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Russia

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Ways to Improve Environmental Policy in Russia

Inforum 2014 Conference, Alexandria, USA

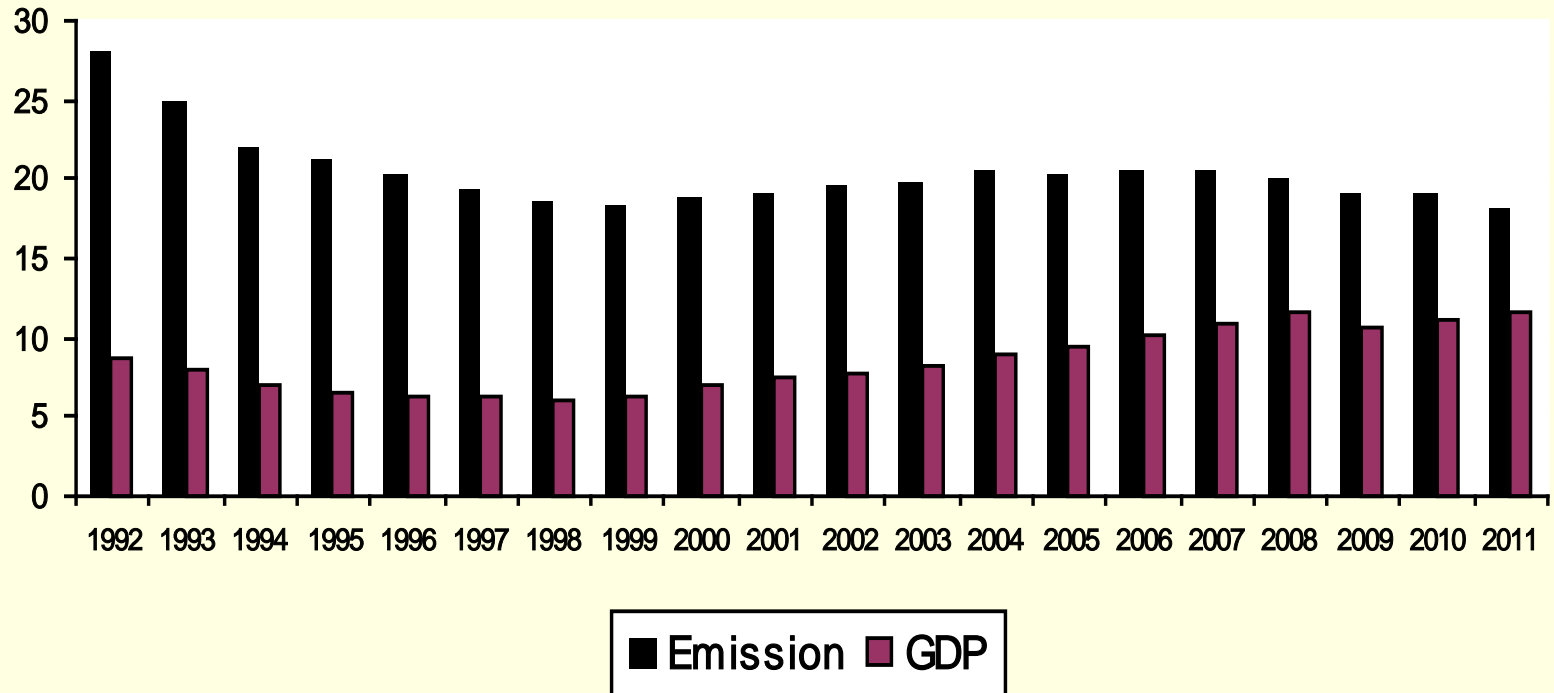
Outline

- Topicality
- Model complex
- Results
- Conclusions

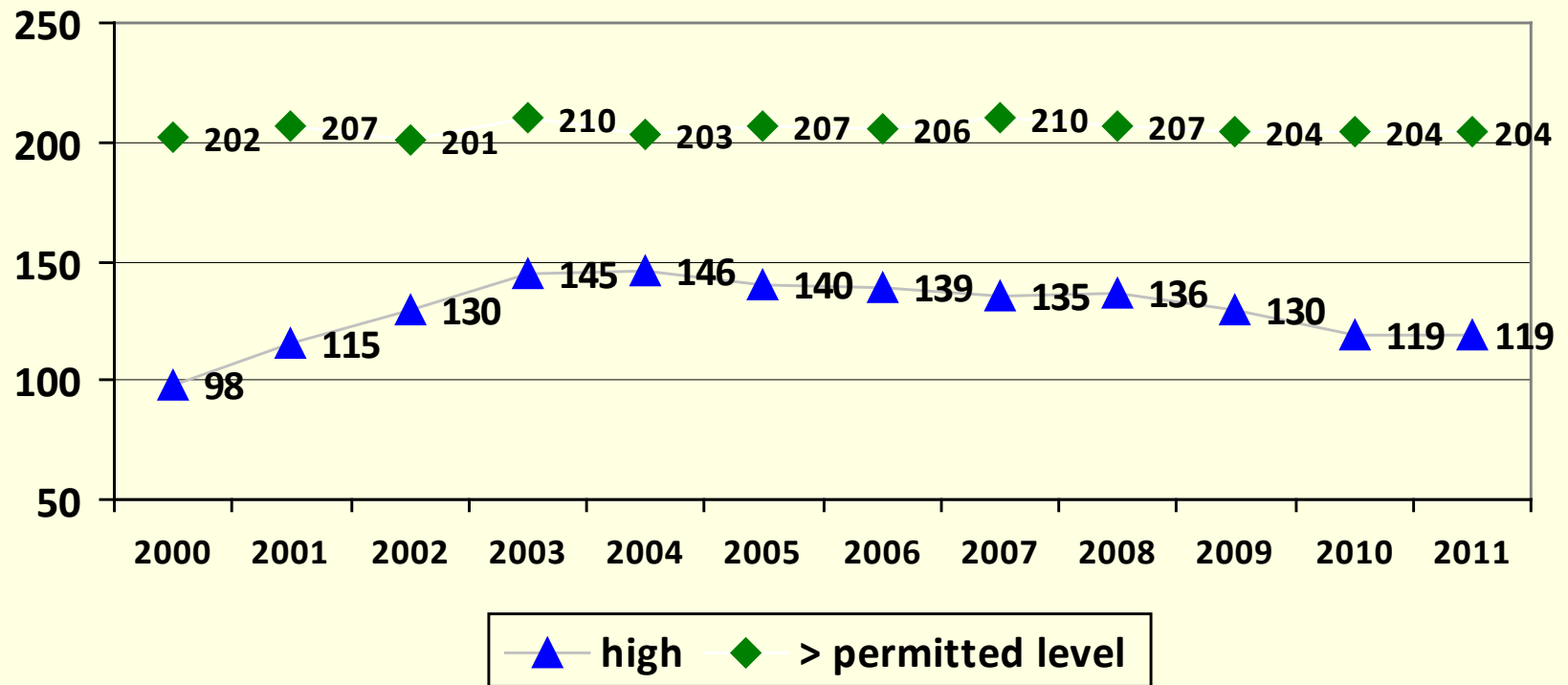
Russia in the World

	CO ₂ emission	
	mln tons	% in the world emission
Chine	8476,6	27,3
USA	5459,7	17,6
India	2168,5	6,9
Russia	1642,7	5,3
Japan	1149,5	3,7
Germany	765,1	2,5
Iran	608,2	2,0

Stationary emission (mln. tons) and GDP (bln. Rbl, before 1998 - trln. Rbl, prices of 2000)

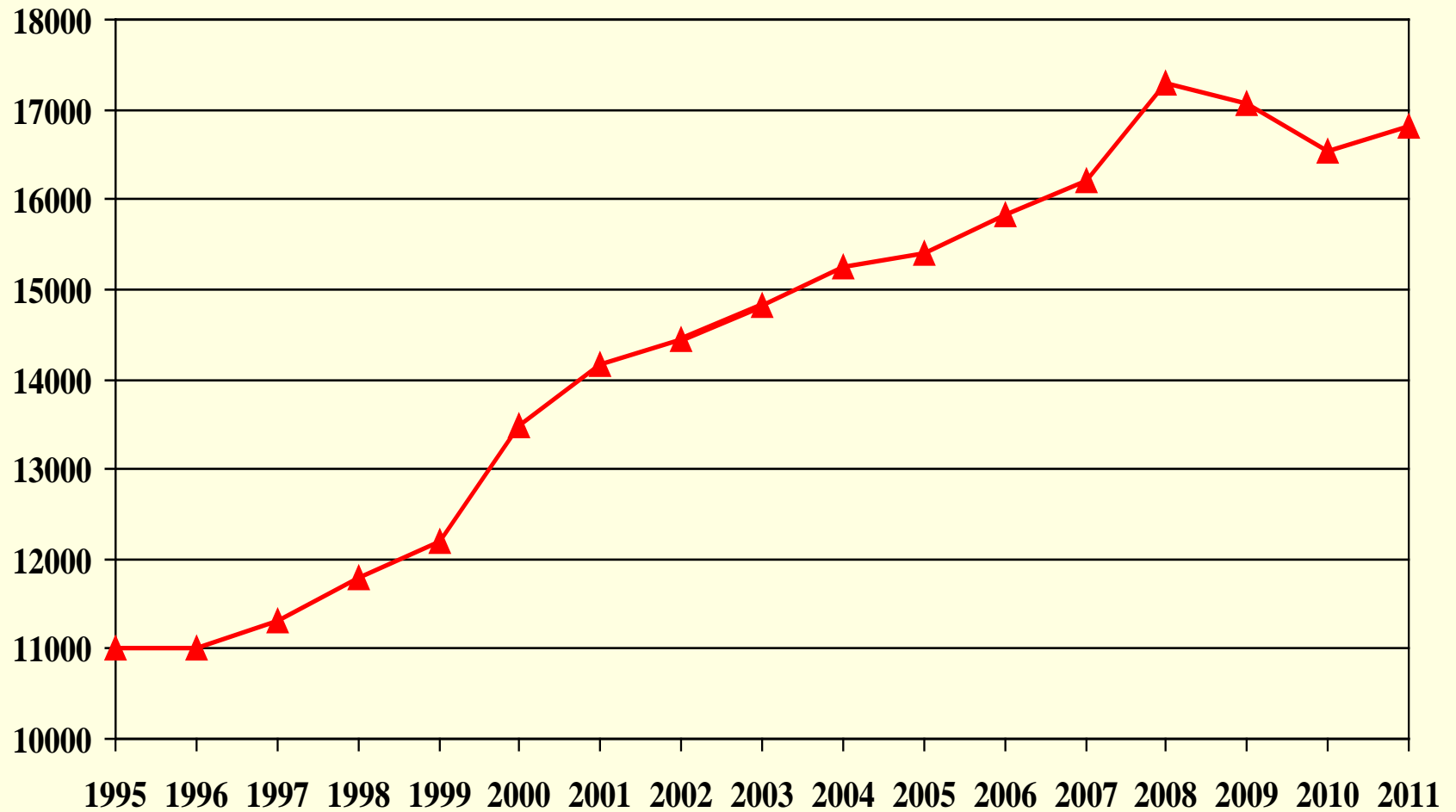


The number of cities with high level of pollution

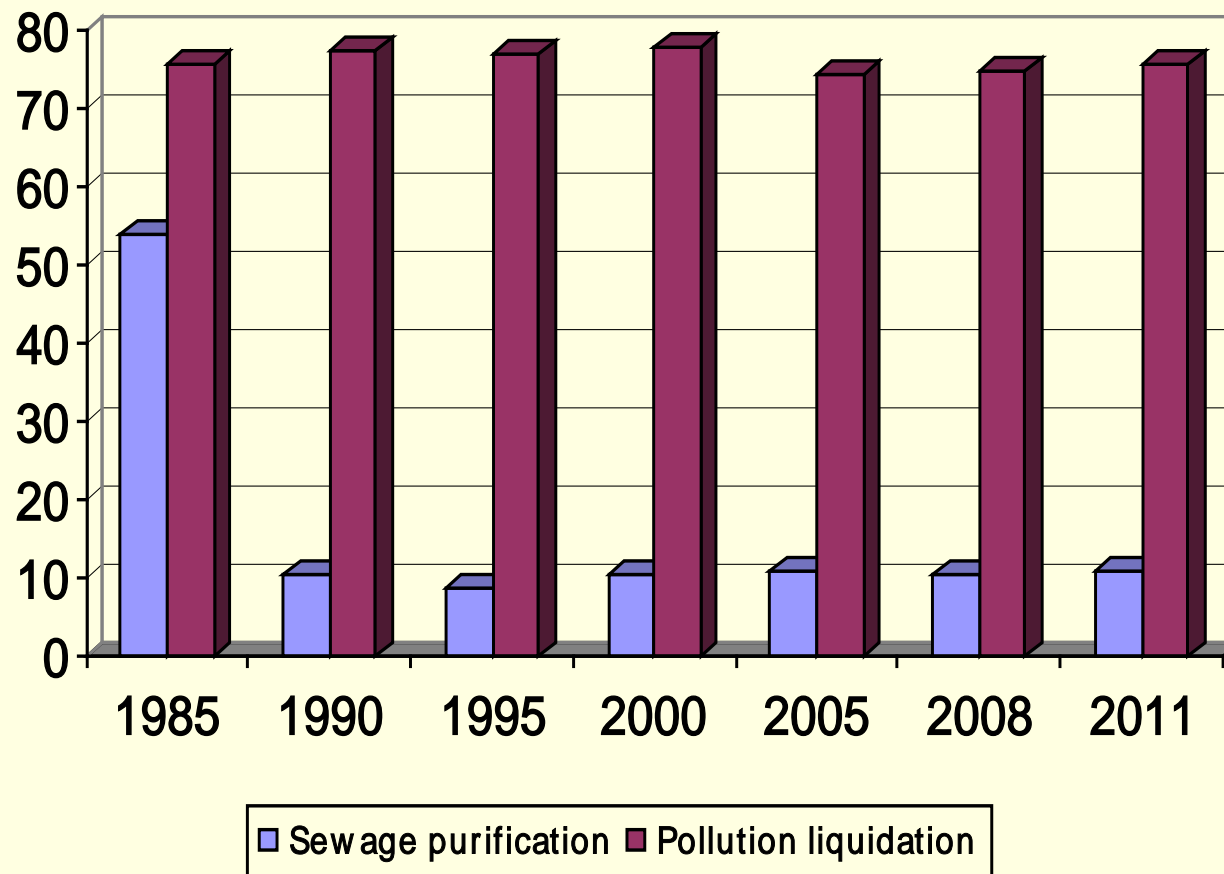


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Motor transport emission of polluting substances into atmosphere (thousand tons)

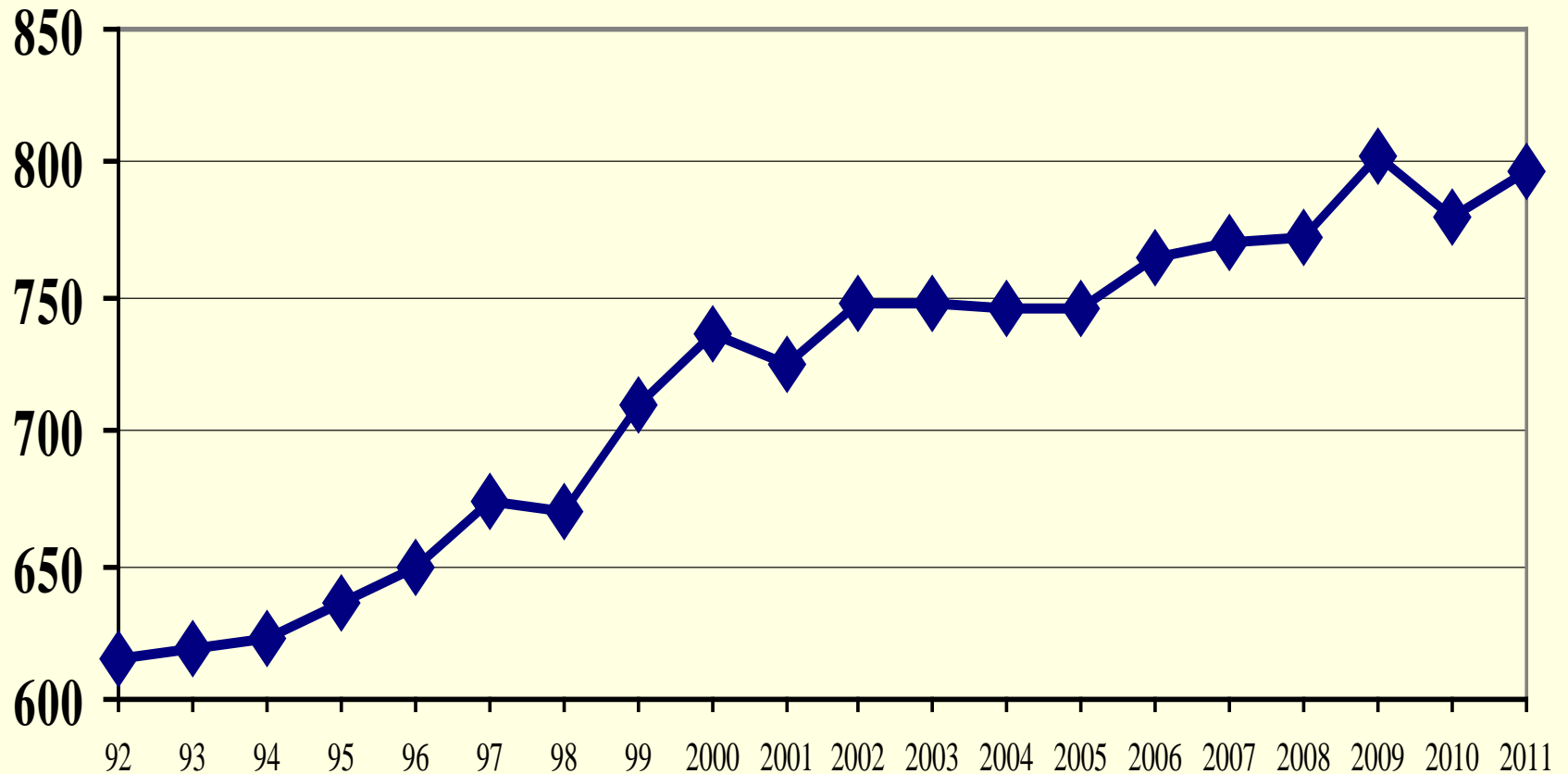


The proportion of sewage purification and pollution liquidation in total volume of their formation (%) in Russia



Morbidity in Russia

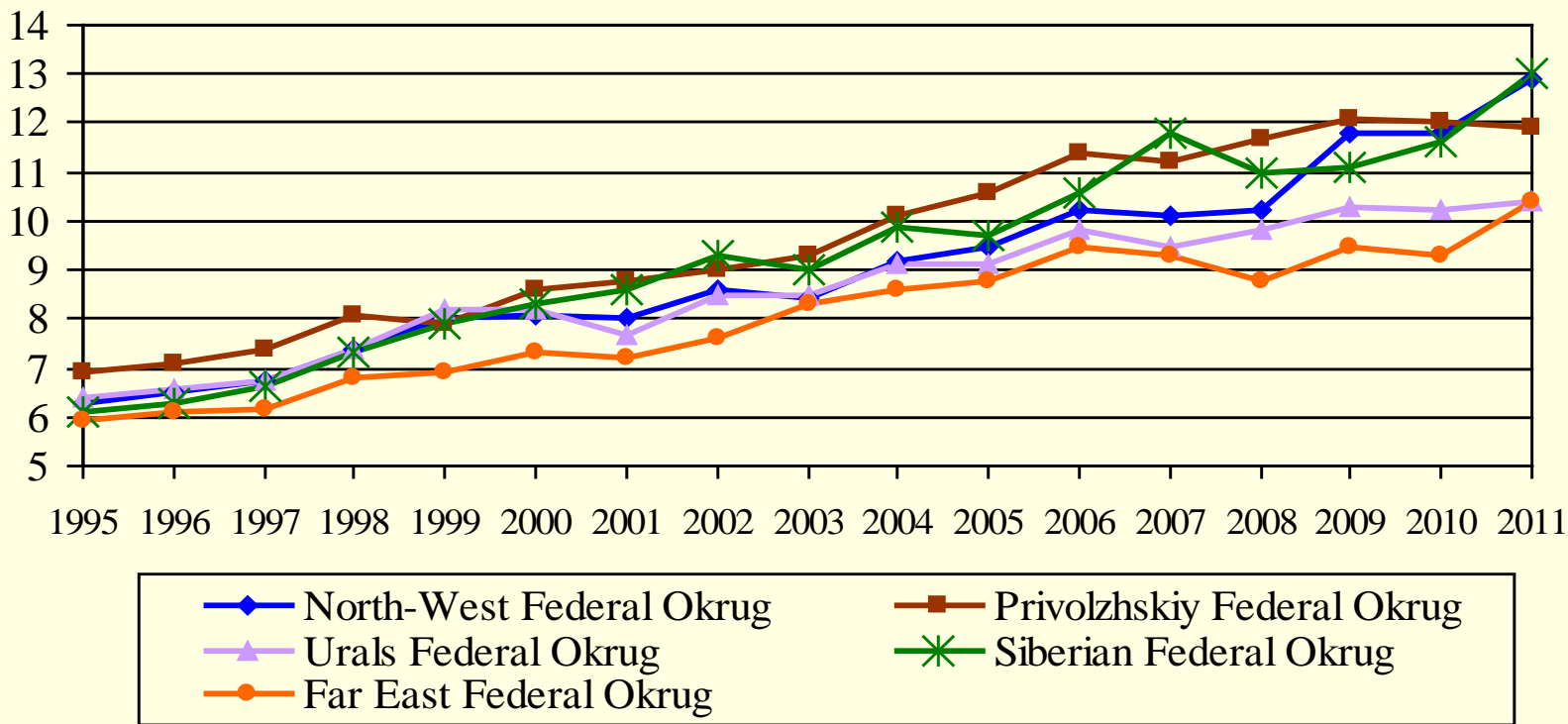
(registered patients with the first diagnosed disease for every thousand people)



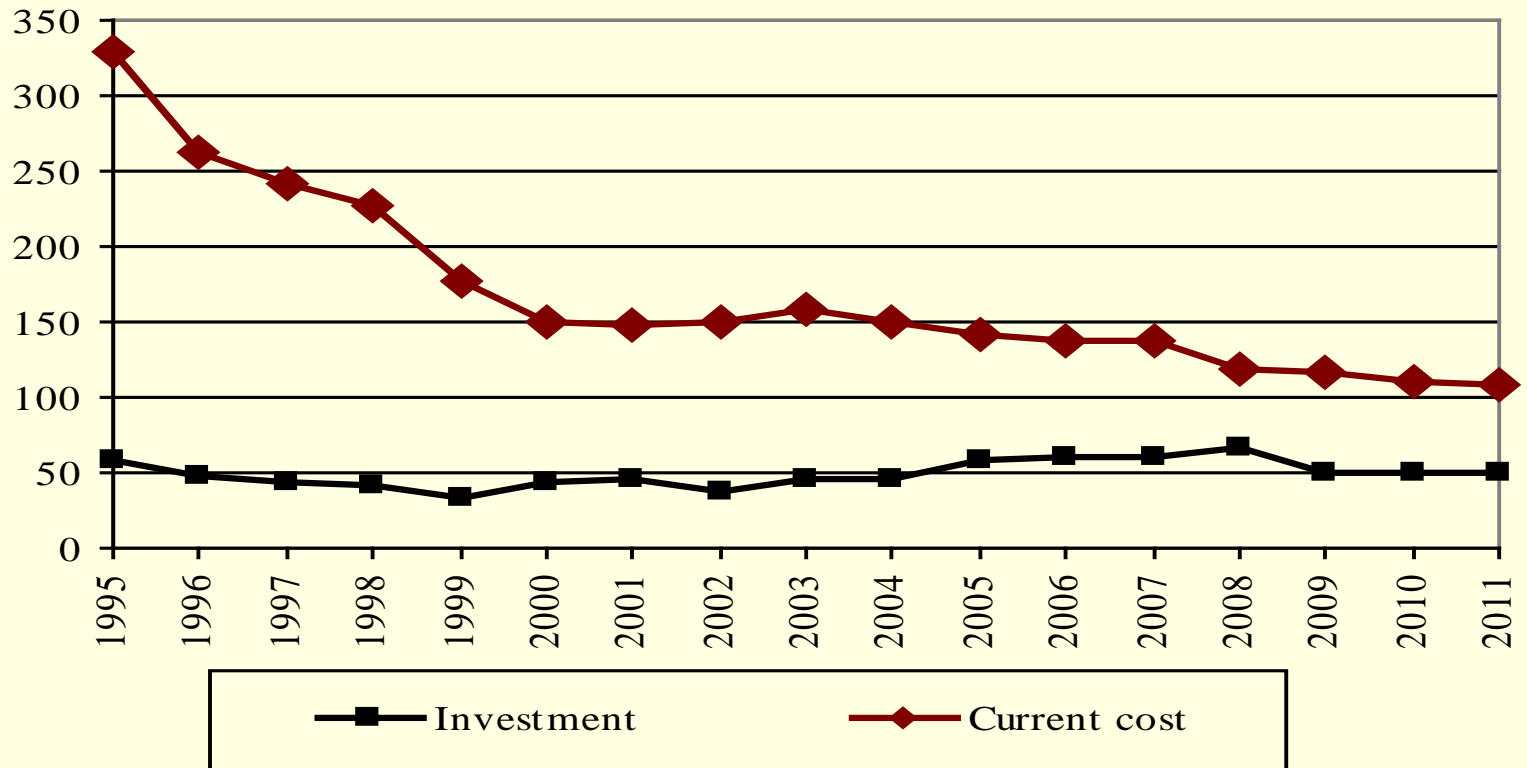
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Morbidity of Cancer in Russia

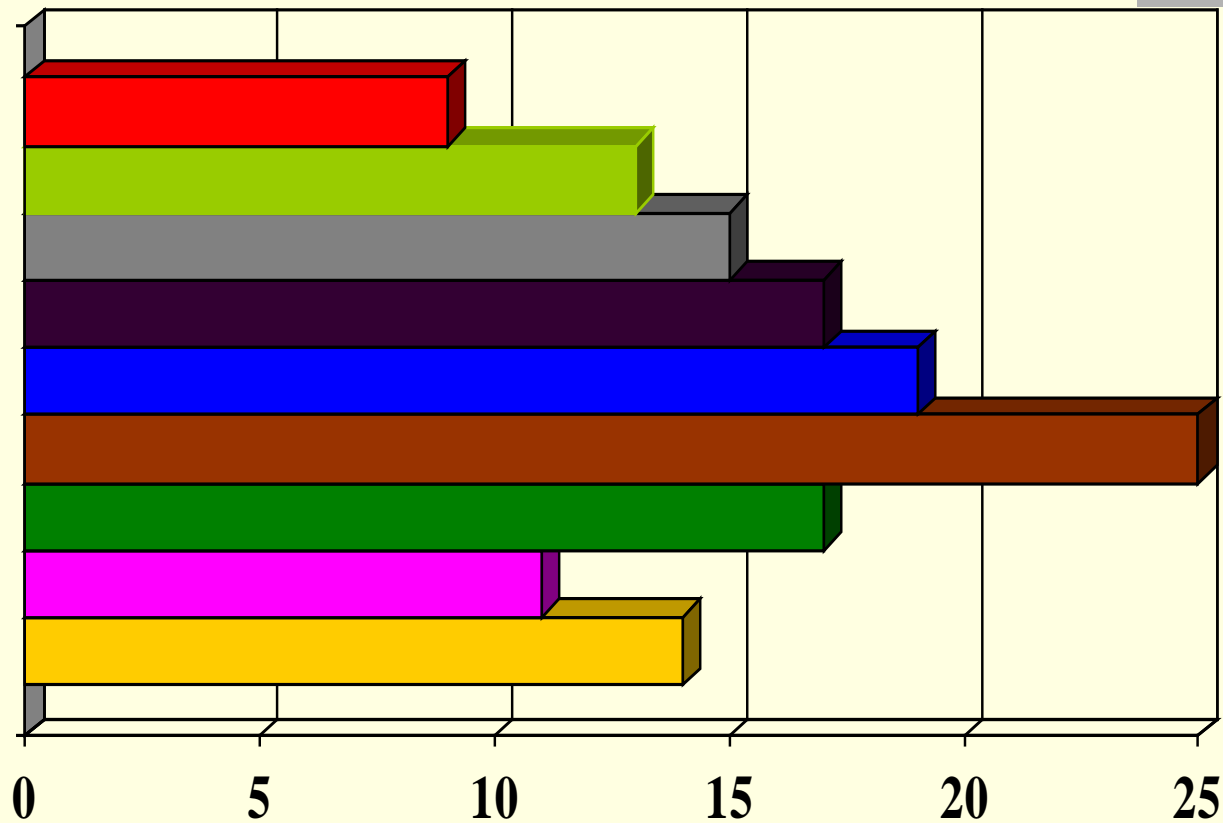
(registered patients with the first diagnosed disease for every thousand people)



Ecological Investment and Current Cost (billion Rbl, before 1998 - trillion Rbl, prices of 2005)



Environmental Protection Cost in 2005-2009 (\$ per 1000 \$ of GDP)



Great Britain (2005) Finland (2005) Germany (2007) The Netherlands (2007) Austria (2007)
USA (2006) Bulgaria (2005) Greece (2007) Russia (2009)

Putting into Operation of Environmental Fixed Assets

	1990	1997	2005	2009	2011
Putting into service the production facilities for sewage treatment (thou cubic m per day)	2000	1004	1300	1500	700
Putting into service the production facilities for pollution trapping (thou cubic m hour)	16400	3101	4200	3600	9700

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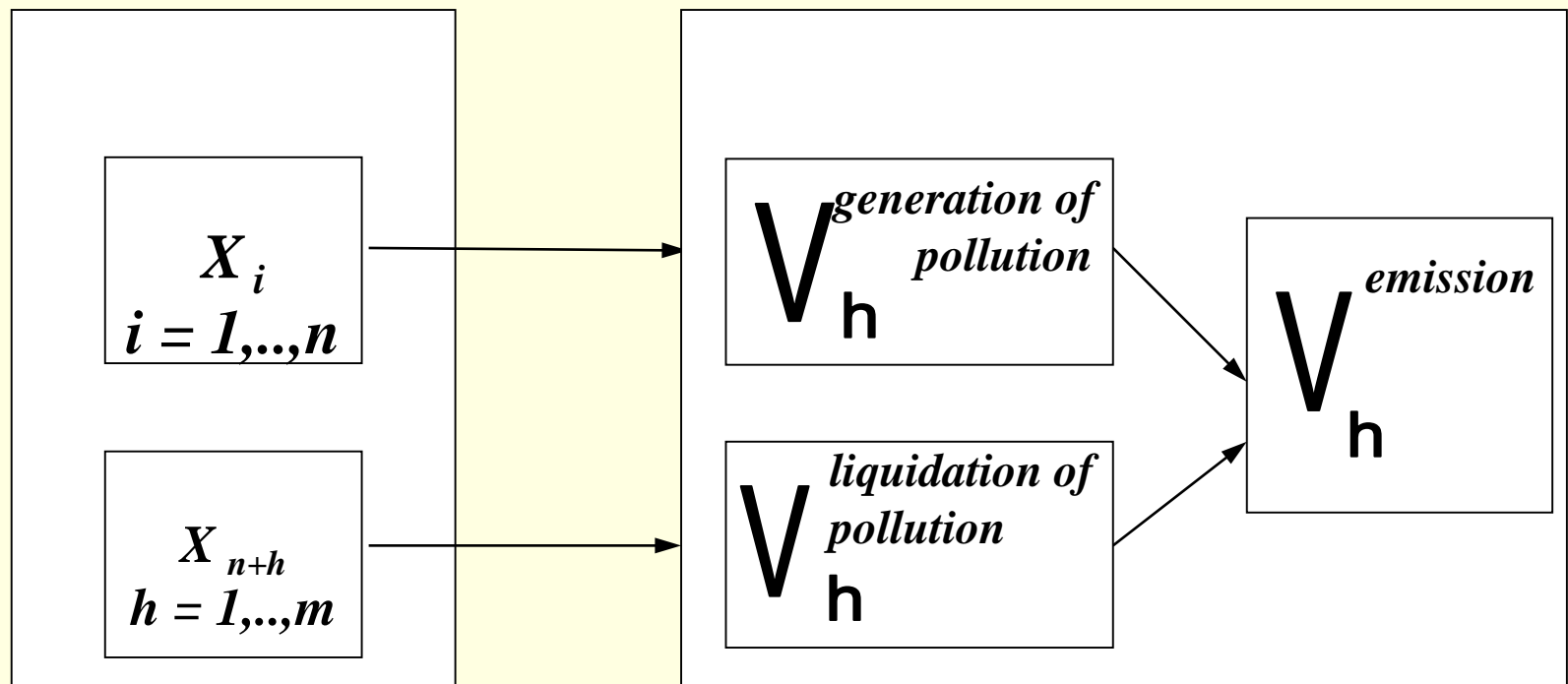
Pollution taxes for SO₂ and NO_x in 2005 (euro per ton)

Country	Pollution taxes	
	SO ₂	NO _x
Czech Republic	28	22
Estonia	3,52	8,5
Poland	85	85
Slovakia	22,7	18,2
Slovenia	14	-
Finland	17,1	-
France	27,4	38,1
Italy	53,2	105
Russia	2,6	5,5

Model Complex of Forecast Calculations

**Dynamic
Input-Output Model
of Russia**

**Block of Environmental
Protection**



$$x(t) = (x_1(t), \dots, x_n(t), x_{n+1}(t), \dots, x_{n+m}(t))$$

$x_i(t), i = 1, \dots, n$ - gross output of industry i in year t

$x_{n+h}(t)$ $h = 1, \dots, m$ - current environmental protection cost for natural resource h

$$V_h^g(t) = \sum_{i=1}^n w_{ih}(t)x_i(t) + D_h(t)$$

w_{ih} - coefficient of pollutant h generation (volume of polluted natural resource h , referred to manufacturing of a unit of production of industry i)

$D_h(t)$ - output of pollutant h (volume of pollution or destruction of a natural resource) in household.

$$x_{n+h}(t) = \sum_{i=1}^n g_{ih}(t)V_{ih}^l(t)$$

$$V_h^l(t) = \sum_{i=1}^n V_{ih}^l(t)$$

$g_{ih}(t)$ - current cost to recover unit of natural resource h (to destroy or to trap unit of pollutant h) in industry i

$V_h^l(t)$ - volume of a recovered natural resource (destroyed or trapped pollutant) of type h

$$V_h^p(t) = V_h^g(t) - V_h^l(t)$$

- volume of pollutant h (a polluted natural resource) that gets into the natural environment without purification (or by volume of destroyed but not reproduced natural resource)

Forecast key factors of national economy in Russia in 2014-2020

	2014	2015	2016	2017	2018	2019	2020
Urals Price (in USD per barrel)	101.6	103.7	105.7	107.8	110.0	112.2	114.4
Change in GDP (in %)	+2.3	+2.5	+2.8	+3.0	+3.6	+3.9	+4.1
Change in M2 (in %)	+10	+10	+10	+10	+10	+10	+10

Forecast industry outputs in 2014-2020 (growth rate, %)

The industries	2014	2015	2016	2017	2018	2019	2020
Agriculture	102.3	103.9	102.5	102.6	102.7	102.9	103.0
Coal	97.4	104.6	101.8	102.9	103.3	103.8	104.3
Oil	100.9	101.5	101.0	101.0	101.0	101.0	101.0
Gas	100.9	101.5	101.0	101.0	101.0	101.0	101.0
Other minerals	103.7	99.3	102.0	104.0	103.2	103.7	104.1
Food industry	101.6	103.0	103.6	103.1	103.3	103.4	103.5
Light industry	102.2	101.7	104.6	104.8	104.7	105.2	105.6
Logging, wood-working, pulp and paper	96.9	91.7	95.4	97.5	96.7	97.3	97.7
Oil products and coke	103.8	102.4	102.0	103.0	102.6	102.6	102.7
Chemical and petrochemical industry	106.5	100.8	105.8	107.7	107.1	107.8	108.3
Other non-metal mineral products	100.8	100.4	100.8	102.8	101.8	102.4	102.9
Metallurgy	99.5	96.4	102.5	101.8	102.0	103.0	103.8
Metal-working industry	101.9	99.0	103.9	104.9	104.5	105.3	105.8
Machine-building industry	104.1	95.8	99.8	105.1	102.9	104.1	105.0
Power engineering	102.7	99.9	101.3	102.6	102.1	102.4	102.6
Collection, sewage treatment and distribution of water	102.7	99.9	101.3	102.6	102.1	102.4	102.6
Construction	103.7	102.2	96.4	100.4	98.5	98.5	98.6
Trade	105.6	105.7	102.3	104.3	103.3	103.4	103.4
Transport and communication	104.8	103.8	102.0	103.8	103.0	103.1	103.2
Services	103.0	104.4	101.4	103.7	103.0	103.3	103.6

Real and model-calculated regional pollution taxes for NO_x in 2014-2020 (prices of 2011)

	Total environmental cost in 2014-2020 (million Rbl)	Total emission in 2014-2020 (thou tons)	Forecast pollution taxes (Rbl per ton)	Real pollution taxes (Rbl per ton)
	[1]	[2]	[3]=[1]:[2]	[4]
Central FO	16751.9	2130.1	7864	471-509
North-West FO	10266.7	3056.5	3359	446-559
South FO	3912.0	843.8	4636	517-614
North-Caucasian FO	1213.5	182.6	6646	517-614
Privolzhskiy FO	19031.2	3509.7	5422	479-509
Ural FO	18093.7	6832.8	2648	450-496
Siberian FO	13872.9	7889.8	1758	429-475
Far East FO	5929.8	1098.4	5399	421-505

Conclusions

- The Russian ecological situation is getting worse. The health and demographic situation in Russia very strongly depends on environment. Significant deterioration of environment attends high morbidity and mortality. In 2011 the number of cities with negative ecological situation was 119 (in 2000 it was 98). The number of yearly registered patients with the first diagnosed disease for every thousand people has increased by 30% in 1992-2011.

Conclusions

- Russian economy spends impermissibly little on environmental protection. A proportion of environmental protection investments in the total volume of national investments is about 1.5 % per year, the growth rate of environmental protection investment in 2011 in Russia constituted 84% of the 1995 level. The growth rate of the current environmental costs in 2011 constituted only 33% of the 1995 level. The main way to augment environmental protection expenditure is to increase size of ecological taxes in 10 times on average. The ecological taxes should to realize compensation and stimulation functions.

Conclusions

- The improvement of the environmental legislation should occur in a complex interactive way with the improvement of the entire tax system. In particular, it is proposed to aim fiscal policy at solving environmental problems with a general decline in direct taxes. In addition, in order to reduce tax burden, the practice of granting tax reliefs and other financial incentives should be more widely used (offsets of environmental payments in the amount of the environmental costs incurred, provision of favorable loans, state guarantees for environmental loans, schemes of accelerated depreciation of environmental capital stock) to stimulate the implementation of advanced environmental protection technologies. All these measures are obviously an effective means of economic and environmental mechanism.

Thanks for your attention!

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