

## Black Sea coasts zone of Ukraine.

The fundamental data were collected in "Black Sea Environmental Priorities Study. Ukraine". ISBN 92-1-126094-9.

United National Publications Sales No. E.98. III.B.16

Black Sea Studies.

United Nations Publications, New York, 1998.

In the Black Sea coastal zone of Ukraine there are six administrative units: Odessa, Nikolayiv, Kherson, Zaporozhie, Donetsk regions and Autonomous Republic of Crimea (ARC).

The main source of effluent into the Black Sea, both in municipal and industrial wast-water discharges, are the Odessa and Crimea regions.

Pollution from agricultural sources has been a serious problem since the 1980s as overuse of these chemicals resulted in a tremendous pollution of soils, ground and surface water as well as to the Sea itself. Pollution from transportation occurs mainly from the cities of Odessa, Illichivsk and Sevastopol. Oil pollution is declining. Finally a substantial source of Black Sea pollution is the input (treated as point sources) from the major rivers passing through Ukraine, in which concentrations of oil products, ammonium, nitrogen, nitrates and phenols have been discharged and monitored for the past two decades.

The Ukrainian economy is under a lot of pressure and is facing a serious crisis. GDP has fallen by 55%, national income by 59% and consumption by 32%. The significant economic sector is in crisis. The current economic crisis is largely perceived to be the outcome of the former centrally- planned system.

Environmental spending used to be among the lowest priority areas of the government. Unfortunately, expenditure on environmental spending in 1999 was 1,3% of GDP and increased only magically to 2,7% in 1994. The Ministry of Environmental protection and Nuclear Safety of Ukraine has proposed an increase of environmental expenditures up to a level of 3-5% of GDP.

Further, an increase of environmental protection funds is expected in local budgets.

## Population and Economy. Demographic and Employment Trends.

Since 1991, there has been a down hard population trend in Ukraine. The rate of natural population growth is negative and since 1994, net migration has also turned negative. Levels of unemployment are increasing. Approximately 75% or 5,2 million people of coastal region live in urban areas. In the summer, the population increases at least 150% due to the inflows of tourists.

### Population of the Black Sea and Azov Sea regions

Regions (administrative territorial units)	Population (millions of persons)			
	1970	1979	1989	1995
Ukraine	47.1	49.8	51.7	51.7
Donetsk	4.9	5.2	5.3	5.3
Zaporizhia	1.8	2.0	2.1	2.1
Mikolayiv	1.2	1.2	1.3	1.4
Odessa	2.4	2.5	2.6	2.6
Kherson	1.0	1.2	1.2	1.3
ARC*	1.8	2.2	2.5	2.6

CR, total**	13.0	14.2	15.1	15.2
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\* Here and elsewhere the Autonomous Republic of Crimea and the city of Sevastopol

\*\* Here and elsewhere the six coastal regions, including ARC

Source: *Economy of Ukraine. 1994-1995*

Beginning in the 1980s and especially in the 1990s natural population growth has first declined and later turned negative due to declining birth rates and increasing mortality rates. Between 1990 and 1994 mortality rates in Ukraine increased from 12,1 per thousand to 14,7 while birth rates fell from 12,7 per thousand to 10,0.

Population densities in the Black Sea region are rather stable increasing only moderately through 1991.

### Population density in the Black Sea and Azov Sea regions

Regions	Population density (person/km <sup>2</sup> )
Donetsk	198.8
Zaporizhia	77.0
Mikolayiv	55.0
Odessa	78.3
Kherson	44.7
ARC	85.4
Ukraine	85.7

Source: *Economy of Ukraine.*

Thus, the general demographic situation in Ukraine including its coastal regions is not favourable and is worsening. Morbidity and mortality rates, especially infant's mortality is high. This situation has been brought on by factors such as the unfavourable demographic structure inherited from the former Soviet Union, the economic crisis, the unsatisfactory socio-economic conditions in many regions of Ukraine, and the low level of social development.

### Economic Overview.

The Ukrainian economy is facing a serious and growing crisis. Macroeconomic indices for 1990-1995 illustrate the economic crisis in Ukraine, one without parallel among developed countries since World War II except for the Newly Independent States. GDP has fallen by 55%, national income by 59%, prices have increased 12.000 times. And consumption has been reduced by 32%. As with the rest of the country, the coastal zone has seen its economy shrink dramatically, as all economic sectors have come under pressure.

### Major economic indices for Ukraine, 1990-1995

Indices	Years / % of previous year					
	1990	1991	1992	1993	1994	1995

GDP*	-4.0	-8.7	-9.9	-17.1	-23.0	-10.3
GDP**	-2.4	-13.5	-16.8	-14.2	-23.0	-11.8
National Income**	-2.4	-13.4	-17.5	-14.9	-24.5	
Industrial Output**	-0.1	-4.8	-6.4	-7.6	-27.7	-11.5

\* Official statistics and estimations of national economists.

\*\* Estimations of the World Bank

Source: *Real Economy and Its Sectors. 1996.*

### Major trends in the industrial sector.

From 1991-1995, industrial output of the coastal regions declined dramatically.

#### Indices of industrial output in coastal regions (1975=100)

Regions	Total industrial output						
	1985	1990	1991	1992	1993	1994	1995
Ukraine	144	167	158	148	135	87	72
Donetsk	132	153	143	132	120	78	64
Zaporizhia	144	167	167	160	147	95	78
Mikolayiv	145	168	167	150	137	88	73
Odessa	143	166	164	164	150	97	80
Kherson	147	170	171	157	144	93	76
ARC	147	171	158	147	134	87	71

Source: *Economy of Ukraine, 1994-1995.*

#### Production indices of the food industry (1990=100)

Regions	1991	1992	1993	1994	1995
Ukraine in total	87	75	65	53	47
ARC	84	77	73	58	50
Zaporizhia	87	73	82	64	46
Donetsk	98	82	77	64	54
Mikolayiv	94	77	68	50	50
Odessa	89	76	62	46	48
Kherson	90	76	71	54	43
CR	90	77	75	59	49

Source: *Statistical data of the Ministry of Economics, 1995.*

Since 1991, the coastal regions have seen a fairly rapid increase in the number of joint ventures as well as small enterprises. This process is developing most rapidly in Odessa and Nykolayiv regions.

### **Pollution. Municipal Sewage.**

Municipal sources of sewage are frequently among the most dangerous for the marine environment. Solutions to municipal sewage problems involve improved use of wastewater treatment technology.

The "Maximum Allowable Concentration" (MAC) is generally used as a measuring device for comparing levels of different pollutants. As the name suggests, MAC is the concentration of a particular pollutant that has been deemed acceptable under law.

Municipal sources water pollution has been quantified in a 1996 report entitled " Assessment of land-based sources of water and land pollution of the Ukraine Black Sea Coast".

#### **Municipal Sources of Liquid and Solid Waste of Selected Black Sea Regions**

Source	Volume (m <sup>3</sup> /y)	Liquid Waste				Liquid Waste		
		BOD <sub>5</sub> Load (t/y)	TSS Load (t/y)	Total N Load (t/y)	Total P Load (t/y)	Oil Load (t/y)	Putresible Load (t/y)	Infection Load (t/y)
Total Mikolayiv region	36,401	2,523	4,518	892	416	4,831	199,763	2,334
Total Odessa region	88,343	10,570	20,023	3,737	1,021	5,167	445,438	4,506
Total ARC	139,197	5,547	9,301	4,211	1,140	14,139	619,050	2,395
<b>TOTALS</b>	<b>263,941</b>	<b>18,641</b>	<b>33,843</b>	<b>8,840</b>	<b>2,577</b>	<b>24,138</b>	<b>1,264,252</b>	<b>9,235</b>

*Source: Assessment of Land-based Sources of water and Land Pollution in the Ukrainian Black Sea Coast. 1996.*

### **Industrial Effluents. Aquatic Pollution**

Concentration of 19 heavy metals frequently exceeds the MACs in all Black Sea coast areas. The most serious offenders are copper, zinc, cadmium, cobalt, nickel and chromium. The load from the industrial sources is the following.

#### **Industrial Sources of Liquid Waste for Selected Black Sea Regions**

##### **Liquid Waste**

Source	Volume (m <sup>3</sup> /y)	BOD <sub>5</sub> Load (t/y)	TSS Load (t/y)	Total N Load (t/y)	Total P Load (t/y)	Oil Load (t/y)
Total Mikolayiv region	1,343	669	2,637	29	1	210
Total Odessa region	101,833	29,858	13,048	26,113	15	62,700
Total ARC	15,157	6,003	54,743	4,813	1,683	8
<b>TOTALS</b>	<b>118,333</b>	<b>36,531</b>	<b>70,428</b>	<b>30,954</b>	<b>1,699</b>	<b>62,918</b>

Source: Assessment of Land-based Sources of water and Land Pollution in the Ukrainian Black Sea Coast. 1996.

### Atmospheric emissions.

The dynamics of air pollutant emissions by industrial in the coastal zones are similar to pollutant dynamics nationally. Air pollution there mainly comes from the metallurgical, energy, coal mining and chemical industries. Due to the sharp decline in industrial output throughout Ukraine and in these industries in particular, total emissions have decreased dramatically.

### Pollutant emission loads in Black Sea and Azov Sea regions

Regions	Pollutant emission loads		
	1985	1990	1991
Donetsk	142,8	116,6	108,5
Zaporizhia	39,2	32,6	27,2
ARC	37,5	25,5	22,3
Mikolayiv	15,6	12,2	11,1
Odessa	15,8	12,8	11,8
Kherson	12,2	9,3	9,6
Total Ukraine	31,2	25,8	23,7

Source: National Report, 1992

### Integrated Air Pollution Index for Selected cities in the Black Sea and Azov Sea Regions

Region	City	Major air polluting industries	Integrated Air Pollution Index (IAPI)			
			1991	1992	1993	1994

Donetsk	Donetsk	Coal, energy, oil refinery, engineering .	163.2	186.2	87.7	36.0
	Mariupol	Metallurgy, electronics, energy	133.7	108.0	NA	10.2
Zaporizhia	Zaporizhia	Metallurgy, energy, engineering, transport	156,3	63.7	19.9	15.4
Mikolayiv	Mikolayiv	Shipbuilding, electronics, energy	52.3	35.0	7.6	8.8
Kherson	Kherson	Energy, machine-building, oil refinery, construction	52.3	35.0	7.6	8.8
Odessa	Odessa	Oil refinery, machine-building, energy, constr.	52.6	81.7	26.1	26.6
	Izmail	Marine transport, food	3.5	3.4	NA	5.5
	Simferopol	Chemicals, energy, transp.	17.8	18.2	3.5	4.5
ARC	Yalta	Food, transport	9.3	4.1	10.1	3.0
	Kerch	Metallurgy, construction	7.3	18.7	7.9	10.3

*Source: Yearbook 1986,88,93.95, the State Committee of Hydrometeorology*

## **Human Health**

Economic losses due to environmental impacts on human health are among the priority issues facing Ukraine.

From an environmental health perspective the Black Sea coastal region is among the most hazardous in Ukraine.

Wide-scale pollution of ecosystems throughout the coastal zone resulting from various economic activities has caused significant social losses.

The ecologically unsafe situation has also affected indices of social development within the coastal zone significant increases in mortality rates in Odessa, Nykolaev and Kherson regions appear directly related to a deterioration of the hygienic and sanitary state of these territories and the deteriorating quality of their water resources.

Similarly, child mortality in Southern regions of Ukraine during the last 15 years has been the highest in Ukraine. Levels of cancer and accidental deaths are also among the highest in the country.

## **Institutional and Legislative Changes.**

Following the adoption of the new Constitution of Ukraine on 28 July 1996, considerable changes in the governmental institutional structure, including environmental bodies, are being planned.

Additional market-oriented environmental measures will be adopted. E.g. a contract system for budget financing, a privatisation plan with compulsory environmental measures on new owners, and national and regional environmental funds, including a Fund for Environmental Protection.

The following will be among the key responsibilities of the Ministry for Environmental Protection and Nuclear Safety:

- Development of regional environmental monitoring systems and regional environmental information systems;
- Elaboration of compulsory rules, techniques, regulations directives and guidelines on environmental protection;
- Development, implementation and monitoring of specific environmental programs;
- Enhancement of environmental management capacity of State and local levels;
- Developing systems for environmental audits and environmental licensing;
- Creation of environmental funds in the State budget
- Organising competitive bidding on governmental contracts for environmental investments;
- Allocating permits for special use of natural resources, solid waste, disposal and discharges and emissions of pollutants, and;
- Creation of a system of environmental insurance.

### **Criteria for Setting Priorities.**

Experience and analysis of the specific problems of the Ukrainian Black Sea coastal zone, the following criteria were chosen in rough order of priority:

1. Losses from environmental damage to human health or health costs. Estimated by child mortality, child pathology, morbidity, effect on life expectancy, ratio of mortality and birth rates in comparison to ecologically pristine areas;
2. Economic and ecological losses due to declining bio-productivity and bio-diversity of terrestrial and marine ecosystems caused by environmental pollution;
3. "hot spots" and danger of irreversible damage to the natural environment;
4. low-cost environmental protection measures and "win-win" investments;
5. ecological benefits/cost ratio or net social benefits maximisation.

Those measures that result in equivalent degrees of environmental protection utilising fewer funds and in a shorter time period are preferable.

Also, the renovation and construction of water treatment facilities at "hot spots" are given high priority.

### **Socio-Economical situation in the coastal region of Ukraine and Odessa area.**

These issues are studied at the Ukrainian National Academy of Science. Institute of Market problem and Economic-Ecological Research.

A complex study was performed and the results were presented by Anatoliy Krissilov, Associate Professor.

### **Short demographical report.**

By the end of 1999 the population of the coastal zone was as follows;

Kherson area        -12371000

Mykolayiv area -13099000  
 Odessa area -25286000  
 Odessa city - over 1 mln.

For the 11 months of 1999 in Odessa area there were registered;  
 18300 -newborns.

32500 - deaths (therefore, the natural decrease of population was 14200 people. The same period of 1999 -13000).

The number of newborns for 100 dead -56,2. (60 - for the same period of 1998).

The main causes of death in 1999 were;

- Heart and vassal diseases (60%);
- Oncology (14,7%);
- Accidents, murders, suicides and other external factors;
- 0,8% of all total deaths were in children up to 12 months old. (perinatal pathologies -62,2%, respiratory diseases.

In 1999 there were 16.2 thousand of marriages and 8,2 thousand of divorces. (In 1998 -15.2 and 8,1 accordingly).

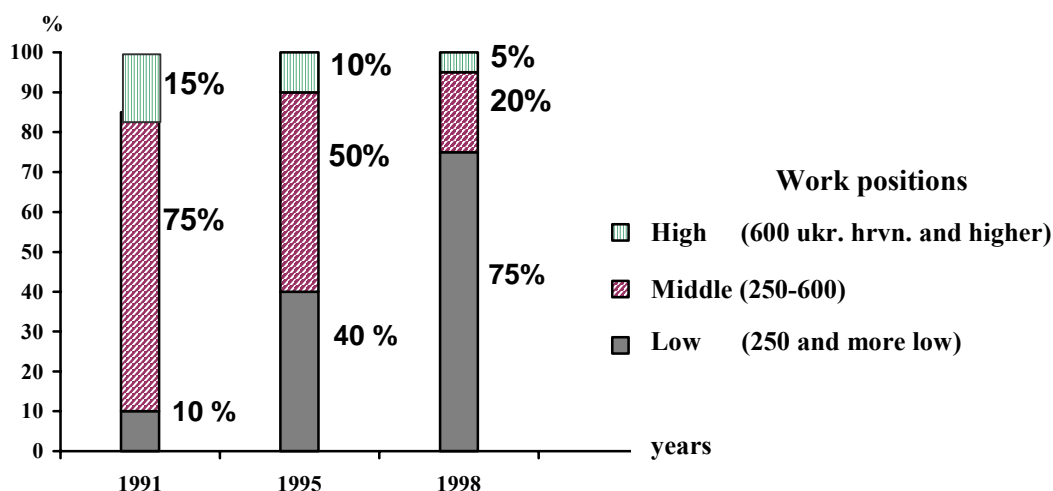
## The Employment Sphere

The sphere of employment is the integral field of macroeconomics. It reflects and influences all the main processes of social and economic activity.

## The Dynamics of Labor Costs

By the 1998 the share of highly-paid positions had decreased 3 times, of middle- paid positions - 4 times. At the same a share of a low-paid positions had increased 7,5 times. Simultaneously, we observe the decrease of the real wages.

**The dynamics of the work positions with high, middle and low wages in %.**



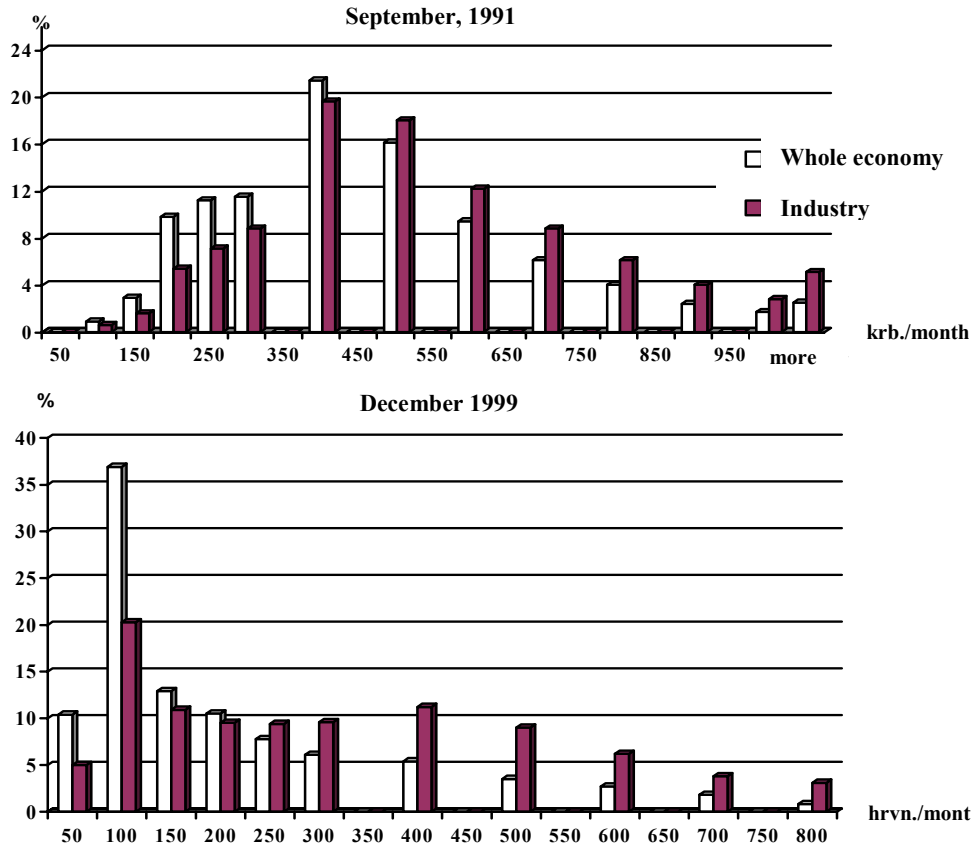
The decrease of the labor costs influences every side of the economy:

- the fall of the solvent demand;
- the decrease of the simple reproduction of labor;
- the growth of social conflicts, etc.



The disqualification of considerable population groups, the loss of social markers and moral principles are obvious.

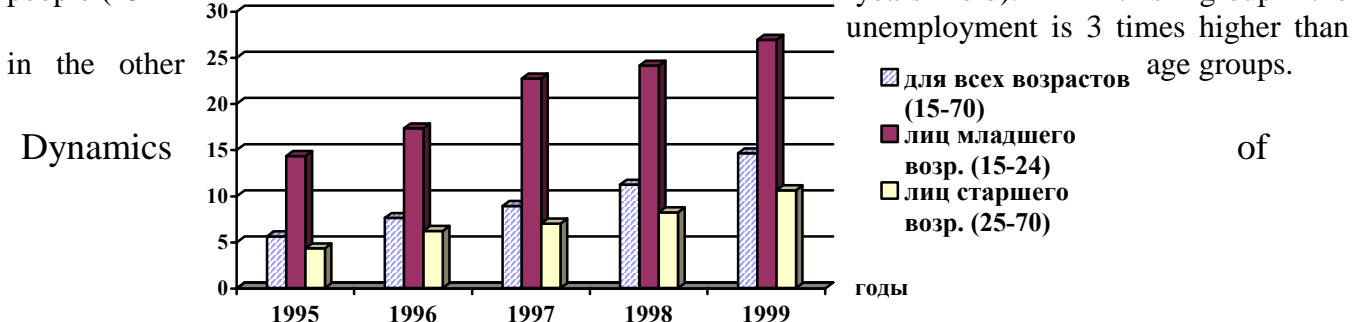
**Work positions according to the wages. Odessa area (September, 1991, December, 1999).**



Sept.'91													
KRB.	100	150	200	250	300	400	500	600	700	800	900	1000	More
Economy	0,9	2,9	9,8	11,2	11,5	21,4	16,1	9,4	6,1	4,0	2,4	1,7	2,5
Industry	0,6	2,8	6,5	11,2	13,3	24,0	15,7	9,0	5,2	3,9	2,9	1,5	3,1
Dec. '99													
HRV	50	100	150	200	250	300	400	500	600	700	800		
Economy	10,4	36,9	12,9	10,5	7,8	6,1	5,4	3,5	2,9	2,5	0,8		
Industry	5,0	20,3	10,9	9,5	9,4	9,6	11,2	9,0	6,2	3,8	3,1		

A misbalance between the supply and demand for labor will definitely increase in the coming years. For January, 1, 2000 there were 50,7 thousand of registered vacant positions. The number of unemployed - 1,7 mln. for coastal area (24 per 1 position). This year there will be 600 thousand people laid out in the sphere of industry. All together there will be 3-7 mln. people looking for a job in the region.

An extremely important and keen issue is the growth of unemployment among young people (15-24 years old). In this group the unemployment is 3 times higher than



unemployment. Age structure.

All ages (15-70)

Youth (15-24)

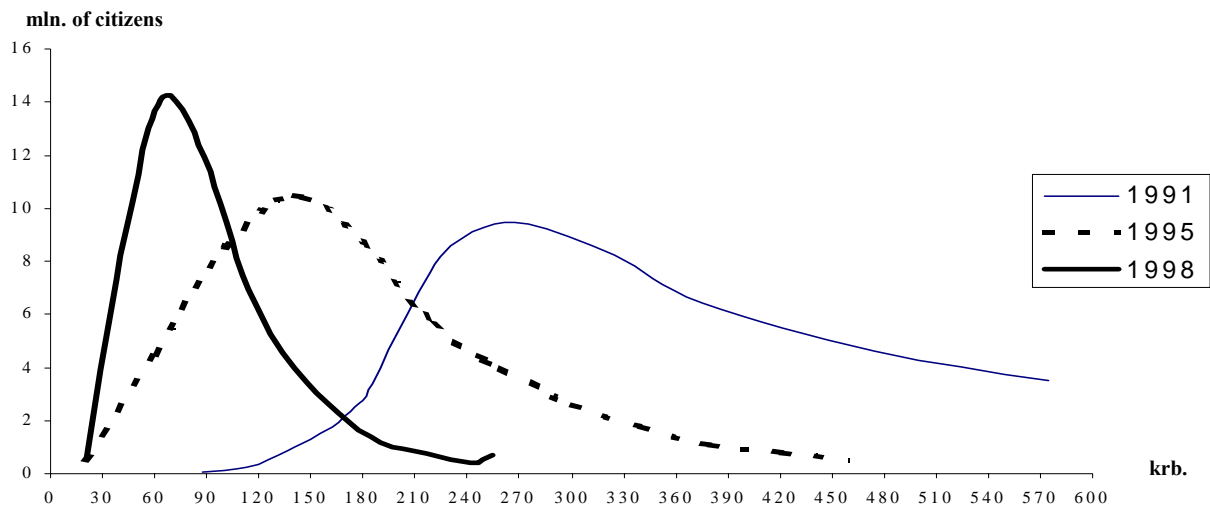
Old (25-70)

years

### The Dynamics of Population Incomes.

The results are calculated considering formal and informal, direct and indirect incomes. The analysis paints out a vast decrease of total monthly average income for the majority of population. According to the border of the lowest life support level (90,6 Ukr. hrivnas, starting July, 2000 - 106 Ukr. hrivnas) - approximately 40% Of the population is below this level.

#### The total monthly average income of the population



1991													
krb.	87,5	112,5	137,5	162,5	182,5	225,0	275,0	325,0	375,0	475,0	575,0		
mln. of citizens	0,05	0,25	0,85	1,75	2,75	8,2	9,4	8,25	6,4	4,6	3,5		
1995													
krb.	20	60	100	140	180	220	260	300	340	380	420	460	500
mln. of citizens	0,5	4,5	8,5	10,5	8,7	5,6	4,0	2,6	1,8	1,1	0,8	0,5	
1998													
krb.	21	38,5	63,5	89,0	114,5	140,0	165,5	190,5	216,0	241,5	254		
mln. of citizens	0,55	7,3	14,1	11,9	6,95	3,95	2,25	1,15	0,75	0,4	0,7		

citizens											
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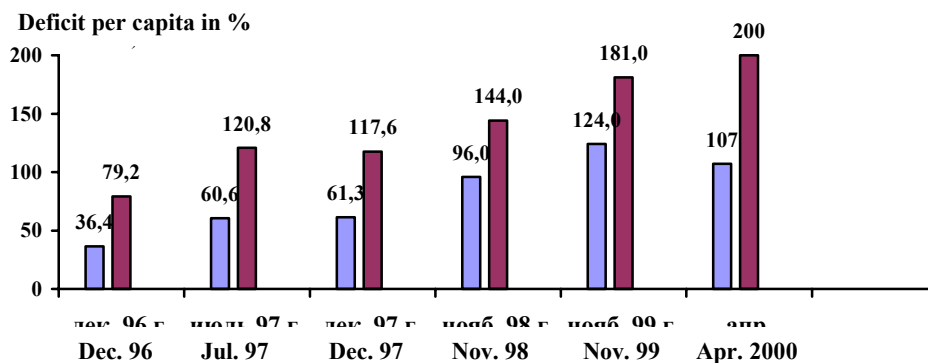
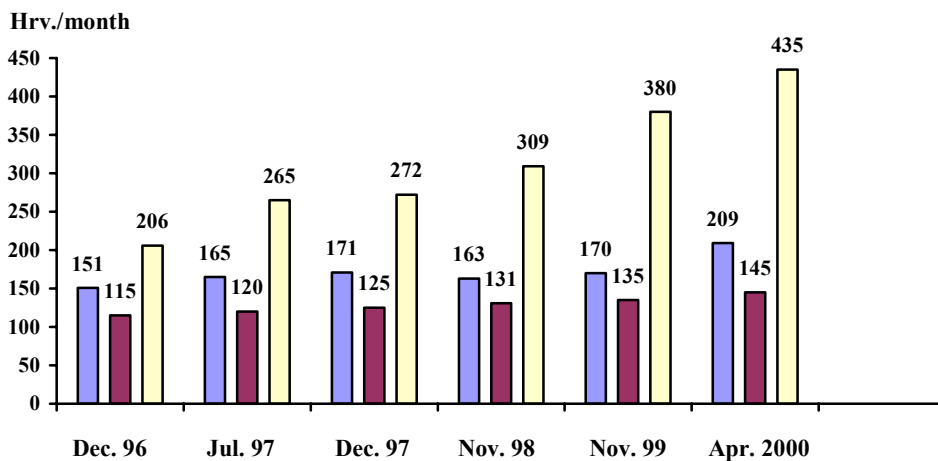
The ratio between the incomes of the richest 10% of the population and the poorest 10% is as follows:  
 1991 - 4.5:1.  
 1995 - 6.4:1.  
 1998 - 37 :1.

The comparison of the 1991 and 1998 data demonstrates the destruction and disappearance of the whole middle class - the main and only possible basis for the social reforms in each and every society. Today in Ukraine there is only one strategy for this group of population - survival at any coast.

### The Evaluation of Nominal Wages in Odessa Region

In general in Ukraine the share of wages in the structure of money income has decreased from 68% in 1990 to 48% in 1999.

#### Dynamics of incomes and payments of the Odessa area population



The difference between the nominal wages and need necessary expenses (% to the wages)

- Average wage of all categories of employees
- Average wage for State Budget organizations
- Minimal living budget per capita (one month)

The upper graph shows the wages in comparison with minimal life budget necessary (22 food products per month, taxes, health care, education, transportation, etc.).

The lower graph shows the monthly deficit of wages to the average minimum consumption budget. The difference between the nominal wages and minimum necessary expenses is obvious. In Odessa region in 1998 an average statistical person needed 2 salaries to have an average minimum consumption budget. At the end of 1999 and the beginning of 2000 - 3 salaries. For the State budget sphere employees this number is even higher and is -3,5 salaries.

## **Regional Comparisons**

The data on the regional comparison of social development provision for the coastal area and the local budgets show the misbalance.

## **Short conclusions**

- The system of social support in the country is far from ideal;
- The level of social support depends on the general poor economic growth;
- In the region there are no long-term programs of social protection of the population.
- Besides the deficit of financial means the main financial capital is concentrated in a bank system, new structures and underground financial turnover the representatives of which are not interested in social investments;
- In a vast number of the social sphere sections the alternative opportunities are absent, the competition relations are not functioning.
- There is a keen necessity of an active influence on the structure of the labor market.
- An extreme attention to the work with young people is needed, attention to the sphere, where the increase of low qualified labor force is progressing.
- Only a complex approach can positively influence the economic state and in general social development Ukraine.