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Umwelt Bundes Amt
For our Environment

Increase in land use for human settlement and transport infrastructure from 1993 to 2008:

- The German Federal Government is aiming to reduce land use for human settlement and transport infrastructure to 30 hectares per day by 2020.
- In the four-year period 1997–2000, land-take was still at almost 130 hectares per day and gradually fell to 112.8 hectares per day in the four-year period 2004-2007 as construction activity slowed (cf. Figure 1).
- Looking at the short-term trend, this figure fell significantly in the individual years 2007 and 2008 – to 96 and 95 hectares per day. This ultimately also had an effect on the four-year average, which dropped noticeably to 103.8 hectares per day in the period 2005-2008 (cf. Figure 1).
- While growth in residential and industrial/commercial building land has slowed markedly since 2000, land use for transport infrastructure has seen steady high growth for years, and the pace of growth in recreational areas even seems to be quickening (cf. Figure 2).
- Looking at the data from the various Federal States (cf. Figures 3 and 4), the rapid growth in recreational areas can be traced in large part to a single Federal State (Saxony-Anhalt), in which in the period 2003-2006 major statistical artefacts occurred not only in recreational areas, but also in other categories of land.
  The main effect is due to the fact that this Federal State recorded former military training sites under the category "recreational area", and not under the category "woodland" (as would be appropriate and is common). Moreover, other areas (e.g. allotment garden sites) from the categories "building land" and "operational areas" were reclassified into the category "recreational area". These "reclassifications" are in part contrary to the system and do not, in part, reflect a real change in use. Therefore, in the following charts, the data from this Federal State are either considered only cursorily or not included at all.
- Whilst in Saxony-Anhalt, with completion of the statistical changeover, statistical artefacts now play a lesser role, since 2007 new artefacts have appeared instead in the Federal States of Brandenburg and Mecklenburg-Western Pomerania, which are presumably likewise due to a conversion of the statistical data base. In these cases as well, the statistics are now seeing recreational areas increase at a heightened pace without there always being an underlying real change in use. This effect is, however, distinctly less pronounced than in the case of the artefacts in Saxony-Anhalt. The reason for the current artefact is –

according to initial feedback received by the Statistical Federal Office – that "Grabeland" (land leased on an annual basis for growing of annual plants) / "Gartenland" (kitchen gardens) behind houses in villages, which in the past were counted as agricultural land, have been reclassified as "Kleingarten" (allotment garden) / "Erholungsfläche" (recreational area) and therefore count as land for human settlement. This reclassification is not associated with a real change in use.

- Figure 5 gives a true-to-scale picture for all of Germany of how far land-take is from reaching the Federal Government's 30 hectares target. Although it does not include the Federal State with the largest artefacts (Saxony-Anhalt), it is evident that the cyclically-induced slower growth in land for human settlement and transport in the other Federal States has not been sufficient to achieve reliable progress towards the 30 hectares target. Although the growth in residential and industrial/commercial building land has slowed, the persistently high growth in land for transport infrastructure and recreation shows that hoping for a slack economy will not be sufficient. Greater care must also be exercised in the use of land for transport and other infrastructures.
- Figures 6 and 7 illustrate this separately for the western and eastern Federal States. Especially the western Federal States need to step up their efforts to make an adequate contribution to achieving the 30 hectares target. In contrast, the eastern Federal States were for a number of years – due to their stagnant economy and the slowdown in building activity - on a path that could lead to attainment of the 30 hectares target. However, this trend was interrupted at least temporarily by a jump in building land and land for transport infrastructure in Saxony in 2007 and the increase in recreational area in Mecklenburg-Western Pomerania in 2008.
- Figure 8 confirms that in those Federal States whose land use statistics do not contain any major artefacts the increase in land occupied by buildings and open spaces correlates very well with construction activity (i.e. finished buildings in the building statistics). This means that for these Federal States the land use statistics reflect reality quite well in terms of land use for residential and commercial development.
- Figures 9 and 10 show the annual contribution of residential housing construction to land-take. In 2007, construction of single-family houses was the main devourer of land, with 20 hectares per day, despite the decrease in construction activity. Construction of multi-storey housing, in contrast, contributed only moderately to urban sprawl, even in the years 1993 to 1996 in which construction activity was high, and by 2007 played a negligible role with 2 hectares per day. In 2008, land-take by residential housing construction as a whole decreased to less than 20 hectares per day as construction activity continued to decline, thus falling for the first time below pre-unification levels. As well as cyclical influences, decreasing demand due to demographic change will presumably increasingly affect the housing market in many regions with a decline in demand.
- Figures 11 and 12 show how many square metres of land for human settlement and transport infrastructure each citizen in each Federal State occupies, e.g. less than 200 m^2 per capita in Berlin and over 1000 m^2 per capita in Mecklenburg-Western Pomerania and Brandenburg.
- Figure 12 additionally presents an estimate of how much land for human settlement and transport infrastructure is used for what purposes. Transport, for example, is subdivided into access roads and extra-urban roads. Sparsely populated, non-city Federal States not only provide their citizens amply with built-up land and access roads, but they must also operate and maintain a widespread network of supra-regional roads. Per-capita costs for this will likely increase steadily in future as the population continues to shrink.

Abbildung 1

Tägliche Zunahme der Siedlungs- und Verkehrsfläche im Zeitraum von 1993 bis 2007
Handlungsziel der nationalen Nachhaltigkeitsstrategie zum Jahr 2020
sowie Zwischenziel des Umweltbundesamtes bis zum Jahr 2010

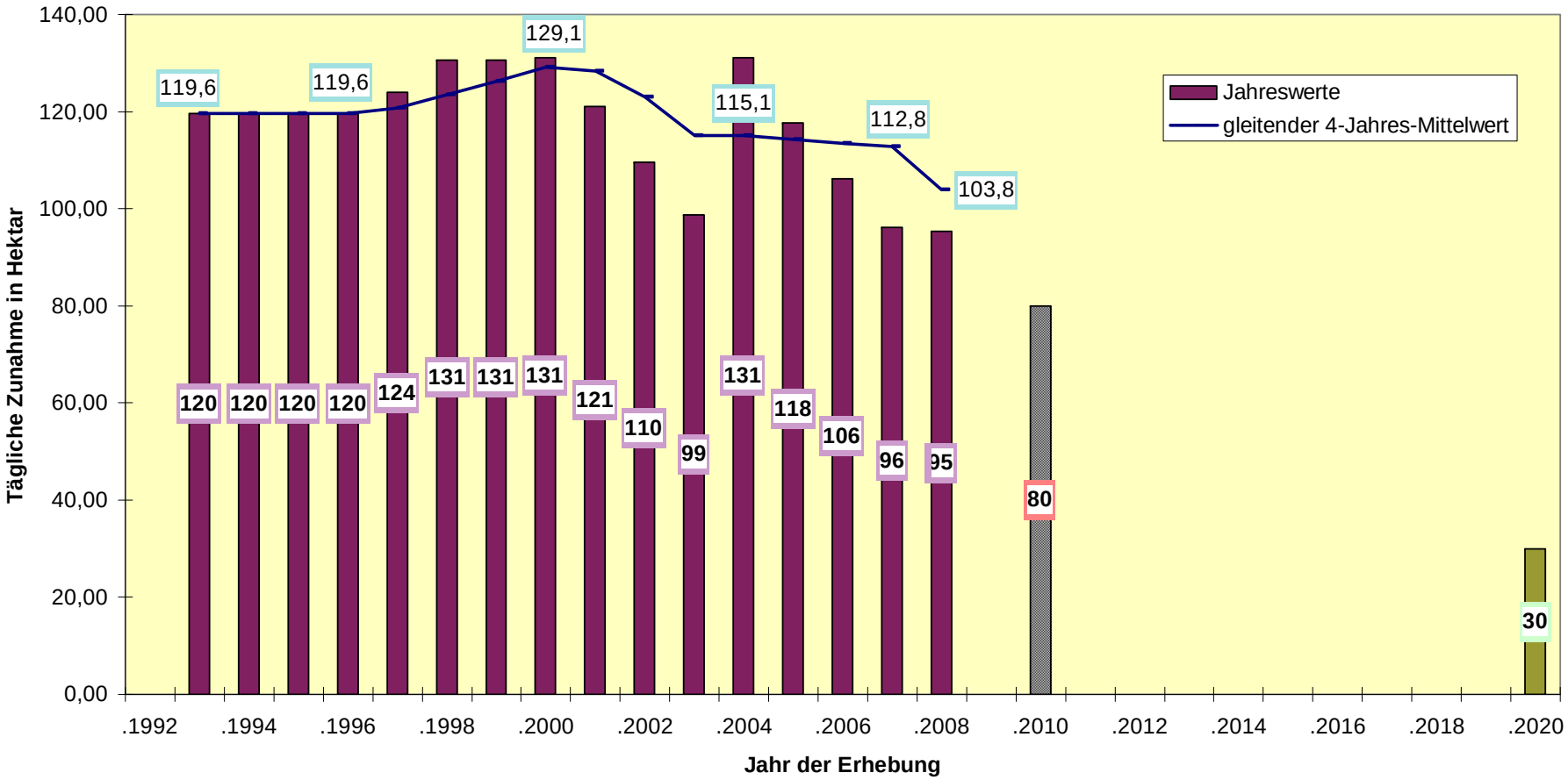


Abbildung 2

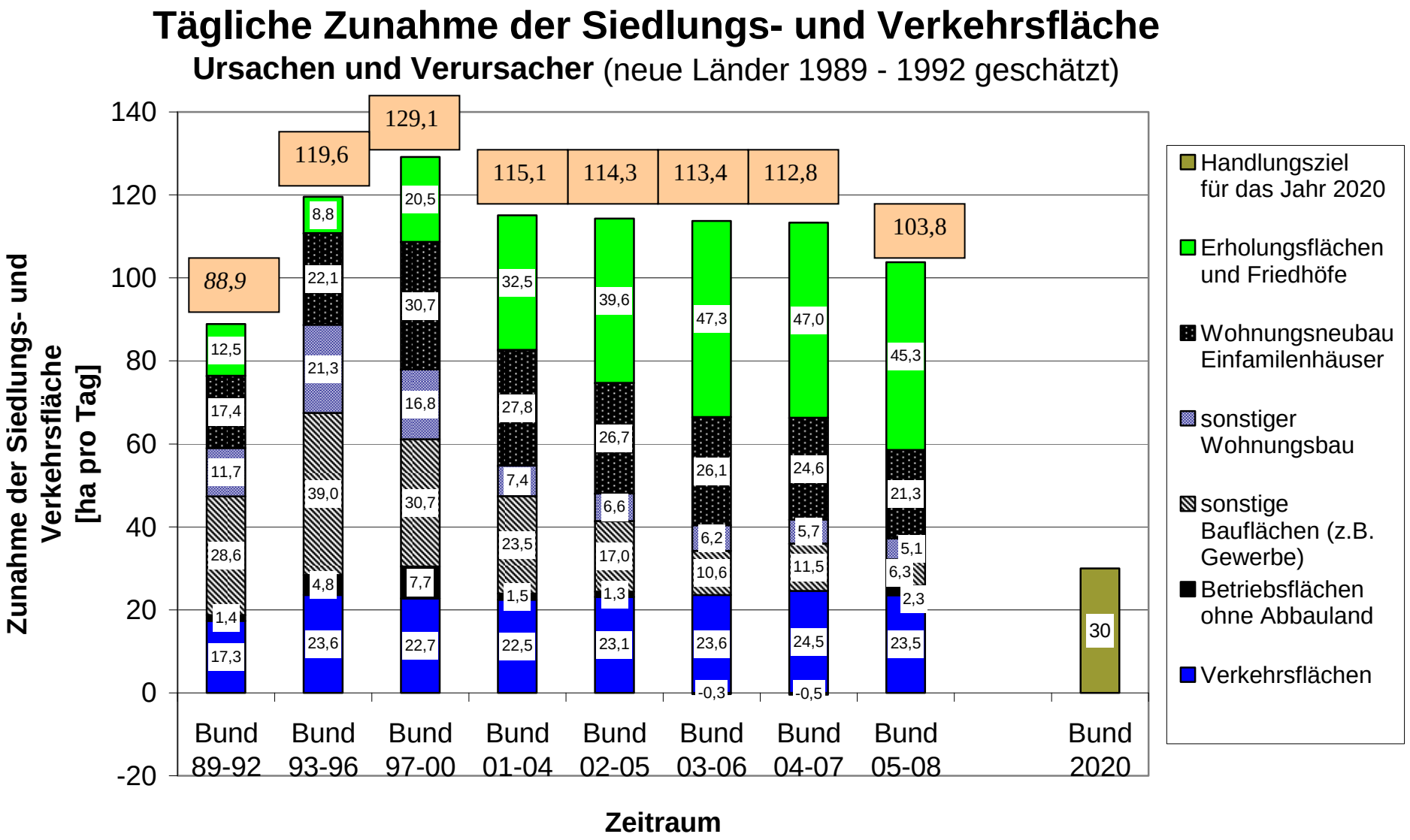

Tägliche Zunahme der Siedlungs- und Verkehrsfläche
Ursachen und Verursacher (neue Länder 1989 - 1992 geschätzt)
Zunahme der Siedlungs- und Verkehrsfläche [ha pro Tag]
Zeitraum
Bund 89-92
Bund 93-96
Bund 97-00
Bund 01-04
Bund 02-05
Bund 03-06
Bund 04-07
Bund 05-08
Bund 2020
88,9
119,6
129,1
115,1
114,3
113,4
112,8
103,8
30
Handlungsziel für das Jahr 2020
Erholungsflächen und Friedhöfe
Wohnungsneubau Einfamilenhäuser
sonstiger Wohnungsbau
sonstige Bauflächen (z.B. Gewerbe)
Betriebsflächen ohne Abbauland
Verkehrsflächen

Abbildung 3

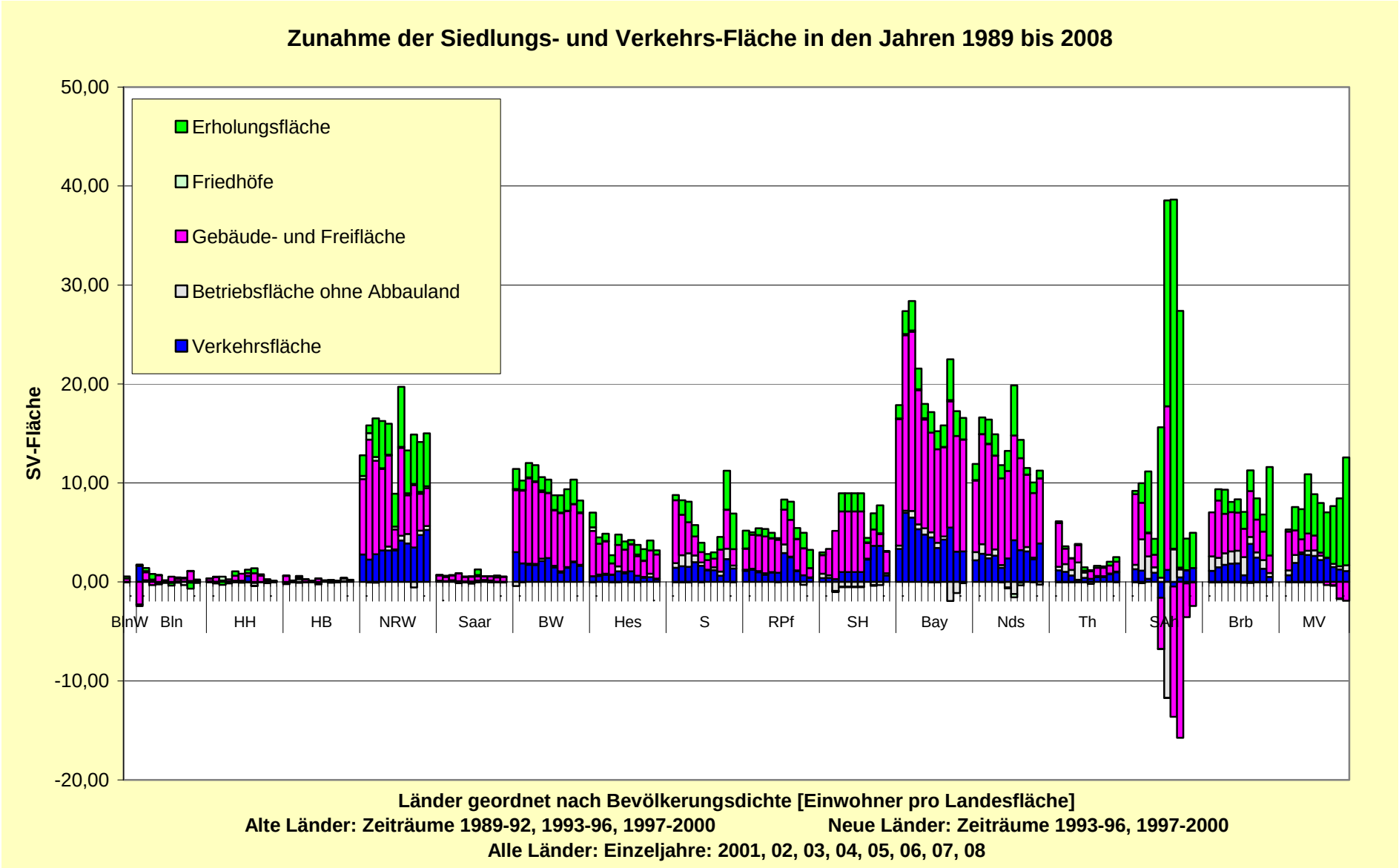

Zunahme der Siedlungs- und Verkehrs-Fläche in den Jahren 1989 bis 2008
SV-Fläche
50,00
40,00
30,00
20,00
10,00
0,00
-10,00
-20,00
Erholungsfläche
Friedhöfe
Gebäude- und Freifläche
Betriebsfläche ohne Abbauland
Verkehrsfläche
BlnW
Bln
HH
HB
NRW
Saar
BW
Hes
S
RPf
SH
Bay
Nds
Th
SAn
Brb
MV
Länder geordnet nach Bevölkerungsdichte [Einwohner pro Landesfläche]
Alte Länder: Zeiträume 1989-92, 1993-96, 1997-2000
Neue Länder: Zeiträume 1993-96, 1997-2000
Alle Länder: Einzeljahre: 2001, 02, 03, 04, 05, 06, 07, 08

Abbildung 4

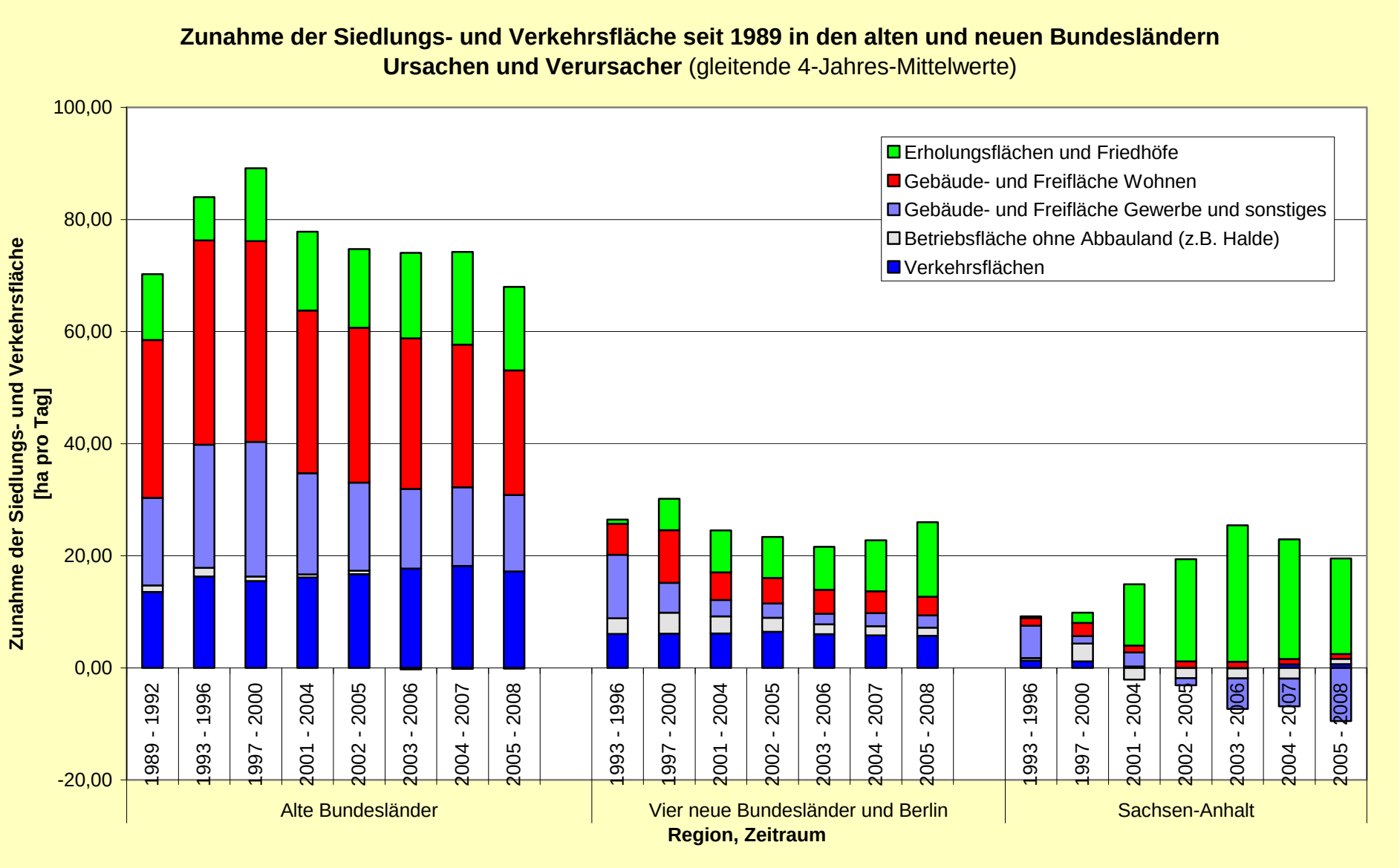
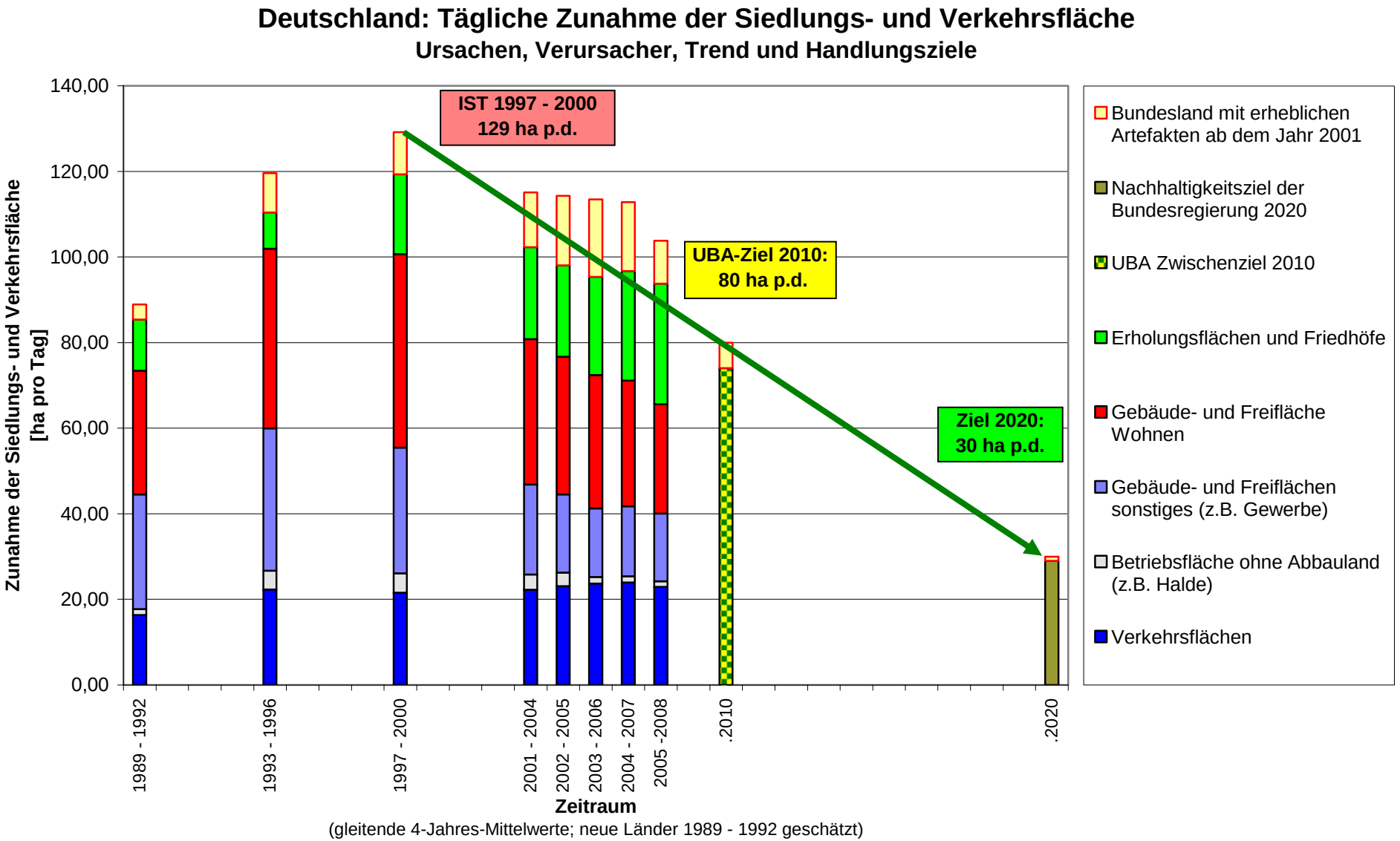

Zunahme der Siedlungs- und Verkehrsfläche seit 1989 in den alten und neuen Bundesländern
Ursachen und Verursacher (gleitende 4-Jahres-Mittelwerte)
Zunahme der Siedlungs- und Verkehrsfläche [ha pro Tag]
100,00
80,00
60,00
40,00
20,00
0,00
-20,00
Erholungsflächen und Friedhöfe
Gebäude- und Freifläche Wohnen
Gebäude- und Freifläche Gewerbe und sonstiges
Betriebsfläche ohne Abbauland (z.B. Halde)
Verkehrsflächen
1989 - 1992
1993 - 1996
1997 - 2000
2001 - 2004
2002 - 2005
2003 - 2006
2004 - 2007
2005 - 2008
1993 - 1996
1997 - 2000
2001 - 2004
2002 - 2005
2003 - 2006
2004 - 2007
2005 - 2008
1993 - 1996
1997 - 2000
2001 - 2004
2002 - 2005
2003 - 2006
2004 - 2007
2005 - 2008
Alte Bundesländer
Vier neue Bundesländer und Berlin
Sachsen-Anhalt
Region, Zeitraum

Abbildung 5



(gleitende 4-Jahres-Mittelwerte; neue Länder 1989 - 1992 geschätzt)

Abbildung 6

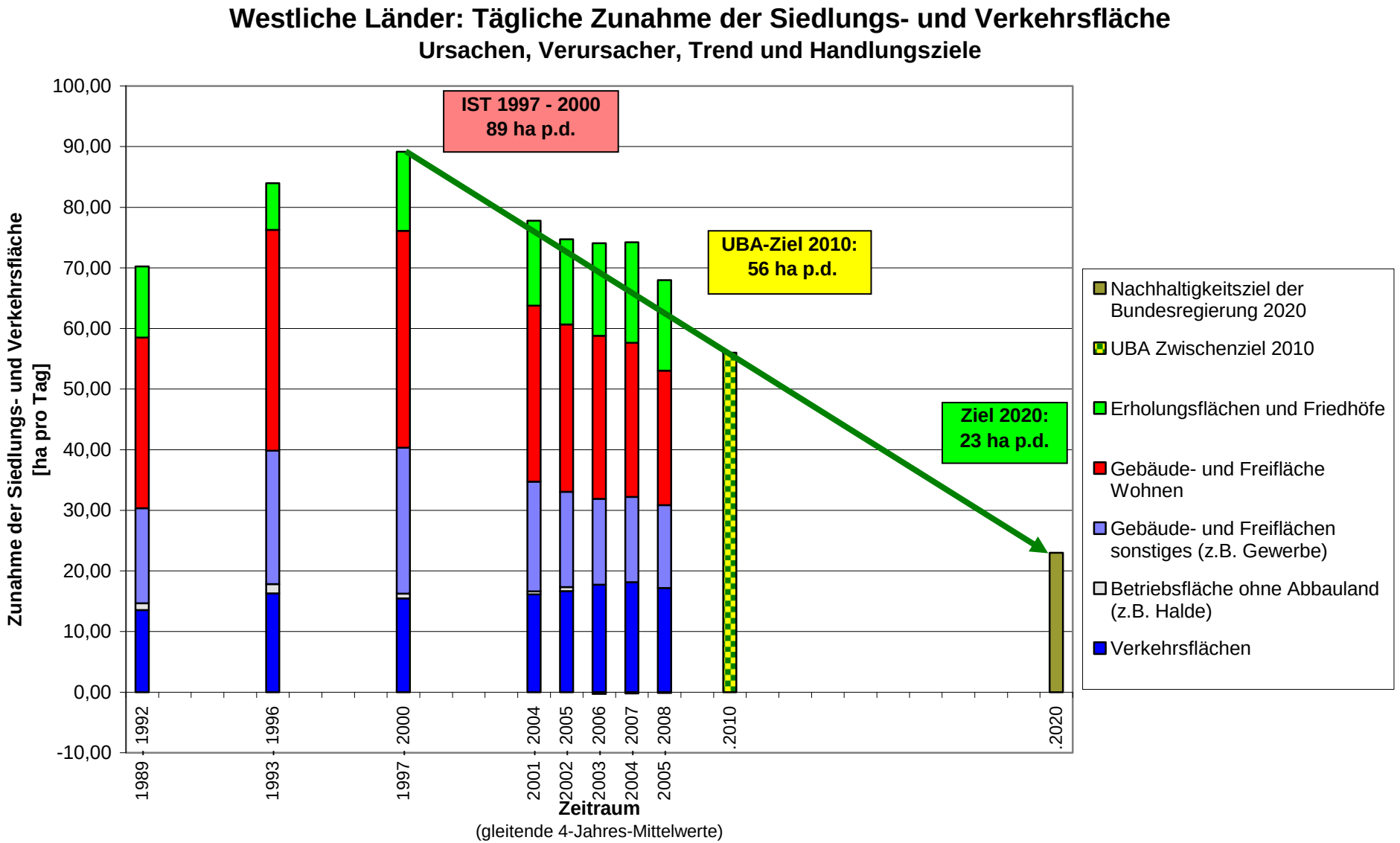
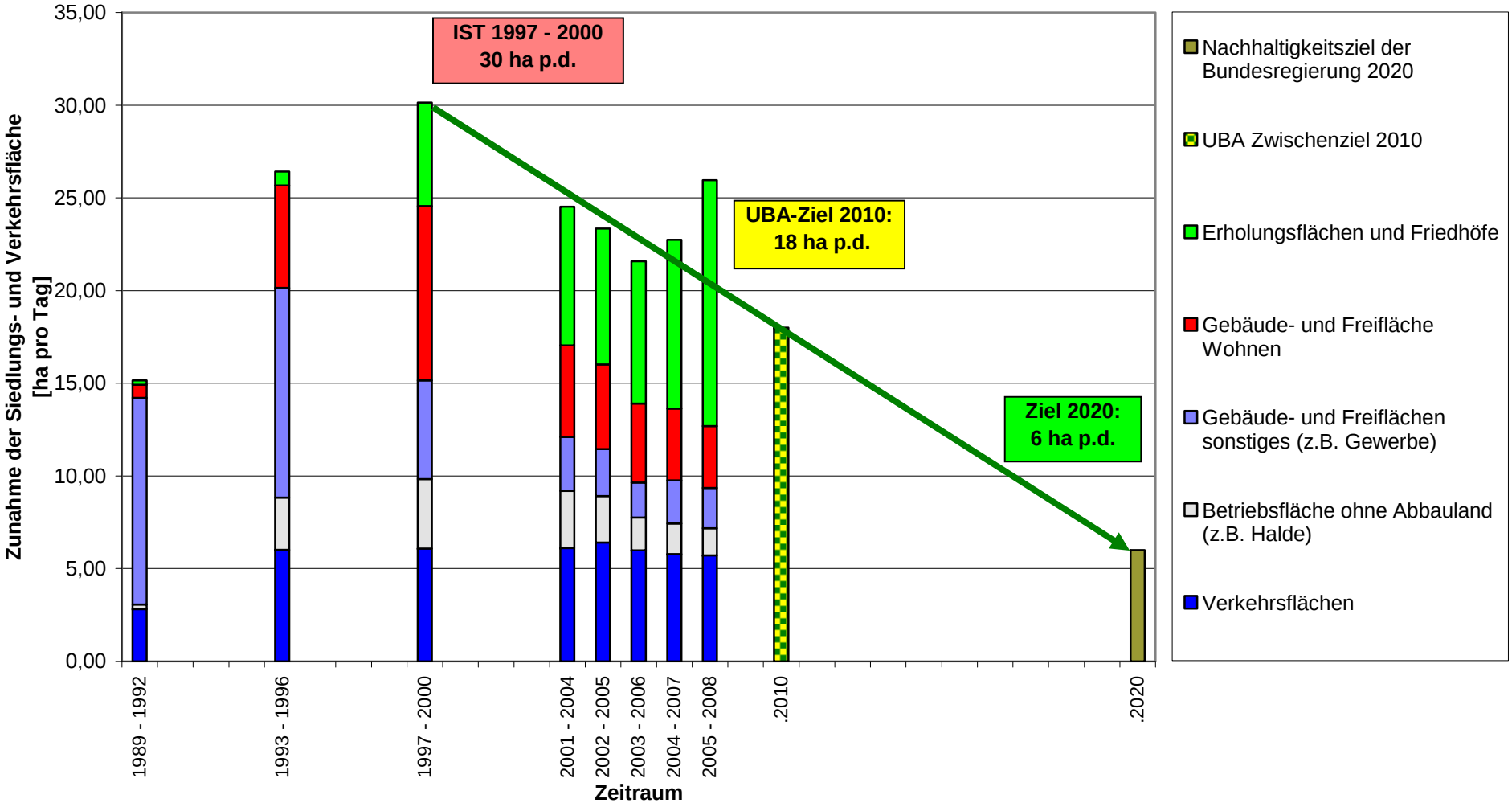

Westliche Länder: Tägliche Zunahme der Siedlungs- und Verkehrsfläche
Ursachen, Verursacher, Trend und Handlungsziele
IST 1997 - 2000
89 ha p.d.
UBA-Ziel 2010:
56 ha p.d.
Ziel 2020:
23 ha p.d.
Zunahme der Siedlungs- und Verkehrsfläche
[ha pro Tag]
100,00
90,00
80,00
70,00
60,00
50,00
40,00
30,00
20,00
10,00
0,00
-10,00
1989 - 1992
1993 - 1996
1997 - 2000
2001 - 2004
2002 - 2005
2003 - 2006
2004 - 2007
2005 - 2008
2010
2020
Zeitraum
(gleitende 4-Jahres-Mittelwerte)
Nachhaltigkeitsziel der Bundesregierung 2020
UBA Zwischenziel 2010
Erholungsflächen und Friedhöfe
Gebäude- und Freifläche Wohnen
Gebäude- und Freiflächen sonstiges (z.B. Gewerbe)
Betriebsfläche ohne Abbauland (z.B. Halde)
Verkehrsflächen

Abbildung 7

4 Östliche Länder+Berlin: Tägliche Zunahme der Siedlungs- und Verkehrsfläche

Ursachen, Verursacher, Trend und Handlungsziele



(gleitende 4-Jahres-Mittelwerte; neue Länder 1989 - 1992 geschätzt)

Abbildung 8

Zunahme der Gebäude- und Freiflächen und Baufertigstellungen von neuen Gebäuden in den alten und neuen Bundesländern im Zeitraum von 1989 bis 2007 *(ohne Sachsen-Anhalt)*

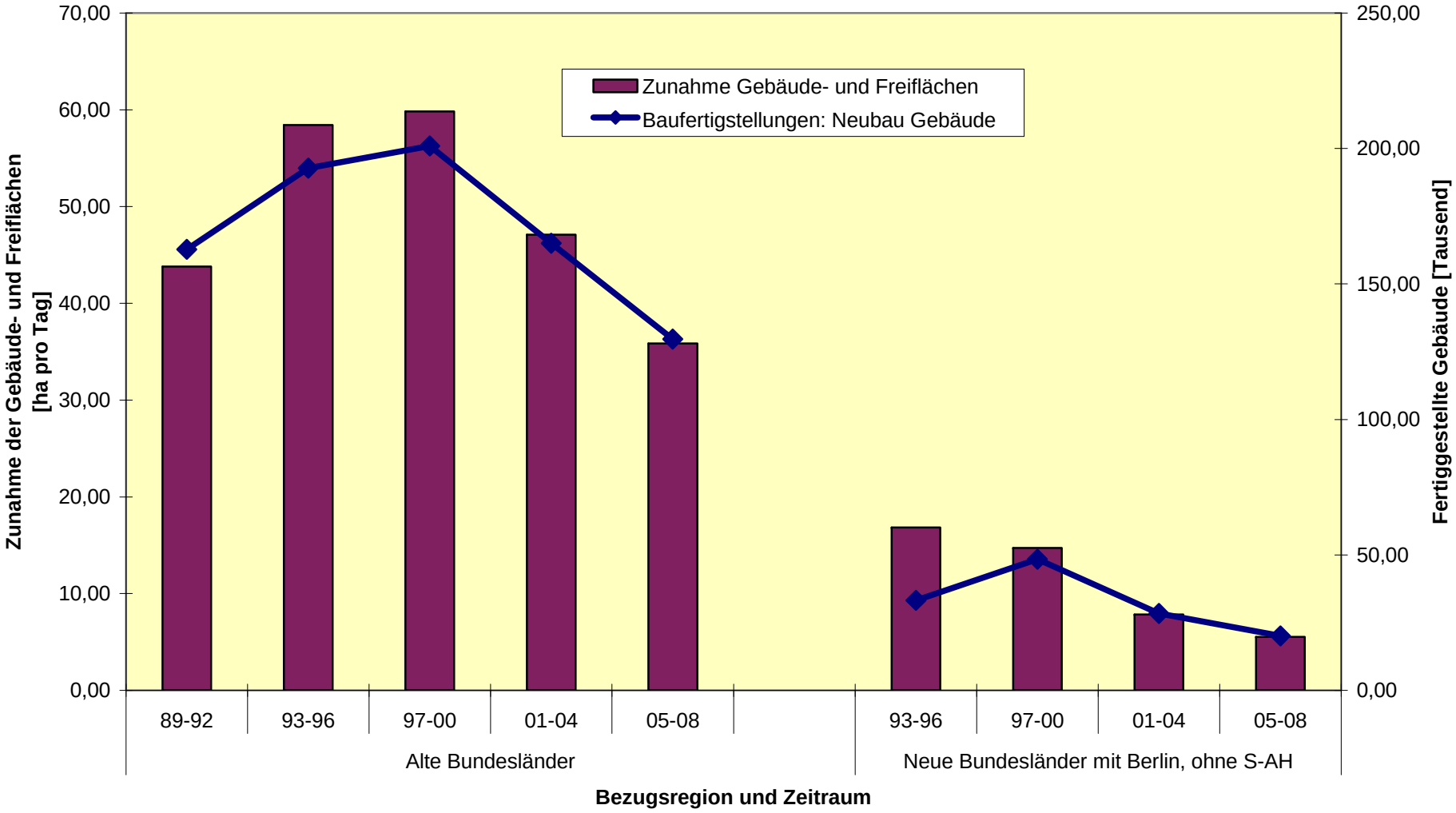


Abbildung 9

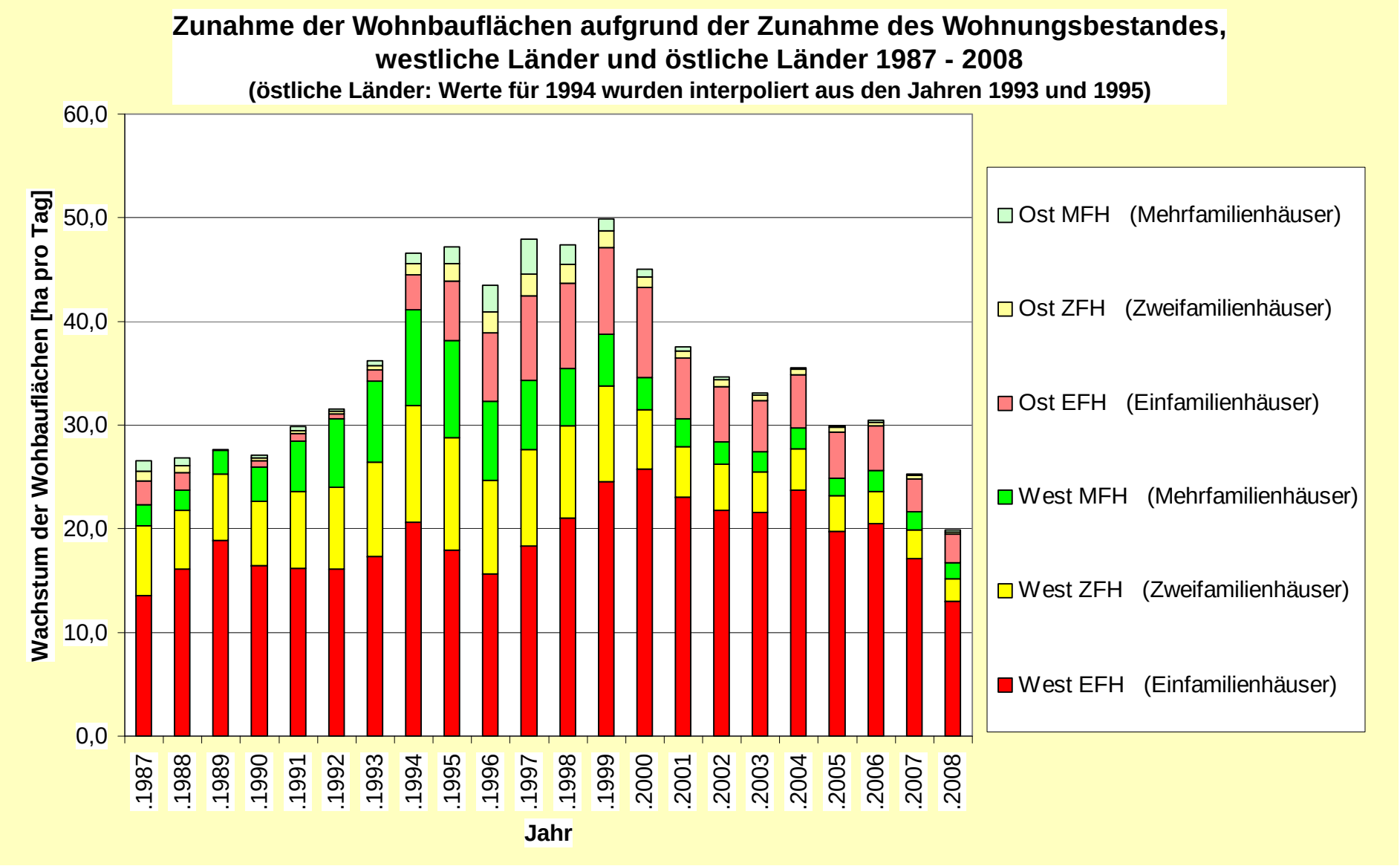

Zunahme der Wohnbauflächen aufgrund der Zunahme des Wohnungsbestandes, westliche Länder und östliche Länder 1987 - 2008
(östliche Länder: Werte für 1994 wurden interpoliert aus den Jahren 1993 und 1995)
Wachstum der Wohbauflächen [ha pro Tag]
60,0
50,0
40,0
30,0
20,0
10,0
0,0
.1987
.1988
.1989
.1990
.1991
.1992
.1993
.1994
.1995
.1996
.1997
.1998
.1999
.2000
.2001
.2002
.2003
.2004
.2005
.2006
.2007
.2008
Jahr
Ost MFH (Mehrfamilienhäuser)
Ost ZFH (Zweifamilienhäuser)
Ost EFH (Einfamilienhäuser)
West MFH (Mehrfamilienhäuser)
West ZFH (Zweifamilienhäuser)
West EFH (Einfamilienhäuser)

Abbildung 10

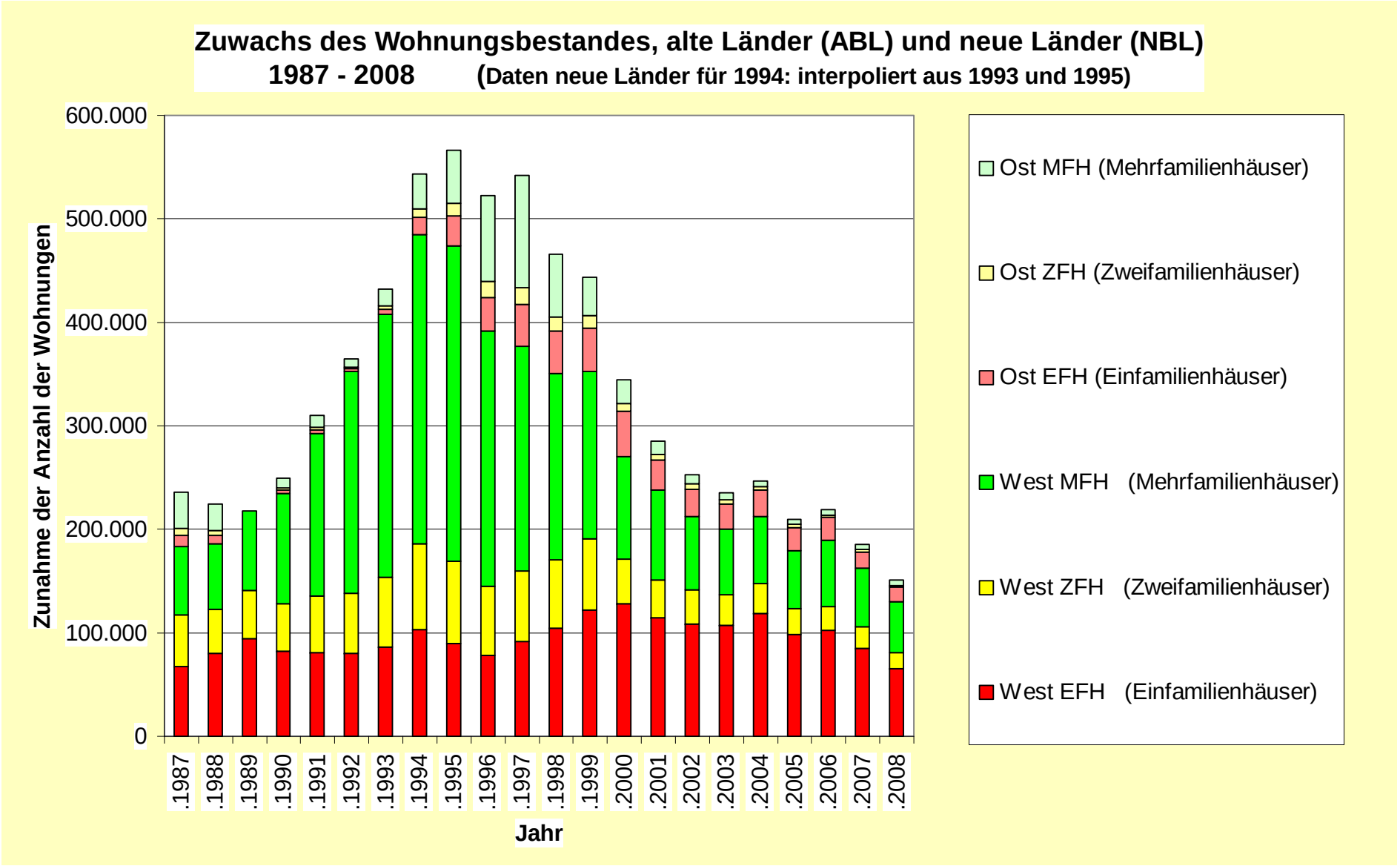
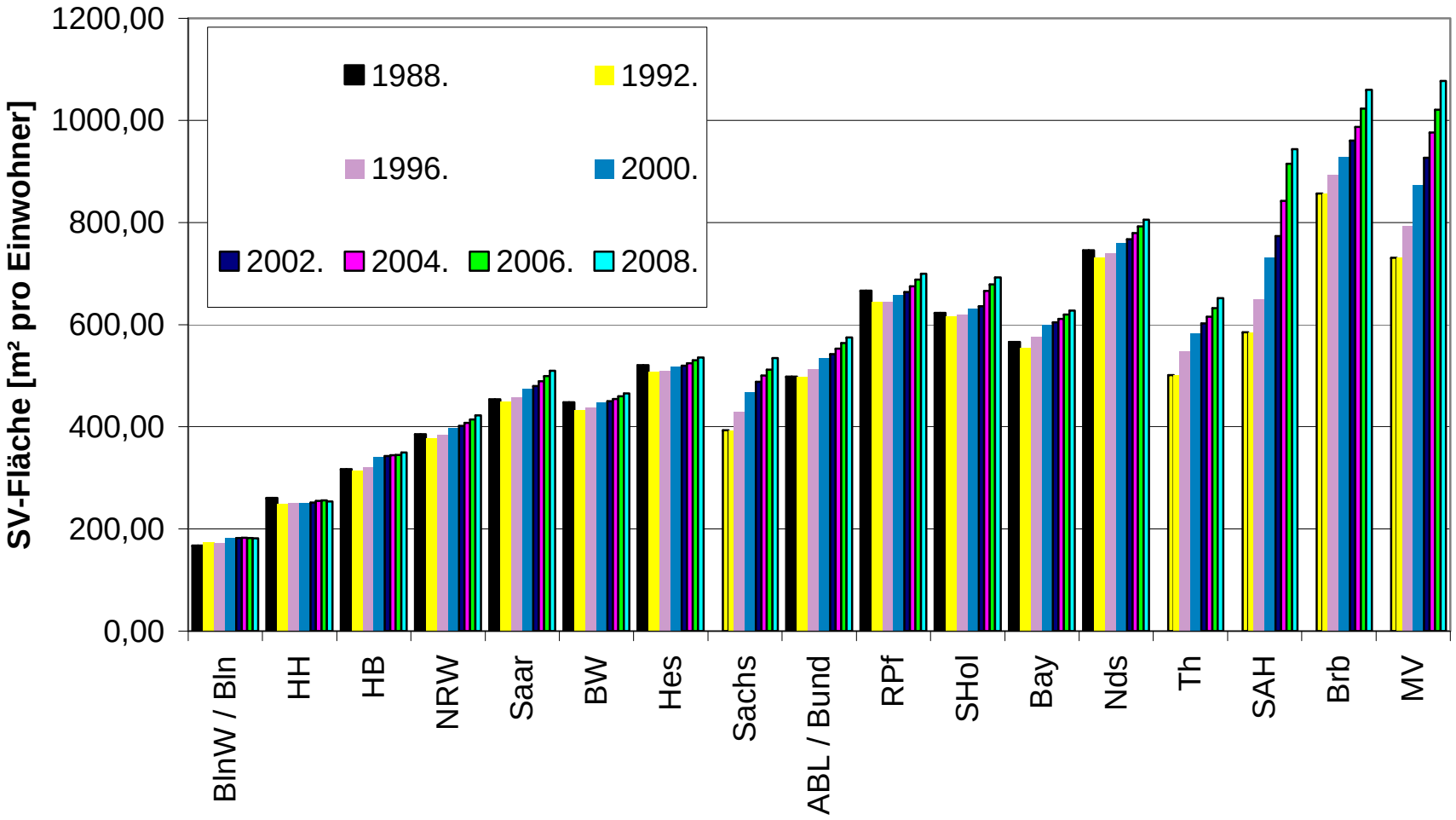


Abbildung 11

Siedlungs- und Verkehrsfläche pro Einwohner [m²]
am 31. 12. 1988, 1992, 1996, 2000, 2002, 2004, 2006, 2007/8



Bundesländer gereiht nach Bevölkerungsdichte [Einwohner / km² Landesfläche]

Abbildung 12

Belegung von Siedlungs- und Verkehrsflächen pro Kopf der Bevölkerung jeweils am 31.12. 1992 und 2008