

Concept Paper

# New Resource-Wise Planning Strategies for Smart Urban-Rural Development in Finland

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Academic Editors: Christina Kakderi, Nicos Komninos and Panagiotis Tsarchopoulos

Received: 28 November 2016; Accepted: 2 February 2017; Published: 7 February 2017

**Abstract:** This article discusses the opportunities and challenges for resource-wise development strategies in regional planning. Spatial planning integrates the key aspects, transportation, housing, and food production which are, on many occasions, stated as the most significant consumption factors causing environmental impacts. In light of the challenges that regions are currently facing in Finland, we are drawing attention to the role of strategic spatial planning as demand-responsive resource management, a theme which is still inadequately addressed within regional development and planning in Finland. In many other fields of society, innovative data-based products and demand- and user-driven services are considered important sources of success in the future. Such strategies combine different types of service providers, like deliveries for groceries or restaurant meals, mobile healthcare services, or public transport with on-demand services. We highlight the fact that a regionally large and sparsely populated country, such as Finland, cannot achieve success solely through centralisation. Instead, smart networking, co-creation, and innovative cyber-physical solutions are vital for the utilisation of the entire country's resource potentiality. In conclusion, we underpin the need for a framework, which would offer a strategic support scheme for resource-wise development, resource optimization, and closure of yield gaps. In our view it is necessary to begin to envision, strategise, and develop user- and demand-responsive development strategies with a specific aim for sustainable, resource-wise ways of life in northern regions, also outside the growing urban centres, and innovate solutions that help individuals, communities, and the whole society to renew and manage resources wisely.

**Keywords:** resource-wise spatial planning; on-demand economy; urban-rural integration; co-creation

## 1. Introduction

It is a well-known fact that most parts of Northern and Eastern Finland are vacating almost at the same speed as the southern metropolitan region is growing [1]. This (presumably inevitable) tendency has gained much attention in the Finnish media, and the argumentation for metropolitan development as an overall gain for the entire country is supported by many advocates who see the opportunities this brings to sectors, such as the housing construction industry, for instance. In light of the global megatrends, such as intensified competition for resources and growing pressures on sustainable resource management of ecosystems in the north [2], we see this polarisation as problematic. In our opinion, a country as regionally large and sparsely populated as Finland cannot achieve success solely through centralisation. Instead, smart networking and integrated local solutions are vital for the utilisation of the entire country's resources (especially bioeconomy-related), which are inevitably geographically scattered. In case of sudden changes in the global markets and growing interest towards

the resource-rich areas in the peripheral north, planning authorities are often unable to efficiently respond to situations where adaptation is necessary, due to either industry closures or new emerging projects and investments related to bioeconomy or extractive industries, for example. This may either lead to a considerable delay, or even cancellation, of the projects, or launching large-scale projects without considering adequately their impacts, as witnessed in some recent cases in Finland.

In this concept paper, we are proposing an idea of resource-wise and demand-responsive planning strategies in the regional context. We are outlining this framework for regions which McCann and Ortega-Argilés call intermediate urban-rural regions [3], but also those more peripheral rural areas with only a few urban centres, and a large number of smaller rural localities. According to a Finnish classification system of localities [4], rural localities, rural fringe settlements, middle-sized rural localities and small rural localities have a total population of 1.5 million people, which is ca. 27% of Finland's population.

We are, thus, reversing the scale and scope of the discussion on resource-wise planning strategies from city-regions to the regional network of localities considered as the frontier of sustainable growth. Founded on the systems way of thinking, and emphasising smart networking, there are similarities in our approach to the smart specialisation strategies. However, in terms of the most remote and less prosperous regions, patterns of specialised diversification that allow these regions to actually diversify and not specialise are more feasible than targeted specialization [3]. As an answer to the criticism towards the cluster-based and sectoral emphasis of the smart specialisation concept, there has been a more general shift in policy thinking towards cross-cutting open innovation platforms [5,6]. Such platforms, or innovation ecosystems, are built on place-based policies facilitating a range of partnerships and bringing different resources—people, knowledge, and assets—together across the regional and local municipality scales.

In addition to focusing on the regional context, we also suggest that resource-wise strategies should foster close matching between the supply of different resources and the region's short-, medium-, or long-term demand. Therefore we will valorise the possibilities of resource-wise regional strategies and planning from the perspective of the new emerging economies, such as peer-to-peer, the sharing economy, and the on-demand economy, which are changing industries and cities in a mobile-first world [7] Even though our paper is concept-oriented and deals with the aforementioned issues on a theoretical level, the paper also draws on the analysis of policy and planning documents, and eight interviews with key actors in the South Savo region carried out in 2016. The secondary aim of this article is to briefly reflect on future research needs dealing with rural development in Finland, and thereby set a further agenda to develop resource-wise planning strategies in practice. In order to bring this debate onto the political agenda, we have, together with the Regional Council of South Savo, made an initiative for the Finland Centenary Programme, to organise a seminar named "Finland100—a hundred Finnish rural localities" in spring 2017.

Consisting of different areal typologies [4] such as the growing urban centres, peri-urban areas characterised by expanding commuter belts, and the rural hinterland with an ageing population and in economic decline, the current challenges confronted by the Finnish regions differ significantly, not only in terms of their competences, but also in terms of their potential evolutionary trajectories. The urbanisation process in Finland is of relatively recent origin, having started in the 1960s. Some regions had significant growth as recently as in the 1970s and 1980s, but subsequent impacts on economic development have rendered the prospects of rural areas mostly negative [8] (p. 362). Today, we can see how technological, and even governmental, structures can change rapidly, while physically-built structures change slowly. Our previous case studies in the "Finnish rural communities in the 2010s" research project, executed in 2013–2015, described the major challenges these communities face regarding services and infrastructure in particular. In many small- and medium-sized rural settlements, the community structure is predominantly in a state of permanent incompleteness, due to modernistic planning with overoptimistic growth expectations that have not been realised [9] (p. 30). The vacancy rate in commercial and public real estates is a growing problem, as the state

government and services have withdrawn from rural areas. Digitalisation and cyber-physical systems are considered to be the method of solving this lack of physical presence of services. A larger portion of services can, and will, be provided digitally, which is both sped up and necessitated by technological innovation and diminishing resources, respectively [10]. Yet, in terms of physical planning, forsaking the ideal of continuous growth has been difficult to achieve.

In urban development and planning, the paradigm for continuous growth and progress has had various forms, also in terms of sustainability, ranging from ecological modernism, to new urbanism and smart growth. Due to resource depletion and climate change, resource efficiency has become even more important. Likewise, the concept of resilience has also made its way into the fields of environmental management, regional development, and strategic planning. Resilience and robustness are undeniably important features of regional infrastructure in northern latitudes, where the ability to maintain vital systems, such as roads, food supply, water, or energy services in all circumstances is crucial. In spite of their popularity, these concepts have also faced criticism, mainly due to their narrow focus and natural scientific orientation [11]. Newly-emerged, more holistic concepts, such as socio-ecological resilience, argue in favour of “people and nature as interdependent systems” which may change, adapt, or transform in response to stresses and strains. Davoudi et al. have also called this approach evolutionary resilience [12], which means that fostering resilience involves cultivating preparedness, as well as planning for recovery from shocks. Such conceptual frameworks place a central role for the capacity of individuals and communities to learn, meaning that complex adaptive socio-ecological systems can become more or less resilient depending on their social learning capacity [12]. In a similar manner, the concept of resource wisdom has been suggested as a broader, more holistic framing of the sustainability issues; it is defined as the ability to use different kinds of resources (such as natural resources, raw materials, energy, products, services, space, and time) in a manner that benefits both human well-being and sustainable growth [13,14]. In other words, resource wisdom goes beyond using resources efficiently; it is a holistic approach to wise resource management.

In the smart city research community, similar terminological reconceptualisations have manifested themselves in the call for wise cities (as opposed to merely “smart” ones; e.g., [15]). In past decades, cities that have adopted the smart or wise city label have emphasised different aspects, from e-governance to environmental sustainability and IT industries. In our view, it is important to understand that the innovations that cities and regions need in the 21st century can be both material and immaterial, or cultural and technological [16]. Indeed, these categorisations, themselves, are rather arbitrary, as technology, for example, is so deeply ingrained in societies. Yet, we argue, these innovations must be rooted in existing practices of urban and rural life.

What we find striking is that different approaches regarding sustainable growth have concerned almost exclusively core city-regions, and overlooked the potentiality of rural localities as networked units which could facilitate resource supply and demand locally. Small and medium-sized rural population centres are, hence, the most neglected scale of inquiry in terms of sustainable resource management, even though many features actually uphold the idea that they can, also in terms of their suitable size, be well-fitted in many types of local self-supporting energy service or environmental technology solutions [17]. In turn, densification has been adopted as the main strategy for sustainability, and as the central dogma of urban planning and policy-making in the 21st century in Finland. Most practical studies have dealt with cities, and region-wide cases altogether are few. One of the exceptions is the work done by the Finnish Innovation Fund Sitra and the city of Jyväskylä, who have been the forerunners in developing a scalable development strategy for resource wisdom. Their joint project called “Towards resource wisdom” produced a range of practical trials proposed by local residents and pilots related to activities such as the reduction of food waste, traffic and housing, which were implemented [18]. Sitra has also been developing and piloting a regional resource flow network model [13]. However, there is a need to address resource-wise development more widely, both in cities and rural localities, in regions which do not possess significant physical material flows or growth.

## 2. The Need for an Integrated Resource Management Model

Spatial planning integrates the key aspects, transportation, housing, and food production, which are, on many occasions, stated as the most significant consumption factors causing environmental impacts. In order to integrate planning and coordination at different levels of government, the state has urged urban regions to compile joint strategic plans based on growth agreements. These are called LHT (or MAL in Finnish)—agreements, which integrate land use, housing, and transportation planning and, recently, also service and economic development planning. In these agreements, the state investments, especially in major transport infra projects, are used to encourage municipalities' strategic cooperation [19]. The underlying premise is that growing urban regions are regarded as engines of Finnish economic growth and, at the same time, this centralising development helps curb climate change. Finnish national innovation programmes since the mid-1990s, such as OSKE, INKA, and the Six City Strategy, have strengthened this “hub” logic by specifically targeting city-regions as opposed to wider regional coverage [5]. Accordingly, the shift towards national control of innovation strategies has led to a further centralisation and made it harder to tailor interventions to specific regional needs. This, in turn, has favoured space-neutral “excellence” at the cost of place-based development [5]. As a consequence, non-statutory strategic planning instruments have become popular in urban city-regions [20].

Challenges identified with the informal strategic planning and its relation to the statutory planning system in Finland are related, for instance, to problems of legitimacy and participation, and legislative demands (for a thorough analysis on the paradox of strategic spatial planning, see [20]). What we are highlighting in this context is the tendentious urban framing and geographical delineation of the strategic planning procedures. Focused on urban and dynamic city-regions, they fail to address the “other half” of the regional resource potentiality which, in many cases, is relying on natural resources and is highly embedded within the region. These challenges were demonstrated in a pilot study, which the University of Oulu and the regional council of South Savo realised in 2016. Our aim was to examine the role of strategic, regional land use planning in terms of its steering power and scalability to municipality-level planning. Our initial hypothesis was that the “service chain” from the regional planning level to local master planning and further down to the building permission phase is more separate than one that is based on a joint strategic vision. Accordingly, different regional and municipal authorities and government bodies handle spatial planning issues case-by-case through the conventional and legal-administrative planning jurisdiction.

Our interest was directed towards South Savo, because the region has been among those suffering the most from depopulation and demographic changes, while, at the same time, the region possesses a wide range of material and immaterial resources. Therefore, it also provides an interesting case to think the possibilities for smart, scalable, and regionally-tailored resource-wise strategies outside growing city-regions. In the smart specialisation strategy of South Savo [21] top areas of innovation are framed as the forest-based bioeconomy, clean water and environmental safety technologies, and smart and functional materials. In addition, digital management of data and information and organic production and food safety innovations are considered developing areas of innovation. However, the strategy and the selected priority domains are rather typically founded on narrow industrial sectors. By comparison, in one of the growth areas in Finland, Pirkanmaa, the regional strategy [5] is based on the so-called growth ecosystems and platform-based urban development. The growth ecosystems identified, such as smart mobility, smart housing and infrastructure, and industry renewal, reflect existing strengths and are underpinned by key enabling technologies, strategic initiatives, and resources identified in the areas.

Interestingly, the regional plan of South Savo (2010), and especially the second-phase update plan waiting to be accepted, differ from most other regional plans in Finland, which are, more or less, characterised by comprehensiveness and zoning orientation. Providing strategic content and giving more freedom of action to the lower level plans, the regional plan has already taken the first step towards accommodating alternative longer-term development scenarios with necessary flexibility,

as suggested by Mäntysalo et al. [16]. Furthermore, the regional council has been exceptionally active in highlighting the role of smaller rural centres as a development potential for the region [22]. Based on eight interviews with key regional and municipality-level planning authorities, and a qualitative content analysis of the planning documents, we were able to draw conclusions of the conformity and scalability of the strategic development objectives in the case of South Savo. The semi-structured interviews concentrated on examining the role, precision, and form of the regional plan within the statutory planning system on the one hand and, on the other hand, valorising the drafting process of a structural scheme for the Mikkeli city-region. Generally, the regional authorities saw the role of the regional plan as important for protecting the natural and cultural values. As a consequence, they also presumed accuracy and legislative power in the identification and conservation of these values. Due to this, very detailed surveys are required, which prolongs the process. The officers working for the city of Mikkeli considered the regional plan as a slow and inefficient instrument to respond to the investment needs of the business world. Paradoxically, the plan must be highly accurate in pinpointing natural and cultural values but, at the same time, it should be a strategic instrument. Conflict situations between different planning tiers were mostly related to recreational needs and lakeshore areas, which are an abundant resource in South Savo. Municipalities may wish to deploy these assets to building sites, whereas regional authorities favour their preservation as recreation areas. A rather surprising notion was that building steering was not regarded as a necessary task for the regional plan. To conclude, most interviewees were in favour that the role and purpose of the regional plan ought to be revised. As one of the interviewees stated: *“Regions such as South Savo do not benefit much from the regional plan. If there is no building needs, there is no need for plans either. Unnecessary planning tiers ought to be abolished”*.

Following the regional plan approved in 2010, city-regional strategic objectives were outlined in a structural scheme work initiated in 2012 by Mikkeli, the provincial capital city of South Savo. Our interviews revealed that the structural scheme work was considered a separate work from the statutory planning process. Moreover, the planning for growth-ideology was explicitly shown in the process, which focused on distributing possibilities rather than optimising and prioritising the development objectives. Reluctance towards integrated coordination easily creates overlapping functions and land reserves, oversized investments and surplus of services, which is very problematic in terms of wise resource management. Without the political will, the efforts to initiate cooperation between municipalities have slight chances for success in a consensus-oriented dialogue [20]. The lack of selectiveness, over-optimistic expectations of growth, and a tendency for partial optimisation hindered the achievement of a clear strategic focus and made the planning authorities question the applicability of such a non-statutory planning instrument in South Savo. Nonetheless, the purpose of interaction, brainstorming, and collaborative visioning were well-served by the scenario working process, and the planning authorities considered the process more important than the outcome.

Seeking to compare the conformity of the strategic objectives of the structural scheme and regional plan in the local planning level, we additionally conducted a practice-based study in the (former) municipality of Ristiina [23]. Drafting a place-based development scenario for a rural locality, we wanted to show an alternative development path for the one proposed by the new municipal-level strategic master plan, which positions Ristiina as one of the suburbs of the Mikkeli city-region. In our view, fostering such peri-urbanisation development is against the transition to a resource-wise society. However, we are not depreciating the importance of the structural schemes or growth agreements in city-regions, as such, but like to suggest an approach that embraces a more open-ended ecosystem development approach, which also promotes strategic planning themes for the wider regional network. Ecosystem facilitation and a platform-based approach to innovation support can be considered as breeding grounds for new forms of cooperation, which reach out to government, markets and civil society. Above all, fostering resource-wise urban-rural development presumes innovative forms of cooperation. The need for such “urban-rural partnerships” has been recognised for a long time [24,25], but the practical implementation still seeks a form. The need for a systems approach is also recognised

in ecosystem-based adaptation strategies, which have recently attracted increasing attention among urban planning (see, e.g., [26–29]). Natural and cultural ecosystem services are, hence, considered as part of an overall adaptation strategy that helps people and communities adapt to the negative effects of climate change. At the local level, identifying collectively acknowledged opportunities emerging from informal aftermarkets and sharing economy fostered by digitalisation is essential. People, instead of institutional organisations, will make things happen, which is in many respects enabled by digitalisation; it can employ the available, but hidden, resources of people, commodities, and skills in new ways.

### 3. Demand-Responsive Regional Ecosystems in the Focus of Spatial Planning

Reflecting on the aforementioned discontinuity of strategic objectives and overall urban-rural disintegration, we bring forth the idea of demand-responsive resource management in spatial planning. This *preparedness* denotes transition from static and top-down driven spatial planning approaches to a more dynamic, user-centred, and anticipatory processes. One of the challenges is currently the limited knowledge base on regional network capacities, which brings forth the need for geo-spatial data visualising the ecosystem resource supply and demand matching and yield gaps (compare, e.g., [30]). However, particularly in smaller rural localities, there is a lack of resources for producing such a knowledge base for planning. Therefore, a regional dashboard-type environmental monitoring system is needed with integration to open data and crowdsourcing.

Resource management based on dynamic data on regional network capacities should cover the functional, physical, sensed, and lived aspects of the environment. Functional and economic resources consisting of local supply, business, cooperatives, and services, which are often globally networked, form the basis for the economic vigour of regions. In turn, material resources and infrastructure have a significant role in enabling or impeding certain functions, activity and even behaviour. Additionally, resource-wise communities and regions should better recognise the attraction resource potentiality and “sensescape resources” as part of their strategic planning and resource management. For instance, regions such as South Savo offer a wide range of recreational possibilities and socio-cultural, commercial, and public services for whole-time and part-time residents and tourists. Finally, resource-wise regions are socially inclusive, acknowledging that quality of life, people, and cultural resources are the most valuable assets in fostering creativity and innovation [14,31,32].

At best, demand-responsive and resource-wise planning strategies could increase the competitiveness and self-sufficiency of regions, foster the utilisation of a whole country’s resource potentiality, and improve adaptation capacity to sudden and unforeseen changes, e.g., in the global markets or politics. They operate on food production, smart traffic, housing, and the built environment in a manner which is firmly linked to the utilisation of digital service operations. The user-driven approach is, therefore, considered central. In this regard, resource wisdom could also be defined as “just in time”—delivery of services and goods, where resource loss and waste are minimised. This is profoundly connected to the idea of the circular economy [33]. As we know, globally and nationally, the situation regarding, e.g., food waste, is alarming [34]. In the following paragraphs, we will briefly describe how resource-wise planning strategies relate to demand-responsive food production from the perspective of local food supply (e.g., local food circles) and alternative food networks [35], as well as food system localisation [36,37]. Secondly, demand-responsive transportation solutions are looked from the Mobility as a Service perspective, which is a form of transportation characterised by flexible routing, shared-ride modes, and pick-up and drop-off locations according to the passenger’s needs [38]. Thirdly, resource-wise strategies are considered from the viewpoint of demand-responsive housing development.

#### 3.1. Demand-Responsive Food Production

As the market and demand for organic products, culinary tourism, and healthy, high-quality, agricultural products has rapidly grown, food supply chains and their role in regional development

have been studied both in the context of rural areas [39] and in urban contexts [40]. The supply of local food, and particularly of local organic food, does not have a large share of groceries in general, though consumers also in the cities are willing to find alternative ways to get what they want. Renting et al. [35] have specified different types of alternative food networks. In their study they specifically discuss short food supply chains (SFSC), such as organic farming, quality production, and direct selling. According to the Worldwatch Institute [41], the international success of direct marketing channels of food to consumers, suggesting that there is strong support for local food systems. In Finland, so-called REKO (Rejäl Konsumtion, Fair Consumption) groups have recently become very popular in large cities, but also in smaller municipalities. However, this type of trade relies on specialised consumers and active farmers, and limited accessibility of consumers in rural areas reduces opportunities for growth [42]. Fortunately, successful examples have emerged, such as Lunchie or ResQ, which are mobile services mediating between consumers and local restaurants selling low-cost excess food, which would otherwise be waste. Another example is the MunaEggsPress, also known as “EggTaxi” in Southwest Finland, where a local henhouse entrepreneur circulates daily a route notified in advance, accurately fulfilling the customers’ demand. In such models of acquisition waste is minimised because the products are ordered beforehand. Despite the complex regulation bureaucracy, regions and municipalities in Finland have an unrevealed capacity to supply local food to be consumed in their own region [42] (pp. 96–98). This would require better regional coordination regarding logistics, facilities, and services. A major hindrance for on-demand solutions, especially concerning fresh products in a sparsely populated country, is logistics. At the same time there are groups and individuals, such as locovores (whose diets consist mainly of locally produced foodstuffs), who already use whatever information technology is available to them in creative ways to support and help them network, run their businesses, or conduct daily chores around these issues. In terms of demand-responsive regional ecosystems, it is important to harness the knowledge of these people to innovate new ways of producing, marketing, and distributing food in sparsely populated rural regions.

### *3.2. Demand-Responsive Transit*

Demand-responsive transport solutions are enabled by digital solutions and openly available data. Resource wisdom is fostered, for instance, through the use of innovative procurement, such as initiatives in commissioning new electric cars or buses. Development of on-demand use of transportation is very much justified, as the average time that a car is parked is staggeringly over 90%. Cities and regions are trying to solve the challenge of supporting public transit, encouraging the residents to switch from cars to buses, trains, and light traffic. Designing extensive cycling route networks promotes non-vehicle-based transportation in communities of all sizes [43]. However, many rural areas lack public transportation, although successful experiences have recently been achieved by on-demand transportation service experiments, also in a small scale. Demand-responsive transportation solutions (DRT) are described as an advanced, user-oriented form of transportation characterised by flexible routing and scheduling of vehicles operating in shared-ride mode between pick-up and drop-off locations according to the passenger’s needs. DRT aims at jointly optimising cost, service, and environmental performance [44]. At the moment the concept of transportation is transforming into a service, where the entire transportation system is built upon user- and service-driven thinking. Start-ups like Tuup and Whim are examples of the Finnish MaaS (Mobility as a Service) concept [45], which give people instant access to fulfilling their mobility needs from cars to taxis, buses, trains, and bike sharing. Transport is also considered a means of sharing economy where car pools or van pools can be available for citizens in different kinds of environments. In an urban context the land use and transportation interaction is a crucial question. It has been concluded that the densely-built urban areas, an attractive environment, a walkable city, and a reasonable amount of open public spaces, combined with efficient public transport, create successful environments from both perspectives. As a contradiction, urban sprawl is found to be a most unwanted phenomenon which maintains the use of private vehicles [46]. On the other hand, modern information and communication

technology provides different scenarios dealing with living environments and settlement structures. With the help of ICT, the possible living places can be chosen more freely, considering individual preferences and lifestyles. According to Mokhtarian et al. [47], ICT could even facilitate a shift to more decentralised land-use patterns. In any case, the need for vibrant smaller and larger centres will endure with the changes in transportation, because these mixed land-use and human-scale environments provide multifunctional environments that attract inhabitants, retail, and services [46].

### 3.3. Demand-Responsive Housing

As the Smart City concept has linked new digital technologies to the development of the built environment, there are still several challenges related to the management and use of data in national, regional, and property-specific planning. At the national and regional levels, preparedness for changing housing needs and preferences, optimising housing provision, and development priorities has been difficult. At the moment we are witnessing a migration wave from rural areas to urban city-regions, similar to the 1960s in Finland. This raises many questions related to resource allocation, readaptation and use of the existing built infrastructure, which covers 74% of our national wealth [48]. In the future people might prefer housing (and communities) that combine the benefits of rural and urban living with a ubiquitous access to services enabled by IoT, such as on-demand medicare, and despite the advancing urbanisation, there are also people who might be called “neoruralists”, or proponents of the LOHAS-lifestyle, interested in health and sustainability and having second, or even third, homes in rural areas. In knowledge-based economies, industries compete for the best workers, and their location decisions might, in the future, be related to the lifestyle preferences of the key staff, who have demands for a clean environment, access to nature, good schools, or low congestion [16] (p. 40). On the other hand, effectively responding to the increasing demand for “solo-living”, due to the demographic changes, is another question. In the sharing economy, housing can be a shared resource for heterogenic groups of seniors, young families, and students having different needs, such as companionship, childcare help, and affordable living. In some European examples, cooperative housing models have managed to lower the rent for housing by up to 50% [49] (p. 19). Currently, such housing models are marginally examined in Finland. As stated earlier, the absence of preparedness or demand-oriented type of thinking has been evident in Finnish spatial planning processes. It is estimated that one million homes are “wrongly” located, especially in Eastern and Northern Finland [50] (p. 16). This means that during the last 25 years every fourth home has been built in an area where the population is declining [51]. The resale value of this property can be practically zero. On the other end of the scale, in order to respond to rising prices in urban areas where demand is the highest, housing supply should be increased. New houses and apartments in the growing urban areas remain inaccessible to the part of the population that would actually need it, however. In turn, this unbalance may mean that urban sprawl will, nonetheless, continue in those areas.

## 4. Discussion

This paper has provided initial thoughts on resource-wise regional planning strategies, which could offer a long-term support scheme for regions in the face of major structural adjustments, and enable demand-responsive solutions at the local level. As Mäntysalo et al. have put it, the more schematic, “higher” levels of planning would be given the task of accommodating alternative longer-term development scenarios with necessary flexibility in the detailed planning level [20]. Such preparedness is timely due to the environmental and demographic challenges in the northern regions. One could expect that climate change and the growing global demand for natural resources changes the focus of strategic spatial planning towards sustainable management of renewable resources and the bioeconomy. Moreover, global sustainability challenges oblige us to answer the question of how we can share both material and immaterial resources wisely in the future.

For centuries, resource wisdom has been an inherent feature of communities. Management of resources has been based on the supply and demand for limited resources of land, water, energy,

and food. Sharing had a key role in communities' survival and prosperity. Usually people had no choice but to be resource-wise. (However, as Campbell [52] (p. 297) points out, one should not over-romanticize the pre-industrial or indigenous communities due to limited modern applicability). Since those days, much of the previously self-evident and intrinsic resource wisdom ("more for less" principle) has been lost in our era of prosperity. The generations born after the war thus continue to possess many resource-wise practices and skills. These skills are disappearing at an alarming rate due to urbanisation and adoption of new lifestyles, however. At the same time, a growing group of people are pursuing a sustainable way of life voluntarily. Another group is formed by individuals that are forced to cope with scarce resources, such as the unemployed or immigrants. In order to build sustainable communities and include the diverse groups in resource-wise planning and policy decisions, it is important to identify these groups and their practices. This requires novel methodologies of shared information production and co-design, which reckon the various forms and preferences of participation and encourage open reflection and a critical attitude of participants [53]. Planning inclusion also increases the level of commitment that different groups of people have to their own living environment, [25] which could also enhance environmental responsiveness. Resource-wise strategies opt for win-win situations: e.g., the selection of one's traffic mode has a direct influence on carbon dioxide emissions and individual health. Importantly, resource wisdom calls for individual changes in behaviour, and not merely changes in the physical surroundings [54].

The rise of the on-demand and sharing economies are revolutionising our consumption behaviour and attitudes towards owning things, for example. The concept of ownership sits well for scarcity management, while sharing works better for the information-based world [55]. In general, we will see increased demand for immaterial assets, such as data, information, and culture, and growing appreciation of unique things and experiences instead of buying more of the same [16] (p. 81). Rethinking resource wisdom in terms of demand-responsive transportation, housing, or food production networks could revolutionise the future of our regions. Society's ability to renew and manage resources wisely prerequisites prosperous alliances between urban and rural areas, instead of fiercely competing against each other.

Making evident the implications of the proposed ideas to spatial planning processes, and whether they can be developed into regional strategies of change, would require a great deal of further research effort. To begin with, our planning system is still rigid and top-down driven, although we have made progress during the last fifteen years towards a more people-oriented approach. Secondly, the scope of strategic planning and structural schemes founded on methodological urbanism and growth makes strategic planning instruments mainly applicable on strengthening the urban structure of city-regions. The unbalance is evident, as rural and peripheral areas are often seen as resource deposits bringing well-being to cities. Thirdly, as concepts, resource-wisdom, as well as sustainability, are mobile targets [52] (p. 132), and the intended goals will not be achieved just by adding the term "sustainable" or "resource-wise" to planning documents [56] (p. 302). Ultimately, what is required are plans that are flexible in terms of changing circumstances, strict enough for heritage and nature conservation, and agile enough to respond to business needs. Based on static data and inventories, even long-term spatial planning is, in a way, an extrapolation from the past, which is more concerned with fixed goals than multi-objective problem solving. This also poses the question of whether and to what extent strategic, long-term planning is even possible in highly dynamic contexts, and to what extent it is even needed in declining regions. Based on our notions, the problem with regional strategies seems to be that they optimistically share "everything for everyone". Instead, their focus should be in identification, prioritisation, and optimisation of different resource networks and their coverage and accessibility, including both urban and rural areas.

The future challenges necessitate that we harness the potentiality of enthusiastic individuals and groups, instead of relying on governmental institutions to take care of things. There has been much talk on the untapped resource of young people, but the same goes for immigrants and senior citizens, as well. This does not imply that we should make the dangerous mistake of seeing people as a resource

in such a way that we see “raw material” for an attempt to create a new society [57] as Hannah Arendt warned in her conclusions about the misleading interpretations of Marxist ideals. Instead, we wish to say that regional development strategies cannot remain focused solely on physical or economical dimensions; a broader view of human resources and the quality of life needs to be addressed. Such strategies do not immediately have to intend to create physical and economic growth, but instead promote local change management linked with people and their needs.

**Acknowledgments:** The authors wish to thank the Academy of Finland (project 255487) and the Ministry of Agriculture and Forestry (project 1849/312/2012) for financial support.

**Author Contributions:** Emilia Rönkkö contributed principally on the sections dealing with the introduction of the theoretical ideas on the demand-responsive planning approach and the pilot study in South Savo. Anna Luusua and Aulikki Herneoja contributed to the sections dealing with bottom-up—design approach and citizen involvement in demand-responsive resource management. Eeva Aarrevaara contributed to the section dealing with demand-responsive transit, and Toivo Muilu contributed to the section concerning demand-responsive food production. All authors have contributed to the overall themes and discussion presented in this paper.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Statistics Finland (SVT): Väestöennuste. 2004. Väestöennuste Kunnittain ja Maakunnittain Vuoteen 2040—Muuttoliikkeen Sisältävä Laskelma. (Population Forecast 2004. Population Forecast by Municipality and Region Including Migration till 2040). Available online: [http://www.stat.fi/til/vaenn/2004/vaenn\\_2004\\_2004-09-20\\_tau\\_002.html](http://www.stat.fi/til/vaenn/2004/vaenn_2004_2004-09-20_tau_002.html) (accessed on 27 November 2016). (In Finnish)
2. Smith, L.C. *Uusi Pohjoinen—Maailma Vuonna 2050. (New North—The World in 2050)*; Tähtitieteellinen Yhdistys Ursa: Helsinki, Finland, 2011.
3. McCann, P.; Ortega-Argilés, R. Smart Specialization, Regional Growth and Applications to European Union Cohesion Policy. *Reg. Stud.* **2015**, *49*, 1291–1302. [CrossRef]
4. Helminen, V.; Tiitu, M.; Nurmio, K.; Ristimäki, M. Suomen Taajamarakenne. Taajamien Seututason Luokittelu. (Classification of the Finnish Settlement Structure). Available online: [https://helda.helsinki.fi/bitstream/handle/10138/166235/SYKEra\\_32\\_2016.pdf?sequence=1](https://helda.helsinki.fi/bitstream/handle/10138/166235/SYKEra_32_2016.pdf?sequence=1) (accessed on 30 January 2017).
5. Vallance, P.ö. *Smart Specialisation for Regional Innovation: Dissemination Report for Research Study of 471 Tampere, Finland*; Centre for Urban and Regional Development Studies (CURDS), Newcastle University: Newcastle Upon Tyne, UK, 2016.
6. Cooke, P. *Complex Adaptive Innovation Systems: Relatedness and Transversality in the Evolving Region*; Routledge: Abingdon, VA, USA, 2012.
7. The On-Demand Economy. Available online: <https://theondemandeconomy.org/> (accessed on 3 February 2017).
8. Lehtonen, O.; Tykkyläinen, M. Self-reinforcing spatial clusters of migration and socio-economic conditions in Finland in 1998–2006. *J. Rural Stud.* **2010**, *26*, 361–373. [CrossRef]
9. Aarrevaara, E. (Ed.) *Suomalaiset Maaseututaajamat 2010-Luvulla—Tutkimushankkeen Loppuraportti. (Finnish Rural Localities in the 2010s—Research Project)*; University of Applied Sciences: Lahti, Finland, 2015.
10. Rehunen, A.; Rantanen, M.; Lehtola, I.; Hiltunen, M.J. (Eds.) *Palvelujen Saavutettavuus Muutoksessa—Maaseudun Vakituisten ja Vapaa-Ajan Asukkaiden Palveluympäristön Kehityssuunnat ja uudet Mahdollisuudet. (Accessibility of Services in Change—Trends and New Opportunities of the Service Environment of Rural Permanent and Leisure Time Residents)*; University of Helsinki, Ruralia-Institute, Reports 88: Helsinki, Finland, 2010.
11. Davoudi, S. Resilience, a bridging concept or a dead end? *Plan. Theory Pract.* **2012**, *13*, 299–307. [CrossRef]
12. Davoudi, S.; Brooks, E.; Mehmood, A. Evolutionary Resilience and Strategies for Climate Adaptation. *Plan. Pract. Res.* **2013**, *28*, 307–322. [CrossRef]
13. Hokkanen, J.; Virtanen, Y.; Savikko, H.; Känkänen, R.; Katajajuuri, J.M.; Sirkiä, A.; Sinkko, T. *Alueelliset ResurssiVirrat Jyväskylän Seudulla. (Regional Resource Flows in the Jyväskylä City Region)*; Sitra Reports 91: Helsinki, Finland, 2015. (In Finnish)
14. Hämäläinen, T. (Ed.) *Towards a Sustainable Well-Being Society. Building Blocks for a New Socio-Economic Model*; Sitra: Helsinki, Finland, 2013.

15. Hambleton, R. *Leading the Inclusive City. Place-Based Innovation for a Bounded Planet*; The Policy Press: Bristol, UK, 2014.
16. Montgomery, J. *The New Wealth of Cities: City Dynamics and the Fifth Wave*; Ashgate Publishing, Ltd.: London, UK, 2007.
17. Kitti, L.; Ovaska, U.; Wuori, O. (Eds.) *Vihreän Talouden Toimintamalli—Tapaustutkimus Sodankylästä. (Abstract: Green Economy in the Making—A Case Study from Sodankylä)*; MTT Agrifood Research Finland: Jokioinen, Finland, 2014.
18. Resource Wisdom. Available online: <http://www.sitra.fi/en/ecology/resource-wisdom> (accessed on 11 April 2016).
19. LHT-Network. Available online: [http://www.mal-verkosto.fi/in\\_english](http://www.mal-verkosto.fi/in_english) (accessed on 4 January 2017).
20. Mäntysalo, R.; Kangasoja, J.K.; Kanninen, V. The paradox of strategic planning: A theoretical outline with a view on Finland. *Plan. Theory Pract.* **2015**, *16*, 169–183. [[CrossRef](#)]
21. Smart Specialization Strategy of South Savo 2014–2017. Available online: <http://s3platform.jrc.ec.europa.eu/documents/20182/168041/Smart+Specialisation+Strategy+of+South+Savo+2014-2017.pdf/bb7e9039-8b4a-4da6-8374-fceca23edf87> (accessed on 7 January 2017).
22. A Development Campaign for small rural centres. Available online: <http://www.esavo.fi/pike> (accessed on 7 January 2017). (In Finnish)
23. Miettinen, M. Maakuntakaavan Vaikuttavuus ja Strategisten Maankäytön Suunnitelmien Skaalaus Maaseudun Pienkeskusten Suunnitteluun, Case Ristiina. (Effectiveness and Scalability of Strategic Land-Use Plans to the Planning of Small and Medium Sized Rural Settlements. Case Ristiina). Master's Thesis, University of Oulu, Oulu, Finland, 2016.
24. European Spatial Development Perspective (ESDP). *Towards Balanced and Sustainable Development of the Territory of the European Union*; European Commission: Potsdam, Germany, 1999.
25. Rusanen, M.; Hooli, L. *Planning Together for Better Quality of Life. Guide for Integrated Management of Urban Rural Interaction*; NEW BRIDGES-Project, Baltic Sea Region Programme 2007–2013; UBC Environment and Sustainable Development Secretariat: Helsinki, Finland, 2011. Available online: [http://www.urbanrural.net/index.php/ur:outputs\\_0](http://www.urbanrural.net/index.php/ur:outputs_0) (accessed on 20 June 2016).
26. Millennium Ecosystem Assessment. *Ecosystems and Human Well-Being: A Framework for Assessment*; Island Press: Washington, DC, USA, 2003.
27. Ahern, J.; Cilliers, S.; Niemelä, J. The concept of ecosystem services in adaptive urban planning and design: A framework for supporting innovation. *Landsc. Urban Plan.* **2014**, *125*, 254–259. [[CrossRef](#)]
28. Niemelä, J.; Saarela, S.R.; Söderman, T.; Kopperoinen, L.; Yli-Pelkonen, V.; Väre, S.; Kotze, J. Using the ecosystem services approach for better planning and conservation of urban green spaces: A Finland case study. *Biodivers. Conserv.* **2010**, *19*, 3225–3243. [[CrossRef](#)]
29. Brink, E.; Aalders, T.; Ádám, D.; Feller, R.; Henselek, Y.; Hoffmann, A.; Ibe, K.; Matthey-Doret, A.; Meyer, M.; Negrut, N.L.; et al. Cascades of green: A review of ecosystem-based adaptation in urban areas. *Glob. Environ. Chang.* **2016**, *36*, 111–123. [[CrossRef](#)]
30. Burkhard, B.; Kroll, F.; Nedkov, S.; Müller, F. Mapping ecosystem service supply, demand and budgets. *Ecol. Indic.* **2012**, *21*, 17–29. [[CrossRef](#)]
31. Blessi, G.T.; Grossi, E.; Sacco, P.L.; Pieretti, G.; Ferilli, G. The contribution of cultural participation to urban well-being. A comparative study in Bolzano/Bozen and Siracusa, Italy. *Cities* **2016**, *50*, 216–226. [[CrossRef](#)]
32. Bukenya, J.O.; Gebremedhin, T.G.; Schaeffer, P.V. Analysis of rural quality of life and health: A spatial approach. *Econ. Dev. Q.* **2003**, *17*, 280–293. [[CrossRef](#)]
33. European Commission. Closing the Loop—An EU Action Plan for the Circular Economy. Available online: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015DC0614> (accessed on 19 November 2016).
34. Silvennoinen, K.; Koivupuro, H.K.; Katajajuuri, J.M.; Jalkanen, L.; Reinikainen, A. *Ruokahävikki Suomalaisessa Ruokaketjussa—Foodspill 2010–2012—Hankkeen Loppuraportti (Summary: Food Waste Volume and Composition in Finnish Food Chain)*; MTT Agrifood Research Finland Report 41: Jokioinen, Finland, 2012. Available online: <http://www.mtt.fi/mttraportti/pdf/mttraportti41.pdf> (accessed on 28 June 2016).
35. Renting, H.; Marsden, T.K.; Banks, J. Understanding alternative food networks: Exploring the role of short food supply chains in rural development. *Environ. Plan. A* **2003**, *35*, 393–411. [[CrossRef](#)]
36. Hinrichs, C.C. The practice and politics of food system localization. *J. Rural Stud.* **2003**, *19*, 33–45. [[CrossRef](#)]

37. Feagan, R. The place of food: Mapping out the 'local' in local food systems. *Prog. Hum. Geogr.* **2007**, *31*, 23–42. [CrossRef]
38. Teal, R. Using Smart Technologies to Revitalize Demand Responsive Transit. *J. Intell. Transp. Syst.* **2007**, *1*, 275–293. [CrossRef]
39. Marsden, T.; Banks, J.; Bristow, G. Food Supply Chain Approaches: Exploring their Role in Rural Development. *Sociol. Rural.* **2000**, *40*, 424–438. [CrossRef]
40. La Rosa, D.; Barbarossa, L.; Privitera, R.; Martinico, F. Agriculture and the city: A method for sustainable planning of new forms of agriculture in urban contexts. *Land Use Policy* **2014**, *41*, 290–303. [CrossRef]
41. Halweil, B. *Home Grown. The Case for Local Food in a Global Market*; Worldwatch Institute: Washington, DC, USA, 2002. Available online: <http://www.worldwatch.org/system/files/EWP163.pdf> (accessed on 28 June 2016).
42. Kotavaara, O.; Korhonen, K.; Miettinen, M.; Lehtinen, U.; Muilu, T.; Juga, J.; Rusanen, J. *Lähi—Ja Luomuruoan Saavutettavuus Pohjois-Pohjanmaalla (Abstract: Accessibility of Local and Organic Food in Northern Ostrobothnia)*; MTT Agrifood Research Finland, Report 152: Jokioinen, Finland, 2014. Available online: [www.mtt.fi/mttraportti/pdf/mttraportti152.pdf](http://www.mtt.fi/mttraportti/pdf/mttraportti152.pdf) (accessed on 27 June 2016).
43. Vaismaa, K.; Rantala, T.; Karhula, K.; Luukkonen, T.; Metsäpuro, P.; Mäntynen, J. *Pyöräilyn ja Kävelyn Edistäminen Suomessa. Toimenpidesuosituksia Kaupungeille. (Promotion of Cycling and Walking in Finland. Recommendations for Action for Cities)*; Tampere University of Technology, Transport Research Centre Verne: Tampere, Finland, 2011.
44. Dessoiky, M.; Rahimi, M.; Weidner, M. Jointly optimizing cost, service, and environmental performance in demand-responsive transit scheduling. *Transp. Res. Part D* **2003**, *8*, 433–465. [CrossRef]
45. MaaS Global Is the World's First Mobility-As-A-Service Company, Founded in 2015. Available online: <http://maas.global/maas-as-a-concept/> (accessed on 15 October 2016).
46. Circella, G.; Pagliara, F. Transportation and Land Use. In *Routledge Handbook of Transportation*; Teodorović, D., Ed.; Routledge: New York, NY, USA & London, UK, 2016.
47. Mokhtarian, P.L.; Salomon, I.; Handy, S.L. The impacts of ICT on leisure activities and travel: A conceptual exploration. *Transportation* **2006**, *33*, 263–289. [CrossRef]
48. Rakennetun Omaisuuden Tila (Built Property Status). Available online: <http://roti.fi/> (accessed on 7 January 2017).
49. European Cultural Foundation (ECF). *Built the City. How People Are Changing Their Cities*; European Cultural Foundation: Amsterdam, The Netherlands, 2016.
50. Pakarinen, S. Miljoona Asuntoa Väärässä Paikassa. (One Million Houses in Wrong Places). Rakennusteollisuus, Blogi, Puheenvuoroja Rakennetusta Ympäristöstä. Available online: <https://rakennusteollisuus.wordpress.com/2016/01/29/miljoona-asuntoa-vaarassa-paikassa/> (accessed on 27 May 2016). (In Finnish)
51. Vainio, T. *Asuntotuotantotarve 2015–2040. (Need for Housing Production in 2015–2040)*; VTT Technical Research Centre of Finland: Espoo, Finland, 2016.
52. Campbell, S. Green Cities, Growing Cities, Just Cities? Urban Planning and the Contradictions of Sustainable Development. *J. Am. Plan. Assoc.* **1996**, *62*, 296–312. [CrossRef]
53. Luusua, A.; Ylipulli, J.; Jurmu, M.; Pihlajaniemi, H.; Markkanen, P.; Ojala, T. Evaluation Probes. In Proceedings of the CHI'15: The ACM CHI Conference on Human Factors in Computing Systems, Seoul, Korea, 18–23 April 2015.
54. Lockton, D.; Harrison, D.; Stanton, N. Making the user more efficient: Design for sustainable behavior. *Int. J. Sustain. Eng.* **2008**, *1*, 3–8. [CrossRef]
55. Ismail, S.; Malone, M.S.; van Geest, Y. *Exponential Organizations: Why New Organizations Are Ten Times Better, Faster, and Cheaper than Yours (and What to do about It)*; Diversion Books: New York, NY, USA, 2014.
56. Berg, P.G.; Nycander, G. Sustainable neighbourhoods—A qualitative model for resource management in communities. *Landsc. Urban Plan.* **1997**, *39*, 117–135. [CrossRef]
57. Arendt, H. *The Human Condition*, 2nd ed.; The University Chicago Press: Chicago, IL, USA, 1958.

