

TOWARDS LATVIAN INFORUM MODEL – INTRODUCTION AND BASE SCENARIO RESULTS

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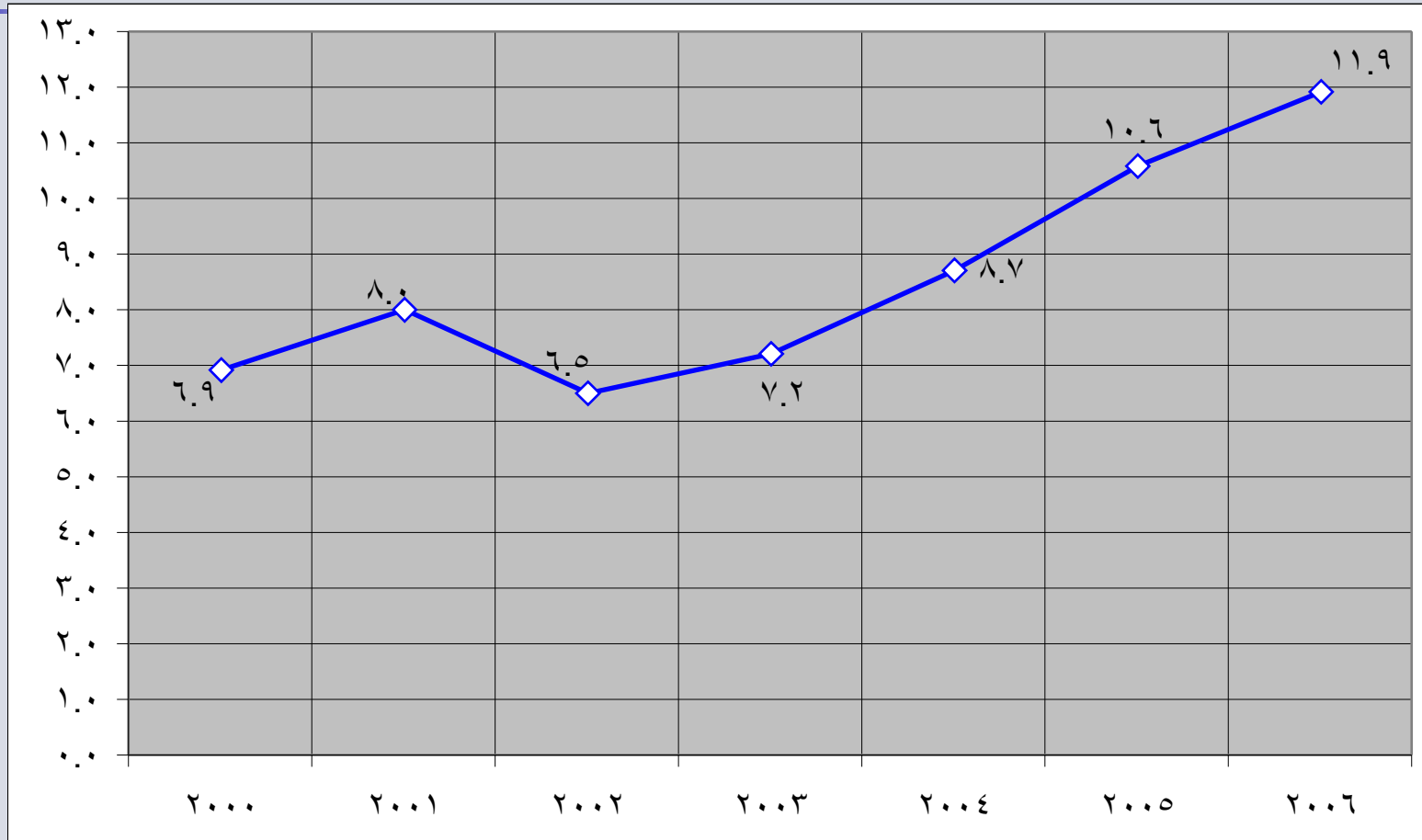
Riga Technical University

■ Structure of presentation

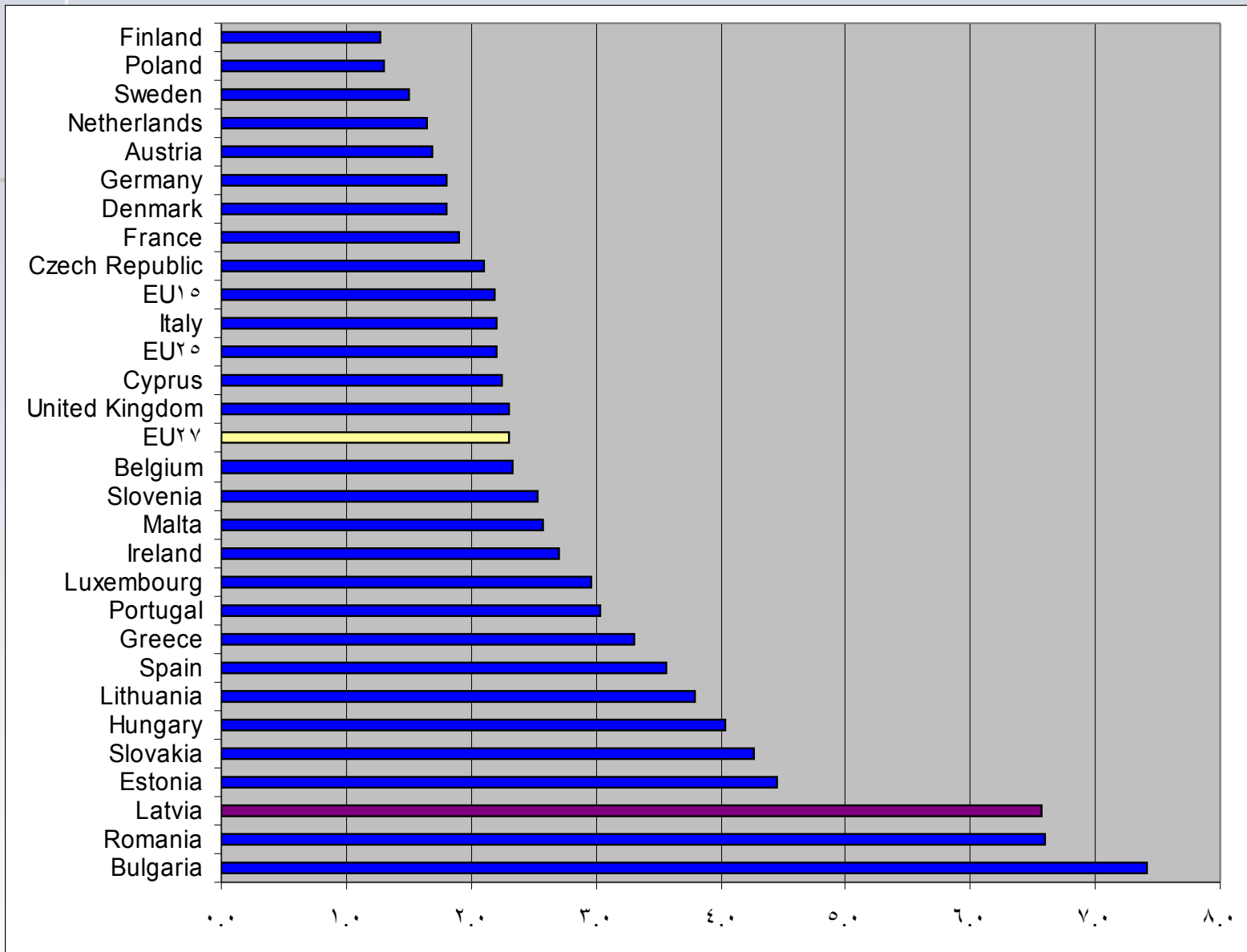
- Current macroeconomic situation
- Sectoral development analysis
- Model
- Results and problems
- Electroenergy forecasting
- Conclusions

**BASE-SCENARIO
FORECASTS BY LATVIAN
INFORUM MODEL:
RESULTS AND PROBLEMS**

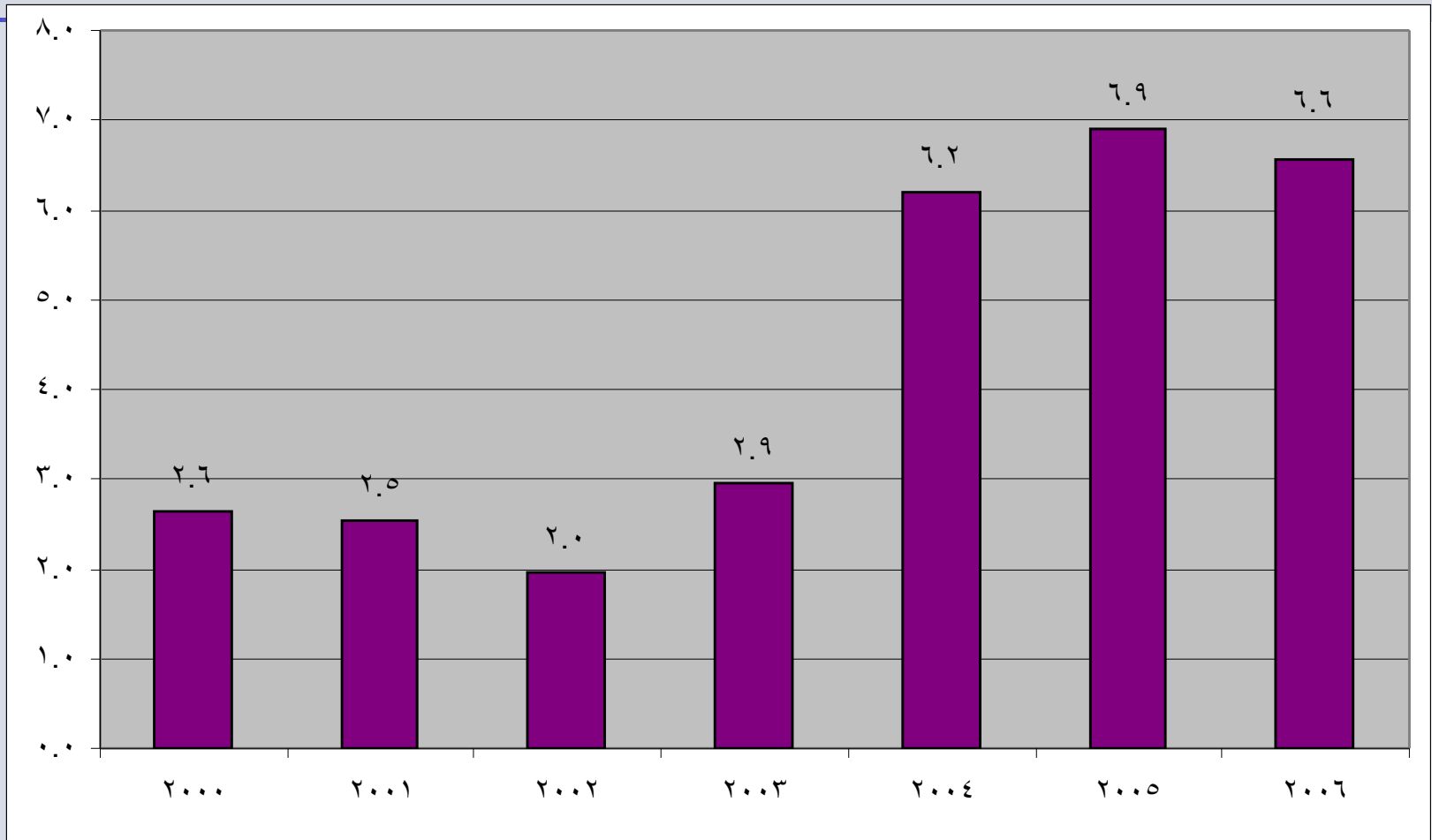
GDP growth rates in Latvia (%)



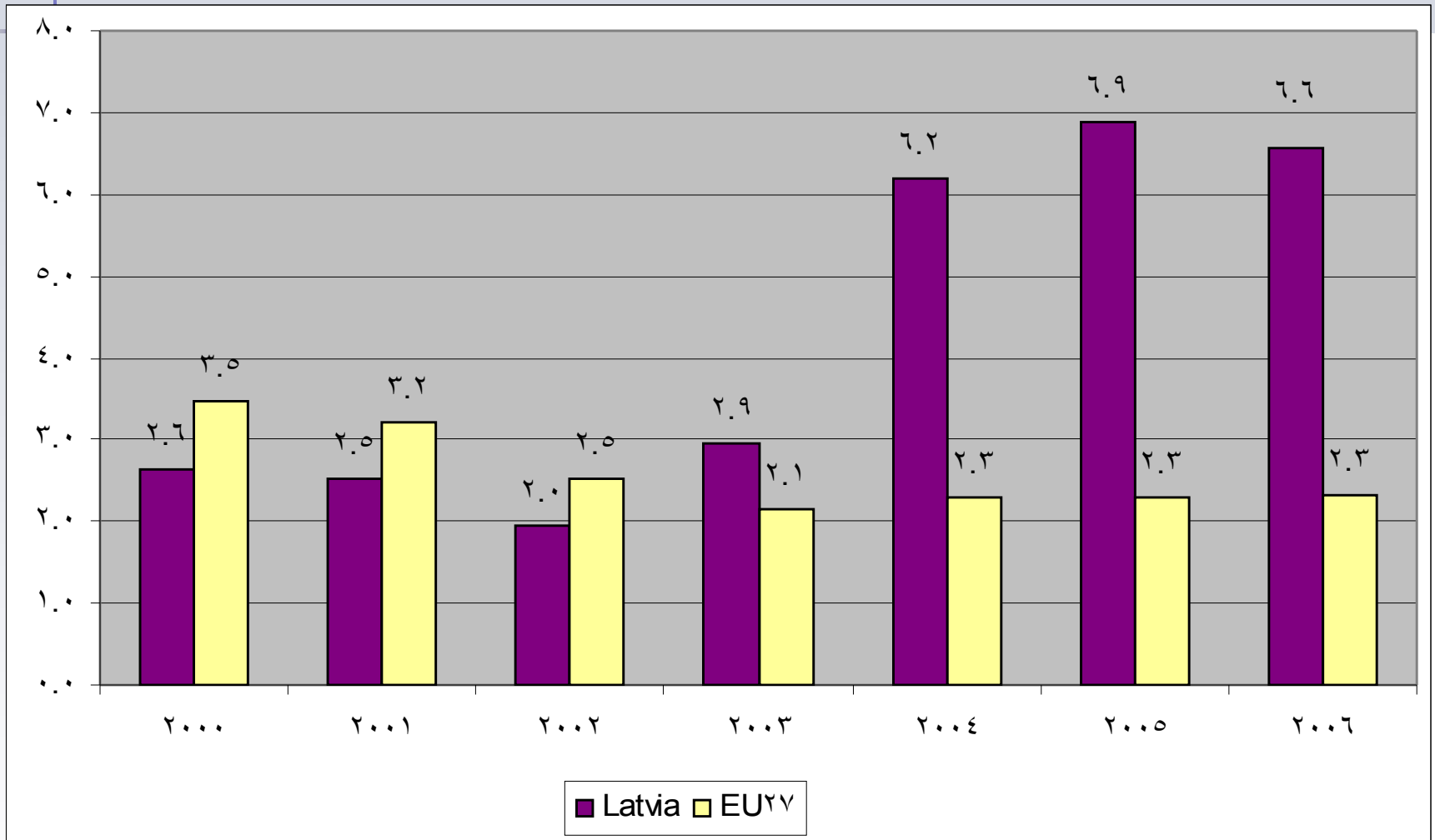
Harmonised annual average CPI in 2006 (%)



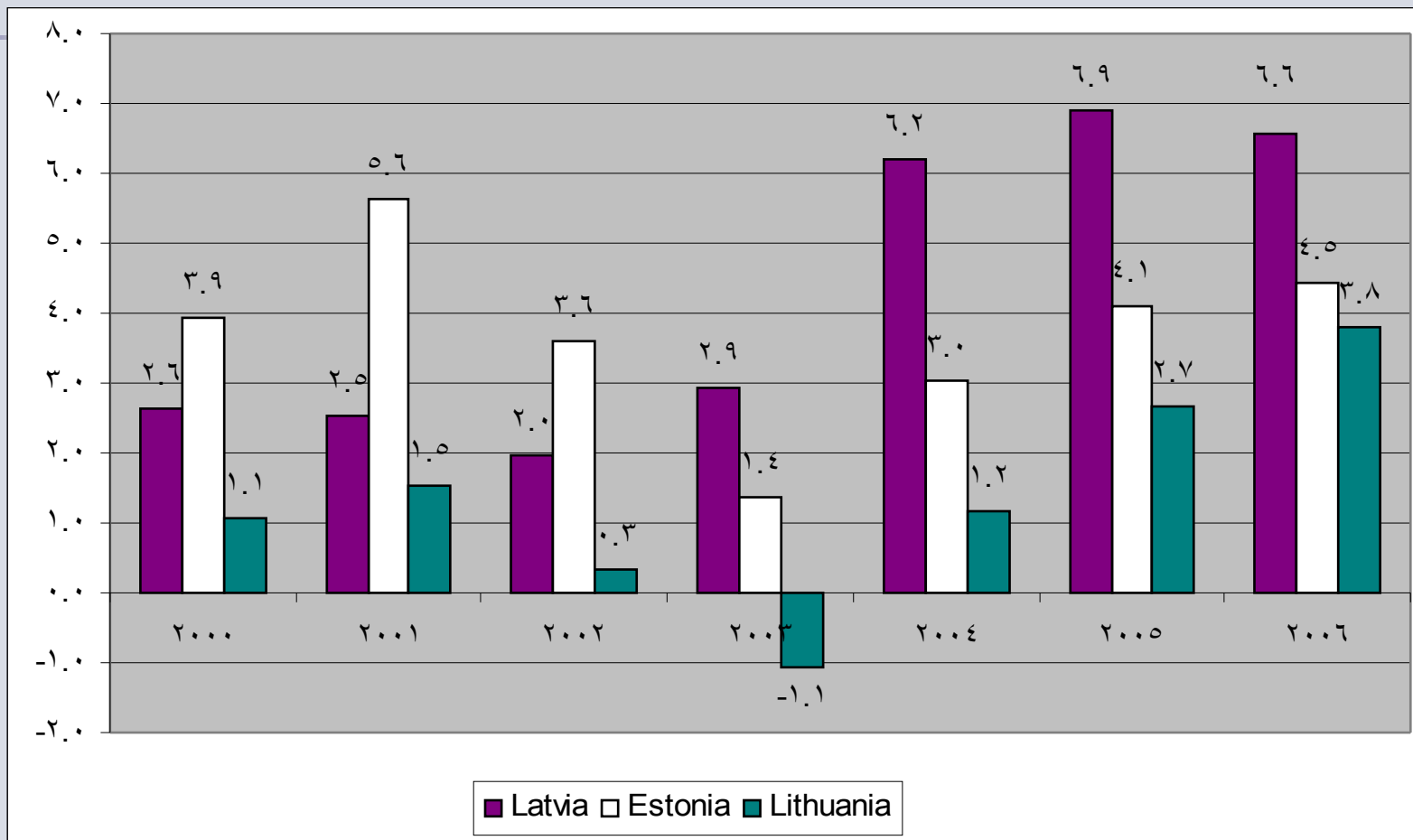
HCPI in Latvia (%)



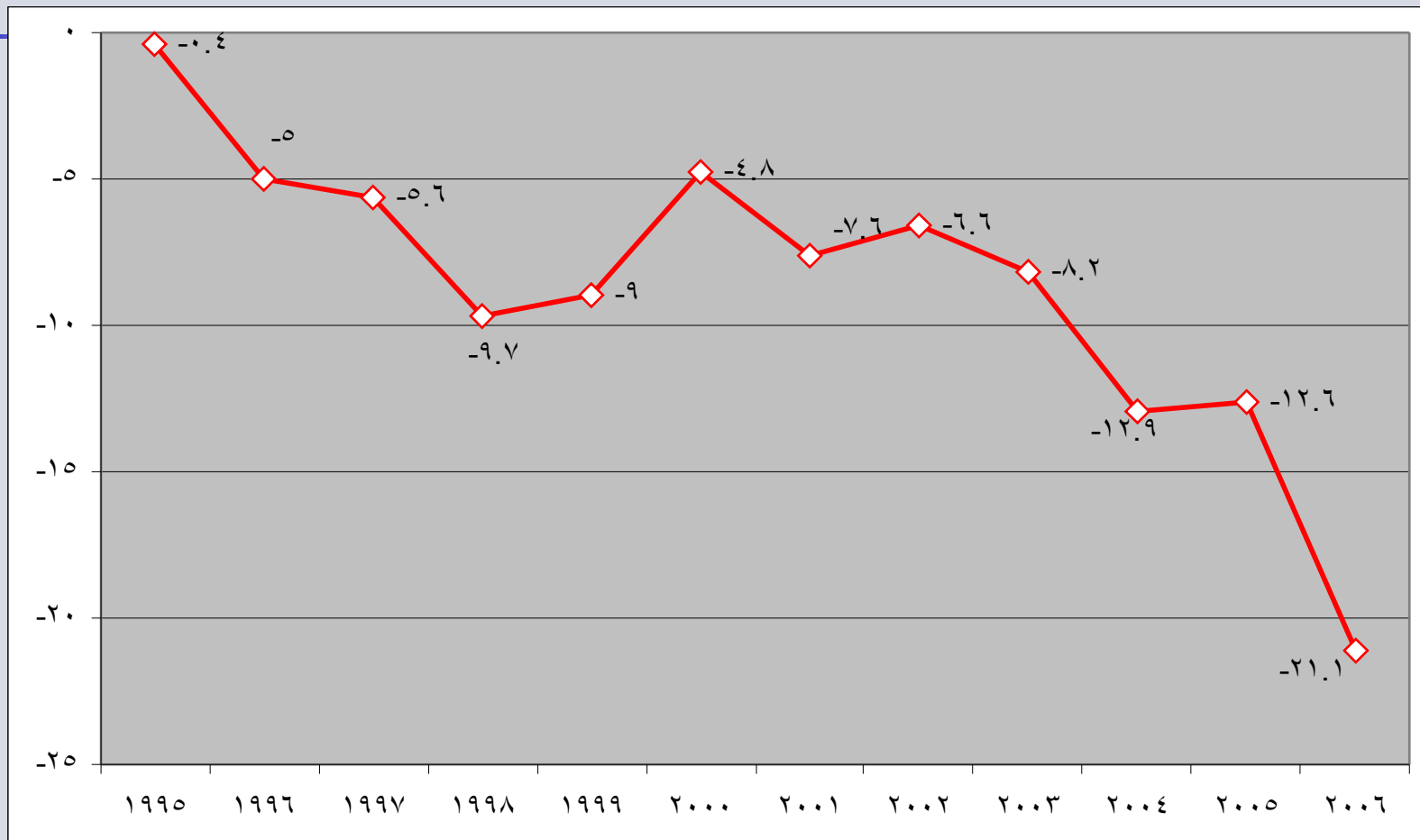
HCPI in Latvia and EU27 countries (%)



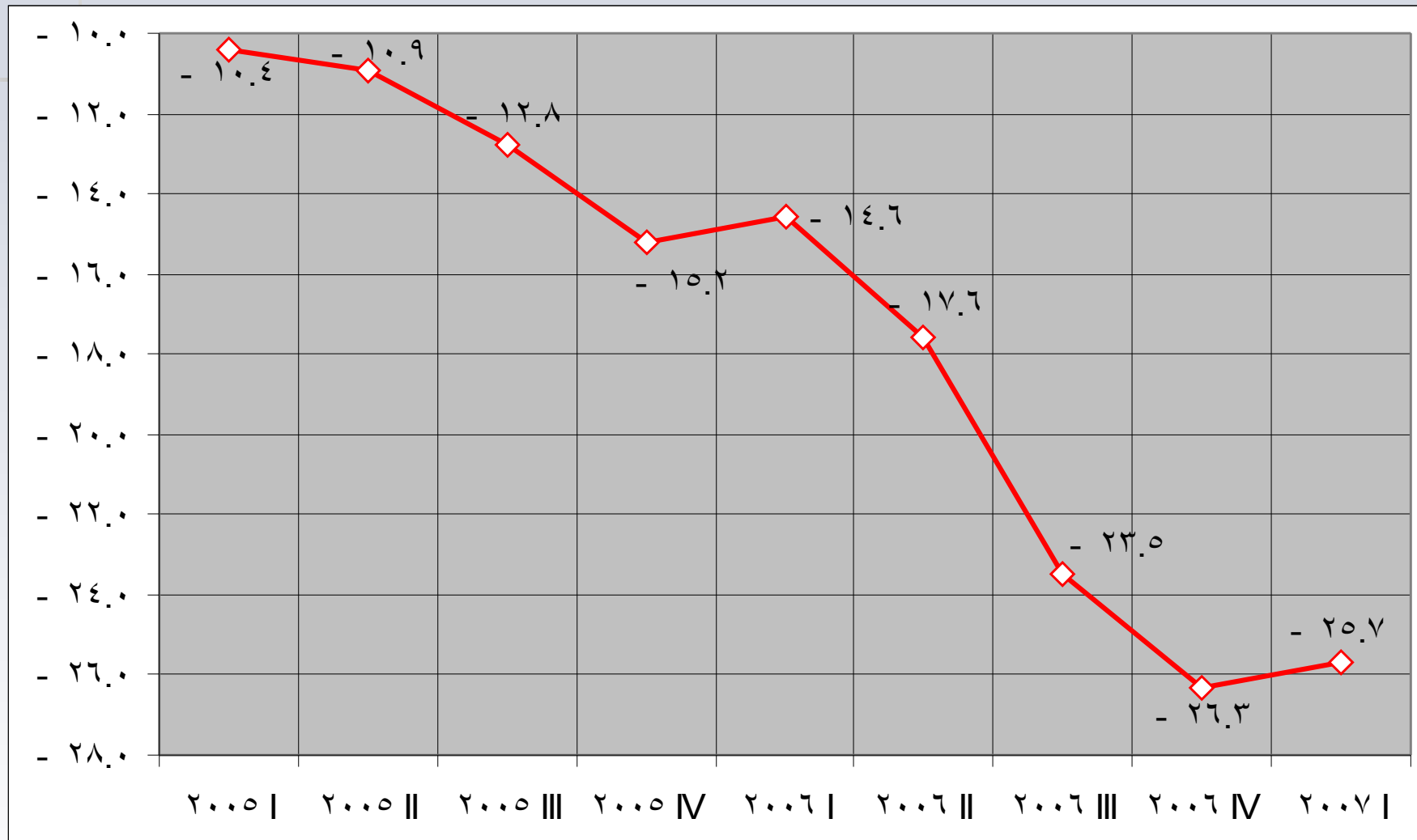
HCPI in the Baltic states (%)



Balance of the current account in Latvia (% of GDP)



Balance of the current account (quarterly data) (% of GDP)



- Latvian economy experiences rocketing growth rates, and some industries develop even faster. In 2006, the fastest growing industries (regarding the NACE classification's groups) were
 - real estate (K) (17.4%),
 - wholesale and retail trade (G) (17.4%),
 - financial intermediation (J) (15.4%),
 - and construction (F) (13.6%).
- However, the products producing industry - manufacturing grew only by 6.2%, and it was one of the lowest growth rates.

Gross domestic product by kind of activity (growth rate)

	२००१	२००२	२००३	२००४	२००५	२००६
TOTAL	१.०८०	१.०६०	१.०७२	१.०८७	१.१०६	१.११९
Agriculture, hunting and forestry (A)	१.०८२	१.००६	१.०००	१.०३२	१.०९०	१.०००
Fishing (B)	०.८०६	०.८७६	०.००९	१.०९१	१.००६	०.९०८
Mining and quarrying (C)	१.६७९	१.२१३	१.२८७	१.११०	१.३१०	१.०९६
Manufacturing (D)	१.१०२	१.०८९	१.०६०	१.०६७	१.००९	१.०६२
Electricity, gas and water supply (E)	१.००८	१.०६३	१.०६६	१.०००	१.०१८	१.०६०
Construction (F)	१.०६१	१.१०८	१.१३७	१.१३३	१.१००	१.१३६
Wholesale, retail trade; repair of motor vehicles, motorcycles, personal, household goods (G)	१.१०६	१.१२७	१.१००	१.१२६	१.१७६	१.१७६
Hotels and restaurants (H)	१.१३७	०.९९८	१.२००	१.१६६	१.१६६	१.१६३
Transport, storage and communications (I)	१.०९०	१.०३६	१.०८९	१.१०१	१.१३७	१.०९३
Financial intermediation (J)	१.०७३	१.००१	१.०३३	१.०८३	१.११६	१.१०६
Real estate, renting and business activities (K)	१.१३९	१.००७	१.०६७	०.३६०	३.०१०	१.१७६
Public administration and defence; compulsory social security (L)	१.०२७	१.०३०	१.०२०	१.०६६	१.०६२	१.००२
Education (M)	१.०१२	१.०१३	१.०६६	१.०२०	१.०६१	१.०३६
Health and social work (N)	०.९९९	१.०१३	१.०३३	१.०२२	१.०२१	१.०३९
Other community, social and personal service activities (O)	१.०३०	१.०६६	१.०६९	१.०८०	१.०९१	१.१६६

- In 2006, fishing and agriculture, including forestry, didn't share the value added increase tendency as the rest of the economy. Despite the increase in subsidies and new market opportunities, agriculture loses its positions year-by-year.
- Since 2000, the structure of the national economy also has changed. The share of the service industries (G-O) had continued to increase and, in 2006, it was 74.8%. During this time period, the share of wholesale and retail trade increased faster –by 4.1 percent point and, in 2006, it was 20.9%.

Structure of value added by kind of activity (%)

	2000	2001	2002	2003	2004	2005	2006
TOTAL	100	100	100	100	100	100	100
Agriculture, hunting and forestry (A)	4.3	4.3	4.4	4.0	4.3	3.8	3.6
Fishing (B)	0.4	0.3	0.2	0.1	0.1	0.1	0.1
Mining and quarrying (C)	0.1	0.2	0.2	0.3	0.3	0.3	0.3
Manufacturing (D)	13.7	13.9	13.7	13.3	13.2	12.6	11.8
Electricity, gas and water supply (E)	3.6	3.4	3.3	3.2	3.0	2.5	2.5
Construction (F)	6.1	5.6	5.5	5.6	5.8	6.1	6.8
Wholesale, retail trade; repair of motor vehicles, motorcycles, personal, household goods (G)	16.8	17.4	17.8	17.9	18.9	20.1	20.9
Hotels and restaurants (H)	1.1	1.2	1.2	1.4	1.6	1.7	1.8
Transport, storage and communications (I)	14.0	15.3	15.2	15.3	14.8	13.9	13.0
Financial intermediation (J)	4.9	4.4	5.0	4.9	5.1	6.0	6.2
Real estate, renting and business activities (K)	14.0	14.0	13.9	13.7	13.8	14.2	14.8
Public administration and defence; compulsory social security (L)	8.2	7.8	7.9	7.8	7.1	6.9	6.6
Education (M)	5.3	5.1	4.9	5.6	5.2	4.8	4.4
Health and social work (N)	3.4	3.2	3.0	3.0	2.9	3.0	3.1
Other community, social and personal service activities (O)	4.1	3.9	3.8	3.9	3.9	3.9	4.0

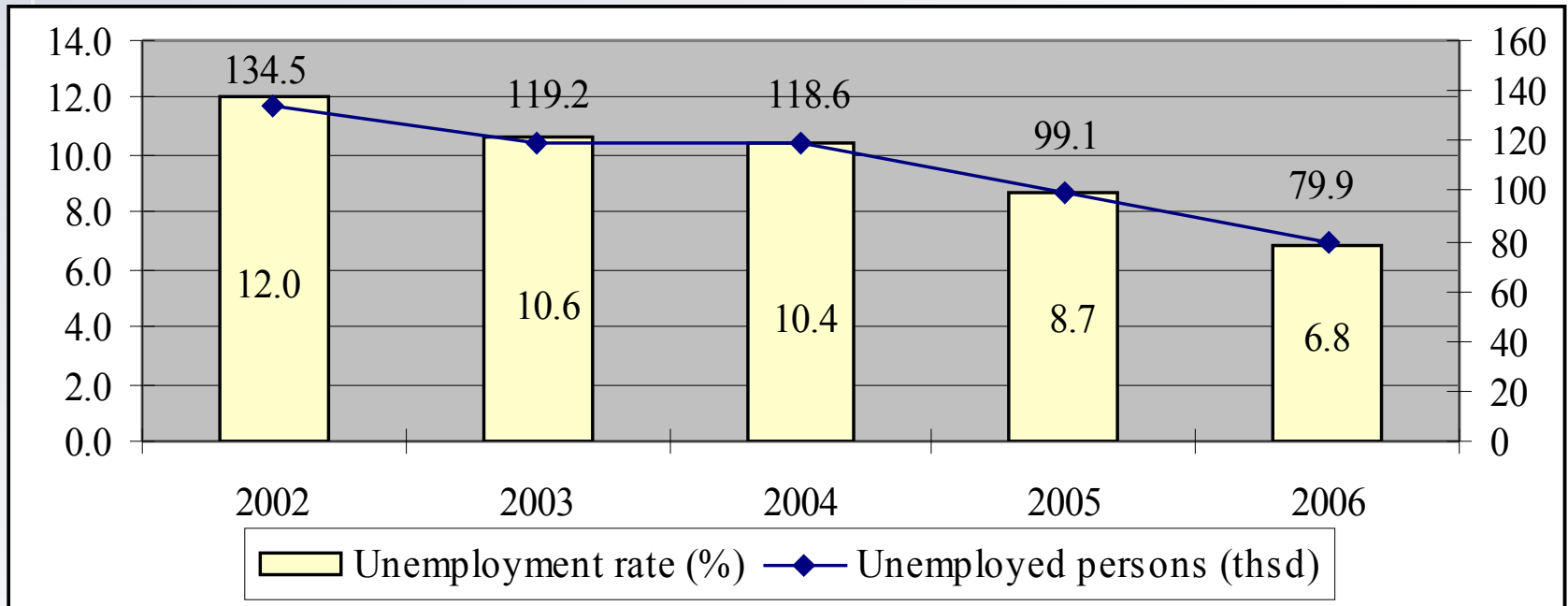
- Manufacturing sector had lost a part of its share in the economy even despite its annual positive and considerably high growth rates. Manufacturing growth rates are considerably high in comparison with the average EU rates, but they are lower the average growth rate of the total nation economy of Latvia. During the past years, the share of manufacturing had decreased by 1.9 percent point and, in 2006, it was below 12 percent.
- Employment trends represent the growing need for labour force, and, since 2000, the number of employed persons has increased on average by 2.4% every year. The sharpest increase was observable in 2006 – by 5.0% (see Table 3).

Employed persons by kind of activity (thsd)

	2000	2001	2002	2003	2004	2005	2006
TOTAL	941	962	989	1 007	1 018	1 036	1 088
Agriculture, hunting and forestry (A)	134	143	147	135	132	122	118
Fishing (B)	2	2	6	3	2	3	2
mining and quarrying (C)	2	2	3	2	2	2	4
manufacturing (D)	170	166	167	174	163	154	170
electricity, gas and water supply (E)	21	19	22	22	25	23	22
Construction (F)	56	68	60	74	87	91	104
Wholesale, retail trade; repair of motor vehicles, motorcycles, personal, household goods (G)	145	151	148	153	151	158	170
Hotels and restaurants (H)	22	22	24	25	26	28	29
Transport, storage and telecommunication (I)	79	78	86	95	96	95	101
Financial intermediation (J)	12	14	13	16	18	20	25
Real estate, renting and business activities (K)	45	41	39	42	40	49	61
Public administration and defence; compulsory social security (L)	71	68	68	67	73	82	88
Education (M)	87	88	88	79	83	91	88
Health and social work (N)	48	50	60	59	54	58	51
Other community, social and personal service (O)	44	49	53	57	60	58	49

- Unemployment rate and number of unemployed persons are the indicators that illustrate the changes demand for labour force. Due to the high economic growth the demand for labour force has significantly increased and since 2002 the unemployment rate has shrunk almost double—from 12.0% in 2002 to 6.8% in 2006.

Unemployment indicators



- Exports and imports of goods and services have grown by high rates, however the ratio of exports on GDP has grown a bit – from 41.6% of GDP in 2000 to 44.2% of GDP in 2006,
- Imports on GDP has grown dramatically – from 48.7% to 64.4%.
- As a result, the foreign trade deficit also has increased dramatically.

- Latvian multisectoral macroeconomic model is based on the INFORUM philosophy, based on the input-output accounting principles and identities, integrated bottom-up approach.
- INFORUM software.
- The model is under construction, and there are significant achievements, improvement, upgrade in comparison with the model's stage and condition in last year.

- As the model development process encounters with a number of problems regarding data endowment and availability, structural changes in the economy, future perspectives and experts' estimation etc. Many issues are still very painful and require an appropriate solution.

- Sectoral disaggregation is based on the NACE classification (two signs level) with some exceptions. Mining and quarrying sector (C group) is presented by two branches – coal and peat mining (C10) and aggregated other mining and quarrying industry (C11-C14).
- Number of branches: 55

- Additional disaggregation is not performed, at the moment. However, several initiatives\ideas concerning the **energy sector, construction, financial intermediation, real estate** and some other industries are being considered as potential model elements.
- Time horizon: till 2020.

- Results and problems

- The forecasts generated by the model illustrated the potential development pace of the Latvian economy in long-run. Taking into account the structural and sectoral changes and shifts in the economy, the model is developed and used more like an indicative instrument that disclosed the potential future levels and problems.
- At the current stage, the model results must be comprehended reservedly and sceptically.
- As the model encounters many branches, some of them perform illogically and they demand close investigation and examination, especially the branches that have developed very sharply during the past years and the trends and experts believe this growth will continue.

- Base modelling scenarios has been developed. It represents the potential sectoral and total developed till 2020. The base-scenario illustrates the economical development within the present and provisional trends and shifts. It is neither optimistic nor pessimistic.

- Most of the branches perform according to pre-simulation assumptions, however there are some branches that perform in a quite weird or questionable manner. It requires detailed analysis to dispart scenario assumption mistakes or slips from fundamental and model-size errors or problems.

Output growth rates forecasts by branch

	Code	Shortened description	2007-2010	2011-2015	2016-2020	2007-2020
1	A 01	AgriProd	1.046	1.036	1.030	1.037
2	A 02	ForestProd	1.111	1.083	1.068	1.085
3	B 05	Fish	1.053	1.038	1.029	1.039
4	C 10	CoalPeat	1.109	1.106	1.099	1.105
5	C 11- C 14	OthMining	1.109	1.106	1.099	1.105
6	D 15	FoodBever	1.053	1.044	1.034	1.043
7	D 16	Tobacco	1.134	1.089	1.066	1.093
8	D 17	Textiles	1.109	1.078	1.060	1.080
9	D 18	Clothing	1.093	1.068	1.054	1.070
10	D 19	Leather	1.148	1.100	1.074	1.104
11	D 20	Wood	1.080	1.060	1.047	1.061
12	D 21	PulpPaper	1.096	1.070	1.055	1.072
13	D 22	PrintRecor	1.091	1.071	1.057	1.072
14	D 23	Coke	1.058	1.048	1.045	1.050
15	D 24	Chemicals	1.062	1.055	1.048	1.054
16	D 25	RubPlast	1.064	1.062	1.062	1.063
17	D 26	OthNMetPro	1.071	1.064	1.059	1.064
18	D 27	BasicMet	1.081	1.068	1.054	1.067
19	D 28	MetalProd	1.070	1.067	1.064	1.067

Output growth rates forecasts by branch (continued)

20	D 29	MachEquipm	1.090	1.077	1.070	1.078
21	D 30	MachOffice	1.086	1.077	1.072	1.078
22	D 31	MachElectr	1.079	1.065	1.056	1.066
23	D 32	CommEquipm	1.097	1.080	1.071	1.082
24	D 33	MedOptInst	1.083	1.066	1.056	1.067
25	D 34	Vehicles	1.279	1.174	1.129	1.187
26	D 35	OthTransp	1.099	1.073	1.060	1.076
27	D 36	FurnitOhte	1.087	1.068	1.061	1.071
28	D 37	SecRawMate	1.065	1.056	1.047	1.055
29	E 40	EIEnergyGa	1.048	1.048	1.047	1.048
30	E 41	Water	1.090	1.097	1.094	1.094
31	F 45	Construct	1.069	1.067	1.065	1.067
32	G 50	VehRepairS	1.064	1.051	1.042	1.051
33	G 51	WholesaleT	1.041	1.037	1.034	1.037
34	G 52	RetailTrS	1.023	1.023	1.022	1.023
35	H 55	HotelRstnt	1.059	1.047	1.038	1.047
36	I 60	LandTransp	1.052	1.044	1.037	1.044
37	I 61	WatTranspS	1.252	1.118	1.073	1.138
38	I 62	AirTranspS	1.082	1.061	1.048	1.062
39	I 63	SuppTransp	1.031	1.029	1.026	1.029
40	I 64	PostTlcmS	1.054	1.046	1.040	1.046
41	J 65	FinIntermS	1.047	1.043	1.040	1.043

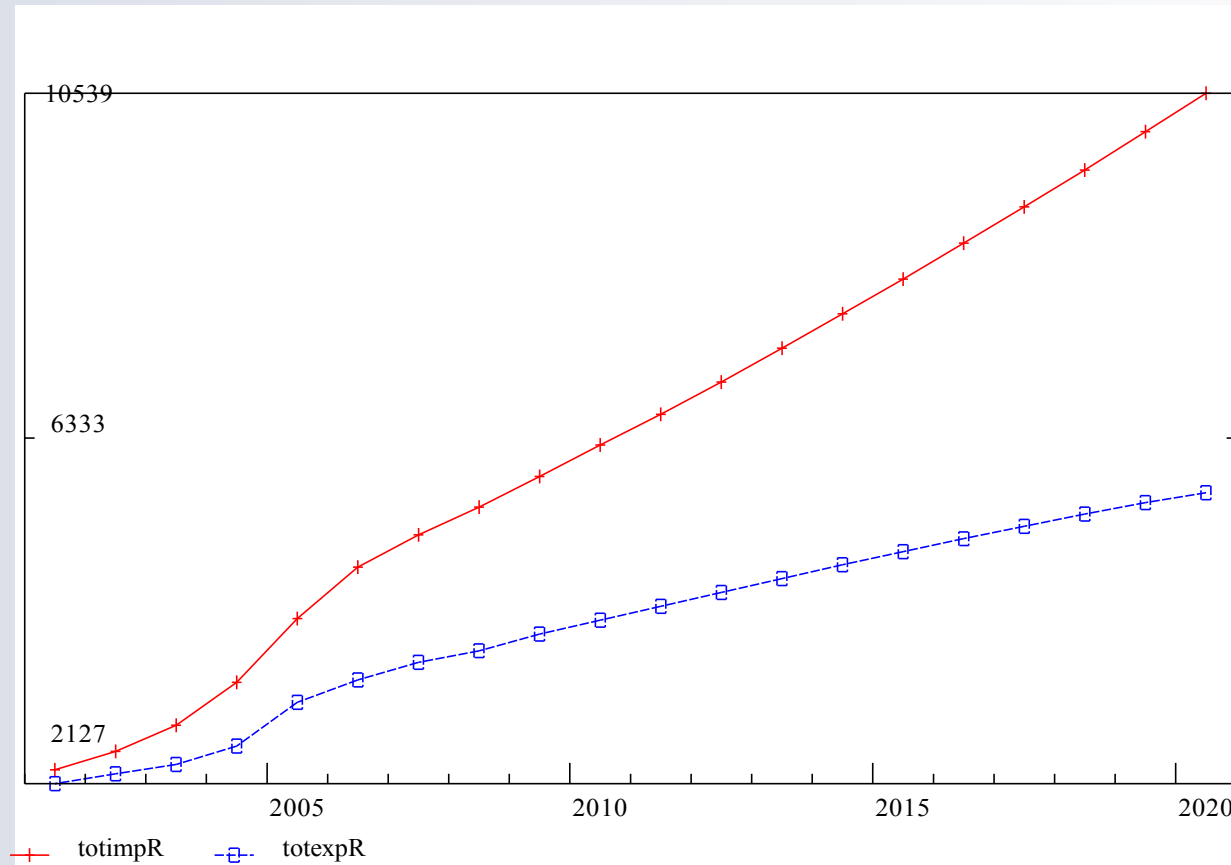
Output growth rates forecasts by branch (continued)

42	J 66	InsuranceS	1.063	1.054	1.047	1.054
43	J 67	AuxFinIntS	1.052	1.041	1.032	1.041
44	K 70	RealEstate	1.033	1.034	1.036	1.035
45	K 71	MachRentS	1.074	1.071	1.067	1.070
46	K 72	ComputerS	1.067	1.062	1.059	1.062
47	K 73	ResearchS	1.063	1.052	1.045	1.052
48	K 74	OthBusinS	1.056	1.049	1.044	1.049
49	L 75	PublAdminS	1.029	1.029	1.029	1.029
50	M 80	EducationS	1.036	1.034	1.032	1.034
51	N 85	SocialS	1.042	1.038	1.035	1.038
52	O 90	RefuseDisp	1.055	1.067	1.073	1.066
53	O 91	MemberOr	1.089	1.068	1.056	1.070
54	O 92	RecrCultur	1.030	1.026	1.023	1.026
55	O 93	OtherServ	1.051	1.044	1.038	1.044
		Total	1.057	1.051	1.047	1.051

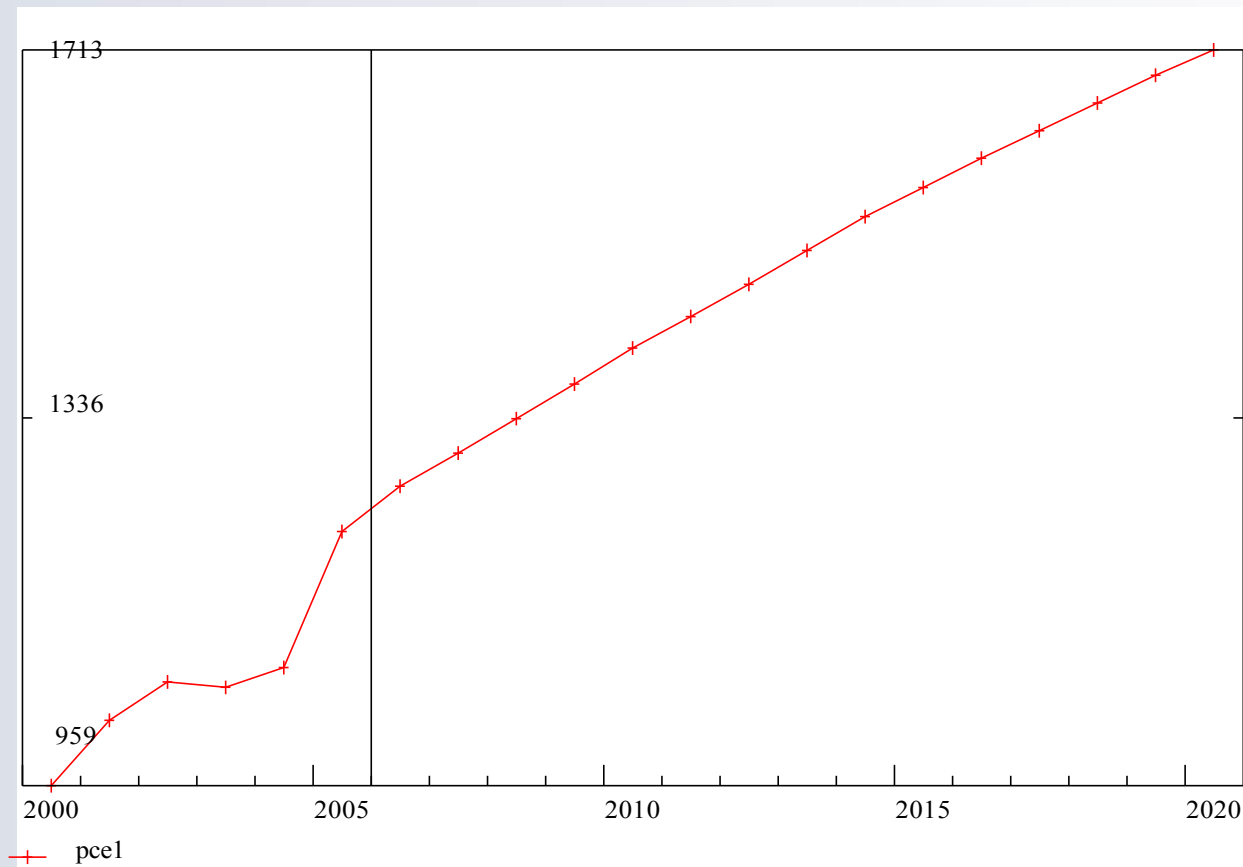
- Exports of goods forecasted on the bases of export indexes for Latvia computed by Grassini and Parve (presented at 14th INFORUM conference in Traunkirchen, Austria, and included in the conference materials).
- However, some modifications and extensions have been carried out because the model time horizon is longer. These activities are mainly carried out using the analysis of trends and experts evaluations.

- However, imports of goods and services are forecasted using the equations – imports shares equations that are integrate in the model. At the current stage, according to the models the imports behave too optimistic from the overseas point of view and very pessimistic from the domestic producers' positions.
- Regarding the forecasts the foreign trade deficit will continue to grow and it seems too dramatic and destructive for the domestic production. It requires also additional analysis and studies to estimate whether it is possible and how to improve the model.

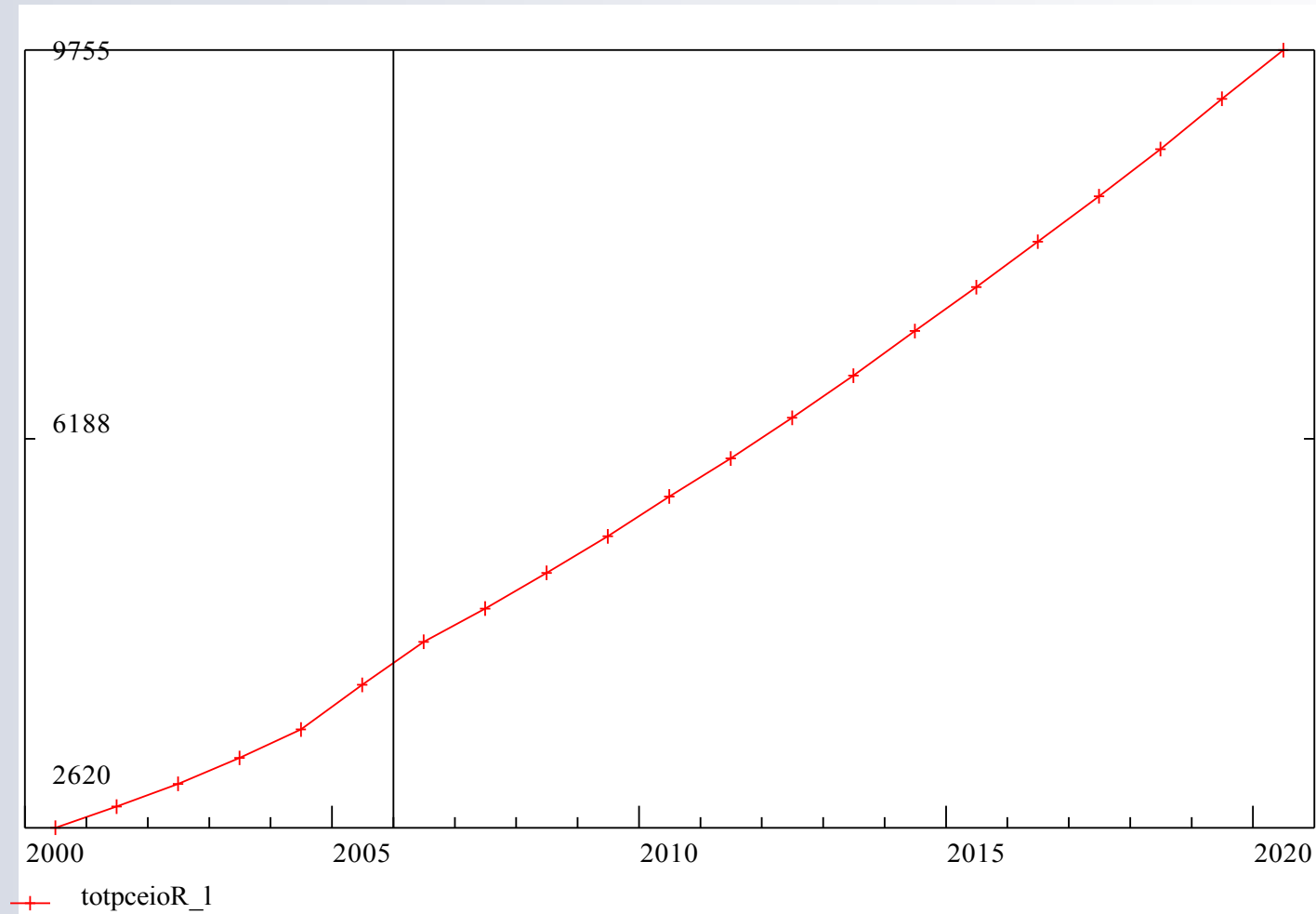
Imports and exports forecast, mln lats



Private consumption expenditure – Food and non-alcoholic drinks



Total private consumption expenditure



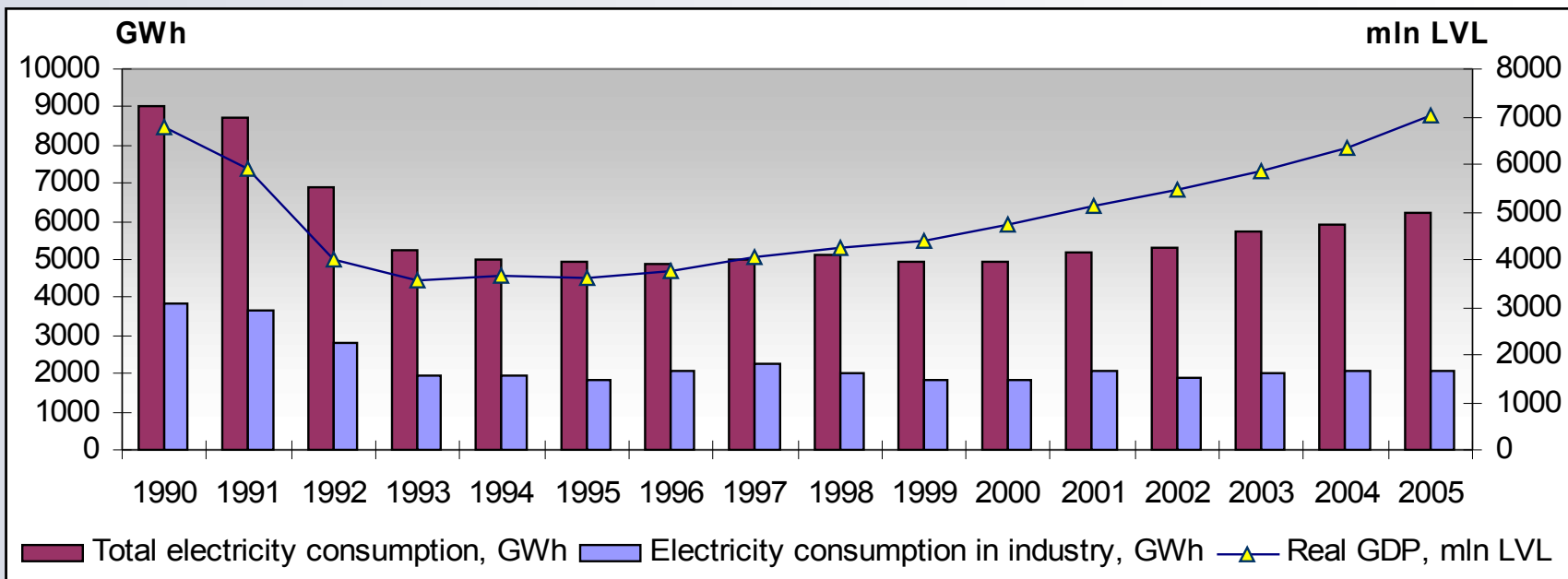
- The model included also the **employment** modelling options. At the present, employment is forecasted using the relation between output and productivity. However, productivity by branch are exogenous. This block also requires both detailed and diverse analysis of results and theoretical improvements. As a result, employment (in persons) mainly depends on output by branch.
- According to model's forecast the average annual growth rate of total employment is 1.2%, and in 2020 the total employment are forecasted to be 1 305 thsd persons. Analysing the structure of employed persons, the increase of the share of service sector stops and it will stabilize.

- There are **several problems** concerning the model's forecasts at the current stage.
- **Firstly**, the problems regarding the model's incompleteness, in other words, the results are weird or bizarre because of the structure, elements, coefficient values, etc. Mainly, it is observable in forecast of small and specific branches that perform differently from year to year and they had unusual stage\conditions and performance in the base year.

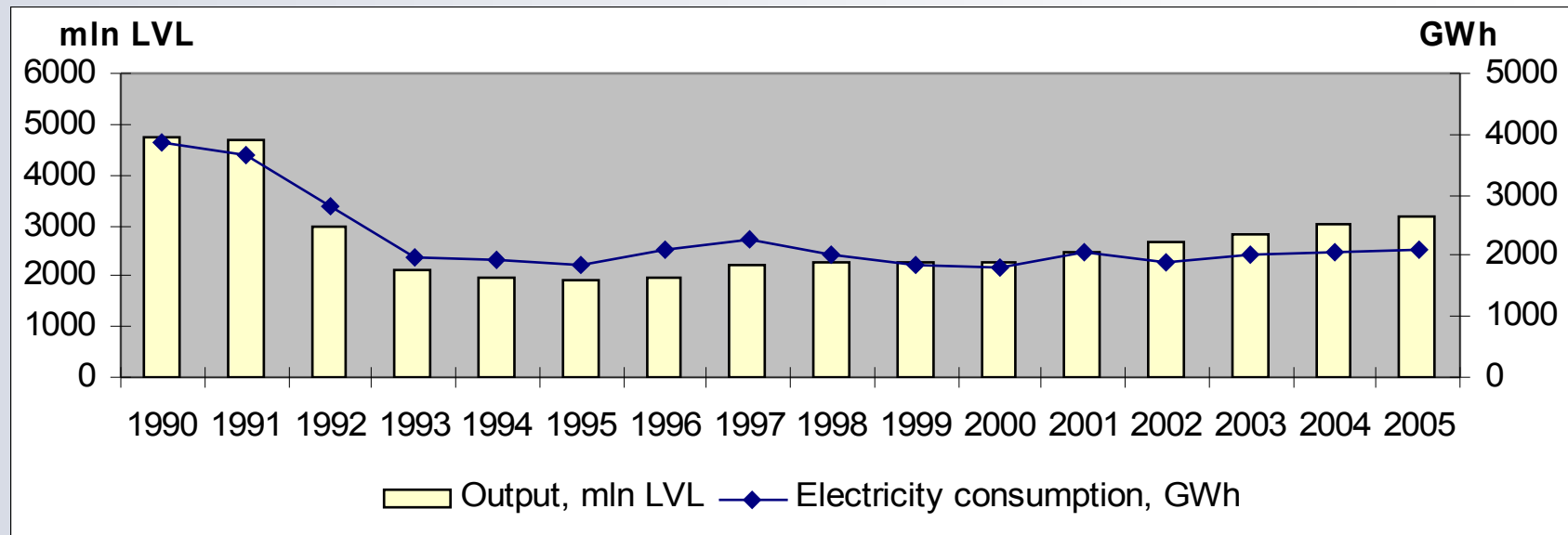
- **Secondly**, how effectively and fastly detect the above mentioned problems (bizarre behaviour without modellers' intentions) is one of the most painful problems and issues. Detection of these problems is the first step and it may shorter time period, but it is far more complicated task to find an appropriate solution.
- **Thirdly**, the model requires new input-output information. Some actions have been taken to elaborate a input-output table for 2005 for analytic needs and with lower level of disaggregation (26 industries instead of 55 industries).

**FORECASTING OF ELECTRICITY
DEMAND IN THE INDUSTRY
SECTOR USING LATVIAN
MULTISECTORAL MODEL**

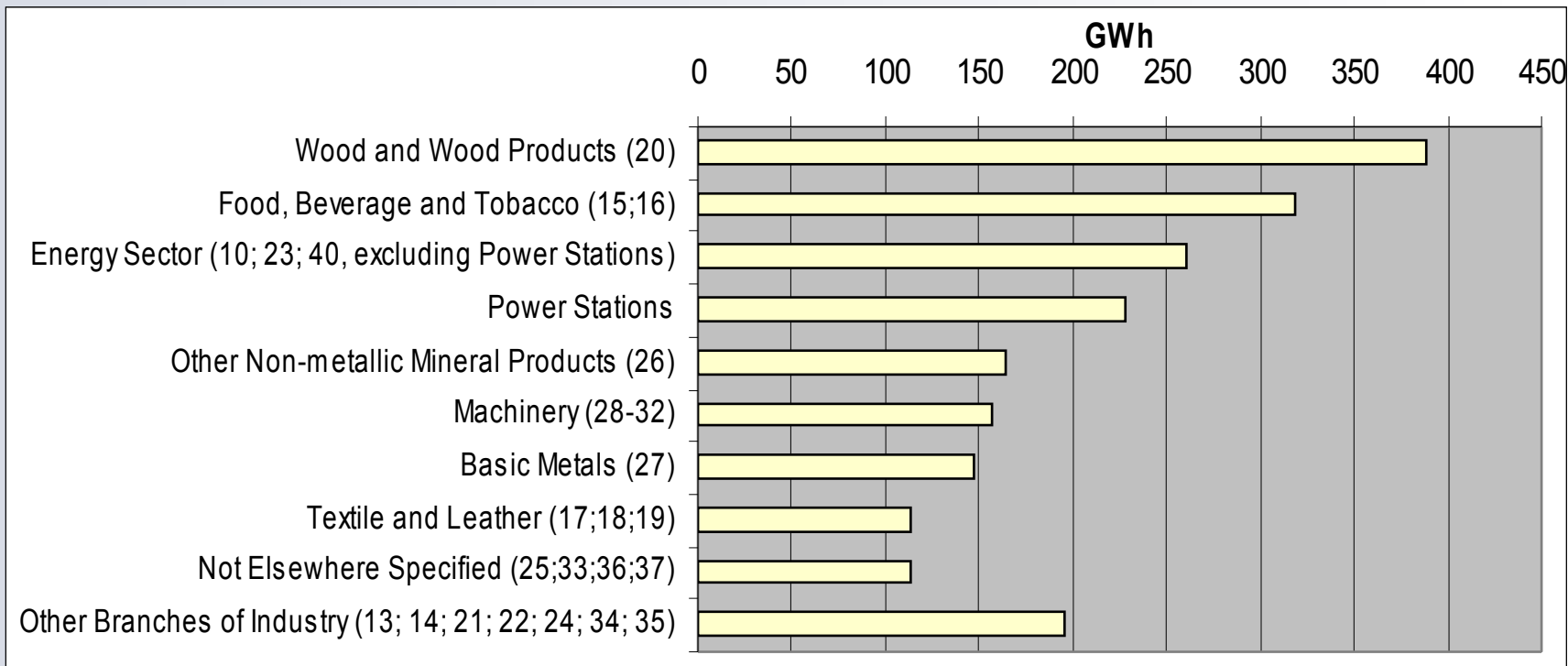
Dynamics of electricity consumption and GDP in Latvia



Electricity consumption and output in industry



Electricity consumption in the branches of industry in 2005



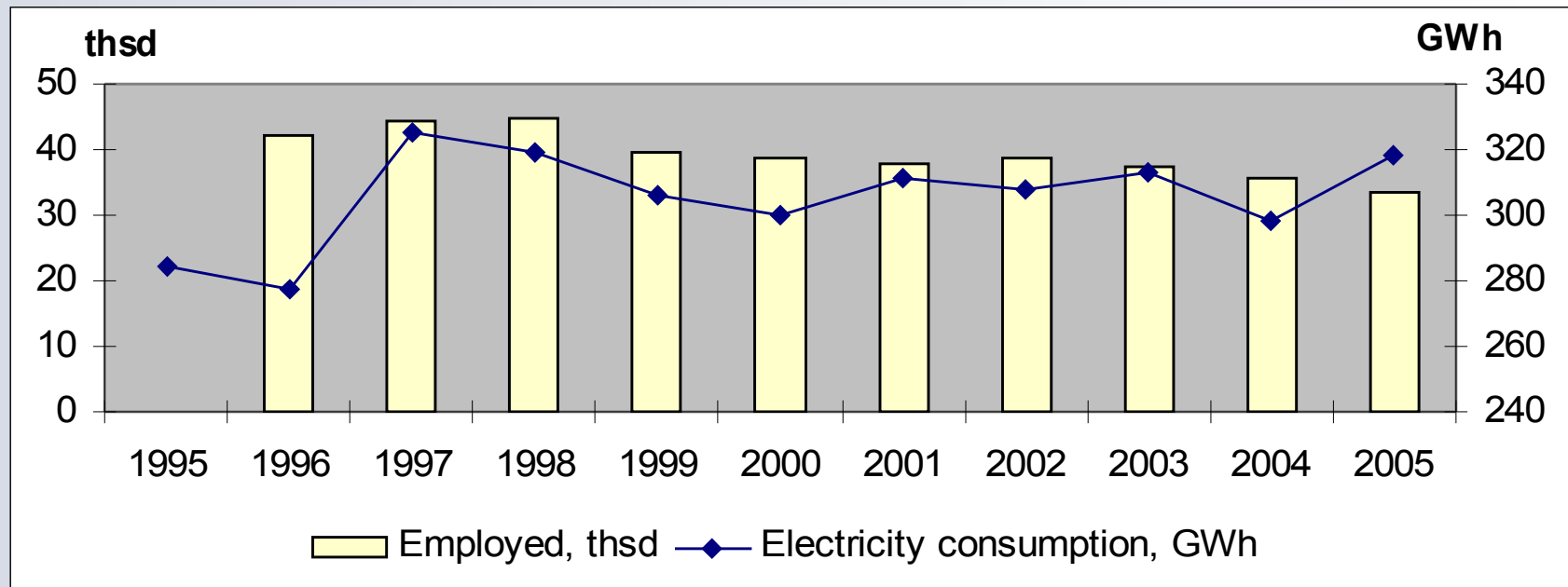
Coefficients of Electricity Consumption to Industrial Output in the Branches of Industry, kWh/LVL (at prices of 2000)

Branches of Industry	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Food, Beverage and Tobacco ^[1] (15-16)	0,656	0,574	0,590	0,597	0,640	0,612	0,594	0,560	0,543	0,483	0,490
Textile and Leather (17-19)	1,723	1,477	1,483	1,379	1,609	1,504	1,435	1,457	1,358	1,196	0,650
Wood and Wood Products (20)	1,054	0,869	0,796	0,773	0,807	0,812	0,843	0,720	0,690	0,721	0,760
Pulp, Paper and Printing (21; 22)	0,594	0,507	0,241	0,178	0,222	0,303	0,226	0,297	0,299	0,316	0,288
Chemical, incl. Petrochemical (24)	2,259	2,032	1,857	1,799	1,854	1,413	1,352	1,259	1,276	0,962	0,922
Other Non-metallic Mineral Products (26)	2,785	2,459	2,877	2,128	1,854	1,874	1,568	1,357	1,217	0,990	1,245
Iron and Steel (27)	3,330	2,102	1,870	1,961	2,376	2,243	2,123	2,217	1,698	1,620	1,442
Machinery ^[2] (28-32)	1,115	1,129	0,898	0,954	1,151	0,983	1,025	0,749	0,635	0,599	0,569
Transport Equipment (34; 35)	1,260	1,596	1,965	1,834	1,747	1,331	1,456	1,360	1,428	1,144	1,227

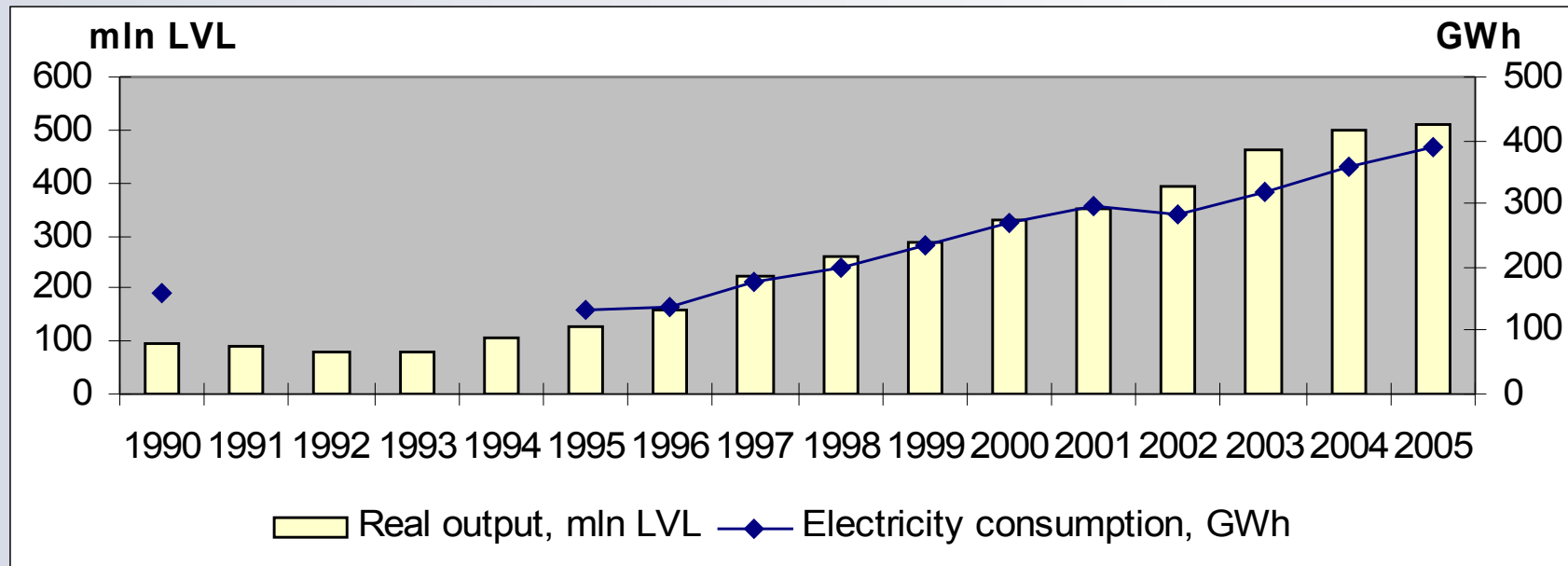
^[1] To industrial output in manufacture of food products and beverages (15)

^[2] Industrial output does not include manufacture of office machinery and equipment (30)

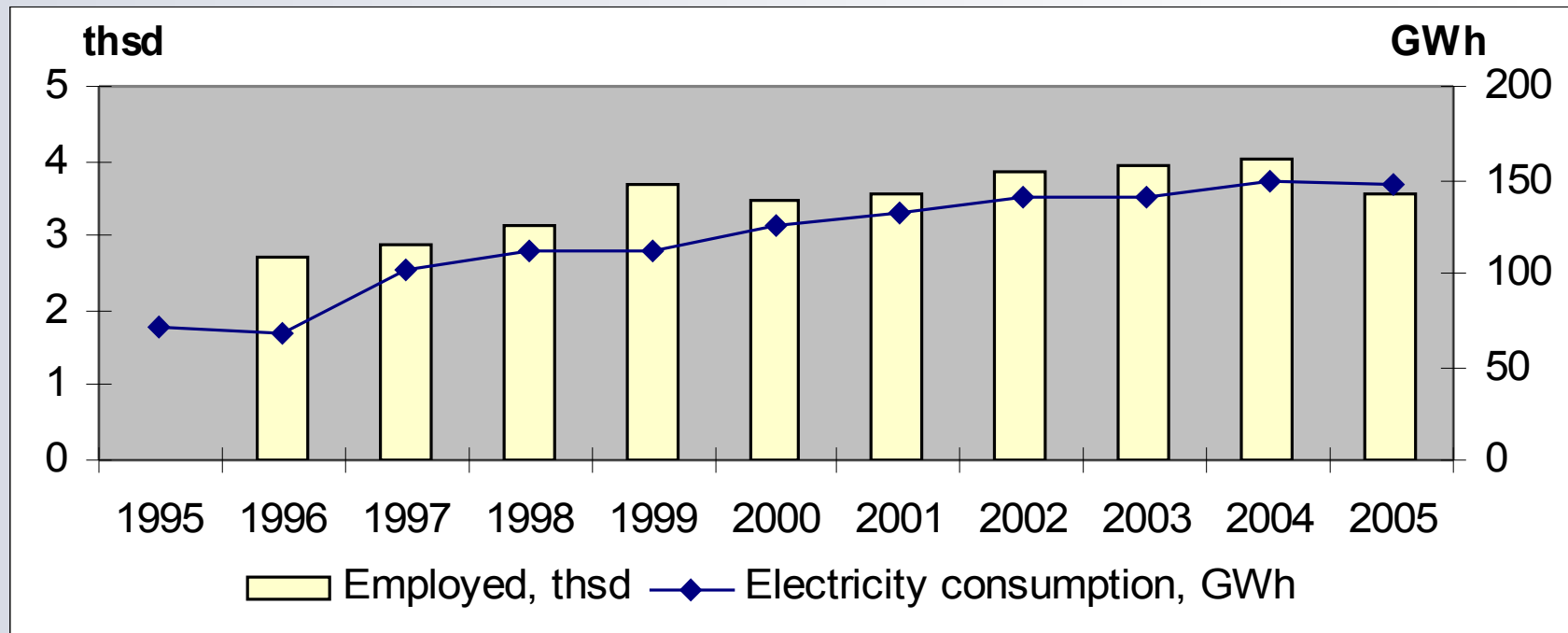
Indicators of manufacture of food products, beverages and tobacco products



Indicators of manufacture of wood and wood products



Indicators of manufacture of basic metals



Equations (1)

$$\text{elect_013} = 0.0781 \cdot \text{out_c} + 6.20 \quad (1)$$

(2.6) (7.4)

$$\text{elect_015} = 2.29 \cdot \text{empl_s015} + 219.01 + 22.32 \cdot \text{d_05} \quad (2)$$

(3.5) (8.4) (3.1)

$R^2 = 0.49$; DW = 1.85 [1997 – 2005],

$$\text{elect_017} = 375.25 \cdot \log(\text{empl_s017}) - 1042.52 \quad (3)$$

(7.1) (-5.9)

$R^2 = 0.70$; DW = 2.21 [1997 – 2005],

$$\text{elect_020} = 0.6432 \cdot \text{out_020} + 43.61 \quad (4)$$

(15.1) (3.5)

$R^2 = 0.91$; DW = 1.60 [1999 – 2005],

$$\text{elect_021} = -44.02 + 31.12 \cdot \log(t) \quad (5)$$

(-3.8) (6.7)

$R^2 = 0.97$; DW = 1.48 [1995 – 2005],

$R^2 = 0.87$; DW = 2.46 [1997 – 2005],

Equations (2)

$$\text{elect_024} = 1.44 \cdot \text{out_024} + 286.80 - 116.54 \cdot \log(t) \quad (6)$$

(11.4) (11.1) (-14.7)

$R^2 = 0.99$; DW = 2.21 [1995 – 2005],

$$\text{elect_026} = 1.17 \cdot \text{out_026} + 101.38 - 6.67 \cdot t \quad (7)$$

(4.2) (6.8) (-2.5)

$R^2 = 0.79$; DW = 2.11 [1995 – 2005],

$$\text{elect_027} = -791.78 \cdot (1/t) + 198.20 \quad (8)$$

(-12.8) (35.7)

$R^2 = 0.96$; DW = 2.29 [1997 – 2005],

$$\text{elect_028} = 0.3346 \cdot \text{out_s028} + 158.14 - 5.93 \cdot t \quad (9)$$

(3.4) (11.5) (-3.9)

$R^2 = 0.66$; DW = 2.33 [1995 – 2005],

$$\text{elect_034} = 0.5641 \cdot \text{out_s034} + 92.52 - 21.39 \cdot \log(t) \quad (10)$$

(5.3) (7.5) (-5.2)

$R^2 = 0.92$; DW = 2.02 [1995 – 2005],

Equations (3)

$$\text{elect_037} = 0.4160 \cdot \text{out_s037} + 27.97 \quad (11)$$

(7.7) (4.0)

$R^2 = 0.88$; DW = 1.56 [1996 – 2005],

$$\text{elect_010} = 21228.31 \cdot (1/t^2) + 184.77 \quad (12)$$

(5.2) (4.3)

$R^2 = 0.77$; DW = 2.36 [1996 – 2004],

$$\begin{aligned} d(\text{elect_energo}) = & 0.0088 \cdot d(\text{elect_r_tot}) - 3.80 - 83.14 \cdot d_{95} + \\ & (1.5) \qquad \qquad \qquad (-0.6) \quad (-3.9) \\ & + 83.80 \cdot d_{03} \qquad \qquad \qquad (13) \\ & (4.0) \end{aligned}$$

$R^2 = 0.79$; DW = 1.86 [1992 – 2005],

Conversion coefficients of industrial output indicators

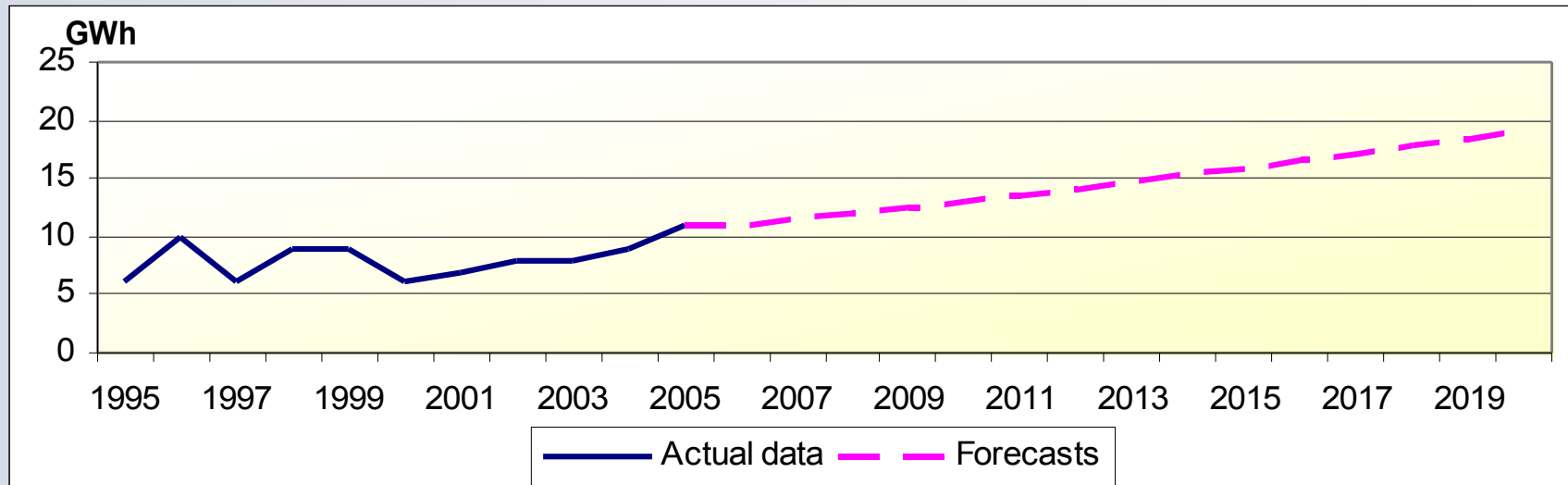
Branches of Industry	2000	2001	2002	2003	2004	2005
Manufacture of food products and beverages (D15)	0.917	0.753	0.764	0.797	0.829	0.792
Manufacture of textiles (D17)	0.916	0.769	0.667	0.631	0.560	0.520
Manufacture of wearing apparel; dressing and dyeing of fur (D18)	0.434	0.321	0.266	0.235	0.238	0.188
Manufacture of leather and leather products (D19)	0.613	0.168	0.127	0.105	0.125	0.114
Manufacture of wood and wood products (D20)	0.873	0.862	0.889	0.928	0.895	0.725
Manufacture of pulp, paper and paper products (D21)	0.769	0.724	0.709	0.651	0.565	0.513
Publishing, printing and reproduction of recorded media (D22)	0.881	0.913	0.808	0.819	0.814	0.781
Manufacture of chemicals and chemical products (D24)	0.835	0.537	0.544	0.511	0.559	0.571
Manufacture of rubber and plastic products (D25)	0.904	1.180	1.313	1.620	1.923	2.010
Manufacture of other non-metallic mineral products (D26)	0.704	0.753	0.839	0.888	0.921	0.961
Manufacture of fabricated metal products, except machinery and equipment (D28)	0.789	0.780	0.737	0.880	0.837	0.800
Manufacture of machinery and equipment not elsewhere specified (D29)	1.000	0.937	0.907	0.874	0.840	0.710
Manufacture of electrical machinery and apparatus (D31)	0.912	1.028	1.163	1.222	1.129	1.090
Manufacture of radio, television and communication equipment and apparatus (D32)	1.079	1.190	1.224	1.746	1.394	1.050
Manufacture of motor vehicles, trailers and semi-trailers (D34)	0.776	0.920	0.979	1.164	1.565	1.079
Manufacture of other transport equipment (D35)	0.946	0.576	0.494	0.397	0.331	0.295
Manufacture of furniture; manufacturing not elsewhere specified (D36)	0.948	0.889	0.885	0.773	0.724	0.596

Output Forecasts of the Branches of Industry (%)

Branches of Industry	2006-2010	2011-2015	2016-2020	2006-2020
Mining of coal and lignite; extraction of peat (C10)	14.3	8.6	6.9	9.9
Other mining and quarrying (C14)	4.8	3.5	3.0	3.8
Manufacture of food products and beverages (D15)	2.4	2.0	1.9	2.1
Manufacture of tobacco products (D16)	4.1	4.5	2.8	3.8
Manufacture of textiles (D17)	10.8	8.1	6.9	8.6
Manufacture of wearing apparel; dressing and dyeing of fur (D18)	8.0	6.7	6.0	6.9
Manufacture of leather and leather products (D19)	4.0	3.6	2.7	3.5
Manufacture of wood and wood products (D20)	10.1	7.9	7.4	8.4
Manufacture of pulp, paper and paper products (D21)	8.9	7.0	6.0	7.3
Publishing, printing and reproduction of recorded media (D22)	9.9	7.5	6.2	7.9
Manufacture of coke, refined petroleum products and nuclear fuel (D23)	4.6	3.6	3.4	3.9
Manufacture of chemicals and chemical products (D24)	5.1	4.5	4.5	4.7
Manufacture of rubber and plastic products (D25)	8.2	6.3	5.8	6.8
Manufacture of other non-metallic mineral products (D26)	8.2	6.2	6.0	6.8
Manufacture of basic metals (27)	9.4	7.2	6.8	7.8
Manufacture of fabricated metal products, except machinery and equipment (D28)	8.1	6.2	5.9	6.7
Manufacture of machinery and equipment not elsewhere specified (D29)	8.6	6.2	5.8	6.8
Manufacture of office machinery and computers (D30)	8.0	5.5	5.1	6.2

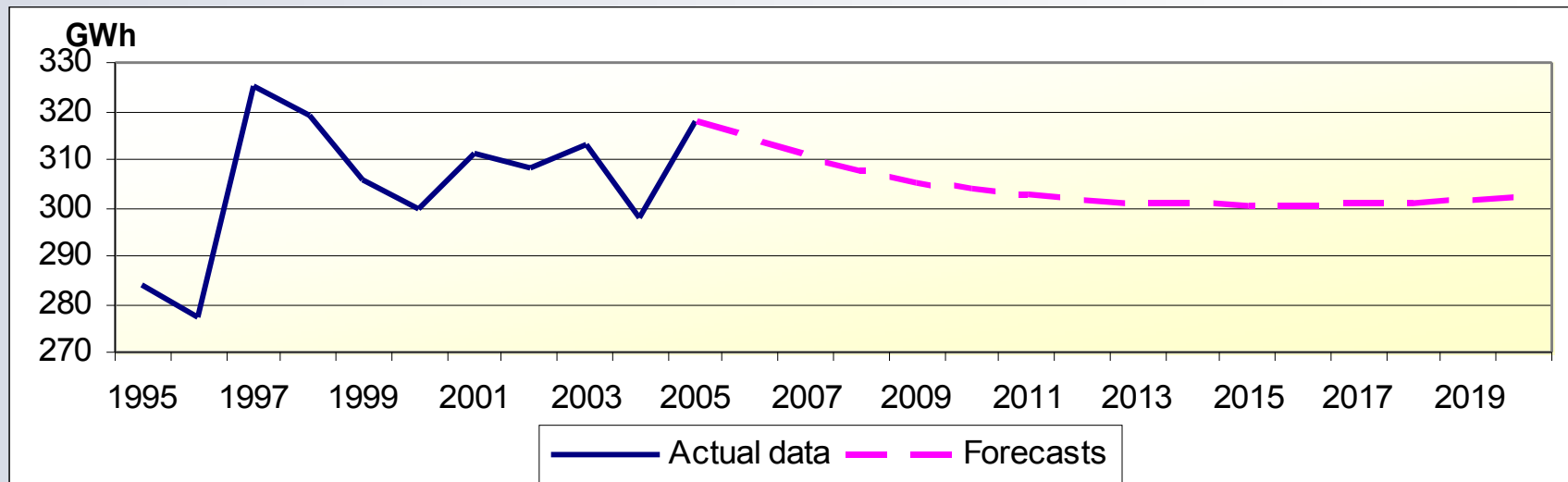
Forecasts of electricity consumption

■ Mining and quarrying



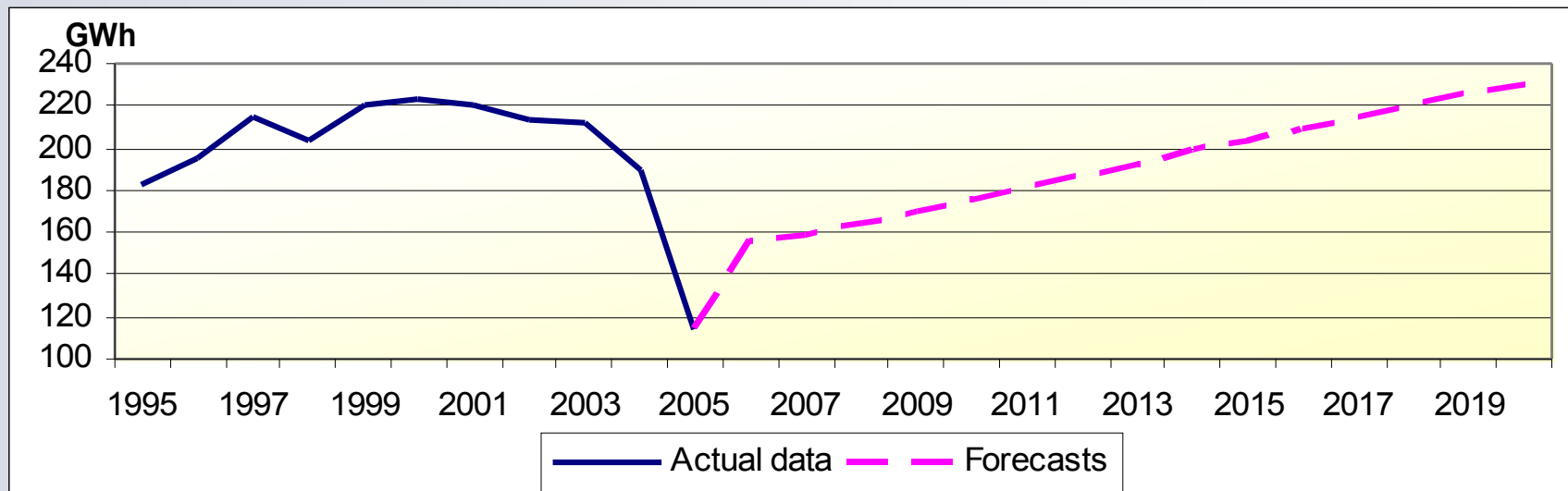
Forecasts of electricity consumption

- Manufacture of food products, beverages and tobacco products



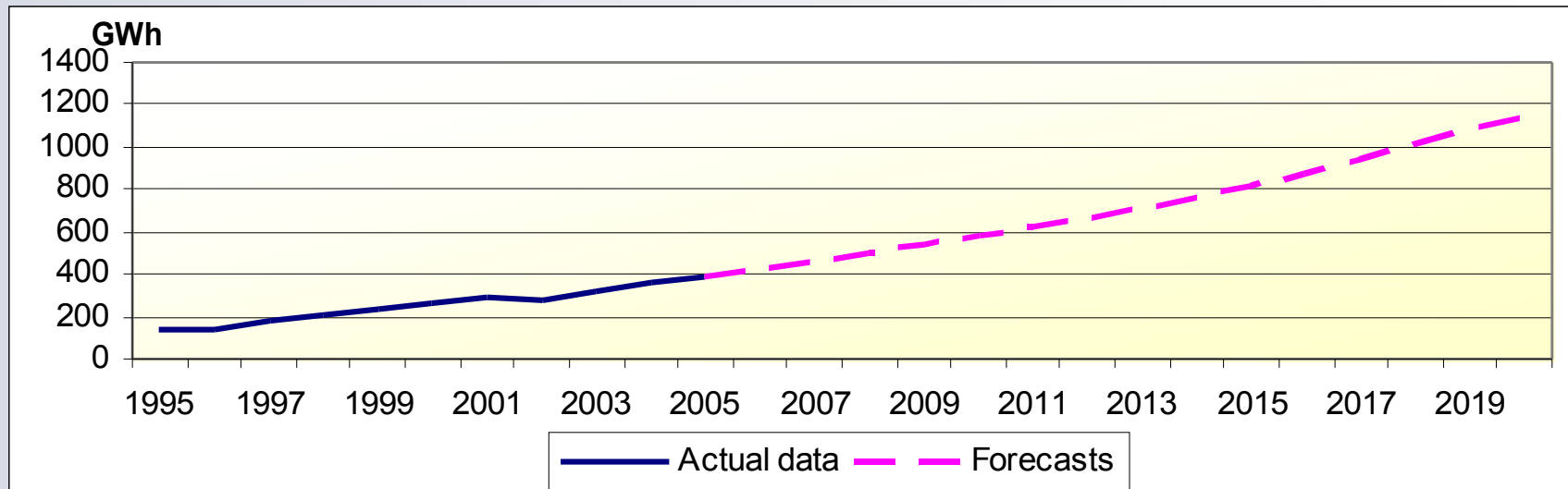
Forecasts of electricity consumption

■ Manufacture of textiles and leather



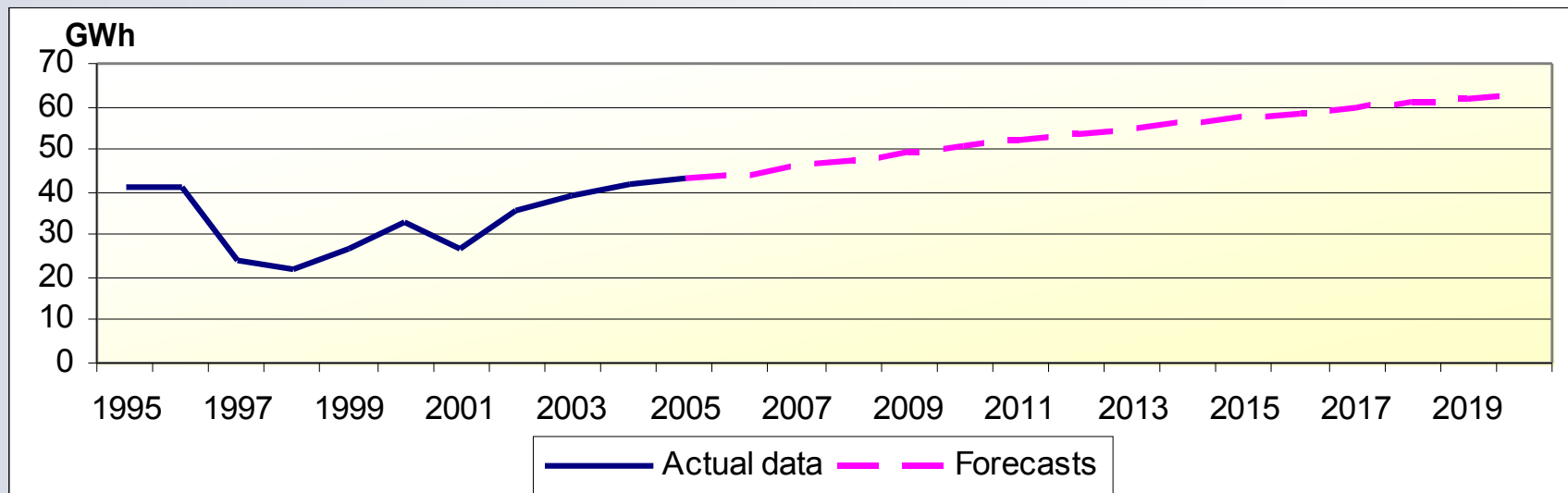
Forecasts of electricity consumption

- Manufacture of wood and wood products



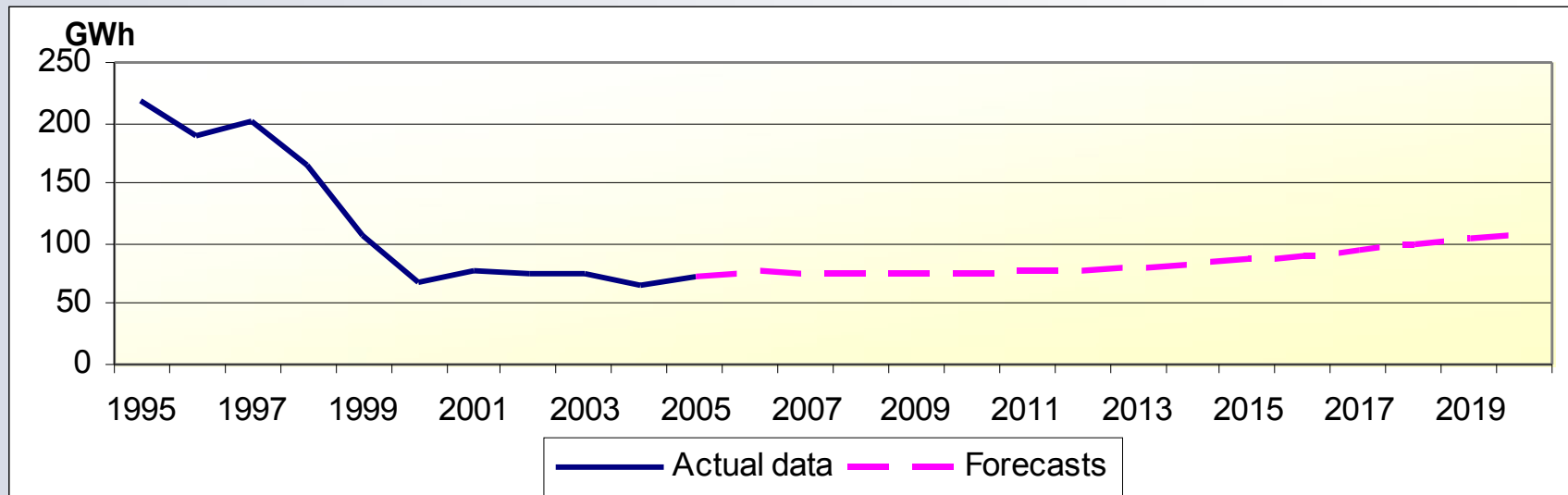
Forecasts of electricity consumption

- Manufacture of pulp, paper and paper products and printing



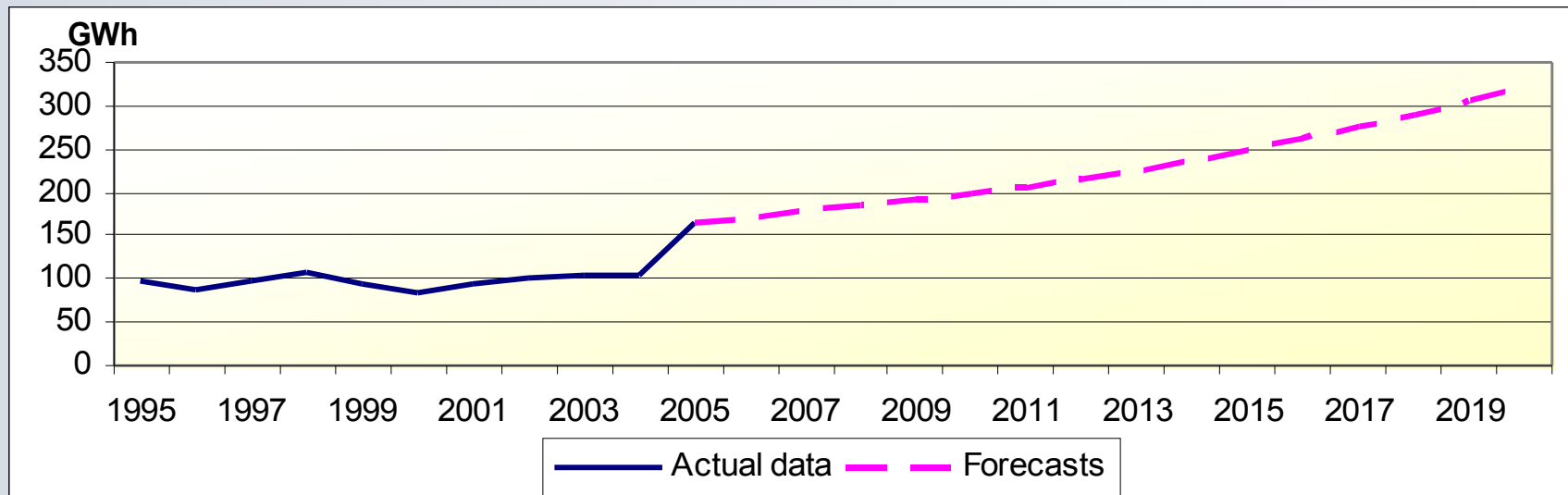
Forecasts of electricity consumption

- Manufacture of chemicals and chemical products



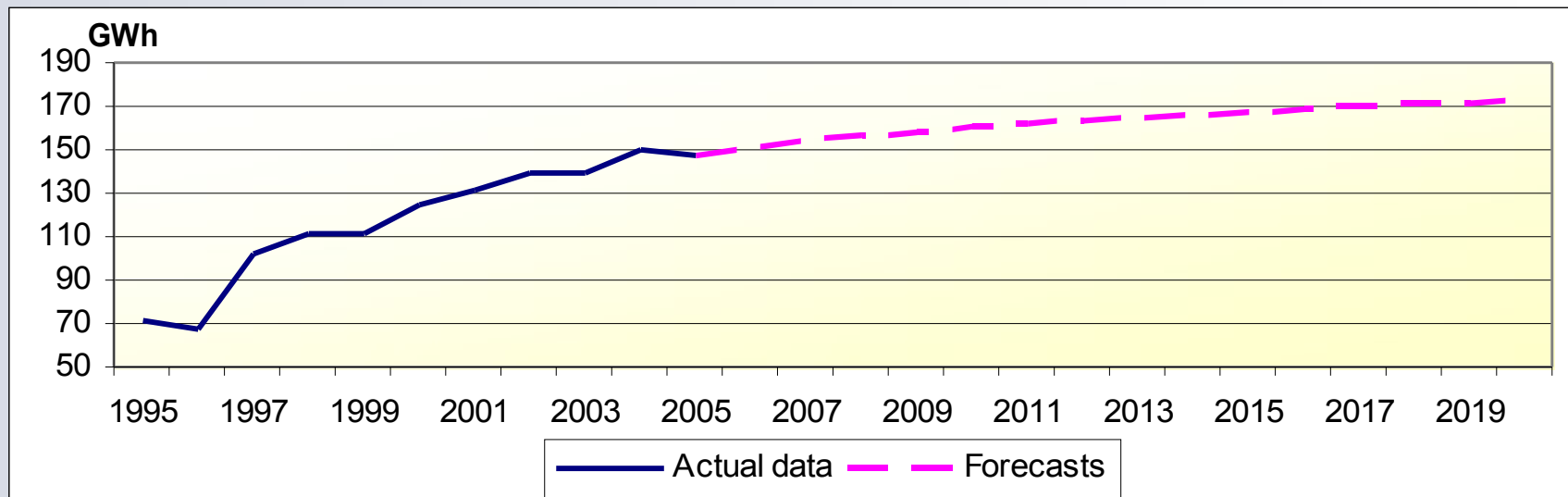
Forecasts of electricity consumption

- Manufacture of other non-metallic mineral products



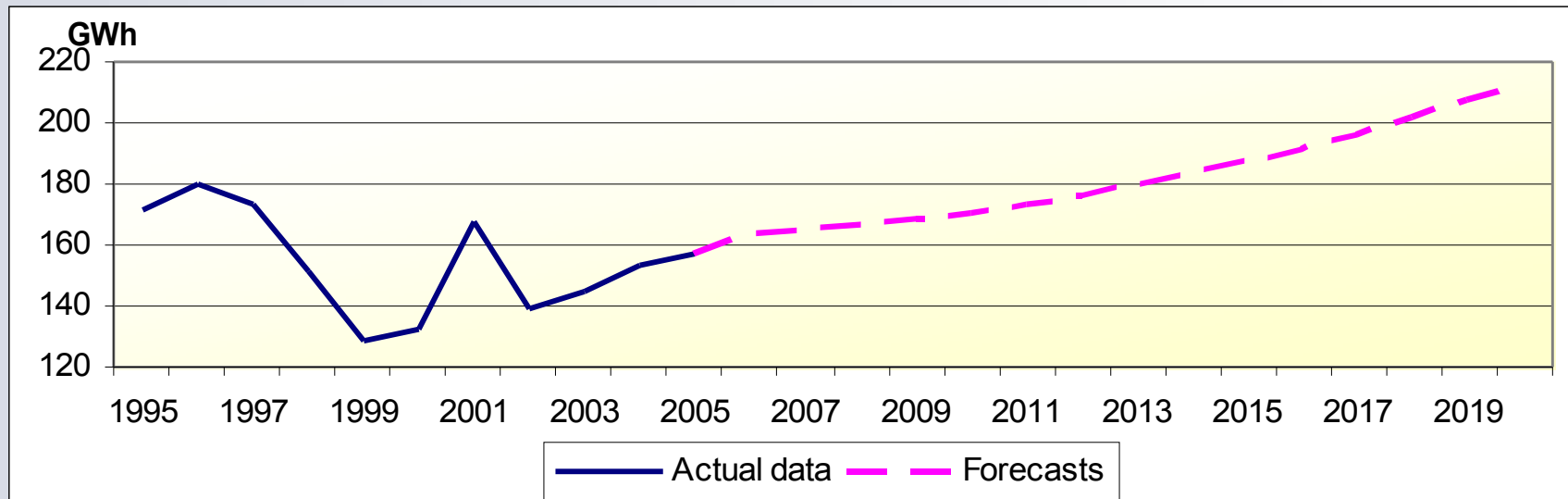
Forecasts of electricity consumption

■ Manufacture of basic metals



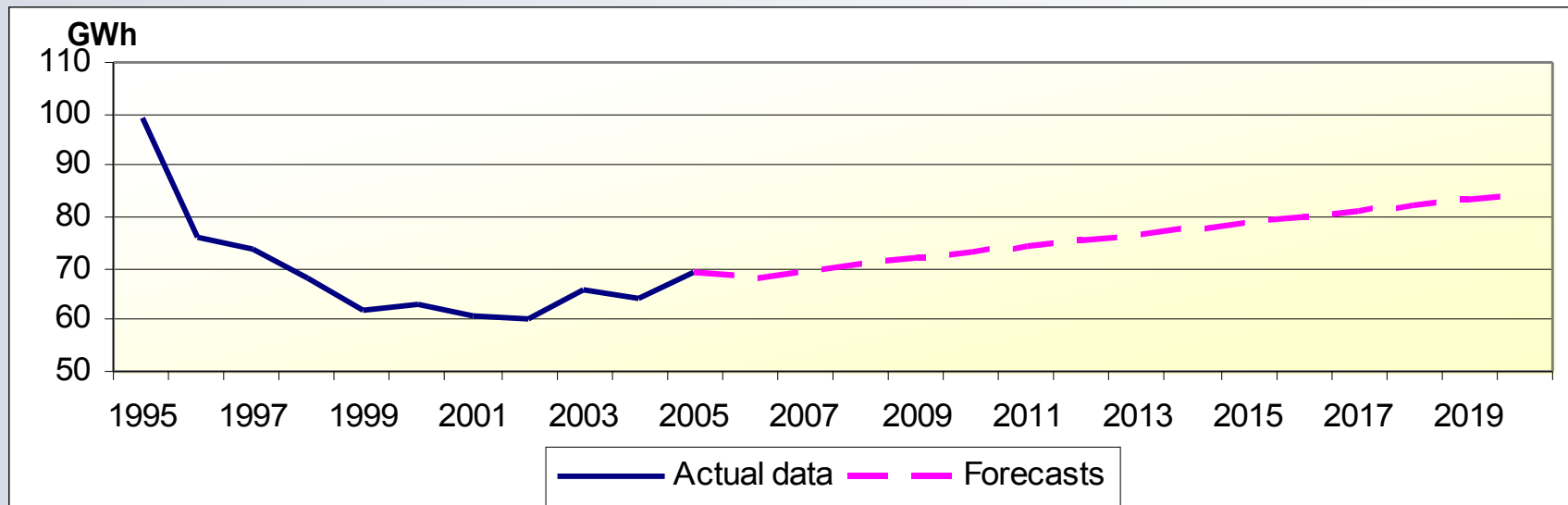
Forecasts of electricity consumption

■ Manufacture of machinery



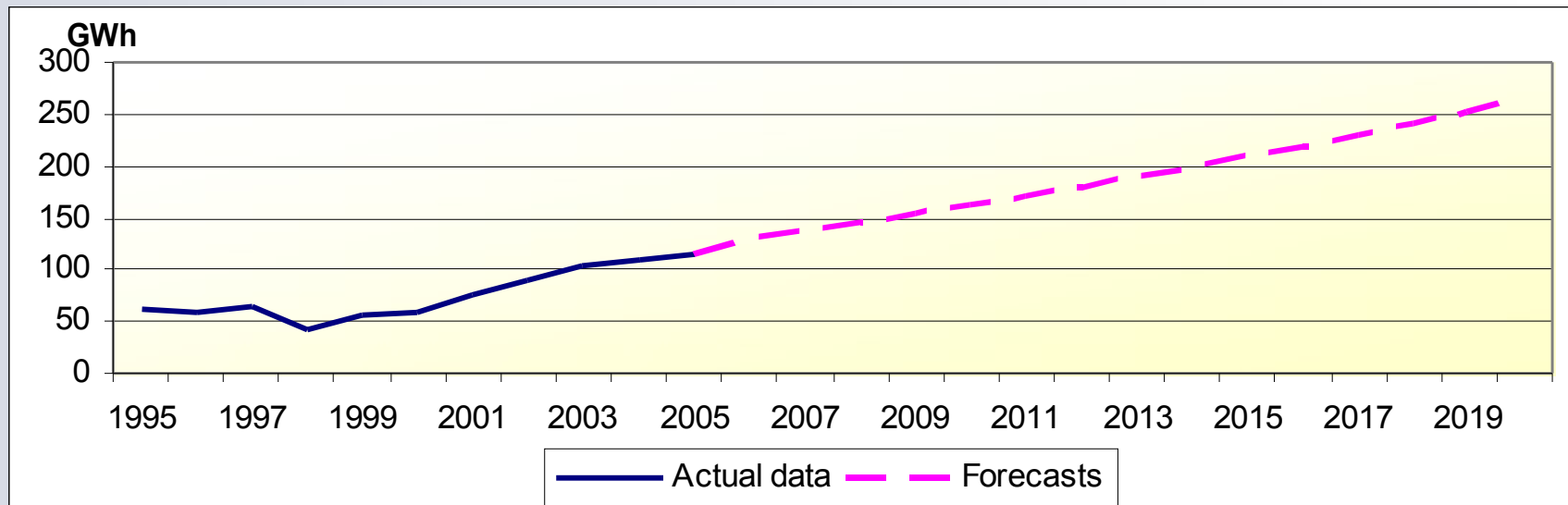
Forecasts of electricity consumption

■ Manufacture of transport equipment



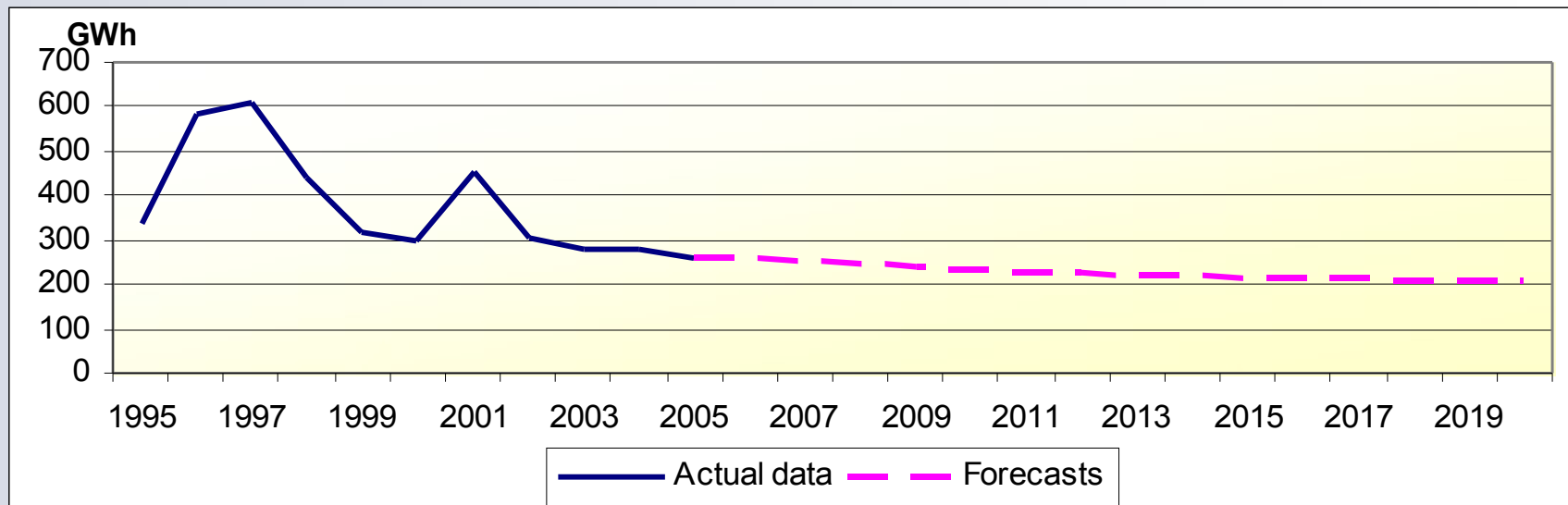
Forecasts of electricity consumption

- Manufacturing not elsewhere specified



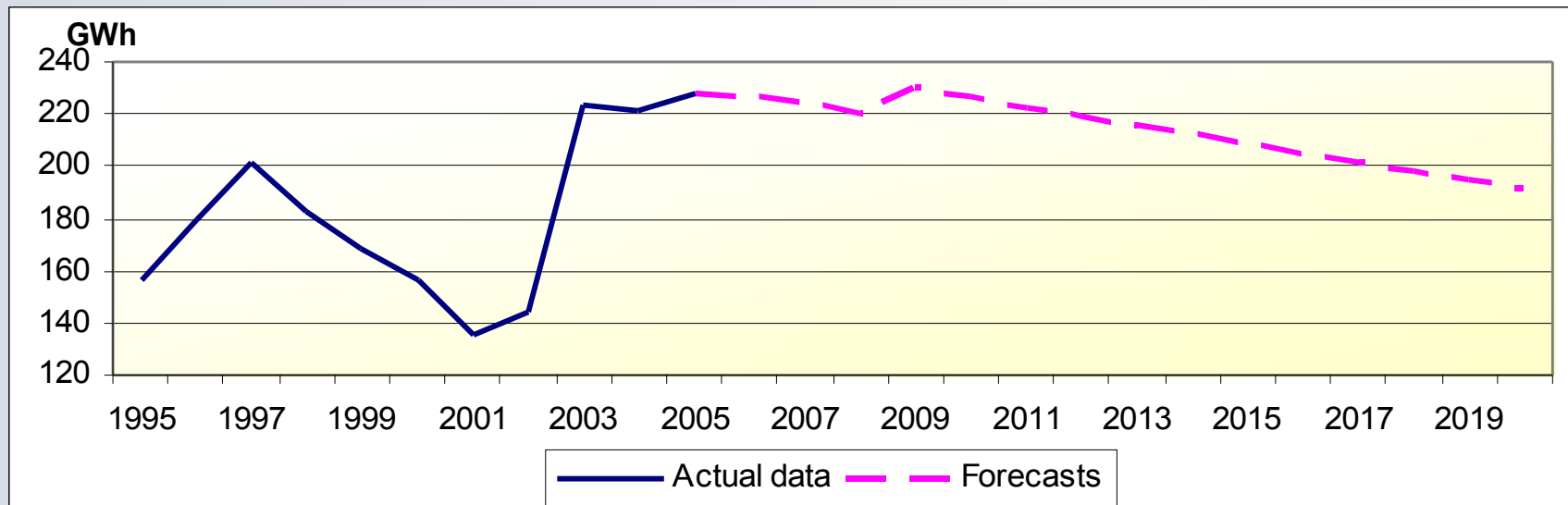
Forecasts of electricity consumption

- Energy sector (excluding power stations)



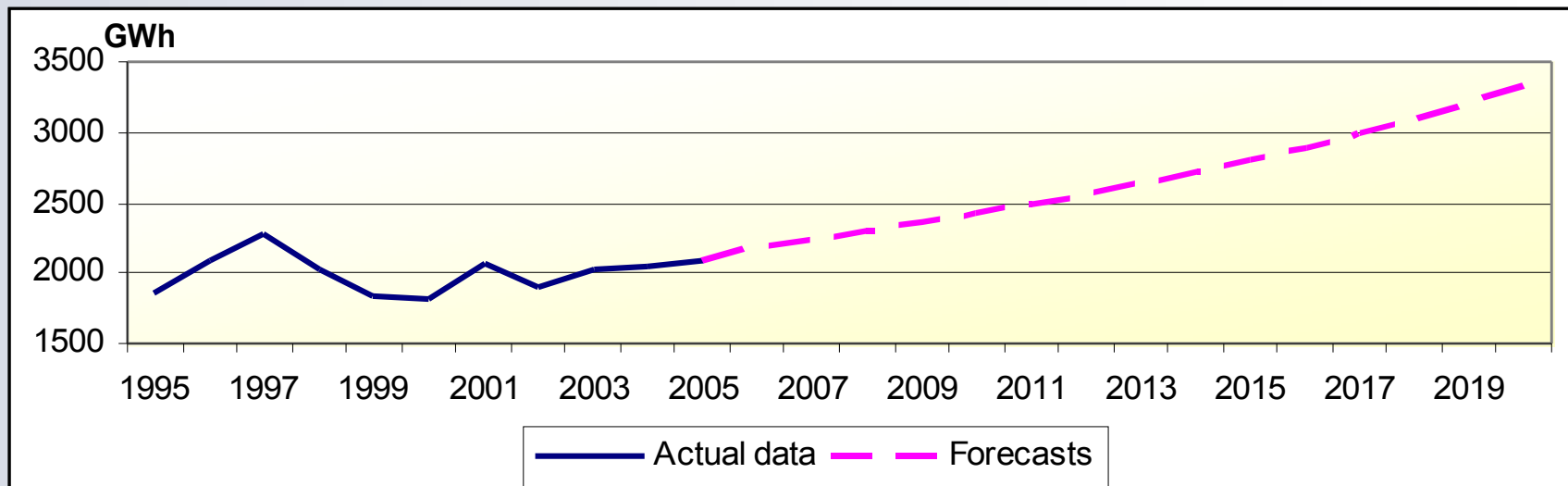
Forecasts of electricity consumption

■ Power stations

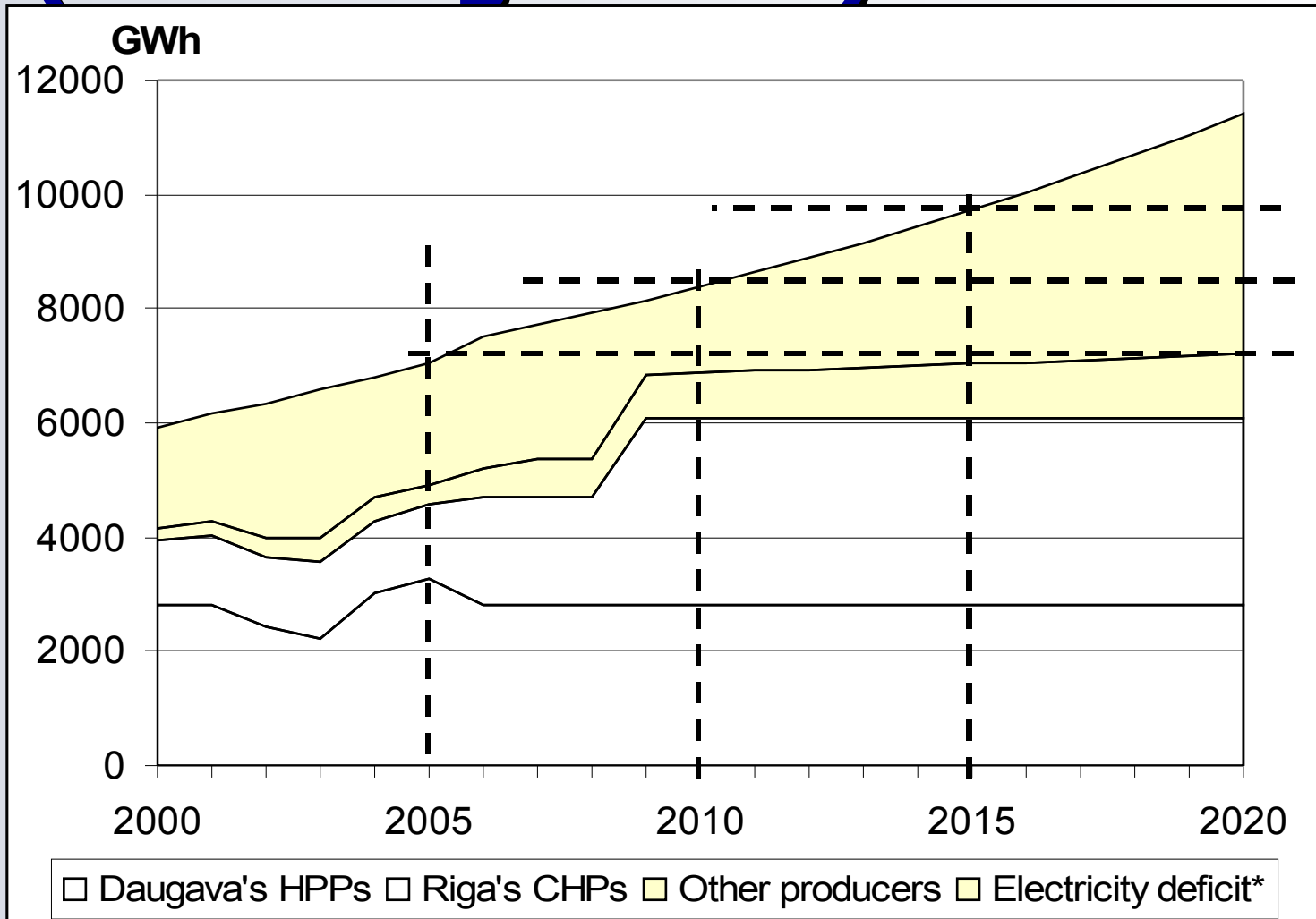


Forecasts of electricity consumption

■ Industry



Total electricity consumption forecasts (including losses)



Thank you for attention!

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