Sustainability

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June, 2019

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Benefits of development (1)

- Large increase in **economic activities** ($2.4 trillion in 1900 to $46 trillion in 2001)

- Large growth in **industrial production** outputs, over fifty times during the past century, four-fifths since 1950s

- Rise in **individual income** ($2,582 in 1950 to $7,454 in 2001)

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(Brown, Larsen, & Fischlowitz-Roberts, 2002; Flavin, 2001; Roodman, 2002; Miller, 2002; WCED, 1987)

Benefits of development (2)

- Increase in **international goods trade** ($311 million in 1950 to $5.5 trillion in 2000)

- Improvements in **agricultural output** (14 million tons in 1950 to 134 million in 2000 and world's grain yield (1.06 tons per hectare in 1950 to 2.78 in 2000)

(Brown, Larsen, & Fischlowitz-Roberts, 2002; Flavin, 2001; Roodman, 2002; Miller, 2002; WCED, 1987)

Top 20 inventions in the last 50 years (1)

- Colour TV
- DVD & Blu ray
- Lasers
- Microwaves
- Bar codes and scanners
- Automated Teller Machine (ATM)
- Space exploration
- Magnetic resonance imaging
- DNA testing and sequencing
- Birth-control pill

http://www.newscientist.com/special/big-impact
http://www.cnbc.com/id/44504579/page/17

http://www.answers.com/Q/How_has_technology_changed_in_the_last_50_years

Top 20 inventions in the last 50 years (2)

- Light and portable computers
- The microprocessor
- The mobile phone
- GPS /Satnav
- Internet
- Email
- Online Shopping/ecommerce
- Green chemistry
- Photovoltaic Solar Energy
- Biofuels

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http://www.cnbc.com/id/44504579/page/17

http://www.answers.com/Q/How_has_technology_changed_in_the_last_50_years

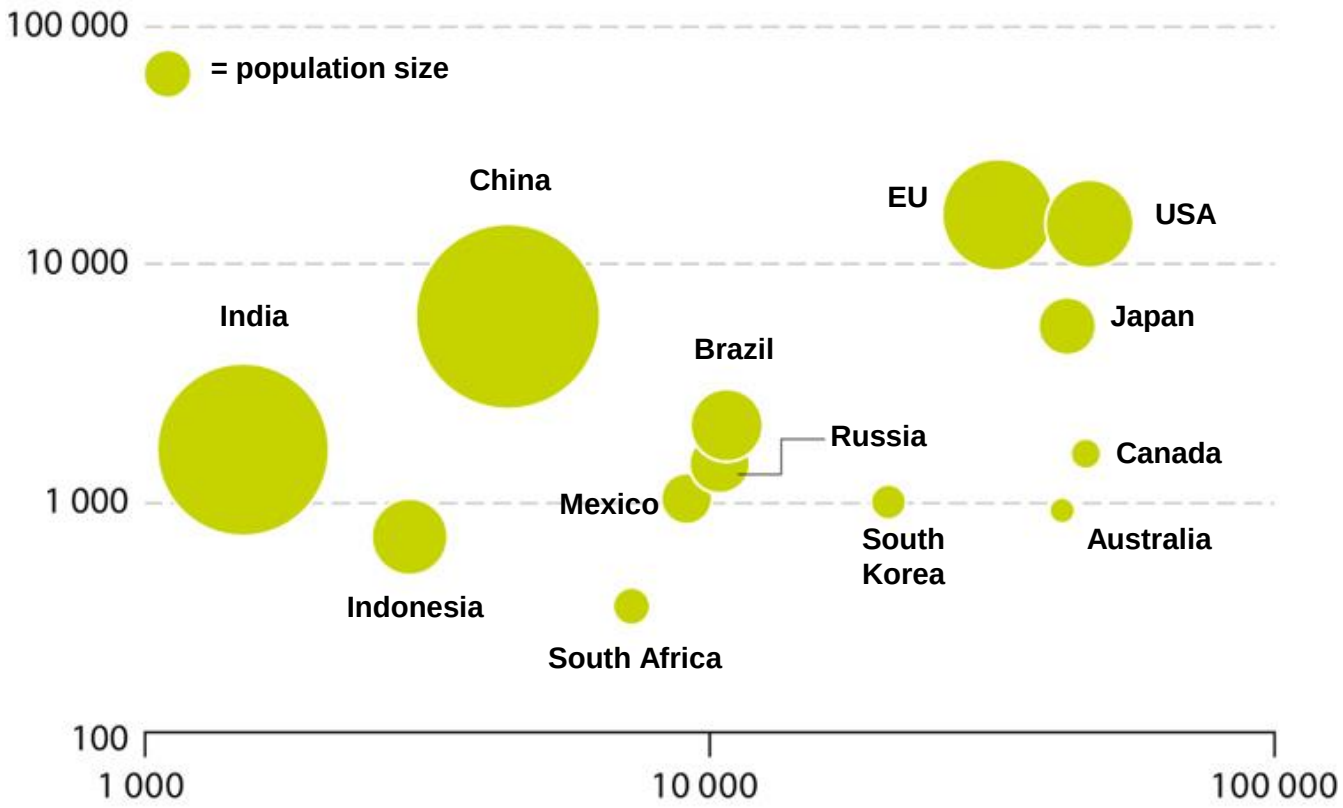
The EU is the world's biggest economy

The EU's GDP per capita grew by 25 % from 1995 to 2011

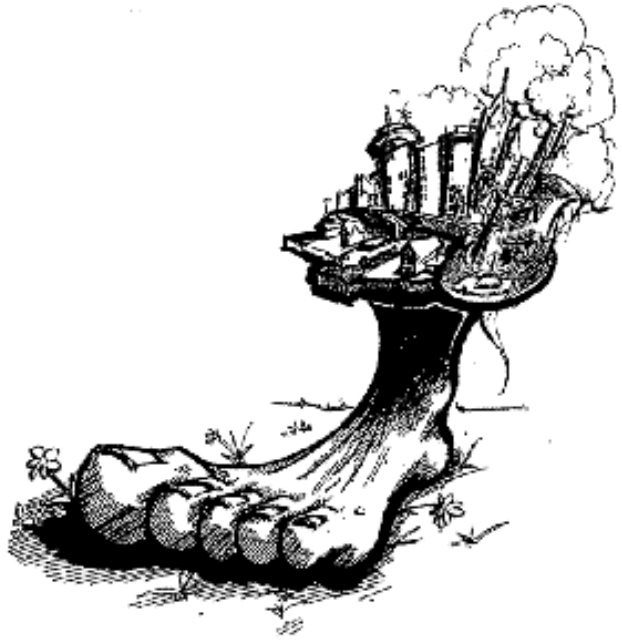
The world's GDP per capita grew by 40 % from 1992 to 2010

Economic growth was fastest in middle-income countries such as Brazil, Russia and China

The EU compared with other economies in the world, 2010



Source: World Bank



Industrialisation Effects

Economic issues

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- Margi
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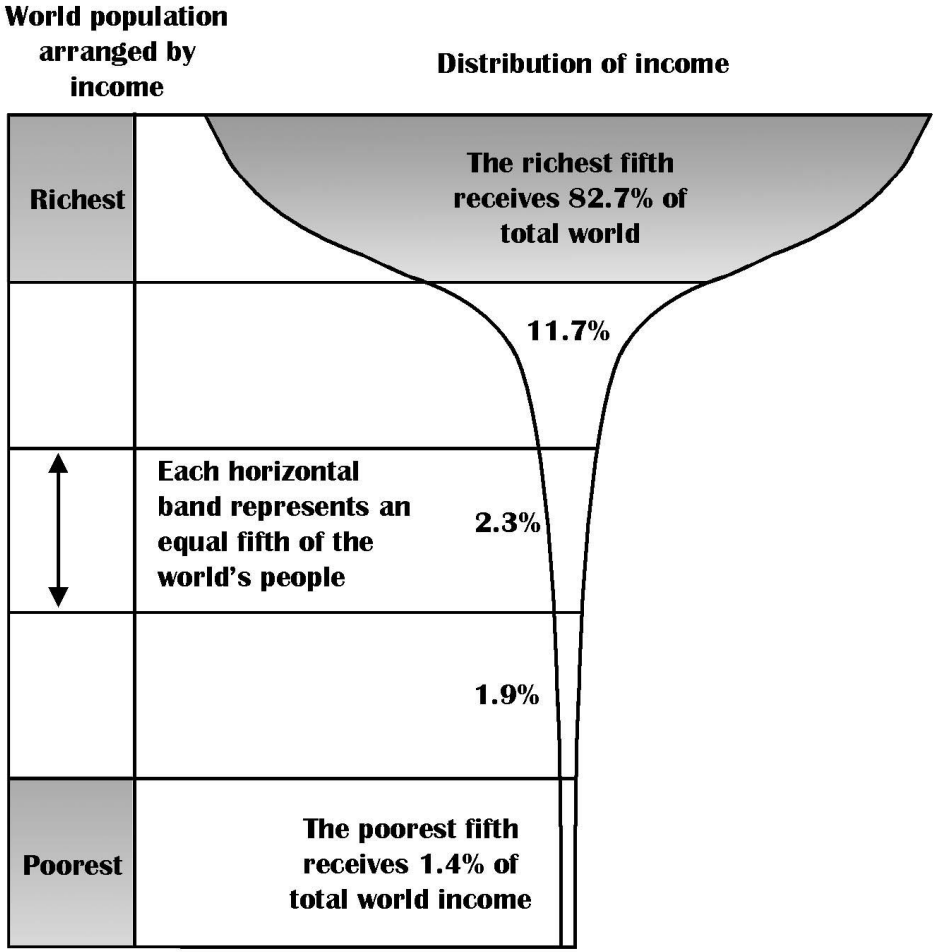
- Dispro , i.e. r ithin countri nd developing countries
- Exterr

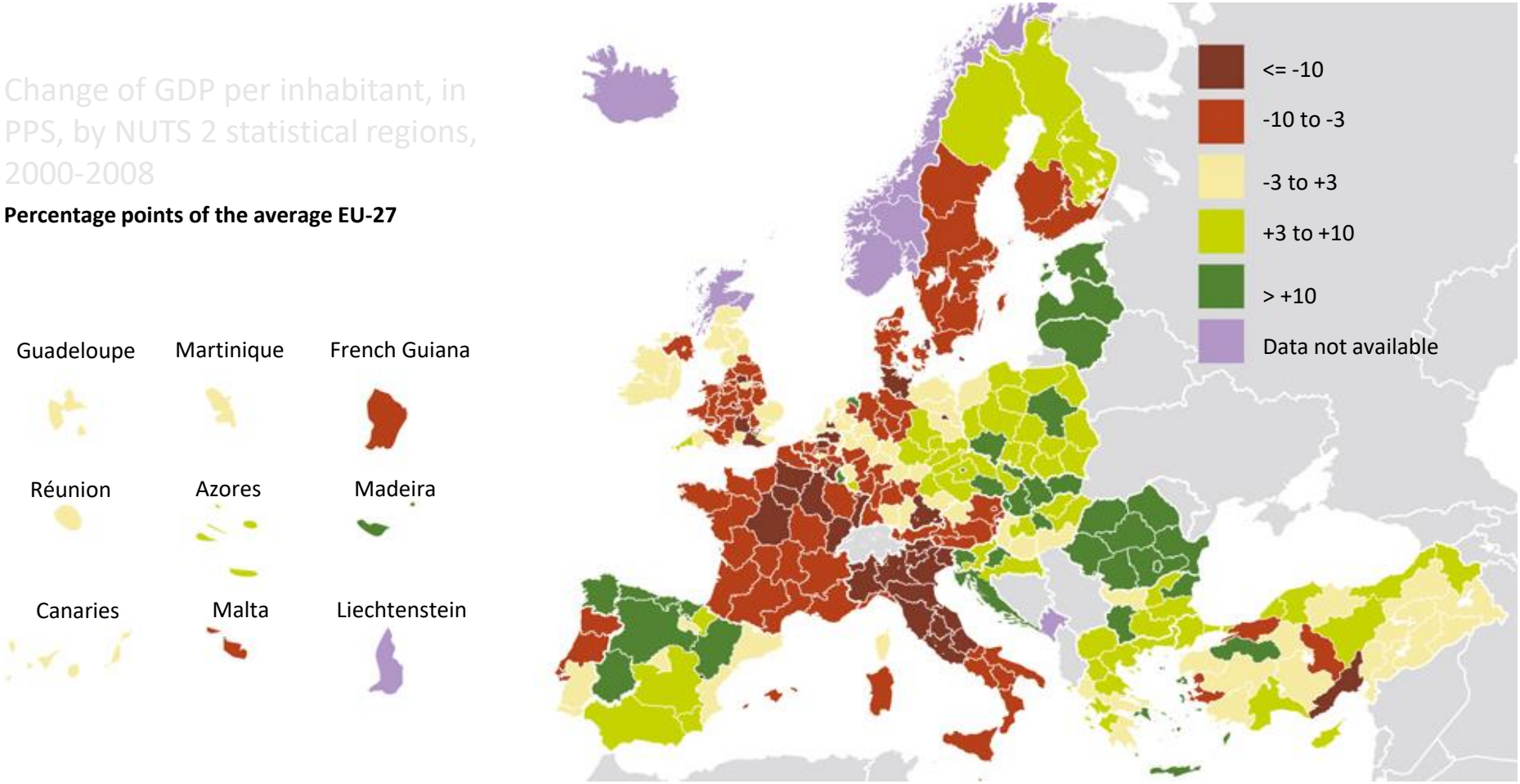


Adapted from
Kirby (2003) and Reid (1995)

Change in GDP per person by region

Change of GDP per inhabitant, in PPS, by NUTS 2 statistical regions, 2000-2008

Percentage points of the average EU-27

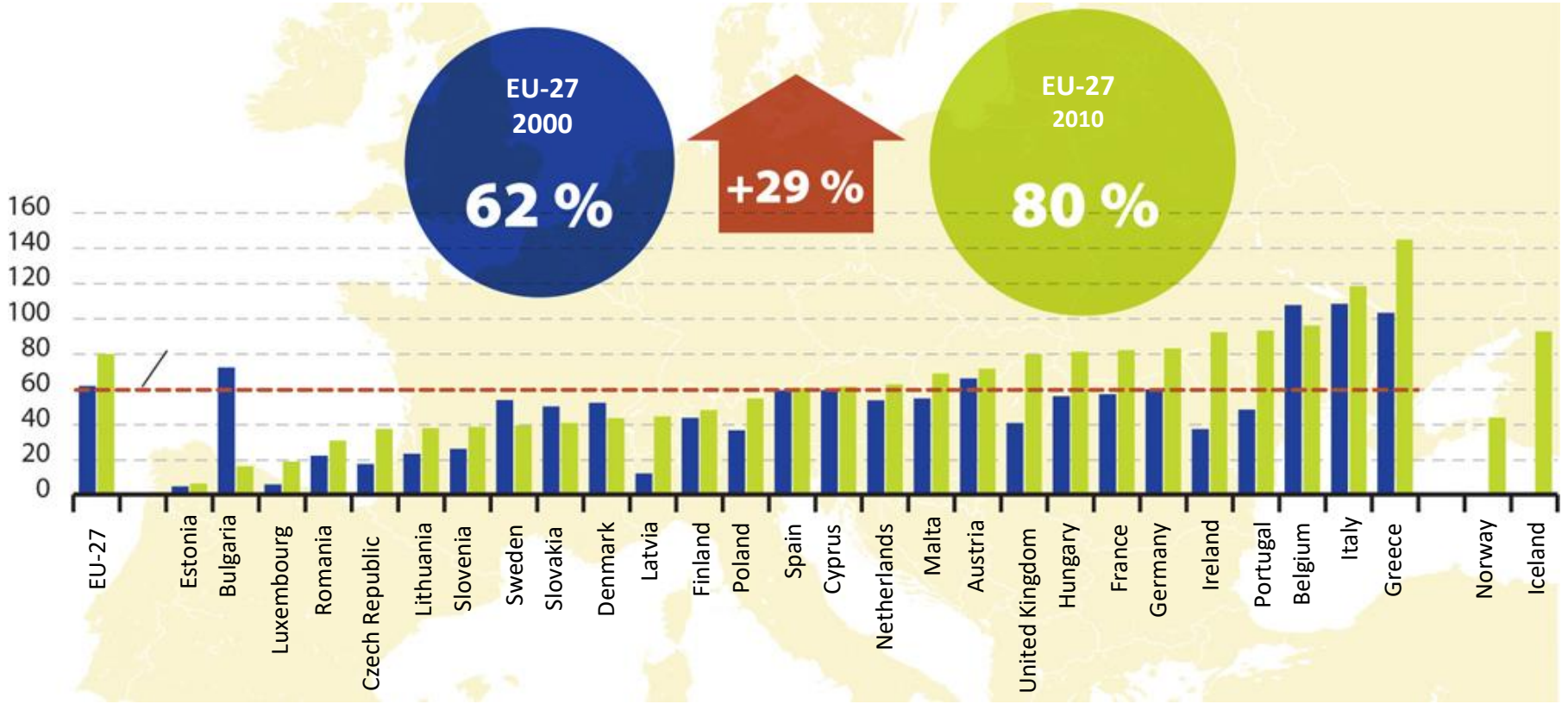


Source: Eurostat (online data code: nama_r_e2gdp)

Country debt has tended to rise over the past 10 years

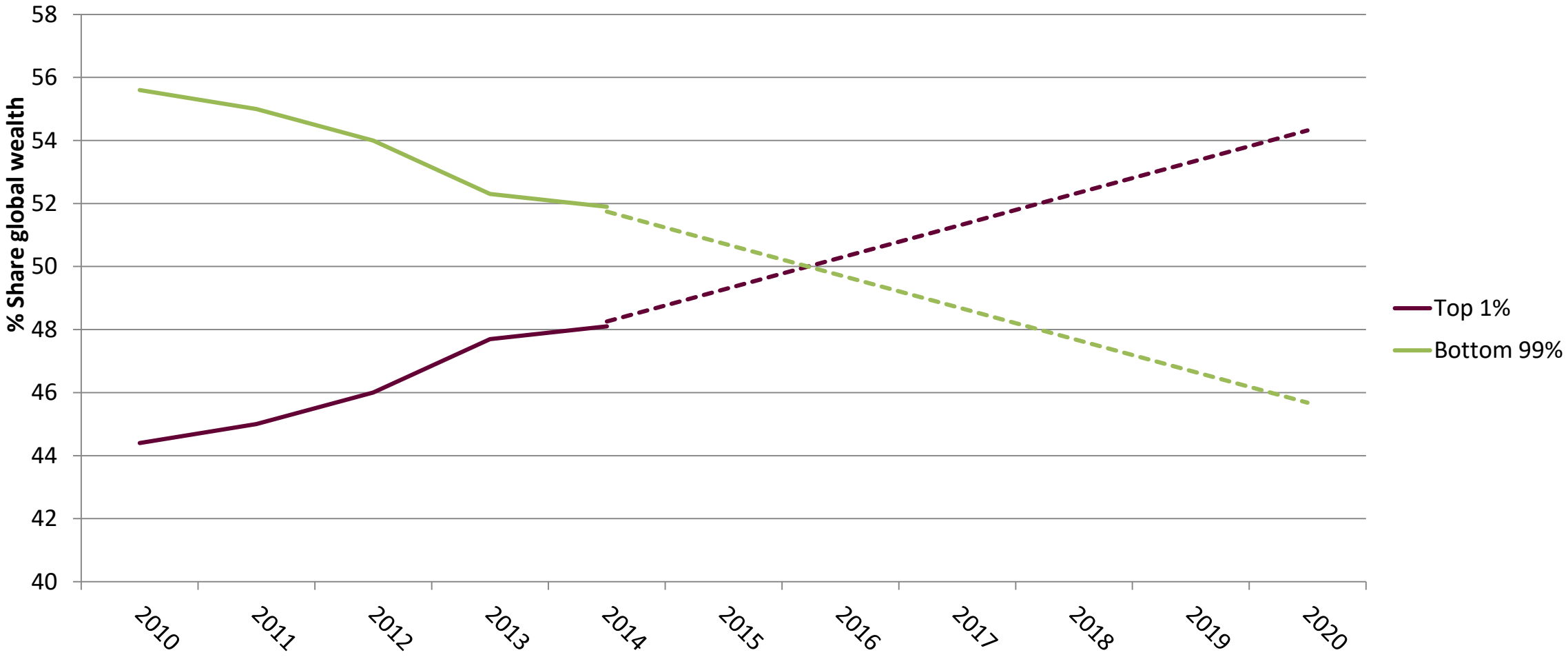
General government debt, by country

% of GDP (at current prices)



Source: Eurostat (online data code: tsdde410)

Share of global wealth of the top 1% and bottom 99% respectively; dashed line projects the 2010–2014 trend



Source: (Oxfam, 2015)

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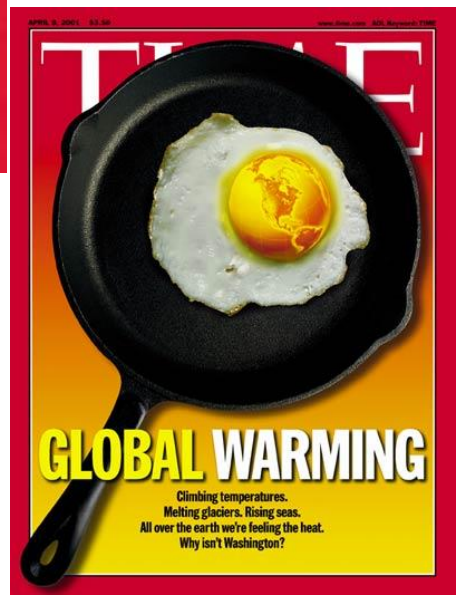
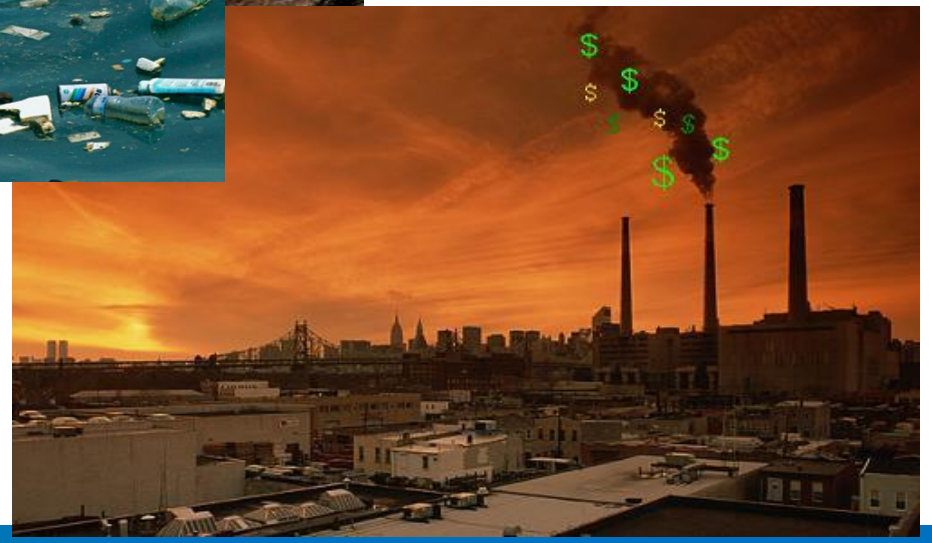
Environmental issues

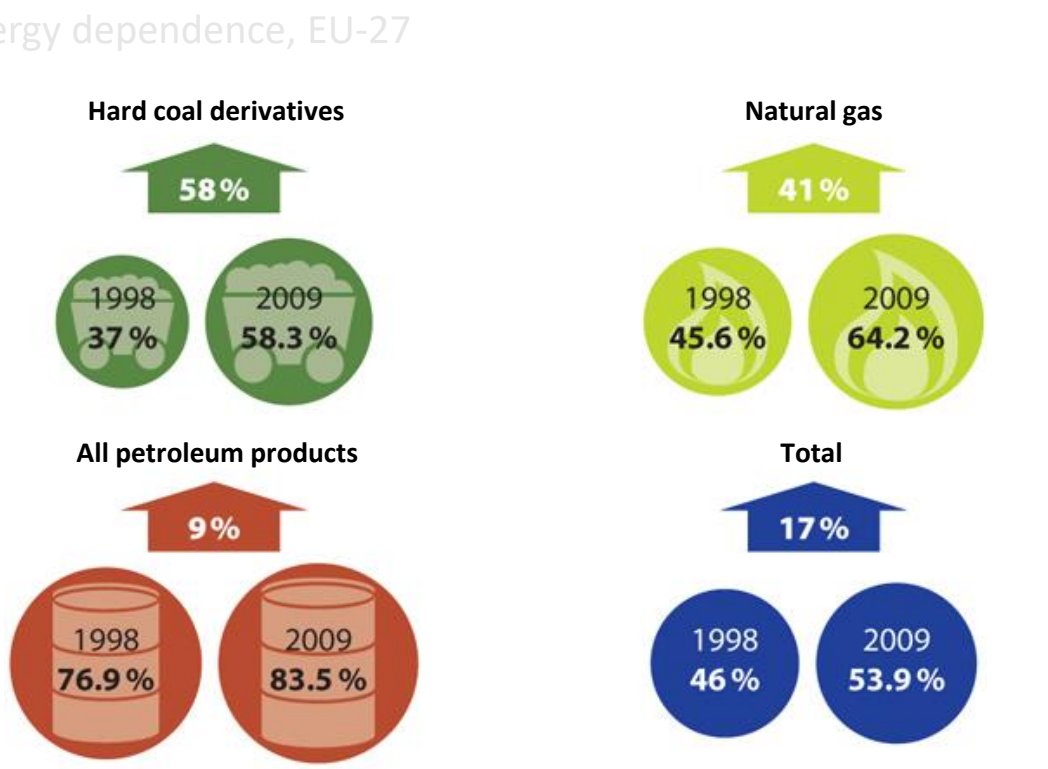
- Global energy use and security
- Climate change/Global warming
- Nitrogen loading
- Natural resource deterioration
- Loss of biodiversity
- Pollution
- Growing water scarcity
- Unsafe ground-water
- Desertification
- Deforestation and soil degradation
- Artificial chemicals
- Plastic pollution of the seas
- Other urban problems





Depending on other countries for energy

- The EU's dependence on imported energy has risen constantly over the past decade
- Since 2004 more than 50 % of the energy used in the EU has been imported
- Dependence is highest for petroleum products such as crude oil
- About one third of crude oil and natural gas imports come from Russia



Note: 'Total' is not the average of the other three fuel categories shown. It also includes other energy sources, such as renewable energy or nuclear energy, which are treated as domestic sources

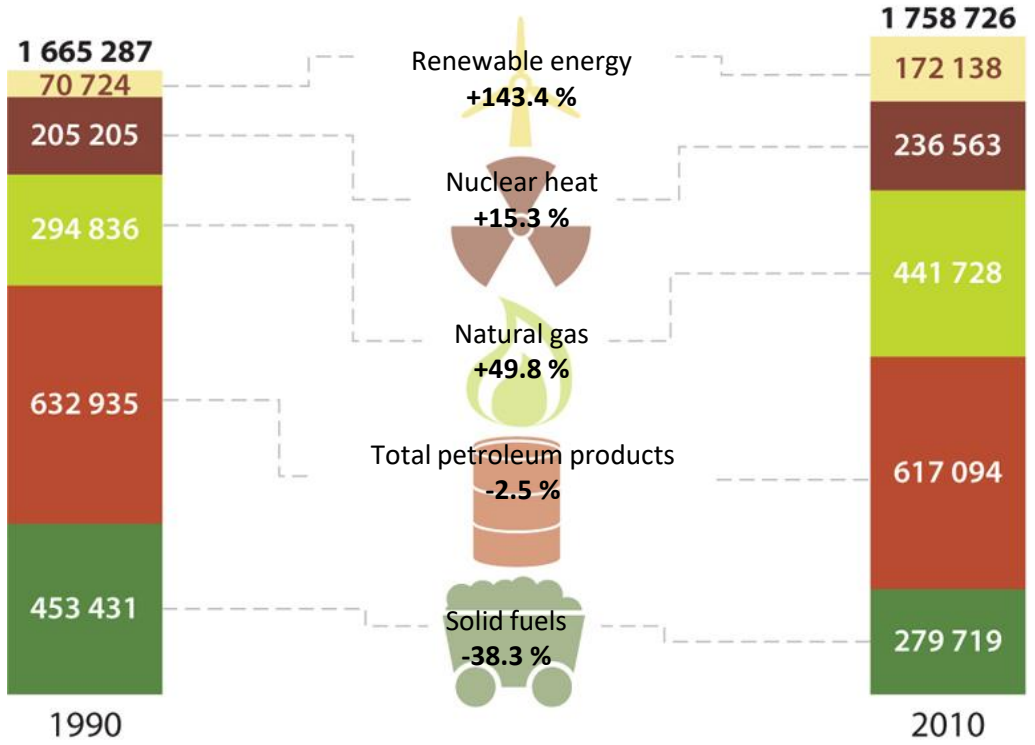
Source: Eurostat (online data code: tsdcc310)

Energy consumption increasing

- Energy consumption in the EU has grown by 6 % since 1990
- The EU's 'energy mix' has changed since 1990
- Use of solid fuels has fallen, while use of natural gas has grown by almost 50 %

Gross inland energy consumption, by fuel, EU-27

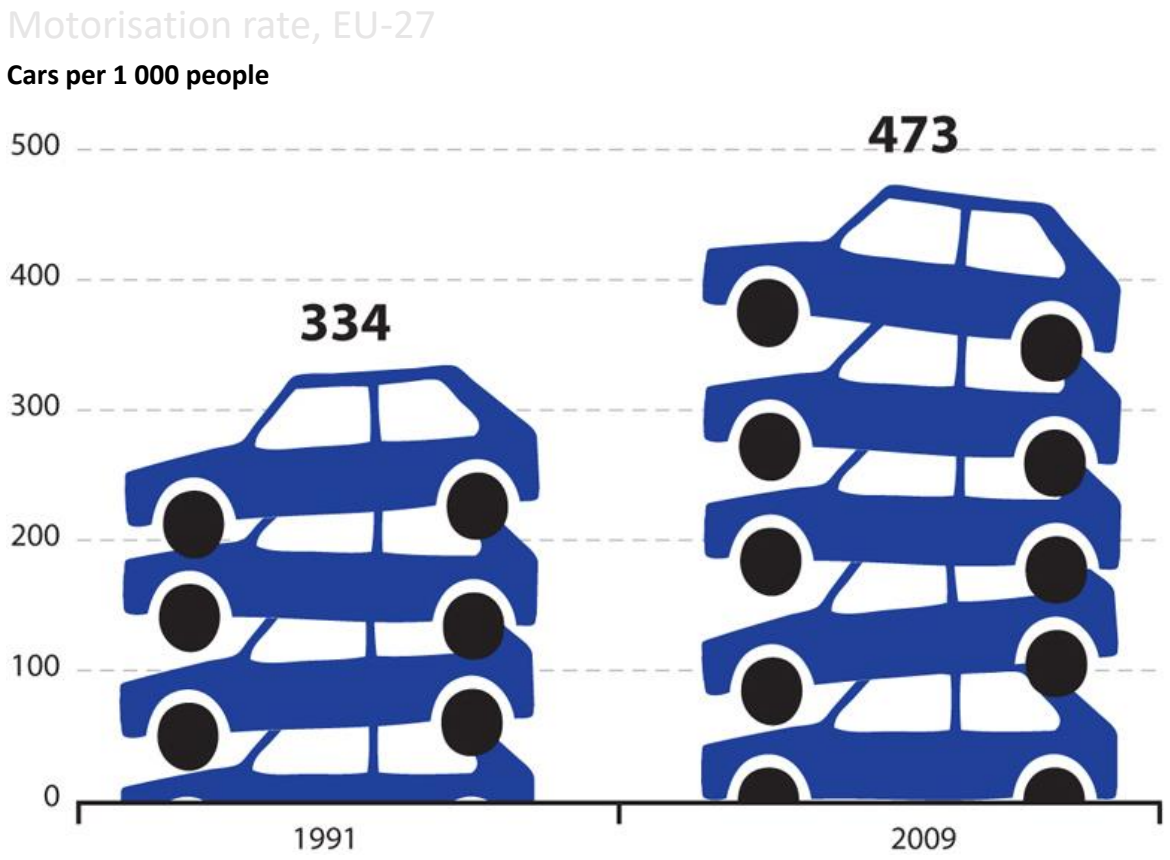
1 000 tonnes, oil equivalent



Source: Eurostat (online data code: tsdcc320)

More and more cars on the road

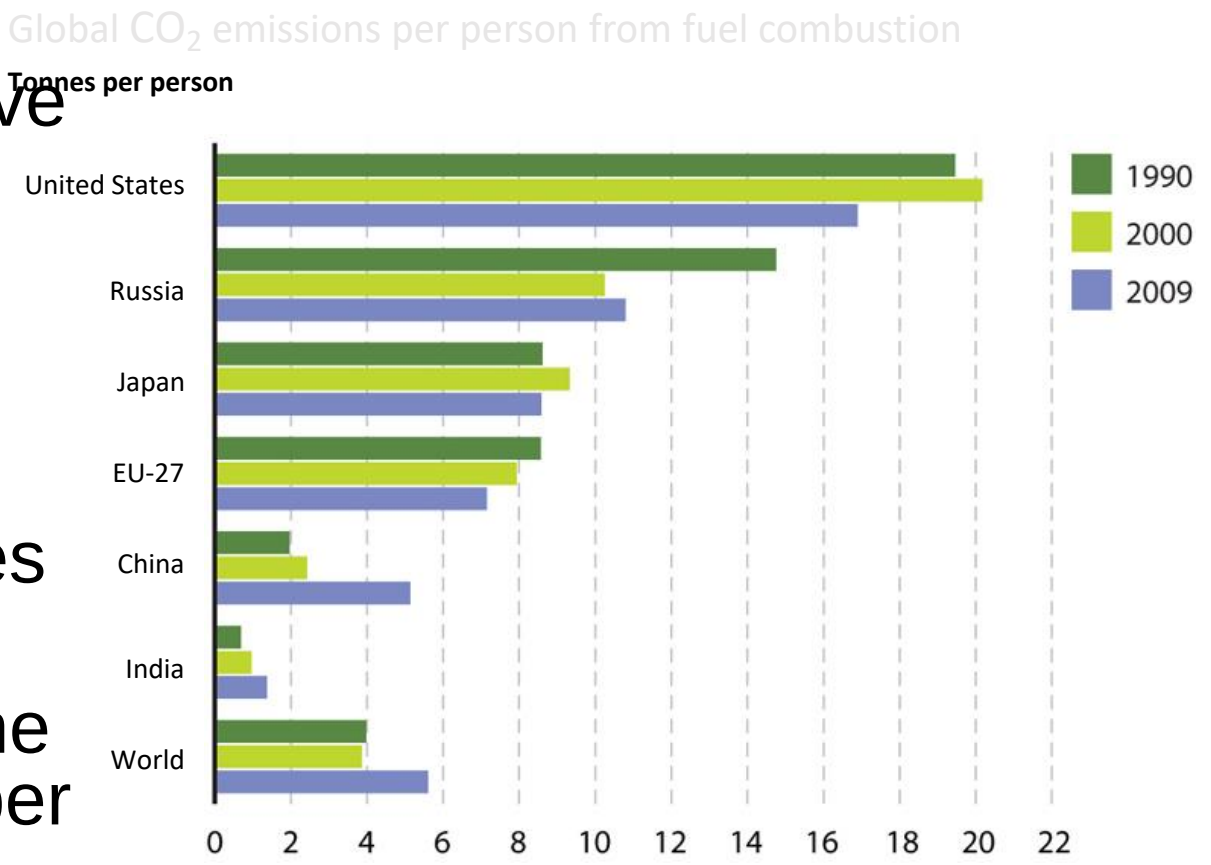
- The number of cars per 1 000 people has grown by 40 % since 1991
- Huge differences exist between Member States
- In nine Member States there is at least one car for every second person



Source: Eurostat (online data code: tsdpc340)

CO2 emissions per person

- CO2 emissions per person have fallen in the USA, Russia and the EU
- Emissions per person have grown in China and India, but their levels are still well below those of industrialised countries
- Since 2007, China's CO2 emissions have been above the global average of 4.3 tonnes per person



Source: International Energy Agency

In one year…

- …we will add **fifteen million tons** of carbon (dioxide and monoxide) to the atmosphere
- destroy **115 square miles** of tropical rainforest
- create **seventy-two square miles** of desert
- eliminate between **forty to one hundred** species
- erode **seventy-one million** tons of topsoil
- add **twenty-seven hundred** tons of CFCs to the stratosphere
- Increase in population by **263,000**

(Orr, 1992)

Social issues

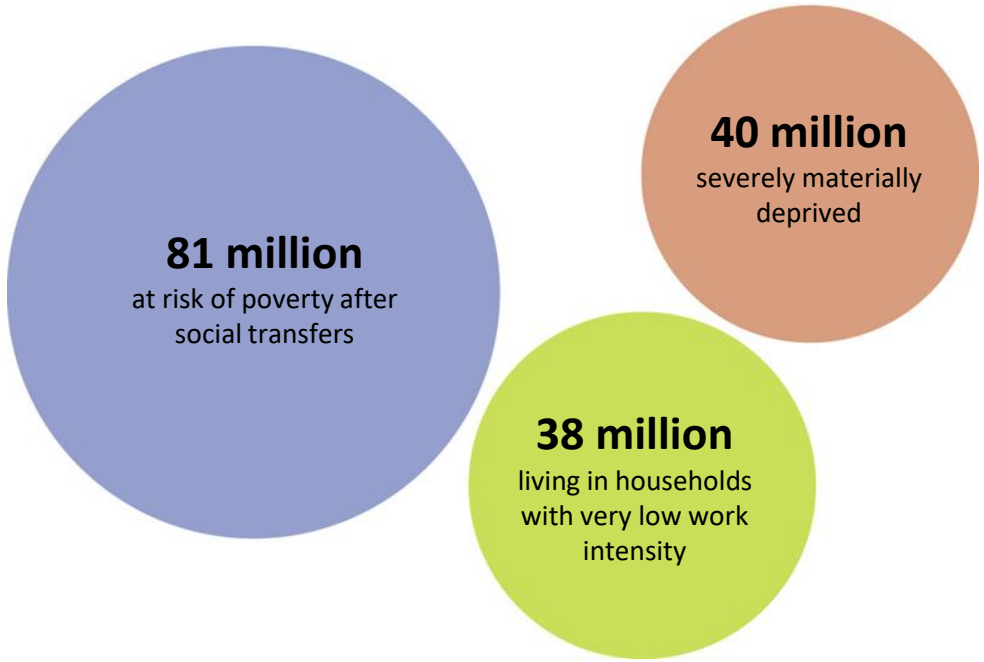
- Poverty and extreme poverty
- Under-nourishment and food s
- Diseases and epidemics (e.g. S, malaria)
- Population growth
- Aging population
- Illiteracy
- Hunger
- Gender differen
- Arms trade and

Dimensions of poverty

- Monetary poverty, material deprivation and lack of access to jobs are the key dimensions of poverty in the EU
- Almost 81 million EU citizens live in monetary poverty
- Some 40 million are regarded as severely materially deprived. About 38 million are living in households where the adults work much less than they could

People at risk of poverty or social exclusion, 2010

Number of people



Source: Eurostat (online data code: tsdsc100, tsdsc270, tscsc280, tsdsc310, tsdsc350, ilc_pees01)

Cross-cutting issues

- Responsibility
- Governance
- Inter-relatedness among ec tal and social problems
- Short,- long-, and longer-ter elatedness

World challenges exacerbated during the last 80 years

Economic aspects	*Environmental aspects*	*Social aspects*
1. Economic disparity and political instability 2. Marginalisation 3. Consumption 4. Bribery & Corruption 5. Disproportionate income distribution, *i.e.* rich/poor ratios (within countries, and between developed and developing countries 6. External debt (mainly of developing countries)	7. Global energy use and security 8. Climate change 9. Nitrogen loading 10. Natural resource deterioration 11. Loss of biodiversity 12. Pollution 13. Growing water scarcity 14. Other urban problems 15. Desertification 16. Deforestation and soil degradation 17. Unsafe ground-water 18. Artificial chemicals 19. Global warming	20. Poverty and extreme poverty 21. Under-nourishment and food security 22. Diseases and epidemics (*e.g.* HIV-AIDS, malaria) 23. Population growth 24. Aging population 25. Illiteracy 26. Hunger 27. Gender differences 28. Arms trade and warfare
Cross-cutting aspects		
29. Inter-relatedness among economic, environmental and social problems 30. Short-, long-, and longer-term effects and inter-relatedness		

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Sustainability

SD origins

- Sustainable Development has its roots in **sustainable forest management** which were developed in Europe during the seventeenth and eighteenth centuries

- In 1713 Hans Carl von Carlowitz published *Sylvicultura oeconomica*, which discussed managing **forests** for **sustained yield**

"*Humanity has the ability to make* ***development sustainable*** *– to ensure that it meets the needs of the* ***present without compromising*** *the ability of* ***future generations*** *to meet their own needs.*"

(WCED, 1987, p. 8)

Timeline of important events of Sustainable Development (SD)

Year	*Event*	*Main contribution*
1962	Carson's (Carson, 2000) "Silent Spring" book published	Sparked the 'environmental revolution', exposed the toxic effects of agro-chemical products on humans and the environment
1968	Ehrlich's (Ehrlich, 1968) "Population Bomb" book published	Connections between population, resource exploitation and the environment
1972	Club of Rome's "Limits to Growth" (Meadows, Meadows, Randers, & Bherens, 1974) book published	Made clear that resources in the world are finite, and highlighted the consequences of continuing exponential growth in resource use and pollution creation
1972	"A Blueprint for Survival" article published (Goldsmith, Allen, Allaby, Davoll, & Lawrence, 1972)	The 'sustainable' adjective, *i.e.* capable of being sustained, from the Latin *sustinere*, *sus-* 'sub' and *tenere* 'hold', was first linked to industrial expansionism and its effects on the environment
1972	UN Conference on Human Environment (UNEP, 1972) held in Stockholm	The protection of the environment and its relation to development were for the first time systematically addressed and became a critical issue
1974	World Council of Churches (Dresner, 2002)	The concept 'Sustainable Society' is coined
1980	World Conservation Strategy (IUCN, UNEP, & WWF, 1980)	The concept of Sustainable Society was connected to Sustainable Development (SD)
1987	'Our Common Future' (WCED, 1987), the Brundtland Report, published	A simple SD definition is created (being the most quoted one up to date). It helped to bring SD to mainstream international political agenda, and to raise worldwide awareness.
1992	United Nations Conference on Environment and Development (UN, 1997), Earth Summit, held in Rio de Janeiro	Provided a forum to express global concerns about environmental and developmental issues. The main outcome: The Earth Charter, and Agenda 21
2002	World Summit on Sustainable Development (UN, 2002), held in Johannesburg	Highlighted as most urgent world problems of poverty, water, consumption and production patterns, natural resources, and rich/poor increasing gap
2012	United Nations Conference on Sustainable Development (UN, 2012), held in Rio de Janeiro	Reinforced the calls from Rio (1992) and Johannesburg (2002)

Sustainability

- During the last four decades, there have been a number of efforts aimed at addressing **economic disparity**, **environmental degradation**, and **social inequalities**, evolving from the 'Environmental Revolution' to Sustainable Development (SD)

- Sustainability is aimed at addressing the negative economic, environmental, and social impacts in this generation and future ones

(Lozano, 2008)

SD principles (1)

- Promotion and protection of fundamental **human rights** (including cultures, quality of life and work)
- **Peace and security**
- **Open** and democratic society
- **Involvement**, participation and collaboration of citizens, businesses, social partners and governments
- Policy **integration**, **coherence** and governance

SD principles (2)

- Use ‘better’ available **knowledge**
- **Precautionary** and polluter pays principles
- **Protection** of the integrity of the environment
- Equal **access** to resources (material and energy)
- **Total integration** of the economic, environmental and social aspects with **intra- and inter-generational equity**

Sustainable Development or Sustainability

- SD and Sustainability tend to be used **interchangeably**, but they are inherently **different**
- SD is the means to achieving Sustainability, an ideal dynamic state, *i.e.* the path or **process** for getting there (Martin, 2003)
- Sustainability is better understood as a **dynamic goal**, which needs to be continually re-assessed

SD drivers (1)

- Social and environmental **strategies**
- **Regulatory changes** that help to reduce production, minimise pollution, and improve resource use efficiency
- Changes in **governance**
- **Governmental** adoption of Sustainability as a national goal
- **Persistent work** from individuals and groups to make it more recognisable to the public

SD drivers (2)

- **Universities**' commitments to Sustainability
- **Technology** which facilitates innovation and creativity in planning, designing and encouraging the social progress towards Sustainability
- Rio and Johannesburg **Summits**
- As a proposal by **business leaders** to help solve the wide range of problems in the international agenda

Sustainable Development Goals

https://sustainabledevelopment.un.org/?menu=1300

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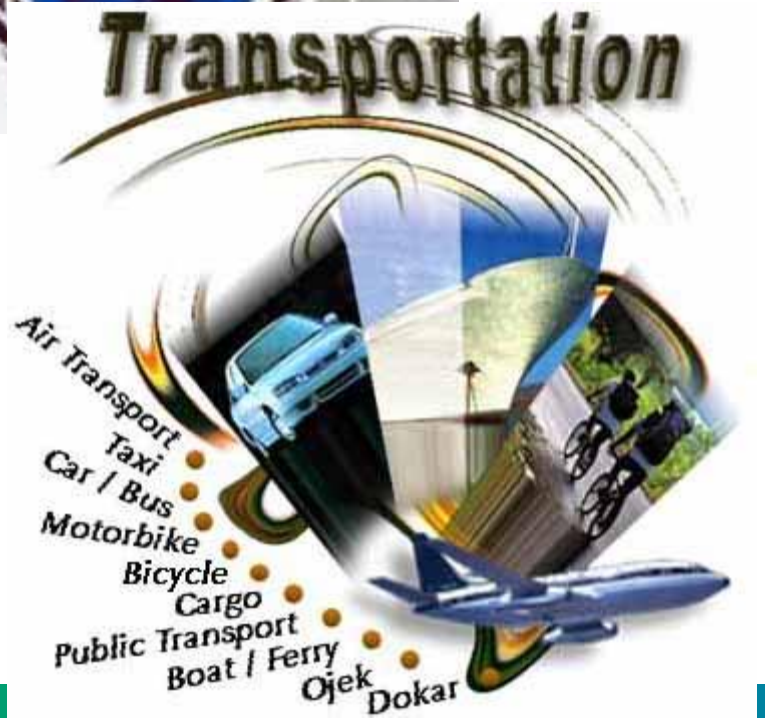
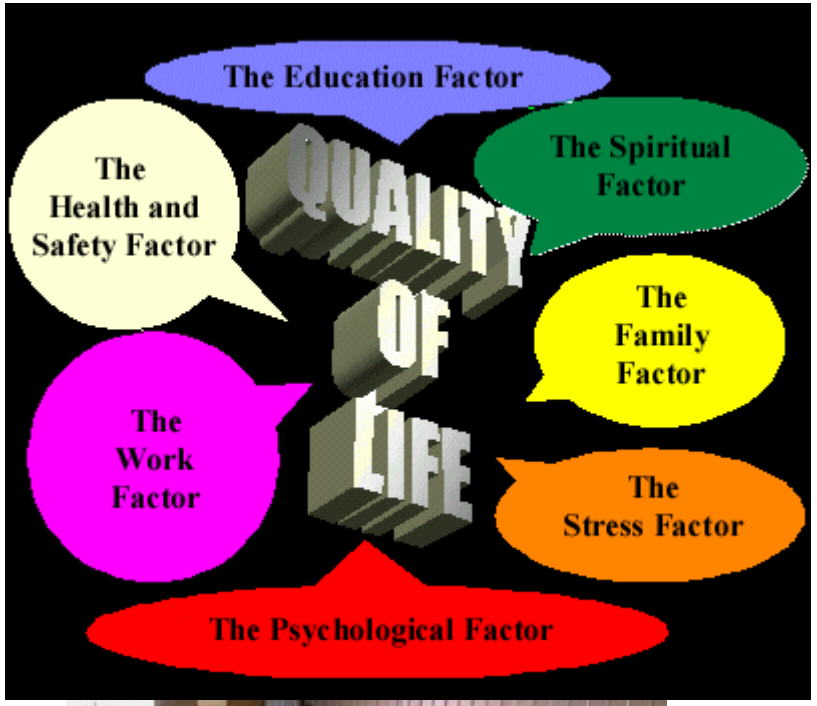
SD POSITIONS

Eco-centrism

Anthropocentric





Tech

- People
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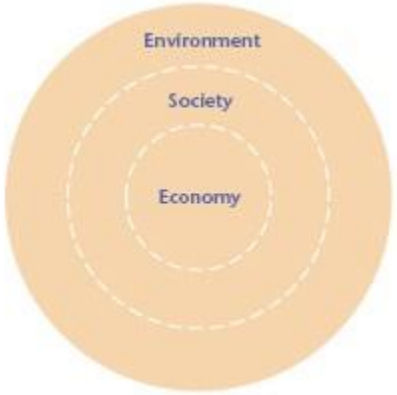
"To combat the rising sea levels we construct thousands of desalination plants to suck up the water."

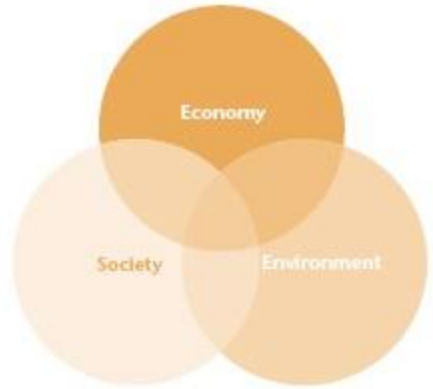
‘Strong’ Sustainability



- Tends to be more **normative and radical**
- It proposes greater emphasis on the **conservation of natural capital** (keeping it constant, while rejecting the creation of economic value from its use)
- It makes the environment a priority over economic and social aspects, leaning towards the protection of nature

(Atkinson, 2000; Bartelmus, 1999b; Daly, 2002; Milne et al., 2003; Zadek, 1999)

‘Weak’ sustainability



- Takes a more **functionalistic** approach, utilising **negotiation** among the different stakeholders to make incremental economic, environmental and social improvements while avoiding decreases in total wealth over time
- It attempts to make the transition **smoother** by **stakeholder** negotiation, which might take longer but with fewer conflicts

(Atkinson, 2000; Bartelmus, 1999b; Daly, 2002; Milne, Kearins, & Walton, 2003; Zadek, 1999)

SD categories

- Conventional economists' perspective
- Non-environmental degradation perspective
- Integrational perspective
- Inter-generational perspective
- Holistic perspective

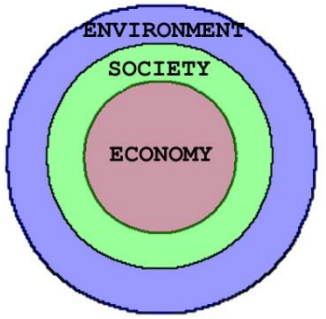
(Lozano, 2008)

Conventional economists' perspective

- Sustainability suggests a steady state
- Sustainability is confused with economic **viability**, *i.e.* sustained growth and self-sufficiency
- It attempts to simplify into economic terms natural and social phenomena
- Such perspective has very limited scope, **neglecting** the impacts of economic activities upon the **environment** and **societies** of today, and certainly in the future

(Goldin & Winters, 1995; Stavins, et al., 2003)

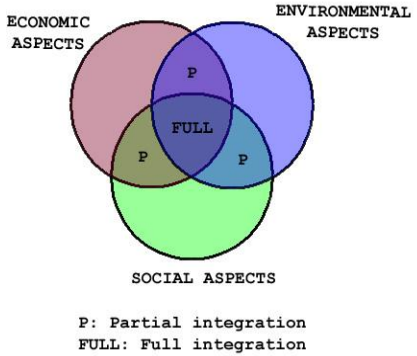
Non-environmental degradation perspective



- Represented by **environmental economics**
- Resources are **scarce**, consumption cannot be continued indefinitely, natural resources should be used without surpassing their carrying capacities, and environmental capital should not be depleted
- SD has primarily **environmental** connotations
- It tends to **neglect** the importance of social aspects
- This perspective also fails to address the inter-relations among the aspects

(Costanza, 1991; Daly, 2002; Dobers & Wolff, 2000; Doppelt, 2003; Fullan, 2002; S. Hart, 2000; Miller, 2002; Murcott, 1997; Rees, 2002; Reinhardt, 2000, 2004)

Integrational perspective



- The key characteristic is the **integration** of economic, environmental, and social aspects, and their relations
- There are many overlaps among the aspects, but they are **not necessarily balanced**
- This perspective is, comparatively, more complete than the previous two
- Nevertheless, it **lacks continuity**, the interactions among the short-, long-, and longer-term, focusing mainly on current activities

(Cairns, 2004; Dalal-Clayton & Bass, 2002; Diesendorf, 2000; Elkington, 2002; Langer & Schön, 2003)

Inter-generational perspective

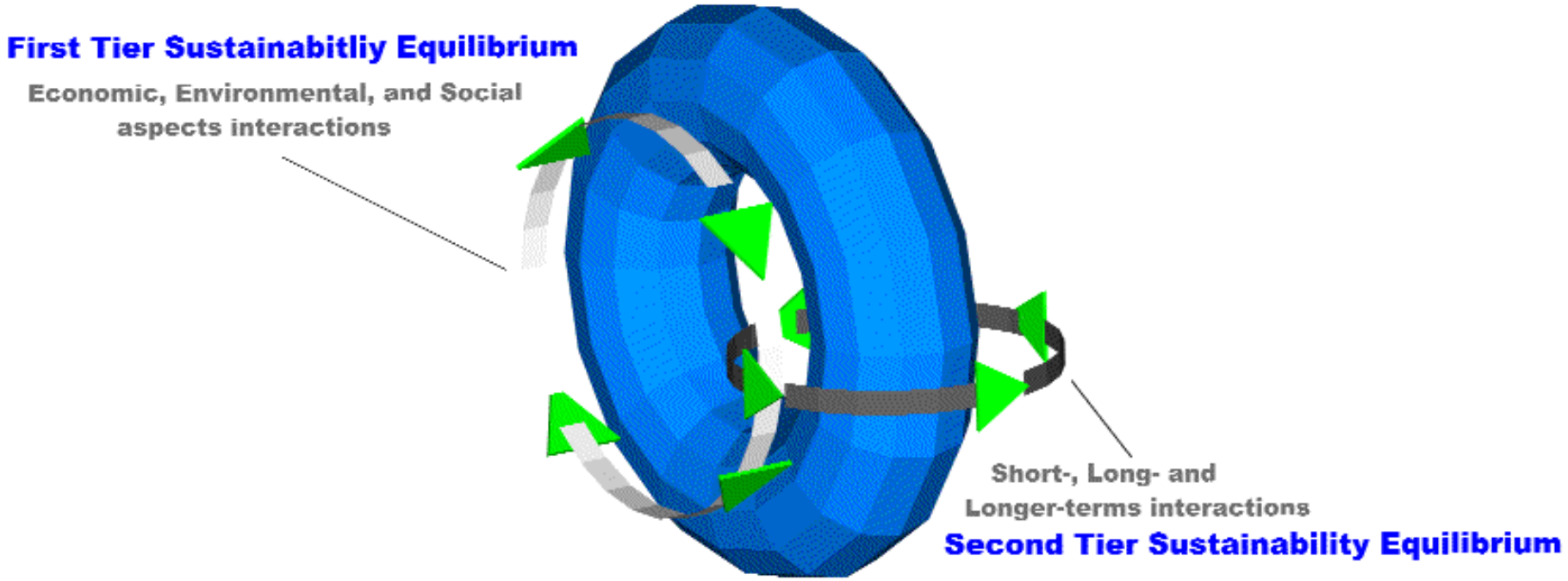
- Main focus is on the **time perspective**, e.g. the Brundtland Report definition
- Although this perspective's forte is its focus on continuity, in some cases it **does not explicitly** integrate the other aspects
- Sometimes this perspective is critiqued as being too **broad and vague**, and **difficult** to ground in practical activities

(Goldin & Winters, 1995; WCED, 1987; Hodge, Hardi, & Bell, 1999; Reinhardt, 2004; Bhaskar and Glyn, 1995; Stavins, et al., 2003)

Holistic perspective

- Explicitly **combines** the integrational and inter-generational perspectives
- This perspective proposes two dynamic and simultaneous equilibria:
  - The first one amongst **economic, environmental and social** dimensions, and
  - The second amongst the **temporal aspects**, *i.e.* short-, long- and longer-term perspectives

(Elsen, 1998; Lozano, 2008, 2009, 2010)


First Tier Sustainabitliy Equilibrium
Economic, Environmental, and Social aspects interactions
Short-, Long- and Longer-terms interactions
Second Tier Sustainability Equilibrium

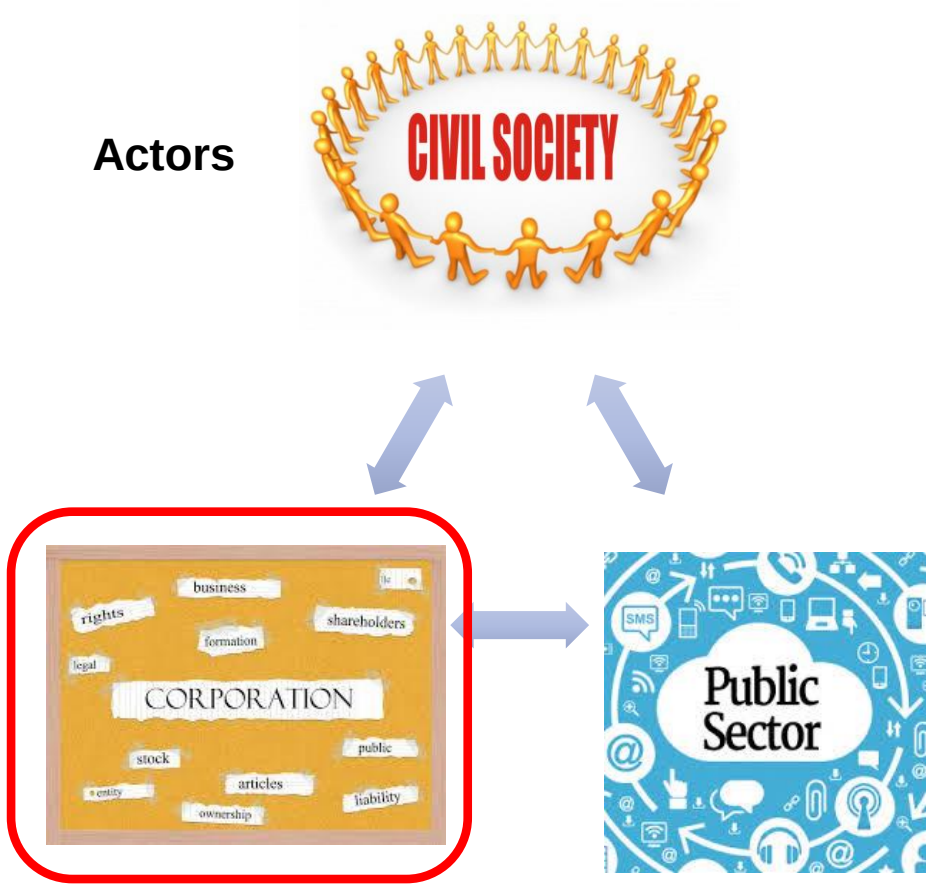
(Lozano, 2008)

Sustainability

Dimensions

Economic
Environmental
Social
Time

Actors



Modern corporations (1)

- Have their origins in the **mercantilist** era (18th and 19th centuries) with the ***Dutch East India Company*** and the ***British East India Company***, where they were established by royal charter
- Their main objective is to generate a satisfactory level of profit for their legal owners (Argadoña, 1998; Boatright, 1996; Charreaux & Desbrières, 2001; Doppelt, 2003a; Farmer & Hogue, 1973; Friedman, 1970; Lee, 2005; Radin, 1932).

Modern corporations (2)

- **Profit** is private benefit minus private cost (The Economist, 2005), where one of the highest costs of corporations is labour, which can range from 10 to 85 per cent (Farmer & Hogue, 1973)
- Although, labour might be the highest, without labour a corporation cannot exist or operate.

Modern corporations (3)

- Other terms used to refer to corporations include firms, enterprises, businesses, and companies
- Have evolved to **large publicly traded** corporations, with limited liability, free to incorporate, and **international** operations, production facilities and markets

During the last two decades…

- … corporations have been the main drivers of dramatic **economic** and **technological** changes

- … corporate **economic power** has expanded, through privatisation and liberalisation

(Amoroso, 2003; Dunphy, Griffiths, & Benn, 2003; Jensen, 1993; Korten, 2001; NGLS & UNRISD, 2002)

Corporate Power

- 90% **ownership** of patents
- **61,582** trans-national corporations (TNCs) with **926,948** subsidiaries in 2000
- TNCs **control 2/3** of world trade
- Combined sales of 200 largest TNCs are **higher** than the economies of all countries except the largest 10

(Hansen, 1998; Anderson & Cavanagh, 2000; Hart, 2000; CorpWatch, 2001)

Introduction

- Companies have been considered as responsible for **many negative** impacts on the **environment** and on **societies** (Dunphy et al., 2003)

- In response, corporations have engaged in efforts to **integrate sustainability** into their operations and better contribute to making societies more sustainably (Elkington, 2002), and satisfy the needs of today's societies without compromising the needs of tomorrow's societies (WCED, 1987)

- In this context, businesses have been increasingly considering the entire **life cycle** of a product or service, from downstream (i.e. extraction), to upstream (i.e. disposal), and its use (DeSimone & Popoff, 2000; Holliday, Schmidheiny, & Watts, 2002; Robèrt, 2000)

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Corporate social responsibility

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CSR Evolution

European or American CSR?

- Different **interpretations** in Europe and in the U.S.A.
- In Europe the mainstream corporate entity is more open and flexible towards CSR, encompassing, in general, **environmental** and **social** aspects (C.E.C., 2001, 2002; M. E. Porter & Kramer, 2003; Smith, 2003)
- In the U.S.A. CSR is more usually a synonym for corporate **philanthropy** (M. E. Porter & Kramer, 2003; Smith, 2003)

Against CSR

- The **only** responsibility of corporations is to make profits
- CSR **increases** costs and impairs performance
- It attempts to fundamentally **reform capitalism** in order to make it more humane
- It **distracts** attention from genuine business ethics problems by taking into account stakeholders
- Merely a cosmetic treatment used for **PR**

(Farmer & Hogue, 1973; Frankental, 2001; Friedman, 1970; Henderson, 2005; The Economist, 2005)

It doesn't go far enough

1. Difficult to demonstrate positive **correlations** between CSR and 'the bottom line'
2. Difficult to **evaluate** performance against all CSR issues
3. Considered a **panacea** for world problems
4. **Many CSR** definitions and interpretations
5. **Only** profitable companies can engage in CSR
6. Potentially the company would take government **roles**
7. 'Corporate Social Responsibility' **implies** social aspects, environmental ones are not explicit

(Avi-Yonah, 2005; Frankental, 2001; Frederick, 1994; Fukukawa & Moon, 2004; Ite, 2004; Laffer, Coors, & Winegarden, 2004; Welford, 2005; Willard, 2002; van Marrewijk & Hardjono, 2003)

CSR and SD

- CSR contribution to more sustainable societies is hindering because:
  - There is a **large number** of, sometimes confusing other times contradicting, definitions and redefinitions that have appeared over the years
  - Usually equated to **philanthropy**
  - Usually perceived as referring **only to social aspects**

(Lozano, 2012)

Moving forward? (1)

- Go **beyond** local laws and regulations
- CSR needs to be integrated into the **operations** and **management** practices
- Be **critical** and admit its shortcomings and mistakes
- **Internal audits** would need to be established for economic, environmental, and social issues
- Corporate **policies** relating to governance need to be modified

(C.C.E., 2001; C.C.E., 2002; Frankental, 2001; Jenkins & Hines, 2003; The Economist, 2005)

Moving forward? (2)

- Rewards from **financial** markets
- Improvement in the understanding and **knowledge** of the concept
- Being **flexible** and not falling into the “one-size-fits-all” solutions
- Facilitating **convergence** and transparency of CSR practices and tools

(C.E.C., 2002; Frankental, 2001; Jenkins & Hines, 2003)

Organisational Sustainability

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Corporate Sustainability

Corporations and sustainability

- Corporate leaders and employees have been increasingly recognising the **relations and inter-dependences** of economic, environmental and social aspects (C.E.C., 2001; Elkington, 2002), what Lozano (2008) calls the **First Tier Sustainability Equilibrium (FTSE)**, and their inter-relations within and through the time dimension, *i.e.* in the short-, long- and longer-term, the **Two Tiered Sustainability Equilibrium (TTSE)**

Corporate Sustainability (1)

- Recently, the term Corporate Sustainability (CS) has emerged as an alternative to CSR, where CS is being considered to be a precondition for doing business, as a '**business case**' (Dyllick & Hockerts, 2002), and the **desirable path for organisations** (Dunphy, et al., 2003; Weymes, 2004).

- Corporate Sustainability (CS) has been proposed as a framework to address the **full array** of sustainability challenges and issues (see Bartelmus, 1999; GRI, 2006; Lozano, 2012)

- CS must be addressed in a **holistic** way (Linnenluecke, Russell, & Griffiths, 2009; Schaefer, 2004; van Marrewijk, 2002), which means addressing the **four dimensions of sustainability** (i.e. economic, environmental, social, and time, as well as their inter-connections (Lozano, 2012))

Corporate Sustainability (1)

- "…**meeting the needs** of a firm's direct and indirect stakeholders, such as shareholders, employees, clients, pressure groups, communities without compromising its ability to meet the needs of future stakeholders as well" (Dyllick & Hockerts, 2002)

- For a company to become more sustainability orientated, it should **make changes** that include the introduction of resource-efficient technologies, sustainability reporting schemes, while providing sustainable products, services, and product-service combinations (Siebenhüner and Arnold, 2007)

Corporate Sustainability (4)

- For a company to become more sustainability orientated, it should make **changes** that include the introduction of **resource-efficient technologies**, sustainability reporting schemes, and the provision of sustainable **products, services, and product-service combinations** (Siebenhuner and Arnold, 2007).
- CS should encompass a **holistic perspective** (Baumgartner & Ebner, 2010; Linnenluecke, Russel, & Griffiths, 2009; Lozano & Huisingh, 2011).

Corporate Sustainability (2)

- "Corporate activities that **proactively** seek to contribute to **sustainability equilibria**, including the economic, environmental, and social dimensions of today, as well as their inter-relations within and throughout the **time dimension** (i.e. the short-, long-, and longer-term), while addressing the **company's system** (Operations and production, Management and strategy, Governance, Organisational systems, Procurement and marketing, and Assessment and communication), as well as with its **stakeholders**"

(Lozano, 2012, 2017)

Corporate Sustainability (2)

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(Lozano, 2012, 2017)

CS and business models

- CS has **challenged** traditional business models (Lozano, 2012; Murray, Skene, & Haynes, 2015), which has fostered a shift from **selling products to providing service** solutions to customer needs (Lay, Schroeter, & Biege, 2009; Mont, Dalhammar, & Jacobsson, 2006) and better engaging with **stakeholders**, while creating competitive advantages to customers, the company, and society (Boons & Lüdeke-Freund, 2013; Porter & Kramer, 2011; Stubbs & Cocklin, 2008)

- A number of **alternative**, or sustainable, business models have been proposed to better contribute to sustainability (see Benn, Dunphy, & Griffit, 2014; Mont et al., 2006; Stubbs & Cocklin, 2008; Bohnsack, Pinkse, & Kolk, 2014; Schaltegger, Hansen, & Lüdeke-Freund, 2016a)

Business Models (BMs) (1)

- A comprehensive understanding of how a company **does business** (Beattie & Smith, 2013; Teece, 2010) and how **value is created** (Afuah, 2004)
- A good business model takes into consideration **human motivations** in the generation of profits (Magretta, 2002)
- They articulate the logic, the data, and other evidence that support a **value proposition** for the customer, and a viable structure of revenues and costs for the enterprise delivering that value (Teece, 2010)
- They can help to focus on how all the **elements of the system** fit together as a whole (Magretta, 2002)

Business Models (BMs) (2)

- A BM clarifies the chosen position of the company within the **value chain**, i.e. what are the key assets to own and control in order to capture value (Teece, 2010)

- A reflection of the **company's strategy** (Casadesus-Masanell & Ricart, 2010), where all the company's BMs should coalesce to meet the company's strategic **objectives** (Thomas Burkhart, 2012)

- BMs also represent a **transformational approach**, where the BM addresses change and focuses on innovation, either in the organization, or in the BM itself (Demil & Lecocq, 2010)

Resource Based View

- Additionally, a company is a collection of productive resources innate to the firm (Conner & Prahalad, 1996; Penrose, 1959), which can be:
  - **Tangible** (e.g. plant equipment, land and natural resources, waste products, and finished goods) (Penrose, 1959)
  - **Human** (e.g. unskilled and skilled labour, clerical, administrative, financial, legal, technical, and managerial staff) (Penrose, 1959)
  - **Intangible** (e.g. capabilities and cognitions) (Sanchez & Heene, 1997)

BMs and stakeholders

- Traditional business models have been based on a **clear distinction between the companies** (Perthen-Palmisano & Jakl, 2005)
- However, the company is linked to several **stakeholders** generating a dependency relation: the external stakeholder demands are converted into the supplied characteristics constituting a product or service by the company having a considerable effect on the company's business model (Hienerth et al., 2011)
- This view of a business model is seen as a means to reduce costs by **contracting** stakeholders (Osterwalder, 2004)
- Such a BM, thus, focusses on explaining a firm's **operations in practice**

Elements of BMs (1)

- Value **proposition** as the offer and the target customer segment, the value **creation** and **delivery** system, and the value capture system (Richardson, 2008; Boons and Lüdeke-Freund, 2013; Osterwalder et al., 2010)

- Zott and Amit (2010) proposed an activity perspective on business models; the selection of **activities** (i.e. 'what'), the activity **system structure** (i.e. 'how'), and **who** performs the activities (i.e. 'who')

- In general, business models should be seen through the lens of **permanent interactions** between these elements and activities, and the implications of their changes (Demil & Lecocq, 2010)

Elements of BMs (2)

- This should support the understanding of how companies work and how they create value for different internal and external **stakeholders** (DaSilva & Trkman, 2014)

- Since a company may have **different value propositions**, it may have other business models with their hierarchical relationships (Thomas Burkhart, 2012) at **different organisational levels** (Demill & Lecocq, 2009)

Alternative Business models

- A number of alternative, or sustainable, business models have been proposed to reduce the environmental burdens, with a particular focus toward switching from product sales to a service approach (Benn et al., 2014; Mont et al., 2006; Stubbs & Cocklin, 2008)

- Three alternative business models (Lay et al., 2009)
  - **Leasing** - where the supplier becomes a service provider by retaining the ownership and assuming responsibility for maintenance, in this case the customer pays a regular fee for unlimited individual access to the product;
  - **Renting** - similar to leasing, however, the customer does not have unlimited access
  - **'Product pooling'** - where the equipment is used simultaneously by several users instead of a sequential mode of use.

SBM examples

- Selling the **function** that baby prams provide (Mont et al., 2006)
- **Chemical leasing**, where chemical companies move from selling tons of chemicals to a service oriented business (Lozano, 2013b; Lozano, Carpenter, & Satric, 2013)
- **Ridesharing** business models for sustainability (Cohen & Kietzmann, 2014), such as Carpooling, Flexible carpooling, Vanpooling, and Ridesharing.

Methods

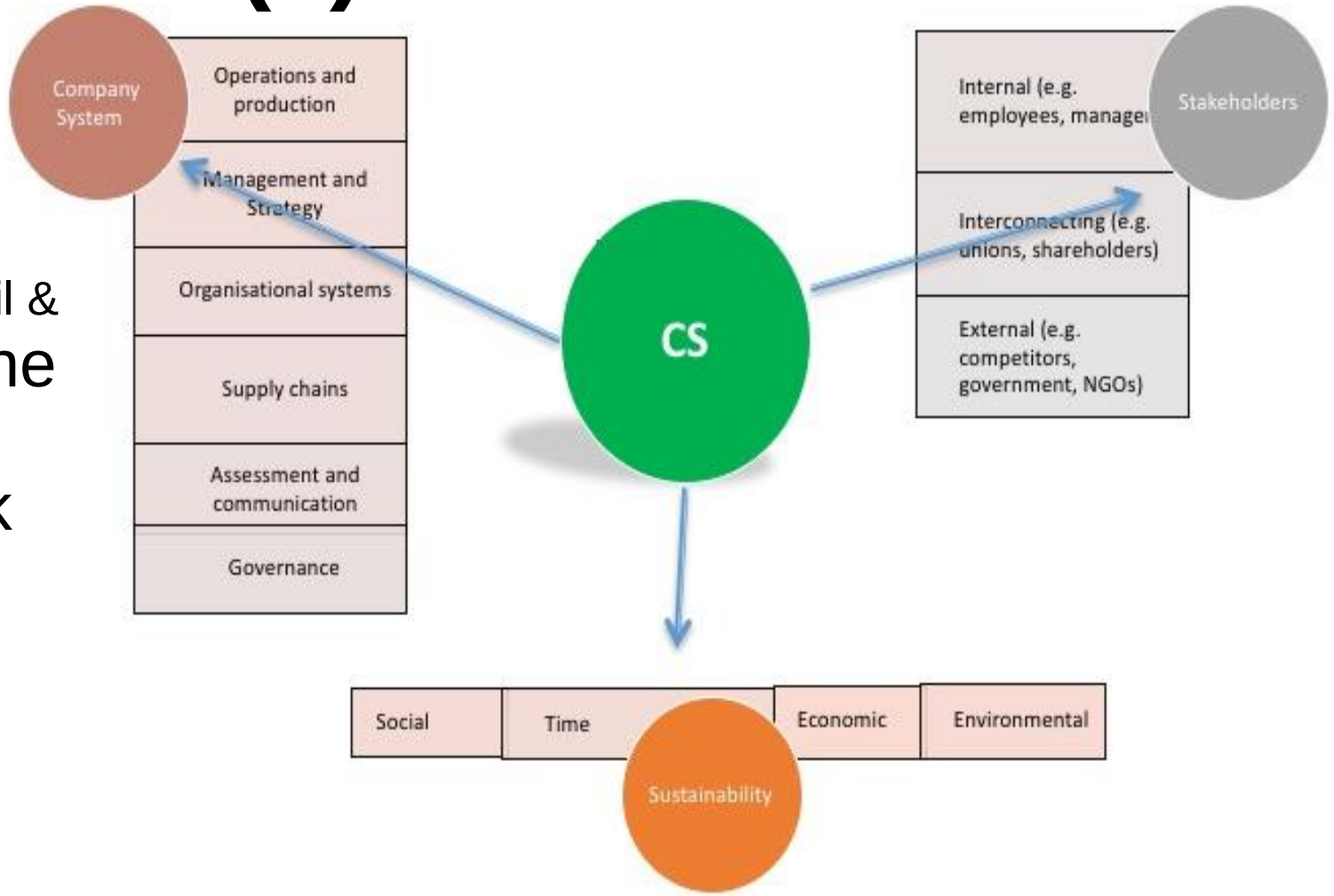
- In the last lustrum, there has been a steady **increase in publications** using the term ‘sustainable business models’; however, there have been **few** that have theoretically defined or characterised the term, and in most cases, they just apply the term.

- **Seven peer-reviewed** papers were selected since they are aimed at defining and explaining SBMs and have been cited considerably

- Each of the definitions was analysed using **hermeneutics** (see Harrington, 2001; Heidegger, 1976; Leyh, 1988)

Analytical methods (1)

- Firstly, by assessing the elements and activities covered (as indicated by Demil & Lecocq, 2010). This was done using the Corporate Sustainability framework (including the company system, sustainability's dimensions, and stakeholders)



Analytical methods (2)

- Secondly, by comparing the papers against Jones's (2013) four approaches to explain organisations:
  1. **External** resource approach, which allows managers to evaluate how effectively an organisation manages and controls its external environment
  2. **Internal systems** approach, which allows managers to evaluate how effectively an organisation functions and operates
  3. **Technical** approach, which allows managers to evaluate how effectively an organisation can convert some fixed amount of organisational skills and resources into finished goods and services
  4. **Inputs** approach, which includes resources such as raw materials, machinery, information and knowledge, human resources, and money and capital

SBMs summaries (1)

- A SBM uses a **Triple Bottom Line Approach** in measuring performance; a SBM considers the needs of all stakeholders rather than giving priority to **shareholders' expectations**; a SBM treats nature as a stakeholder and promotes environmental stewardship; Sustainability leaders, or champions, drive the **cultural and structural changes** necessary to implement sustainability; and an SBM encompasses the **systems perspective**, as well as the **firm-level** perspective (Stubbs and Cocklin, 2008)

SBMs summaries (2)

- Four elements of a SBM:
  - **Value proposition** - providing measureable ecological and/or social value in concert with economic value;
  - **Supply chain** - involving suppliers who take responsibility for their own as well as the focal company's stakeholders;
  - **Customer interface** - motivating customers to take responsibility for their consumption as well as for the focal company's stakeholders
  - **Financial model** - reflecting an appropriate distribution of economic costs and benefits among actors involved in the business model and accounting for the company's ecological and social impacts. (Boons and Lüdeke-Freund, 2013),

SBMs summaries (3)

- Eight SBM archetypes, grouping them into:
  - **Technological** (maximise material and energy efficiency, create value from ‘waste’, and substitute products and processes with renewable and natural ones)
  - **Social** (deliver functionality, instead of having ownership; adopt a stewardship role; and encourage sufficiency)
  - **Organisational** (re-purpose the business for society and the environment, and develop scale-up solutions) (Bocken, et al., 2014)

SBMs summaries (4)

- Business Models for Sustainability (BMfS) connects **four partial models**:
  - 1) the firm
  - 2) the environment
  - 3) the decision maker
  - 4) the customer
- The BMfS is built on the firm's **value creation** capacity, value to the customers, value to the natural environment, and the value that the firm captures. The environment is conceptualized by means of **three main stocks**: renewable resources, non-renewable resources, as well as pollution and waste. (Abdelkafi & Tauscher, 2015)

SBMs summaries (5)

- New business models for sustainability are developed through **interactions between individuals and groups** inside and outside companies, which are based on three elements:
  - 1) building **networks** and collaborative practices for learning and action around a new vision
  - 2) deploying **new concepts** drawn from outside the company
  - 3) elaborating and implementing **structure** within a reconfigured network. (Roome & Louche, 2016)

SBMs summaries (6)

- "*A business model for sustainability helps describing, analysing, managing, and communicating (i) a company's sustainable* ***value proposition*** *to its customers, and all other* ***stakeholders****, (ii) how it* ***creates and delivers*** *this value, (iii) and how it captures economic value while* ***maintaining or regenerating*** *natural, social, and economic capital beyond its organizational boundaries*". Schaltegger et al. (2016),

SBMs summaries (7)

- Upward and Jones (2016) provided an ontological discussion to define sustainable business models and propose a framework. These are based on:
  - 1) stakeholders considering human and non-human
  - 2) governance
  - 3) tools and framework to embed sustainability
  - 4) biomimicry frameworks
  - 5) industrial ecology principles
- The authors explicitly mention the **time perspective** in their arguments
- The authors propose the following **components**: actor; stakeholder; target customer; channel; value proposition; decision (governance); relationship; value configuration; partnership; capability; process measure (non-financial); profit; cost; revenue; and assets.

		Stubbs and Cocklin (2008)	Boons and Lüdeke-Freund (2013)	Bocken, et al. (2014)	Abdelkafi & Tauscher (2015)	Upward and Jones (2016)	Roome & Louche (2016)	Schaltegger et al. (2016)
Company system	Operations and production			Yes		Implied		
	Management and strategy	Yes	Yes	Yes	Yes			Yes
	Organisational systems				Yes		Yes	
	Supply chains		Yes	Yes				
	Assessment and communication	Yes	Yes			Yes		Yes
	Governance					Yes		
Stakeholders	Internal	Yes			Somehow	Implied	Yes	Yes
	Interconnecting	Yes				Implied		Yes
	External	Yes	Yes	Yes	Somehow	Implied	Yes	Yes
Sustainability	Economic	Yes	Yes	Yes	Yes	Yes		Yes
	Environmental	Yes	Yes	Yes	Yes	Yes		Yes
	Social	Yes	Yes			Yes	Yes	Yes
	Time	Somehow				Yes		
Organisational approach	External resource	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Internal system	Yes				Yes	Yes	Yes
	Technical			Yes		Yes		
	Inputs		Yes		Yes	Yes		
Citations*	SCOPUS	176	260	258	13	23	7	39
	Google scholar	436	691	612	48	64	27	119

Critiques to current approaches to SBMs (1)

- Although some discussions on SBMs claim to be based on the **TBL** (Bocken et al., 2014; Stubbs & Cocklin, 2008), the majority of them are heavily focused on the **environmental dimension**, such as ecological modernisation or through resource efficiency (see Bocken et al., 2014; DeSimone & Popoff, 2000; Holliday et al., 2002; Robèrt, 2000; Stubbs & Cocklin, 2008)

- Bocken et al. (2014) highlighted **some social issues** of sustainability, but these are mainly of the impacts of products for consumers

- The time dimension is **conspicuously missing** in SBMs discourse.

Critiques to current approaches to SBMs (2)

- Most definitions are based on a **narrow, business oriented** perspective of **value proposition, creation, and delivery** (see Abdelkafi & Tauscher, 2015; Bocken et al., 2014; Boons & Lüdeke-Freund, 2013; Schaltegger et al., 2016), with the exception of Upward and Jones (2016). This arises from the traditional BMs perspective, i.e. from a (mainly economic) value point of view

- Sustainability encompasses **economic**, **environmental**, **social**, and **time dimensions**, thus, a SBM should be seen from a sustainability perspective on how to add value to the four dimensions of sustainability, and not from value focussed on how to increase sustainability performance

Critiques to current approaches to SBMs (3)

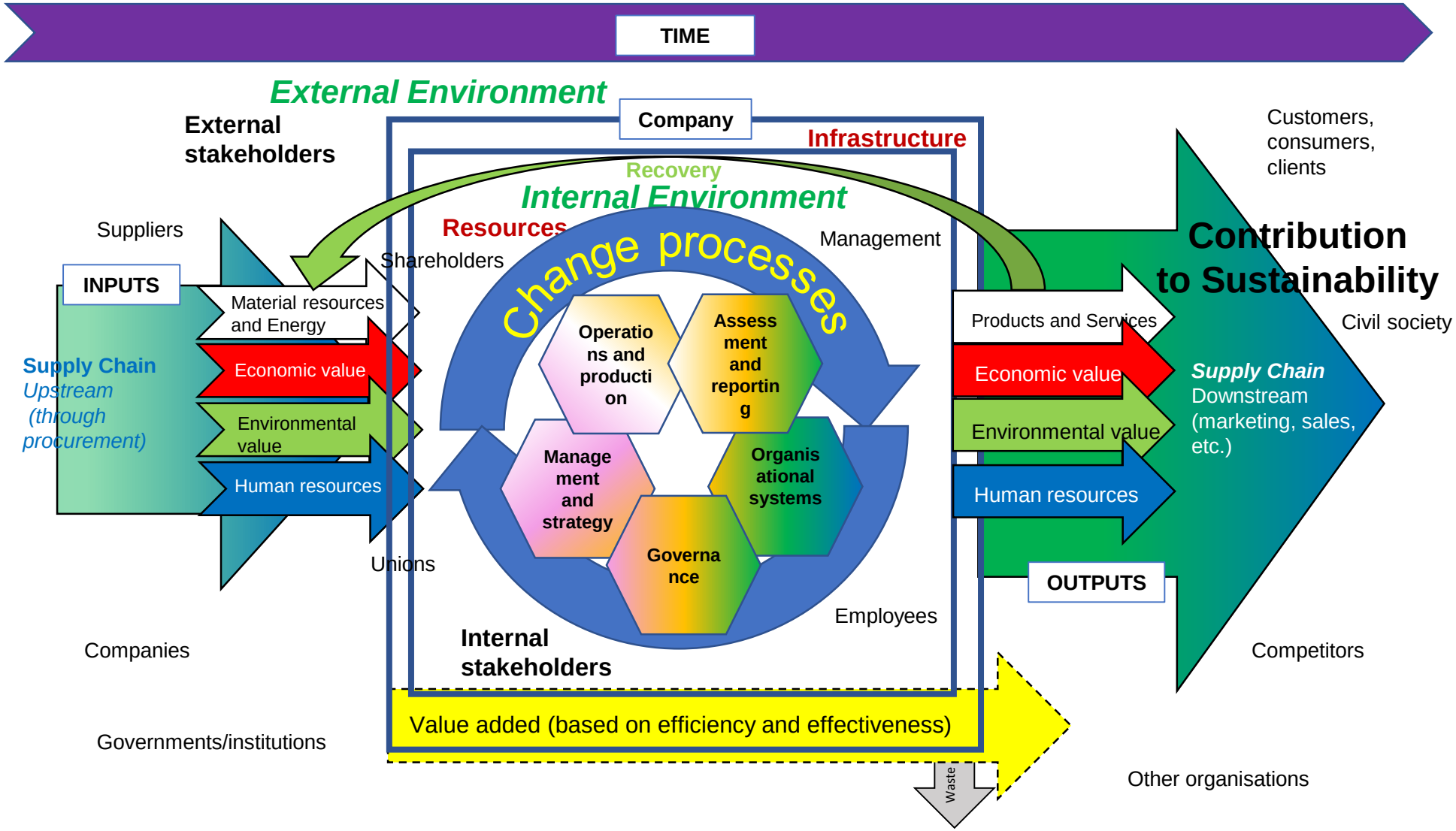
- Most authors use the term **‘sustainable business model’,** with the exception of Schaltegger et al. (2016), who prefer the term ‘**business models for sustainability**’

- Terminologically, it will be better to label this term as **‘sustainability oriented business models’**, but this would imply that the view is from business models to sustainability

- A better term would be **‘more sustainable business models’**, where sustainability is embedded in the business model, and is based on sustainability as a dynamic ideal, and thus no business model will ever be fully sustainable.

Proposed definition of A More Sustainable Business Model

- ‘A **holistic and systemic** reflection of how a company **operationalises** its strategy, based on **resource efficiency** (through operations and production, management and strategy, organisational systems, governance, assessment and reporting, and change), so that the **outputs** have **more value** and **contribute to sustainability** more than the **inputs** (in regards to material and resources that are transformed into products and services, economic value, human resources, and environmental value). The business model is affected by the **company’s resources** (tangible and intangible), the **supply chain**, and the company’s **stakeholders** (internal, inter-connecting, and external), including the environment (inside and outside the company)”.


TIME
External Environment
External stakeholders
Company
Infrastructure
Recovery
Internal Environment
Resources
Management
Shareholders
Suppliers
INPUTS
Material resources and Energy
Economic value
Environmental value
Human resources
Supply Chain
Upstream
(through procurement)
Change processes
Operations and production
Assessment and reporting
Management and strategy
Organisational systems
Governance
Unions
Employees
Internal stakeholders
Companies
Governments/institutions
Value added (based on efficiency and effectiveness)
Waste
Customers, consumers, clients
Contribution to Sustainability
Civil society
Products and Services
Economic value
Environmental value
Human resources
Supply Chain
Downstream
(marketing, sales, etc.)
OUTPUTS
Competitors
Other organisations

Conclusions

- The More Sustainable Business Models framework is aimed at **integrating** organisational approaches, the company system, stakeholders, change, and sustainability dimensions, thus, providing a **more holistic and systemic approach** to SBMs discourses

- The framework can also serve as a base for companies to analyse how CS has been integrated into their business models, strategies, and activities, and, consequently, contribute to making societies more sustainable.

Organisational Sustainability

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Companies have to **embed sustainability holistically**, systemically, and integrally into the elements of their business models on cultural, structural, firm-level, and systems-level **attributes** to **create value** for the company whilst considering its stakeholders, and not based, as in many SBMs discourses, on creating value **under the pretence** of sustainability.

Thank you!

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