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# **Beyond GDP: the global interdependence and reduction of inequalities scenario**

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***ISIS***

# This presentation

- **Scenario development context: the PASHMINA project (EU – FP7)**
- **Macro characterization: paradigm shifts**
- **The world in 2050**
- **How to get there: policies and drivers**

# PASHMINA (FP7)

Paradigm Shifts Modelling and Innovative Approaches

- Questioning the dominance of the economic growth objective (feasible? desirable?)
- Ecological economics framework (focus on the interaction between economic and ecologic systems)
- New paradigms  
    ↓
- New/enhanced tools
- New indicators



**Do it fast**  
More consumption of mass-produced goods ("industrial GDP" civilization)

**Do it together**  
More care for nature and social well being



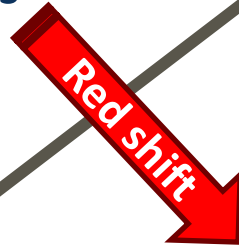
**Growth within limits**



**Growth without limits**



**New Welfare**



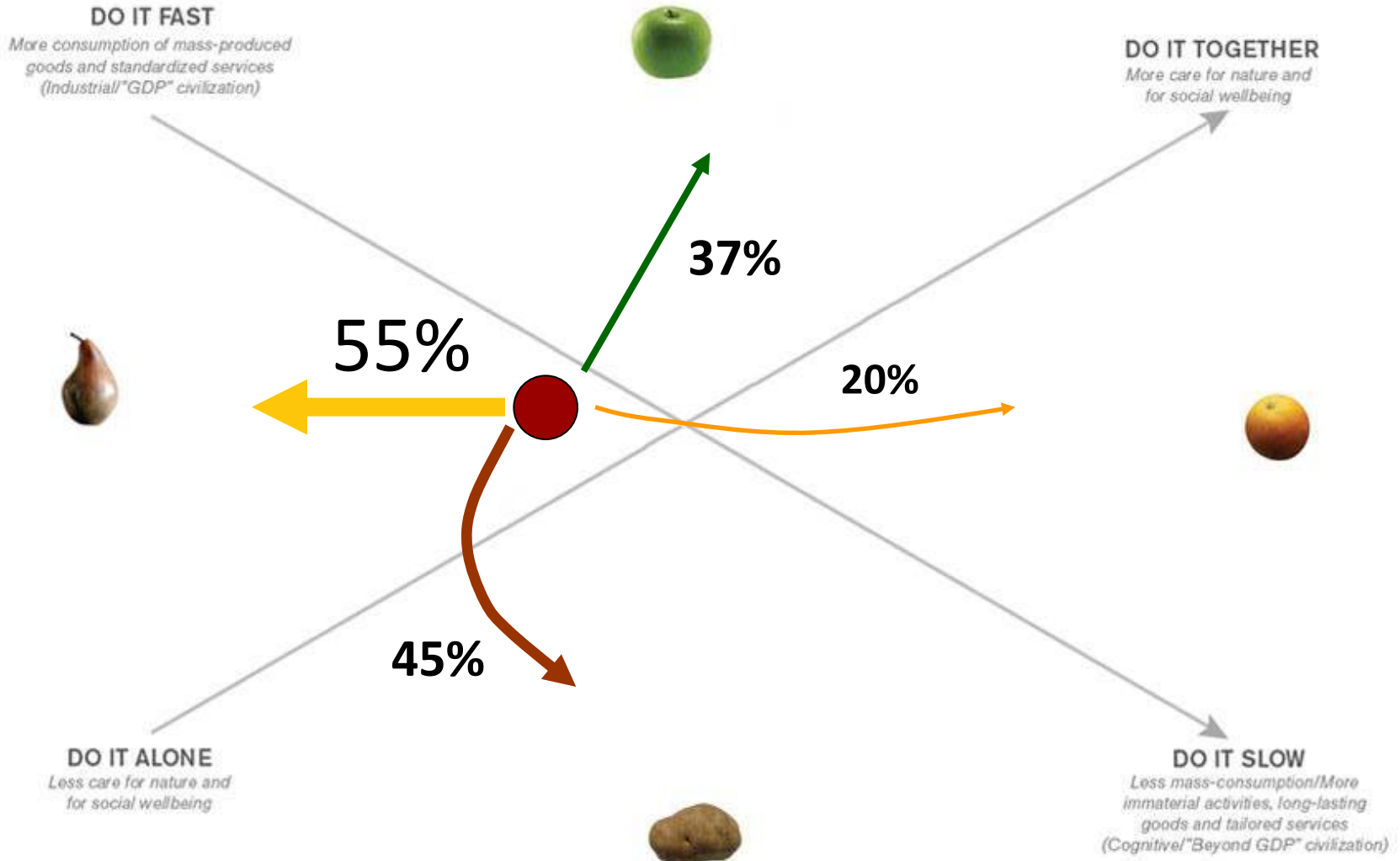
**Stagnation**



**Do it alone**  
Less care for nature and social well being

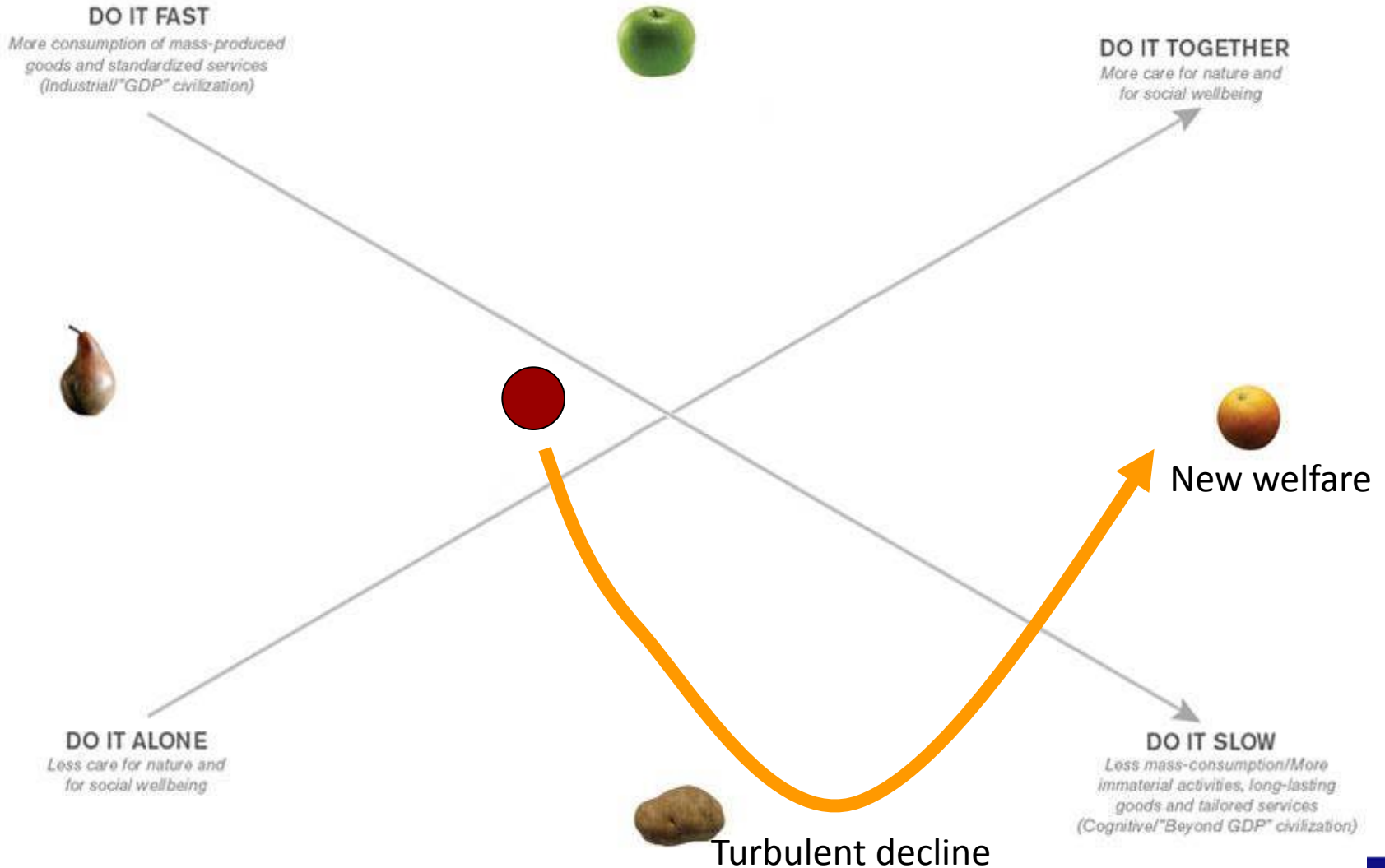
**Do it slow**  
Less mass consumption –  
Dematerialization –  
("cognitive GDP" civilization)

# Which scenario is more credible?





# .. but which scenario is preferable?





# New Welfare: Key Assumptions

- **Unsustainability of current paradigm (limited resources, resource efficiency will be not enough)**
- **The GDP measure of growth is obsolete. But “beyond” GDP doesn’t mean “against”: we need to add something in the equation (natural, human and social capital; intangibles)**
- **Beyond market and government failures: more room for “new” forms of self-regulation of common resources (social innovation in education, management of ecosystems, infrastructure ...)**



# New Welfare Storyline

## ECONOMY AND SOCIETY:

- **Societal (lifestyles) + technological innovation => More consumption of services and intangibles**
- **New economic paradigm: natural capitalism, blue economy and the “economics of enough”.**
- **From global unequal growth to global prosperity in a multi-polar, globally interdependent world**
- **Social (ICT-based) production of open knowledge and intangible products**
- **New global and local democracy institutions**





# New Welfare Storyline

## PATHWAY TO LOW CARBON FUTURE:

- Reduction of (i) overall energy consumption and (ii) energy intensity
- Shift from fossil to RE, smart grids, active demand management, gas or small nuclear to fill (energy gaps)
- Carbon pricing (“Climate Marshall Plan” (carbon mechanism) => fall of GHG
- Networks of compact and resilient cities
- Collective, less individual travel, consistent share of electromobility

**Totemic measure of progress:  
Well-being/sustainability indicator(s)**

**Which paradigm shifts are envisioned in this scenario?**

## *Paradigm shift in Economy*

### **From growth to prosperity beyond GDP**

- **Not new ! (Stuart Mill, Keynes, Daly, Jackson, Hawken, Pauli, Coyle ...)**
- **Rethinking production: from short-lived to longer-lasting goods, recycling and zero-waste processes (blue economy)**
- **Rethinking consumption and time use: from material to intangible goods and services**
- **Rethinking business: from profit to social entrepreneurship (social innovation to satisfy social needs; employee share-ownership and participation); build local capital, markets and community ownership; limit privatization of commons**

## ***Paradigm shift in Policy***

# **New local and global democracy**

- **New global democracy networks and institutions**
- **Beyond human rights, recognition of “nature rights” in a global Earth and national constitutions**
- **Beyond voting, deliberative democracy and self-government of local common pools of resources (e.g. ecosystems, community resource development)**
- **Citizens’ income ⇔ citizens’ duties**

# What will the world look like in 2050?

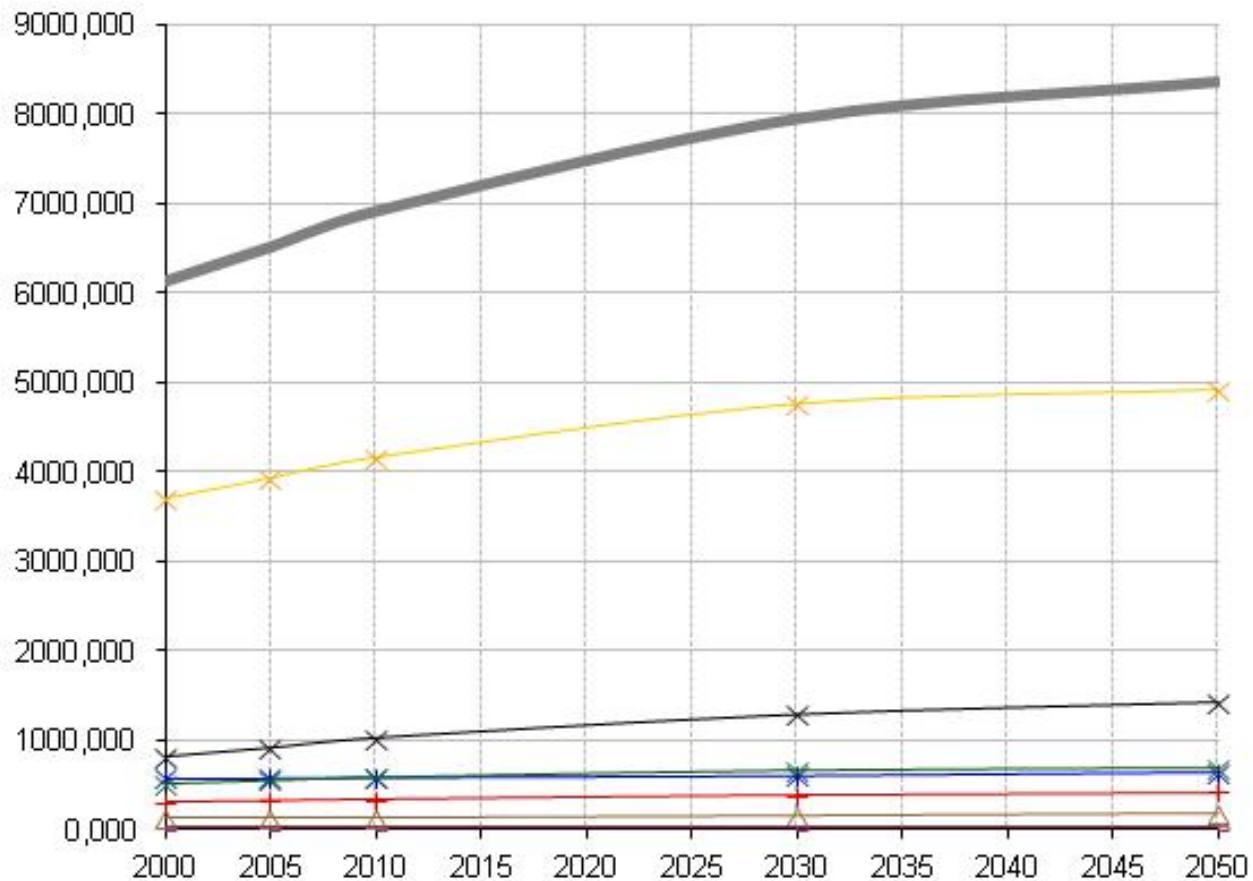
# Macro view

	Trend 2010-2050	Scenario snapshot 2050	Rate of change
Population	↔	8000 millions in 2050	Population yearly growth rates from 1'3% in 2010 to 0'5% in 2030 and 0'2% in 2050
Settlements: Urban society	↓	From 50% urban population in 2010 to 45% in 2050.	3 million urban residents more per year between 2010 and 2050.
Rural land overexploitation	↓	Land for bioenergy production 500 mil.ha in 2050 (4% global land)	1% decrease in agricultural land, 1% decrease in meadows and 2% increase in forests.
Technology	↑	- Telemedicine - Ubiquitous computing - Countryside sensors -Precision bio farmin	2% GDP devoted to R&D investment in growing within limits nations
GDP	↔	- Global GDP about 30% higher in 2050 than in 2010.	0'5% GDP yearly growth rate for developed regions, 1% for developing.
Energy consumption	↓↓	Energy yearly consumption in 2050 is one third of 2010's.	Energy intensity yearly decrease ( $\Delta$ energy/GDP) from -0'8% in 2010 to -2% in 2030 and to -5% in 2050
Transport	↔	Transport drops sharply due to locally based societies and drop in GDP	Decoupling of transport and economy
Climate change	↓↓↓	World GHG emissions in 2050 are 85% lower than in 2010	Emission factors yearly decrease ( $\Delta$ emission/energy) from -0'3% yearly to -1% in 2030 and -3% in 2050.
Biodiversity	↑↑	Reintroduction of extinguished spices. Social awareness helps preserve environmental values.	15.000 species are recovered per year
Governance	↑↑	Networked society, bottomup governance based on human capital rather than institutions.	10 new peaceful anarchies per year between 2010 and 2050

# Key indicators

VITAL SIGNS		2010	Trendline (2050)	New welfare
<b>Population</b>	<i>(million inhabitants)</i>	6910	9214	8360
<b>Settlements: Urban society</b>	<i>(% of people living in cities)</i>	50%	69%	62%
<b>Rural land overexploitation</b>	<i>Arable (% over total land)</i>	12%	12%	11%
	<i>Meadows (% over total land)</i>	26%	26%	25%
	<i>Forests (% over total land)</i>	31%	30%	33%
	<i>Biofuels (% over total land)</i>	0%	4%	4%
	<i>Other (% over total land)</i>	31%	28%	27%
<b>Technology</b>	<i>(% of R&amp;D investment over GDP)</i>	1,9%	2,0%	2,3%
<b>GDP</b>	<i>(2010 = 100)</i>	100	311	296
<b>Wealth disparities</b>	<i>(GDP/capita dispersion relative to mean)</i>	2,3	1,7	0,9
<b>Energy consumption</b>	<i>(MTOE, 2010 = 100)</i>	100	238	112
<b>Transport</b>		100	With economy	Heavily under economy
<b>Climate change</b>	<i>(Mtonnes CO<sub>2</sub>, 2010=100)</i>	100	213	111
<b>Biodiversity</b>	<i>(% yearly change in the number of species)</i>	-0,07%	-0,08%	0,03%
<b>Governance</b>	<i>(forms of government)</i>	93 democracies, 50 anocracies, 20 autocracies	130 democracies	110 peaceful anarchies

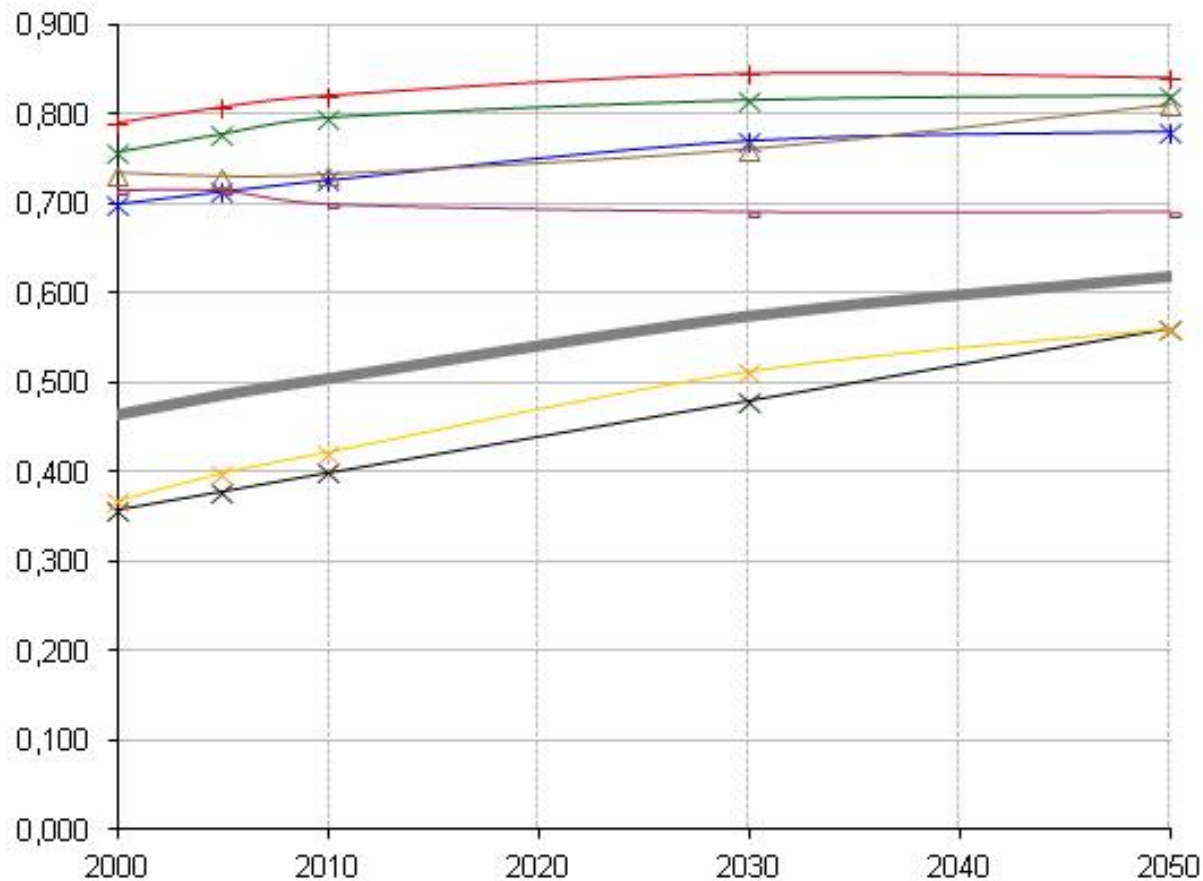
# Population (millions of people)



—\*— EU27 —△— Russia —x— Africa —x— Asia —x— Latin America and Caribbean —+— North America —+— Oceania —+— World



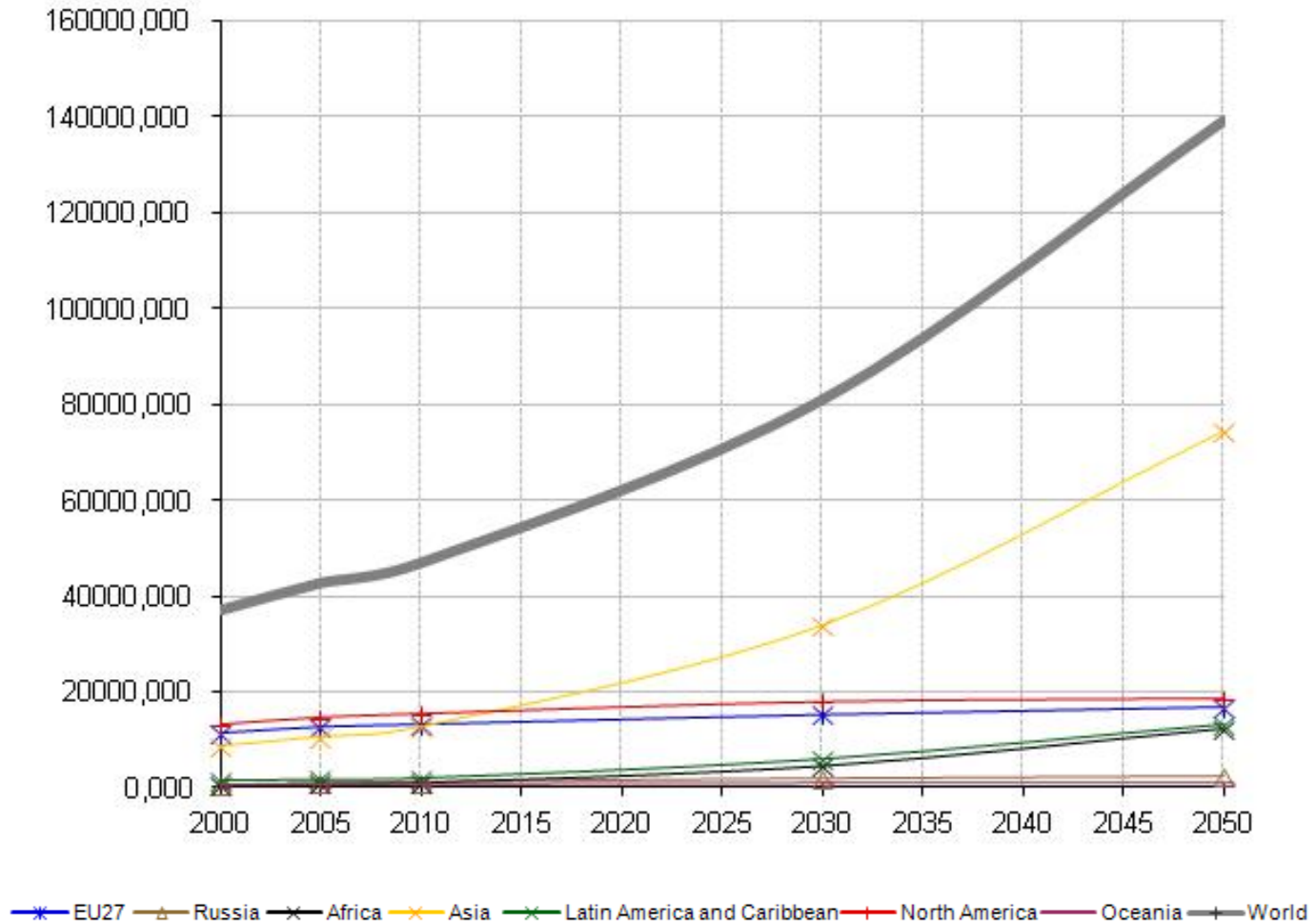
# Urban population ( % over total population)



—\*— EU27 —△— Russia —×— Africa —×— Asia —×— Latin America and Caribbean —+— North America —□— Oceania —×— World

# GDP

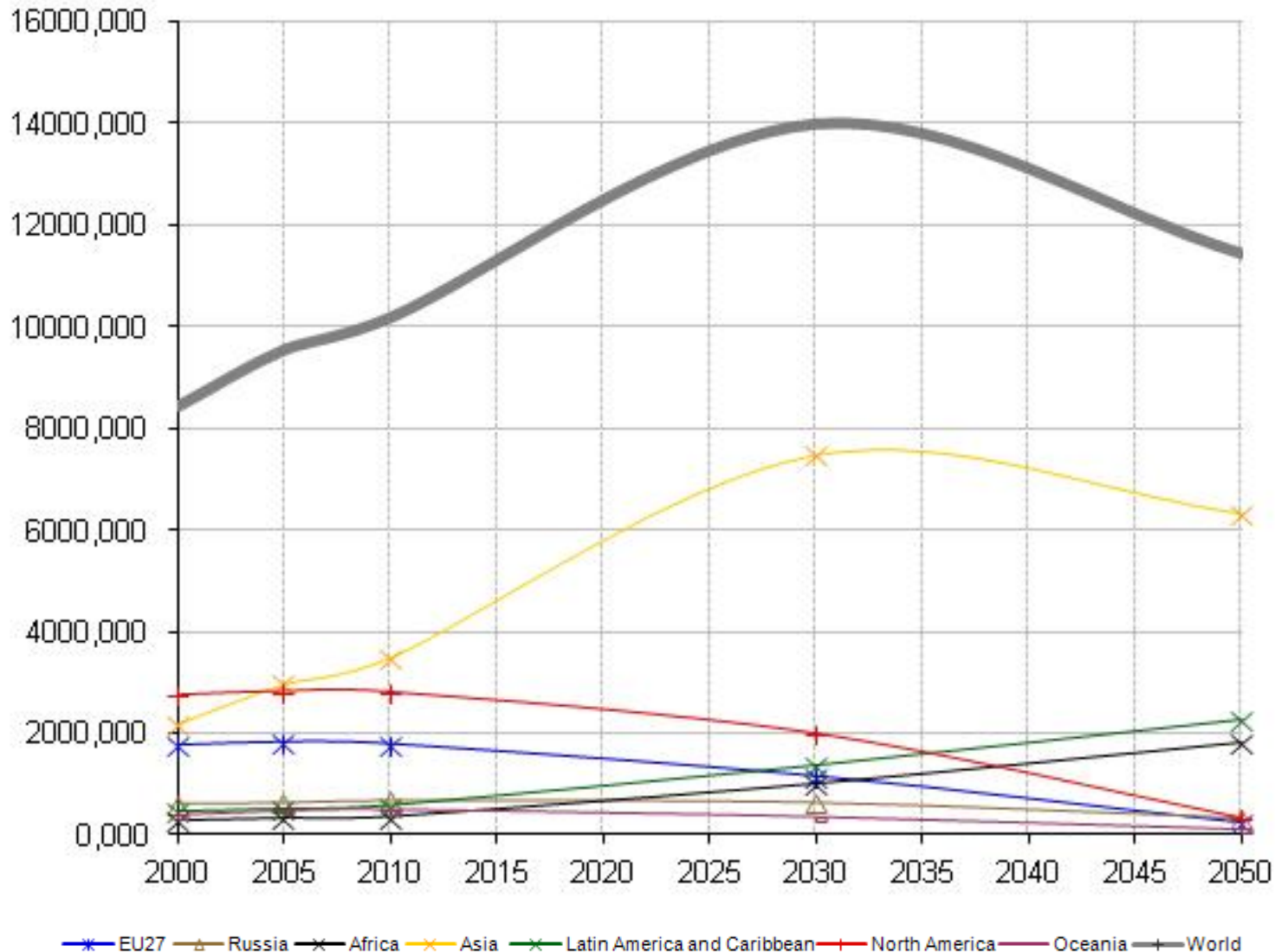
## (1000 millions of 2005 \$)



# Agricultural land use (% over total)

Landuses. Agricultural land (% over total)	Trend line			New welfare	
	2010	2030	2050	2030	2050
EU27	29%	30,33%	29,94%	28,62%	26,27%
Russia	8%	7,96%	7,86%	7,51%	6,90%
Africa	8%	8,94%	8,82%	8,43%	7,74%
Asia	17%	18,48%	18,24%	17,43%	16,00%
Latin America & Caribbean	8%	8,87%	8,75%	8,37%	7,68%
Northern America	12%	12,76%	12,60%	12,04%	11,05%
Oceania	5%	5,79%	5,71%	5,46%	5,01%
<b>World</b>	<b>12%</b>	<b>12,40%</b>	<b>12,24%</b>	<b>11,70%</b>	<b>11%</b>

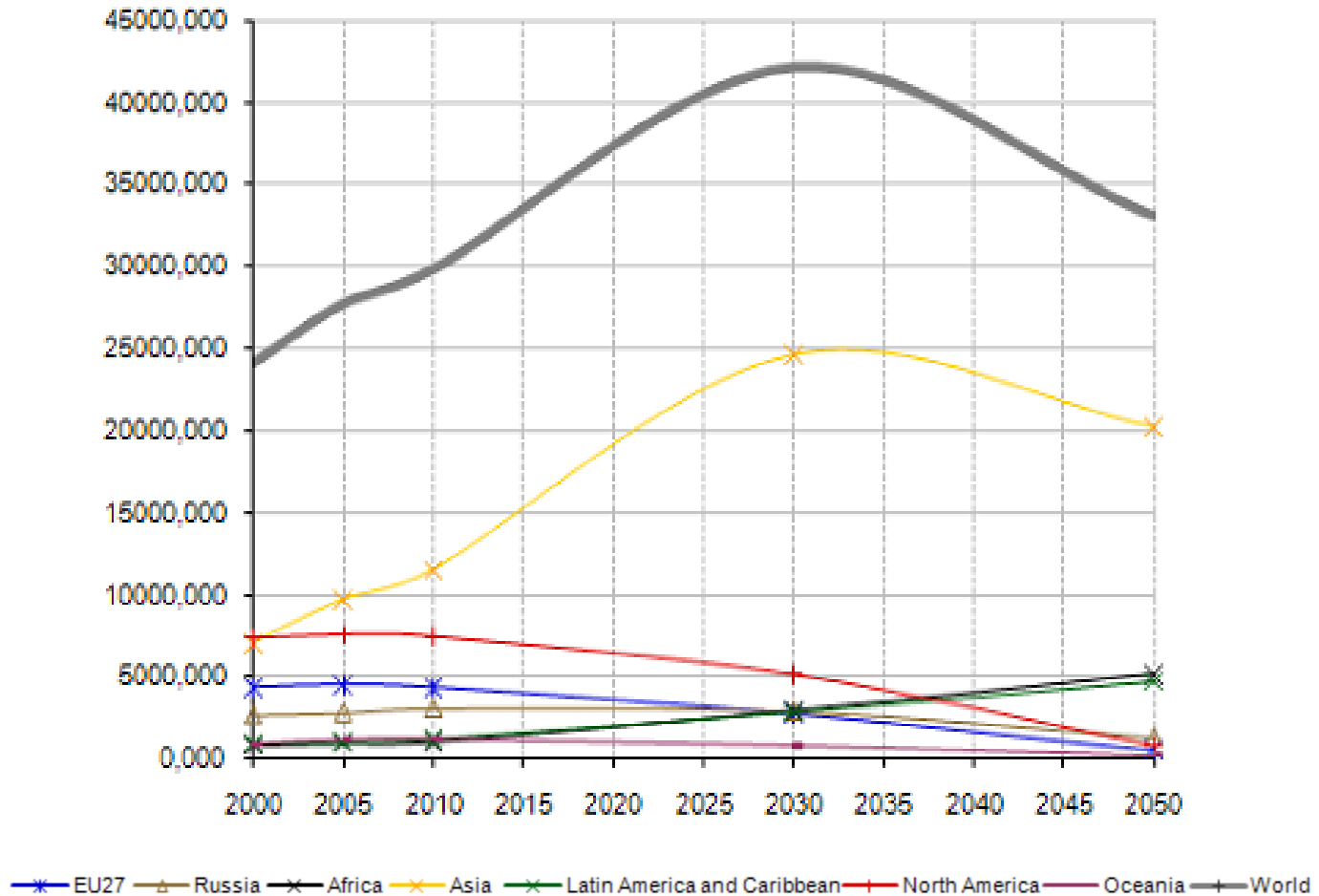
# Energy consumption (Mtoe)



# Energy mix

World Energy Mix	Trend line			New welfare	
	2010	2030	2050	2030	2050
% of fossil	85,3%	72,0%	60,9%	70,6%	56,2%
% of oil	34,4%	24,6%	17,7%	21,2%	11,9%
% of coal	27,7%	29,2%	28,3%	29,4%	25,3%
% of natural gas	23,3%	18,1%	15,0%	20,0%	19,0%
% of nuclear	5,7%	7,1%	9,0%	4,8%	3,9%
% of renewables & biomass	9,0%	20,9%	30,0%	24,7%	39,9%

# CO2 Emissions (Millions tones)



**Which policies are needed to get there?**

**HOW**

# Key Actions

- Innovate the measurement of progress
- Develop resilience policy thinking and practice (beyond resource efficiency approaches)
- Raise collective awareness and public acceptance for technological and societal change
- Create new global (e.g. Climate Trust) and local institutions (deliberative democracy) for sustainable management of environmental commons and social justice
- Sustainable production and consumption by mimicking nature (cradle-to-cradle)
- Low carbon smart energy and transport agenda



# Thank you

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