

Governance of Shrinkage
Within a European Context



Work package 2

Urban shrinkage in Donetsk and Makiiivka, the Donetsk conurbation, Ukraine

Research report

D4 Comparable research report

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1. EXECUTIVE SUMMARY

The Donetsk conurbation is the core of the Ukrainian Donbas – the country’s proud industrial heartland – and is the third largest continuously built-up area in Ukraine, after Kyiv and Kharkiv. The Donetsk conurbation began to shrink in 1993, from the population peak of 1,611,072 inhabitants to 1,393,620 in 2009, thus, experiencing in 16 years a net loss of 217,452 residents, or 13.5% of its population base. By 2018, the conurbation is projected to decline even further to 1,292,200 residents; hence shrinking by 20% in twenty five years. The city of Donetsk – the conurbation’s bigger and much better off municipality – declined by 146,802 residents (or 13.1%) between its population peak of 1,121,400 in 1992 to 974,598 in 2009. The city of Makiivka – Donetsk’s poorer and more troubled neighbour – lost 20.1% of its population (or 91,323 net residents), having started to shrink half a decade earlier than Donetsk, from 455,000 inhabitants in 1987 to 363,677 in 2009.

The primary reason for urban shrinkage in both Donetsk and Makiivka has been a dramatic decline in birth rates due to historically unprecedented fertility levels in the conurbation. The urban fertility rate in the region has declined under post-communism to one of the lowest level in the world (0.9 live births per 1,000 women in 2002), thus, falling far below the natural replacement level. This phenomenon, combined with a profound public health crisis which accompanied Ukraine’s social and economic transformation in the 1990s and 2000s, as well as the overall ageing of the local population, will further accelerate the rate of urban shrinkage in the Donetsk conurbation throughout the 2010s. This report suggests that the severe and prolonged economic depression suffered by Donetsk and, to a much greater extent, Makiivka, following the collapse of the USSR, along with the physical, emotional, and mental stress generated by Ukraine’s post-communist developments, have left a very deep scar on the two Donbas cities.

The overall process of shrinkage in the conurbation has gone hand in hand with an increasingly uneven urban development, caused by a profound divergence of performance trajectories of the Donetsk and Makiivka urban economies in general, and of individual inner-city areas and local firms in particular. Whereas the Donetsk economy had recovered from the output slump of the 1990s and continued rapidly to expand well until the recent recession of 2008-09, Makiivka lagged far and further behind. This report provides an extensive list of impacts *on* and consequences of urban shrinkage *for* Donetsk and Makiivka. Most of the time, the effects of urban shrinkage on patterns of segregation and social cohesion in the Donetsk conurbation, business growth and employment opportunities in various parts of Donetsk and Makiivka, the urban social infrastructure and education, housing developments, the state of the technical infrastructure in both cities, land use characteristics, environmental quality, as well as the financial and fiscal ability of the local authorities to cope with the tremendous challenges of shrinkage, have been intensely intertwined with the overall impact on the Donbas of Ukraine’s economic, social, political, and cultural transformations following the fall of state socialism in 1991.

2. PATTERNS OF URBAN SHRINKAGE

In this part of the report we describe the reasons behind the process of urban shrinkage in the Donetsk conurbation and show how urban shrinkage developed in the late 1980s onwards in the cities of Donetsk and Makiivka. The first section is focused on the main drivers of shrinkage, including demographic change, developments in the urban and national economies, and the transformation of settlement system. In the second section, we uncover how urban shrinkage has developed over time. We also show how the processes of urban shrinkage have affected the cities of Donetsk and Makiivka in general as well as what impact they have had upon different parts of Donetsk and Makiivka.

2.1 Reasons and premises

Introduction

The Greater Donetsk conurbation, including the cities of Donetsk, Makiivka, Khartsyzsk, Yasynuvata, Avdiivka, Mariinka, and the surrounding peri-urban areas, lies at the heart of the Donets Basin or *Donbas* (*Donbass* in Russian) – an ‘old industrial region’ in eastern Ukraine, which historically encompasses the modern-day *Donetska* (*Donetskaia* in Russian) and *Luhanska* (*Luganskaia* in Russian) *oblats* (provinces equivalent to the Eurostat NUTS Level 2 regions). Donetsk and Luhansk are the provincial centres of the Donbas (see Fig. 1), with the former being widely recognised as the informal capital city of the entire Donbas.

Figure 1 Map of Ukraine

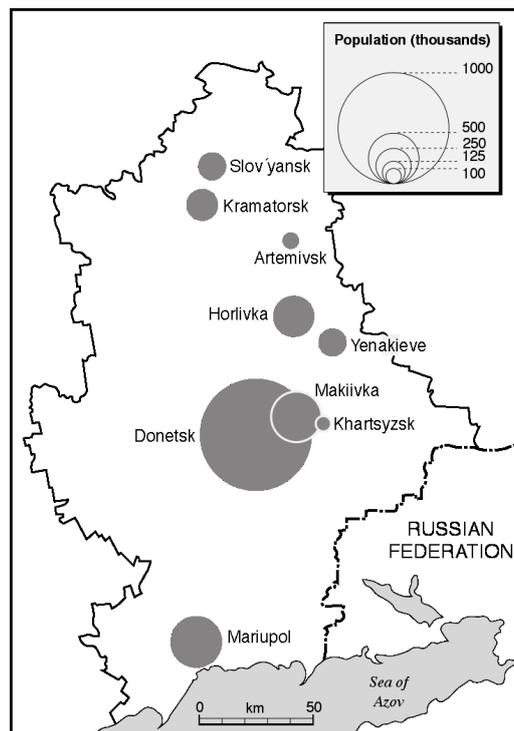


Source: Courtesy of Adam Swain

Donetsk is geographically positioned 712 kilometres south-east away by road from Ukraine’s capital Kyiv; 1,601 km east away by road from Sosnowiec (Poland); 1,603

km from Timisoara (Romania); 1,688 km from Ostrava (Czech Republic); 2,202 km from Leipzig (Germany); 2,848 km from Genoa (Italy); 2,893 km away by road from Brussels (Belgium); and 3,509 km from Liverpool (United Kingdom). Within Donetska oblast itself, the city of Donetsk is 109 km by road north of Mariupol, the oblast's second largest city, or less than two hour drive-away from the Sea of Azov and its small resort towns (see Fig. 2). The travel distance between Donetsk and Makiivka (i.e. the cities' main post offices) is 26 km. The Donetsk conurbation lies in a close proximity to the state border with the Russian Federation, which is just 90 km away by road in the south-eastern direction.

Figure 2 Map of largest urban areas, Donetska oblast



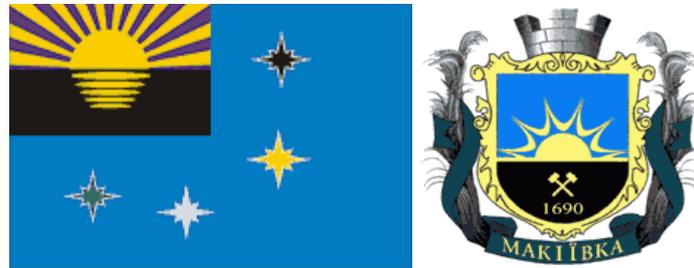
Source: Courtesy of Adam Swain

The city of Makiivka is the smaller yet much older part of the Donetsk conurbation than the city of Donetsk itself. The city proudly dates back to a 17th century Zaporozhian Host's defence outpost headed by legendary Cossack Makii, hence Makiivka (*Makeyevka* in Russian) (see Figs 3-4). The back colour signs and cross sledge-hammers in the official emblems of Makiivka symbolise its main historical industry and the city's *raison d'être* – coal-mining. The golden star on the city's flag and the golden line delineating the coat of arms stand for iron and steel – the city's second biggest industry. In the upper left-hand corner, the city flag incorporates the flag of Donetska oblast, to which Makiivka belongs.

The city of Donetsk's claim to fame is intrinsically linked to the multi-national capitalist modernisation of the Russian Empire, following the Emancipation of the Serfs in 1861 by Emperor Alexander II. In the 1860s, the Imperial government began

to attract foreign direct investment to ‘New Russia – the country’s recently acquired and previously under-populated southern territories surrounding the Black Sea coast (McKay, 1970; Roberts, 2003).

Figures 3-4 The City of Makiivka flag (left) and coat of arms (right)



Source: Makiivka City Council, www.makeyevka.dn.ua/

In 1869, John Hughes, a Welsh industrialist and mining engineer from Merthyr Tydfil, was given a concession to develop coal mines and iron and steel works in the area. After raising enough capital abroad and bringing a host of skilled mining and metallurgical personnel from south Wales, John Hughes’ New Russia Company for Coal, Iron and Rail Production Ltd soon opened first mines and iron works in a new settlement established in 1869 named after its founder Hughesovka (*Yuzivka* in Ukrainian; *Yuzovka* in Russian; see Bowen, 1978; Edwards, 1992; Friedgut, 1989; Friedgut, 1994a). John Hughes has eventually become a symbol of multi-cultural identity of Donetsk (see Figs 4-5).

Figure 4-5 Celebrating the city of John Hughes: monument to the city’s founder (left) and a Hughes Brewery beer advertisement (right), central Donetsk, 2009

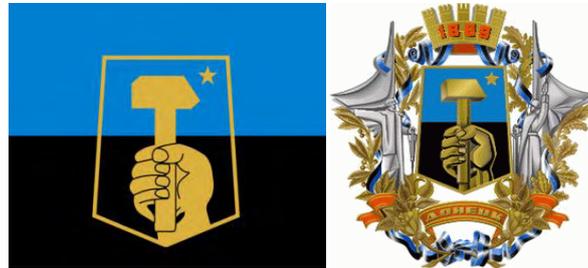


Source: Vlad Mykhnenko

In the early 20th century, Yuzovka was gradually merged with a number of other neighbouring mining towns and acquired an official city status in 1917. In 1924, the city was renamed after the Bolshevik leader Joseph Stalin to become a centre of Stalin’s Industrialisation drive of the late 1920s and early 1930s. Stalino was renamed Donetsk in 1961 during an extensive de-Stalinisation campaign by the then Soviet

leader Nikita Khrushchev, who was himself a former industrial worker from the outskirts of Yuzovka (Wynn, 1992).

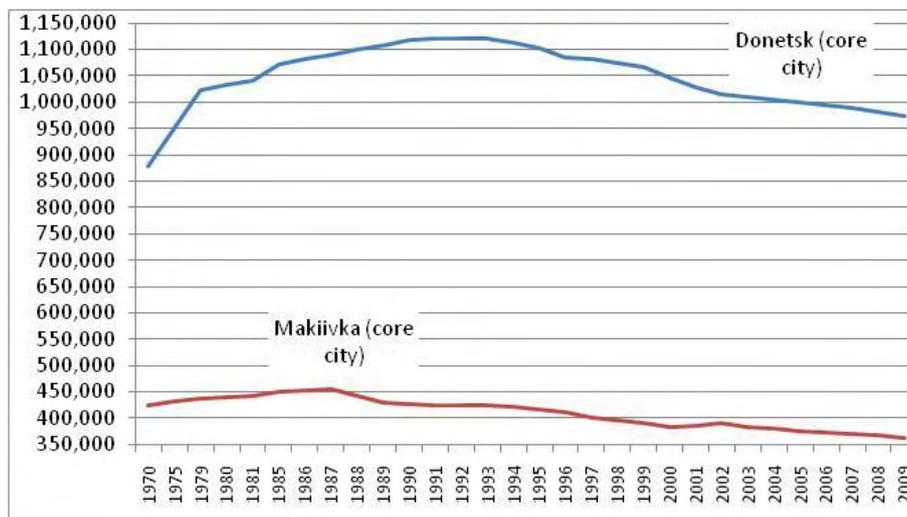
Figures 6-7 The City of Donetsk flag (left) and coat of arms (right)



Source: Donetsk City Council, <http://mer.dn.ua>

Similar to the city of Makiivka, Donetsk is inevitably associated with the coal-mining industry. The city’s symbols are dominated by the colour of locally-mined coal and by the main mining tool of the 19th century (see Figs 6-7). Under the late state socialism, there were twenty one coal mines operating within the city of Donetsk council boundary. The coal production peaked in 1975. In three years’ time, the city’s population reached one million (see Fig. 8).

Figure 8 Population trajectories of Donetsk and Makiivka, primary urban areas, absolute numbers, 1970-2009



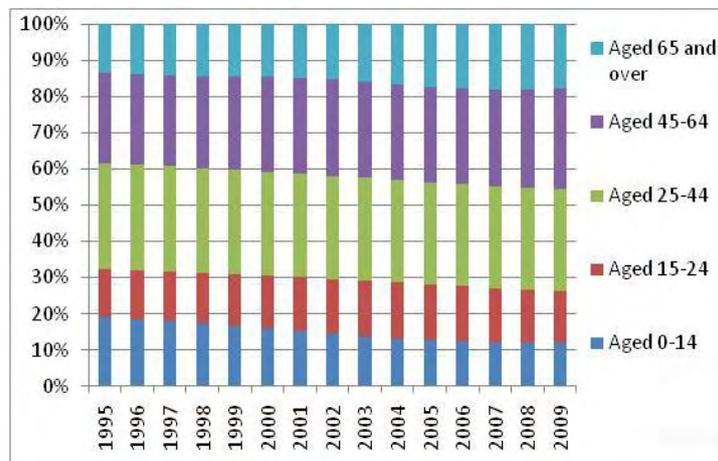
Source: WP2 D6 Database, May 2010

Demographics

It may appear that the Donetsk conurbation’s population trajectory has closely followed the fortunes of its major traditional industry. Having reached 1,000,000 residents in the late 1970s, the population of Donetsk peaked at 1,121,400

inhabitants in 1992, gradually declining through the 1990s and 2000s to reach 974,598 inhabitants in 2009 (Fig. 8). During its first 17 years of negative population change, Donetsk had declined by 146,802 inhabitants, having lost 13.1% of its total population. Makiivka's population decline has been steeper and longer, starting five years prior to that in Donetsk. After having reached 455,000 population in 1987, by the beginning of 2009, Makiivka had sustained a loss of 91,323 inhabitants, amounting to 20.1% of its total population. In this sub-section, we consider the three main causal factors behind the phenomenon of urban population shrinkage in the Donetsk conurbation, namely demographic change, job-migration (including commuting), and suburbanisation.

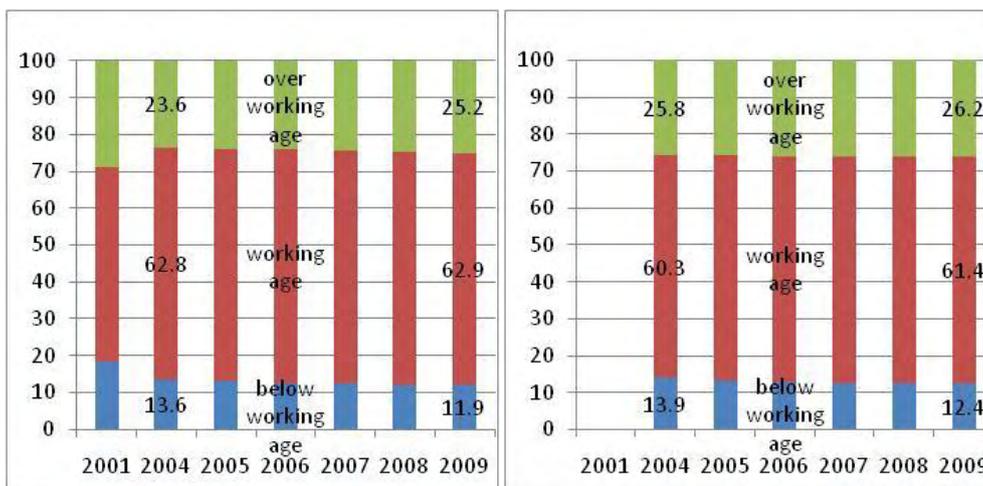
Figure 9 Change in age group composition, share of total population, Donetska oblast, 1995-2009



Source: WP2 D6 Database, May 2010

The cities of Donetsk and Makiivka along with the entire region have been hard hit by ageing (see Fig. 9). Between 1995 and 2009, the number of under 15-year-olds declined by 46%; the number of 15- to 24-year-olds declined by 9%, whilst the third youngest population category (25- to 44-year-olds) shrank by 17%. The only age group enjoying an increase was among 65-year-olds and over; the numbers of old age pensioners grew by 12%. The demographic change in the Donetsk conurbation has not been as dramatic as in Donetska oblast as a whole. Donetsk and Makiivka have been characterised by a slightly younger population than the regional average; nonetheless, the share of 'below the working age' population declined in both cities, whilst the share of those 'above the working age' continued to increase (see Figs 10-11). In 2008, the average inhabitant of Donetsk was 41 years old, whilst the average age of Makiivka residents grew to 41.8 years.

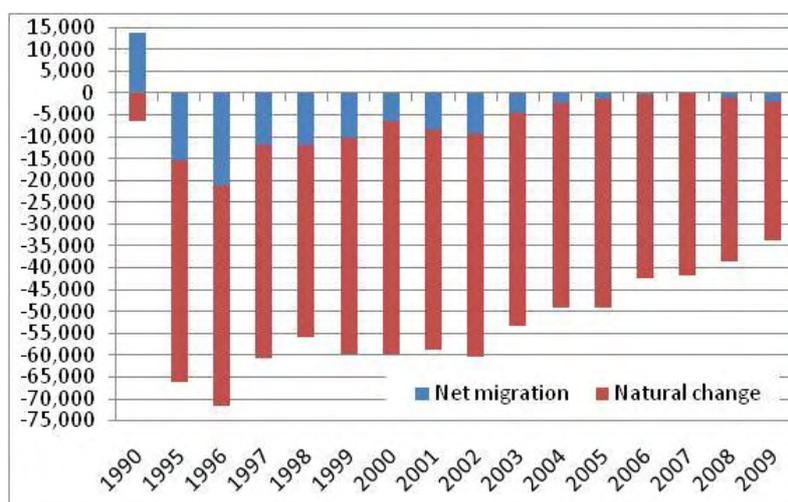
Figures 10-11 Change in working age group composition, % of total population, Donetsk (left) and Makiivka (right), 2001-2009



Source: WP2 D6 Database, May 2010

The post-communist transformation has had a negative impact on the migration patterns in the region (see Fig. 12). Whilst the migration data on individual Donbas cities, including the Donetsk conurbation, remain very patchy, we have had to resort to the NUTS-2 regional statistical time series. Migration in-flows and out-flows have had a significant effect on the regional and urban change in population, especially in the initial stages of ‘transition’ in the 1990s. Nonetheless, migration effects have been evidently dwarfed by those of the negative natural change, which has been the dominant driver of urban population shrinkage in the Donbas.

Figure 12 Population change by source, Donetska oblast, absolute numbers, 1990-2009

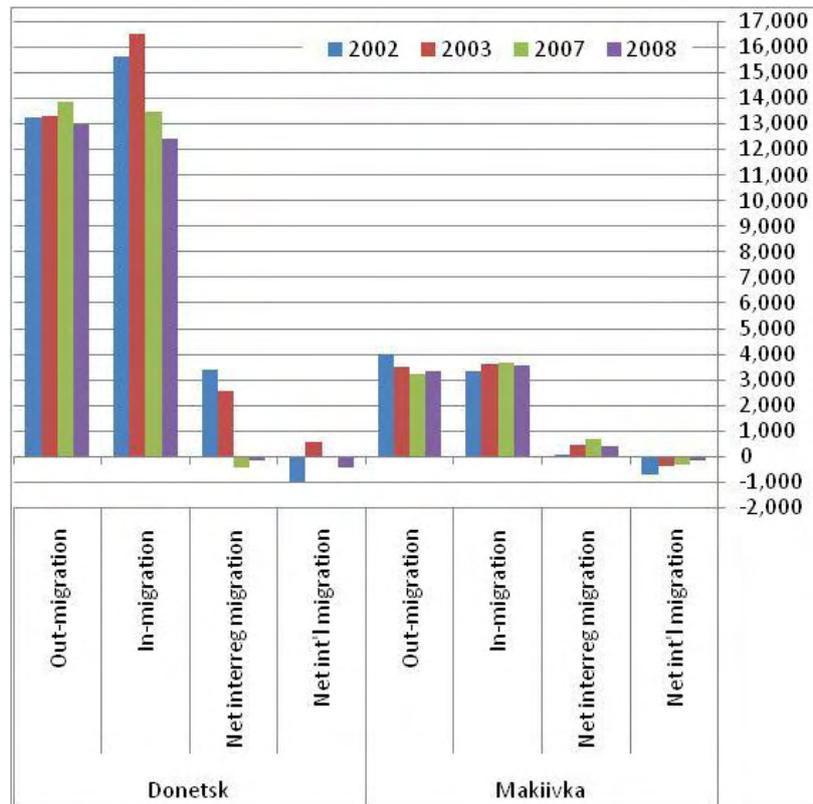


Source: WP2 D6 Database, May 2010

The impact of migration and sub-urbanisation on the individual urban population trajectories has been the most difficult to assess, in particular, since both Donetsk and Makiivka city councils have enlarged their territories during the last two decades, mostly covering the emerging and/or potential suburban enclaves. However, some trends can be observed. From its peak in the early 1990s until the

beginning of 2009, the number of people residing within the city council of Donetsk boundary declined by 13.4%, whereas the core city's population shrank by 13.1%, thus, implying stronger centripetal forces concerning the residential location. At the same time, the continuously built-up area of Makiivka declined by 20.1% of inhabitants, whilst the city council territory as a whole experienced a loss of 15.2% only. At the same period, the Donetsk conurbation as a whole declined by 13.5%, whilst Donetska oblast's population shrank by 16.1%.

Figure 13 Migration patterns, Donetsk and Makiivka, absolute numbers, 2002-2008



Source: WP2 D6 Database, May 2010

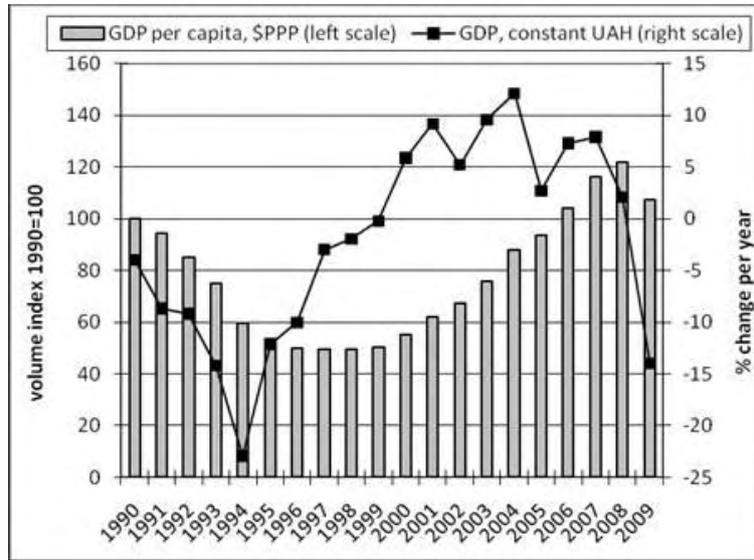
These population trends suggest a fairly rapid decline of the core city of Makiivka which was accompanied by the relative rise of its peripheral and suburban areas. Both the core and (to a lesser degree) peripheral urban or suburban areas of Donetsk were able more successfully to retain their population, when compared to both the conurbation and the region as a whole. Similar to the nature of demographic decline observed in Donetska oblast, migration has played its role in driving the population change in both Donetsk and Makiivka. In the 2000s, over 27,000 people each year were moving in or out of Donetsk, whereas the equivalent figure for Makiivka stood at 7,000 people. However, the net impact of migration was less negative in the two cities, with Makiivka having being able to attract in-migrants from within the wider region. Until the outset of the global financial-economic crisis, Donetsk was able to attract a significant number of international in-migrants as well (see Fig. 13).

Thus, there is some evidence to support the proposition of suburbanisation growth negatively influencing the population change in Makiivka. At the same time, it has not had any impact on Donetsk; moreover, Donetsk and the conurbation as a whole have experienced a relative concentration of population in the core urban areas. The impact of migration on urban shrinkage was more difficult to access, due to the lack of reliable and consistent figures on the city level. It is safe to assume that out-migration had been the second crucial factor behind the decline in population in the Donetsk conurbation during the economic depression of the 1990s. The number of out-migrants stabilised at the later stages, before approaching a neutral net impact by the early 2000s. On the peak of economic recovery, and prior to the beginning of the 2007-2009 global financial and economic crisis, both Donetsk and Makiivka enjoyed a steady net surplus of job-migrants. To conclude, amongst the three causal factors which have had an impact on the population shrinkage in the Donetsk conurbation since the early 1990s, demographic change has emerged as the central, if not the only, element.

Economic development

In this sub-section we describe the major national macroeconomic trends, before proceeding to access the overall impact of the post-communist transformation on the urban economies of Donetsk, Makiivka, and the Donbas region as a whole. First of all, the disintegration of the Soviet Union and Ukrainian independence resulted in a profound depression in the economy beginning in 1990 and lasting until the mid 1990s (Banaian, 1999; Swain, 2007). The initial exogenous shock arising from the collapse of state socialism, Comecon, and the disintegration of the USSR as an integrated national economy, was much more pronounced in the Donbas, causing the detrimental effects of disorganisation and trade implosion (Blanchard, 1997; Camps and Coricelli, 2002). In turn, after the initial output contraction caused in the Donbas mainly by the exogenous shocks, the regional economy experienced yet another phase of disorganisation associated with the implementation of the Washington consensus reforms in the mid-1990s (Burawoy and Krotov, 2000). After Leonid Kuchma's election to the presidency in late 1994 and the subsequent introduction of a macroeconomic stabilisation package, the rate of decline decelerated (Fig. 14). In the 1990s, the economy measured by real gross domestic product (GDP at constant prices in Ukrainian hryvnia) shrank by 59%. At the end of 1999, the economy returned to positive growth which lasted until 2009. Overall, in the 2000s, Ukraine enjoyed an annual economic growth rate of 5.6%, registering a 9.0% growth rate per annum between the nadir point of 1999 and the peak of 2008. Nonetheless, even before the beginning of recession in August 2008, real output remained below the pre-transition period level. The post-soviet depression resulted in a continuous decline in Ukraine's population, thus, boosting per capita income levels. The trajectory of Ukraine's GDP per capita in purchasing power parity (international dollars) is more positive; it shows that the 1990 level was surpassed in 2006 and remained above it even after the recession of 2009.

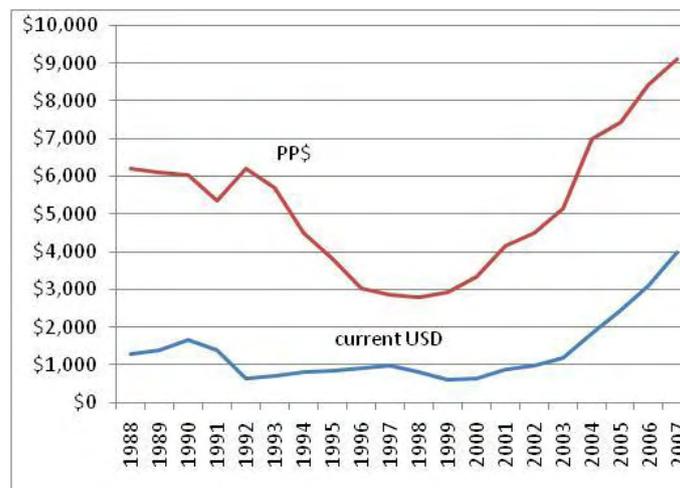
Figure 14 Ukraine’s post-communist income and output change trajectories, 1990–2009, volume indexes (1990 = 100)



Source: Mykhnenko and Swain, 2010, p. 147.

The post-communist economic transformation was propelled by a trio of economic liberalisation, privatisation, and macroeconomic stabilisation; it was accompanied by a profound structural change and led to large scale de-industrialisation. On the eve of independence in 1991, Ukraine’s industry accounted for 45.7% of GDP, whilst the services sector generated only 29.7% of the national output. By 2009, the share of industry, including mining and quarrying, manufacturing, and electricity, gas and water supply, in the country’s GDP had declined to 30%, whereas the services had more than doubled in size, expanding to 62.6% respectively.

Figure 15 Income trajectories, Donetska oblast, GDP per head in US\$ (current prices) and international dollars (purchasing power parity), 1988-2007



Source: Vlad Mykhnenko

The post-soviet ‘transitional’ depression and ensuing de-industrialisation have hit the industrially-dependent regions and cities the hardest (Swain and Mykhnenko, 2007). Similarly to most European countries, there are no relevant GDP data on the local authority level (i.e. NUTS-3 region) in Ukraine. We were able to construct a consistent time series data for Donetska oblast, nonetheless. Our analysis shows that the output and income trajectories of the Donbas tracked closely the national trends during the 1990s depression, when the region’s inhabitants had lost over 53% of income on average. However, in the economic recovery period of 1999–2007, Donetska has bucked the trend, outperforming the national economy by as much as 35% in total (cf. Figs 14 and 15), reaching 151% of the Soviet-era GDP per capita level (cf. Sarna, 2002).

Table 1 Major characteristics of successive growth models in Ukraine, 1999–2008

Institutional forms	Kuchmanomics (1999–2004)	Orangeism (2005–8)
Growth regime	Export-led national capitalism	Finance led, increasingly transnational
Wage–labour nexus	Coordinated/regulated labour market combined with internal bureaucratic flexibility	Towards external market flexibility
Form of competition	By commodity market prices	Increasingly on financial markets
Monetary regime	Targeted towards price and exchange rate stability	Oriented towards domestic consumption
State–society relations	Mercantilism combined with weak developmental state	Proactive and market-enhancing state combined with populism
Insertion into international regime	Rise of the Brazil, Russia, India, China (BRIC) economies	Globalization of financial system
Coherence and dynamic of the growth regime	Strong exposure to external disturbances	Risk of systemic financial instability

Source: Mykhnenko and Swain, 2010, p. 158.

As it has been argued elsewhere (Mykhnenko, 2005; 2007a; 2007b; Mykhnenko and Swain, 2010), it was the construction of *Kuchmanomics* – a relatively successful national mode of co-ordinated capitalist development (see Tab 1; cf. Gaddy and Ickes, 2002; Hanson and Teague, 2007) – which has explained the success of the seven, contiguous out-performing regions (see Fig. 16):

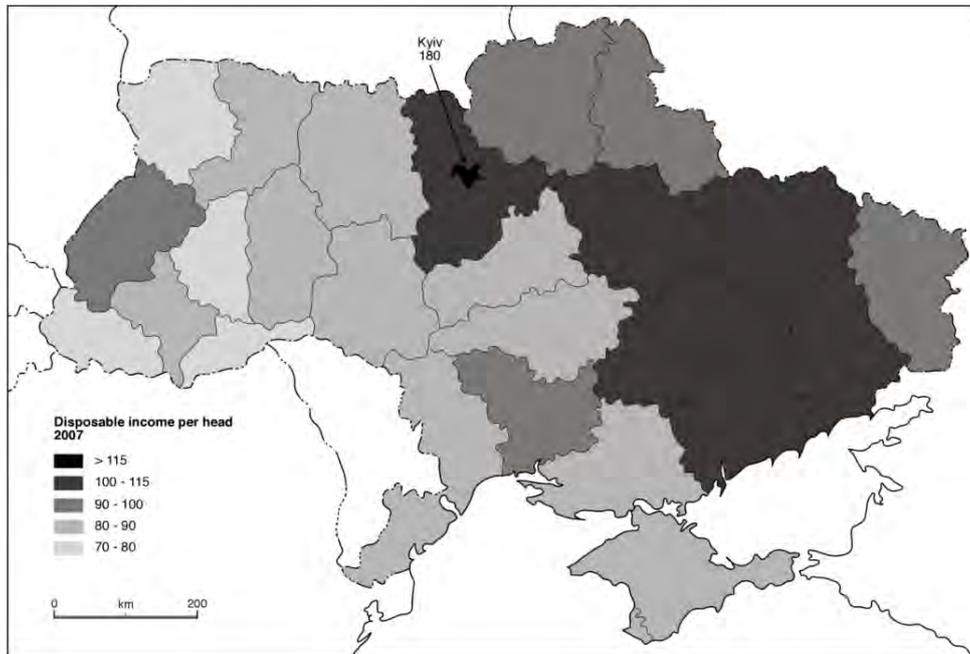
Whereas marketization eroded most industrial regions elsewhere in CEE (Smith, 1995; Birch and Mykhnenko, 2009), in Ukraine these regions have proved resilient and have underpinned the national economy. It is clear that the recycling of export revenue to fund increased consumption within these regions generated economic growth (Mykhnenko and Swain, 2010, p. 160).

The fortunes of Ukraine’s newly-built arc of prosperity, stretching from Kyiv to the city of Mariupol on the Sea of Azov, has been dependent, however, on the shift in the national growth regime away from industrial export-led development towards financialisation. Thus:

Kuchmanomics promoted industrial production concentrated in the east of the country for expanding albeit potentially volatile external markets. This resulted in rapid national economic growth and a relatively balanced pattern

of regional development. In turn, the Orange model promoted service sector activities in large metropolitan and tourist regions, which were ultimately dependent on importing capital; this ceased when the global financial crisis reached Ukraine in August 2008 (Mykhnenko and Swain, 2010, p. 161).

Figure 16 Disposable income per head by region (NUTS-2), Ukraine = 100, 2007

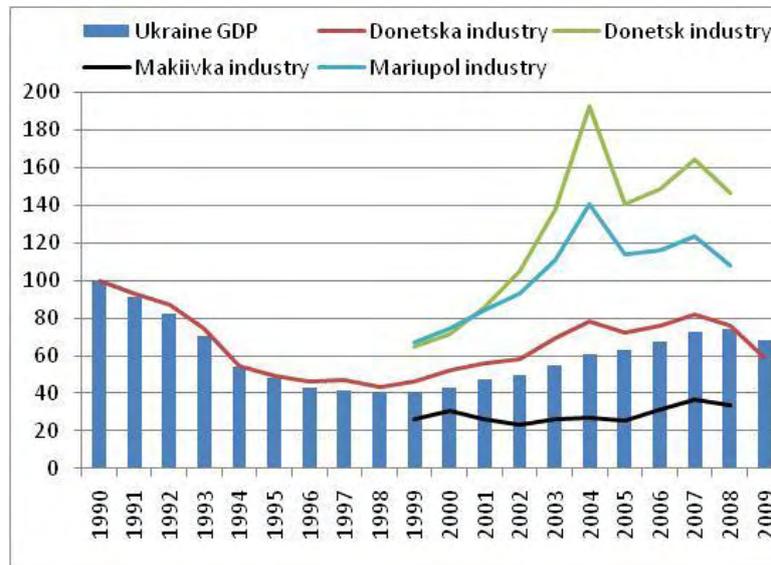


Source: Mykhnenko and Swain, 2010, p. 151.

The national macroeconomic trajectory has had a direct negative impact on the process of urban shrinkage, in addition to the overall continuous decline in population suffered by Ukraine since independence (Siedenberg and Hoffman, 1999). The post-soviet depression, in particular, has aggravated the inherited low fertility rates in the Donbas; it has led to an increase in mortality and a profound decline in life expectancy at birth. The resulting decline in population slowed down at the end of the economic resurgence period of the mid- to late 2000s. Nonetheless, the detrimental impact of the post-communist transformation on the public health both in the Donbas and in the country as a whole has appeared to be irreversible.

Until the advent of the global financial and economic crisis of 2007-2009, the relative economic performance of Donetska oblast as a whole had been better than the national average. Nonetheless, by unpacking the regional performance, one is able to reveal a complex and diverging picture. Donetsk along with Donetska's second largest city – Mariupol – has by far outperformed the national developmental trajectory. By contrast, the relative fortunes of Makiivka were amongst the worst in the region (see Fig. 17)

Figure 17 Comparative output trajectories: Ukraine (total output), Donetska oblast (industrial output), Donetsk (industrial output), Makiivka (industrial output), and Mariupol (industrial output), volume indexes (1990 = 100), 1990-2009



Source: WP2 D6 Database, May 2010

At its economic peak in 2004 prior to the Orange revolution and the subsequent change in the national developmental model, Donetsk’s industrial output stood at 193% of the 1990 level, whereas Makiivka’s industrial volume index was only 27% of its Soviet level. Whereas Donetsk’s output level had remained firmly above the pre-transitional level by the end of 2008 (at 147%), Makiivka’s industrial output in 2008 was still two-thirds below 1990.

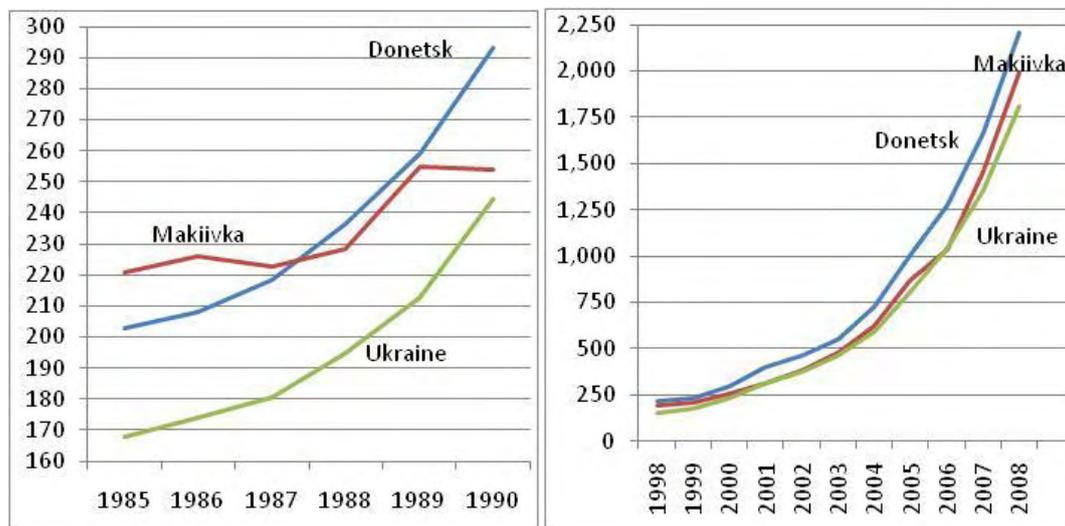
Figure 18 The Heroic Deeds of Makiivka Coal Miners Memorial, central square, Makiivka



Source: Makiivka City Council, www.makeyevka.dn.ua/ru/our_city/photogallery/

Makiivka's permanent loss of output during the restoration of capitalism has, thus, been more profound in comparison with the region and Ukraine generally. Due to its smaller size, Makiivka has been more dependent on coal-mining than Donetsk (Bogatov, 2007; Siegelbaum, 1997). The city's central square proudly hosts a monument to Makiivka's coal miners, once the best paid vocation in the city and the region as a whole (see Fig 18). The gradual demise of the mining industry in the Donbas (Swain, 2006; 2007) and its impact on smaller mining cities is well reflected in the long-term employee remuneration patterns (see Figs 19-20). Whilst jobs in Makiivka were amongst the best paid in the Soviet Ukraine, they have gradually lost their high premiums and under post-communism Makiivka's employee pay trajectory has been only slightly higher than the national average. In 1985, the average monthly wage or salary in Donetsk was 20.7% higher the national average; this gap had widened by 2009 to 22.1%. By contrast, Makiivka's pay premiums reduced from 31.6% to 10.1% in the same period. Thus, our analysis suggests that Donetsk's urban economy has out-performed the national developmental trajectory under post-communism, as reflected in the output and income statistics concerned. Makiivka's economy has generated a more ambiguous record, still retaining better paid jobs than Ukraine's average, yet lagging far behind the performance of other Donbas cities. Makiivka's urban economy has been hit particularly hard by the post-soviet depression of the 1990s.

Figures 19-20 Average nominal wages per month in Donetsk, Makiivka, and Ukraine, 1985-2008, in national currency



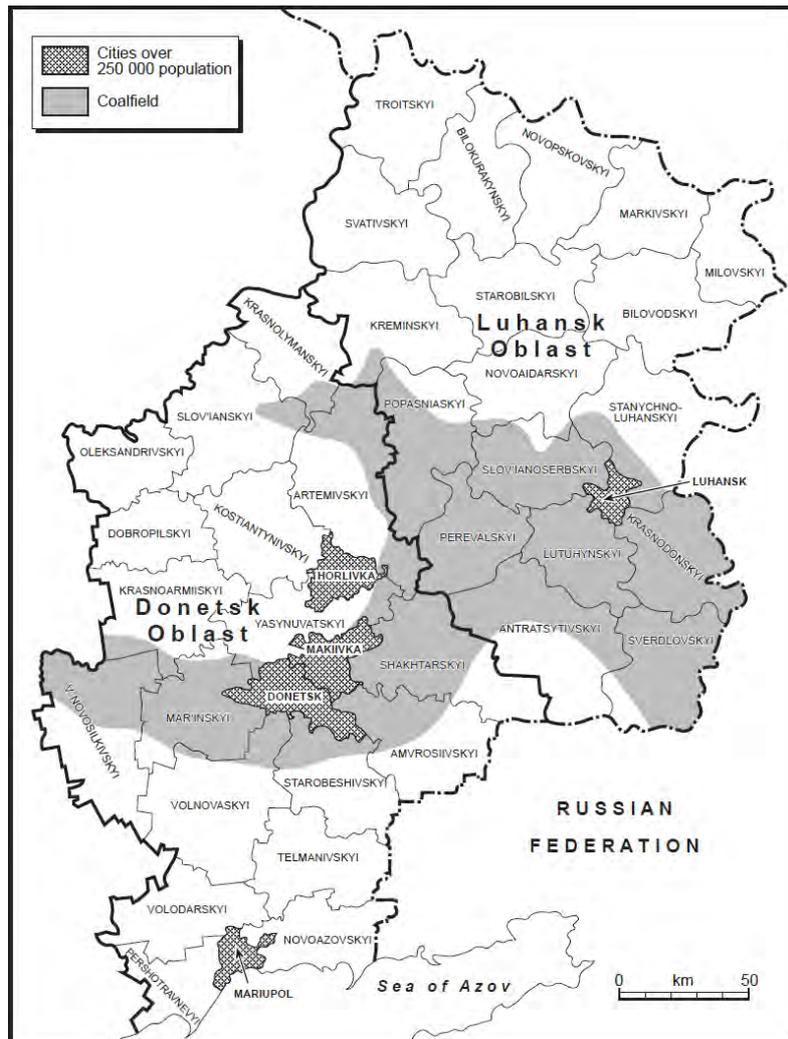
Source: WP2 D6 Database, May 2010

Settlement system

In addition to the legacy of state socialism, with its repressed services sector and acute housing shortages, the peculiar features of urban shrinkage observed in

Donetsk and Makiivka are partly explained by the conurbation's and region's underlying settlement system. The two cities have emerged as a rather random agglomeration of irregularly shaped mining villages and iron works settlements which mushroomed on the central belt of the Donets Basin Coalfield in the second half of the 19th century (see Fig. 21).

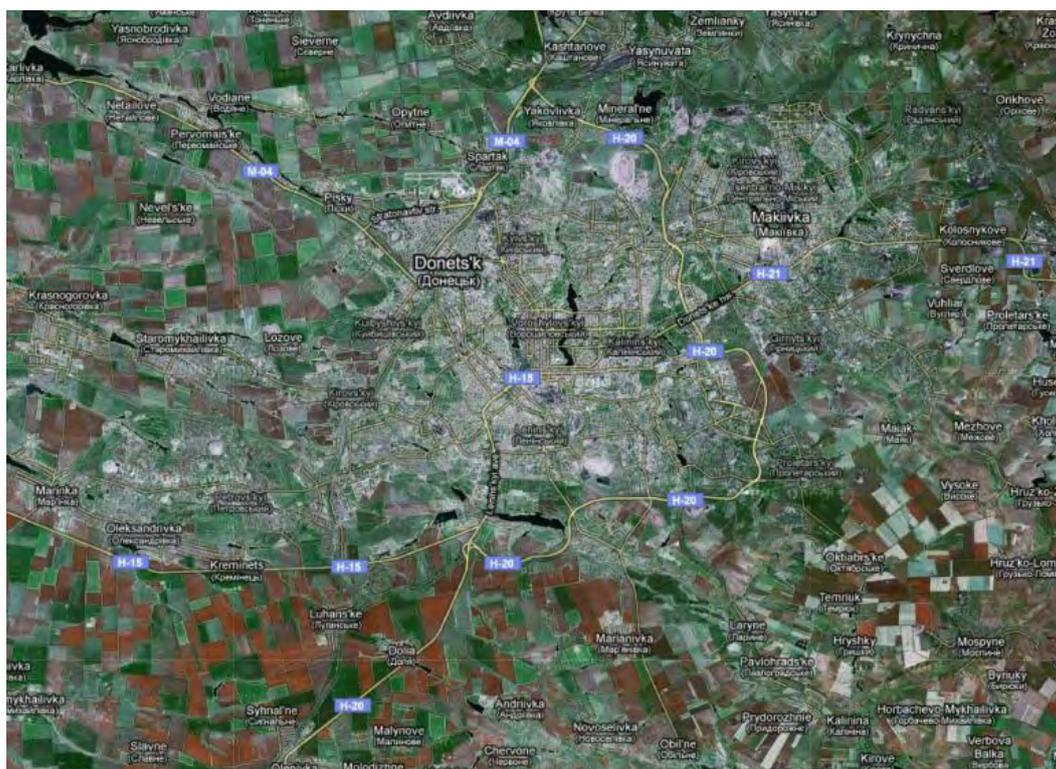
Figure 21 Map of the Ukrainian Donbas coalfield and local authority units, Donetska and Luhanska oblasts



Source: Courtesy of Adam Swain

The distance from the westernmost point of Donetsk to the north-eastern end of Makiivka is 68 km by road; the north to south distance within the extended Donetsk city council boundary is about 50km by road. Historically, the City of Donetsk Council boundary tended towards expansion, from its actual continuously built-up area of 358 sq. km in the 1980s to 570.7 sq. km in the 2000s. Makiivka city council was extended as well to cover 425.7 sq. km; thus, making currently the area size of the Donetsk conurbation 996.4 sq. km in total (see Fig.22).

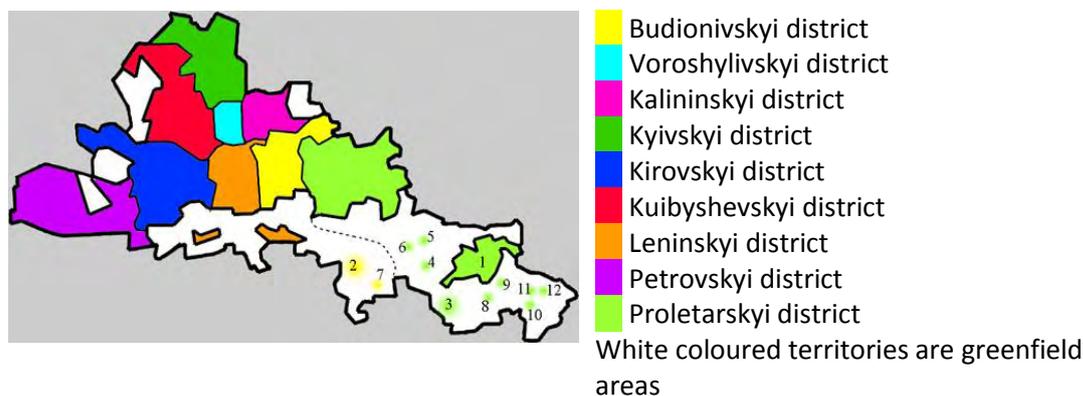
Figure 22 Map of the Donetsk-Makiivka conurbation



Source: Google Maps

The city of Donetsk consists of 9 inner-city local authorities – *raions* (districts), almost all of which are named after famous Bolshevik party leaders: Budionivskiy (Budionnyi’s), Voroshylivskiy (Voroshilov’s), Kalininskiy (Kalinin’s), Kirovskiy (Kirov’s), Kuibyshevskiy (Kuibyshev’s), Leninskiy (Lenin’s), and Petrovskiy (Petrovsky’s) districts, as well as Kyivskiy (Kyivan) and Proletarskiy (Proletarian) districts (see Fig. 23; Siegelbaum, 1988). The extended city council boundary also covers the adjacent town of Mospyne (no. 1 on Fig. 23), two urban type settlements or townships (Laryne and Horbachevo-Mykhailivka), one workmen’s settlement (Pavlohradske) and seven villages surrounding Mospyne.

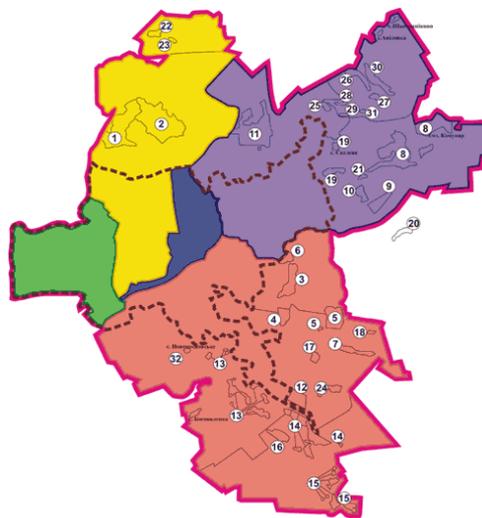
Figure 23 Map of Donetsk city districts, city council boundary, 2010



Source: Donetsk City Council, <http://mer.dn.ua>

Due to a fairly generous nature of the city of Donetsk council boundary, most of suburbanisation processes driving urban shrinkage in the city have been captured by the city council population figures. Moreover, less than 1.7% of the city council population reside outside the city of Donetsk proper. The boundary of Makiivka city council is even more broadly drawn: in addition to Makiivka, it also covers 17 urban type settlements, 8 workmen's settlements, and 7 villages. Makiivka is divided by 5 inner-city districts: Chervonohvardiiskyi (Red Guard's), Kirovskiy, Tsentralno-Miskiy (Central Town), Sovyetskiy (Soviet), and Hirnytskyi (Miner's) (see Fig. 24). Unlike in Donetsk, the suburban and peri-urban areas of Makiivka inhabit almost 11% of the city council population. As it has been discussed earlier, they tend to be much less influenced by urban shrinkage processes than the core city itself.

Figure 24 Map of Makiivka city districts, city council boundary, 2010



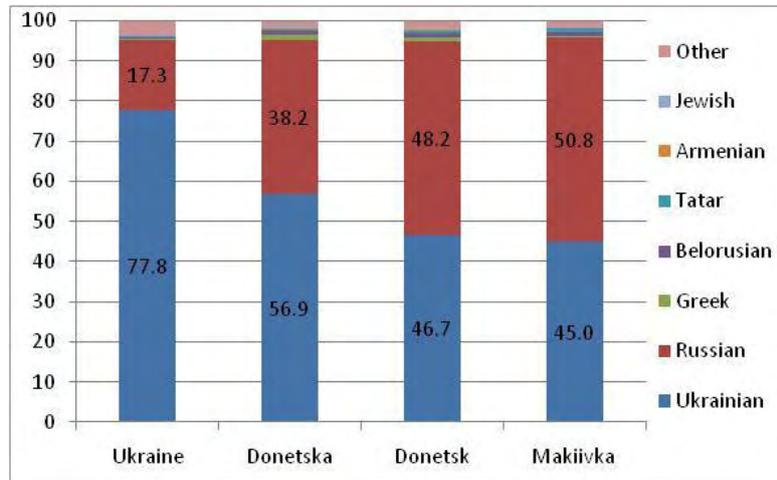
Green – Chervonohvardiiskiy district; **Yellow** – Kirovskiy district; **Blue** – Tsentralno-Miskiy; **Violet** – Sovyetskiy district; **Red** – Hirnytskyi district. The internal dotted line boundary – continuously built-up urban area; the **pink** outer boundary – the city council administrative area.

Source: Makiivka City Council, www.makeyevka.dn.ua/

Other factors: cultural identity and ethno-linguistic politics

Another factor which has had a profound impact on urban shrinkage in the Donetsk conurbation and the Donbas as a whole is intrinsically linked with the region's cultural history, borderland identity, and ethno-linguistic composition. According to the last general population census, Russians and other non-Ukrainian ethnicities have formed a majority of population in both Makiivka and Donetsk; in contrast with the solid majority enjoyed by the country's titular nation in both the region and Ukraine as a whole (see Fig. 25).

Figure 25 Largest ethnic groups in Ukraine, Donetska oblast, Donetsk and Makiivka, % share of total population, 2001 population census data



Source: WP2 D6 Database, May 2010

Furthermore, less than a quarter of the region's population recognise Ukrainian as a mother tongue, with 74.9% declaring their allegiance to the Russian language. In the large industrial cities of the Donbas, Ukrainian is officially declared as a mother tongue by a tiny minority of population, running in high single or low double digits: 11.1% in Donetsk, 9.8% in Mariupol, and 12.4% in Makiivka respectively. The cultural identity of the majority of Donbas inhabitants lies with the Ukrainian Orthodox Church in communion with the Moscow Patriarchate of the Russian Orthodoxy (see Figs 26-27). Even after some 15 years of Ukraine's independence, only 41% of the Donbas inhabitants identified themselves as 'Ukrainian', 11% described themselves as being 'Soviet', and 48% opted out for a regional or local identity of 'Donbas', 'Donetsk', etc (see Hrytsak, 2000; Kopat'ko and Korshunov, 1998).

Figure 26 The Transfiguration of Christ Cathedral, Donetsk, 2009



Source: Vlad Mykhnenko



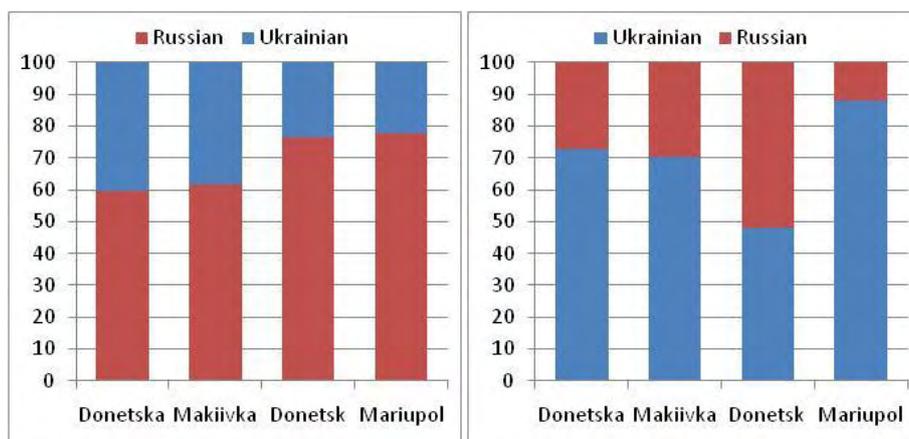
Figure 27 Cathedral of St George the Victorious, Makiivka, 2009

Despite such an historically complex ethno-linguistic and cultural composition, the region and its largest cities have had to endure a prolonged and continuous campaign of ‘Ukrainisation’ officially sanctioned by the Ukrainian state and orchestrated in the late 2000s with fervent zeal by the Orange revolution-inspired nationalist government in Kyiv (Holdar, 19995; Nemyria, 1999a; 1999b; Sasse, 2001; Swain, 2005; Wilson, 1995; 1997; 2005). Between 1995 and 2009, the share of Donetsk’s pre-school children being instructed in Ukrainian increased from 5% to 48%.

Source: Makiivka City Council, www.makeyevka.dn.ua/

In Makiivka, the Ukrainian language share of pre-school education grew from 2.2% to 70.3%. In primary and secondary education, Ukrainisation in the class room increased dramatically throughout the region as well, reaching 23.7% in Donetsk and 38.4% in Makiivka (see Figs 28-29).

Figures 28-29 Pupil enrolment by language of instruction, pre-school (left) and school level (right), Donetska oblast, Donetsk, Makiivka, and Mariupol, % share of pupils, 2008



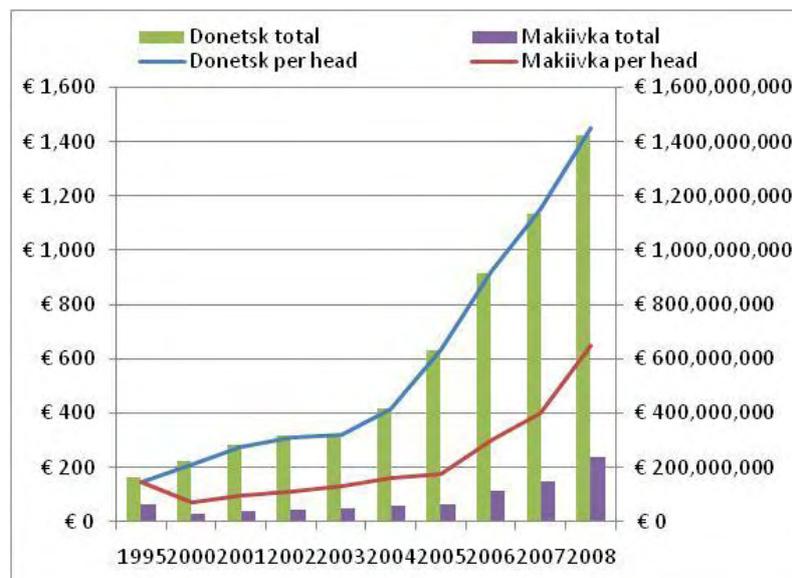
Source: WP2 D6 Database, May 2010

The Donbas's absence of cultural and ethno-linguistic affinity with the Ukrainian nationalist project, combined with the depth of the economic depression suffered by the region and its large industrially-orientated cities in the wake of the dissolution of the USSR in 26th December 1991, have led to a creeping sense of alienation in the region. The Ukrainian identity politics have eventually added to unhappiness, depression and psychological stress in the Donbas, exacerbating out-migration pressures and adding to mental health problems amongst most of the urban dwellers.

2.2 Trajectories of urban shrinkage

This section focuses on spatial-temporal patterns and dynamics of urban shrinkage in Donetsk and Makiivka. In the sub-section on spatial-temporal patterns of change, we uncover whether there have been particular areas more or less affected by shrinkage at specific time periods, whereas in the sub-section on dynamics we describe differences in speed and scope of urban shrinkage over the last two decades.

Figure 30 Consumer purchasing power, Donetsk and Makiivka, annual retail turnover, € (current prices), 1995-2008



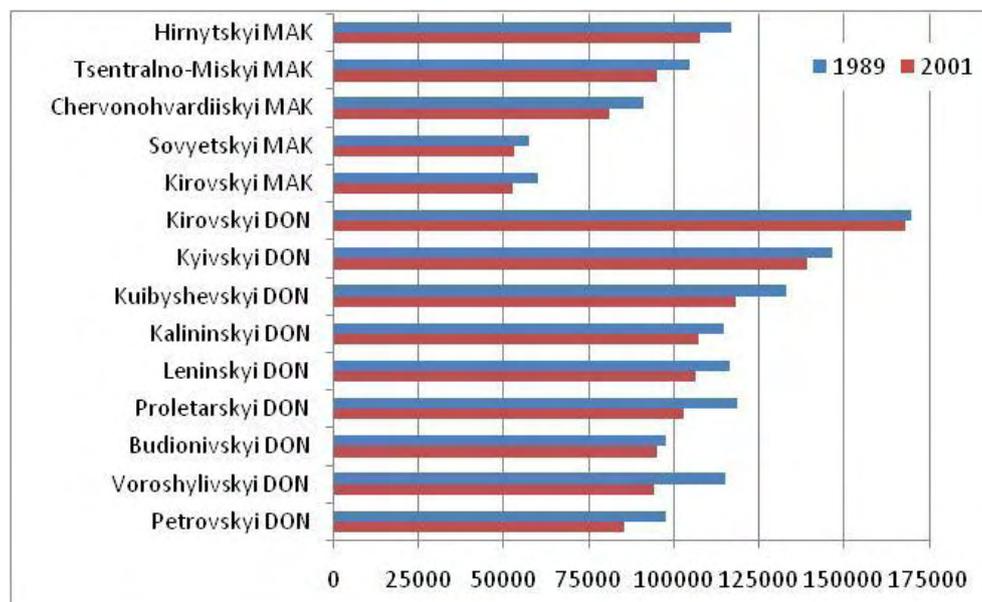
Source: WP2 D6 Database, May 2010

Spatial-temporal patterns

The first spatial-temporal feature of shrinkage in the Donetsk conurbation has been the divergence of urban fortunes of Donetsk and Makiivka, with the latter being disproportionately badly affected. In the previous sections we have identified diverging trends in the economic and spatial development of Donetsk and Makiivka, and identified the core city of Makiivka as the fastest shrinking territory within the

conurbation. Our analysis suggests that the point of bifurcation lies at the end of the post-soviet depression of the 1990s, when during Ukraine's rapid economic recovery of 1999-2008, the Donetsk economy had been able to pull away, leaving Makiivka trailing far behind. Although the average wage trajectories of the two cities do not exhibit a particularly dramatic variance under post-communism (see Fig. 20 above), the purchasing power of Donetsk and Makiivka consumers tells a rather different story (see Fig. 30 above). In 1995, Makiivka's annual retail trade turnover was €149 per head, comparing with Donetsk's €148. By 2009, the purchasing power of Makiivka's consumers had grown to €649 per capita per year; whilst in Donetsk it had stood at €1450 or 2.2 times higher than in Makiivka. The sheer size of the Donetsk retail economy, amounting to €1.423 billion in 2008, has come to dwarf's that of its eastern neighbour (€238 million).

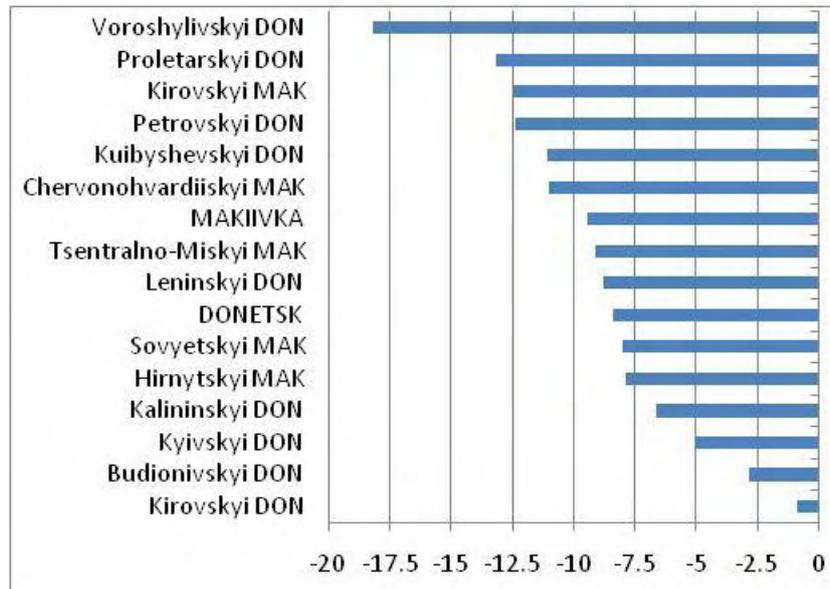
Figure 31 Inner-city population change, Donetsk (DON) and Makiivka (MAK) city districts, absolute numbers, 1989-2001



Source: WP2 D6 Database, May 2010

The second spatial-temporal characteristic of urban shrinkage in the Donetsk conurbation has been the divergence of inner-city experiences. The two cities have entered transition with a disparate variety of district authorities. In Makiivka, Hirnytskyi was 1.94 times larger population-wise than Kirovskiy in 1989 (see Fig. 31), further widening the gap to 2.04 times by the early 2000s. In Donetsk, Kirovskiy was 1.74 times the population size of Petrovskiy in 1989, expanding to 1.97 times the size by 2002. In terms of the scale of inner-city shrinkage, the majority of Donetsk districts have shrunk faster than the city average (see Fig. 32), including Voroshylivskiy, Proletarskiy, Petrovskiy, Kuibyshevskiy, and Leninskiy. In Makiivka, Kirovskiy and Chervonohvardiiskiy districts were in the minority of being the most affected by population loss.

Figure 32 Inner-city population change, Donetsk (DON) and Makiivka (MAK) city districts, % change (ranked), 1989-2001



Source: WP2 D6 Database, May 2010

The third major feature of spatial-temporal developments in the shrinking cities of Donetsk and Makiivka is the *qualitative* difference between population loss in Donetsk's Voroshylivskiy and Makiivka's Chervonohvardiiskiy in comparison with Donetsk's Petrovskiy and Proletarskiy or Makiivka's Kirovskiy districts. Whilst the former group is the core of the rapidly emerging central business district of the conurbation, the latter districts are the conurbation's poorest, most remote, heavy industrial peripheries. Voroshylivskiy district of Donetsk and the adjacent Chervonohvardiiskiy district of Makiivka are the areas closest to the urban amenities of Donetsk, with the highest real estate prices in the conurbation. In April 2009, the average housing sale in Voroshylivskiy was €1031 per 1 sq. m., compared with the Donetsk average of €574 per 1 sq. m., or €441 in Petrovskiy at the bottom of the Donetsk real estate scale. Donetsk's central district of Voroshylivskiy has gradually been turned into the main residential area for urban middle-class professionals, public officials, and managers, with 11 new private housing developments for high income residents built in the 2000s or under construction. Four such housing developments have been built in Kyivskiy, three in Kalininskiy and Leninskiy each, two in Leninskiy, and one in Budionivskiy district. So far, Donetsk private real estate developers have not entered the city's poorest districts of Kirovskiy, Proletarskiy, and Petrovskiy; they have shunned Makiivka as a whole as well.

The newly-approved Master Plan for Donetsk 2010-2031 (see Fig. 33), indicates the city authorities' intention to continue saturating Voroshylivskiy with business office space. The City of Donetsk master plan has rather scandalously included Makiivka's Chervonohvardiiskiy district (the undesignated area in the north-eastern corner of Fig. 33), 'approving' it as an area for expensive, detached family house development.

Fig. 34 above), a 51,500 seat stadium built privately by Football Club Shakhtar Donetsk with an estimated cost of €300 million (Stoner-Weiss, 1997; Swain and Mykhnenko, 2007). By striking contrast, Makiivka's fastest shrinking Kirovskyi district is built around an old and struggling iron and steel combine (see Fig. 35), which was faced with the ultimate closure as the result of the global financial-economic crisis of 2007-2009.

Figure 35 The Makiivka Kirov Iron and Steel Works, Kirovskyi district, 2009



Source: Vlad Mykhnenko

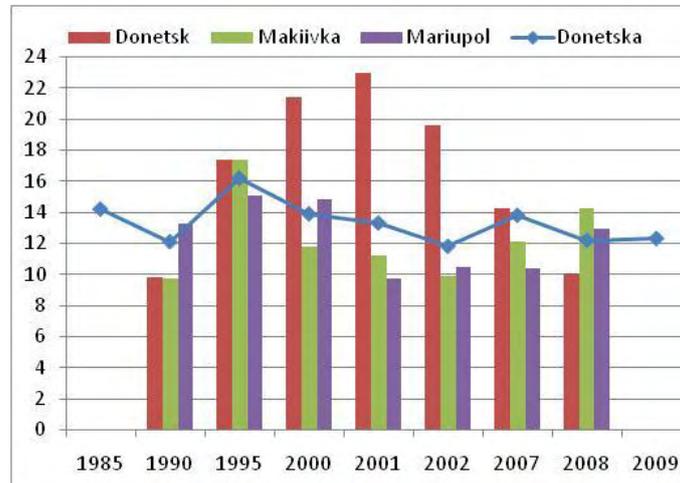
Dynamics

In this sub-section, we focus differences in speed and scope of urban shrinkage in the Donetsk conurbation over the entire reported period of time and beyond. First of all, the post-soviet depression caused by the collapse of the USSR and economic transition policies that ensued has led to a profound decline in healthcare provisioning, and eventually a mortality and public health crisis. Despite the economic resurgence of the 1999-2007 period, public health conditions in Donetsk and Makiivka, and the region as a whole, have shown no sign of improving.

Infant mortality, one of the main comparative indicators of human well-being, has increased during the transition in all Donetska's major cities as well as the region as a whole (see Fig. 36). Nonetheless, whilst this public health indicator in the region's second largest city has largely tracked Donetska's, infant mortality increases were much higher in Makiivka. Yet the most striking of all was the public health trajectory of Donetsk: between 1990 and 2001 the city's infant mortality rate more than doubled. By the end of the 2000s, this state of affairs had improved, yet even in 2008 Donetsk's infant mortality rate was higher than in the late Soviet period. In Makiivka,

infant mortality had actually worsened through the 2000s, ending the decade with the highest level amongst the region’s three main cities and 47% higher than in 1990.

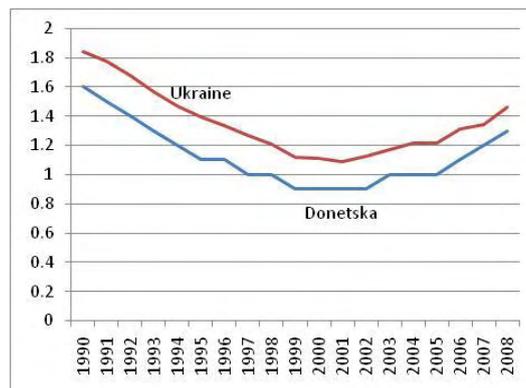
Figure 36 Infant mortality rates, Donetska oblast, Donetsk, Makiivka, and Mariupol, deaths of under 1-year-olds per 1,000 live births, 1985-2009



Source: WP2 D6 Database, May 2010

Urban shrinkage in the Donbas and Ukraine’s gradual demographic decline have been driven by historically unprecedented low fertility rates, which were far below the natural replacement level even under state socialism (see Fig. 37). In the 1990s, fertility rates declined even further, below 1 birth per 1,000 women. In the 2000s, both Ukraine’s and Donetska’s fertility rates somewhat improved.

Figure 37 Fertility rates, Ukraine and Donetska oblast, live births per 1,000 women, 1990-2008

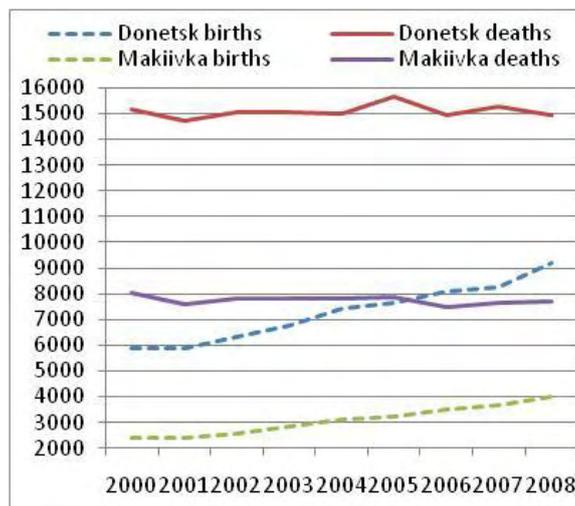


Source: WP2 D6 Database, May 2010

The overall number of deaths stabilised in both Donetsk and Makiivka (see Fig. 38), whilst there were many more births than in the previous decade. These most recent developments have had a positive impact on the natural rate of population change and elderly rates in the two cities (see Figs 39-40). However, the relative steadiness of shrinkage experienced by Donetsk, Makiivka, and Donetska as a whole in the late

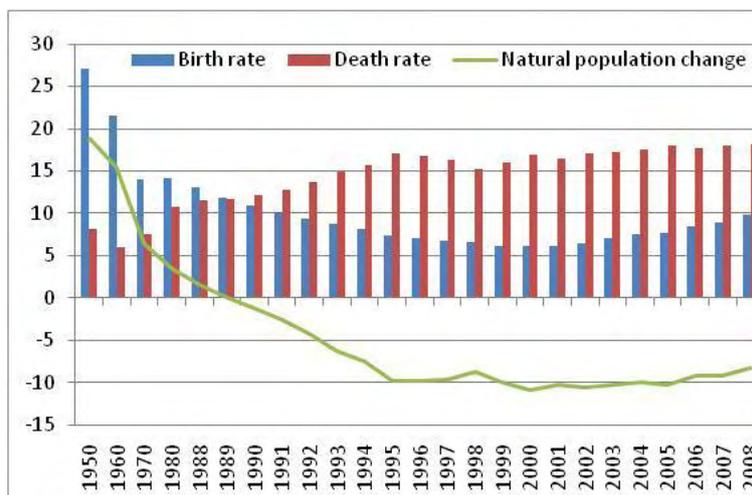
2000s is far from the rates of population growth registered before 1990. With both Donetsk's and Makiivka's ageing indexes still growing rapidly in the 2000s, urban shrinkage in the conurbation is set to continue unabated (Mykhnenko and Turok, 2008).

Figure 38 Demographic trends in Donetsk and Makiivka, births and deaths, actual numbers, 2000-2008



Source: WP2 D6 Database, May 2010

Figure 39 Post-war demographic trends, Donetsk oblast, birth rates, death rates, and natural population change (per 1,000 inhabitants), 1950-2008

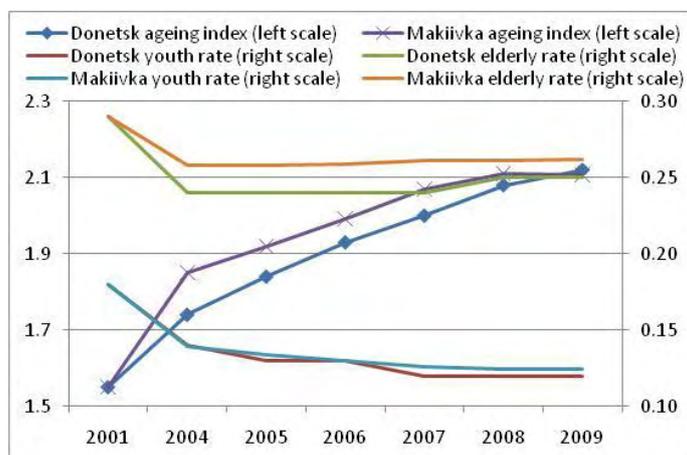


Source: WP2 D6 Database, May 2010

Using long-term demographic trends of Donetsk and Makiivka, we were able to build a general population projection for the two cities and conurbation as a whole until the end of 2018 (see Fig. 41). This allows one to provide the actual figures covering long-term population trajectories of the Donetsk conurbation. Taking as a whole, the

main findings of the demographic research is that urban shrinkage in the conurbation will only intensify.

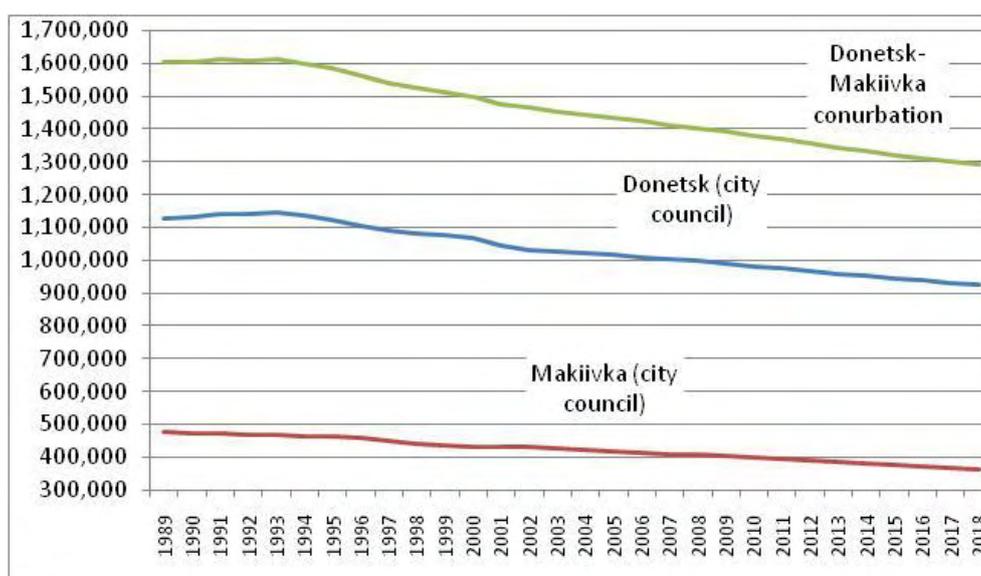
Figure 40 Demographic change in Donetsk and Makiivka, ageing index (ratio of people over the pension age to children), youth rate (ratio of young people to total population), and elderly rate (ratio of old age pensioners to young people), 2001-2009



Source: WP2 D6 Database, May 2010

On average, in the 1990s, the Donetsk conurbation was losing annually 0.67% of its inhabitants. The speed of shrinkage increased in the 2000s to 0.78% of population per year. In the 2010s, the population decline will intensify to 0.81% of population annually. Makiivka has been and will remain the main driver of shrinkage in the conurbation.

Figure 41 Long-term population trajectories, Donetsk, Makiivka, and the conurbation, 1989-2018



Note: demographic projection from 2009 onwards.

Source: Dmytro Myedvyedyev

The city was annually losing 0.92% of its residents in the 1990s. In the 2000s, urban shrinkage processes in Makiivka decelerated to a 0.74% population loss per year. Nonetheless, in the 2010s, Makiivka's population loss will worsen to 1.05% per year. By contrast, Donetsk's population loss trajectory has been gentler: 0.57% per year in the 1990s, 0.79% in the 2000s, decelerating to 0.71% in the 2010s. Thus, by the end of 2010s, Donetsk would have lost 19% of population from its peak in 1993. Makiivka's population decline would amount to 24% from its peak in late 1980s, whilst the conurbation as a whole would have lost one in five inhabitants.

3. IMPACT AND CONSEQUENCES OF URBAN SHRINKAGE

In this part of the report we investigate the structural impact that urban shrinkage has had on various spheres of urban development in the Donetsk conurbation. We study both direct and indirect effects of shrinkage on patterns of social cohesion and segregation, business environment and employment, social infrastructure and education, housing, technical infrastructure, land use and environment, and municipal finances and budget, trying to uncover which of these developments might have been caused primarily by urban shrinkage.

3.1 Patterns of segregation and social cohesion

Ukraine's post-communist transformation in general has led to a marked increase in social class and income inequalities, especially in the 1990s. Combined with the processes of urban shrinkage, the social inequalities have acquired distinct spatial features, leading to concentration of wealth and poverty, and to the gradual exclusion of vulnerable social groups, including the poor, the elderly, the unemployed, and the homeless. Despite almost a decade of economic resurgence experienced by the Donetsk conurbation, poverty has continued to concentrate. The late 1950s-1960s neighbourhoods of 5-storey white brick houses widely known as *khrushchivky* (*khrushchiovky* in Russian) were built under the Soviet leader Nikita Khrushchev to house the post-World War II baby-boomers and their fast expanding families. As the post-war generation had retired and their own children had left home, by the late 2000s *khrushchivky* turned into primary housing areas for the poor elderly in Donetsk and Makiivka (see Figs 42-43).

Figures 42-43 Derelict playgrounds, a 1960s neighbourhood backyard, Kyivskiy district, Donetsk, 2009

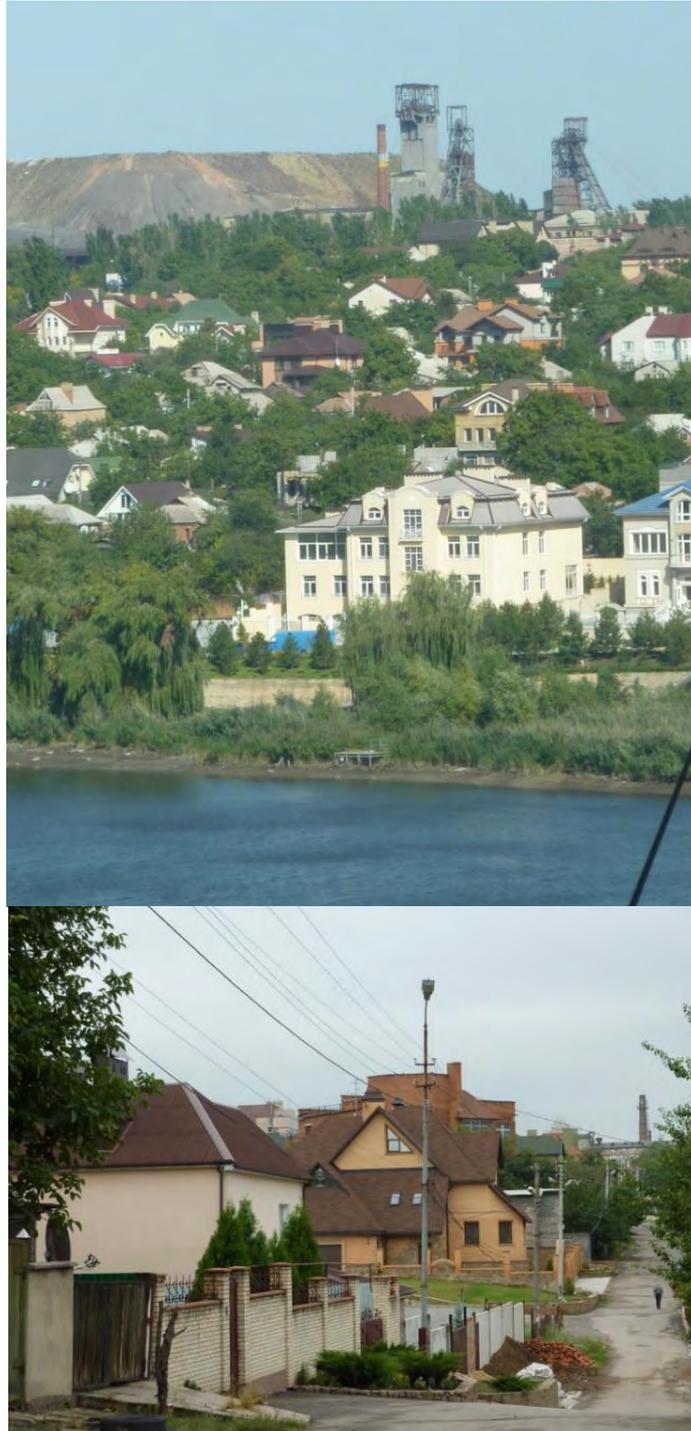


Source: Vlad Mykhnenko

By contrast, some of the formerly poorest neighbourhoods of semi-legally built mud huts and hut barracks used during Stalin's industrialisation of the 1930s to house vast expanding industrial workforce have been undergoing gentrification. Karl Marx mining settlement in central Donetsk (Kalininskyi district) on Kalmius River has been

historically known as *Tsyhanske selyshche* or Gypsy Township (*Tsyganskii posiolok* in Russian), home to the city's Roma community, as well as the pitmen from the nearby Kalinin Coal Mine (see Fig. 44-45). In the 2000s, most of the former workmen's barracks and small cottages were replaced by large, multi-story detached family houses with gardens, overlooking the river and the Donbas Arena farther on.

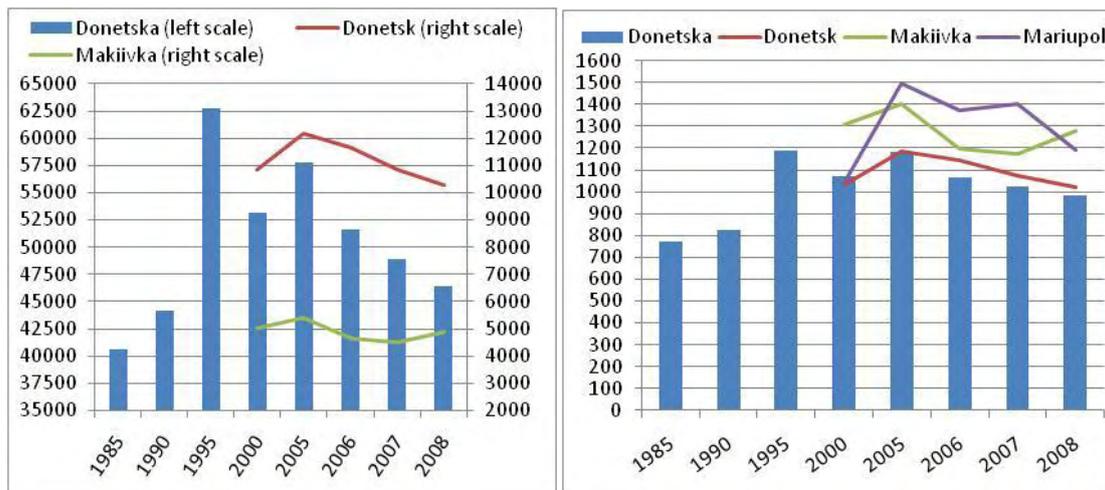
Figures 44-45 From a mining village to a riverside 'escape'? Newly-built large family houses on the bank of Kalmius, Karl Marx settlement, Kalininskyi district, Donetsk, 2009



Source: Vlad Mykhnenko

Ukraine’s post-communist transformation, similar to Russia’s, has had a particularly chaotic, almost lawless nature in the early 1990s (Woodruff 1999 and 2000; Zimmer, 2004; 2006a; 2007). It has turned the large urban centres of the Donbas into scenes of violent crime, homicide, robbery, burglary, mugging, etc (van Zon, 2005). The number of reported crimes increased in Donetska oblast between 1985 and 1995 by 65%, with almost half of all the offences taking place in the region’s three largest cities of Donetsk, Mariupol, and Makiivka respectively. (see Figs 46-47). By the late 2000s, the criminal surge had subsided. Yet with two crimes registered in the Donetsk conurbation on average every hour throughout the decade, Donetsk and Makiivka in particular have remained the most unsafe places in the region, along with Mariupol.

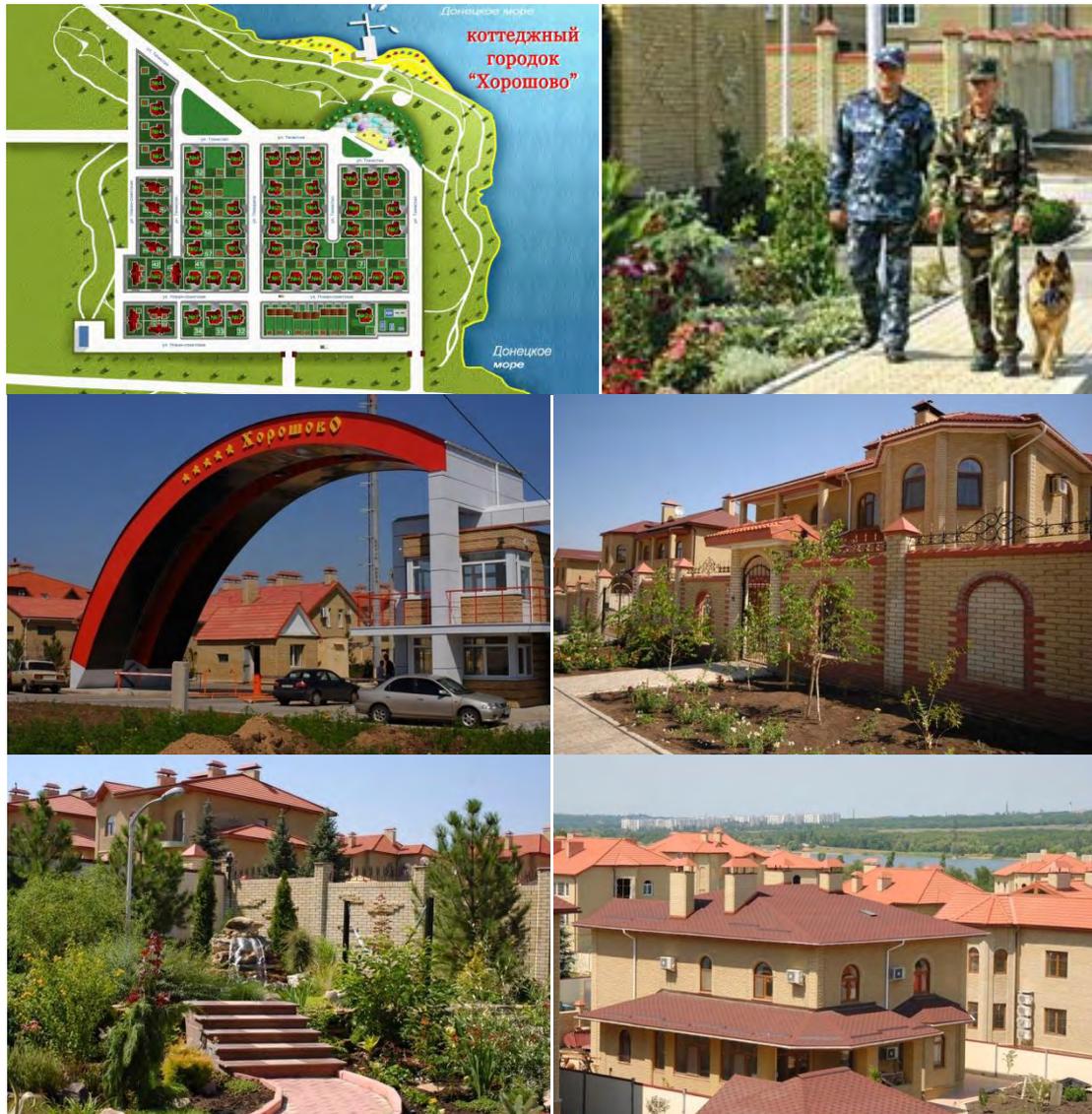
Figures 46-47 Reported crime statistics, total number of registered offences in Donetska oblast, Donetsk and Makiivka (left), and official crime rates in Donetska oblast, Donetsk, Makiivka, and Mariupol, offences per 100,000 people (right), 1985-2008



Source: WP2 D6 Database, May 2010

The fear of crime by the high income city dwellers, along with its actual experiences, promoted a series of out of town gated communities, which have been marketed as ‘safe and environmentally clean heavens’ by private developers. Currently, there four such ‘cottage towns’ situated at the outskirts of Donetsk’s Leninskyi district, and none in Makiivka. Khorosheve or Fineville, 11 km south of Donetsk, is amongst the largest new developments of large (186 to 450 sq. metres) detached and semi-detached family houses, priced at €820 per 1 sq. m. This picturesque gated community of up to 70 houses (see Figs 48-53) overlooks the Sea of Donetsk water basin and boasts having a private landing pier. At the time of writing, only 17 houses were left unsold.

Figures 48-53 Gated suburbia, 'Fineville' - Khorosheve Cottage Town, south of Donetsk, 2009



Source: Vlad Mykhnenko and Khorosheve Cottage Town marketing material, <http://horoshovo.dn.ua/>

Next to the cottage settlement of Khorosheve stands another upmarket development of Liubymove or Belovedville, which consists of over 200 detached family houses. This private gated community covers 65 hectares of greenfield space and is planned to include a health and fitness centre, an indoor swimming pool, hairdresser's, a Spa saloon, a park, a social club, with a restaurant, a bar, a cinema theatre, bowling and snooker, an internet cafe, a sports ground, an open swimming pool with an aqua park, a private beach and waterfront, a nursery, a first-aid post, a tailoring shop, a supermarket, a car wash and a garage, parking, a warehouse, maintenance services, and a 24/7 security post at the entrance (see Figs 54-58). The dwelling and technical built-up space at Liubymove amounts to 100,000 sq. metres in total. The houses are priced at around €1,200 to 1,600 per 1 sq. metre, with the

cheapest house being advertised in March 2010 at €310,117 and the most expensive at €782,225. At the same time, Makiivka real estate agents were able to offer one an old, traditional house for as little as €6,000.

Figures 54-58 Gated suburbia, Belovedville - Liubymove Cottage Town, south of Donetsk, 2009



Source: Vlad Mykhnenko and Liubymove Cottage Town marketing material, <http://liubimovo.com.ua/>

3.2 Business and employment

Under state socialism, the predominance of heavy industries, primarily coal, iron and steel, chemicals, and heavy engineering, used to define the Donbas and its major cities (Amitan *et al*, 2001). The bulk of the produce was exported overseas or to other Soviet republics. In the late 1980s, the Donetsk economy accounted for 32% of the regional exports, whilst Makiivka's firms generated almost 11% in total export sales, thus, making the Donetsk conurbation the Donbas's primary export machine which produced 42.8% of regional exports in 1988-1990. Large industrial state-

owned enterprises were the norm of business organisation. During the economic transition to capitalism, all of the Donbas's major industries (apart from the most of coal mining and defence) have been either privatised or undergone liquidation. The Donetsk economy has been restructured away from heavy industries; the Mariupol economy has emerged as the industrial winner, whilst Makiivka has turned into the main urban laggard of the regional economy. In the late 2000s, almost half of all businesses in the region, including Ukraine's largest company and its sole shareholder, were headquartered in Donetsk, whilst the Makiivka economy accounted for just 5.9% of Donetska's business entities. Over one third of the region's fixed capital assets were accumulated in Donetsk. Makiivka's economy has trailed far behind, with just 4.6% of the region's fixed capital and almost three times as little as Mariupol's (see Tab. 2).

Table 2 Business patterns in Donetska's three major cities, 2008-2009

		<i>Donetsk</i>	<i>Makiivka</i>	<i>Mariupol</i>	<i>Donetska (total)</i>
Businesses and organisations, 2009	Total no.	42,507	5,317	8,252	89,998
	% of total	47.2	5.9	9.2	100.0
Fixed capital assets, 2008	Euro, million	10,170.5	1,379.2	3,812.1	30,137.7
	% of total	33.7	4.6	12.6	100.0
Industrial output, 2008	Euro, million	3,460.1	1,773.5	6,640.7	20,951.7
	€per capita	3,528	4,835	13,989	4,608
	% of total	13.8	8.7	33.2	100.0
Exports of goods & services, 2008	Euro, million	2,533.2	288.5	4,446.5	10,180.5
	% of total	24.9	2.8	43.7	100.0
Imports of goods & services, 2008	Euro, million	2,098.2	28.1	789.9	3,656.8
	% of total	57.4	0.8	21.6	100.0
Small & medium enterprise, 2008	per 10,000 inhabitants	125	38	54	54
	Employees	78,900	11,400	17,800	169,300
	% of total	46.6	6.7	10.5	100.0

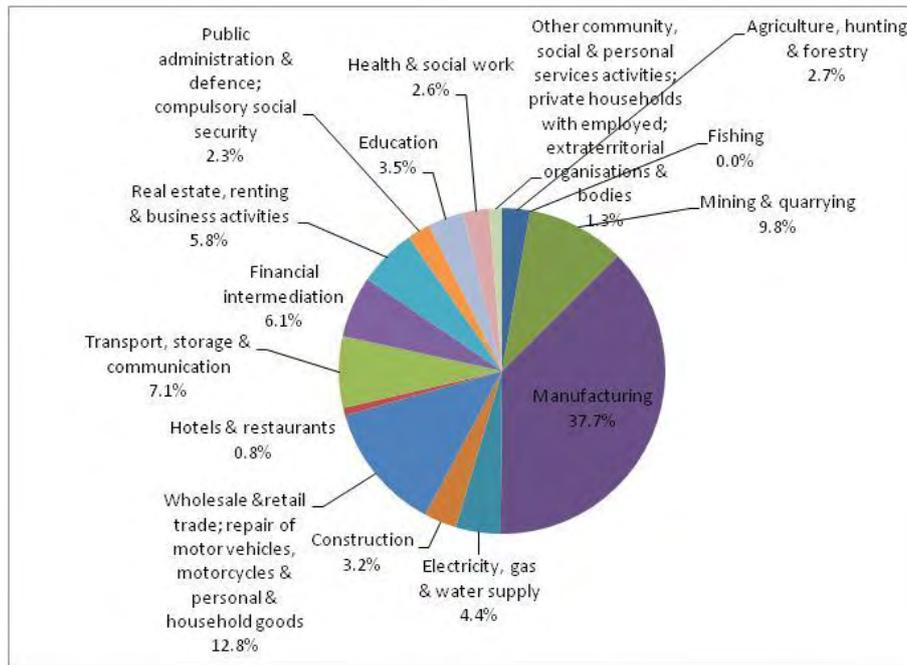
Source: WP2 D6 Database, May 2010

The Donetsk conurbation's combined share of the regional industrial output has declined to just 22.5% in total (standing at 13.8% in Donetsk and 8.7% in Makiivka) in comparison to Mariupol's 33.2%. Consequently, Mariupol has become Donetska's main export machine, accounting for 43.7% of regional exports. By contrast, the share of Donetsk has declined to 24.9%. The Makiivka economy's exports share has fallen to just 8.7%. In terms of small and medium enterprise (SME) development, the Donetsk economy has clearly bucked the trend, with 2.5 times as many small and medium firms per 10,000 residents than in Mariupol (the regional average), employing almost a half of all the region's SME employees. The SME development record in Makiivka was amongst the poorest across the region, however.

There are no comparable NUTS-3 level data on output or employment by sector in Ukraine. However, Donetska oblast's statistics can provide us with a broad picture

concerning the economic structure (Fig. 59). By the late 2000s, the industry’s share of the regional economy declined to 51.8% from about three-quarters under state socialism. Mining has seen a steepest decline to less than 10% of what was once described as a ‘Coal Eldorado’ (Pleines, 2004; 2008). Non-market public services’ share has declined as well. Under post-communism, output growth was the highest in market consumer and producer services (Lyakh, 2007).

Figure 59 Gross value added by sector, Donetska oblast, 2007



Source: WP2 D6 Database, May 2010

Figure 60 ‘The Heights of Conquered Depths’: A Makiivka Coal Holding Company advertising, central Donetsk, 2009



In terms of urban economies, the Mariupol economy continues to be driven by steel industry and transport, whereas the Makiivka economy has remained to be based around (state-owned) coal mining and public services (see Fig. 60). Most of the long-term growth sectors have gravitated towards Donetsk, the region’s capital city. Two out of four of Ukraine’s largest private companies – System Capital Management and the Industrial Union of the Donbas – are located in Donetsk.

Source: Vlad Mykhnenko

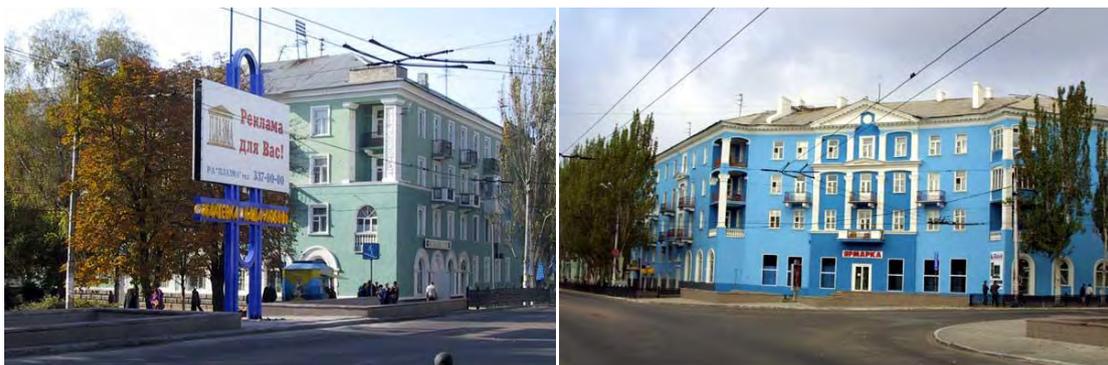
Other major business entities and asset managers have also been based in the city (Swain and Mykhnenko, 2007; cf. Clarke, 2004; Erocson, 2001). Thus, Donetsk has appeared to enjoy the bulk of the region's public as well as private investment, which has propelled the city to become the main location for high value-added activities in the Donbas. Makiivka, however, has been lacking all the attraction. The visual imagery of Donetsk's bustling central business district, with its new office space and signs of creeping financialisation (Figure 64 below exhibits 16 different banks' ATMs), can hardly present a more striking contrast to Makiivka's sleepy city centre (see Figs 65-66).

Figures 61-64 Bustling central Donetsk, 2009



Source: Vlad Mykhnenko

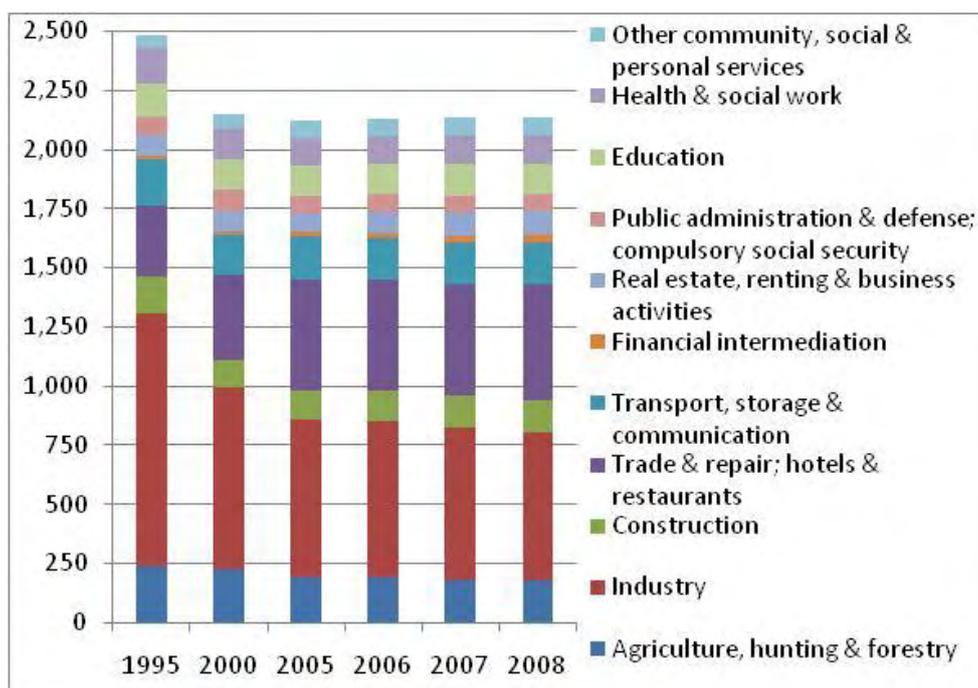
Figures 65-66 The apparent tranquillity of central Makiivka, 2009



Source: Makiivka City Council promotional material, www.makeyevka.dn.ua

The post-communist economic transformation and its longer-term structural adjustment have had a dramatic impact on employment patterns across Eastern Europe's old industrial regions (Birch and Mykhnenko, 2009). In Donetska oblast alone, between 1990 and 2008, total employment figures declined by 17.4%. Most of the change has occurred since the mid-1990s, when the region's employment declined by 13.8% (see Fig. 67). A crucial feather of the internal labour market change in the Donbas has been the proliferation of entrepreneurship (employers and the self-employed) and unpaid work in family-run businesses.

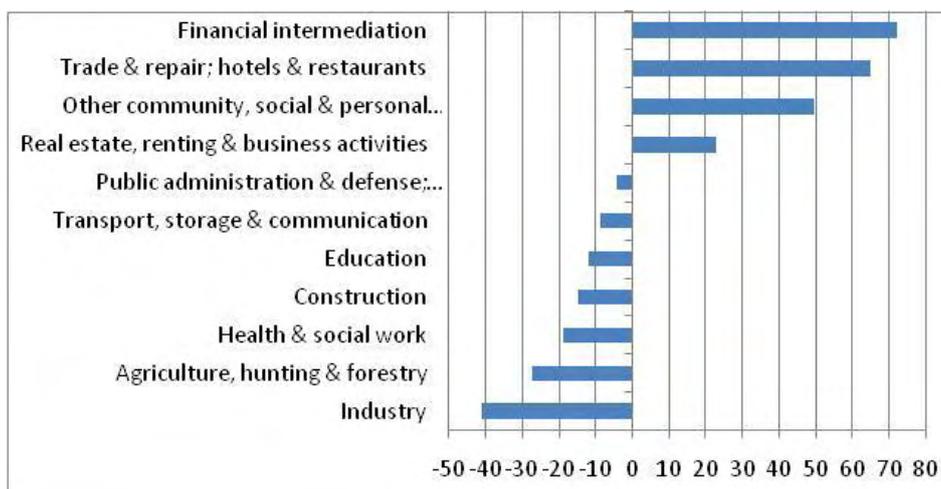
Figure 67 Employment by sector in Donetska oblast, thousands, 1995-2008



Source: WP2 D6 Database, May 2010

Even more striking has been the fall in actual paid jobs: the number of waged or salaried employees declined in the 1990-2008 period by 38.7%. Similarly to the total employment patterns, the bulk of restructuring has been carried out since the mid-1990s: between 1995 and 2008 a third of all the jobs in the region had disappeared. Being partly a consequence of the post-soviet depression of the 1990s, the shrinkage of the labour market in the Donetsk conurbation has been caused by overall urban shrinkage processes as well. In terms of employment structure, industry, construction, public services and utilities have been the most affected by the restructuring of the Donbas economy; with the industry losing over 40% of employment between 1995 and 2008. At the same time, financial intermediation and market consumer services grew in employment size by 72% and 65% respectively (see Fig. 68).

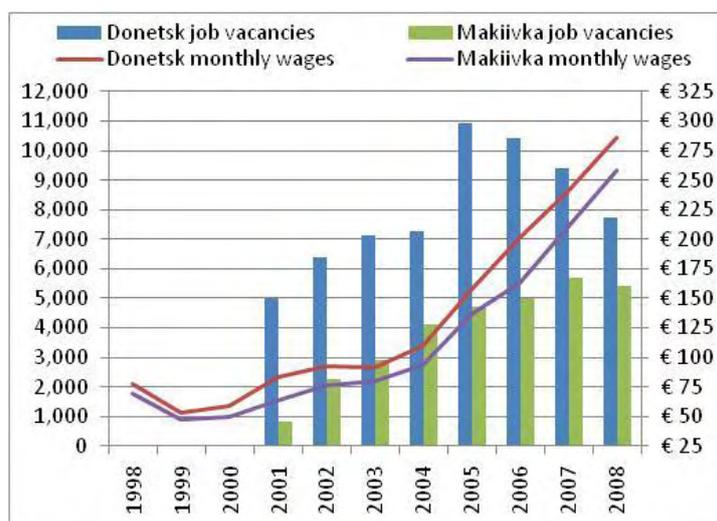
Figure 68 Employment change by sector in Donetska oblast, %, 1995-2008



Source: WP2 D6 Database, May 2010

Financial and real estate assets bubble of the late 2000s, accompanied by record world prices for steel and chemicals – the Donbas economy’s main exports – explain the fast rising average wages in both Donetsk and Makiivka, which more than tripled in almost as many years (see Fig. 69).

Figure 69 Total job vacancies and average wages per month, current Euro, Donetsk and Makiivka, 1998-2008

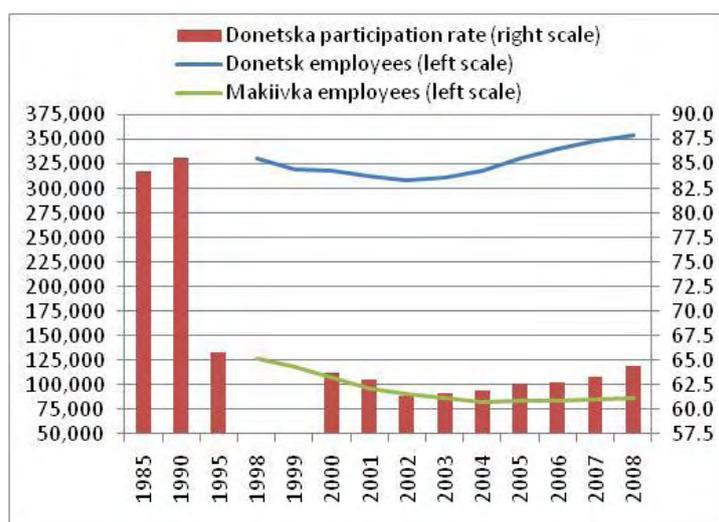


Source: WP2 D6 Database, May 2010

Yet, in addition to highly-skilled industrial and engineering jobs, many of the new employment opportunities created and many of the unfilled vacancies at the time were in market consumer or producer services, which required from applicants possessing a different skill set from the traditional coal and steel vocations. Manual industrial workers and, most prominently, the unskilled and low-skilled personnel

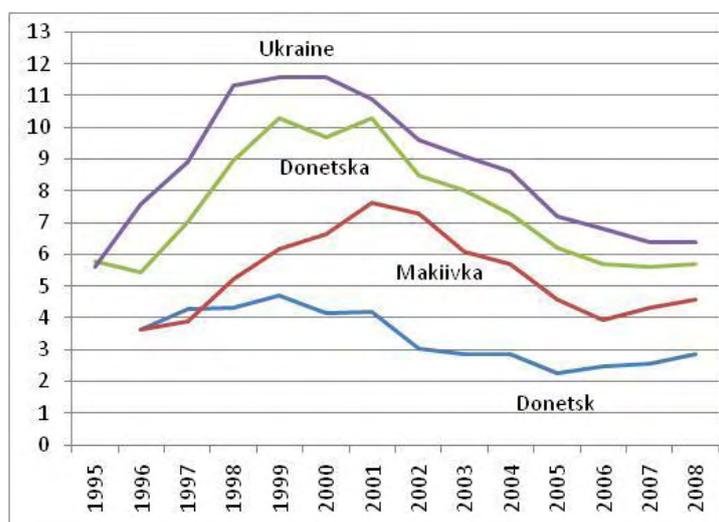
have been the main losers of the urban economic restructuring (Crowley, 1995 and 1997; Siegalbaum and Walkowitz, 1995). New employment opportunities have tended to depend on the national-scale and global positioning and diversity of local labour markets. As Ukraine's economic recovery of 1999-2008 was propelled by productivity gains, Donetska oblast lost 273,800 jobs or 17.6% in total. During the period, the region's second and most heavily industrialised city – Mariupol – reported a loss of 9,800 jobs (a better than average decline of 5.4%). The Makiivka economy suffered a loss of 32,100 jobs, amounting to a steep fall of 27.1%. By contrast, the Donetsk economy generated 33,600 extra jobs between 1999 and 2008, thus, expanding the local labour market by 10.5% (see Fig. 70).

Figure 70 Labour market participation (economic activity) rate, Donetska oblast, and number of employees in Donetsk and Makiivka, 1985-2008



Source: WP2 D6 Database, May 2010

Figure 71 Unemployment rates in Ukraine, Donetska, Donetsk, and Makiivka, labour-force survey based (ILO methodology), % of economically active 15- to 70-year-olds



Note: estimates for Donetsk and Makiivka are based on the relationship between the claimants count unemployment rate in both cities and the ILO unemployment rates observed in Donetska.

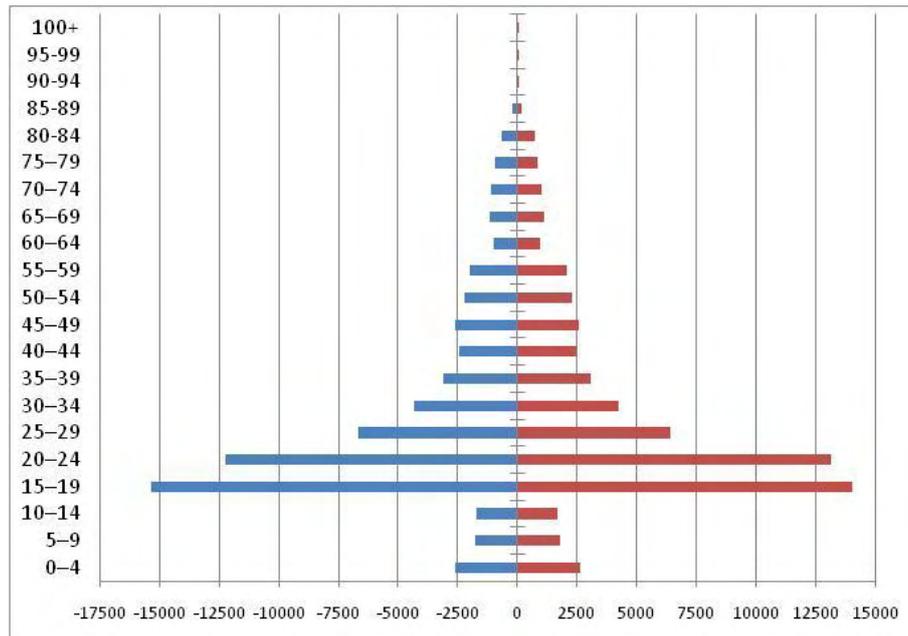
Source: WP2 D6 Database, May 2010

In comparison with the region and the country as a whole, the economy of the Donetsk conurbation has performed relatively well in managing to keep overall unemployment levels in lower to medium single digits (see Fig. 71 above). Even prior to the global financial and economic crisis of 2007-2009, Donetsk and Makiivka had been badly affected by the shift in Ukraine's underlying development model which followed the political turbulence of the 2004 Orange Revolution of 2004. In the late 2000s, economic growth in both cities slowed down and unemployment began to rise. Nonetheless, between 1996 and 2008, the average labour force survey-based unemployment rate (ILO methodology) in Donetsk had been 3.4%, peaking at 4.7% in 1999 and bottoming down at 2.3% in 2005, before climbing back to 2.9% by the end of 2008. Makiivka's overall average unemployment rate during this period had been 5.4%, higher than Donetsk's, yet still much lower than Donetska's average of 7.6% or Ukraine's 8.9%. Long-term unemployment in Donetsk over 12 months declined from 14.7% in 2006 to 6.8% in 2008/

Despite the economic resurgence of the early and mid-2000s and notwithstanding the dwindling population numbers, economic activity rates in the region has remained far below the 70% threshold and much lower than the 85.6% level of 1990. The labour market participation figures have, thus, indicated the existence of a large untapped pool of labour power in the region. This attribute of the local labour market could potentially mitigate potential labour shortages which would eventually result from the population pressures of urban shrinkage.

Unemployment in the Donetsk conurbation as well as Ukraine in general has had a disproportionately negative impact on women and the young. In 2008, the highest rate of joblessness in the region (10.6%) was amongst 15- to 25-year-olds, steadily declining to the relatively lowest rate (3.4%) in the pre-retirement age group of 50- to 59-year-olds. Over 60% of all employees made redundant in 2006-2008 were female. At the same time, only 48.3% of all the filled-in vacancies in Donetska were given to female job-seekers. It is, perhaps, unsurprising that the young and women have made the bulk of out-migrants. Donetska oblast's migration data report a net inflow of 136 men and a net outflow of 1023 women in 2008. According to age specific groups, a net outflow of migrants was registered amongst 10- to 19-year-olds, 25- to 39-year-olds, 45- to 49-year-olds, and 65- to 94-year-olds (see Fig. 72). The bulk of Donetska's out-migration in 2008 was directed to other Ukrainian cities and regions, predominately to the capital city of Kyiv. At the same time, the Donbas has enjoyed a net inflow of international migration, primarily from the former Soviet republics. In terms of educational qualification, 'brain-drain' was primarily the feature of the 1990s: there were 15 times as many out-migrants with full doctoral degrees in 1995 than in 2008.

Figure 72 Migrants by age group composition, out-migrants (left hand) and in-migrants (right hand), Donetska oblast, 2008



Source: WP2 D6 Database, May 2010

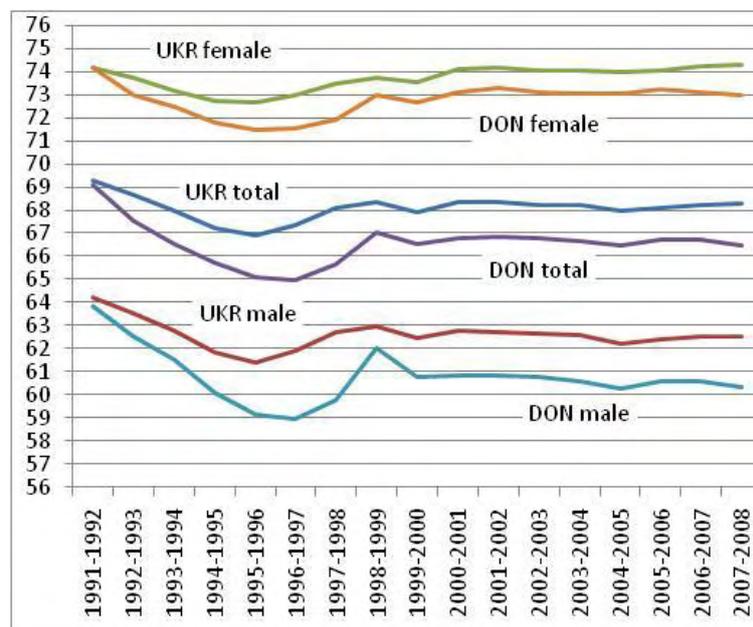
3.3 Social infrastructure and education

The impact of urban shrinkage on the quality of life of the Donetsk conurbation residents has been a complex one, depending on personal circumstances, location, social class, background, income, and a host of other factors. Nonetheless, some aggregate patterns can be assessed. Life expectancy at birth is regarded typically as the basic yet comprehensive indicator of living standards. Generally, Ukraine's post-communist transformation has had an adverse effect on public health, leading to a massive crisis which has resulted in the collapse of life expectancy, both in the Donbas and the country as a whole. Although there are no relevant data at the city level, Donetska oblast's human development patterns paint a broadly consistent picture with the urban experiences in Donetsk and Makiivka (see Fig. 73). Male life expectancy in the region declined from 63.87 years in 1991 to 59.16 years in 1995, recovering to 62.00 years in 1998, before further declining to 60.35 years in 2007-08. The female and total population life expectancy trajectories have followed a very similar trajectory, albeit at a higher level. Despite the region's above the average income levels, Donetska has all but lost in life expectancy parity with the Ukraine average under post-communism. Furthermore, in the late 2000s, the region's human survival patterns appeared to diverge from Ukraine's general upward trajectory. Thus, by the late 2000s, the Donetsk conurbation residents were not only amongst the eldest population in Europe, but also with the shortest lifespan on average.

The collapse of the Soviet Union in 1991 and the drama of the ensuing post-Soviet economic depression, accompanied by Ukraine's ascendance to the independent

statehood and the resurgence of cultural and ethno-linguistic Ukrainian nationalism have left mental scars on the inhabitants of the Ukrainian-Russian borderland (Lane, 2000; Lane and Myant, 2007; Lyakh and Panków, 1998; Nemyria, 1995; Walkowitz, 1995). The region's healthcare statistics provide some evidence to support this claim: the number of people in Donetska oblast diagnosed with mental illness for the first time increased between 1990 and 2008 by 58% in absolute terms, from 12,618 patients to 19,954, or by 87% relatively to the region's shrinking population; the total number of mental illness patients in Donetska requiring medical observation rose from 173,085 in 1990 to 238,753 in 2008, an absolute increase of 38%, or 64% relatively to the population level.

Figure 73 Life expectancy at birth (years), Ukraine and Donetska oblast, male, female, and total, 1991-2008



Source: WP2 D6 Database, May 2010

Infectious and sexually transmitted diseases have exploded. The number of people first diagnosed with syphilis increased by 54 times (from 225 to 12,163) between 1990 and 1996, before gradually subsiding to 908 cases in 2008. The number of active cases of tuberculosis had tripled from 1,496 in 1990 to 4,582 in 2006, followed by a mild decline to 4,121 in 2008. The escalating abuse of illegal and legal drugs have hit the Donetsk conurbation hard (see Fig. 74; Popova, 2007). The sharing of needles and syringes amongst intravenous drug users in the Donbas has become the primary cause of the most severe HIV/AIDS epidemic in Europe: the number of people diagnosed with AIDS in Donetska oblast grew from 1 in 1995 to 1,336 in 2006, before subsiding to 940 cases in 2008; the number of people first diagnosed with HIV grew from 62 in 1995 to 3,992 in 2008. Overall by the end of 2008, there were 2,716 registered AIDS sufferers in Donetska, and another 20,053 people were officially reported as HIV positive.

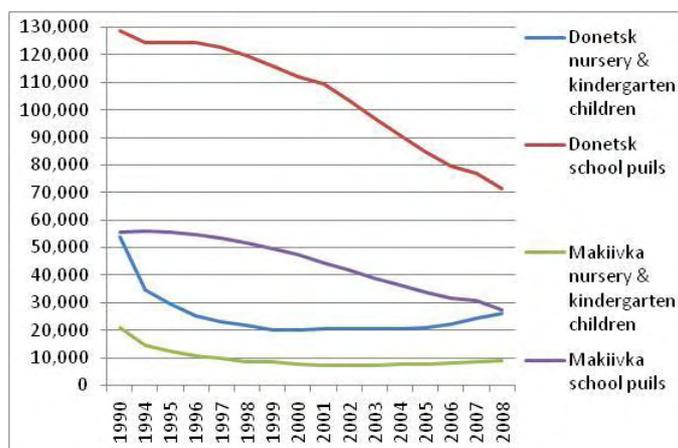
Figure 74 A ‘narcomat’: machine dispensing legal narcotic drugs, central Donetsk, 2010



Source: Segodnya, 19 March 2010.

Notwithstanding the region’s public health emergency, medical authorities have been hardly able to tackle the crisis adequately, duet to continuous cuts in publicly-funding healthcare. The number of practicing medical doctors in the region declined by 18% between 1990 and 2008, whereas the number of nurses declined by 38% during this period. Seventy three hospitals were closed down, resulting in a 47% decline in the number of hospital beds. In 2008 alone, 201 polyclinics and general practice surgeries were closed in the region, a decline of 29% in total. Social and cultural amenities have also faced a steep decline since the late 1980s: only forty out of Donetska’s 1,418 cinemas operating in 1985 have survived the ‘transition’, partly as a consequence of underuse. Similarly, the number of local libraries in Makiivka declined by 31% between 1990 and 2008 (from 72 to 50), whilst the number of social clubs in the city fell by 39%, from 44 to 27. In Donetsk, social clubs declined by 30% from 67 to 47, whereas the number of local libraries grew slightly from 113 in 1990 to 134 in 2008.

Figure 75 School and nursery attendance in Donetsk and Makiivka, absolute numbers, 1990-2008



Source: WP2 D6 Database, May 2010

Yet by far the most dramatic change in demand for social services and amenities has occurred in the education sphere. The attendance of nursery school children in Donetsk declined under post-communism by 27,600 or 51%, whilst the city's primary and secondary schooling experienced a fall of 57,300 pupils or 45% of the 1990 level (see Fig. 75). In Makiivka, due to its faster aging population, the number of children at nurseries and kindergartens declined by 57% or 12,000 between 1990 and 2008, whereas Makiivka's schools had 28,000 fewer pupils, a fall of 51%.

Nursery and kindergarten closures in the Donetsk conurbation has been commensurate with the decline in the number of attending children: 225 nursery-type establishments or 56% of total were closed down in Donetsk between 1990 and 2008, whilst in Makiivka 107 nurseries and kindergartens were shut down, a total of 57%. A large number of these closures were due to the bankruptcy and failure of the formerly state-owned enterprises, which used to provide pre-school facilities for free to their employees. Under post-communism, the entire so-called 'social sphere' of the business enterprises, including nurseries, kindergartens, health clinics, recreational and resort establishments, social, technical, and transport infrastructure, was privatised or transferred into the municipal ownership. The majority of local authorities, however, were unable to sustain financially the newly-acquired social sphere entities.

Figure 76 Sport facilities, Zoia Kosmodemianskaia Comprehensive School No. 54, 2009

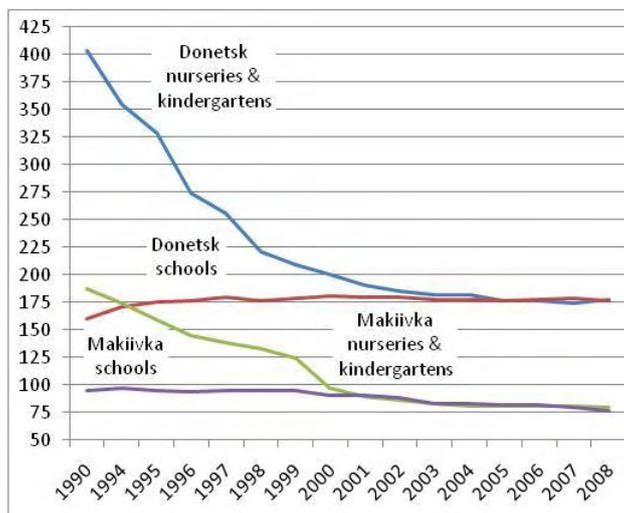


Source: Vlad Mykhnenko

Since the late 1980s, when the education sector was liberalised in Ukraine, the number of new independent and voluntary sector schools have grown, thus, somewhat masking the decline in state-funded schooling (see Fig. 76 above). As a result, the more affluent neighbourhoods of the Donetsk conurbation have experienced a rise in the number of schools, whereas in the low-income areas the number of schools has declined: Makiivka lost 18 schools between 1990 and 2008,

19% in total, whilst Donetsk gained 17 schooling establishments, a rise of 11% (see Fig. 77).

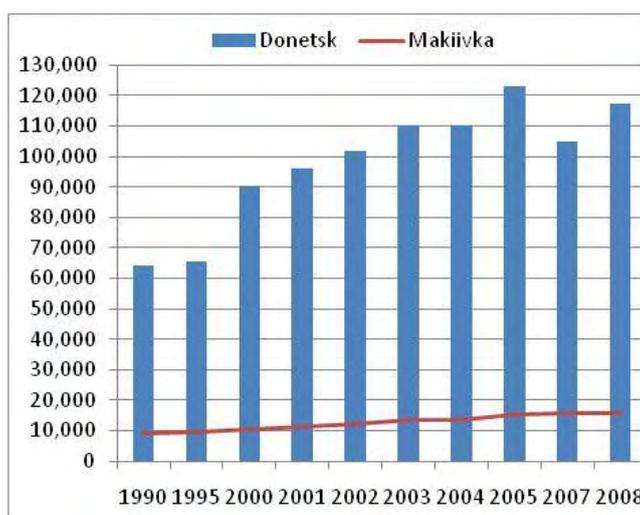
Figure 77 Schools and nurseries in Donetsk and Makiivka, absolute numbers, 1990-2008



Source: WP2 D6 Database, May 2010

Along with the independent schools, new private universities have mushroomed in the region, taking the total number of universities in Donetska oblast from 10 in 1990 to 27 in 2008. At the same time, the number of students in the Donetsk conurbation almost doubled, growing from 64,170 in 1990 to 117,194 in 2008 in Donetsk, and from 9,240 to 15,818 students in Makiivka (see Fig. 78). The change in Ukraine’s demographic structure, with its continuously ageing population, can only partially explain the phenomenon of exploding tertiary education in the circumstances of urban shrinkage.

Figure 78 University level students (tertiary education), Donetsk and Makiivka, absolute numbers, 1990-2008



Source: WP2 D6 Database, May 2010

The structural transformation of the Donbas economy since the late 1980s has led to a rise in the service sector professions at the expense of manual working class vocations. Thus, the rise in number of universities and their attendance figures has been accompanied by a decline in vocational education and training. Between 1990 and 2008, 28% of all vocational schools and technical colleges in the region were closed down, with the remaining 60 establishments training 46% fewer vocational students on average.

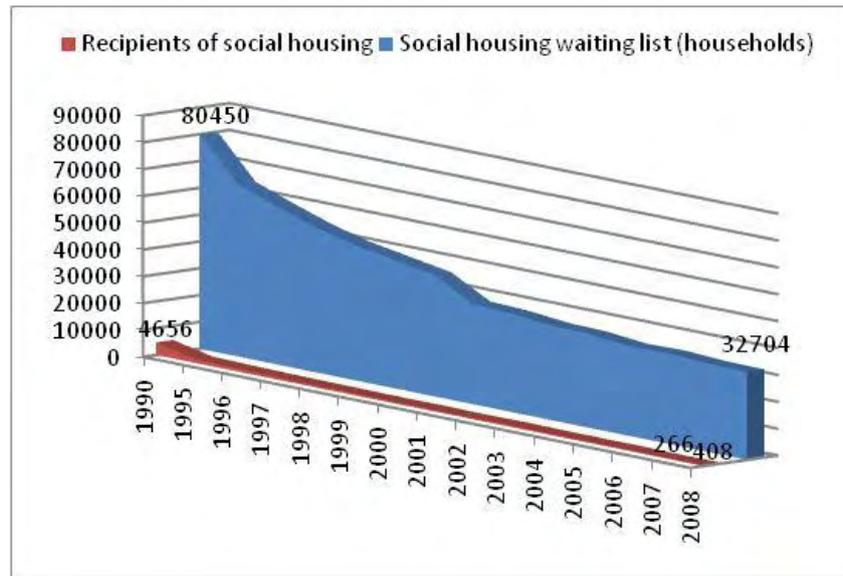
In terms of the level of vocational skills and knowledge-based capacities amongst the local labour force, the Donbas has historically been characterised by high, industry-specific vocational and technical skills and low general tertiary education skills. According to the last population census of 2001, Donetska oblast's levels of tertiary and comprehensive secondary education were lower than Ukraine's average: 20.4% and 48.7% in the former, and 21.4% and 52.5% in the latter respectively. At the same time, 30.9% of Donetska's labour force had vocational training degrees compared with the Ukraine average of 26% in total. Whilst the share of university graduates in the region's workforce had been gradually increasing from 6.0% in 1970, to 9.1 in 1979, to 12.8% in 1989 onwards, it had always been lagging the national average of 6.1, 9.6, and 13.9 percent respectively.

The overwhelming majority of university students in the Donetsk conurbation are either local or typically come from the wider region. The gradual marketisation of tertiary education provision has led to a dwindling number of bursaries and tuition fee waivers, with about two-third of students in the 2000s having to pay full tuition fees at university in the Donetsk conurbation. Amongst graduates who received their master's degrees in 2008, every single one was privately-funded. Growing numbers of students leave Donetska and Makiivka upon graduation, with the majority moving to Kyiv, since Ukraine's capital city is perceived to offer better professional employment opportunities.

3.4 Housing

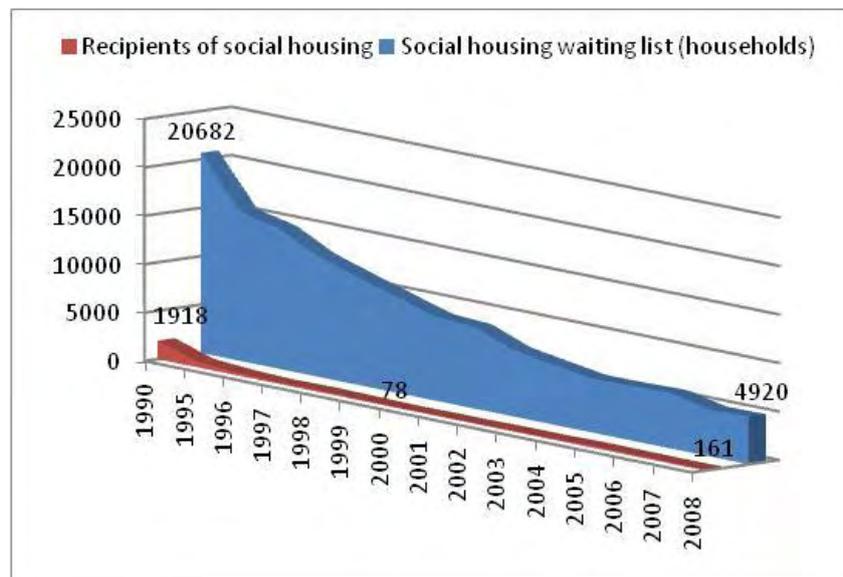
The everlasting shortage of housing was one of the most prominent features of state socialism in the Soviet Ukraine since the end of World War II. In 1990, the waiting list for public or social housing in the Donetsk conurbation had reached 100,000 households: the social housing waiting list included 80,450 households in Donetsk and 20,682 households in Makiivka. The same year 4,656 Donetsk households and 1,918 Makiivka households were able to improve their dwelling conditions by receiving a new socially provided accommodation, typically in a high-rise block of flats. If the tempo of social housing construction works would have been maintained through the 1990s and 2000s, it should have taken 17.3 years to clear the remaining waiting list in Donetsk, and 10.7 years in Makiivka (see Figs. 79-80).

Figure 79 Social housing waiting list and number of social housing recipients in Donetsk, number of households / families, 1990-2008



Source: WP2 D6 Database, May 2010

Figure 80 Social housing waiting list and number of social housing recipients in Makiivka, number of households / families, 1990-2008

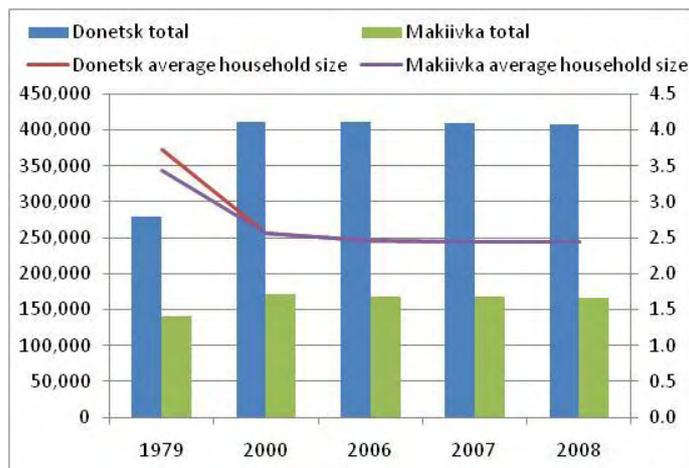


Source: WP2 D6 Database, May 2010

However, the advent of market forces, following the restoration of capitalism in the country, has resulted in an almost complete collapse of social housing provision. As the result of urban shrinkage and due to further tightening of means-tested eligibility conditions, the waiting list was more than halved in the Donetsk conurbation under post-communism to cover 37,624 households in total by the end of 2008. Yet with

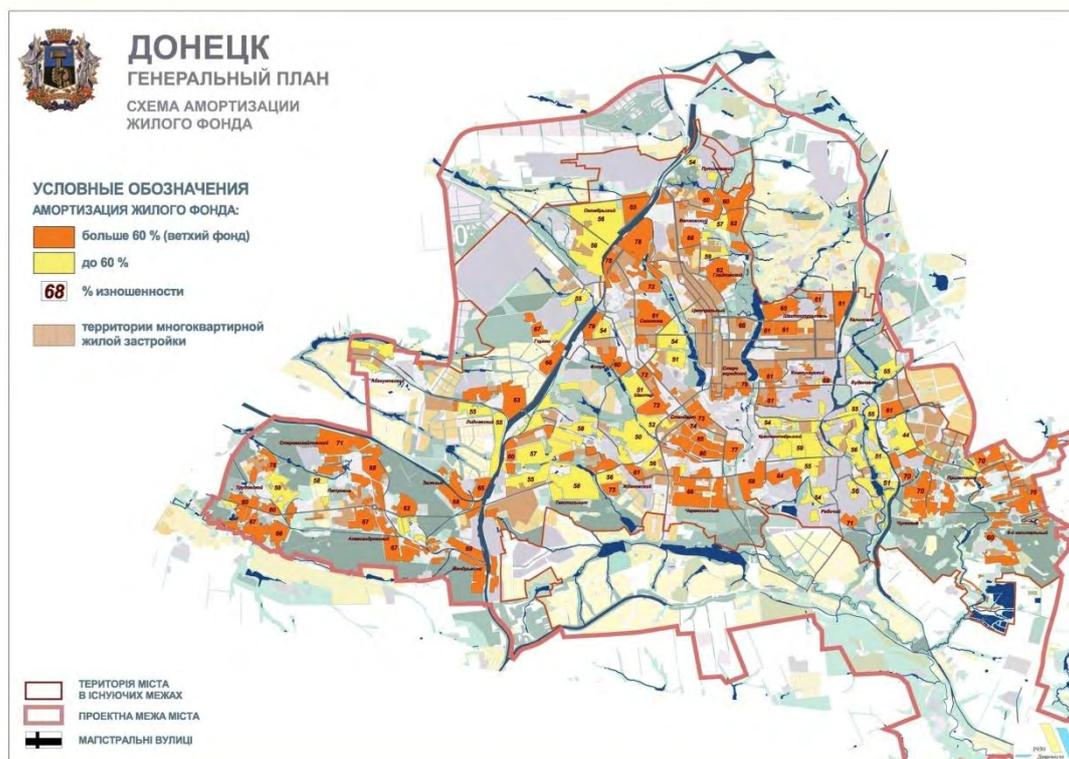
only a very small amount of social housing being made available in the 2000s, it could take 31 years to clear the current waiting list in Makiivka, and well over 80 years in Donetsk. In addition to the inherited shortage of housing stock, the demand pressure for more dwelling space has also been driven by demographic and social change in the region. Since the late 1970s and until the early 2000s, the number of households was steadily rising in both Donetsk and Makiivka, accommodating fewer people on average year-on-year (See Fig. 81).

Figure 81 Donetsk and Makiivka households, total number and average size, 1979-2008



Source: WP2 D6 Database, May 2010

Figure 82 Donetsk housing stock, % of wear and tear, 2010

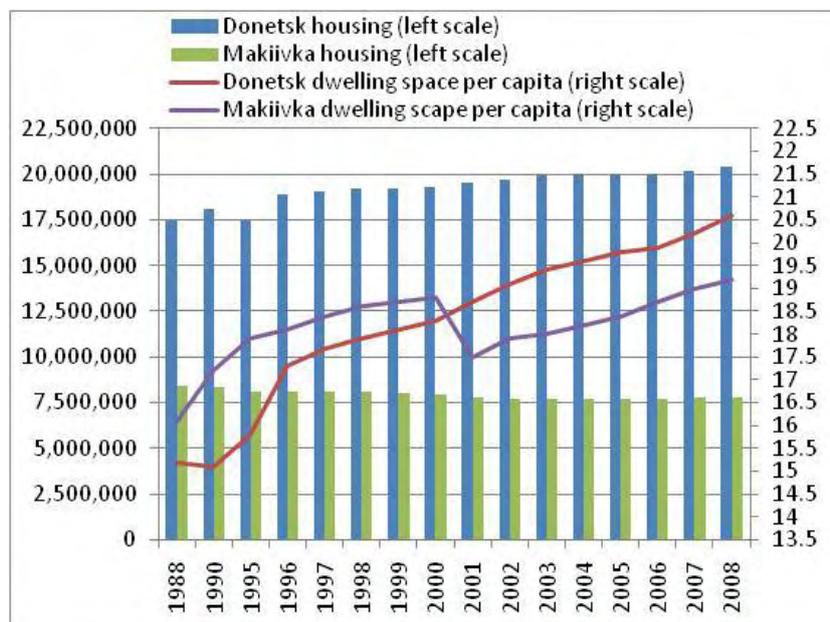


Source: Donetsk City Council, <http://genplan.donetsk.ua>

Finally, a large share of the inherited housing stock in the conurbation was built prior to or soon after WWII, characterised by very poor quality, lacking basic amenities, including cold and hot running water, gas or central heating, or sewerage networks. According to the current Donetsk city council estimates, wear and tear of housing stock has reached over 60% in a vast number of neighbourhoods, thus officially designating large areas of the city as dilapidated (see orange areas in Fig. 82 above).

Thus, despite the urban shrinkage conditions, the historical legacies of the Soviet and pre-Soviet eras combined with demographic change have ensured a fairly strong housing demand in Donetsk in particular. This has accelerated even further during the real estate boom of the late 2000s. In the last 20 years, the Donetsk housing stock grew by 17.2%, from 17.447 million square metres in 1988 to 20.448 sq. m. in 2008; combined with the actual decline in population during this period, the new housing construction increased the per capita amount of dwelling space in Donetsk by 35.5%, from 15.2 to 20.6 square metres (see Fig. 83). The per capita dwelling space availability increased in Makiivka as well by 19.3% (from 16.1 to 19.2s square metres), despite the city having experienced an actual loss of 582,000 sq. m. (or 6.9%) of housing stock, which was demolished or fell into decrepitude during this period.

Figure 83 Housing in Donetsk and Makiivka, total dwelling space and dwelling space per capita, square metres, 1988-2008



Source: WP2 D6 Database, May 2010

With all of the new housing stock being built in Donetsk, it was chiefly the central city areas of Voroshylivskiyi, Kyivskiyi, and Kalininskyyi districts which have experienced

the bulk of the real estate expansion. Prior to the approval of the City of Donetsk Master Plan for 2010-2031 in early 2010, most of the new housing, office, hotel, and retail space in the city centre was built on temporary planning permissions obtained by private developers in non-transparent fashion and often against vocal opposition from local communities. Trying to maximise the value of Donetsk's most expensive land and squeeze in as many highly priced housing units as possible, the construction and real estate industry has concreted over large parts of the city centre's little remaining green space, building houses in former public parks, school sport grounds, and virtually in the back yards of the existing blocks of flats (see Figs 84-87). According to the Donetsk 2010-2031 master plan, in twenty years the city plans to increase its housing stock to 29 million square metres (or about 95,000 flats). As the city authorities are planning to maintain the population of Donetsk around 1 million, they envisage, thus, to increase the overall dwelling space availability to 29.4 sq. m. per capita by 2031.

Figures 84-87 Newly-built blocks of flats, central Donetsk, 2009



Source: Vlad Mykhnenko

Thus, in central areas of the Donetsk conurbation population losses have not been reflected to a large extent in either the renovation and maintenance of the built environment or the construction of new real estate and residential housing. Housing and commercial vacancies were not a visible problem in the two cities until very recently. The advent of the global financial and economic crisis of 2007-2009 heralded the collapse of Ukraine's Orange economic development model which was geared towards financial speculation. Mortgage provision in the country dried up

since August 2008, with most of the expensive new housing developments in central Donetsk remaining either vacant (see Figs 84-87 above) or unfinished (Fig. 88). Commercial real estate developers have struggled to fill in new office space as well (Fig. 89).

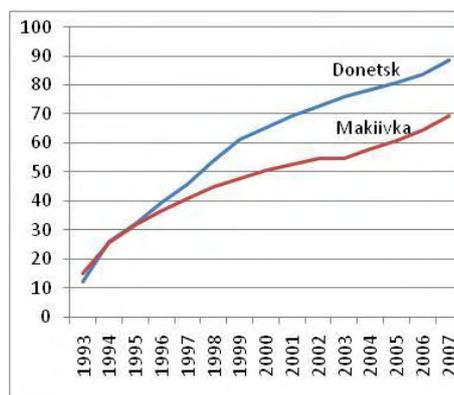
Figures 88-89 Victims of the American sub-prime crisis: an unfinished housing development (left) and a new empty office building for sale, central Donetsk, 2009



Source: Vlad Mykhnenko

The rather frantic grab of public lands by private real estate developers in the Donetsk conurbation has been accompanied under post-communism by an even grander privatisation – the handing-out for free of the former state- or publicly-owned residential housing. Since the passing of Ukraine’s 1991 Law on Housing Stock Privatisation, 88.5% of all the flats and detached houses in Donetsk which had been previously owned by the central government, local authorities, or state-owned enterprises, have been transferred into the private ownership by their tenants. In poorer areas of the conurbation, Makiivka in particular (see Fig. 90), only 69.2% of the social/public housing tenants have exercised their ‘right to buy for free’. The lower uptake figures in Makiivka have reflected the worries of low income residents about the high maintenance costs of the housing in the areas characterised by low real estate market prices.

Figure 90 Privatised housing in Donetsk and Makiivka, % total social & state-owned housing stock, 1993-2007



Source: WP2 D6 Database, May 2010

Another socially significant issue propelling even further the segmentation of housing market in the Donetsk conurbation is the inability of low income residents of Donetsk and Makiivka to pay for their ever increasing utilities bills. In 2008, the number of households receiving social assistance with payment for utilities and housing and communal services (e.g. council tax benefits, gas and fuel allowances) reached 39,018 in Donetsk and 16,272 in Makiivka, or one-fourth of the region's total. Nevertheless, between 2003 and 2008, the share of unpaid council tax and utilities bills increased from 1.1% to 6.2% in Donetsk, and from 19.7% to 20.4% in Donetska oblast as a whole. Makiivka's situation remained much more dramatic, with non-payments reaching 36.5 and 35.4 percent in 2003 and 2008 respectively. As one is obliged by law to settle one's council tax and utilities bills prior to privatisation or sale, a number of residents in poorer areas of the conurbation have chosen to abandon their flats rather than pay the debt. According to Donetsk city council, there were 275 abandoned flats in high-rise blocks across the city, which the local authorities have had to take back into municipal ownership, before transferring the properties to the families registered on the social housing waiting list. By the end of 2008, the city council social services have had 498 people officially registered with them as homeless. The only shelter for the homeless, located at the outskirts of Donetsk and funded by the city council, have the maximum capacity to house up to 40 people, however (see Fig. 91).

Figure 91 Shelter for the homeless, Chulkovka, Proletarskyi district, Donetsk, 2008



Source: Salon Dona i Basa, 28 November 2008

In addition to the homeless, the children of parents with serious substance abuse problems have become amongst the most socially deprived and excluded groups of local residents in the Donbas (Novak, 1998). Abandoned and neglected by their

parents, who would have often sold the family property to feed alcohol and drug habits, these children are forced to survive in the underground basements of large housing estates. With the social services being significantly underfunded and understaffed, and with the local authorities shunning away from the homeless generally, these vulnerable children have had to feed for themselves, receiving only occasional food, medical, and substance abuse assistance from international charities (see Figs 92-95). The local media and the 'blogosphere' are full of harrowing accounts of the vulnerable and homeless children of Donetsk and Makiivka being exploited by international paedophile rings and forced into sex slavery, prostitution, and crime.

Figures 92-95 Homeless children sniffing glue and getting charitable help, Donetsk



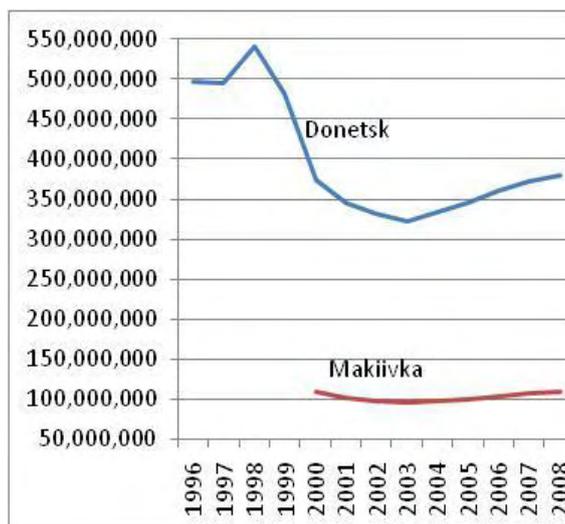
Source: To Help Street Children Project by Caritas Ukraine and European Movement Ukraine, <http://kids.net.ua>

3.5 Technical infrastructure

Urban connectivity and the development of transport and communications have had a complex relationship with the processes of urban shrinkage as well as with the wider post-communist transformation of the Donbas generally and the Donetsk conurbation in particular. Some types and ways of transport – primarily local – have experienced a significant decline, whilst inter-city and international means of transport and communications have seen a substantial increase. Between 1990 and

2008, the amount of goods transported annually by motor vehicles in Donetska oblast declined by 70%, from 574.9 million tonnes to 174.9 million tonnes; however, the average freight distance of a tonne of goods transported by motor vehicles in the region grew by a third, adding 4 km on average. The number of travel journeys by bus or coach declined by 53% or 601,700,000 passengers per year in the same period. In 1990, a Donetska oblast resident took 212 bus journeys on average, whilst in 2008 this figure stood at 118 only. Travel by tram in Donetska's major cities declined by 35% to 197 million passengers per year, whilst there were 34% fewer trolley-bus journeys made annually on average between 1990 and 2008. Between 1998 and 2008, the urban public transport system carried 161 million fewer passengers in Donetsk alone (see Fig. 96 above). In the region generally, trolley-buses tracks were cut by 9.3%, whilst over 15% of tram tracks were dismantled or disused. The Donetsk public transport system was downsized to just 10 tram, 18 trolley-bus, and 182 bus routes in operation, thus, cutting the size of the network to 1,733 km in total.

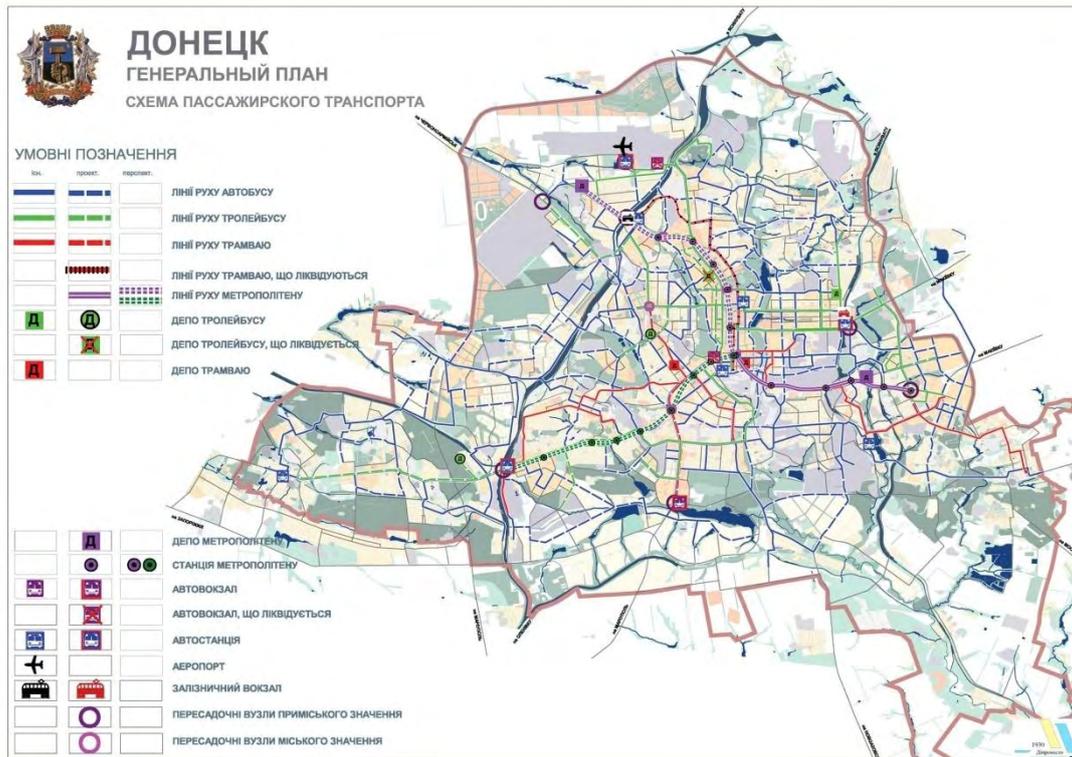
Figure 96 Donetsk and Makiivka public transport use, total passengers per year, 1996-2008



Source: WP2 D6 Database, May 2010

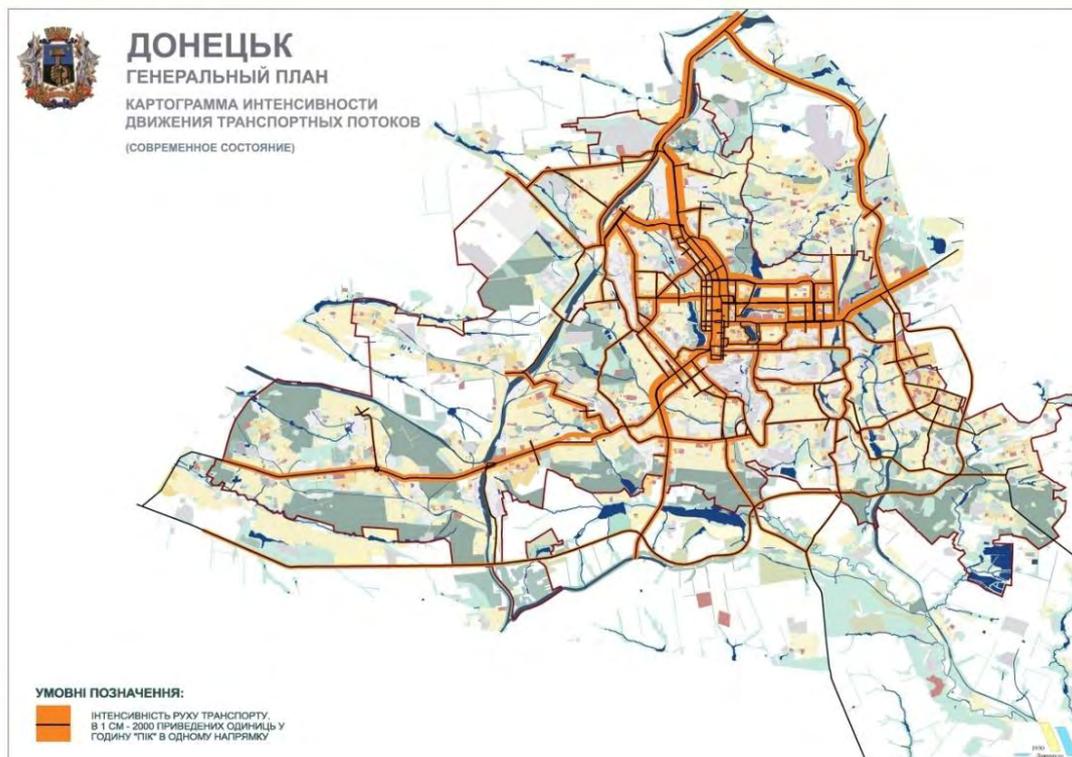
The Donetsk tram and trolley-bus company has been retained in municipal ownership, continuously suffering from underinvestment and left operating an extremely old stock of vehicles. At the same time, all non-electric public transport was privatised, liberalised, and extremely fragmented, with 95.2% of public transport conducted by 605 different private providers in 2007. (There were 1,291 private providers of urban passenger transport in Donetsk in 2002). The city of Donetsk master plan for 2010-2031 envisages further decline of the tram in the city, accompanied with a restructuring and an extension of trolley-bus network by 35 km (see Fig. 97), and accompanied by a further expansion of bus transport links by 120 km. Most significantly, the city council major plans include building a three line underground metro network, connecting the north, west, and east of the city.

Figure 97 Donetsk public transport network, current and planned, 2010-2031



Source: Donetsk City Council, <http://genplan.donetsk.ua>

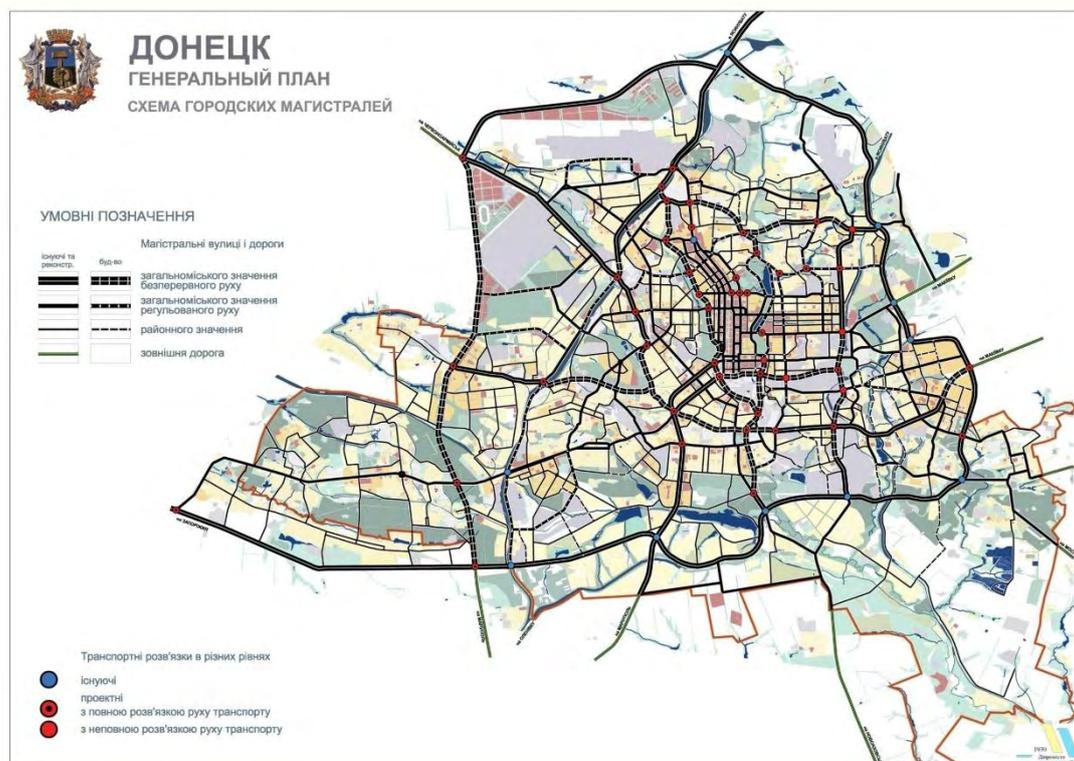
Figure 98 Vehicle density on Donetsk roads, 2009



Source: Donetsk City Council, <http://genplan.donetsk.ua>

The main officially declared reason behind the planned construction of an underground public transport network has been the expansion of private motor vehicle ownership in the city, accompanied by growing traffic congestion along the major roads in Donetsk (see Fig. 98 above). Since 1990, the number of privately owned motor cars increased by 1.7 times in the region (doubled on the per capita basis); the number of buses on the road grew by 1.2 times, whilst the number of privately owned motor lorries increased by 4.7 times. At the same time, between 1990 and 2008, there was not a single extra kilometre of road surface being built either in the Donetsk conurbation or the region as a whole.

Figure 99 Primary roads in Donetsk, current and planned, 2010-2031



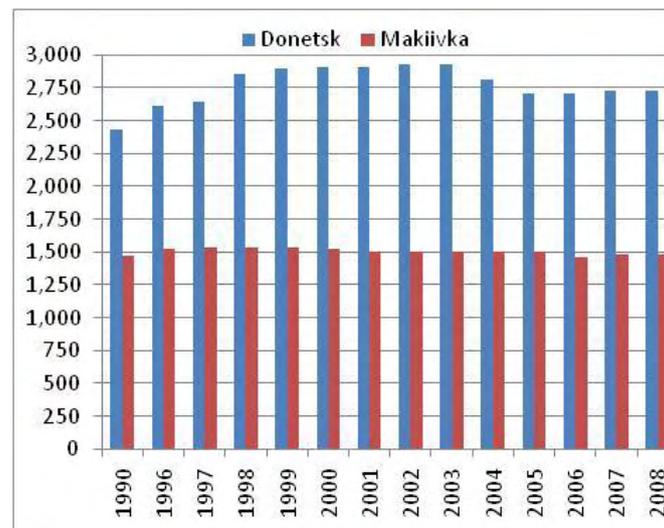
Source: Donetsk City Council, <http://genplan.donetsk.ua>

Thus, in addition to the proposed underground network, to accommodate the growing urban motor vehicle traffic, the city authorities plan to expand the road network both in the central, most heavily congested areas of Donetsk, and at the outskirts of the city by building and developing further the ring road around Donetsk. In total, the city of Donetsk master plan calls for the construction of 400 kilometres of new primary roads in the city (see Fig. 99 above). In terms of the inter-city and international connectivity, the public railways have performed relatively well under post-communism, carrying almost as many passengers per year in 2008 as they did in 1990. In the 1990s, the Donetsk city airport acquired the status of an international

airport and air travel has reported a rapid expansion in recent years, from 286,000 passengers in 1995 to 553,400 passengers in total in 2008. At the same time, the number of passengers taking direct international flights from Donetsk grew from 98,200 to 215,800.

Similar to transport, the impact of urban shrinkage on the demand for utilities and technical infrastructure in the Donetsk conurbation, including water supply, central heating, and gas network, has not been very straightforward. Due to persistent underinvestment into the technical infrastructure under state socialism, as late as 2008, only 83.1% of flats in Donetsk were equipped with running water, 82.6% were connected to the central sewerage network, and just 73.5% were supplied with natural gas through the pipeline. Between 1990 and 2003, the water mains network in Donetsk was enlarged by 500 km in total length, followed by a cut of 200 km of the network by 2008, thus indicating a total increase of 12% under post-communism. Even in Makiivka, the water mains network grew by 7 km in length between 1990 and 2008 (Fig. 100).

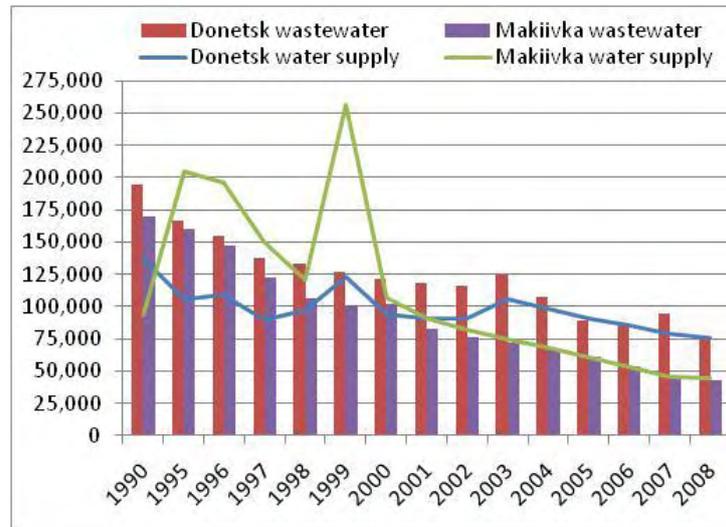
Figure 100 Water mains system and sewerage networks in Donetsk and Makiivka, total distance in kilometres, 1990-2008



Source: WP2 D6 Database, May 2010

The expansion of water mains in the conurbation is primarily explained by the extension of the network towards new housing developments in Donetsk. At the same time, the demand and supply of water and the discharge of wastewater in both Donetsk and Makiivka have dramatically declined during the period: the consumption of water on the per capita basis in Donetsk declined between 1990 and 2008 by 44.8%, with 61.7% less wastewater being discharged by households. In Makiivka, the water consumption fell by 53.2% and the wastewater discharge declined by 75% in total, thus indicating a substantial degree of recycling of water by the households in both cities (see Fig. 101).

Figure 101 Annual water supply and wastewater discharge in Donetsk and Makiivka, litres per capita, 1990-2008



Source: WP2 D6 Database, May 2010

In addition to a more economic attitude towards the region's very scarce water resources, Donetsk and Makiivka are faced with massive water leakages within the obsolete water mains network, amounting to 43% - 55% of water supply across the conurbation: in Donetsk alone up to 88% of the water mains are either in emergency conditions or need urgent replacement. Yet another reason behind such a dramatic collapse of the public demand for water has been the inability of local residents to pay ever increasing water supply charges. With 7% of Donetsk and 35% of Makiivka households being persistently in arrears with utilities payments, including water and wastewater bills, the amount of unsettled bills to local utilities suppliers amounted in 2008 to €43.995 million in Donetsk and €40.016 million in Makiivka.

The local utilities companies have waged a prolonged campaign aimed at disconnecting water supplies as well as wastewater pipelines to insolvent customers in arrears with their water/wastewater bill payments. Both the individual detached housing sector and high-rise housing estates across the conurbation have been affected, with the Donetsk city water company displaying the outcomes of its action on the city council website for educational purposes (see Figs. 102-107). Eventually, in order to minimise its mounting losses, the Makiivka municipal water company has actually cut all the normal water supply in the city: in the late 2000s, Makiivka residents were only able to open their water taps in the morning and in the evening for 3 to 4 hour intervals.

Figures 102-107 Disconnecting households in arrears with water bill payments: Donetsk municipal water company officials in action, late 2000s

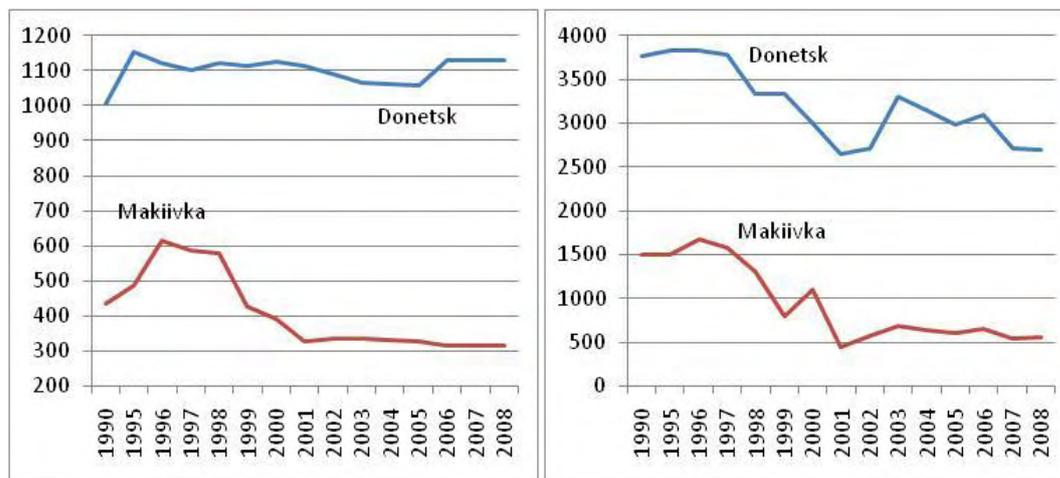


Source: Donetsk city council, <http://donetsk.life.dn.ua>

Central heating networks in Donetsk and Makiivka have followed generally the water infrastructure story of obsolete or worn out equipment, shrinking demand and customer insolvency, yet with a larger disparity between the two parts of the conurbation. Between 1990 and 2008, the Donetsk central heating system was extended by 125.5 km or 12.5% in total, whereas in Makiivka the network was cut by 119.8 km or 27.4% in total. In terms of demand and supply of heating, however, both

cities experienced significant decline by 28.5% in Donetsk and 62.2% in Makiivka (see Figs 108-109).

Figures 108-109 Central heating pipelines in Donetsk and Makiivka, total distance in kilometres (left), and central heating supply in Donetsk and Makiivka, thousand Gigacalories (right), 1990-2008



Source: WP2 D6 Database, May 2010

With the central heating being more difficult a service to disconnect on an individual basis than water supply, these municipal authorities have resorted to peer pressure and court-enforced repossession of defaulting customer's property, prior to cutting the central heating supply to entire blocks of flats (see Fig. 110-113). By the late 2000s, there emerged entire neighbourhoods of five-story blocks of flats in Makiivka which were either not supplied with or disconnected from water, gas, and central heating networks.

Figures 110-113 Donetsk central heating water company officials in action: naming and shaming residents in arrears with central heating bill payments (upper left), educating future consumers (upper right), and repossessing property of defaulting customers, late 2000s

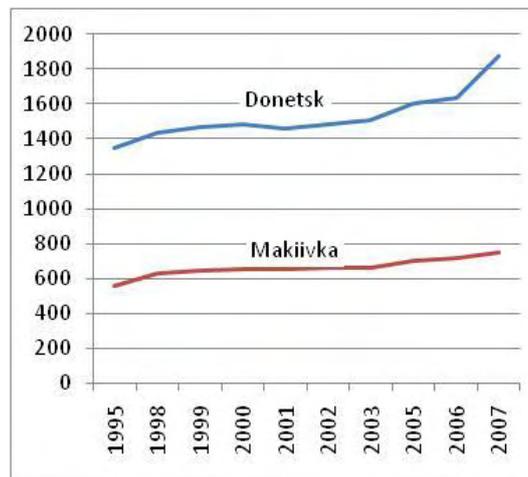




Source: Donetsk city council, <http://donetsk.life.dn.ua>

The Donetsk and Makiivka residents living in detached and semi-detached bungalows and cottage houses, as well as in new, private housing developments have been switching from the centralised heating provision deemed too expensive towards individual gas boiler-type heating systems. The natural gas supply network continued to extend in the 1990s and 2000s throughout the conurbation as a whole, adding between 1995 and 2007 over 526 kilometres of new gas pipelines in Donetsk and 187 km in Makiivka (see Fig. 114).

Figure 114 Gas supply network in Donetsk and Makiivka, total distance in kilometres, 1990-2008



Source: WP2 D6 Database, May 2010

3.6 Land use and environmental quality

Historically, the Donetsk conurbation was built around coal mines and iron and steel works to accommodate the growing heavy industrial workforce, first, of the Russian Empire, and, since 1917, of the Soviet Union (Westwood, 1965; Mykhnenko, 1999; Mykhnenko, 2003). Donetsk Iron and Steel Works (see Figs 115-116) along with a host of other metallurgical, coal-mining, heavy engineering, armaments, textile, food and drink, and other industries were located at the heart of the city (Sarzhn, 1999).

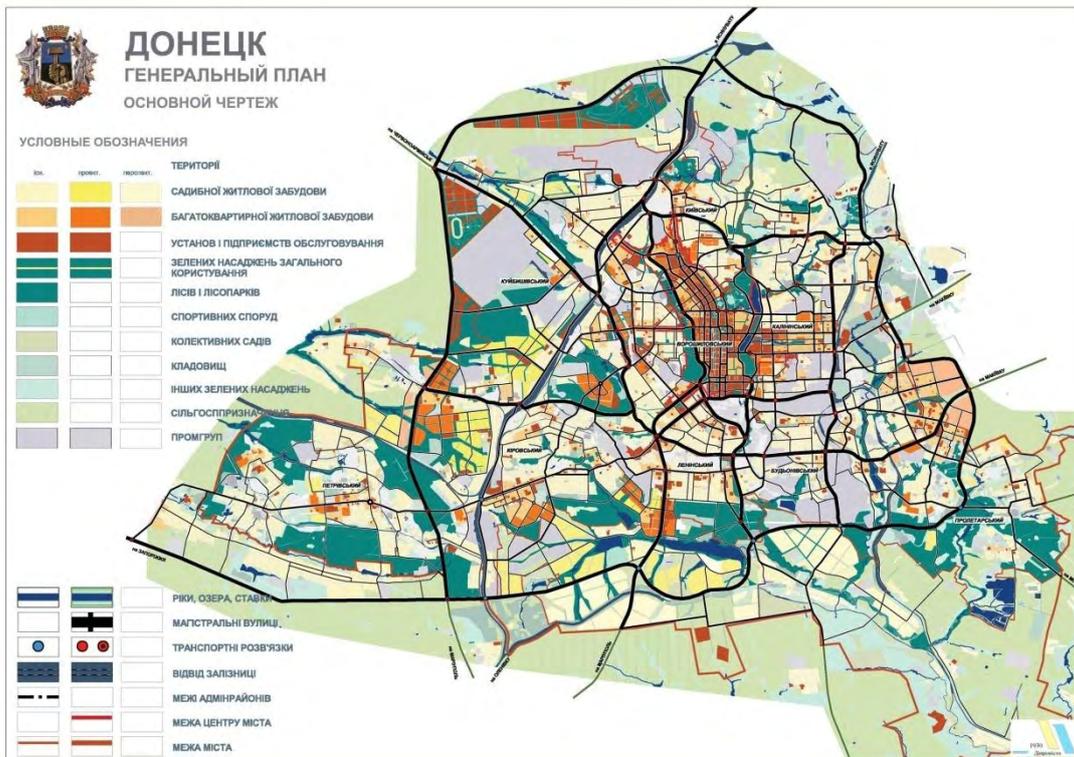
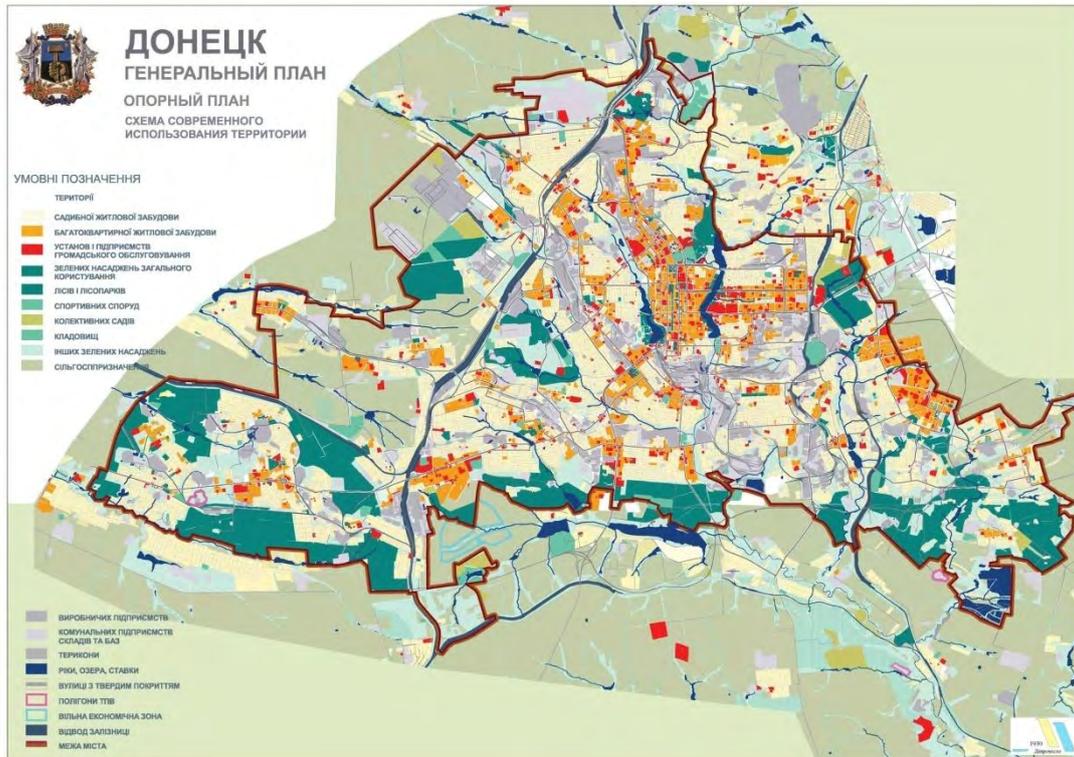
Figures 115-116 Donetsk Iron and Steel Works, central entrance (left) and a view from the south-eastern entrance (right)



Source: Vlad Mykhnenko

The pre-Soviet and Soviet industrial development produced a wide variety of land use in the conurbation. The basic map of the city of Donetsk 2010-2031 master plan (see Fig. 117) shows how the old, pre-WWII, low-rise working class cottage settlements (pale yellow areas) dominate the urban landscape, built around the industrial enterprises in which the local residents worked themselves (grey areas), with a Y-shaped, city centre intrusion of high-rise housing estates of the post-war era (bright orange areas), and vastly spread consumer, retail and office places (appearing in red). The city authorities' major town planning goals, which are contained in the 2010-2031 master plan, are to 'green' the city, tackle environmental pollution and degradation, and eventually to move all the major industrial enterprises outside the city boundaries. In addition, the city plans further to expand the council boundary by incorporating southern and south-eastern greenfield areas and by (informally) taking over northern and north-eastern areas of the conurbation. Over 900 hectares of new parks and greenfield spaces are to be created. Waste banks and pit refuse heaps which are scattered all over the conurbation are to be either removed or turned into green areas with trees and shrubs planted on top. Central Donetsk shall see more commercial real estate and residential housing developments (see Fig. 118).

Figure 117-118 The city of Donetsk master plan: current land use by type (top) and planned land use in 2010-2031 (bottom)



Source: Donetsk City Council, <http://genplan.donetsk.ua>

Eventually, the city council hopes to be able to end coal coke- and steel-making and remove Donetsk Iron and Steel Works from its current site close to the city centre. In addition to improving environmental quality, this plan is driven by private housing developers, which have built high-cost housing in the attractive central parts of the city with a panoramic view of the River Kalmius. Unavoidably, however, the northern vistas from the penthouses of these high-rise buildings present a less pleasing industrial landscape surrounding the steel works (see Figs 119-120).

Figure 119-120 Puffs of thick smoke pouring from Donetsk Iron and Steel Works over newly-built private housing developments in central Donetsk (upper left and right), and a view of 2009



Source: Vlad Mykhnenko

It appears that the Donetsk steel works could follow the way of the Makiivka steel works, which were rendered uneconomical by the global financial-economic crisis of 2007-2009, and where steel-making was put to an end, following over 6,000 compulsory redundancies of metallurgical workers at the end of 2008 (see Figs. 121-122; see Mykhnenko, 2004).

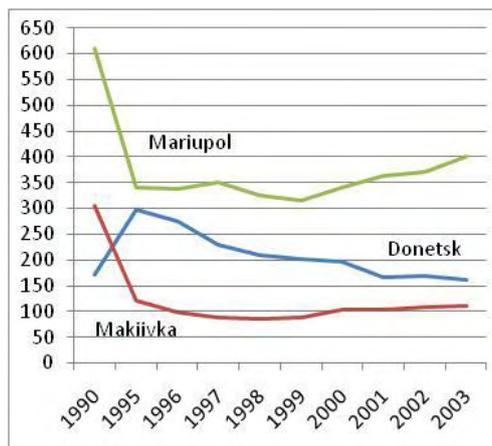
Figure 121-122 End of the road for Kirov Iron and Steel Works, Makiivka, 2009



Source: Vlad Mykhnenko

Similar to the post-Soviet depression of the 1990s, the recession of 2008-2009 has appeared to have a positive impact on the environmental (if not the labour market) situation in the Donetsk conurbation. Generally, in the 1990s to the early 2000s, the air pollution from the industry in the Donbas's three major cities had declined in parallel with the collapse in industrial output: by 70% in Makiivka and by almost 50% in Mariupol and Donetsk (see Fig. 123).

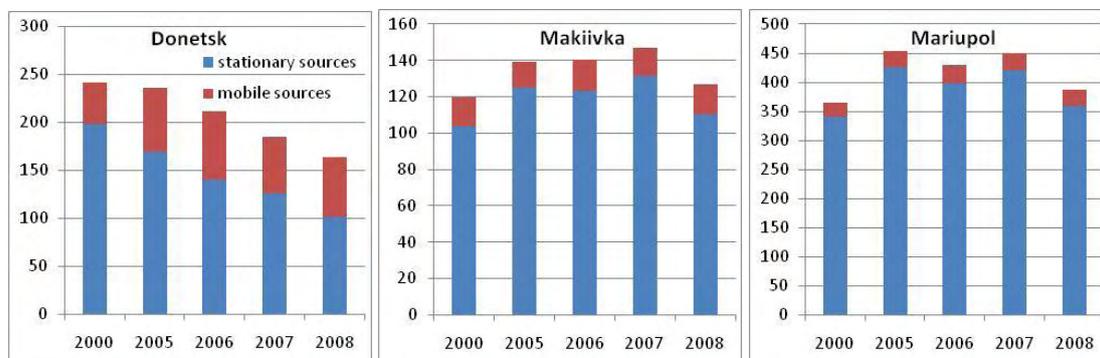
Figure 123 Air pollution from stationary sources in Donetsk, Makiivka, and Mariupol, thousand tonnes, 1990-2003



Source: WP2 D6 Database, May 2010

In the 2000s, the improving of environmental situation had slowed down in Donetsk, primarily due to extra air pollution emitted by motor vehicles, whereas in Makiivka and Mariupol the environmental degradation continued and even accelerated (see Figs 124-126). Nonetheless, between 1990 and 2008, air quality in all of the Donbas major cities changed for the better to a great extent.

Figures 124-126 Air pollution from stationary and mobile sources in Donetsk, Makiivka, and Mariupol, thousand tonnes, 2000-2008

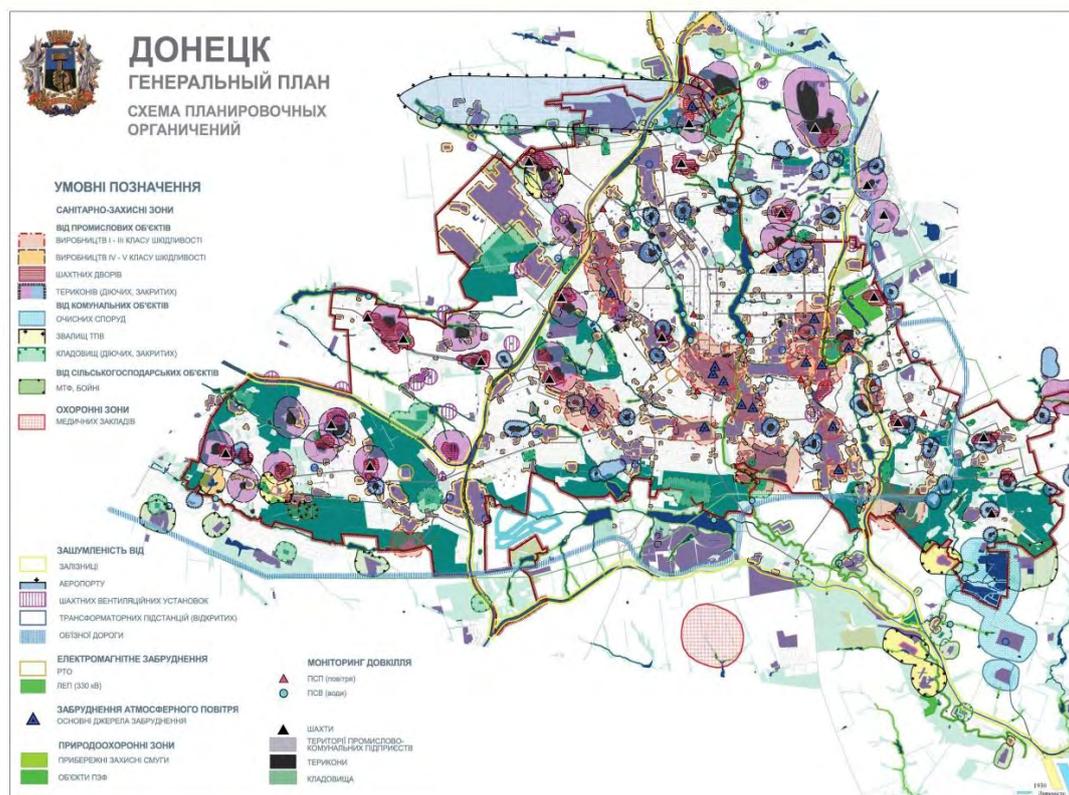


Source: WP2 D6 Database, May 2010

The city of Donetsk master plan has imposed very tight planning restrictions on industrial and environmentally harmful activities within the city boundary (see Fig.

127). It plans to cut air pollution by 50%, improve environmental monitoring of large industrial companies, as well as to liquidate 523.3 hectares of brownfield sites in Kyivskiy district (north-eastern areas of the city). The city authorities in both Donetsk and Makiivka managed to improve the collection rate for penalty charges imposed by them on environmentally polluting enterprises from 43 and 26 percent respectively in 2000 to 86 and 93 percent respectively in 2008.

Figure 127 Planning restrictions on industrial zones and environmental protection areas in the city of Donetsk master plan, 2010-2031

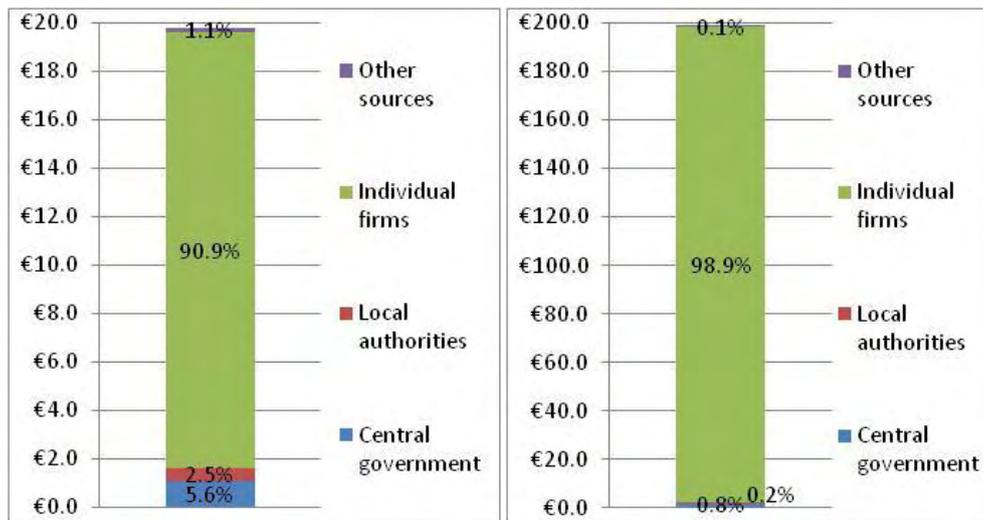


Source: Donetsk City Council, <http://genplan.donetsk.ua>

Although air pollution has declined significantly under post-communism in both Donetsk and Makiivka, industrial contamination has increased and the amount of household and industrial waste has grown by six times in the 2000s alone. In 2007, Donetsk households and enterprises generated a record amount of waste (98,853 tonnes), followed by a steep decline during recession in 2008 to 38,793 tonnes. In Makiivka, the waste generation trajectory was similar, but on an enormous scale: from 515,286 tonnes in 2007 to 406,495 tonnes in 2008. In 2008, landfills and industrial sites of Donetsk contained 236,810 tonnes of toxic waste; in Makiivka this figure amounted to a staggering 5,471,869 tonnes of toxic waste. Despite the magnitude of environmental degradation in the Donetsk conurbation, neither the central government nor local authorities have played any major financial role in assisting the Donbas cities. In 2008, the regional capital investment on environmental protection totalled €19.8 million, whereas the current maintenance

expenditure on environmental protection-related machinery, equipment, and other material stock was €198.5 million. Yet most of the funding for the improvement of the situation has had to come from the industrial enterprises themselves (see Figs 128-129).

Figures 128-129 Capital investment (left) and current maintenance expenditure (right) on environmental protection by source of funding, € millions and % of total, Donetska oblast, 2008

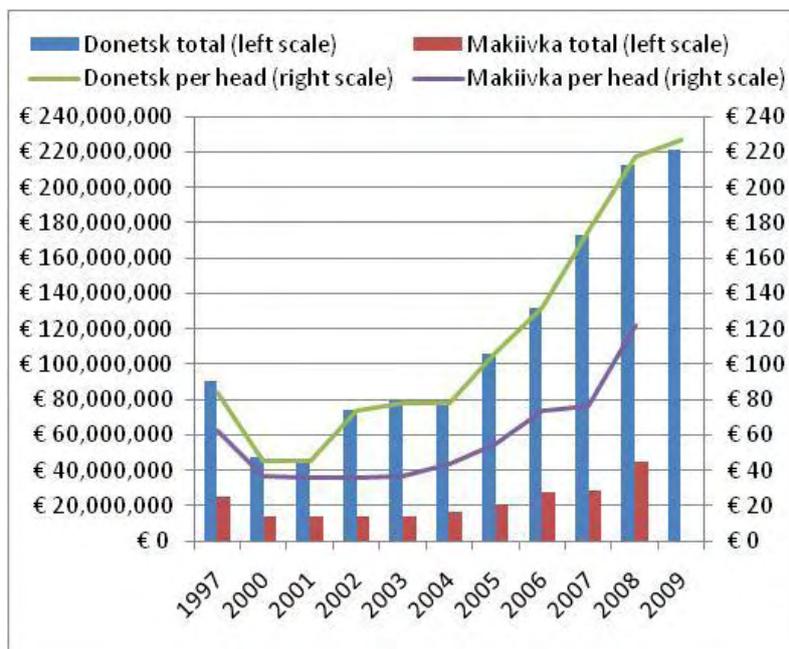


Source: WP2 D6 Database, May 2010

3.7 Municipal finances and budget

Urban shrinkage along with the growth trajectory of the urban economy has had direct impact on the evolution of revenues and, to lesser degree, expenditures in the municipal budgets of Donetsk and Makiivka under post-communism. The budget revenues have closely tracked the output developments in both cities: during the economic recovery phase of 1999-2008, the Donetsk budgetary expenditures increased by 3.7 times in current prices from €47.4 million to €221.2 million, whilst Makiivka's city council budget grew by 2.1 times from €14.1 million to €44.8 million, thus, reflecting the overall growth of the Donbas regional economy during the period. As the result of dwindling population numbers, municipal budgetary revenues per capita increased even further: by 2.3 times in Makiivka and over 4 times in Donetsk. However, due to structural weaknesses of the Makiivka economy, with its reliance on lower paid public sector employment and struggling industries, the relative gap between the two municipal budgets of the Donetsk conurbation significantly increased: whilst in 2000, the Makiivka budgetary revenue per capita was 81% of its Donetsk counterpart, by the late 2000s this figure dropped to 56% (see Fig. 130).

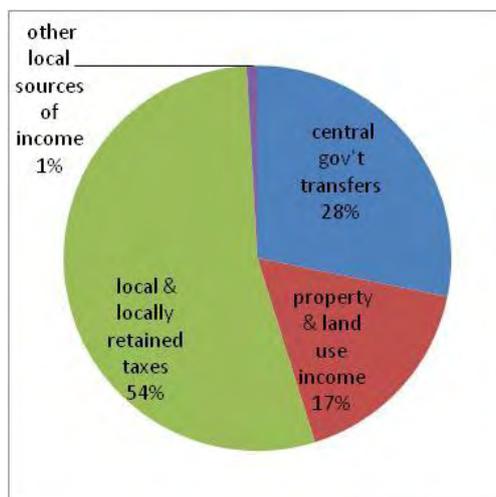
Figure 130 Donetsk and Makiivka city council budgets, total revenue and revenue per inhabitant, current €, 1997-2009



Source: WP2 D6 Database, May 2010

The main reason for the growing divergence in financial capacity between the two municipalities has been the structure of the budget with the bulk of revenues originating in the cities themselves from local and locally-retained taxes (primarily personal income tax) and from property, capital, and land use income, with the central government contributing less than a third of total revenues (see Fig. 131). The relative deprivation of a large number of Makiivka residents has, thus, been adversely reflected in the city's budgetary capability. In 2009, not a single hryvnia of the Donetsk city council budgetary expenditure was spent or allocated to an urban shrinkage issue per se.

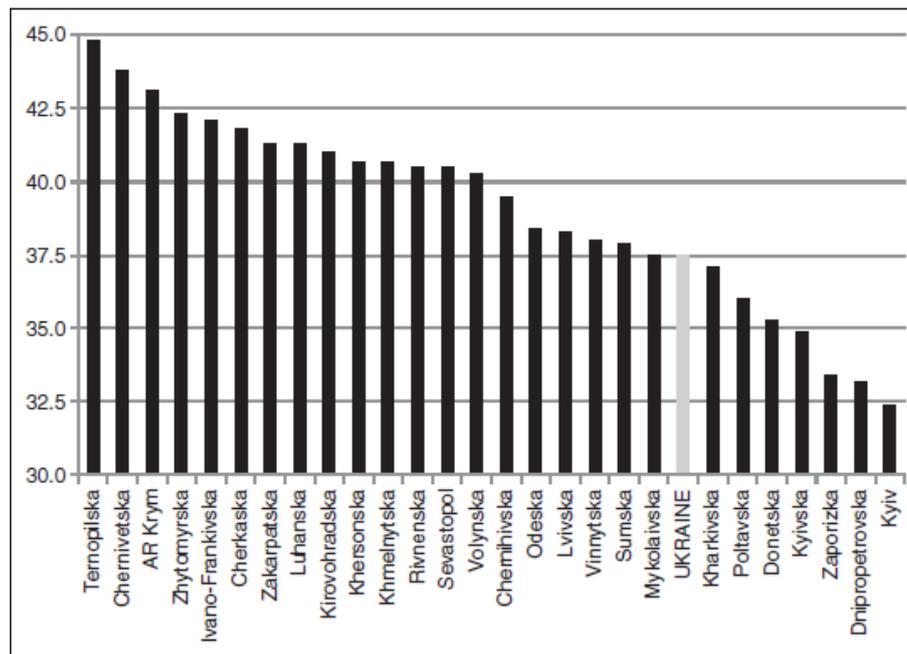
Figure 131 The city of Donetsk budget by source of revenue, 2009



Source: WP2 D6 Database, May 2010

Ukraine's over-centralised, unitary system of governance and the country's peculiar regional electoral geography (see Mykhnenko, 2009) have led to the vast redistribution of national income away from seven nominally richest regions – stretching from Kyiv in the centre of Ukraine to Mariupol in the south-east – and towards the country's twenty one less developed regions (see Fig. 132).

Figure 132 Current social transfers as a proportion of total regional income, %, 2007



Source: Mykhnenko and Swain, 2007, p. 155.

Political elites and community leaders in the Donbas have long complained about the crude and unfair system of central government transfers, as it is based on a rather simplistic GDP per capita evaluation of a region's 'high income' status, and fails to take into account not only the pressures emanating from urban shrinkage and industrial decline, but also immense environmental degradation problems faced by Ukraine's eastern, industrially-orientated regions and cities. It has long been claimed that Donetsk, Makiivka, Mariupol, and the Donbas in general simply cannot afford to assist generously other, nominally 'less developed' territories in western and central Ukraine (Amitan, 2002; Amitan, 2004; Kubicek, 2000; Lyakh and Tkachenko, 1998; Whitmore, 204).

Ukraine's largest political force – Party of Regions – born and based in Donetsk have campaigned since 1997 for a greater decentralisation and fiscal autonomy for the country's regions and local authorities (D'Anieri, 2007; Friedgut, 1994b; Kovaleva, 2007; Kuromiya, 1998; Mykhnenko, 2003).

Figure 133-134 Electoral advertising by Viktor Yanukovich during the 2009-2010 presidential campaign (left) and the Party of Regions' greeting billboard on Miners Day, Donetsk, 31 August 2009



At the same time, during the 2009-2010 presidential elections, the Party of Regions' leader – Viktor Yanukovich – made Ukraine's depopulation an electoral issue, calling for the reversal of the country's demographic decline and its 'return to 50 million inhabitants by 2020' (see Figs. 133-134). The election of Yanukovich on 7th February 2010 to the head of state, followed by the formation of a Party of Regions-led government coalition, have increased public expectations for change, economic renewal, and real territorial justice across the Donetsk conurbation and the region as a whole. It remains to be seen whether the new Ukrainian government will be able to address these expectations adequately (see Lane, 2008; Mykhnenko, 2009).

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