NAE Chapter 5 Figures

Figure 5.1 Dynamics of water consumption in North America by kind of economic activities from 1900 to 2025. Source : Shiklomanov, 1999.

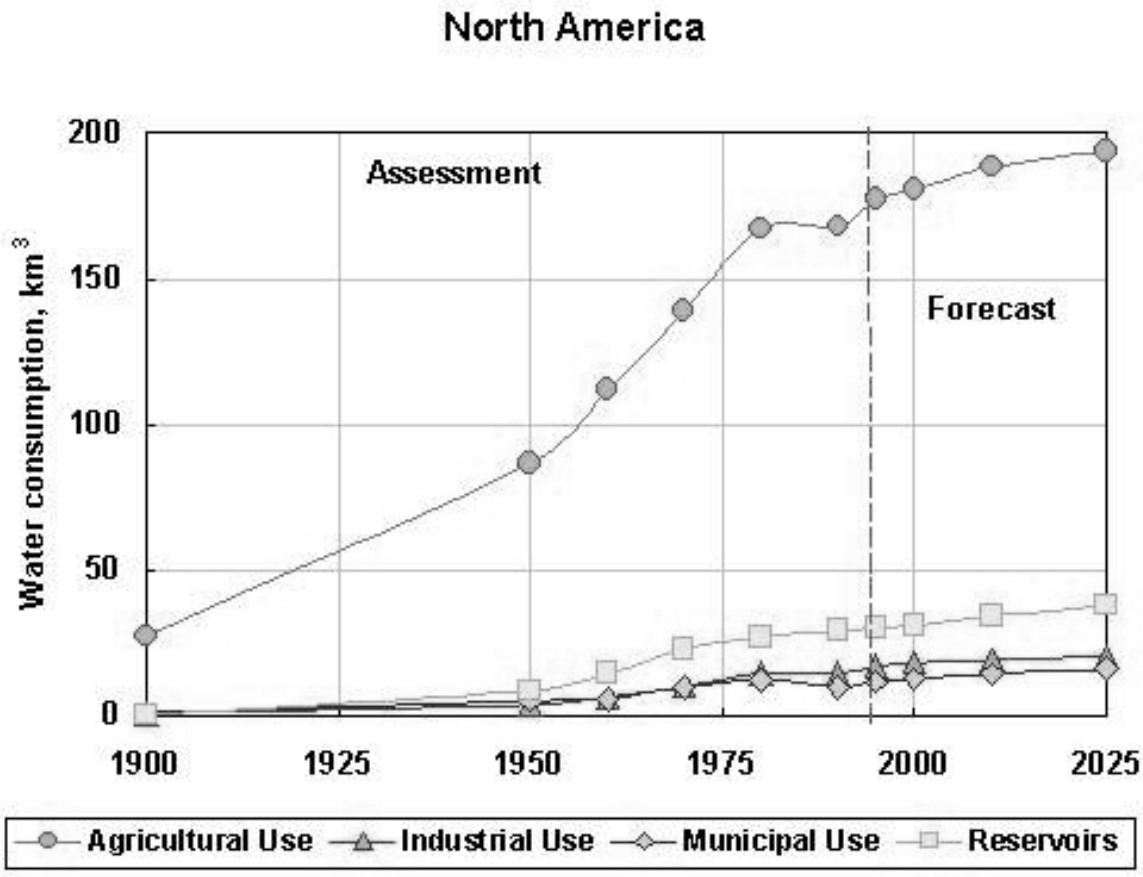

Figure 5.2 Dynamics of water consumption in Europe and Central and Western Europe by kind of economic activities from 1900 to 2025. Source: Shiklomanov, 1999.

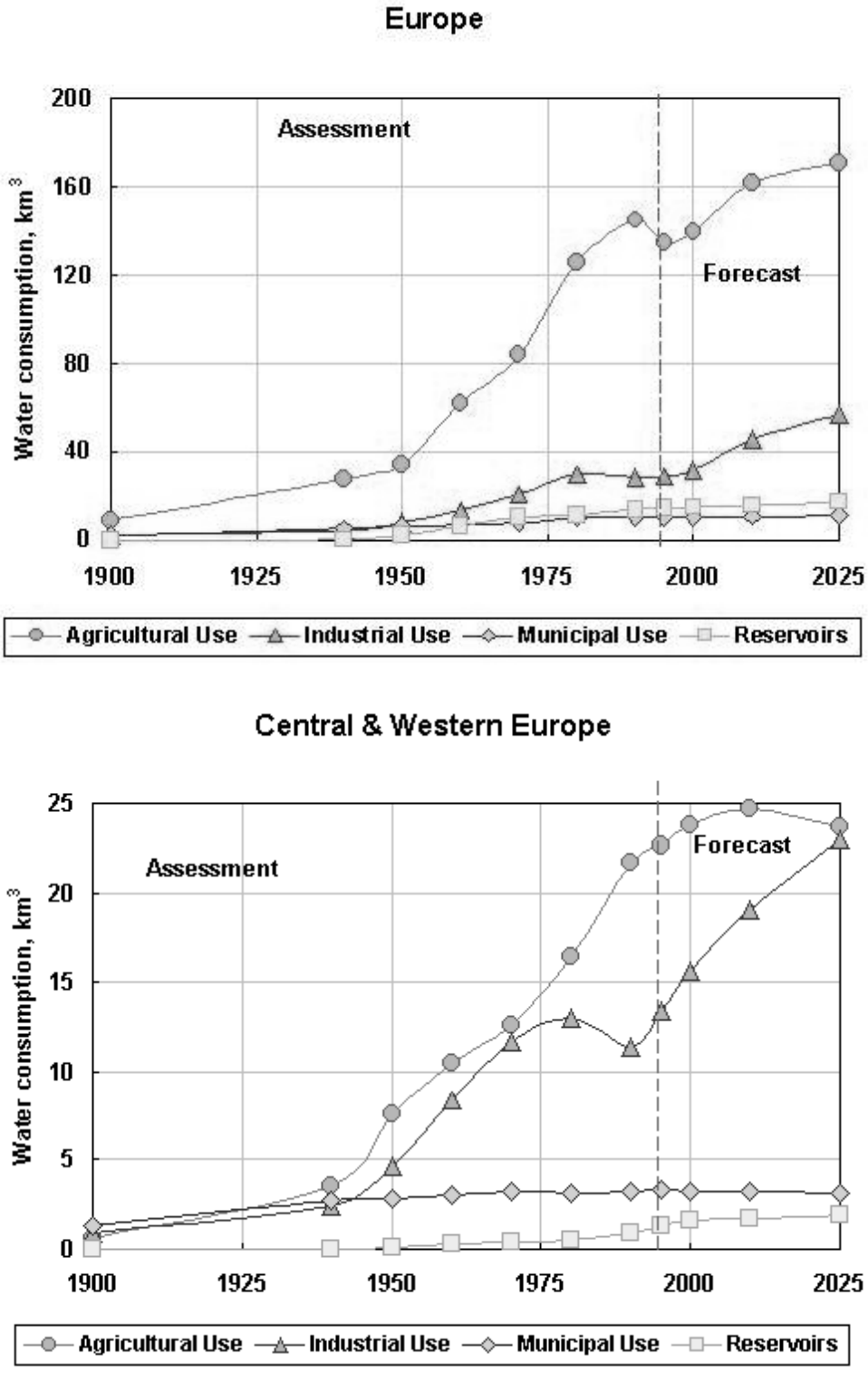

Figure 5.3 Rise of greenhouse gases (CO2, methane and nitrous oxide and others) 1900-2000 as compared to reference year 1750. Source: European Environment Agency, 2004.

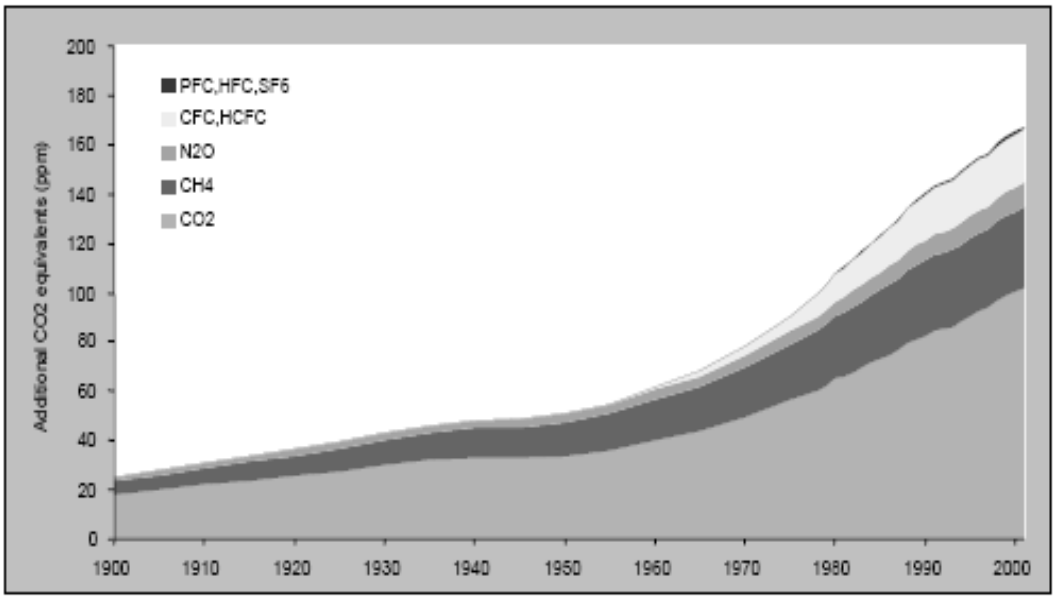

Figure 5.4 Sources of GHG emissions. Source: Stern Review, 2006.

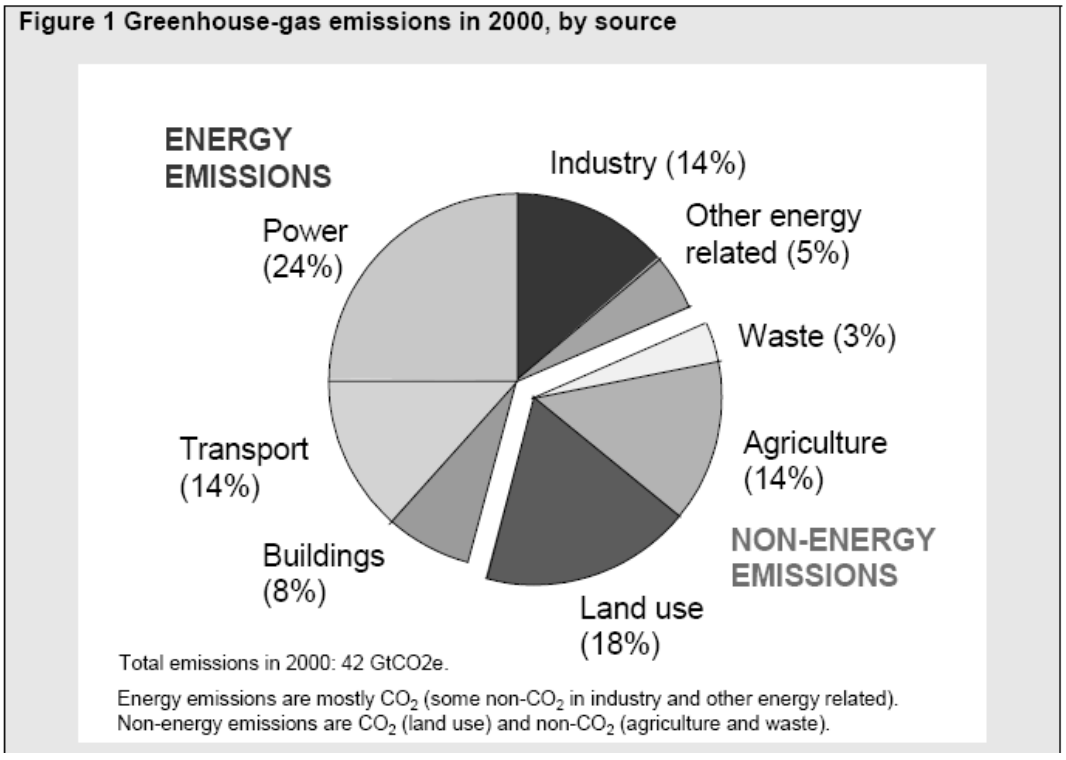

Table 5.1 Overview of quantitative modeling tools used in IAASTD Global Chapter 5

Global foresight model	Main focus	Time-line	Approach
Global Scenario Group (GSG)	Sustainable development		Strong focus on storyline, supported by quantitative accounting system
IPCC – Third and Fourth Assessment Reports (TAR3 and TAR4)	Climate change, causes and impact	2100	Storylines supported by modeling.
IPCC – SRES	Greenhouse gas emissions	2100	Modeling supported by storylines.
UNEP : GEO3 & GEO4 RIVM 2004	Environment		Storylines and modeling. Modeling on the basis of model chains/ interlinked models
Millenium Ecosystem Assessment - MA	Ecosystems	2050	Storylines and modeling. Modeling on the basis of linked models
OECD – FAO Food outlook	Food Systems	2015	
OECD – FAO Food	Food Systems	2030/2050	
FAO at 2020	Agriculture	2020	Single projection, mostly based on expert judgment
IFPRI World Food Outlook	Agriculture	2020	Model-based projections. Global and regional scenarios.
OECD Environment Outlook	Ecosystems		

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- Dissemination conference. http://cordis.europa.eu/foresight/ntw_conf2004.htm

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The "Key Technologies" Expert Group has approached the future of several key technologies all crucial for Europe's future: biotechnology, nanotechnology, information technologies, communication technologies, transport technologies, energy technologies, environmental research, social sciences and humanities, manufacturing and materials technologies, health research, agricultural research, cognitive sciences, safety technologies, complexity research and systemic, research in the services sector.

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Table 5.3 References to Foresight exercises related to Agriculture, Food, Science and Technology at North American level since 2003

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Table 5.4 Projected total fertility rates per women in 2015. Source: U.S. Census Bureau, International Data Base

Region	Projected fertility rate in 2025
Northern America	2.13
USA	2.18
Western Europe	1.62
Eastern Europe	1.51
Commonwealth of Independent States	1.73

Table 5.5 UN Population prospects for Europe (in thousands). Source: UN World population prospects: The 2006 revision

Year	Medium variant	High variant	Low variant
2005	731 087	731 087	731 087
2015	727 227	743 202	711 151
2025	715 220	752 266	677 662
2035	697 507	757 482	639 351
2050	664 183	777 168	566 034

Table 5.6 UN Population prospects for North America. Source: UN World population prospects: The 2006 revision

Year	Medium variant	High variant	Low variant
2005	332 245	332 245	332 245
2015	364 334	372 011	356 656
2025	392 978	413 338	372 678
2035	416 777	452 730	382 037
2050	445 303	517 137	381 551

Table 5.7 Resources devoted to R&D, share of world scientific publications and ratio of researchers in the three sub-regions of NAE. Source: OST 2006

	North America	EU 25	Federation of Russia
Percent of GDP devoted to R&D (2003)	2,4 %	1.8%	1.29 %
Share of gross expenditures on R&D (2003)	36,1 %	24,3 %	1,9 %
Share of gross expenditures on R&D coming from private sector (2003)	62,8 %	53,7 %	30,8 %

Share of world scientific publications (2004)	36.2%	34,2 %	2,4 %
Ratio of researchers to total population	4,4 %	2,6 %	3,4 %

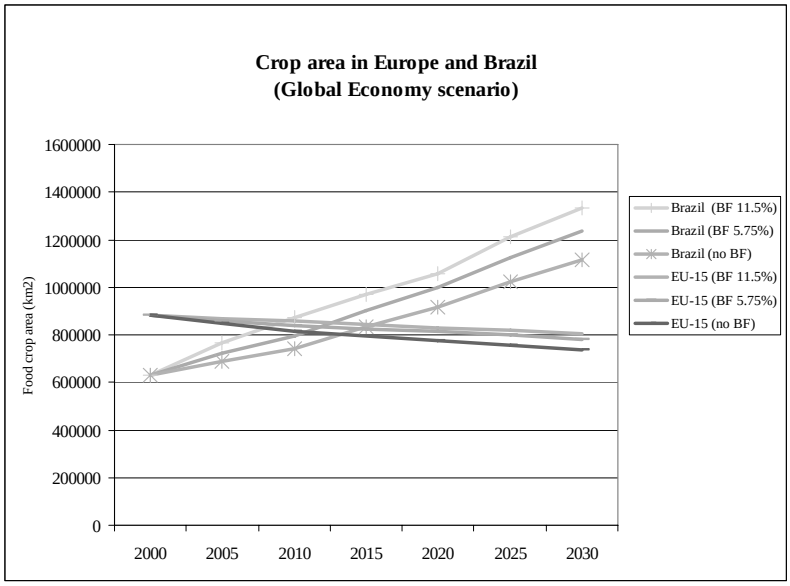
Table 5.8 Share of agricultural products in trade in total merchandise and in primary products in NAE regions, 2002. Source: http://www.wto.org/english/res_e/statis_e/its2006_e/section4_e/iv05.xls

	Share of agricultural products in trade in total merchandise (2005)		**Share of agricultural products in trade in primary products (2005)**	
	Exports	Imports	Exports	Imports
World	8.4	8.4	32.8	32.8
North America	9.2	6.0	43.3	26.8
South and Central America	26.4	8.9	41.6	31.0
Europe	9.1	9.4	49.4	39.0
CIS	7.8	13.2	11.5	53.1
Africa	10.9	13.9	14.3	50.2
Middle East	2.3	10.0	3.1	56.5
Asia	5.6	7.5	37.9	24.6

Box 5.1 EURURALIS. Scenario 'Competing claims for scarce resources- EU biofuel policy option' (by W.A. Rienks)

The results of Eururalis outline what could happen in rural Europe towards 2030, based on conditions that differ in nature, course, duration or place. In Eururalis four contrasting scenarios are evaluated. The impact on various people, planet and profit indicators is calculated. One of the scenarios is the Global Economy scenario. This scenario depicts a world with fewer borders and regulation compared with today. Trade barriers are removed and there is an open flow of capital, people and goods, leading to a rapid economic growth, of which many (but not all) individuals and countries benefit. Within this scenario three alternative policy options for biomass production for biofuels have been elaborated (only 1st generation biomass technology being taken into account):

1. no blending obligation for the EU (No BF)
2. 5.75% blending obligation of biomass in transport fuel within the EU (BF 5.75%)
3. 11% blending obligation of biomass in transport fuel within the EU(BF 11.5%)



Results : The figure shows the impact on agricultural land use (crop area) in EU15 and Brazil in the Global Economy scenario with 3 different policy options regarding the blending of biomass in transport fuel. The graph shows opposite trends for both regions. In the EU15 towards 2030 there is land to spare. Consequently, marginal agricultural regions will face land abandonment. This is driven by higher yields per hectare and low growth of the EU population and its demand for food. In EU15, the abandonment of extensive agricultural land sometimes leads to loss of high nature value farmlands. In Brazil, on the contrary, growing regional and global population and an increased demand for food crops worldwide drive the increase of agricultural land. This will put extra pressure on nature and forest areas.
For both EU15 and Brazil there are clear impacts of the EU biofuels policy. The blending obligation for transport fuel increases the needed crop area in both regions. In South America this is putting an extra pressure (of about 20 mln ha) on land used currently as nature or pasture land. In Europe the extra demand for biomass is slowing down the trend of agricultural abandonment but it does not stop it. These results clearly show that EU strategic policy has not only impact on land-use within Europe but also a very significant impact elsewhere in the world.

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