



Hard coal reserves and resources in Poland according to the UNFC-2009

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1. Poland has 3 coal basins of carboniferous age

Lower Silesia Basin (totally abandoned)

Upper Silesia Basin (center of coal
production in Poland)

Lublin Basin (only 1 mine, but huge)

2. The main role plays Upper Silesia Coal Basin, where the deposits of coal have been extracted from the end of XVII century. This basin is characterized by the greatest number of developed and undeveloped coal deposits and quantity of reserves and resources of steam and coking coal, sporadically anthracite.



Hard coal and lignite deposits in Poland (PGI-NRI)

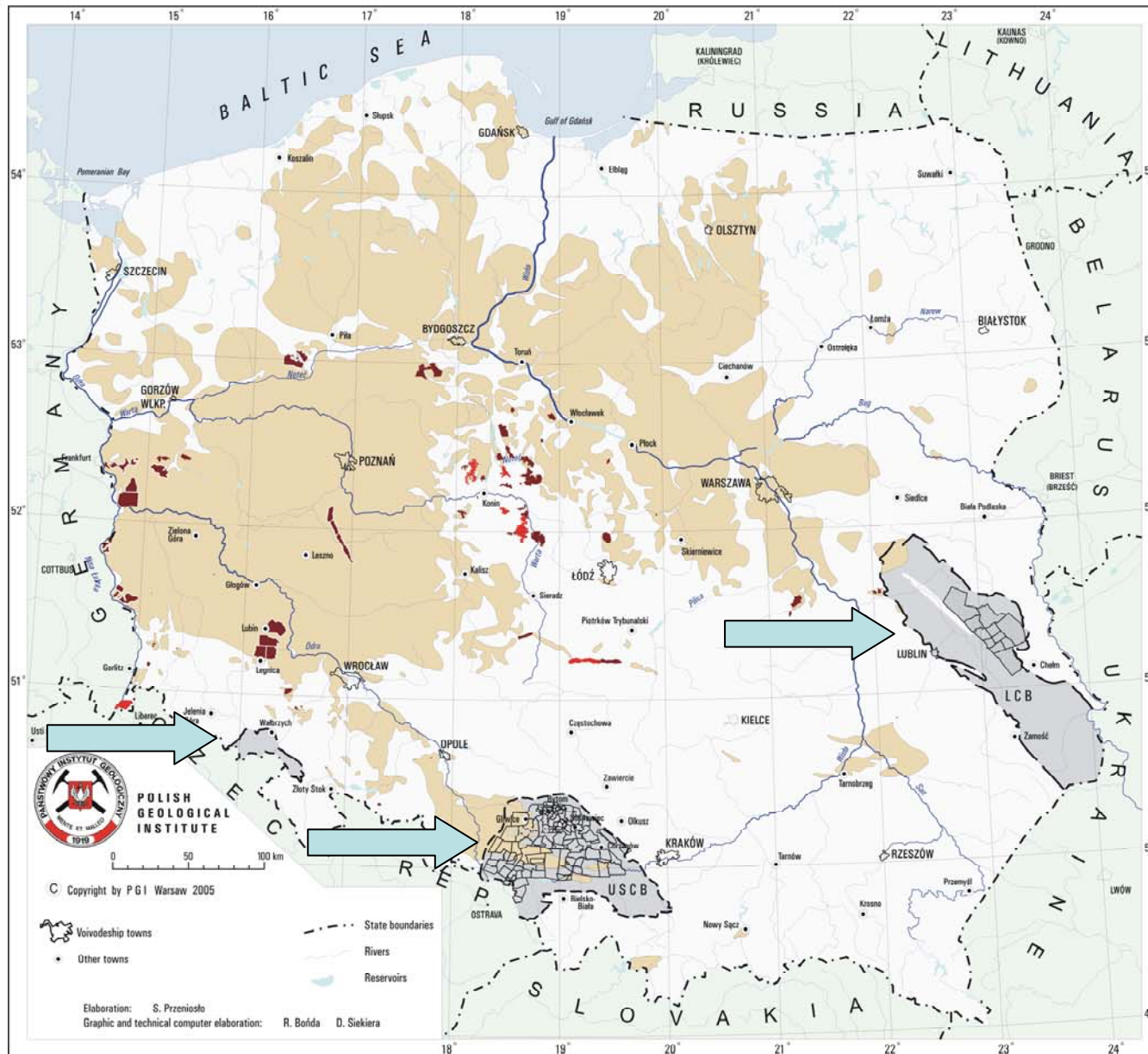


Plate 2

HARD COAL AND LIGNITE DEPOSITS

Hard coal:

USCB Upper Silesian Coal Basin

Extent of deposits

LCB Lublin Coal Basin

Deposits in exploitation

Not exploited deposits

Lignite:

Deposits in exploitation

Not exploited deposits

Occurrence of coal-bearing formations:

Paleogene lignite-bearing formations (after M. Piwocki)

Carboniferous hard coal-bearing formations

Areas without prospects for coal and lignite occurrences

Extent of coal-bearing Carboniferous formation



3. According to main direction of use of the hard coal, it has been classified into 3 main groups:
 - steam (energetic) coal (31-33 and 38 types of old polish coal classification)
 - coking coal (34-37 types of old polish coal classification)
 - anthracite (41, 42 types of old polish coal classification)

4. The relation between Polish and UNFC Classification of reserves and resources has been indicated very well by Marek Nieć at many papers and presentations. We have used it as a one basic point for this presentation.

5. The Polish classification uses hierarchic system of category of reserves and resources.



prognostic 334 and
prospective 344 resources

Anticipated subeconomic resources (32&33)

Anticipated economic resources
(22&23)

Economic and non-economic
resources (21&31)

Extractable
reserves (11)

Total geological resources

Total geological resources of hard coal



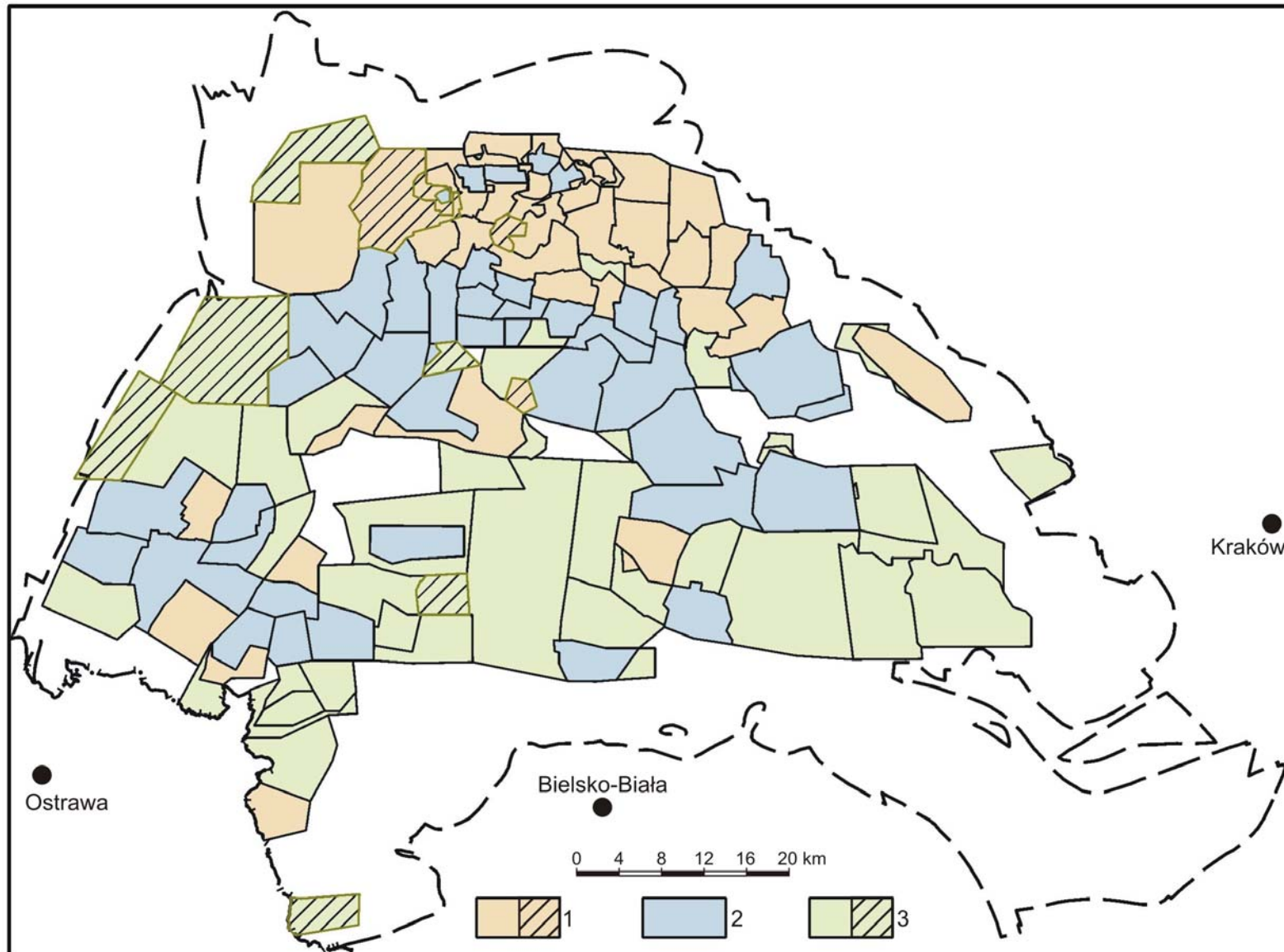
HARD COAL – basic definition of the deposits

	resources	reserves
Depth	1000 m (1250 m)	1000 (1250)
Thickness	min. 1.0 m (economic) 0.6 m (uneconomic)	min. 1.5 m
Calorific value	min. 15.0 MJ/kg (Poland)/17.5 MJ/kg (W Europe)	
Sulphur content	max. 2%	



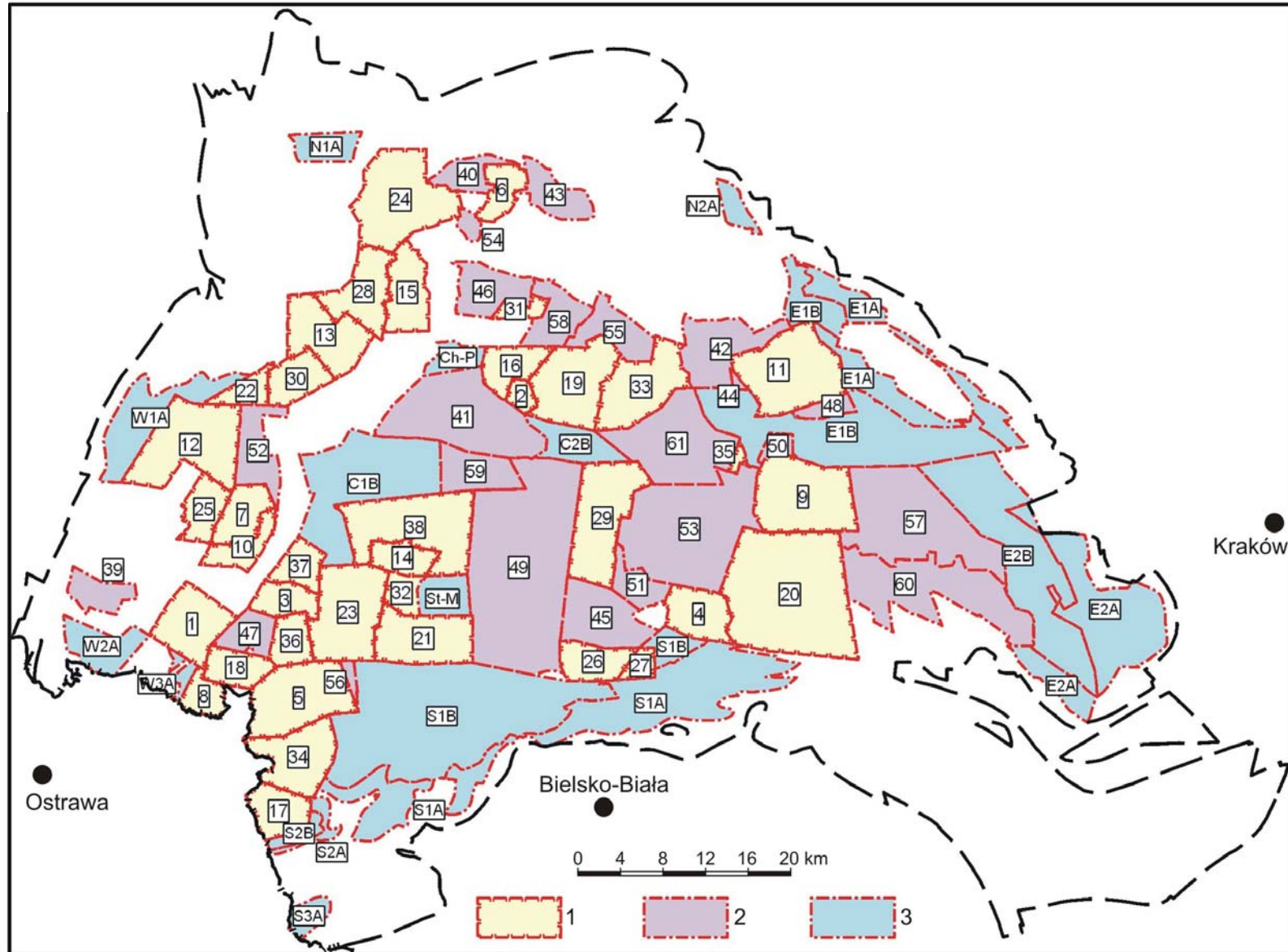
COAL CLASSIFICATION

- 1) **LIGNITE**
calorific value 6.3 – 12.5 MJ/kg/15 MJ/kg (Poland)/ \geq 17.5 MJ/kg (W Europe)
- 2) **STEAM COAL**
calorific value 12.5/15.0 MJ/kg (Poland)/ 17.5 MJ/kg (W Europe)
15.0/17.5 – 23.9 MJ/kg subbituminous coal
23.9 – 29.3 MJ/kg hard steam coal
but 25.1 – 26.0 MJ/kg standard steam coal on market
 \leq 12 % of ash
 \leq 1 % of total sulphur
 \leq 8 % of moisture
- 3) **COKING COAL**
29.3 – 35.1 MJ/kg calorific value
 \leq 6.9 % of ash
 \leq 0.7 % of total sulphur
 \leq 8.0 % of moisture
 \leq 8.0 % of volatiles
- 4) **ANTHRACITE**
 \geq 35.1 MJ/kg calorific value
 \leq 5.6 % of ash
 \leq 0.9 % of total sulphur
 \leq 7.9 % of volatiles



Known coal deposits in the Upper Silesia Coal Basin (J. Jureczka et al 2010)

1 –abandoned deposits, 2 – extracted deposits, 3 – undeveloped deposits

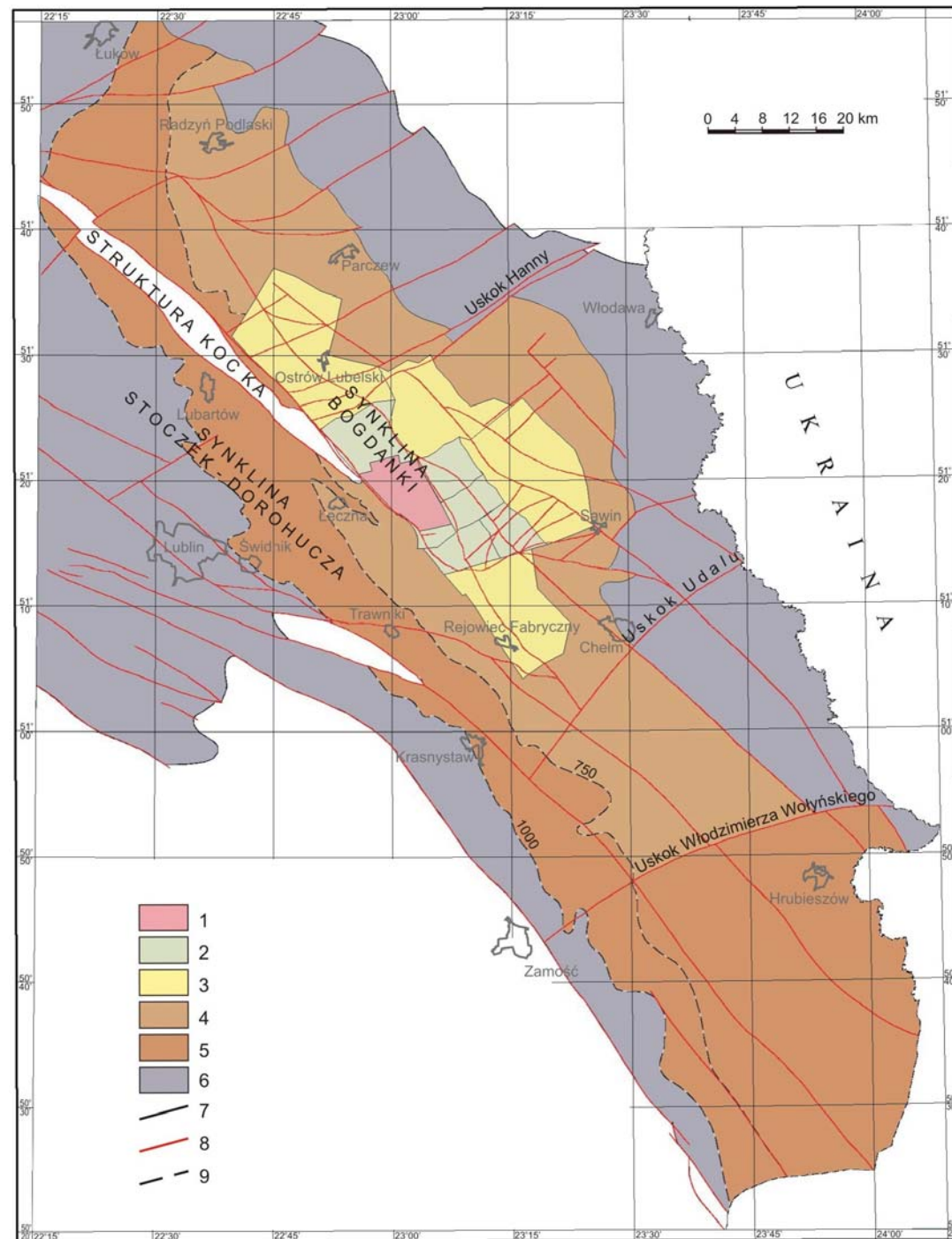


Areas of the prognostic and prospective resources at the Upper Silesia Coal Basin (J. Jureczka et al. 2010)
1 – prognostic resources, 2 – perspective resources below 1000 m In the areas of known deposits
3 – perspective resources outside of the known deposits



Map of exploration status of
Lublin Silesia Coal Basin
(according to: A. Zdanowski,
S. Wilk, 2010):

- 1 – category A – C2
- 2 – category C1
- 3 – category C2
- 4 – prognostic area I
- 5 – prognostic area II
- 6 – carboniferous area without prognostic resources
- 7 – range of carboniferous rocks
- 8 – faults
- 9 – isopachous line of overburden 750 and 1000 metres



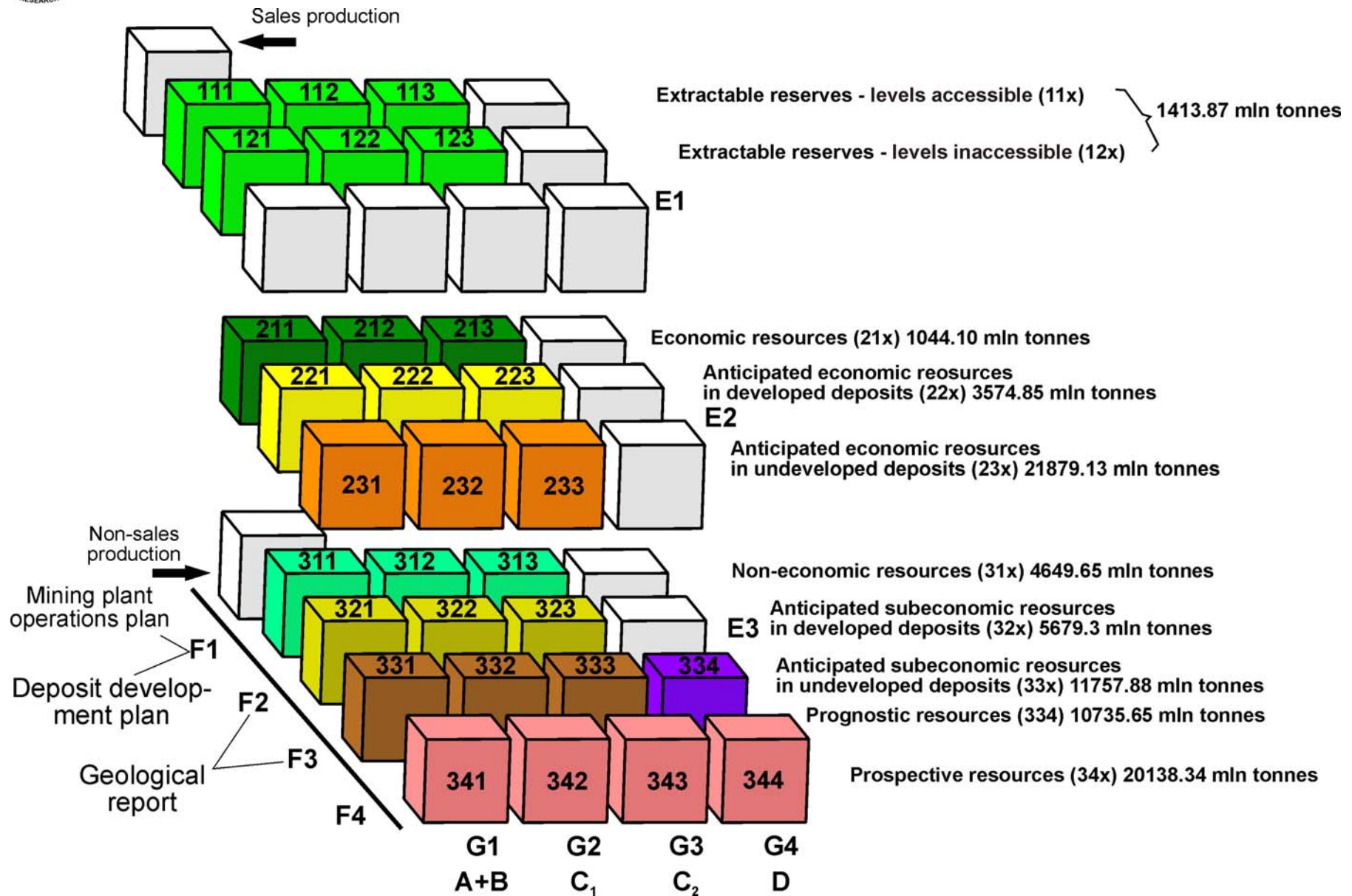


Hard coal reserves and resources in Poland according to the UNFC-2009 as of 31.12.2009

Types of deposits	Number of deposits	Geological resources in place		Economic resources	Non-economic resources	Extractable resources
		anticipated economic	anticipated subeconomic			
developed deposits						
Total	49	6 938.13 [22x]	8 286.74 [32x]	1 851.76 [21x]	6 440.28 [31x]	2 503.89 [11x]
1. Deposits of operating mines	47	6 564.21 [22x]	7 920.20 [32x]	1 657.78 [21x]	6 190.46 [31x]	2 474.45 [11x]
2. Mines during preparation process	2	373.92 [22x]	366.54 [32x]	193.98 [21x]	249.82 [31x]	29.44 [11x]
undeveloped deposits						
Total	92	26 397.59 [23x]	15 951.31 [33x]	-	-	-
1. Deposits covered by detailed exploration	37	13 329.57 [23x]	5 093.72 [33x]	-	-	-
2. Deposits covered by preliminary exploration	13	12 441.82 [23x]	6 982.16 [33x]	-	-	-
3. Abandoned deposits	42	626.20 [23x]	3 875.43 [33x]	-	-	-
PROGNOSTIC RESOURCES						
Upper Silesian Coal Basin						
Total	79	9 193.37 [334]	-	-	-	-
Lublin Coal Basin						
Total		10 847.73 [334]	-	-	-	-
Lower Silesian Coal Basin						
Total		0.39 [334]	-	-	-	-
PROSPECTIVE RESOURCES						
Upper Silesian Coal Basin						
Total	41	25 533.05 [34x]	-	-	-	-
Lublin Coal Basin						
Total		5 887.61 [34x]	-	-	-	-
Lower Silesian Coal Basin						
Total		232.00 [34x]	-	-	-	-

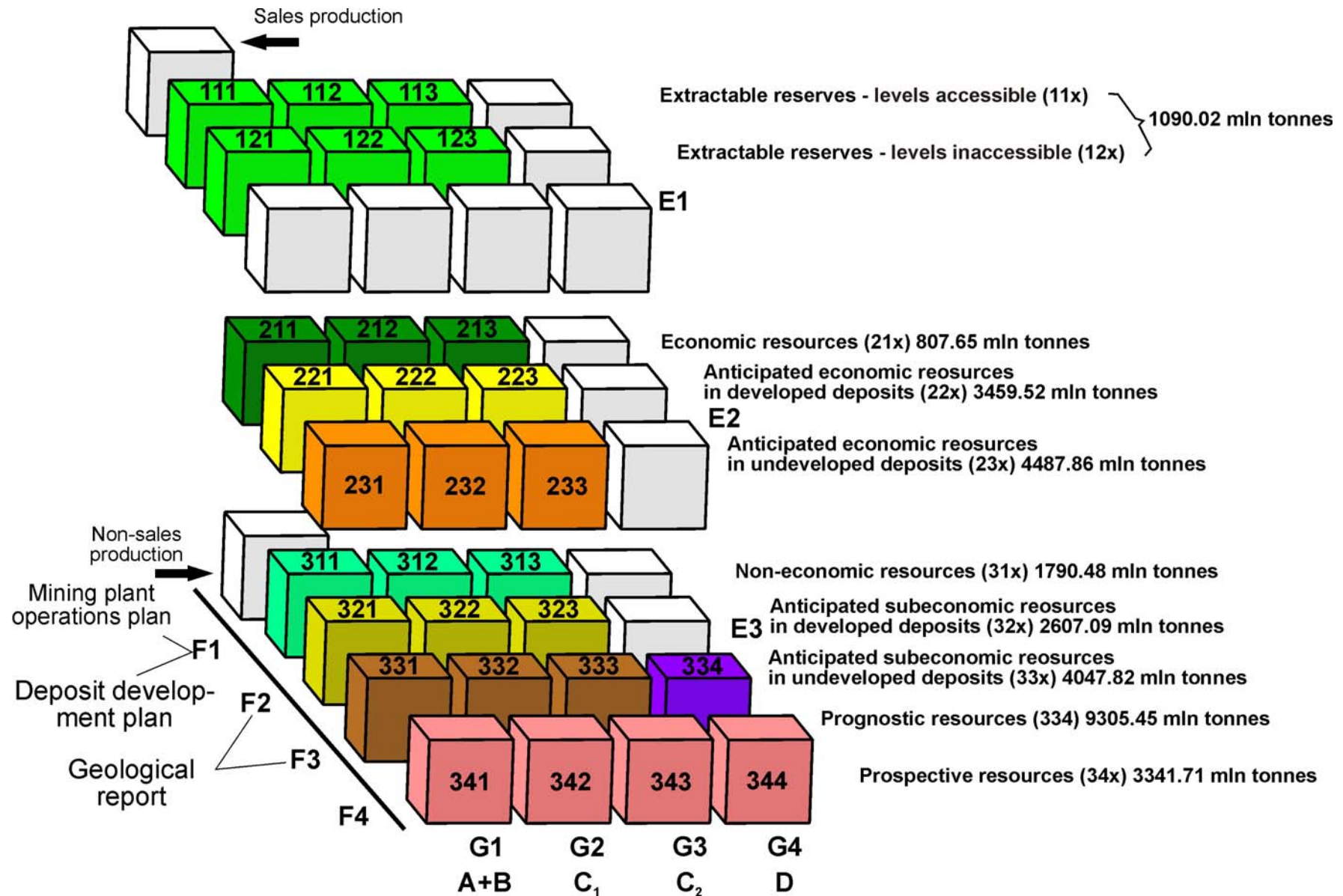


Steam coal reserves and resources in Poland according to UNFC-2009 as of 31.12.2009



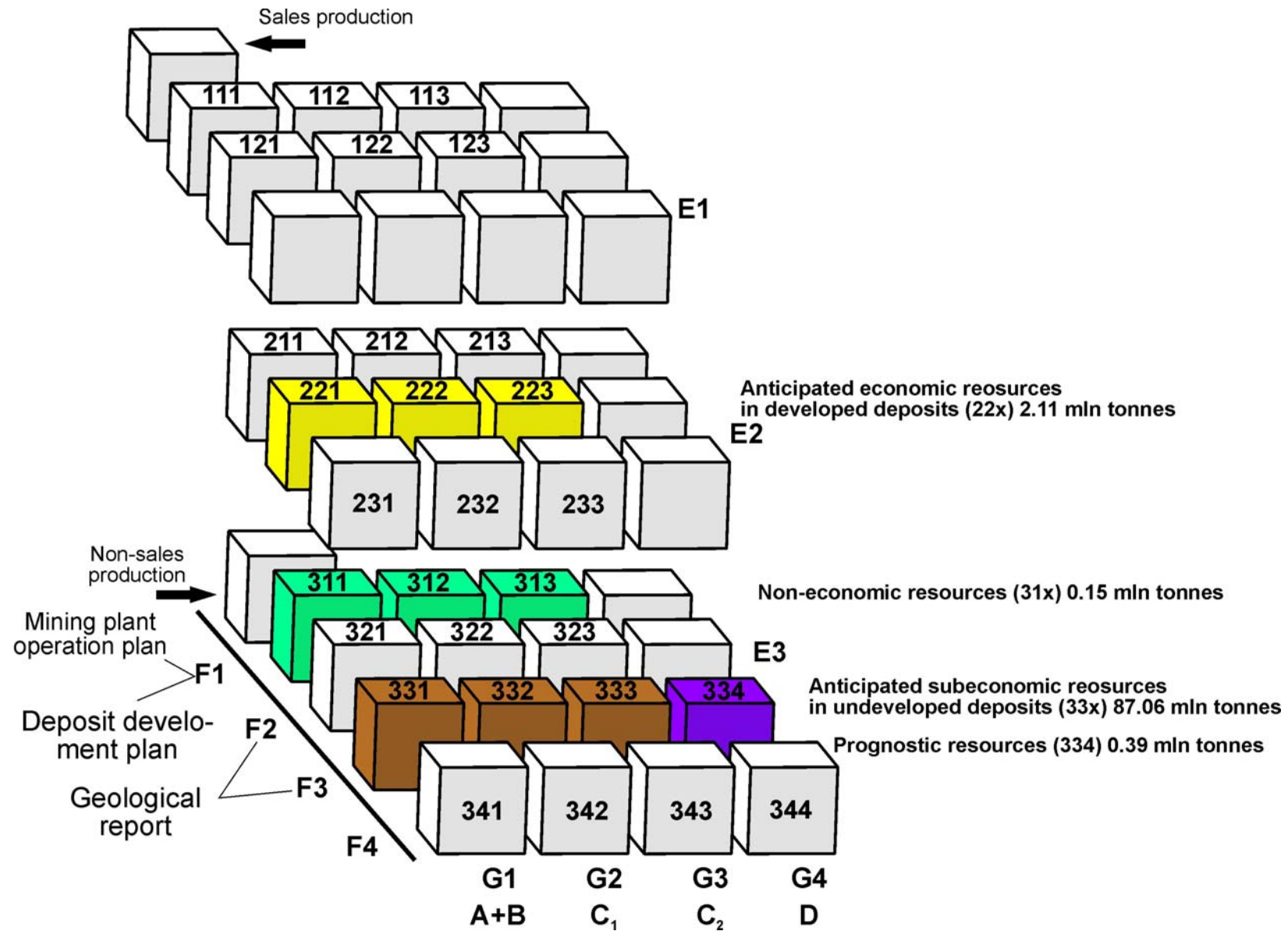


Coking coal reserves and resources in Poland according to UNFC-2009 as of 31.12.2009



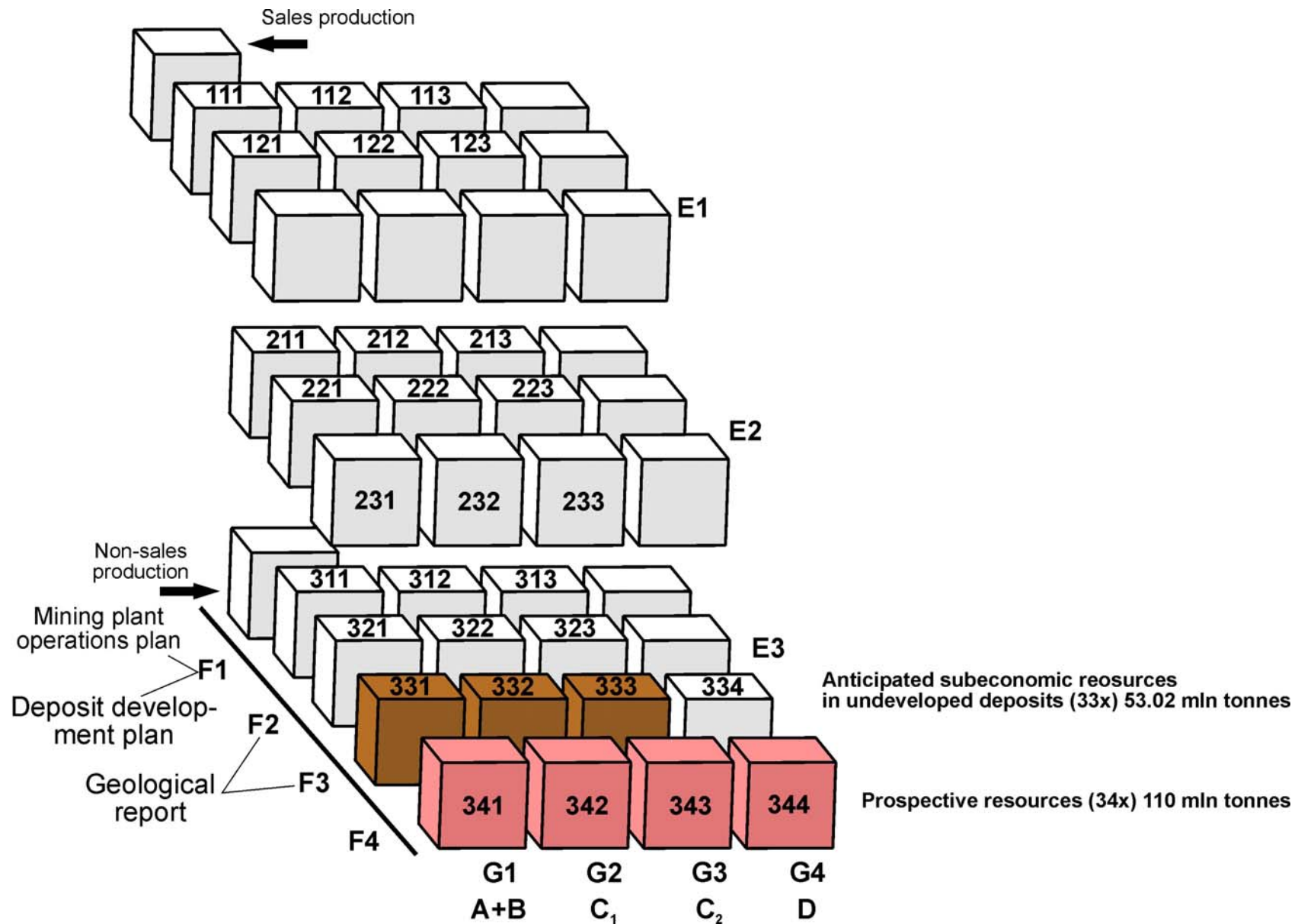


Anthracite resources in Poland according to UNFC-2009 as of 31.12.2009



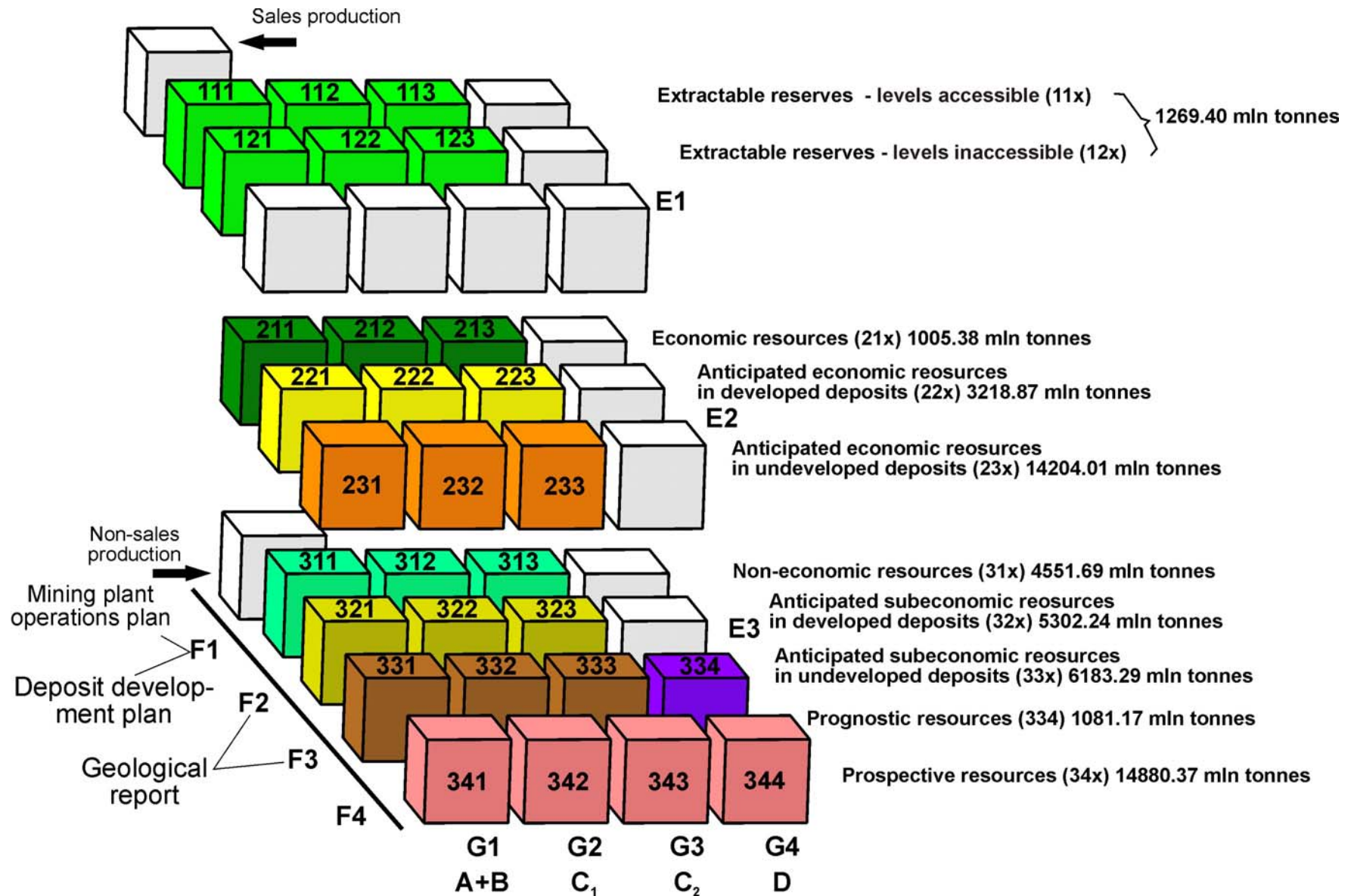


Hard coal type 42 resources in Poland according to UNFC-2009 as of 31.12.2009



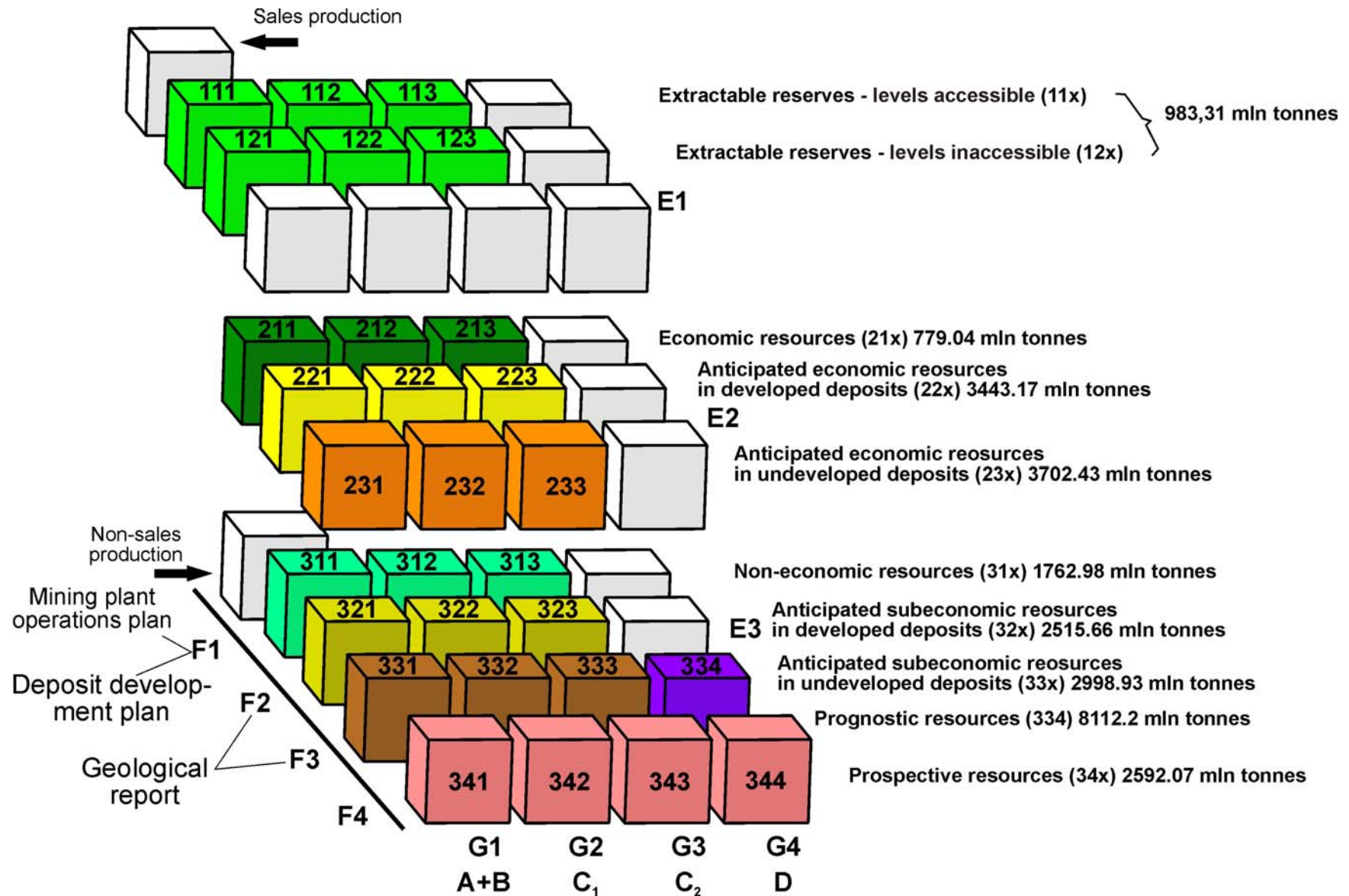


Steam coal reserves and resources in the Upper Silesia Coal Basin according to UNFC-2009 as of 31.12.2009



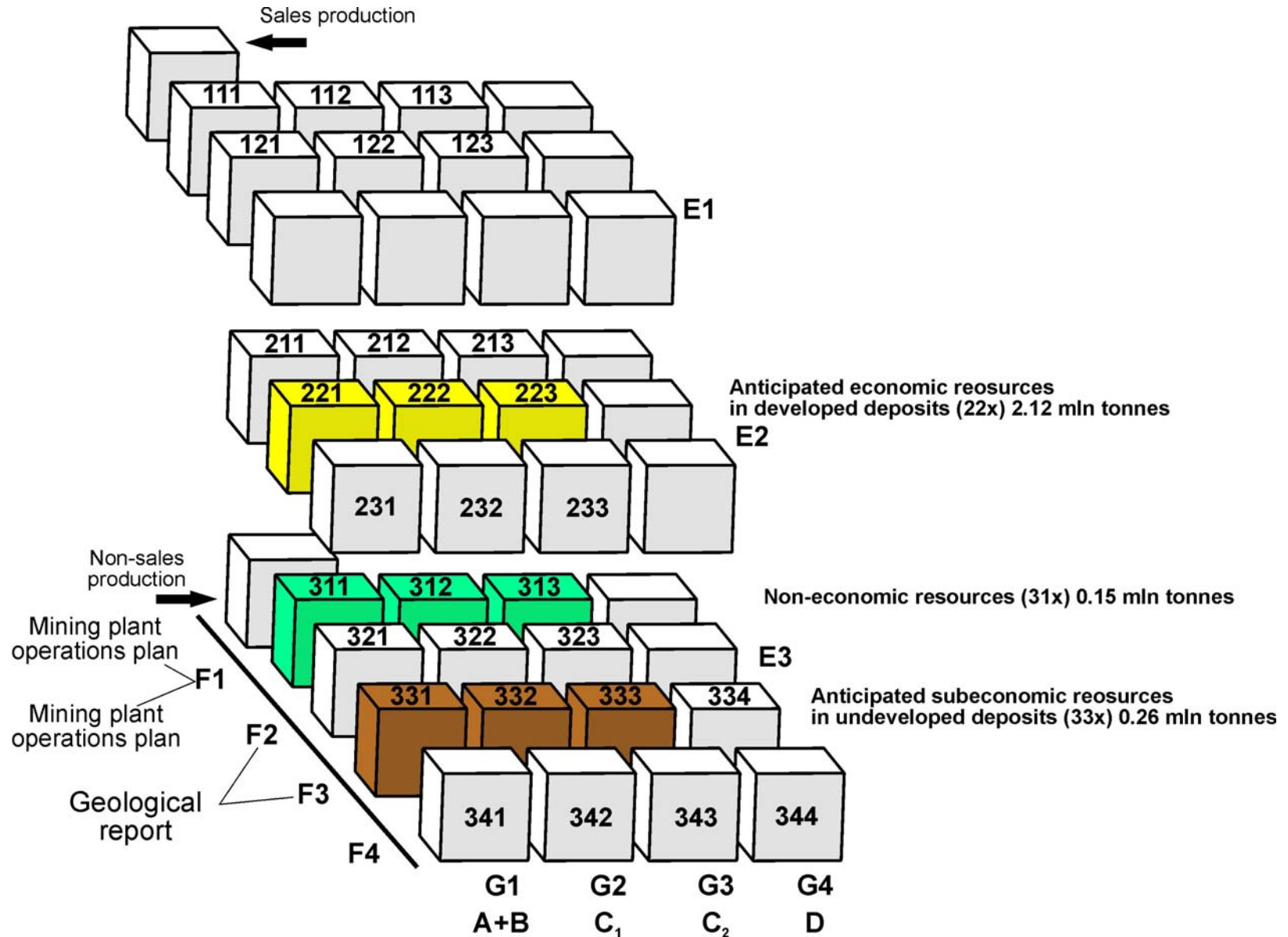


Coking coal reserves and resources in the Upper Silesia Coal Basin according to UNFC-2009 as of 31.12.2009



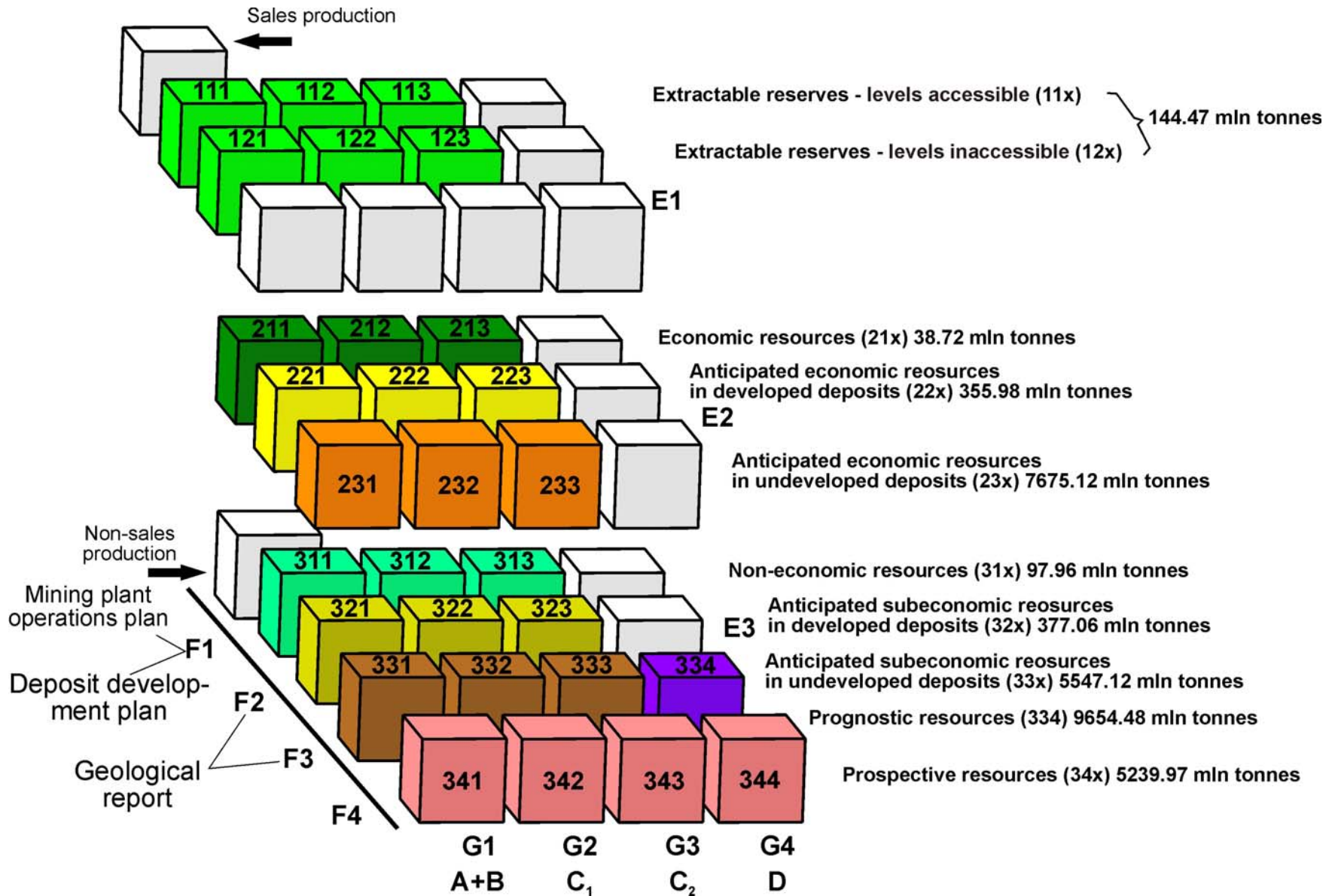


Anthracite resources in the Upper Silesia Coal Basin according to UNFC-2009 as of 31.12.2009



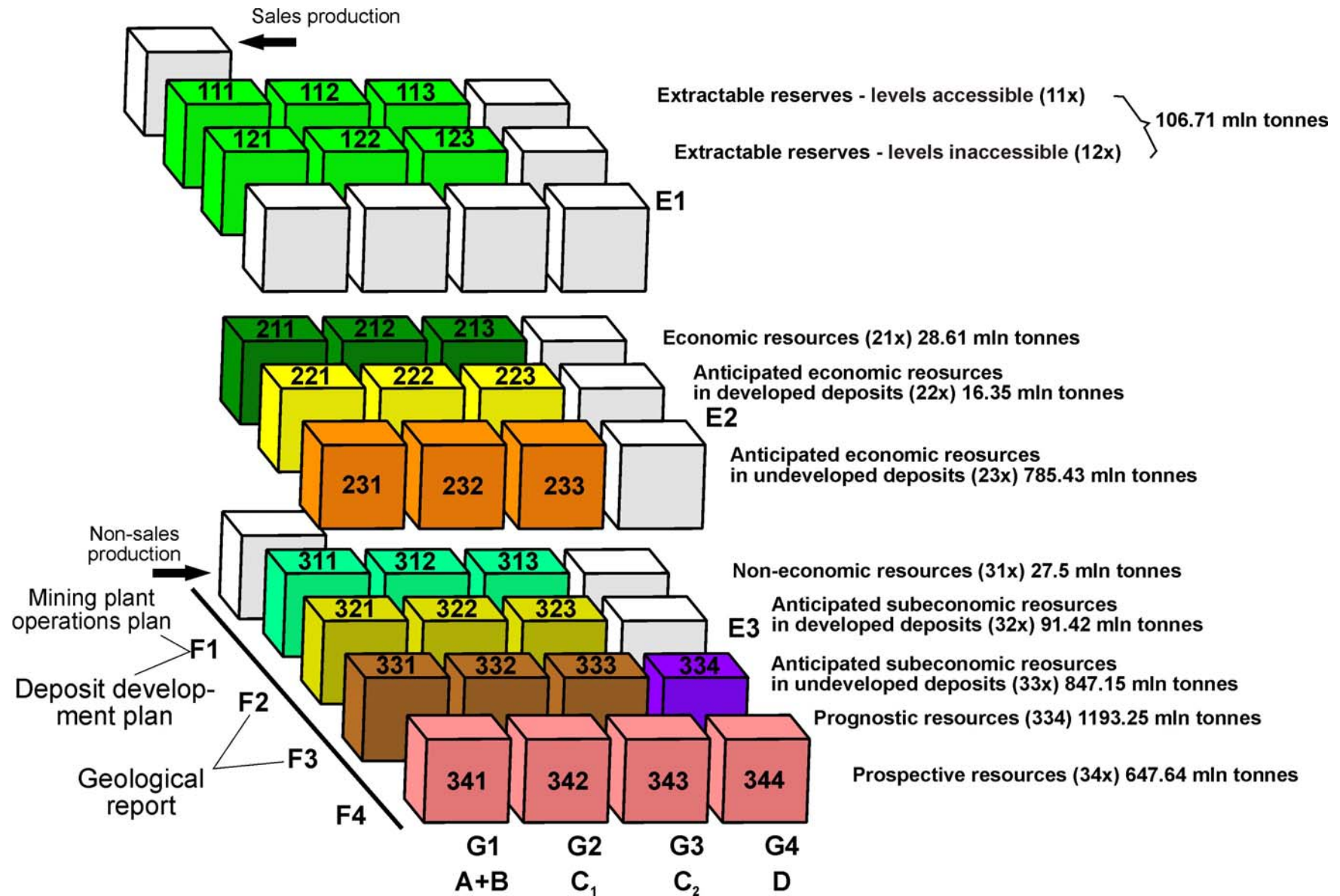


Steam coal reserves and resources in the Lublin Coal Basin according to UNFC-2009 as of 31.12.2009



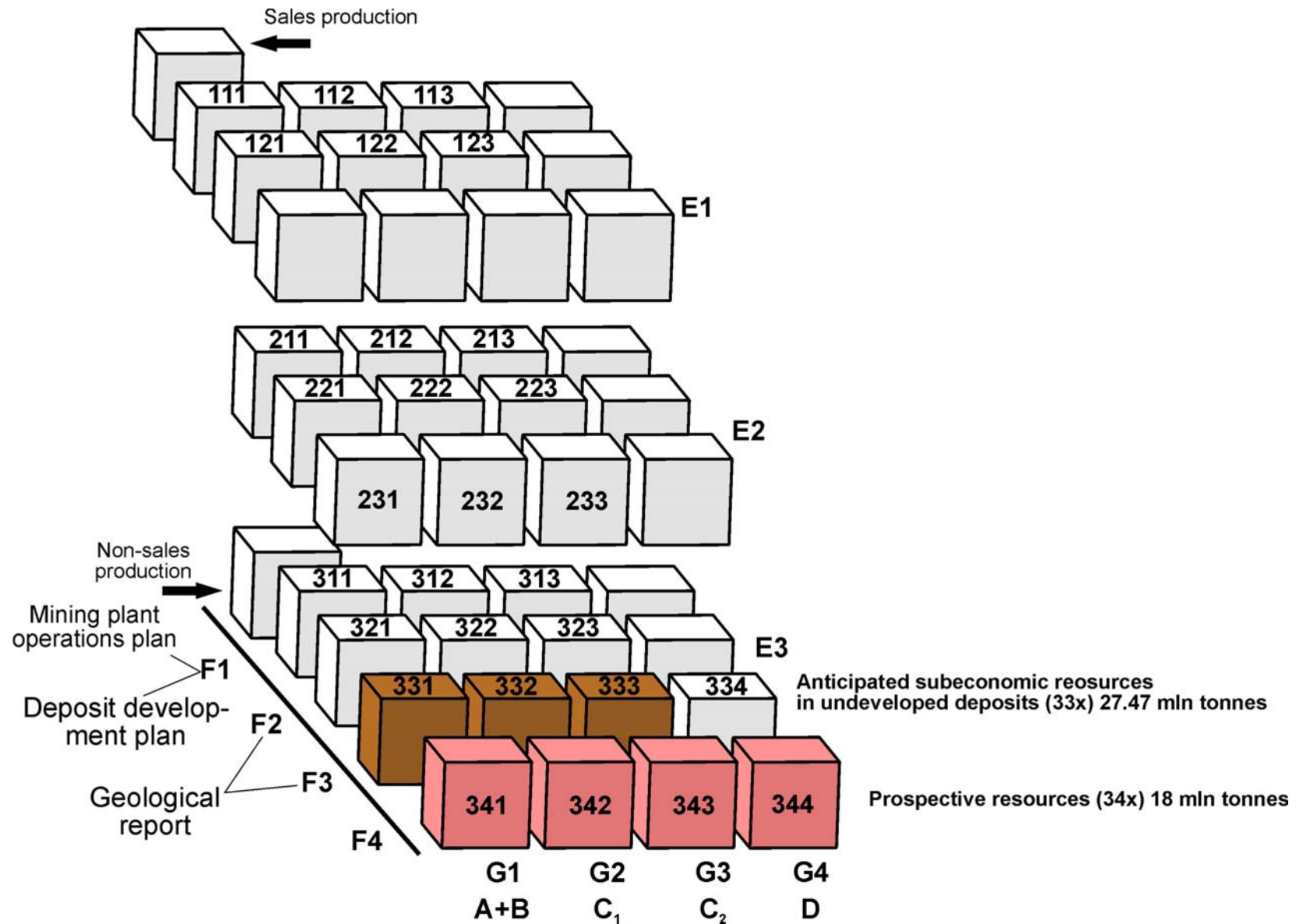


Coking coal reserves and resources in the Lublin Coal Basin according to UNFC-2009 as of 31.12.2009



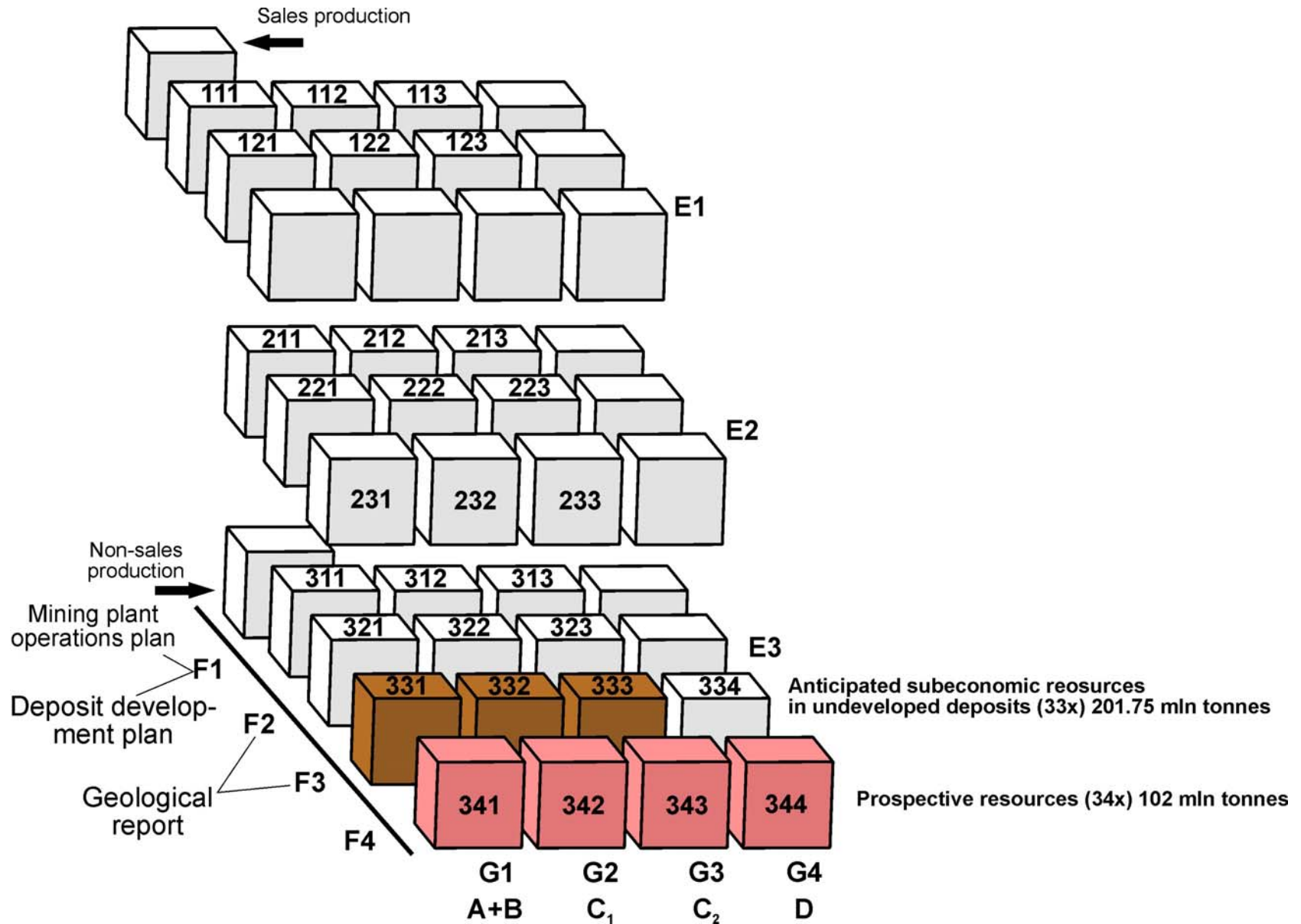


Steam coal resources in the Lower Silesia Coal Basin according to UNFC-2009 as of 31.12.2009



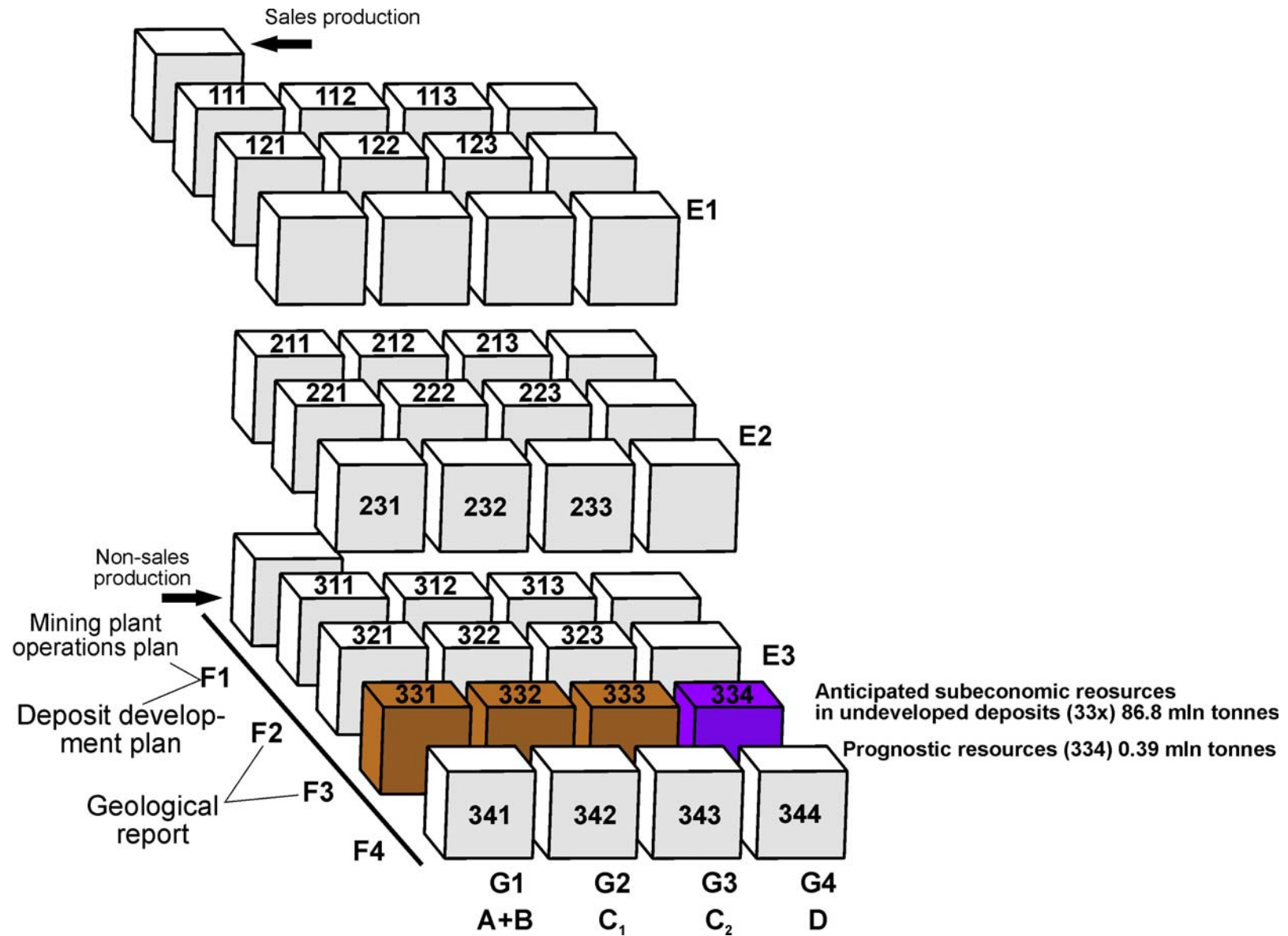


Coking coal resources in the Lower Silesia Coal Basin according to UNFC-2009 as of 31.12.2009



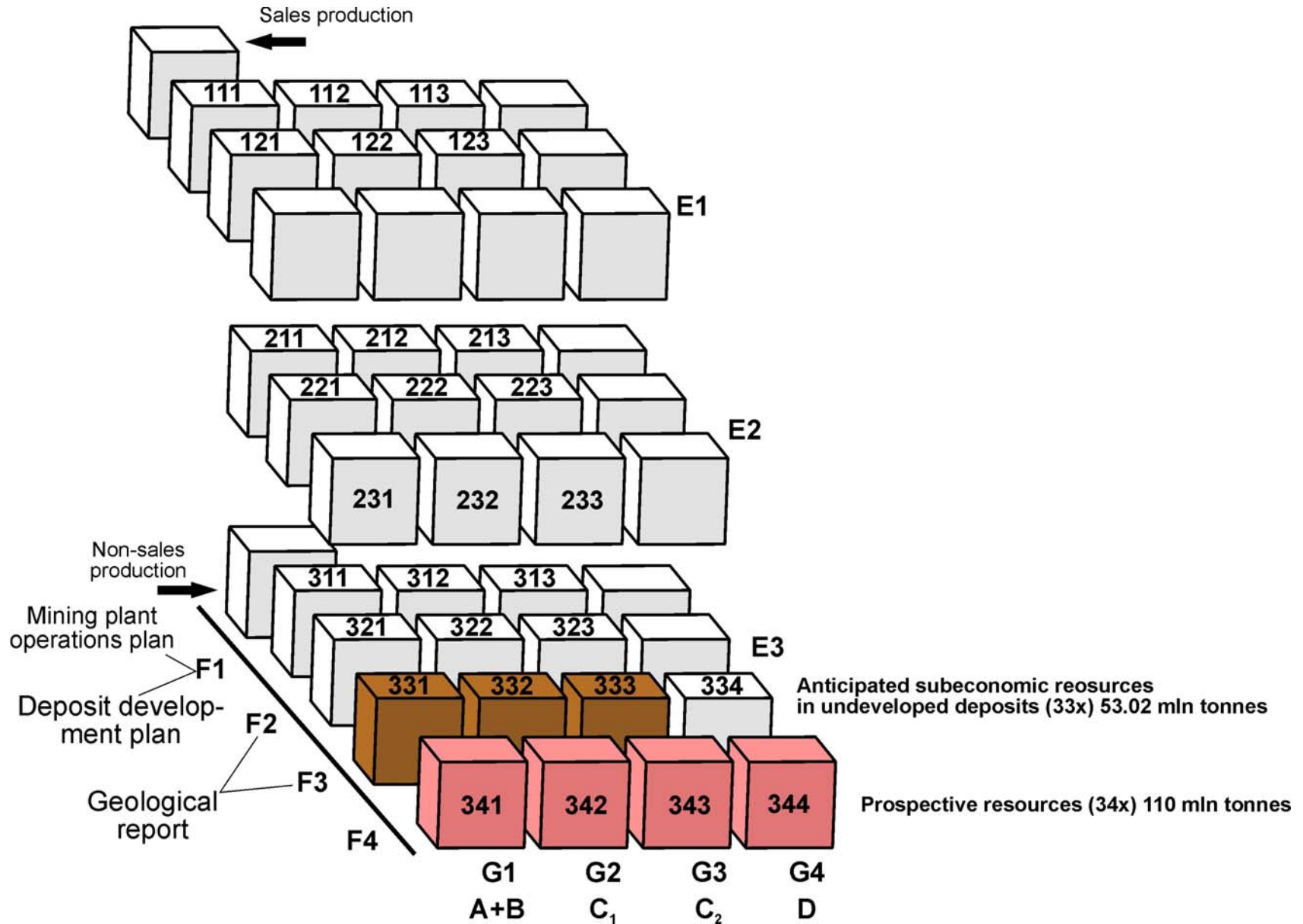


Anthracite resources in the Lower Silesia Coal Basin according to UNFC-2009 as of 31.12.2009





Hard coal type 42 resources in the Lower Silesia Coal Basin according to UNFC-2009 as of 31.12.2009





Thank you for your attention