



12th International Geography Olympiad

FIELDWORK EXERCISE 2

Staritsa and sustainable settlement systems

Resource Book

Tver 2015

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Sustainable futures for settlements in rural areas

Many small settlements in long-settled areas have suffered the same fate in the last 60 years; once thriving communities have lost out to larger metropolitan areas as their functions have been superseded by better transport links, declines in demand for rural labour and the centralisation of administrative functions. In the last 60 years, the market areas for goods and services have increased in size, and mass production is the dominant mode of industry. Local goods (seasonal fresh food) and services (vehicle repair) survive in small settlements. Public transport and vehicle ownership have increased labour force mobility and services such as hospitals, schools and universities are increasingly found in larger urban settlements. *Central place theory*, described by the German Geographer Walter Christaller, noted the importance of (i) the market place in settlements, (ii) transportation within a settlement system and (iii) the role of administrative functions (like schools and hospitals) offered by small settlements.

Figure 1 is the widely recognised description of the sustainability process. The economic sustainability of small settlements is a key question. Attracting new opportunities like tourism services, small/light industries, hospitals and training facilities like Computera, or new resource developments, are projects often considered to influence economic sustainability. Social sustainability is affected by an ageing population with the out movement of young people for employment, education and training along with new family formation. Community actives like sport and leisure activities promote social sustainability. Environmentally sustainable settlements depend on things like the protection of the water supply, waste management and controls on air pollution.



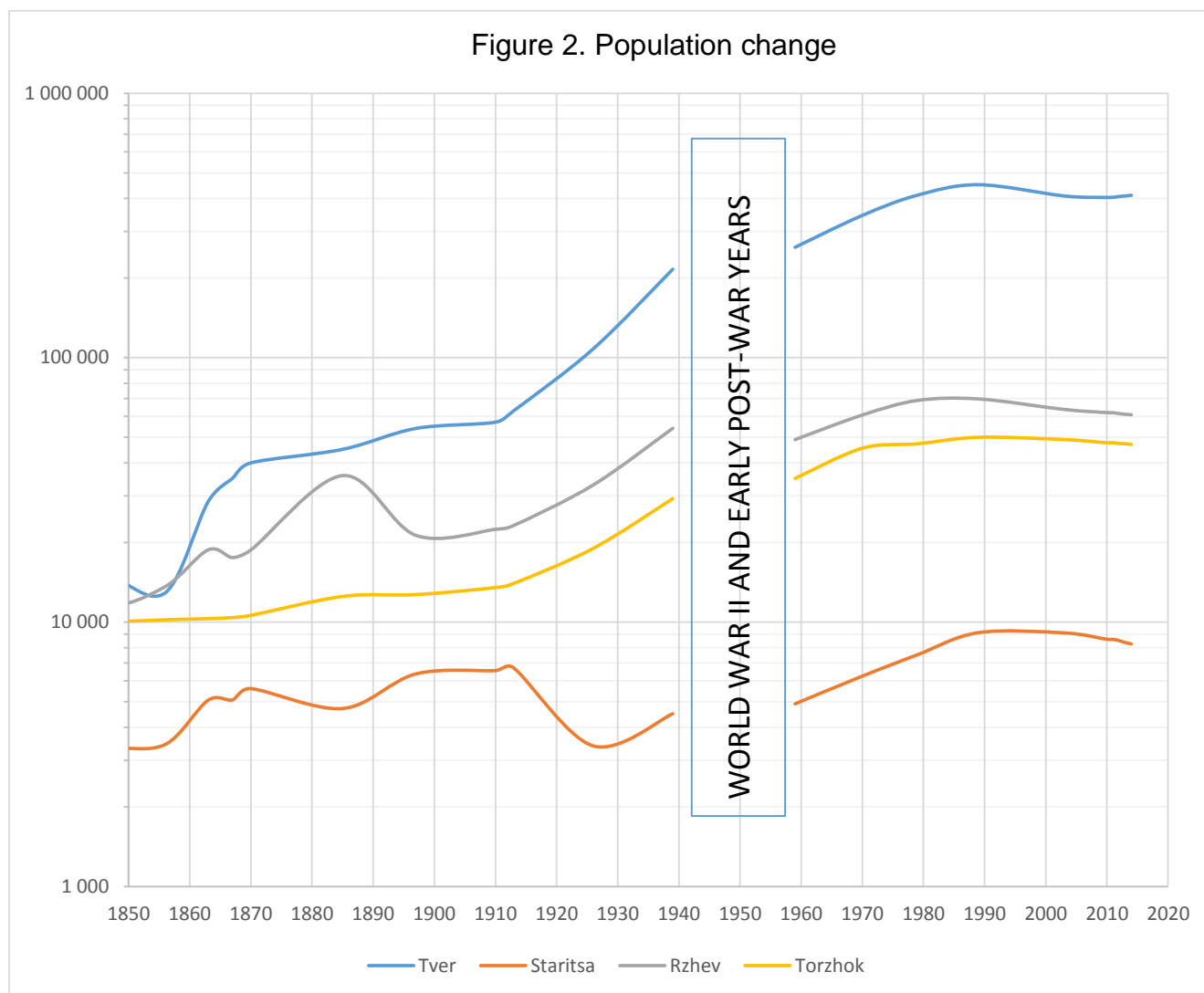
Figure 1. The sustainable development process

From plans to reality

When public bodies (like the Staritsa District Council) make plans in areas like Staritsa, they need to identify who will have the responsibility for doing the planning, which groups the planners should work with, and who will be responsible for implementing the agreed plans. Sometimes other bodies propose plans. These bodies include commercial companies, family companies, individuals and interest groups like religious communities and service providers, among others. When other groups make their proposals, they are submitted to the District Council. The District Council follows the same process as above; who will have the responsibility for doing the planning, which groups the planners should work with, and who will be responsible for implementing the agreed plans.

Co-ordinating strategic development plans.

Plans can be prepared at any time, but individual plans need to be co-ordinated and aligned with the strategic developments that the District has put in place, or wishes to consider for the future. Planning needs to consider the environmental, social and economic costs and benefits of every plan. Timing of plan implementation is important; plans may have a wide range of impacts on some local people and time needs to be allowed to do cost-benefit work on these impacts. Time is important, but so is space. Strategic initiatives should be co-ordinated; when Councils dig up new roads, they have probably failed to co-ordinate the transport strategic plan and the housing strategy.



	1847	1856	1863	1867	1870	1885	1897	1910	1913	1926	1939
Tver	15 000	12 900	28 500	35 000	40 000	45 000	54 000	57 000	63 000	108 000	216 000
Staritsa	3 325	3 444	5 060	5 075	5 600	4 709	6 368	6 554	6 700	3 400	4 500
Rzhev	11 618	13 621	18 746	17 528	18 732	35 810	21 265	22 423	23 200	33 000	54 070
Torzhok	10 000	10 200	10 300	10 400	10 600	12 500	12 700	13 500	14 000	19 000	29 300

	1959	1970	1979	1989	2003	2010	2011	2012	2013	2014	2015
Tver	261 500	345 112	411 548	450 941	408 900	403 606	404 030	406 918	408 877	411 042	413 960
Staritsa	4 905	6 244	7 518	9 120	9 100	8 607	8 600	8 506	8 367	8 265	8 094
Rzhev	48 971	60 671	68 858	69 808	63 700	61 982	61 916	61 439	61 091	60 831	60 349
Torzhok	34 921	45 443	47 214	49 982	49 000	47 644	47 739	47 326	47 260	46 950	46 658

Table 1. Population of Tver, Staritsa, Rzhev and Torzhok, 1847 – 2015

Gravity model and zones of influence

Theory

The zone of influence idea has been used in the 'gravity model' for over 80 years (W.J.Reilly, 1931; J.Q.Stewart, 1947); at any one location we can assess the attractiveness of competing settlements with reference to the size (population) and the distance to those settlements. We can estimate the gravity model 'attractiveness' for a village that is 60 km east of a Town A with 10000 people and 40km west of a Town B with a population of 15000.

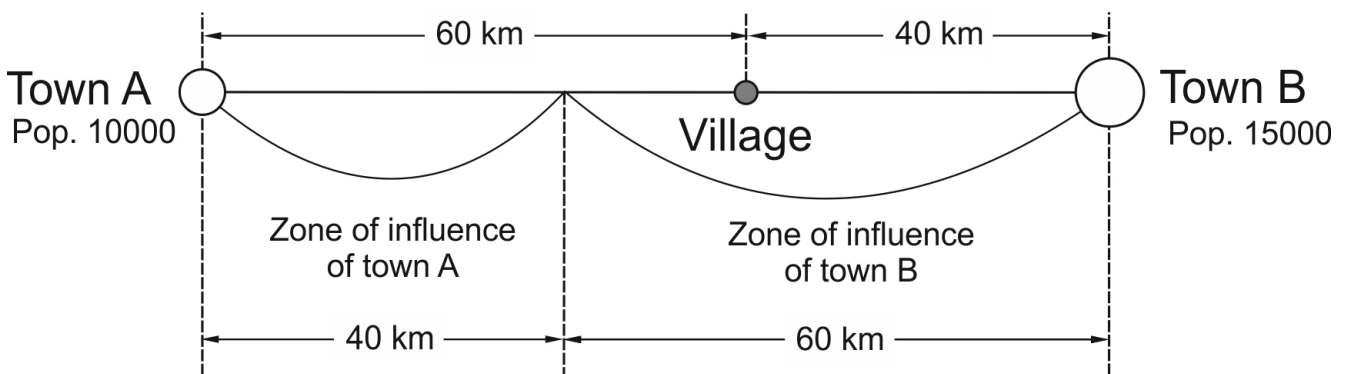


Figure 3. The 'gravity' effect

Because B is closer to the village and it has a larger population, it attracts proportionally more villagers than A ($15000 \text{ people}/40\text{km away} = 375$) versus ($10000/60 = 167$).

To find the boundary of the zone of influence, we must locate the point of equal gravitational attraction of the competing towns. The point at which an equal number of villagers would be attracted to A and B (the boundary of A and B's zones of influence) would be at 40 kms to A ($10000/40 = 250$) and 60km to B ($15000/60 = 250$).

Worked example for mapping

Each square in the Figure 4 example of the gravity model is 1 square kilometre. The area shown is 30km west to east, and 40km south to north.

We want to estimate the zone of influence for the settlement Y which has a population of 5000, with reference to competing settlements X which has 30000 people, V (8000), W (5000) and Z (5000). To the nearest km, V is 18km away from Y. X and Z are 14km away, and W is 7km.

The spatial extent of influence of Y in the direction of V is mapped arithmetically. We calculate using 5000 people divided by the combined population of V and Y (13000) times the distance of 18km.

In another way this is: $Y/(Y+V) * D_{Y-V} = 5000/13000 * 18 = 7\text{km}$

The arithmetic for other settlements is X = $5000/35000 * 14$ is 2 km

W = $5000/10000 * 7$ is 3.5km

Z = $5000/10000 * 14$ is 7km

The influence effect is determined by lines drawn at right angles in the direction of the competing settlement. At 7km towards V from Y, the influence of each settlement is equal. The zone of influence is the polygon drawn by the intersecting lines from competing settlements.

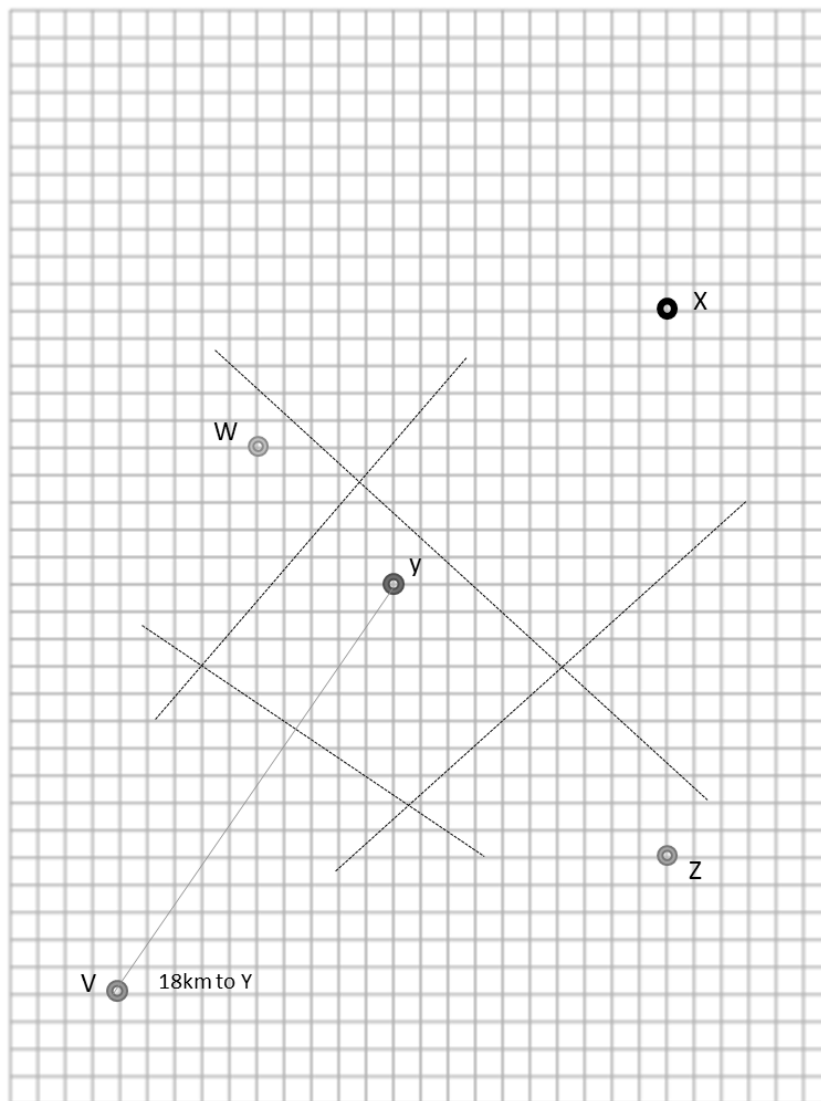


Figure 4. The zone of influence of settlement 'Y'.

Historical views of Staritsa

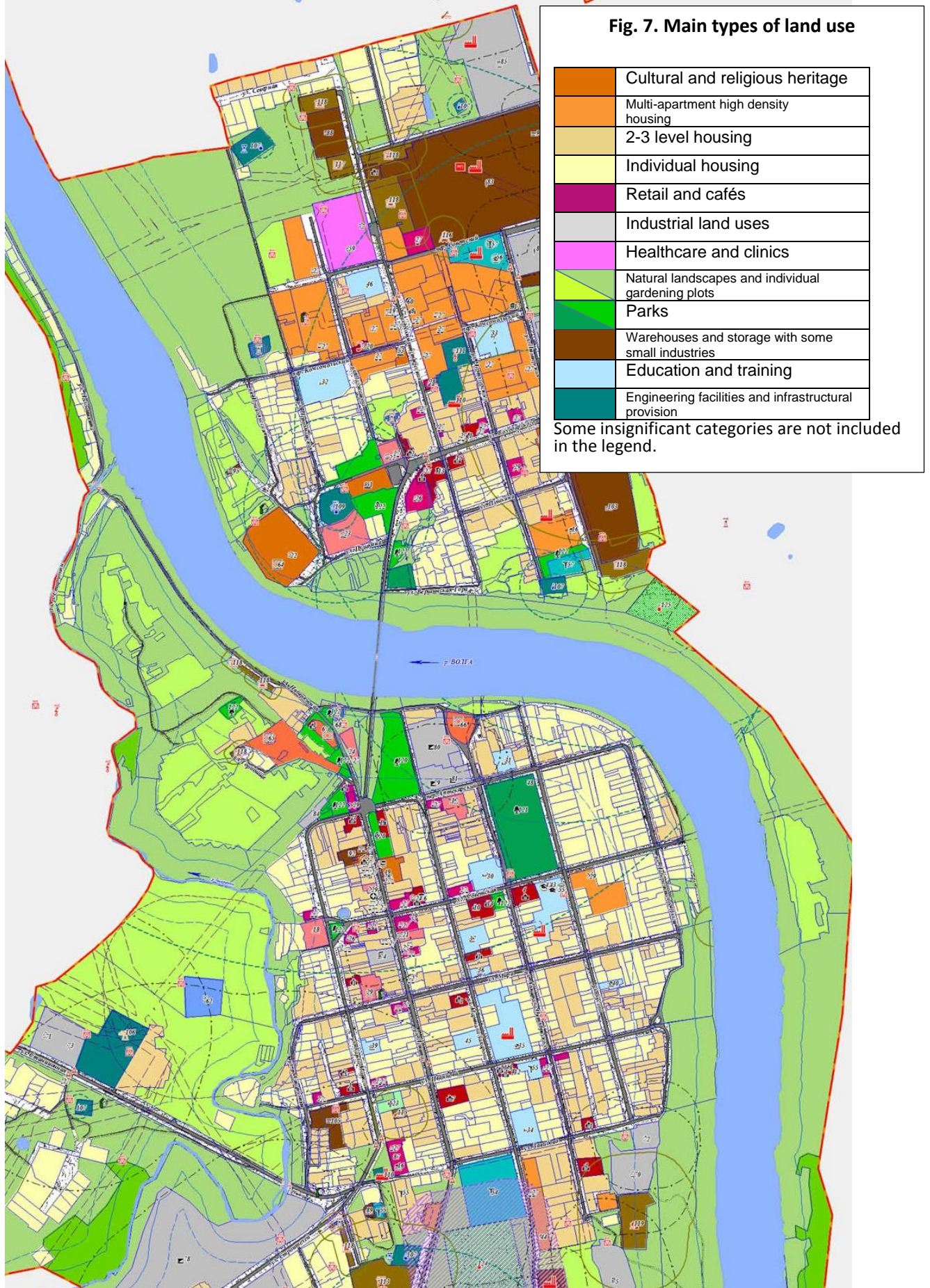


Figure 5. Staritsa in the Middle Ages. Reconstruction. Unknown painter (view from the right bank of Volga covering the hillfort / FWE 1 area)



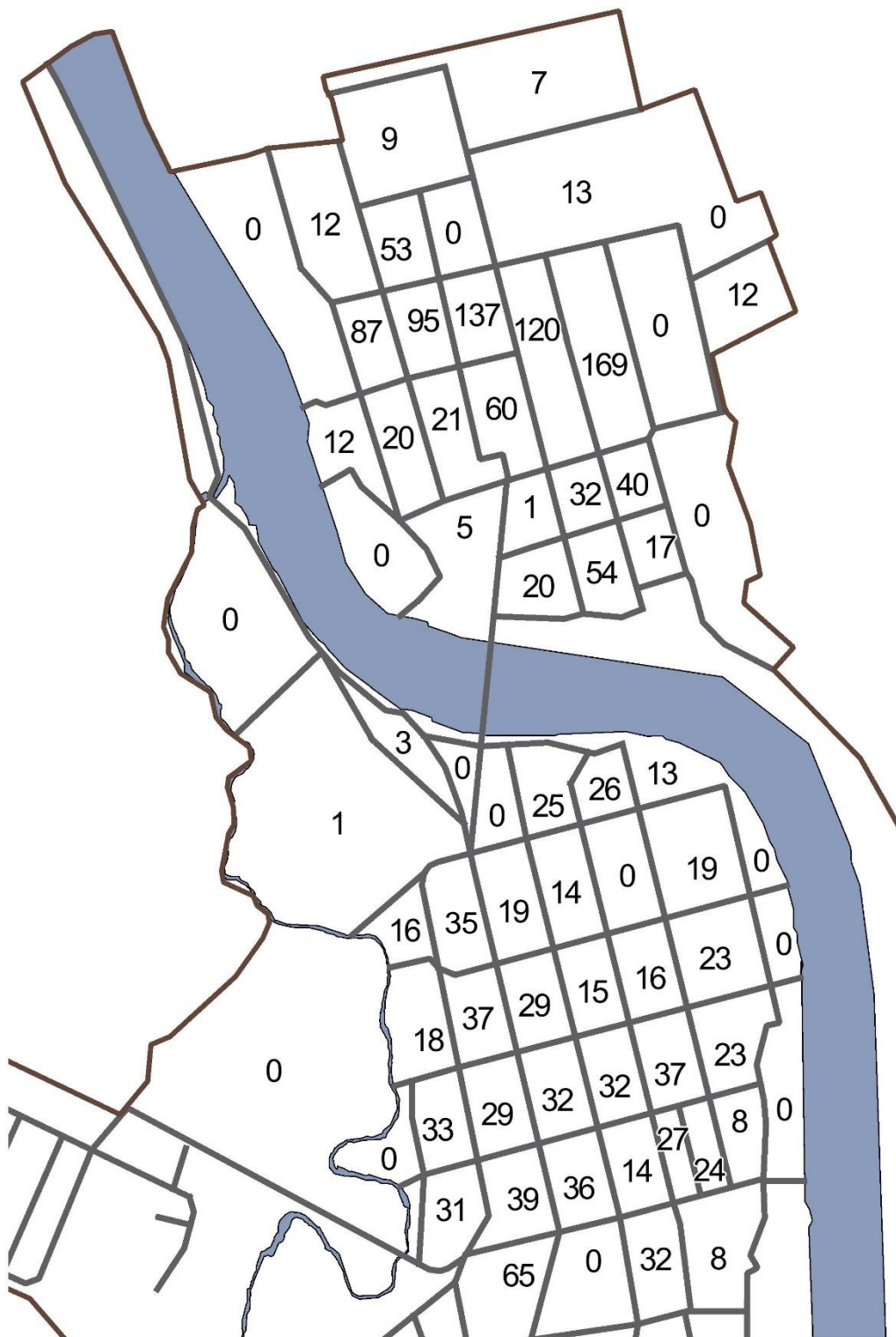
Figure 6. Residential land uses on the North bank side of Staritsa.

Land use map, 2010



Population density, 2015

Fig.8. Population density within town blocks (quarters) of Staritsa (per ha).



Sustainability development plan

Major issues to be considered in Staritsa sustainability development plan

1. **Relatively low income of local population.** Low incomes encourage local people to grow their own food. Some keep poultry and livestock to supply themselves with milk, meat and eggs.
2. **Workforce drain.** Nearly 1/3 of the local workforce are employed outside Staritsa (mainly in Tver but also in Rzhev and in Moscow). Weekly commuting occurs both because there are few local jobs and low wages in industrial employment (20-40% less than in nearby locations).
3. **Housing.** Despite the decreasing population, housing is one of the most striking problems for Staritsa, as significant parts of the housing stock are old and/or not equipped with electricity, gas or sewage connections. The District Council has provided new housing in multi-apartment buildings (much cheaper to accommodate people moving from old houses), but there is a consumer preference for individual housing.
4. **Low public revenues (budget income) collected from tourism.** Many tourist attractions – buildings of heritage interest, both churches and civil - are abandoned, ruined or closed to visitors. There is only one hotel in Staritsa and a significant lack of restaurants and cafes to accommodate tourists. Most tourists are therefore transit visitors, spending only 2-3 hours in Staritsa; 90% of them visit only one attraction, the Monastery.
5. **Strategic co-ordination.** The District Council is the co-ordination agency for planning, but individuals, sector groups (e.g. those with tourism interests) and companies can advocate, plan and implement sustainable development strategies with Council approval and support. Regional and national government can also become involved (e.g. in health and education initiatives).

Sustainable development plan for Staritsa: food, tourism, industry ...

Historically, settlements in rural space often grew as market places for local food production. **Local food markets** often operate in central “market squares”, at times known to producers and quickly learned by local consumers. More recently, local markets have developed as *social and community-building* events that happen perhaps twice a week in small settlements, but almost daily in larger rural settlements. While the vendors may bring produce some distance, the consumers are generally local people. The *economic* benefits are high, as expenditure recirculates in the local economy.

		
<p>The market offers value-added products like honey, and customers are encouraged to taste before buying.</p>	<p>Local people sell fruit and vegetables (girl selling berries) harvested from the natural <i>environment</i>.</p>	<p>Vegetables are also commonly offered for sale in the markets of rural settlements.</p>

Markets are best located at focal points in small settlements. They may be run in local halls in winter, but often stalls are set up outside in summer. Once they have reached a threshold of about 10 stalls, and they have operated for six weeks, consumers start to use them for weekly ‘provisioning’ rather than casual purchases.

Tourism. Given the historical significance of Staritsa, the number of heritage sites is high, and there are opportunities to use these features of the settlement as a basis for sustainable development initiatives in tourism. The Assumption Church and Monastery show what is possible, but accommodation options and activities in the Moon Valley indicate that local people can become involved in providing tourism services using the local *environment*. The sites of tourism are widely distributed, so a tourism bureau in the central civic area would be important and would co-ordinate the *economic* development of tourism. The strategies for development would focus on the 137 listed heritage sites, with preservation of 14th and 15th Century buildings a priority.

The use of *social* media to promote Staritsa's heritage and the limestone caves in the vicinity has already indicated where the promotional opportunities lie; there are numerous abandoned limestone quarries in the town's vicinity, explaining an abundance of limestone buildings in the town. The river is no longer used for transport, but there are popular swimming beaches at a number of places on the banks of the river.

		
<p>All three buildings of Prokudin-Gorskii's classic tourist image are in disrepair today. Left, Piatnitskaia Church; centre Hotel and right, Bell Tower of Saints Boris and Gleb.</p>	<p>Richard Lozin's image of a Staritsa Ice cave; a potential site of tourism.</p>	<p>Assumption Church and Dormition Monastery.</p>

Investment in new industry is a strategy often advocated as part of sustainable development initiatives, especially where there is an experienced workforce or a potential resource that can be developed. In settlements like Staritsa, *social and cultural* participation in religion and administration have dominated the history, and the only resource that is freely available is labour.

		
<p>Work environment featuring custom-built, Russian wooden furniture.</p>	<p>1940 image of a start-up jam industry based on the collection of local fruit.</p>	<p>Russian monk Agapy makes local cheeses at Valaam.</p>

Skilled labour is critical in attracting technology-based investment, but in small settlements industries that can offer semi-skilled employment and focus on processing local resources are more likely to succeed. Industries based on processing agricultural produce are possible, despite the *environmental* constraints of a reasonably short growing season and the absence of organizational infrastructure (such as the security of supply provided by a production co-operative). Small industries such as cheese making and honey extraction may be seasonal. An initiative in a timber-related industry could be proposed for the manufacture of toys and ornamental items from the local timber supply, and a craft industry co-operative is also possible. In an *economic* sense these are start-up industries that could be supported by the District Council providing access to vacant buildings in Staritsa.

The capital requirements of small local industry are generally low, and the site of manufacture can be located wherever there is available space. The distribution of outputs from locally-based industrial output requires only local transport systems; most of the consumption will be within the region, with craft and timber products promoted through a linked tourism facility.