Fate of anthropogenic CO_2 emissions (2007–2016)

Sources = Sinks

34.4 $GtCO_2$/yr

88%

12%

4.8 $GtCO_2$/yr

17.2 $GtCO_2$/yr

46%

30%

11.0 $GtCO_2$/yr

24%

8.8 $GtCO_2$/yr

Budget Imbalance:

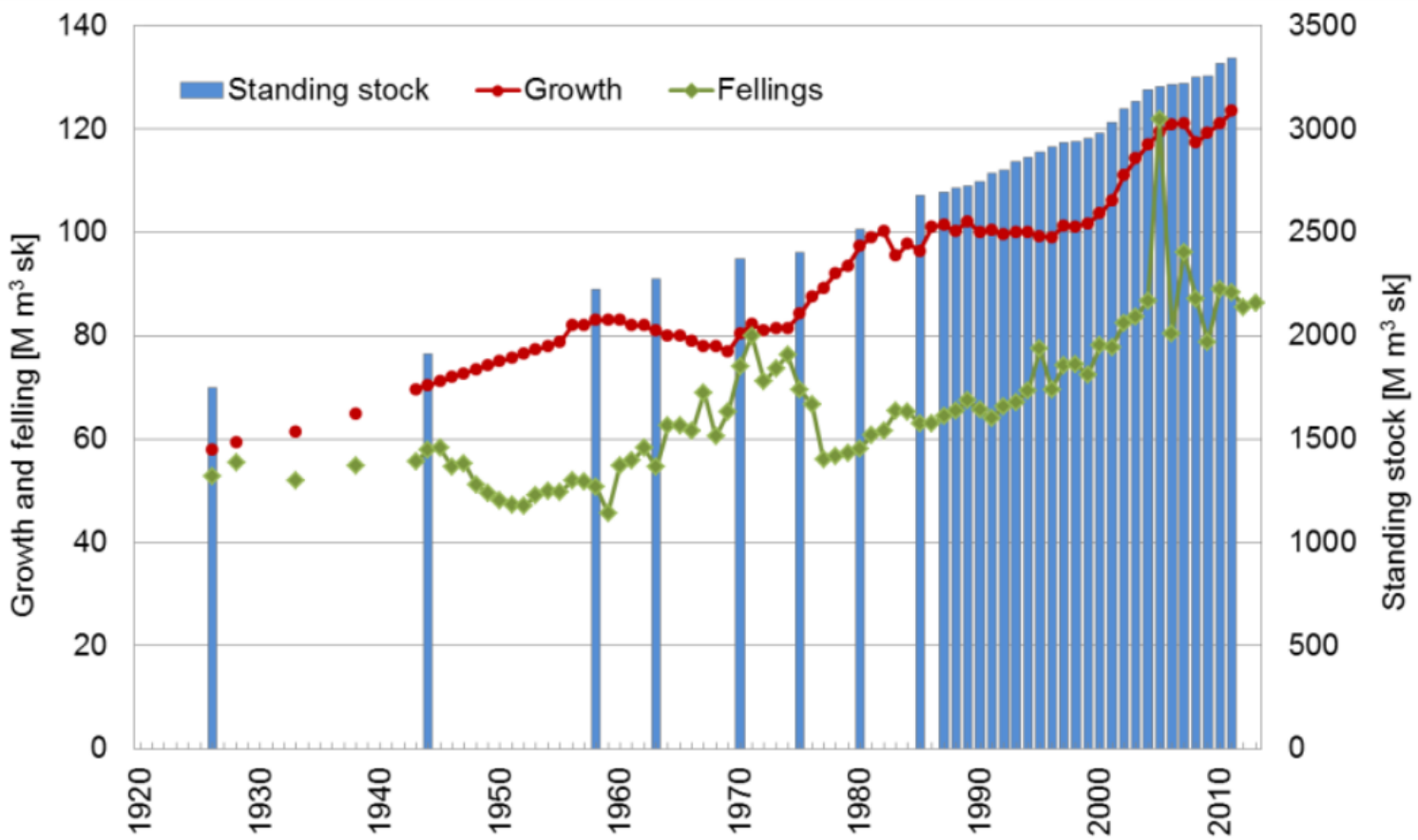
(the difference between estimated sources & sinks)

6%

2.2 $GtCO_2$/yr

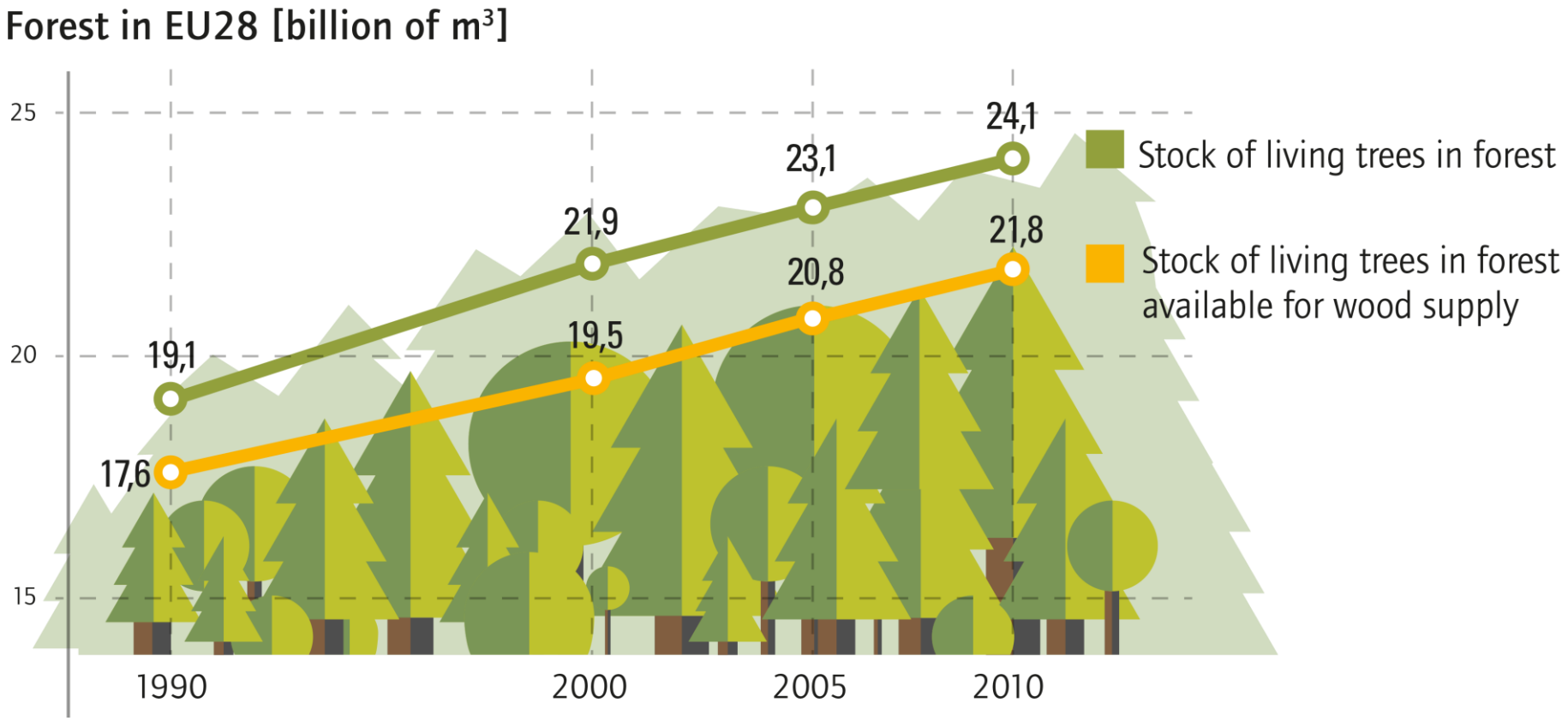
Source: CDIAC; NOAA-ESRL; Houghton and Nassikas 2017; Hansis et al 2015; Le Quéré et al 2017; Global Carbon Budget 2017

Standing stock in Swedish forests, annual growth and fellings



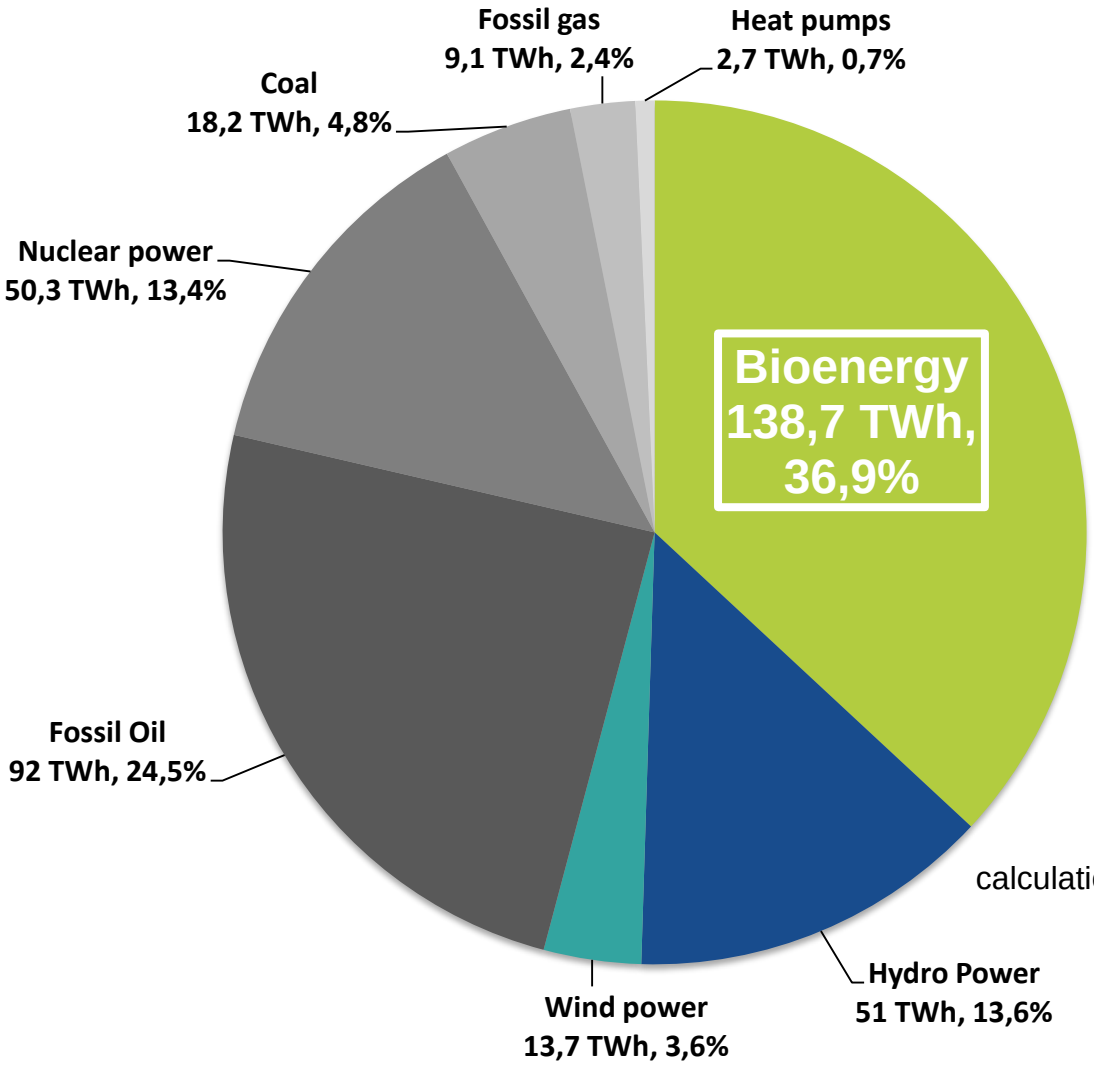
Source: Swedish Agricultural University, Forest department.

Trend of standing volume in European forests



Source: AEBIOM, European Bioenergy Outlook 2014

Swedish Energy use in 2017

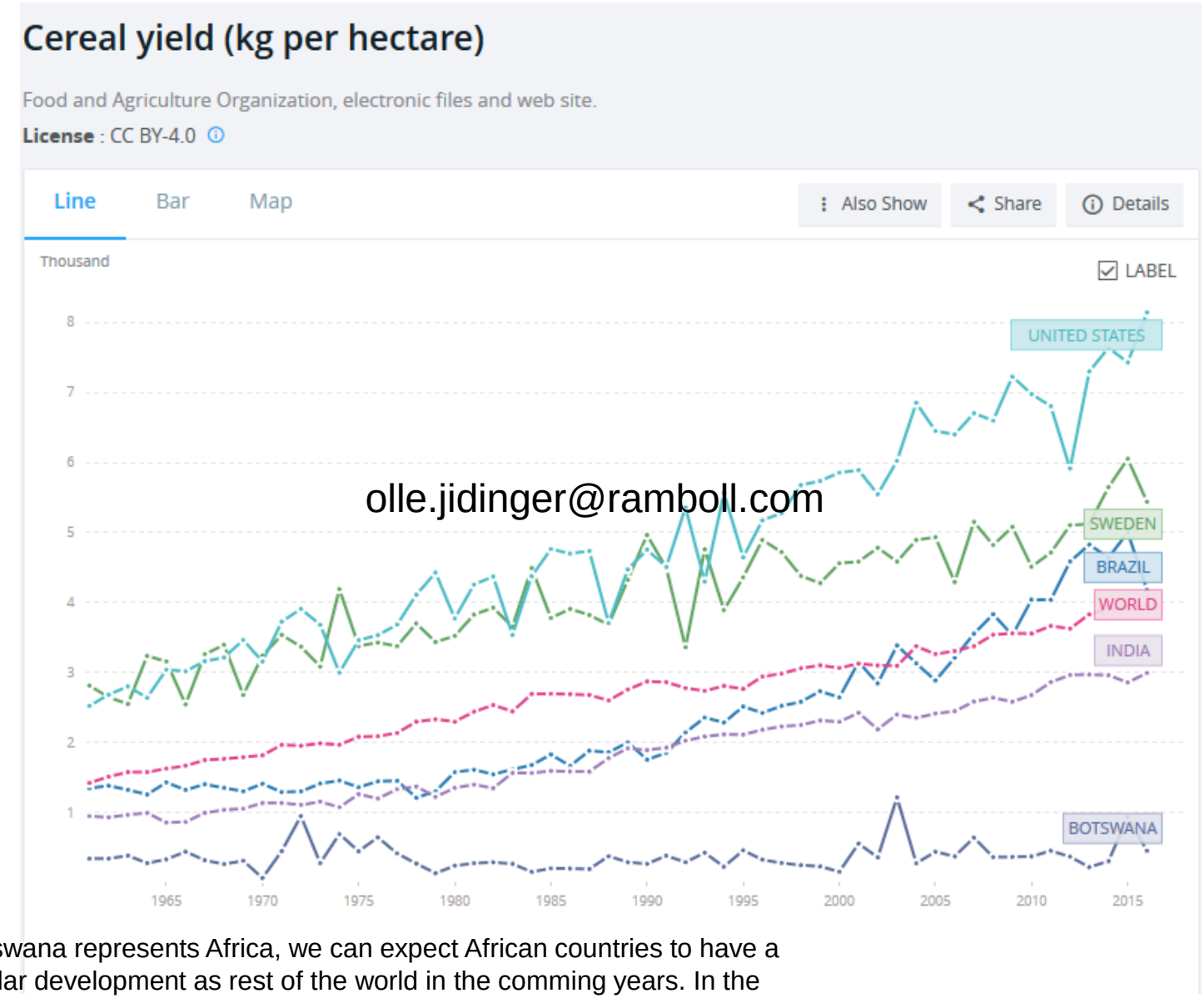


In the 1970-ties, fossil oil was 75 percent of Swedish energy use. In 2009 Bioenergy for the first time surpassed fossil oil. Last year sustainable bioenergy was 51 percent larger than fossil oil.

Final domestic energy use in Sweden 2017 divided in different energy sources. Bioenergy includes peat and waste, Source : Svebios calculation from preliminary statistics from the Swedish Energy Agency (Kortsiktsprognos mars 2018).

SVEBIO

Grain yield in the world and selected countries, 1961-2016, kg/ha



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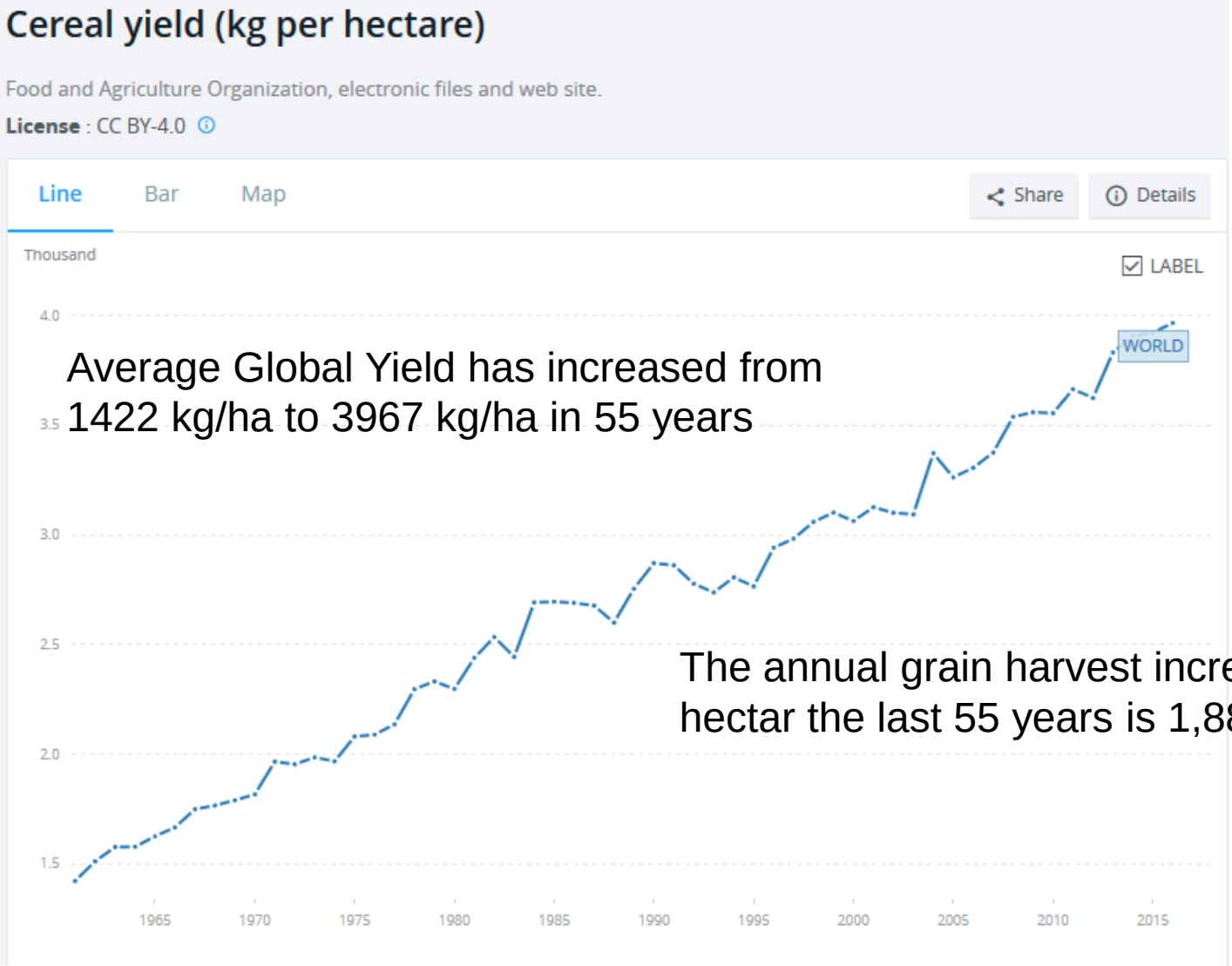
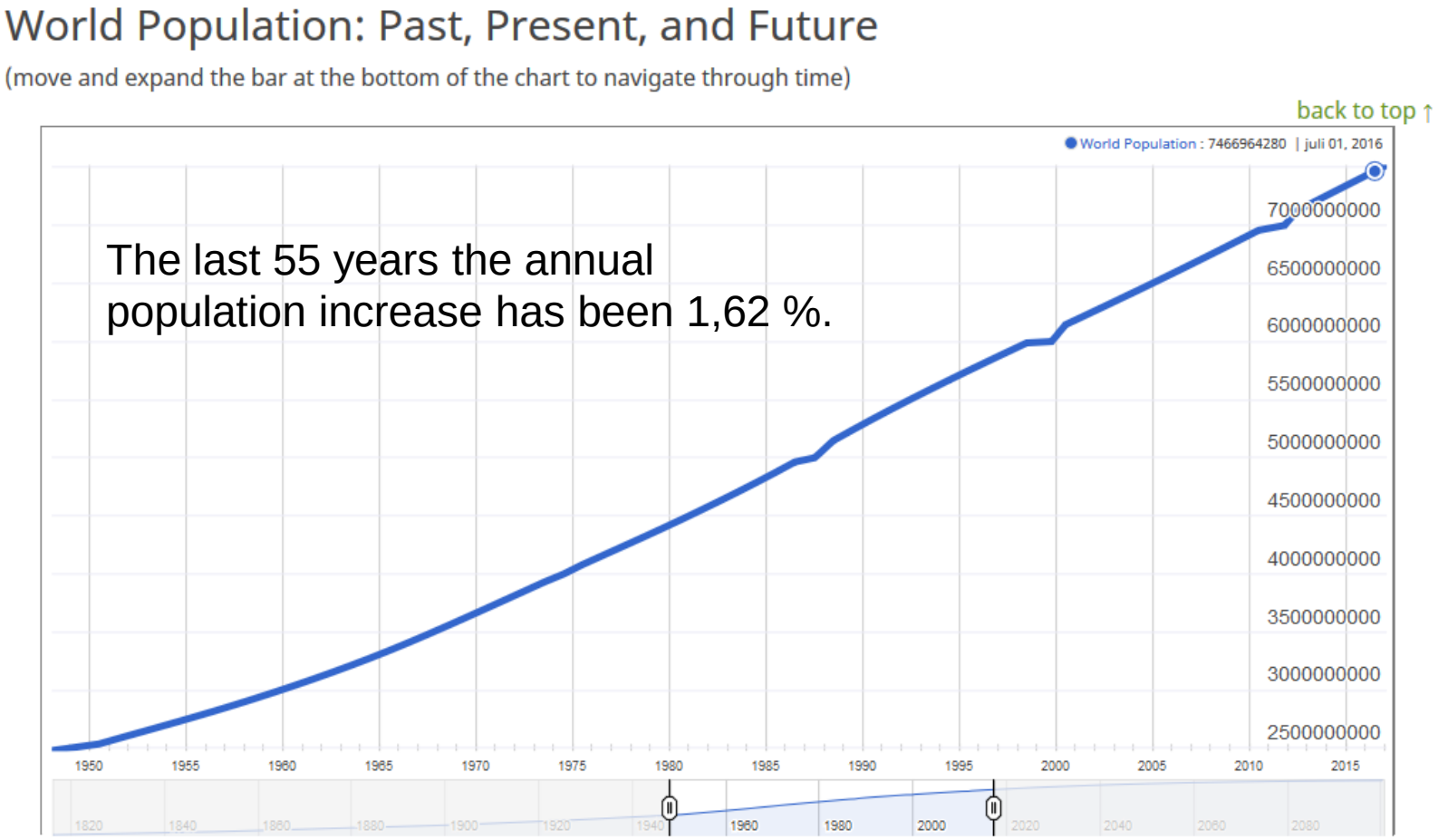
Botswana represents Africa, we can expect African countries to have a similar development as rest of the world in the comming years. In the future we have reason to expect all countries to reach at least US-level.

World Avarage Grain harvest, 1961-2016, kg/ha



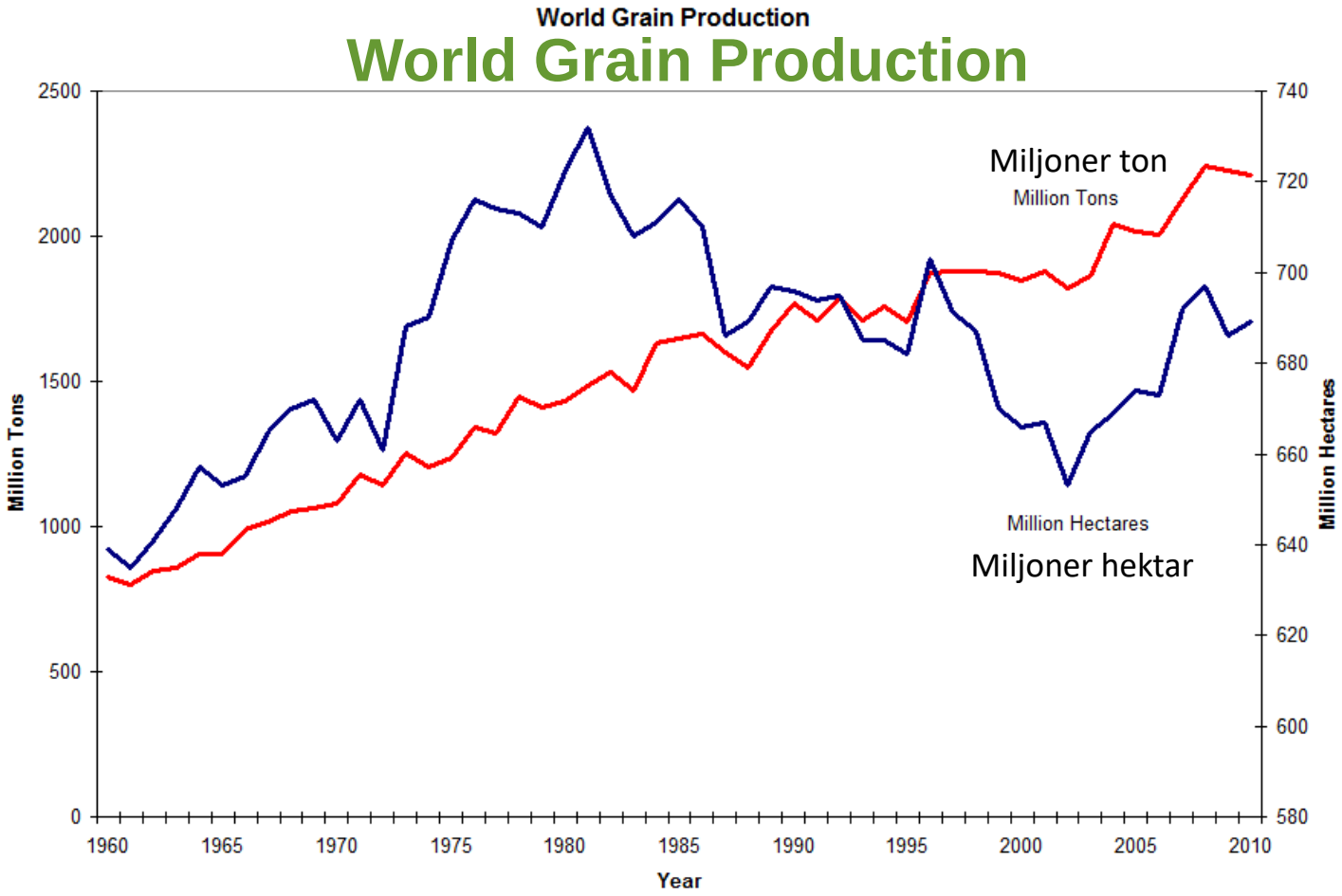
World population growth: Juli 1961 until Juli 2016. 3,09 mdr – 7,47 mdr



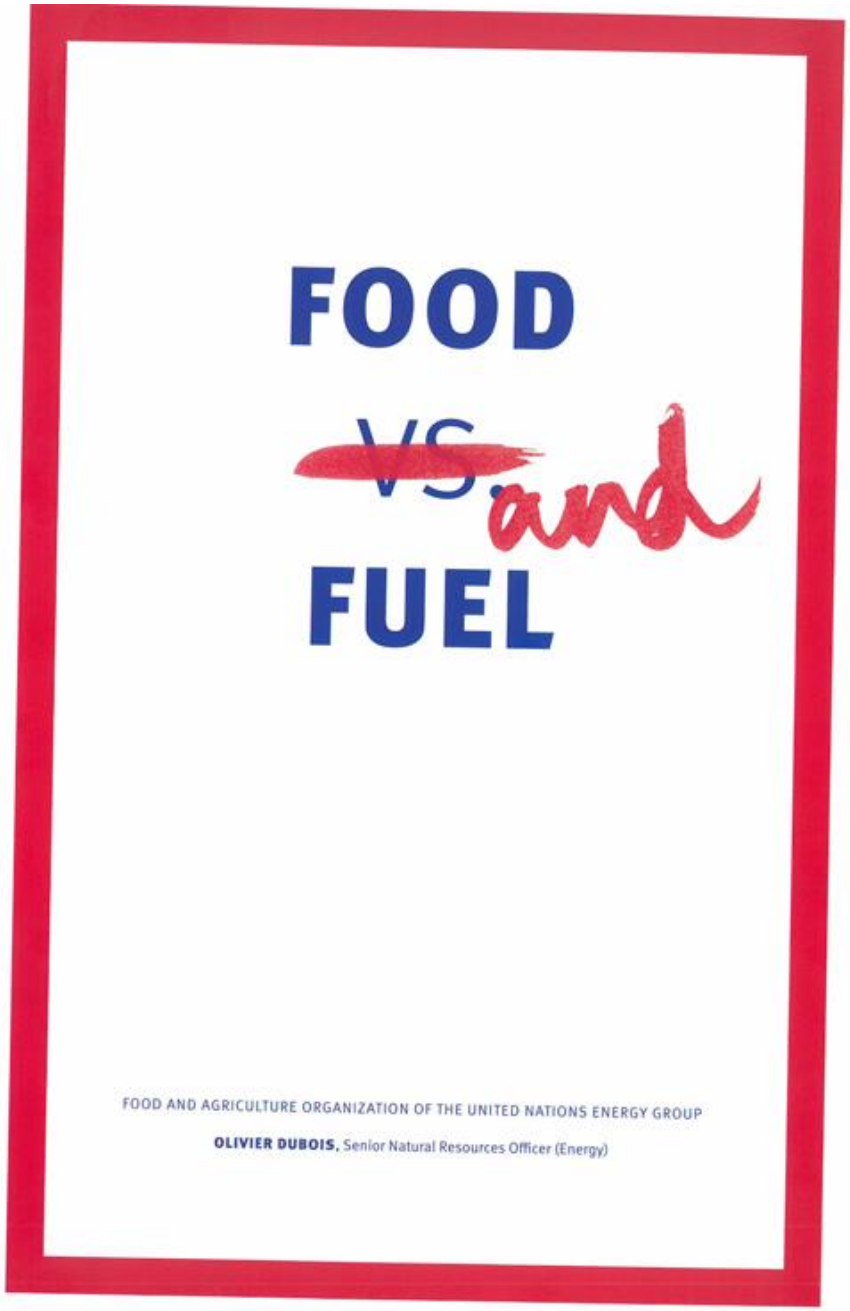
This means that for the last 55 years we use less and less land to fulfill the need of food. This is well known for European conditions but is also a global fact. We should use arable land for a faster replacement of fossil fuels

SVEBIO

World Grain Production



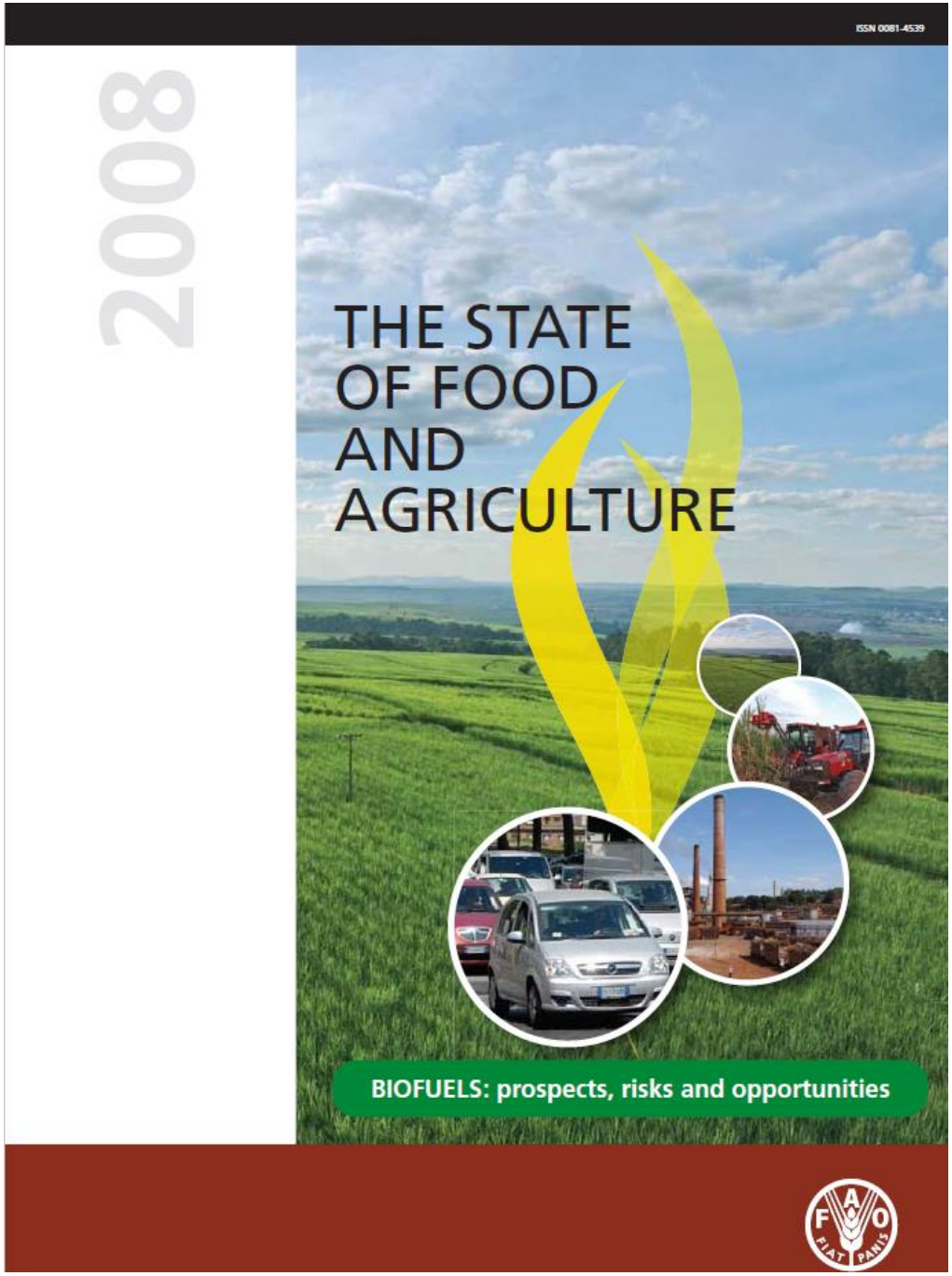
World Grain Production increase continously in balance with global demand. Since yield per hectare increase faster than food demand. Additional land is released for energy crops, biofuels or afforestation.



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS ENERGY GROUP

OLIVIER DUBOIS,
Senior Natural Resources Officer (Energy)

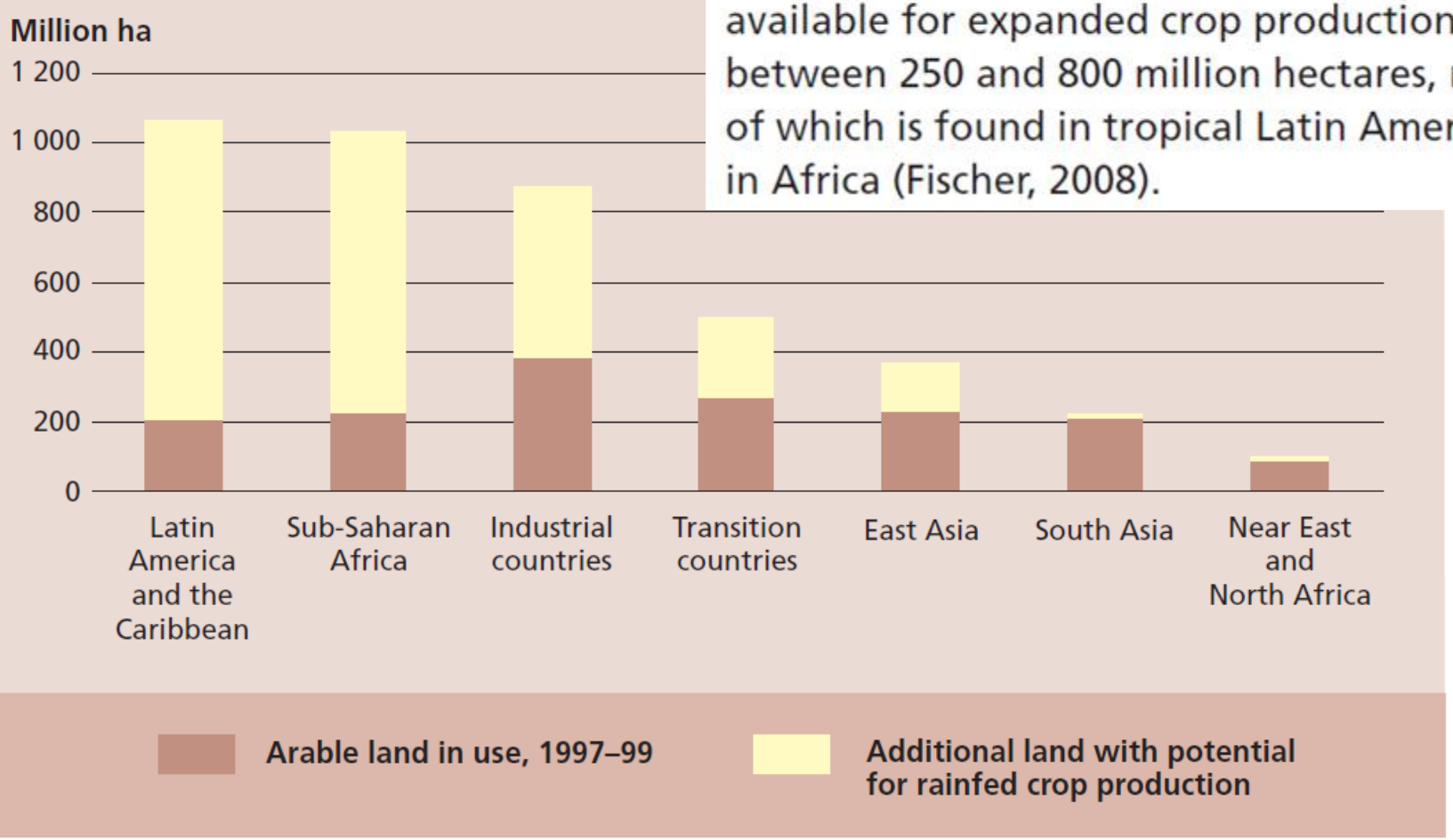
In 2015 the FAO changed their mind and agreed that biofuels on arable land can give farmers a cash crop to develop agriculture instead of seeing biofuls as a threath causing food shortage.


ISSN 0081-4539
2008
THE STATE OF FOOD AND AGRICULTURE
BIOFUELS: prospects, risks and opportunities
FIAT PANIS

Area expansion

After excluding forest land, protected areas and land needed to meet increased demand for food crops and livestock, estimates of the amount of land potentially available for expanded crop production lie between 250 and 800 million hectares, most of which is found in tropical Latin America or in Africa (Fischer, 2008).

FIGURE 24
Potential for cropland expansion



Source: FAO, 2003.

The State of Food and Agriculture, FAO 2008.

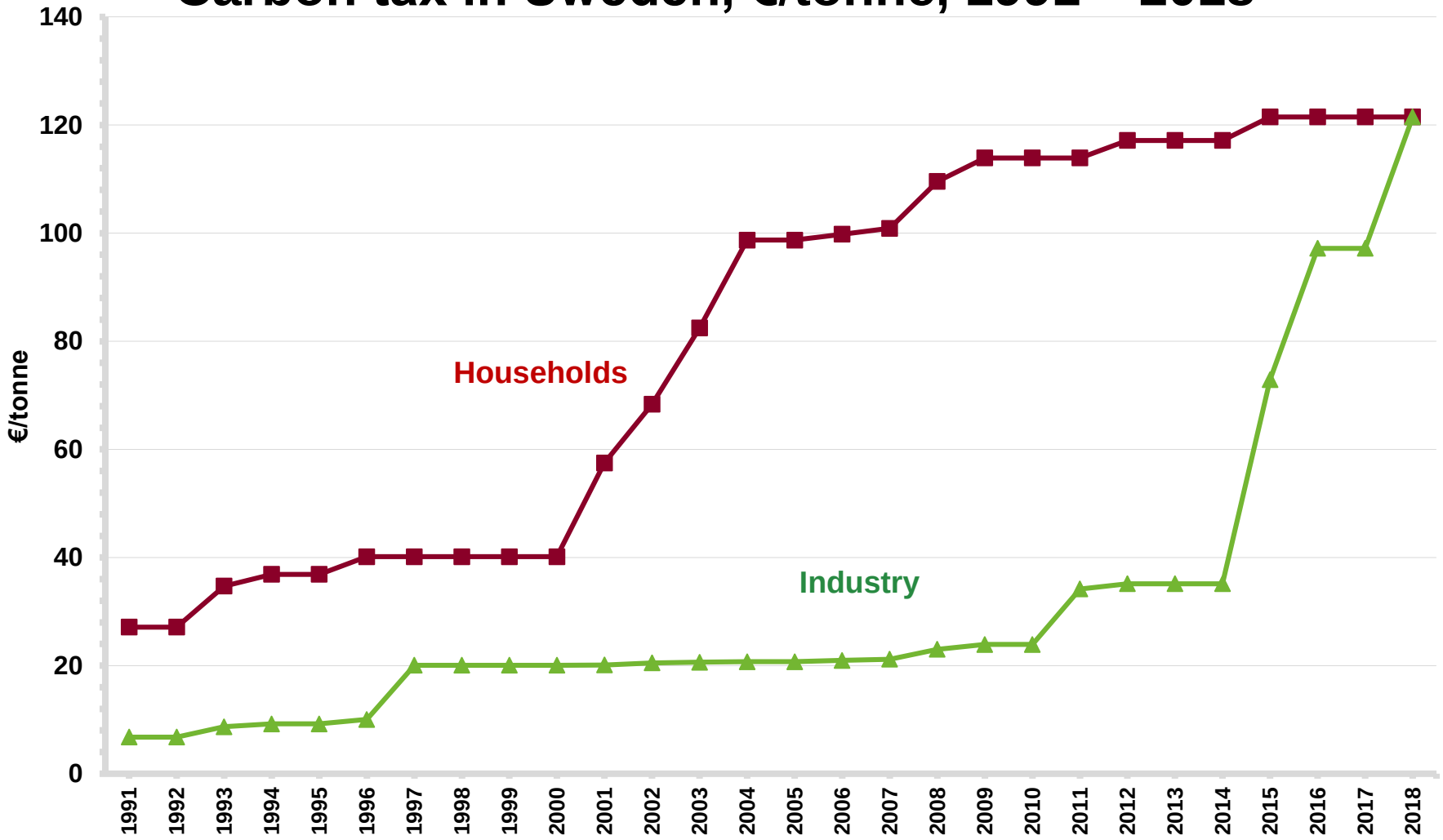
Swedish Carbon Pricing

- CO_2 tax on motor fuels and heating fuels since 1991
  - Based on fossil carbon content of fuels
  - Introduced along with existing energy tax. Part of major general tax reform.

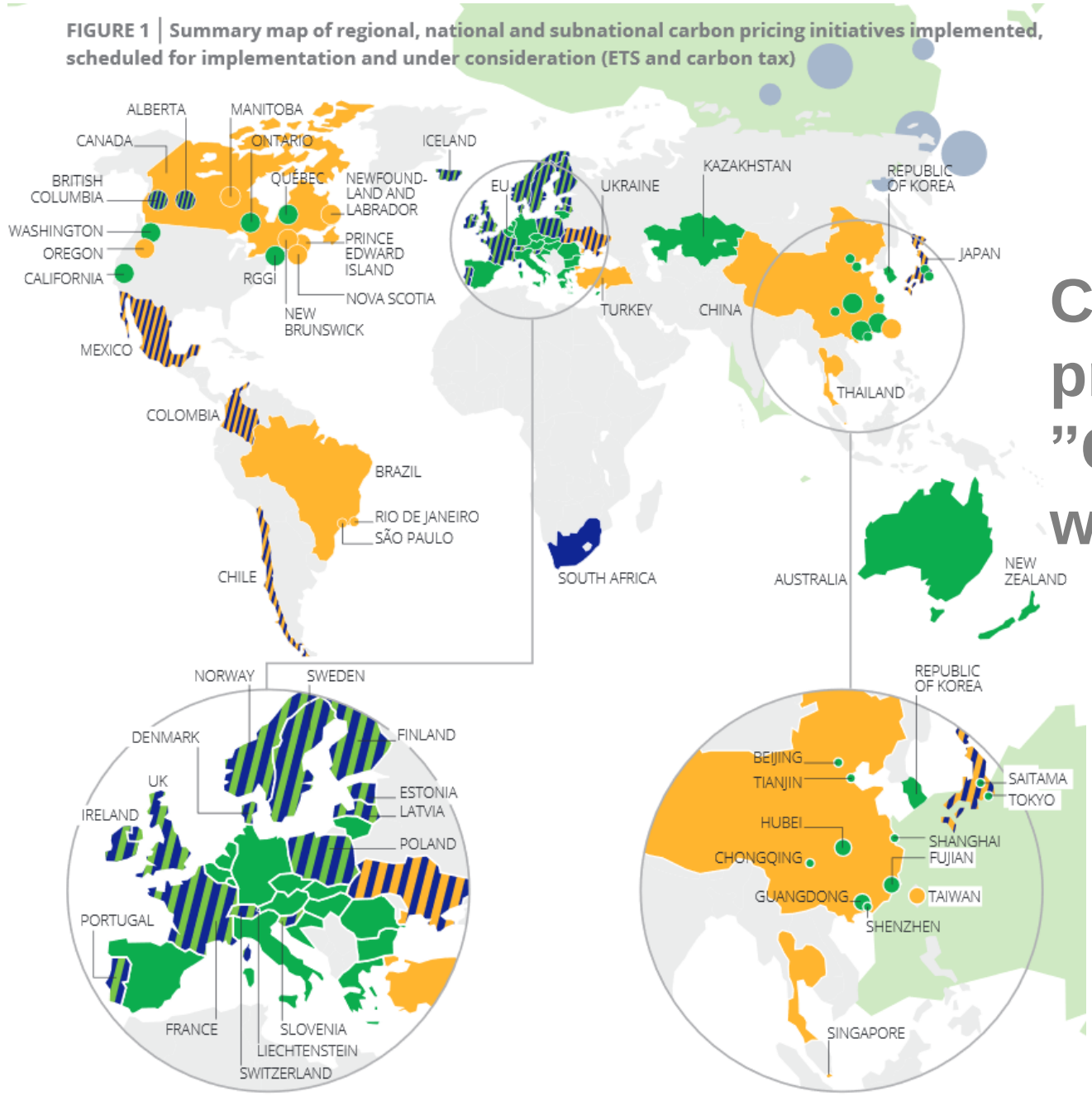
- EU Emission Trading Scheme (EU ETS) since 2005
  - Emissions of fossil CO_2 and other greenhouse gases
  - Large part of heavy industry, heat and power installations

- No CO_2 tax on industry covered by EU ETS

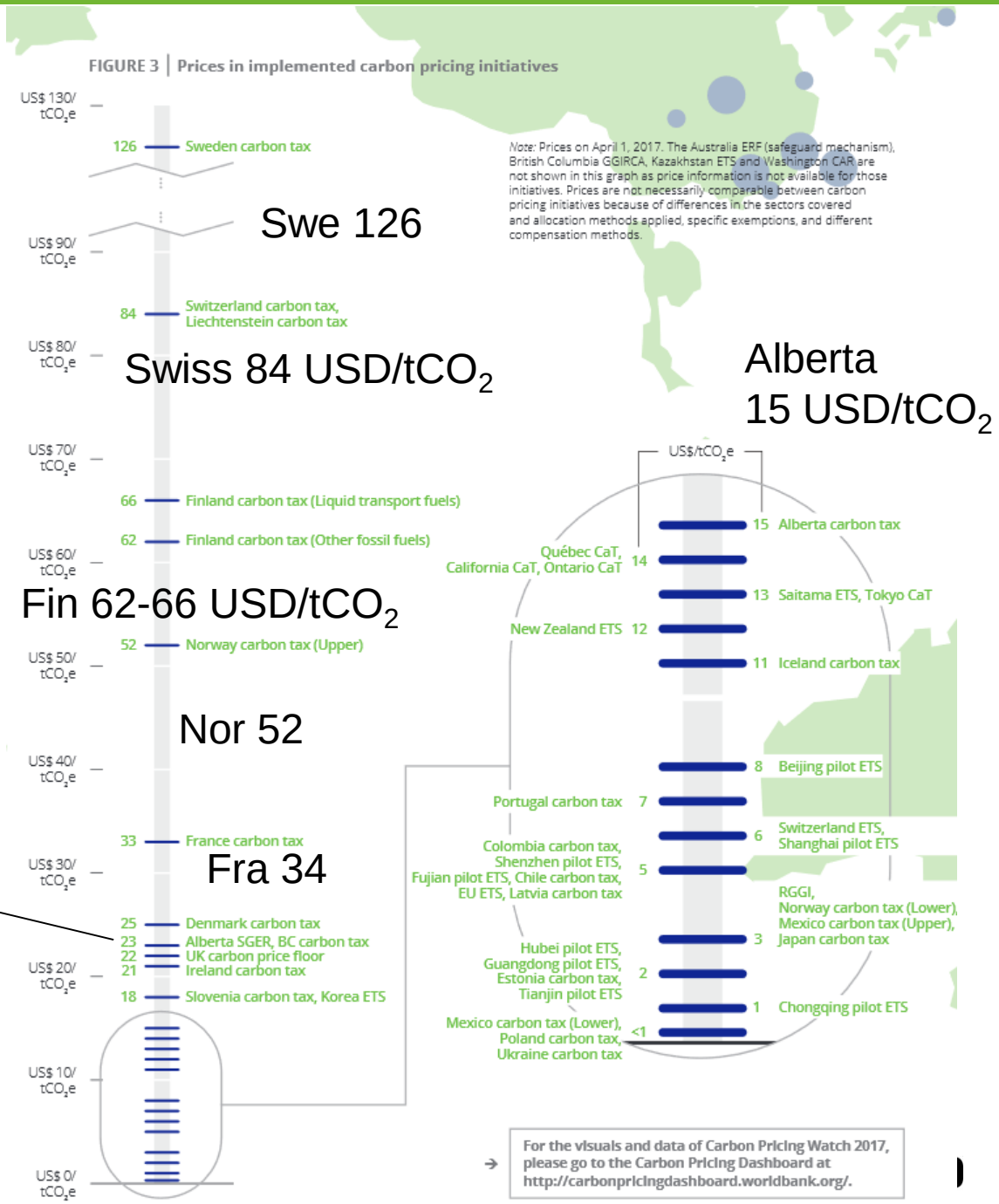
Carbon tax in Sweden, €/tonne, 1991 – 2018



Current carbon pricing initiatives ”Carbon Pricing watch 2017”



Prices in existing Carbon Pricing initiatives 2017



Swe 126

Swiss 84 USD/tCO_2

Alberta 15 USD/tCO_2

Fin 62-66 USD/tCO_2

Nor 52

Fra 34

Denmark, BC in Canada, UK
Ireland, Sloveia, Korea

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