerability to change). If we compare this with the characteristics of each adaptive cycle in Figure 5.2, it results in the conclusion that during the *reorganisation* phase a system's responsiveness to transformation is at its most.

If to group adaptive cycle stages according to the vectors of their dynamics - proactive (stage *exploitation* to stage *conservation*) and retroactive (stage *release* to stage *reorganisation*), then more sensitive to transformation process a system will be when following the retroactive vector of dynamics (Walker *et al.*, 2006). From the point of turning forward system dynamics to backward one, the system experiences turbulent period, when windows of opportunity arise and openness to external disturbance enlarges (Ambrosio and Bastiaensen, 2010; Resilience Alliance, 2010). As Folke *et al.* (2010) and Olsson *et al.* (2004) emphasise, transformation process makes use of such critical moment and windows of change allowing for a system to reconfigure its key variables.

Having understood during which stages a system state increases its transformability potential, the question remains how to identify which stage the system is undergoing in the present moment. Application of adaptive cycle framework to current system requires retrospective analysis of system's evolution with key system variables serving as indicators of system's evolutional change along the cycles (Resilience Alliance, 2010). This process will be practised with the RES of a model rural area of Russian Karelia and detailed in the later section 5.4.3.

5.3.3. Current transformation strategies

Adaptive co-management recommended by the resilience sciences for orchestrating a system's transformation process possesses its particular instruments and requires policy approaches different to the currently applying ones. However, considering generally slow rate of acceptance of

novel policy methods in decision-making and governance, utilisation of existing policy technologies with gradual incorporation of effective novelties can be assumed appropriate.

In line with the above in addition to identification of current RES conformability with SRES, findings of the previous chapter can be also utilised for evaluation of current programs and strategies aimed at entrepreneurship development. Coherence between these existing strategies and classification of SRES components can show whether they are encouraging for a RES to transform to desired SRES and can help to reconsider strategies' formulation using system thinking approach.

To compare the goals and measures formulated in strategic programs with classification of SRES components the approach proposed by Ambrosio *et al.* (2009) can be used. It calculates the frequency of mentions of each SRES component among the goals and measures/actions of all corresponding strategic program and projects. Resulting ranking (from most to least frequent) performed separately for goals and actions allow for the following considerations:

1) Representation of SRES components:

Any SRES component being or not being mentioned in the programs and strategies can be interpreted in two-fold, either as the lacking components are in place in the current RES (this can be understood from investigating the mapping of current RES) or they are not in place and, at the same time, are not considered at all or valuable to be included in such programs and strategies. Whether this decision of not including is reasonable or not, can be assessed through identifying the classifying role of each particular lacking component.

2) Position and nature of SRES components:

Depending on which SRES component occupies which position in the ranking, one can conclude on the importance designers of the strategies and programs give to such component in terms of reaching the final goal. Depending on the nature of component (classification) occupying higher or lower position, one can assess the conformity of such programs to the SRES structure and roles of its components in the system identified in the previous chapter of this work.

Those SRES components that have been identified as preconditions for the system dynamics, namely,

working on the land culture
suitable legal framework
success stories & examples of other entrepreneurs
social media

should be positioned high in the ranking of strategic programs as they are able to provoke sufficient change in the RES and require external action over them as being hardly influential from inside the system.

The following list of strategic components is recommended for being positioned in strategic programs as well as they are able to produce reinforcing change (over itself and over influential components as outcomes, for example):

sustainability-driven rural entrepreneurship
local social network
rural entrepreneurship support
local entrepreneurial tradition
community trust & support
entrepreneurs networks & partnerships
high quality natural resources & environment

Differences in component's position in column of goals and column of actions can advance the real ranking (and, hence, value for developers) of this element. When in the goal column a component ranks high and in the actions low, this entails that its frequent mentions in the strategies do not correspond with the frequency of real actions' mentions referring to this component.

As a result, these observations can provide grounds for reconsidering and reformulating existing strategic programs in accordance to the nature of SRES components. They can indicate those components demanding more attention as they can influence internal dynamics of RES (determinants, stakes, and regulators) as well as those components that cannot be influenced from within the system (autonomous and environment) and, thus, require influence from outside of RES.

Analogous approach of using SRES classification as criteria can be also used in grant-making and development field, when selecting which projects to finance and/or implement.

Concluding the description of the framework, one more aspect is necessary to be mentioned. It is highly advised that the application of proposed framework to be performed through participatory techniques with active stakeholders' involvement (Godet, 2002). The reason is two-fold, the results of the framework's application can be different depending on the quantity and quality of the participants (one vs several mental models), and the very process of public participation validates the results of this process for the stakeholders and thereby increases the effectiveness of policy actions developed based on these findings. Analogous approach of using SRES classification as criteria can be also used in grant-making and development field, when selecting which projects to finance and/or implement.

5.4. Rural Entrepreneurship System of Belomorsky District

This section serves as a demonstration of how the threefold framework proposed in the previous section can be used in the real-life evaluation of Rural Entrepreneurship System. For this, it, firstly, introduces model rural area, Belomorsky municipal district of the Republic of Karelia in Russia (generally and with regard to entrepreneurship development). Then, it traces the district's historic developments finalised by description of current state of entrepreneurship development. The second part of the section represents the application of the framework from the previous section to the district's rural entrepreneurship system.

Before beginning, it is valuable to emphasise that, although it has been mentioned above that the evaluation of such kind is recommended to be performed with direct stakeholders' involvement, in this research, due to absence of such possibility and considering demonstrative role of such evaluation, it has been considered appropriate to undertaken evaluation solely by the researcher based on the data directly and indirectly collected from the stakeholders.

5.4.1. Description of the model region: Belomorsky District

(The description is prepared based on the information provided by the 'Program of complex socio-economic development of Belomorsky municipality for 2011-2015' and on the official web-sites of Belomorsky district, http://belomorsk-mo.ru/, and the Republic of Karelia, http://gov.karelia.ru.)

Belomorsky district is one of the fifteen administrative districts in the Republic of Karelia. It is situated in the northern-eastern part of the Republic along the Onezhsky bay of the White Sea. Its territory constitutes 12,797 km² (7% of the Republic's total), and involves one urban (Belomorsk) and three rural (Letnerechenskoe, Sosnovetskoe, Sumposadskoe, and Nyukhtchinskoe) settlements. Population is 21,065 people (average population density 1,7/km²) with 54,9% living in urban area.

Natural resources are the key basis of district's economy, among which the most important are biological resources of the White sea (fish and sea products), forest resources (cover 40% of the area), fossil fuels (peat resources constitute 18% of the republic's total), and hydro-energy. Key companies are hydropower plants (producing more than 30% of total electricity in the Republic of

Karelia) in energy sector, timber harvesting company and a sawing and woodworking plant in forest sector, and fishing and fish-processing companies in fish industry.

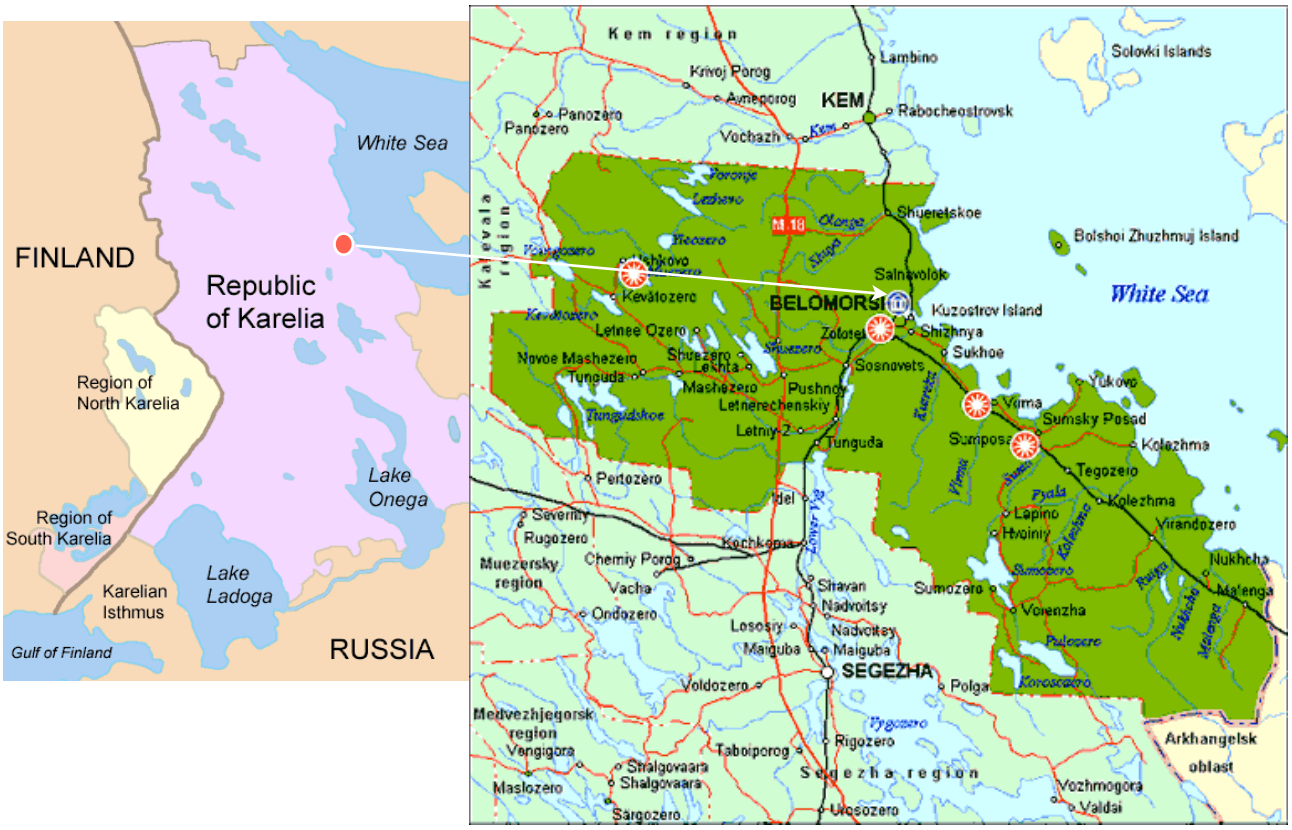


Figure 5.3. Map of the Republic of Karelia (left) and Belomorsky district (right).

Geographical position makes Belomorsky district easily accessible from any direction. Railway and highway provide transportation from the North, West, and South, sea-port Belomorsk is able to receive water transport, and the White Sea-Baltic channel, connecting the White Sea with Onego lake, provides access to the Baltic Sea and, together with the Volga–Baltic waterway, is part of the Integrated Deep-water system of the European part of Russia networking five seas - White, Baltic, Caspian, Sea of Azov, and the Black sea.

The district's area may be distinguished by three main zones of natural landscape: seashore with skerries and indented sealine, wetland, and the watershed area with many rivers and lakes. There are two seaside landscape preserves - Shuiostrovsky (10,000 ha) and Soroksky (73,900 ha) - created for protection of numerous sea animals, especially birds. Their ecosystems may represent perfect objects for scientific, educational and ecological tourism, especially during the periods of flight when hundreds of thousands of waterfowl stop here for rest and feeding. Along the extensive wetland there exist postglacial terraces reflecting stages of the White Sea regress, and bogs of different age and shape. The territory has the status of national wetland, and also represents particular interest for scientific and ecological tourism.

Cultural and historical heritage of Belomorsky district is rich and significant with over 200 monuments of archeology, architecture, history and art, and some historical and cultural

complexes and territories. Among the most outstanding there are the archeological complex of the White Sea Petroglyphs, Peter and Paul's church (1696) in the village of Virma, church of St.Nicolas the Miracle-Worker (1602) and chapel of the Vernicle (1672) on the island of Troitsky on Muezero lake. There also remained the ruins of two stockaded towns - Troitsky that had played an outstanding part in repulsing the Swedish invasion in 1580, and Sumsky which in the beginning of the 17th century had sustained in struggle against the Polish-Lithuanian troops.

5.4.2. Overview of the historical periods

11th-16th centuries: Independent peasants

Since the 11th century Russian possadniks and boyars from Veliky Novgorod with their peasants started to settle on the shores of the White Sea attracted by rich natural resources, fur-animals and fish. They had managed to cope with severe Nordic conditions and established particular type of sea-based economy with fishing, sea-hunting, and navigation being fundamental and agriculture being a minor sources of livelihood. This entrepreneurial economy was stipulated by the ever-changing sea and critical seasonality. Fisheries covered sea shores and river banks providing food and income source.

Since 15th century quitrent lands of Pomorye (the co-called coastal lands of the White Sea, part of which is now Belomorsky district) became property of the grand duke of Moscow, still de facto remained property of the pomor peasants who only paid from this the state tax (tithe). This was different from the rest of the country where the Code of Law (1550 year) implied serfdom. Pomorye district had its own Code of law (1589) oriented on independent peasants and manufacturers. Therefore, every salmon pit, fur-bearing animals and game birds camp, trapping lot belonged to particular person or family and may be sold, rented, or devised to offspring.

Salt production in Russia had started from Pomorye in 12th century. It was quite a profitable activity considering high salt prices. Until the beginning of the 20th century the White sea salt was produced and traded throughout Russia and beyond. Everyone was involved in this activity from peasants and free mercenaries to the boyars and monasteries. During 14-16th centuries, the latter were active entrepreneurs in the Pomorye region consolidating in their hands salt production and internal and foreign trade activities (Bessolitsin and Kuzmitchev, 2005).

In spite of high profits, salt production had severe negative effects on ecology of the region, in particular on its forests. Enormous amounts of wood were burned for salt evaporation (for example, roughly 60 years of salt production was enough to clear-cut the whole island of 24 km^2 of forests). The situation was so alarming, that the Tsar had to issue some forest protection decrees to balance the economic and ecological interests of the state.

Since Middle Ages and until the Revolution of the 1917th pomors maintained regular trade relationships with Northern Norway, and were first to create trading way to the East Siberia connecting European Russia with Siberia. Thus, they were selling their goods (variety of fish, furs, game, and salt) throughout Russia (Pavlina, 2009; Kraikovsky 2009) and beyond, supported by the strong and growing pool of local merchants-entrepreneurs.

In addition to fisheries, gaming, salt production, and trade, gathering of forest berries and mushrooms, wood-working (especially, boats-building), and stone-crafting contributed as supplementing economic activities. In the parts distant from the sea peasants were struggling with harsh work in agriculture, as the agricultural lands were fragmented among forests and lakes and climate conditions were severe causing frequent crop failures. During winter and spring peasants left their farms for wage labour in forest logging.

End of 16th - 17th century: New system of quotas and subsequent crisis.

Decree from Moscow in the late 16th century had imposed the system of 'farmings' which allowed tradesmen to buy the rights on total amount of bag (animals) and catch (fish) of hunters and fishermen. This resulted into the deep crises of entrepreneurial activity in the Pomorye, because almost all quotas were acquired by rich foreign merchants who, hereby, monopolised the trade. Pomorye was gradually devastating until in the 1646 after the petition from Moscow's merchants the system of 'farmings' was ceased, and the state tax (tithe) returned. In 1678-1681 financial reform had increased the tax burden, but the peasants of pomorye still remained among only 10% of independent population of Russia (Kondratieva, 2009).

Beginning of 18th century: Failure of Monopoly.

The very beginning of 18th century was marked with another attempt to enrich the state treasury - Peter the First issued a decree to give all sea-hunting and fisheries to the monopolistic company, consequently, fishermen and hunters were not allowed to sell 'bag and catch' to any other tradesmen but only to this company and on extremely low prices. This entailed again impoverishment of the population and slump of entrepreneurship activity in the regions. It neither yielded expected profits for the state treasury, but on the contrary, the profits fell dramatically.

To cope with the worsening situation in 1721 tsar decided to grant all rights for sea-hunting and fisheries in Pomorye to some merchant family company, but this attempt has failed in several months, and since 1722 tsar's decree returned the rights of sea-hunting and fisheries to all manufacturers without limitations, hereby returning a favourable environment for entrepreneurship revival.

Late 18th - beginning of 20th century: Steady development

Families and neighbours of peasants merged into fishing artels, the side depended on the type of fisheries. Income was distributed in forms of shares (usually as a part of catch). This may provide an example of entrepreneurial co-operation tradition in the region in the past (Alexeeva, 2002).

Since the second half of the 19th century forest logging and sawmills started to intensively develop in Pomorye as Russian and foreign timber merchants were coming in, attracted by vast forest reserves, access to floating ways and, sea shipping.

At that time, advantages of multifunctional entrepreneurship oriented towards diversification among economic activities (fishing, forestry, shipbuilding) and within one sector (kinds of fishing) had been already acknowledged as to guaranty more continuous profit in the circumstances of seasonality, severe climatic conditions, instability of years, and general unpredictability of natural events.

The 20th century: Soviet Union

In spite of October Revolution 1917, traditional economic activities had been maintained in Pomorye until the end of state capitalism period ('New Economic Policy') in 1929. Total collectivisation implied all peasants, hunters, and fishermen to enter the kolkhoz under the threat of property acquisition, banishment, sending to timber harvesting, and other menaces. Mass dispossession of kulaks out of the villages and arrests of 'anti-soviet elements' forced fearful population to enter the kolkhoz. By the 1940s there was a fishing kolkhoz in every village along the sea shore and nearby rivers. All kolkhozes, fishing, agricultural and fur-breeding, in the Pomorye were obliged to simultaneously participate in lumbering and floating.

Abrogation of private property turned all lands and resources into the state property governed by state agencies. Ship-owners were dispossessed, karbasses and boats were collectivised, and the produce did not belong to pomors anymore, but to kolkhoz which handed it over to state without any profit. The White sea was given status of the boundary waters, and trade with Norway was ceased. All these factors along with strict rules of fishing and hunting inspections resulted in total and radical turnaround of pomorsky lifestyle entailing idleness and alcoholisation of population and, hereby, degradation of long-time culture of hard-working and entrepreneurship.

In spite of some territorial developments during the Soviet years, such as, construction of the railway line through Belomorsk district, opening of the first sawing and woodworking mill, building of The White Sea – Baltic Sea Canal and seaport Belomorsk, the years after the Second World War marked significant out-migration of rural population to urban areas and big towns, destruction of traditional pomorsky occupations, and cultural impoverishment.

This period not only dramatically influenced social and economic character of the territory, but also had adverse effects on key natural resources and ecology of many ecosystems. It was

marked by over-catch and malfunction in reproduction processes of some fish species, unfavourable spawning environments, barriers (hydroelectric dams and blockage of sunken logs) on the fish migration ways, structural changes in some fish populations due to prioritised catch of seed fish. Along with mass destruction of *zostera* sea-grass in 1960, these all exerted enormous long-lasting adverse influence on sea ecology and mariculture, and, as a result, prolonged depression of marine sector, one of the key sectors of region's economy.

1985 - 1999 years: 'Perestroika' and Reforms

Perestroika and later land and agricultural reforms marked principal transformation from administrative-command to market economy, from collective to private property, and from kolkhozes to joint-stock companies and co-operatives. Issuing of laws 'About individual labour activity' (1986) and 'The general principles of individual entrepreneurship in USSR' (1991) aimed at revitalisation of entrepreneurship.

For Belomorsky district political transformation and market reforms resulted into bankruptcy of many key companies in fish industry, marine transportation (seaport), and forestry, which did not survived without state subsidies, floating assets, and governmental orders. Almost all kolkhozes and logging enterprises were rapidly transformed into joint stock companies and closed soon after that in the middle 1990s. Those companies and organisations that remained on the feet experienced long delays in wages payment. Survival tactics of former employees distinguished two main groups - those who left the territory, and those who stayed and take on subsistence farming on homestead land, fishing, forest non-wood products gathering, and sporadical wage labour in towns or other regions.

By end of 1990s, some logging enterprises, main saw woodworking plant, and fishing fleet company have managed to start operating again (Kazberovitch, 1999). Still, any prognosis about rapid development of small- and medium-scale entrepreneurship and individual farmers as a basis for regional development were not realised. By the end of the 20th century the district experienced twice population decrease compared to pre-reform years, and unemployment became the most critical challenge for municipality (Plyusnin, 1997).

2000-2011: Present time

Belomorsk district entered into 21st century with general economic and social depression. Infrastructure (transportation, housing, schools and kindergartens, medicine, warehouses, and processing infrastructure) built during the Soviet time has not undergone any reparation or development resulting in lack or even absence of key infrastructure objects throughout the territory aggravating the general picture of devastation.

Observations made in recent times have identified some signs of gradual recovery and revival of economic and social life, in most cases not because of, but rather in spite of state and regional policies and actions.

Field work undertaken in the district allows to talk about three modern clusters of district's population according to their living tactics (these groups described below are extremes, meaning that there also exist people simultaneously or sequentially combining explained tactics):

1) Those blaming the state authorities and political system in general for worsening of life conditions compared to the years under the Soviet Union, and, at the same time, expecting finding of solutions and providing assistance from the state or local authorities. They are mostly pensioners and elderlies who lived the major part of their lives during the command economy, thus, as a result, presumably, are not anymore capable of performing transformation to more self-reliant or even entrepreneurial thinking, and does not trust in market economy. Many have moved to native villages to be able to complement pension with fishing, farming on the plot, and forest berries and mushrooms gathering for better self-subsistence and for provision of additional livelihood for children and grandchildren.

2) Those employed or seeking employment in local and state governmental bodies and big private companies, or preferring to be a shift worker on freight or fishing boats. They are mostly in search of stability which they consider to receive from guaranties and benefits accompanying positions in such organisations, and do not see themselves willing or/and capable of taking on risk of self-employment or staring up a business. They are considered to constitute so-called emerging middle class.

3) Those do not expecting anything and trying to arrange their living independently and entrepreneurially. They might be of two types: 1) those descendants of families with some entrepreneurial or self-employment history in the past (before and, unofficially, during the Soviet times) who inherited knowledge and skills and motivation to continue such activity; 2) self-made entrepreneurs-beginners, who came to this accidentally or as an evolution of survival tactics generally by trial and error. Both groups express weak interest in any relationships (even support) with state and local authorities and expect the same in return. They rely on themselves and on narrow circle of family and social networks of neighbours and friends.

Observations of recent evolution of several district's villages indicate some developments. In contrary to beginning of 2000s with vast marks of villages' desolation (abandoned and neglected houses and buildings, general depopulation, and almost total alcoholisation of remained male

population), this time such signs as renovated and modernised houses, cultivated house gardens and plots of land, and increased amount of people on the streets, mostly women and children, have been traced. Interviews have uncovered the underlying force of these changes to be pensioners (especially women) and their grown-up children.

Pension provides elderlies with stability and some secure livelihood minimum, considering that their basic needs are comparatively low (Lemetti, 2011). Having additional profit from selling of fish, agricultural products from the plot, and some handicrafts, allows them to cover expenses on household maintenance and renovation. Their children and grandchildren usually live in the town or outside of the district, still, value the luxury of having a rural house with fresh produce, especially as a place for summer vacations. Therefore, they consider worthy investing in its rebuilding and maintenance.

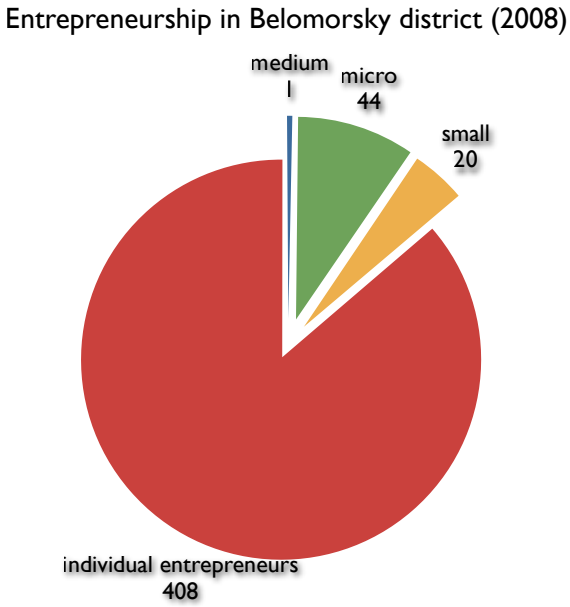


Figure 5.4. Entrepreneurship in Belomorsky district (developed by the researcher based on the data from the Municipal Program "Development and support of small and medium-sized businesses in the Belomorsky municipal district in the 2009 - 2014 years".)

Proportion of small enterprises in Belomorsky district constitutes 95 for 100 thousand of people (20 enterprises/21,065 people). This is a half of the 199 for the Russian Federation in general and almost equals the 101,3 for the Republic of Karelia (of which Belomorsky district is a part). Still, this amount is less than a quarter of the 232,6 for the North-Western federal district (the Republic of Karelia is a part of) which demonstrates the largest number among all 8 districts existed in 2008 and constitutes 16,8% above Russia's average (Saidullaev and Shestoperov, 2009).

SMEs development in Belomorsky district prevails in the following sectors (statistics provided by the 'Program of complex socio-economic development of Belomorsky municipality for 2011-2015'):

Fishing: 12 enterprises and 15 individual entrepreneurs operate in the fishing sector, based

their activities on oceanic and marine (in the White sea) fishing and sea-weeds catch, fish (trout) farming and fish hatcheries. Underuse of aquaculture and mariculture entrepreneurial opportunities and lack of processing operations constitute major current weaknesses and potential opportunities of the sector (Zubarev, 2007). Key challenges for further sector's development lie in new sectorial policies and regulations (fishing quotas), general dilapidation of equipment, decrease of purchasing prices while increase prices of fuel and equipment (Alimov *et al.*, 2008). Due to strict regulations and lack of livelihood opportunities poaching is not a rare case.

Forestry: Current use of forest resources in entrepreneurship activities is not intense. Apart from the general challenges for entrepreneurship development, this is also due to low density of resources (average is 76 m^3/ha), low level of their exploitation properties, lack of transportation network, and, mostly, due to remoteness from wood processing operations (only two exist in the area).

Tourism: There is only one travel agency registered and one rural tourism co-operative has been created for the whole district's territory. Rural villages and their traditional way of life along with the existing objects of natural, cultural, and historical heritage constitute significant basis for development of general and specialised (active, rural, ecological, etc.) types of tourism. Still, official statistics shows only 13 objects of tourists accommodation available serving in total 120 guests, while average annual number of tourists visiting the area is counted to reach 35 thousand. Sufficient underdevelopment of entrepreneurial initiatives in this sector is caused also by general degradation of infrastructure (especially transportation) and lack of regional marketing.

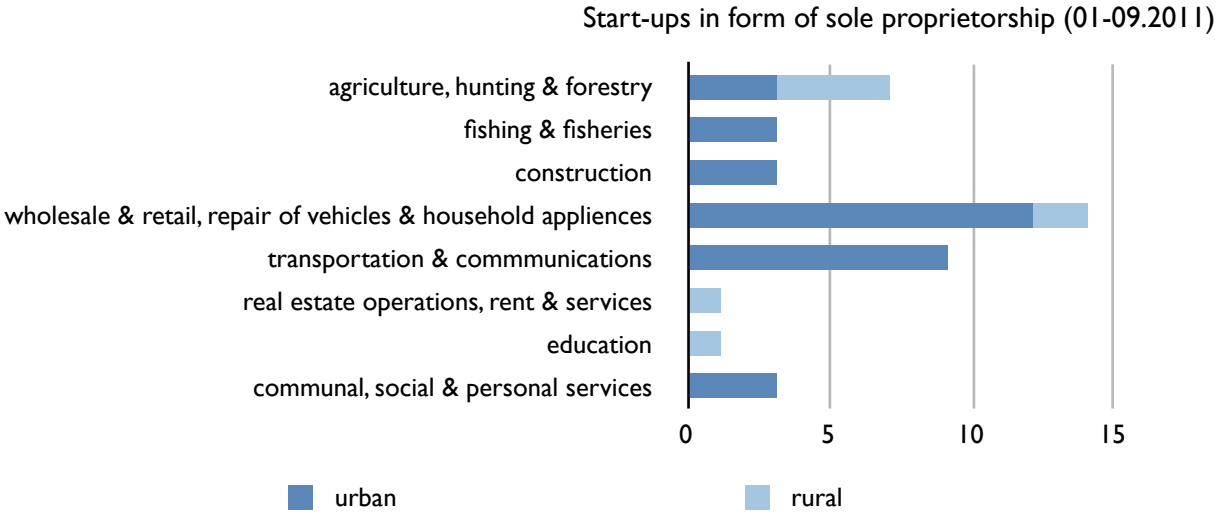


Figure 5.5. Start-ups of the second half of 2011 classified by sector (developed by the researcher based on the report of the Municipal Employment Center on the Regional program for employment support in the Republic of Karelia).

There was no statistical data found available separately for rural entrepreneurship in Belomorsky district. The data acquired from the Municipal Employment Centre of Belomorsky district revealed the proportion of start-ups established as a result of the Municipal program aimed at development of self-employment to be roughly 80% (33) in urban to 20% (9) in rural areas. Distribution on type of economical activities (see Figure 5.5.) shows majority of start-ups initiated in two sectors - natural resources use (animal breading) and provision of services.

This data and observations collected during the filed-trip support the proposition of Morozova (2009) for rural entrepreneurship of the Republic of Karelia in general, that in the conditions of risky agriculture without substantial economical and institutional state support rural entrepreneurship can develop following two directions - meeting internal demand of rural areas for social infrastructure and services and utilising recreational potential.

It is worth mentioning that official data on entrepreneurial activities, especially in recreational sector, may not fully reflect the real situation as many rural 'entrepreneurs' operate without officially registering their profitable activities such as provision of accommodation, transportation services for tourists, etc. Such activities may be seasonal and are not reflected in the official statistics, although, constitute not solely surviving practices.

To sum up, historical and descriptive analysis of the region and state of entrepreneurship development presented in this section has demonstrated that in Belomorsky district there exist several grounds (natural resources' potential, long-term (excluding the Soviet period) local entrepreneurial tradition, etc.) for development of some sustainability-driven entrepreneurial models (especially those non-agricultural). At the same time, it has revealed several general and sectorial obstacles for further increase of number and variety of enterprises. Thorough analysis of rural entrepreneurship environment in this areas is to be performed in the following section via application of the framework proposed for evaluation of Rural Entrepreneurship System.

5.4.3. Current Rural Entrepreneurship System of Belomorsky district.

As it has been explained and performed in the previous chapter (section 4.1.5.), the process of identifying and mapping a system is a two-steps process.

Identification of RES components

To start, the components of the current RES are to be identified and filled in the Table below in the following mode. First, presence (+) or absence (-) of SRES components in the RES under investigation is needed to be identified. Next, considering each SRES component, the micro-variables with regard to this component are to be filled in the right column. At last, any additional

considerations on factors influencing rural entrepreneurship in Belomorsky district are to be examined and those factors, if any, to be added in the Table.

N	SRES component	yes/no	RES component & description
1	high quality natural resources and environment	+	- presence of untouched natural areas - wonderful natural conditions - biodiversity (natural and landscape preserves)
2	specific territorial characteristics	+	- unique nature - rich cultural heritage - advantageous location: close to Europe (Finland), regional capital and big urban centres Saint-Petersburg, Moscow - attractions in the neighbourhood: on the way to Cultural and Historic Ensemble of the Solovetsky Islands (UNESCO)
3	skilled workforce	-	- out-migration of able-bodied population - ageing of population
4	entrepreneurial competence	-	- lack of adequate knowledge on how to start and operate an enterprise
5	education in the field	+	- general high level of professionalism in the field - some outdated technical knowledge which is gradually advancing if demanded
6	success stories & examples of other entrepreneurs	-	- low awareness about success stories (within and outside the area) - low number of local entrepreneurship examples
7	entrepreneurs networks & partnerships	-	- few sectorial associations - weak rural co-operation institution
8	community trust & support	-	- envy to somebody else's success - low social recognition of success based on profit-making
9	local social networks	+	- strong social networks - wide family ties - importance of being local to be socially accepted
10	working on the land culture	+	- rural culture - working on the land tradition
11	local entrepreneurial tradition	-	- two-generations' long tradition of collective&state-dependent work - lost entrepreneurial mentality & general passivity (expectations for the state to solve problems)
12	knowledge about sustainable opportunities in rural businesses	-	- lack of awareness & knowledge on sustainable business alternatives - absence of sustainability concerns
13	culture of sustainability	-	- respect to land, the sea and natural resources along the generations - lack of sustainability issues awareness & ecological concerns
14	early & conscious customers	-	- low culture of "green" consumerism
15	infrastructure & ICT	-	- insufficient accommodation and leisure providers - inappropriate transportation network (transport isolation of several areas) - obsolete infrastructure facilities (mentally and technically) - weak ICT network (no internet in most rural areas)
16	rural entrepreneurship support	+	- district's program on SME development - informational support for entrepreneurs-to-be

N	SRES component	yes/no	RES component & description
17	social media	-	- no pattern of social media use
18	business development capital	-	- absence of financial support programs for business development
19	start-up funding	-	- insufficient state financial support for start-ups (only grant for a self-employment initiative) - no mechanisms of bank loans for rural businesses - absence of investors
20	macroeconomics situation	+	- long-term economic crisis - unemployment - out-migration - political instability
21	business-friendly regulations and procedures	-	- relationships with authorities dependent on personal reputation & networks - weak law enforcement - distrust to state
22	suitable legal framework	-	- over-regulation & high tax burdens on business - no unified policy & actions on rural entrepreneurship development
23	sustainability-driven rural entrepreneurship	-	- lack of sustainability-driven rural enterprises
24	severe natural conditions & northern climate (high seasonality of activities)		
25	independent and cautious character of pomors		

Table 5.1. Comparison of SRES components and RES components in Belomorsky district.

Resulting list of RES components in Belomorsky district is presented below. Those SRES components presented in current RES were included in this list as they are. Instead of lacking SRES components associated with them micro-variables were taken, and additionally recognised components were added.

N	component
1	high quality natural resources and environment
2	specific territorial characteristics
3	out-migration of able-bodied population
4	population ageing
5	lack of adequate knowledge on how to start and operate an enterprise
6	low awareness about success stories
7	low number of local entrepreneurship examples
8	few sectorial associations
9	weak rural co-operation institution
10	envy to somebody else's success

N	component
11	low social recognition of success based on profit-making
12	local social networks
13	working on the land culture
14	two-generations' long tradition of collective&state-dependent work
15	lost entrepreneurial mentality & general passivity
16	lack of awareness & knowledge on sustainable business alternatives
17	respect to land, the sea and natural resources along the generations
18	education in the field
19	lack of sustainability issues awareness & concerns
20	low culture of "green" consumerism
21	insufficient accommodation and leisure providers
22	inappropriate transportation network
23	obsolete infrastructure facilities
24	weak ICT network
25	rural entrepreneurship support
26	no pattern of social media use
27	absence of financial support programs for business development
28	insufficient state financial support for start-ups
29	absence of investors
30	no mechanisms of bank loans for rural businesses
31	macroeconomics situation
32	relationships with authorities dependent on personal reputation & networks
33	weak law enforcement
34	distrust to state
35	over-regulation & high tax burdens on business
36	no unified policy & actions on rural entrepreneurship development
37	lack of sustainability-driven rural enterprises
38	severe natural conditions & northern climate
39	independent and cautious character of pomors

Table 5.2. Components of the Belomorsky district RES.

Mapping of RES dynamics

The second stage includes identification of causality links between system's components and building the system's model. This is to be performed through:

1) filling in the double-entry causality matrix:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1		+																	+																					
2																																							
3				+																																			
4														+												-													
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Table 5.3. Double-entry causality matrix of the Belomorsky district RES components, filled in by the author.

2) causal loop diagramming (this task has been performed using Vensim PLE for Macintosh Version 5.11A):

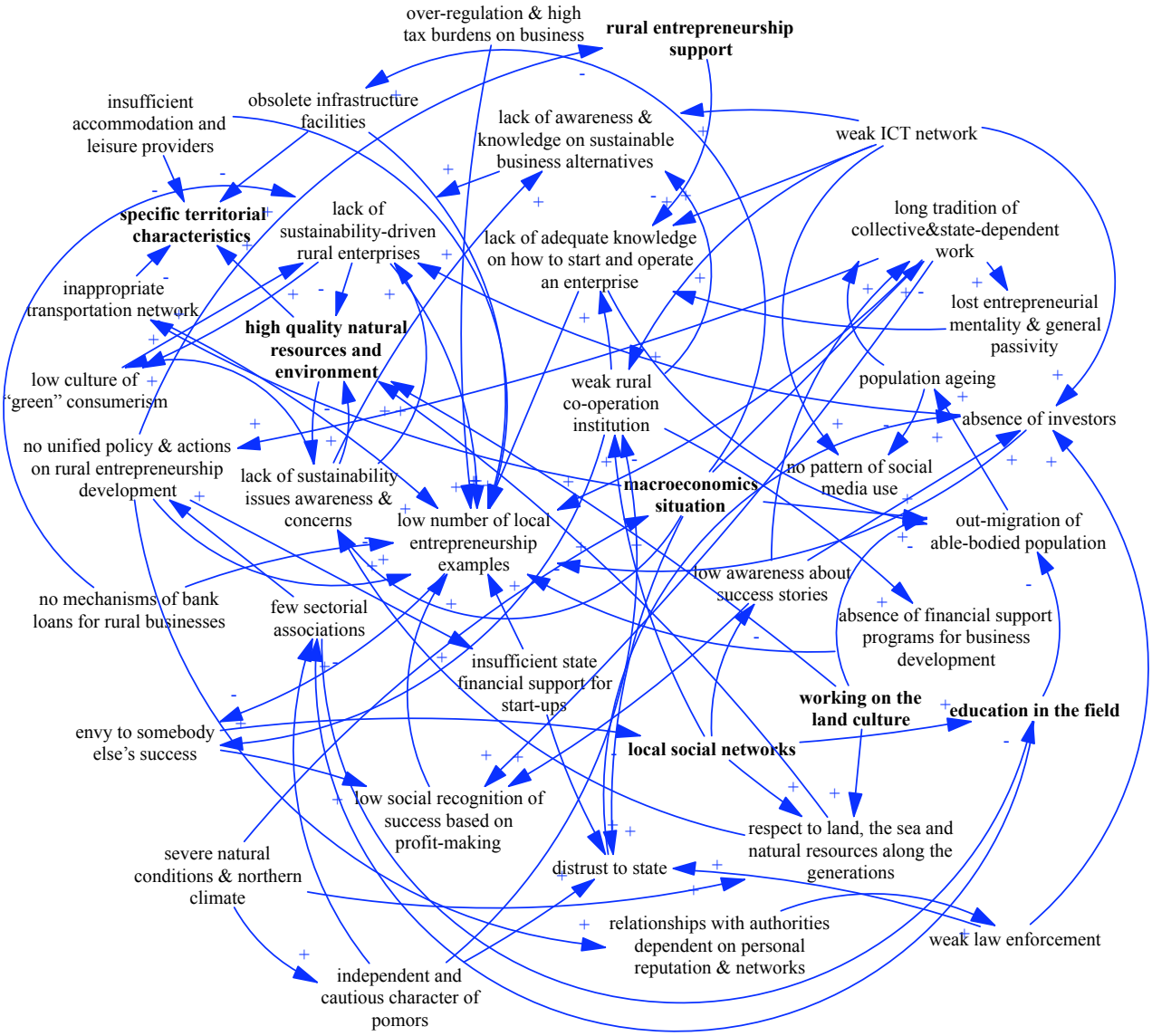


Figure 5.6. Causal-Loop Diagram of RES in Belomorsky district.

Comparing RES with SRES.

As one can see from the Table and Diagram above, only 7 (in bold) out of 23 SRES components are presented in the RES of Belomorsky district allowing for conclusion that the system is not sufficiently capable of encouraging creation and nurture of sustainability-driven rural enterprises.

According to components' classification, among the lacking components are:

input-output logic		strategic logic	
determinant	outcome	stake	autonomous
	- early & conscious customers	- sustainability-driven rural entrepreneurship	- business development capital - start-up funding - business-friendly regulations & procedures - infrastructure & ICT
environment	target	regulator	secondary
- suitable legal framework - success stories & examples of other entrepreneurs - social media	- skilled workforce - culture of sustainability - entrepreneurial competence - knowledge about sustainable opportunities in rural businesses		- local entrepreneurial tradition - community trust & support - entrepreneurs networks & partnerships

Table 5.4. SRES components lacking in the Belomorsky RES.

Based on this information further strategies for orchestrating RES transformation to SRES can be designed. What is more, when elaborating deliberate actions over particular system's variables, the system's model drawn can be utilised also for identifying those components that cause and, thus, influence interesting system's variables. This can be done via causes trees.

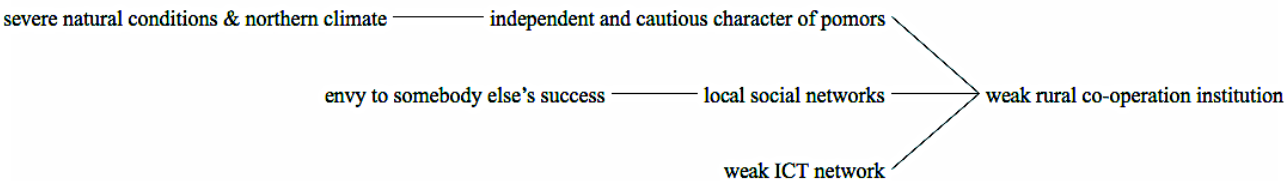


Figure 5.7. Tree of causes for the component 'weak rural co-operation institution'.

Example Figure above demonstrates the causes tree for the RES component <weak rural co-operation institution>. In case there appears a need to propose action to change this component or its dynamics, one can see here through which components to influence this one. The previous levels of cause can be traced as well.

5.4.4. Adaptive cycle phase

The approach proposed by the Resilience Alliance (2010) allows for comprehending the periods of system's adaptation cycles. Analysing the description of historical periods proceeded through by the district (presented in the section 5.4.2.), the following summary of key influences attributed to social and ecological subsystems that influenced the focal system's dynamics from larger-scale system above (regional level) and smaller-scale below (village level) can be presented:

	social				ecological		
time	late 16th century	early 18th century	1929	1990s	early 18th century	soviet	1960
from larger-scale system	fishing and hunting quotas	trade monopolisation	collectivisation	market reforms		structural changes in fish populations	
Rural Entrepreneurship System of Belomorsky district							
from smaller-scale system					destruction of forest resources		mass loss of zostera sea-grass

Table 5.5. Key disturbances over the focal RES along the timeline.

The next step is identify those RES variables that move the system through these disturbances and drive change. The 'role of hand' logic (Walker *et al.*, 2006) presumes that no more than 5 key variables can trace the system's dynamic along its history. Considering the fact, that no much detailed data is available about the system's development in the distant past, the analysis focused on the period from the beginning of the 20th century and up to the present time. As a result, the following key factors have been found to define the behaviour of the RES in Belomorsky district during this period:

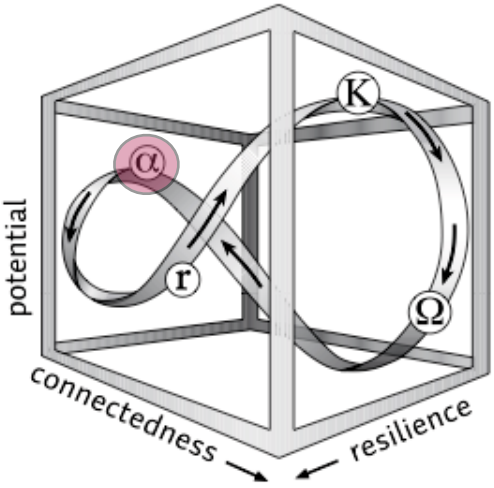
(1) access to means of production (property institution);

(2) the number of entrepreneurs per capita;

(3) entrepreneurial mentality & tradition.

Tracing the changes of these variables in the RES, the following dynamics is shown. By the beginning of the 20th century the system was reaching its maturity - defined property rights' institution, sufficient number of enterprises and sole proprietaries, and several-centuries tradition of entrepreneurial culture (conservation K phase). The system's drastic collapse (1930s) was caused by external disturbance from the larger-scale system - change of political regime and collectivisation of national economy. Two key variables (1 and 2) were ceased, marking the release period (Ω), This was followed by period of renewal (α) attempts with changed variables and systems' gradual reconsideration to fit in the underground economy of higher scale and, thus, begin its new adaptive cycle (exploitation r phase).

Conservation phase of this second cycle continued until the Perestroika and market reforms (1990s), the release phase started (again through exogenous disturbance to RES initiated by the larger-scale system). At present, the RES is trying to increase potential by capitalising its three key variable, and undergoes the reorganisation stage.



Such observations, that the RES is passing through the back-loop adaptive cycle stage, allow to assume that the windows of opportunity for initiating the deliberate system's transformation to increase its sustainability-driving capacity can still be found and the moment for a system to supplement its key variables has not passed yet.

Figure 5.8. Adaptive cycle with the marked current phase of the Belomorsky district's RES (Ambrosio and Bastiaensen, 2010).

5.4.5. Existing rural entrepreneurship development strategies.

As far as in the district there exist no unified strategy aimed at rural entrepreneurship development, the following list of related programs and projects has been monitored:

Municipal target program "SME development and support on the territory of Belomorsky municipal district for 2009-2014".

Municipal target program "Tourism development in Belomorsky municipal district for the period 2012-2015".

Program of social-economic development "Belomorsky municipal district" for 2011-2015.

Regional program for employment support in the Republic of Karelia for 2011.

Republican target program "Social development of rural areas of the Republic of Karelia before 2011".

About Regional target program "Development of agricultural sector of the Republic of Karelia for the period before 2012".

Project "Small rural entrepreneurship" (ProAgria Oulu).

Considering that all the above programs are of the short-term strategy, the classification of SRES components is taken in terms of the short-term strategy as well. Each document then has been examined on the quantity of mentioning of SRES components among the goals-objectives (left column) and actions (right column) as it is shown in the Table below, based on which ranking of

SRES components has been performed (in real numbers and as a percentage from total).

	SRES components	goals		SRES components	actions	
1	rural entrepreneurship support	7	19%	infrastructure & ICT	14	19%
2	infrastructure & ICT	5	14%	rural entrepreneurship support	10	14%
3	specific territorial characteristics	5	14%	specific territorial characteristics	6	8%
4	high quality natural resources and environment	4	11%	entrepreneurs networks & partnerships	5	7%
5	skilled workforce	3	8%	education in the field	5	7%
6	macroeconomics situation	3	8%	skilled workforce	5	7%
7	working on the land culture	2	5%	entrepreneurial competence	4	5%
8	business development capital	2	5%	business development capital	4	5%
9	education in the field	1	3%	start-up funding	4	5%
10	entrepreneurs networks & partnerships	1	3%	local social network	3	4%
11	culture of sustainability	1	3%	suitable legal framework	3	4%
12	local entrepreneurial tradition	1	3%	working on the land culture	2	3%
13	sustainability-driven rural entrepreneurship	1	3%	success stories& examples of other entrepreneurs	2	3%
14	start-up funding	1	3%	high quality natural resources and environment	2	3%
15				knowledge about sustainable opportunities in rural businesses	1	1%
16				sustainability-driven rural entrepreneurship	1	1%
17				local entrepreneurial tradition	1	1%
18				business-friendly regulations and procedures	1	1%

Table 5.6. Ranking of SRES components utilisation in the strategic programs for Belomorsky district.

The following observations can be made from the data presented in the Table above:

1) Representation of SRES components:

Out of 23 SRES variables, only 14 are mentioned among the goals and 18 among the actions in the programs and strategies aimed at developing rural entrepreneurship, meaning that not all the SRES components are covered. Comparison of both groups of lacking components with the ones presented in current district's RES (Table 5.2.) shows those components, with exemption of *local social network* stake component, are lacking in this current system as well, resulting in the recommendation of particularly considering inclusion of the lacking components from the list proposed above in the section 5.3.3.:

among the goals - *community trust & support* (secondary), and 3 components from environment cluster, *suitable legal framework, success stories & examples of other*

entrepreneurs, and *social media*;

among the actions - *community trust & support* (secondary), and *social media* (environment).

2) Position and nature of SRES components:

In this ranking, among the goals, the biggest attention (according to frequency of mentioning) is given to first 4 components, *rural entrepreneurship support, infrastructure & ICT, specific territorial characteristics, high quality natural resources and environment*, constituting together almost 50% of the total 14 components, and 6 components have only been mentioned once.

If to compare the present ranking with the list from the section 5.3.3., the observation can be made that no prevailing attention (as to goals of the strategies) is given to any of the recommended components except *rural entrepreneurship support* (1st rank) and *high quality natural resources & environment* (4th rank) with *working on the land culture* component occupying the middle ranking position and *sustainability-driven rural entrepreneurship, local entrepreneurial tradition,* and *entrepreneurs networks & partnerships* sharing the lowest one, being mentioned only once each.

Among the actions, there are 2 outstanding most frequently mentioned components constituting together 33% of the total 18 components, and one *rural entrepreneurship support* is from the recommended list. *Entrepreneurs networks & partnerships* ranks relatively high and in its position in the actions column is quite different from the goals column, meaning that its average role in the current strategies is higher than detected from the goals column.

Other recommended components *local social network, working on the land culture, high quality natural resources & environment, sustainability-driven rural entrepreneurship,* and *local entrepreneurial tradition* are mentioned among the strategic actions, although quite low, with *high quality natural resources & environment* component loosing its ranking compared to goals, which lowers its average role in the current strategic programs.

The results, in overall, demonstrate insufficient attention of recent strategies given to those components able to lead the Belomorsky district RES transformation to a more-sustainable one.

5.5. Discussion and Results

This chapter aimed at elaborating and testing the framework for utilisation when there is a need to observe and evaluate the capacity of receiving environment, rural entrepreneurship system, to which the new business models are transferred.

Framework for Rural Entrepreneurship System evaluation

The proposed framework has been developed utilising the systems dynamics and resilience thinking approaches, and consists of the following components:

1) Assessment of RES sustainability-driving capacity.

This is proposed to be done through comparative analysis of the current RES with the SRES. For this, the components of current RES are to be identified. Listing of RES components allows to recognise those components of SRES that are presented in current RES and those that are not presented. Depending on the quantity and qualification (based on SRES components' classification provided in the previous chapter) of those missing components, the conclusion can be made about the sustainability-driving capacity of a particular RES.

To utilise this exercise for further policy actions, the effort of mapping RES causality relationships and drawing the causal loop diagram of the RES under investigation can be recommended, as it provides the system's model to serve as a basis for designing and testing the transformation strategies. In addition, mapping of system's dynamics results also in better understanding of the system, and can entail reconsideration of those RES components identified without tracing the causality inter-links.

2) Identification of the phase of RES Adaptive cycle.

Analysis of system's evolution through the lens of adaptive cycle concept allows to see the dynamics of such system's properties as potential, connectedness, and resilience. When RES proceeds through the front-loop of the cycle it means that the system's transformation to a new state is more complicated and requires bigger effort and different strategies comparing to the moment when the system is undergoing the back-loop phases.

3) Assessment of current RES transformation strategies.

To understand whether the current programs, projects and strategies aimed at rural entrepreneurship development value and encourage RES transformation to a more-sustainability driving one, it is recommended to analyse the coherence between these existing strategies and the SRES. To perform this, the classification of SRES components can be used as criteria to understand whether all important for RES transformation components are stipulated in the strategies as well as whether the strategies' focus is on those components capable of changing the system. This can help also to reconsider strategies' formulation process using system thinking approach.

To sum up, analysis of RES through the proposed framework allows to reconsider the perception of the environment where the entrepreneurship develops and nurtures, and provide basic knowledge about RES to utilise for development of more appropriate strategies and programs aimed at encouragement of more rural sustainable enterprises and, hence, more resilient rural areas.

Demonstration of the Framework's utilisation

The framework has been tested for a model rural area in the Russian Karelia - Belomorsky district. The findings have shown that the current RES in the area is lacking key SRES components and cannot be considered as capable of cultivating the new sustainability-driven models of entrepreneurship. However, the RES has been revealed to currently proceed through the reorganisation phase of its adaptive cycle uncovering increased current system's ability for undergoing change. Still, the assessment of current strategic programs has revealed lack of the objectives and actions aimed at key transformation-driving RES components.

It should be emphasised, that the assessment of the district's RES performed in this chapter has no other aim than to serve as a demonstration of the developed framework's utilisation. The findings on this case cannot be proposed for any concrete policy or actions design. This is due to the fact, that in real-life situations this framework needs to be utilised through participatory process with active direct involvement of local stakeholders.

Limitations and propositions for further research

This piece of research limits analysis of system's dynamics within the borders of the focal RES and does not consider inter-influences between RES and the systems 'above' and 'below'. Therefore, the framework proposed is recommended to be further developed to address panarchy concept and consider dynamics of the focal RES within social-ecological systems at larger and smaller scales.

Chapter 6. CONCLUSIONS

6.1. Summary of findings

This thesis has been motivated by increasing concerns about gradual decaying of Russian rurality and focuses on one of the possible solutions for revitalisation of rural economies — transfer of European experience on novel entrepreneurship models, able to revive economic life while at the same time contribute to social and ecological aspects of rural development.

The first chapter, **Literature review,** has showed that the development of economic system constitute an integral part of general rural resilience, and entrepreneurship activity in rural area can positively influence the pace of its economic development. Analysis of entrepreneurship evolution has demonstrated that it started to adapt to changing demands for sustainability, and the emergence and growth of various, named in this research, sustainability-driven entrepreneurial models were observed in rural areas of Europe.

Analysis of Russian rurality, generally and with focus on entrepreneurship, has evidenced that modern pace of entrepreneurship development is not sufficient for reinforcement of rural economies, neither enough support and encouragement are provided from relevant national and regional policies and strategic actions. The need for urgent entrepreneurship transformative and strengthening steps is widely acknowledged.

Investigation of the knowledge transfer field and general practices utilised has allowed to reveal several shortcomings. First one referred to the prevailing mode of knowledge experience transfer, which efficacy was challenged. The second concerned lack of research on the incoming context of transfer, the environment where rural enterprises emerge and grow. These two aspects have become the objects of this study along with the existent practices of sustainability-driven entrepreneurship in the EU.

The findings of the **Second chapter** have allowed to identify and cluster 177 novel sustainability-driven forms of entrepreneurial activity among European rural enterprises. The majority of novelties are farm-based, still substantial numbers were found for forest-based and for entrepreneurial operations connected to rural environment in general. In addition, three business models patterns named ‹waste as a resource›, ‹profit as a by-product›, and ‹consumer as a sponsor› have been revealed among the novel business models, which indicates that the sustainability-driven practices have moved from the phase of random emergence to the phase of maturity and multiplication of those business model's properties that constitute its competitive advantage from the threefold view of sustainability.

Other findings that were elaborated in this chapter relate to the appropriate mode of transfer for the entrepreneurial practices collected. The Business Model Canvas has been found to be the most effective tool for transferring such practices as it best meets the given criteria of simplicity, visualisation, comprehensiveness, and ease of manipulation. Any novelty from the collection described in form of the Canvas represents a substantive, while understandable toolkit for immediate use and minnovation by recipients-entrepreneurs, which allows for the novelty being adapted to the demands of the receiving context. To demonstrate the benefits of this framework several novelties and enterprise model patterns are presented in the Canvas.

The **Third Chapter** findings concern the environment enabling and encouraging the birth and growth of novel sustainability-driven entrepreneurial practices collected. Through the complex systems lens applied, this environment has been approached as a complex adaptive system and regarded as a Sustainability-Driving Rural Entrepreneurship System (SRES). Participatory modelling technique has permitted to identify 23 integral SRES components. SRES internal dynamics has been approached in twofold, causality and influence of components' interrelations.

The causal-loop diagram of SRES causality dynamics has shown disputable results due to lack of data, and this aspect was recommended for further investigation. The SRES components' inter-influences identified have served as a basis for SRES components classification. Application of the structural (impact) analysis to SRES components and subsequent MICMAC simulations resulted into clustering of SRES components and discovering the key components for SRES dynamics according to their strategic and influential nature for short-term and long-term perspectives.

These findings on SRES structure and component's classification have been used along with the systems dynamics and resilience thinking approaches in the **Fourth Chapter** to elaborate the Framework for evaluation of sustainability-driving capacity of the recipient context for transferring entrepreneurial practices, in other words Rural Entrepreneurship System (RES), and its readiness for transformation. It has been proposed to consist of three modules.

First one regards assessment of RES sustainability-driving capacity through comparative analysis of the current RES with the SRES. The quantity of missing components and the role of a missing component in SRES dynamics identified in the previous chapter provide for conclusion about the sufficient or insufficient sustainability-driving capacity of a RES. Second one is aimed at identification of the phase of RES adaptive cycle. RES movement along the adaptive cycle changes its potential, connectedness among elements, and overall resilience, which can reflect RES readiness or resistance to undergoing transformation. Third one evaluates whether existent entrepreneurship development strategies encourage RES transformation to a more-sustainability driving one through examination of coherence between these strategies and the classification of SRES components used as the criteria.

The concluding findings of this chapter regard the developed framework's testing for a model rural area in the Russian Karelia. They have shown that the current RES in the area is lacking key transformational components and cannot be considered as sufficiently capable of effectively cultivating the new sustainability-driven models of entrepreneurship, if transferred. However, the model RES has been revealed to currently proceed through the reorganisation phase of its adaptive cycle uncovering its increased ability to undergo transformation. At the same time, district's existent strategic programs pay insufficient attention to key change-driving RES components among their objectives and actions and, hereby, demonstrate lack of ability to encourage RES transformation.

6.2. Proposed framework for entrepreneurship models transfer

This work has made an attempt to reconsider traditional practices for transfer of entrepreneurship experience in forms of concrete business models. It has tried to synthesise recent developments in business modelling with complexity sciences' approaches to advance knowledge transfer techniques. As a result, the following Framework has been elaborated.

(1) **Content of transfer**: **Sustainability-driven Entrepreneurship practices**

Any variety and quantity of entrepreneurship practices, either in forms of a whole enterprise model or as constituent parts of a business model, can constitute the content of transfer if considered valuable by the transfer managers. Those practices and patterns, presented in this thesis, compose particular value for the transfers concerned about sustainability issues. The majority of presented entrepreneurial opportunities require access to various rural resources, be it either a farm, or forest, or rural environment, however, the opportunity exist that they can be modified to fit another context.

(2) **Mode of transfer**: **Business Model Canvas**

Entrepreneurship practices in form of enterprise models or their parts selected are recommended to be transferred through its representation in Business Model Canvas. This makes them easily understandable by recipients-entrepreneurs (considering they have some basic knowledge on business modelling) and easily transferable in both ways, off-line and on-line (ex., by means of distance learning projects).

Still, the principle advantage of this mode over the traditional textual descriptions is that the practices described through Business Model Canvas and transferred can be used as a tool-kit for business model's redesign and manipulation with its components. Contrary to usual transfer approach, which generally contains provision of entrepreneurial training while good practices serve more as the accompanying examples and source of inspiration for recipients, this approach allows for an entrepreneur-recipient to practically utilise this models for reconsideration of existent businesses or designing of new ones immediately upon the transfer.

Due to relevant self-sufficiency of transfer content, if presented in the Canvas, this mode can guarantee increased effectiveness of transfer process as this technique allows the recipients-entrepreneurs to adapt transferred practices to receiving environment through manipulating with

them and minnovating, meaning, innovatively imitating them. The transferred content, thereby, can be altered directly by end-users to meet any particular demands of the receiving context.

(3) **Context of transfer**: **Rural Entrepreneurship System**

The capacity of a receiving environment to accept transfer content and, hereby, foster or hinder transfer process, needs special assessment. It is as well important to evaluate the readiness of a receiving environment to undergo changes to become more enabling for the aims of transfer. In this thesis transfer context is referred to as Rural Entrepreneurship System (RES), and the RES enabling emergence and development of sustainability-driven practices is considered as Sustainability-Driving RES (SRES) and has been thoroughly investigated in this thesis.

The steps for assessment of RES readiness for transfer are proposed as follows. (To ensure credible and validated results, this evaluation is recommended to be performed with active participation of stakeholders from the receiving environment.)

1. Sustainability-driving capacity: Comparison with SRES.

Initially all components of RES under analysis need to be identified and listed. The list of SRES components (figured out and presented in this thesis) can be used as a starting point to recognise those SRES components presented in this RES and, then, supplement them with any other components that, as participants perceive, constitute integral parts of the RES.

The next, optional, step is to trace the causality relationships among RES components (draw a causal loop diagram) and, hereby, map the RES causality dynamics. This can provide better RES understanding and entail reconsideration of those RES components identified before as well as a basis for designing and testing the transformation strategies in the future.

Then, the influence analysis is to be performed over the RES components identified and, its findings can be compared with the classification of SRES components (developed and provided in this thesis). Depending on the quantity and qualification of missing components, the conclusion can be made about the sustainability-driving capacity of the RES under investigation.

2. Readiness for transformation: The phase of RES Adaptive cycle.

It begins with the RES historical analysis and identification of key disturbances occurred with RES over the selected timeline to identify core milestones and stages in RES evolution. Then, this RES dynamics is to be examined through the adaptive cycle concept and its four-stages pattern to identify which phase it is going through now.

Depending on the concrete phase and on front-loop or back-loop RES dynamics, the RES readiness for change can be understood (considering three key properties of a system as connectedness, potential, and resilience), as well as the windows of opportunities to initiate the RES transformation to a desired state can be identified upon such analysis.

3. Transformative policy: RES development strategies.

To begin with, all current programs, projects and strategies relevant to entrepreneurship development in this rural area are collected. Next step is to trace all mentions of each SRES component in these programs, list them separately for the goals/objectives and actions and rank each group's components according to the number of mentions.

Based on this collection, the coherence between existing strategies and the SRES components' classification used as criteria (for the short-term strategies the classification with short-term perspective needs to be applied and respectively for the long-term) can show the effectiveness of RES strategies, firstly, by identifying whether all important for RES transformation components (based on SRES classification) are stipulated in the strategies and (by examining of components' ranking in each group) whether current strategic focus is on the components capable of changing the RES or not.

6.3. Practical implications

The framework developed and other findings of this study can be of particular importance for practical implications among the others by:

- Entrepreneurs (those not only from Russia, but as well from other countries and even other regions of the same EU)

As the recipients of the content provided for the transfer they can either become entrepreneurs and, herewith, benefit from alternative source of permanent and formal employment, or advance their entrepreneurship practices in many-fold. Those entrepreneurs, not transfer-recipients, also can directly utilise provided sustainability-driven practices in their entrepreneurial activity as well as to reconsider and make an attempt to redesign current business models (using the Business Model Canvas tool) and, hereby, enhance them by introduction of ecological and/or social concerns.

- Transfer managers, project developers and managers

They can utilise the proposed transfer framework as a whole or its parts when designing and implementing international and regional projects and development programs aimed at addressing rural challenges through diversification of rural economies and reinforcing entrepreneurship. Analogous approach of using developed SRES classification as the criteria can be also utilised in grant-making and development field, when selecting which projects to finance and/or implement.

- Policy-makers and decisions-takers

The methodology of RES identification and evaluation of its readiness and capacity to change can be useful to support policy-makers in the designing and establishment of strategies for rural areas based on the comprehensive understanding of system's integral structure and internal dynamics.

All in all, encouragement of sustainability-driven rural businesses is seen as a vital opportunity for recovering lagging rural territories, and the proposed transfer framework utilised according to its intended purpose - transfer of pioneering practices - can enrich local economies with new actors and activities enable to contribute to sustainable endogenous development and increased resilience of rural areas.

6.4. Perspectives for further research

Several considerations for further development of this research have been already emphasised in the concluding sections of each chapter, still, the principle ones can be shortly summarised here:

Further investigation on the business model patterns among sustainability-driven rural enterprises can constitute interesting perspective through which to trace the dynamics of sustainability-driven entrepreneurship development.

The research on Rural entrepreneurship system enabling to sustainability-driven enterprises can be further developed to consider and specify the peculiarities of the entrepreneurial systems encouraging for particular sectors of rural economy or clusters of enterprises.

The study of Rural entrepreneurship system dynamics as receiving environment can be further enlarged to address also the systems above and below this focal system approached through the panarchy concept and, hereby, consider the dynamics of the focal RES within social-ecological systems at larger and smaller scales.

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Appendix 1. The sources consulted to identify enterprises for inclusion in the Inventory.

name	source
projects/databases:	
CBC Programme Italy-Slovenia: Projects 2000-2006 database	http://www.ita-slo.eu/projects/projects_2000_2006/
CBC Programme Italy-Slovenia: Projects 2007-2013 database	http://www.ita-slo.eu/projects/projects_2007_2013/
Database of rural development expertise	http://www.hvtk.org/index.php?a=csoport&id=3&lang=eng
Description of projects funded under Area 4 of the FAIR programme covering agriculture forestry and rural development	http://ec.europa.eu/research/agro/fair/en/toc-area.html
FP6 project success stories	http://ec.europa.eu/research/agriculture/projects_showcase_en.htm
Leader+ Good Practices database	http://leaderplus.ec.europa.eu/cpdb/public/gpdb/GpdbSearchFS.aspx?language=en
LEADER+: Database of innovative actions	http://ec.europa.eu/agriculture/rur/leader2/action_innovante_search_js_enable.cfm?selected_lang=en
Middlesex University, CEEDR: SME Development, Finance and innovation	http://www.mdx.ac.uk/research/areas/enterprise/ceedr/sme_development/index.aspx
Regional development projects database	http://ec.europa.eu/regional_policy/projects/stories/index_en.cfm
The Baltic Sea Region Programme 2007-2013: project database	http://eu.baltic.net/Project_Database.5308.html?
Leader+ 2000/2006 Veneto	print publication
awards:	
Business Commitment to the Environment (BCE) Environmental Leadership Awards	http://www.bceawards.org/
Business in the Community: The Awards for Excellence	http://www.bitc.org.uk/awards_for_excellence/awards_for_excellence_2010_winners/index.html
COPA: Innovation prize for women farmers	http://www.copa-cogeca.eu/img/user/file/innovarion_prize_and_photos_2009.pdf
Cornwall Sustainability Awards	http://cornwallsustainabilityawards.org
Development Marketplace 2009 Winners	http://web.worldbank.org/WBSITE/EXTERNAL/OPPORTUNITIES/GRANTS/DEVMARKETPLACE/0,,contentMDK:22388925~pagePK:180691~piPK:174492~theSitePK:205098,00.html
Dumfries and Galloway Rural Awards	http://www.ruralgateway.org.uk/en/node/2997

E.S.E.M.P.I. “Excellent Experience for Developing Innovative Methods and Practices" - competition for best practices in rural development	http://www.reterurale.it
Farmers Weekly Awards	http://www.fwi.co.uk/Articles/2009/09/28/114569/FW-Awards-2009-Celebrating-the-best-in-British-farming.htm
Globe Award	http://globeaward.org
RegioStars – The Awards for Regional Innovative Projects	http://ec.europa.eu/regional_policy//cooperation/interregional/ecochange/regiostars_en.cfm?nmenu=4
Schweighofer Prize: European Innovation Award for Forestry, Wood Technology and Timber Products	http://www.schweighofer-prize.org/index.en.html
Slovenian Business Excellence Prize	http://www.mirs.gov.si/en/field_of_activity/slovenian_business_excellence_prize/the_national_quality_award/list_of_slovenian_business_excellence_prize_winners_and_finalists/
SMART: Scotland Competition	http://www.scottishbusinessgrants.gov.uk/rsa/999.html
Stelios Award for Young Entrepreneur of the Year in Greece	http://www.stelios.com/entrepreneurship/award-for-young-entrepreneur-of-the-year-in-greece.html
the Business Achievers Awards	http://businessachieversaward.com/
The European Business Awards	http://www.businessawardseurope.com/
The European Business Awards for the Environment	http://ec.europa.eu/environment/awards/index.html
The European Enterprise Awards	http://ec.europa.eu/enterprise/policies/sme/best-practices/european-enterprise-awards/index_en.htm#winners
The German Business Founder Award	http://www.deutscher-gruenderpreis.de
The Green Awards	http://www.greenawards.ie/
The JFC Innovation Awards for Rural Business.	http://www.teagasc.ie/ruraldev/startingyourownbusiness/jfcawards.asp
The Lincolnshire Environmental Awards	http://www.lincsenvironmentalawards.org.uk
The Queen’s Awards for Enterprise	http://thebln.com/2010/04/list-of-winners-of-queens-awards-for-enterprise-2010/
The Swedish Business Awards	http://www.swedishbusinessawards.com/
The Weekly Times Farm Business Awards	http://www.rasv.com.au/weekly_times_farm_business_awards.asp
business directories / best practices:	
Europe's Best Business Selected to represent their Nation	http://www.businessawardseurope.com/newsroom/europes-best-businesses-selected-to-represent-their-nation-2/

Female Entrepreneurship in Nordic Regions	http://nordicbusinesswomen.eu/en/new_companies_02/
PRAXIS: 15 rural entrepreneurs tell their stories!	www.agr.unideb.hu/hvtk/doc/toolkit/15rets.pdf
Responsible entrepreneurship. A collection of good practice cases among small and medium-sized enterprises across Europe	www.insme.org/documents/resp_entrep_en.pdf
Springwise: smart new business ideas	http://springwise.com/ideas/
The ClearlySo: Social businesses & enterprises directory	http://www.clearlyso.com/businesses-directory-list.jsf
The Secret of Success 2010: The Many Faces of European Entrepreneurship	http://ec.europa.eu/enterprise/policies/entrepreneurship/sme-week/documents/brochure2010/entr_sme10_the_secret_of_success_-_the_many_faces_of_european_entrepreneurship_en.pdf
The secret of success: Tips from European entrepreneurs	http://ec.europa.eu/enterprise/policies/entrepreneurship/sme-week-2009/documents/entr_sme09_the_secret_of_success_-_tips_from_european_entrepreneurs_en.pdf

conferences, seminars, proceedings and participants:

2nd Green Venture Summit	http://greenvsummit.com/gvs10/
7th Rural Entrepreneurship Conference: Rural Enterprise in a Recession	https://www.browne.org.uk/images/uploads/click%20on%20presentation%20to%20view%20slides.doc
Agri&tour 2009	in person
ERSA Congress “Sustainable Regional Growth and Development in the Creative Knowledge Economy”	in person
European Conference How Green Makes Money	http://www.howgreenmakesmoney.eu
European SME Week 2010: European Level Events	http://ec.europa.eu/enterprise/policies/entrepreneurship/sme-week/index_en.htm
Forum Innovation IV “Environment, Innovation and Sustainable Development”	in person
IncrediblEurope Summit 2010	http://incredibleurope.com/_pdf/Booklet_IncrediblEurope_2010.pdf
ISDA 2010: Innovation and Sustainable Development in Agriculture and Food	http://www.isda2010.net/content/view/full/1564
Rural Tourism and Network Nature 2000: In the lagoon countryside (field seminar with Veneto Agricultura)	in person
SusCon 2010: International Conference on Sustainable Business and Consumption	http://www.suscon.net/global/download/%7BVUVLDMKYBR-9292010143543-DAJMVZPNOL%7D.pdf
TED Conferences and Events	http://www.ted.com/
The Like Entrepreneurship forums 2010/2009/2008	http://www.like-entrepreneurship.com/