What is this?

POLFREE Project Aims

rstand the web of constraints and barriers to resource effi ciency Identify the concepts, policies and business models that could overcome the barriers, untangle the web of constraints - Create a vision for and pathways to a resource-efficient Europe

 Identify policy mixes that can promote a resource-efficient economy

Model scenarios simulating the proposed pathways and policy

 Synthesise and draw policy conclusions from the results POLFREE project is a European Union Collaborative FP7 Project October 2012 - March 2016

The logic of the Vision

The info-mural "Vision for a Resource-Efficient Europe in 2050" (shown on the right) presents on a single page a narrative for the POLFREE project: what Europe aspires to; what urgent constraints it (and the world) faces; what targets for its air, water, land, and materials use it must have; what these targets represent in targets for Europe's economy; and, what types of policies and practices will need to be implemented by the European Union to achieve these targets.

Scenario creation

Part of the POLFREE (POLicy options For a Resource Efficient Economy) project involved intensive work on creating, modeling and visualizing scenarios for the emergence of resource-efficient economies. This involved linking quantitative economic and ecological models, and simulating the policies and policy mixes derived in the earlier work, supplemented with appropriate Life-Cycle Assessment (LCA) analysis for selected products and sec tors, to ensure that the policies and business models in the scenarios lead to absolute decoupling of economic activity from resource use and environmental degradation. The scenarios and associated policy analysis considered economic, environmental and social dimensions.

The project was be explicitly geared to support policy efforts and initiatives on resource efficiency in the European Commission, and involved a wide range of stakeholders from business, the policy world, and NGOs.

Four scenarios

- The project created four scenarios
- Global Cooperation
- Europe Goes Ahead
- Civil Society Leads
- Business as Usual (Reference Scenario)

The first three scenarios listed above are shown in detail on separate info-murals in this series and are available for viewing.

Outcomes of the modeling

The quantitative outcomes of the modeling process for the four scenarios are show to the right. More detail is available from the reports of the project on its website http://www.polfree.eu.

Key Findings

- To stay with the usual behavioural patterns of the past in policy, industry and civil society is not an option at all.

- A global cooperation on policy measurements to keep global warming below 2°C and to boost resource efficiency would not only allow staying within planetary boundaries, but would also be beneficiary for green growth and jobs in the EU.

 If a global consensus not only on targets but also on binding policies cannot be achieved in the near future Europe should go ahead. This is from economic perspective even more successfu If the policy measurements are designed in the right way. Modelling results for the contributions of civil society to a reduction in resource use show the immense potentials of changing values and behaviours in society.

Collaborating Institutions UCL ISR (UK) Wuppertal Institute (Germany) TNO (Netherlands) ICIS, Maastricht University (Netherlands) GWS (Germany) SERI (Austria) PIK (Germany) International Synergies (UK)

POLFREE Vision for a Resource-Efficient Europe





Busir	less as l	Jsual	Global Coopera				
Economic OutcomesEU GDP20302050+28.2%+48.6%Global GDP+78.9%+164.1%EU Number of Jobs-7.6%-15.3%Change against 2005 levels	The Modeling Process and policies presented in each narios were introduced to the interlinked GINFORS (environmentation) models, in order to quantify economic and each various domains. Key outcomes for the Reference scenarios Economic Sector EU	Ave annual increase in	Targets for Europe - 2050 Required to Prevent Dangerously Exceeding Planetary Boundaries (As developed in the POLEREE Visioning Process)	DECONOMIC OUTCOMESE20302050EU27%48%Global GDP+7%+8%EUHass+5.2%EUHumber of Jobs+1.8%+1.8%+0.8%Difference against "Business-as-Usual" (Reference) cenario projections for 2030 and 2050	The Modeling Process and Outcomes Key contextual assumptions and policies presented in each of the three POLFREE scenarios were introduced to the interlinked GINFORS (environmental-economic) and LPJml (vegetation) models, in order to quantify economic and environmental outcomes across various domains. Key outcomes for the Global Cooperation scenario are presented below. Economic Sector EU Outcomes		
A change in attitudes or enhanced action among governments and civil society to improve resource efficiency and tackle climate change fails to materialize, and remain low priorities both in the EU and the wider world. Although the EU achieves is climate policy targets for 2020, longer- term ambitions are abandoned (although some low-level carbon pricing continues in the EU). GDP continues to be the main measure of progress.	Resource 2010 2030 205 9.0% 4.3% 2.4 Carbon Price (€ 2010/tCO2) 2010 2030 208 2010 2030 208 13.0 29.8 42 13.0 29.8 42 Image: State of the second state of the	Ave. annual increase in resource productivity [GDP/RMI abiotic} (2010-2050) 0.8% Standards for implementation of water saving N/A Proportion of demand for metals and minerals covered by recyclates N/A Recycling rate of major materials N/A Final energy demand across	AIRGreenhouse gas emis- sions reduced by 80 to 95% by 2050 (compared to 1990)2010 -9.1%2030 -22.9%2050 -33.1%	The EU plays an active role in the multilateral and coalition-based processes, collaborating with partners from across the world. Global targets and commitments are reflected in regional and national approaches and reflect the impact of Europe's actions internationally as well as within the Union. GDP continues to be the main measure of progress and continues to grow through the green economy.	<section-header></section-header>	Environmental tax – share of total tax revenues 2010 2030 2050 9.0% 14.6% 17.7% Carbon Price (€2010/tCO2) 2010 2030 2050 13.0 40.7 65.3 Increasing international markets for secondary materials, used components of capital goods and leasing of products become established by 2030, and becomes more important than markets for primary materials by 2050.	Ave. annual increase in resource productivity [GDP/RMI abiotic} (2010-2050) 3.5% Standards for implementation of water saving measures are introduced by 2030, and become more stringent by 2050. Proportion of demand for metals and minerals covered by recyclates by 2030. High proportion of demand covered by recyclates by 2050. Increased recycling rate of major materi- als (e.g. metals, electrical and electronic equipment, vehicles, plastics, paper) Final energy demand across
The EU ETS remains in place to 2050, with moderate increases in price in real terms. Whilst fossil fuels remain dominant in power generation, high prices for fossil fuels driven by continuing high global demand means that low-carbon generation still increases in cotn- tribution.	POWCR generation (gCO2/kWh) Image: Strain of the	EU supplied by renewables 2010 2030 2050 6.9% 11.8% 13.2% Reduced water abstraction 2010 2030 2050 -9.7% -10.5% -11.5% S Increase in CO2 emissions	Mean carbon footprint per capita reduced 60-80% (below 2004 levels)201020302050 -20.6%-9.3%-20.6%-28.1%METALS & MATERIALS	Large scale international grids, with more efficient direct current systems, to enable power sharing between the solar resources of North Africa, hydropower and biomass resources of Scandinavia and so on. A diversity of supply strategies (renewable energy, unconventional fuels, nuclear) but strong treaties on quality and risks as well as on nonproliferation.		generation (gCO2/kWh)20102030205040418824Share of electricity in total final energy demand201020102030205020.6%36.7%62.4%Beduction in CO2 emissions	EU supplied by renewables 2010 2030 2050 6.9% 21.6% 54.5% Reduced water abstraction 2010 2030 2050 -9.8% -8.6% -22.8%
MAJOR FEATURES Use of internal combustion engines continues to be a major factor in mobility. Both EU and Non-EU countries have no substantial subsidies for public transportation or non-fossil fuel vehicles. Neither EU nor non-EU countries have a tax on air transport.	Image: State of the state	sincrease in CO2 emissions from aviation and shipping from 1990 levels020102030205033.5%44.7%22.9%inShare of electricity in total energy consumption in land transport2010203020501.6%2.3%2.9%	5 tonnes of raw materials consumption per capita20102030205012.511.611.8	Conforms to common fuel efficiency standards and the European high-speed rail network extends outside of the Union where geography permits, creating extensive options for land- based international travel. - New technologies for vehicles and traffic man- agement - Optimized performance of multimodal logistic chains Mobile societies worldwide - The use of cars remain high - Conventional-fuelled cars are replaced by new fuels (e.g. electric cars, biofuels) European high speed rail network	MOBILITY	from land transport from 1990 levels 2010 2030 2050 19.3% -23.9% -79.7% Halve the use of conventionally fuelled cars in cities by 2030 from 2010 levels. No conven- tionally fuelled cars in cities by 2050 N/A	Reduction in CO2 emissionsfrom aviation and shippingfrom 1990 levels2010203033.5%31.0%-6.2%Share of electricity in totalenergy consumption in landtransport20102030201020301.6%37.6%81.5%
MAJOR FEATURES EU and Non- EU countries institute no strong investment in retrofitting of build- ings and no strong regulations on use of energy, materials, and water in new buildings.	BUILDINGSImage: Strate of the strate o	SomReduction in primary Raw Material Input (RMI) into con- struction (Change against 1995) 2010 2030 2050 -8.7 -20.0% -23.5%O 4%Recycling rate of construction mineralsO 8%N/A	N/A ■ LAND USE Use of global cropland (ha/person)	 MAJOR FEATURES Highly resource efficient renovation of existing buildings Zero-energy and highly material efficient construction of new buildings Industrial production in housing (more large-scale companies operating at a global level) Recycling of non-hazardous construction materials 	BUILDINGS	Reduction of CO2 emissions from residential buildings from 1990 levels201020302050-7.3%-28.6%-56.4%Water abstraction for public water supply (Change against 1995)201020302050-6.8%-4.6%-4.5%	Reduction in primary Raw Material Input (RMI) into con- struction (Change against 1995)2010203020102030-8.7-36.1%-69.2%Increased recycling rate of construction mineralsN/A
MAJOR FEATURES The EU ETS remains in place to 2050, with moderate increases in price in real terms. No additional policy measures are introduced for climate, resource efficiency or related environ- mental purposes (including for non-metallic material or ore recycling, leading to an increase in the annual growth rate of ore prices).	INDUSTRYImage: Strain St	Increase in primary Raw Material Input (RMI) into Industry (Change against 1995)201020302010203015.7%26.7%23.5%Water use995)%	2010 0.312030 0.272050 0.27Average annual loss of cropland for EU27 (2045- 2050)	MAJOR FEATURES Two key drivers lead to improvements in the resource efficiency of industrial processes. Firstly, technology transfer is a key aspect of the global agreement on climate change and this stimulates a growth in innovative technologies and commitments to investment in research and development within Europe. Secondly, the growth of global product agreements (either through sustain- able commodity agreements or through certification or labelling mechanisms) drives the industrial sector to compete not for compliance but to outperform their competitors on resource efficiency. Such competitiveness is on a global scale, which in the early years is an advantage for Europe given their tradition in eco-design legislation, but others soon catch up and hence effective eco-innovation is paramount to success on the global market.	<section-header></section-header>	Reduce CO2 emissions from Industry (Change against 1990) 2010 2030 2050 -38.8% -57.7% -77.9% Reduce energy intensity of industry (Change against 1995) 2010 2030 2050 -9.9% -46.6% -64.1%	Reduction in primary Raw Material Input (RMI) into Industry (Change against 1995)20102030205015.7%-4.6%-52.8%Keep water use within sustainable levelsN/A
 MAJOR FEATURES Substantial regulations for agriculture Non-EU countries have no substantial regulation policies for water. There is no substantial regulation on the expansion of agricultural land for the EU and Non-EU countries. Non-EU countries do not have restrictions on land use, hence deforestation continues in the rest of the world. 	LAND Increased meat demand per capita (change against 1995) FOOD, AGRICULTURE, FORESTS 2010 2030 205 LOSS of biodiversity 11.3% 18. LOSS of biodiversity N/A	Food waste N/A Water use N/A Primary abiotic raw material use	0.17% WATER Mean water footprint per capita reduced 30-50% (below 2004 levels) N/A	MAJOR FEATURES Growth in confidence in the sustainability of international agricultural supply chains is achieved through international programmes of labelling, certification and sustainable commodity agreements. Europe contributes to a global agricultural market with niche products and specialised intensive farming. Efficient and standardised international rules on food labelling, certification and sustainable commodity agreements mean that consumers are more equipped to take into account the global impact of the food	<section-header></section-header>	Reduced meat demand per capita (change against 1995)2010203020505.3%-7.1%-22.5%Loss of biodiversity due to land-use change is halted by 2030N/AN/A	Avoidable food waste is halved by 2030 and elimi- nated by 2050 N/A Keep water use within sustainable levels N/A Primary abiotic raw material use
INTERNATIONAL CONTEXT Glimate, resource efficiency and other environmental policy parameters in all non-EU countries, including tax rates, carbon prices, subsidies and other eco- nomic instruments, remain at 2009 levels to 2050. Global population increases to 9.5 billion by 2050.	GLOBAL DEVELOPMENTS against 1990) 2010 2030 2050 45.6% 87.0% 121. Agricultural land use (in mio. km2) 2010 2030 2050 2010 2030 2050 45.6% 87.0% 121.	(in tons per capita) 2010 2030 2050 7.5 9.1 9.5 Water abstraction (in mio. cbm per day) 2010 2030 2050 11958 12637 13317	Water Exploitation Index below 20% in all EU Coun- tries20102030205010.2%12.2%11.9%	INTERNATIONAL CONTEXT In this scenario the commitment to global cooperation is strong with all countries rec- ognizing the importance of coordinated action. Globally there is a shift to adaptive management of resource use questions with policies being regularly updated and adjusted based on evaluation and learning.	GLOBAL DEVELOPMENTS	against 1990) 2010 2030 2050 45.6% 63.5% -11.3% Agricultural land use (in mio. km2) 2010 2030 2050 2010 2030 2050 42.6	(in tons per capita) 2010 2030 2050 7.5 7.3 4.1 Water abstraction (in mio. cbm per day) 2010 2030 2050 11957 10626 10347

POLFREE Scenario Outcomes

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Targets for Required Dangerou Planetary Boundari (As develop POLFREE	r Europ to Prev usly Exc es bed in the isioning	e 2050 ent eeding Process)					
Greenhou sions redu 95% by 20	se gas e uced by ()50 (compare	mis- 80 to ed to 1990)					
2010 -9.1%	2030 -34.8%	2050 -70.9%					
Mean carb capita red ^{2004 levels}} 2010 -9.3%	on footp uced 60- 2030 -35.4%	2050 -82.0%					
METALS	& MATE	RIALS					
5 tonnes o consumpt	of raw ma ion per o	aterials capita					
2010 12.3	2030 8.4	2050 3.9					
No net ado stock	ditions to	o built-up					
L	AND USE						
Use of global cropland (ha/person)							
2010 0.31	2030 0.28	2050 0.27					
Average an cropland for 2050)	nnual los or EU27	s of (2045-					
	-0.03%						
	WATER						
Mean wate capita redu 2004 levels)	r footprii Iced 30-5	nt per 50% (below					
	N/A						
Water Expl below 20% tries	oitation in all El	Index J Coun-					
2010 10.2%	2030 9.9%	2050 9.6%					

he Modeling Process a omic Outcomes EU GDP 2030 2050 +7.8% +12.3% Global GDP +5.4% +8.6% various domains. Key outcomes for the Europe Goes Ahead sce EU Number of Jobs +1.9% +1.8% Difference against "Business-as-Usual" (Ruscenario projections for 2030 and 2050 Environmental tax – share of total tax revenues VARRATIVE Europe with determined, courage & focused leadership in all sector Governance Carbon Price (€2010/tCO2) government policy , business, NG citizens – creates policy foundation 2030 for sustainability by 2030; the rest o the world follows along afterwards **POWER** CO2 intensity of electricity generation (gCO2/kWh) AJOR FEATURE - Energy prices split between world regions. The EU adopts 2010 2030 2050 20⁻ border tax adjustments or similar **404 185 25** measures EU energy partnership with Russia and neighborhood policy Share of electricity in total with Northern Africa brings new final energy demand - Cooperation within Europe (e.g. 2010 2030 2050 **20.6%** 37.6% 63.2% -9,⁻ **NOBILITY** Reduction in CO2 emissions from land transport from 1990 levels AJOR FEATURES Fuel efficiency with new engines, ma^{*} rials and desigr - Cleaner energy use through new fue and propulsion systems 19.3% -32.4% -86.8% Better use of network through information tion and communication systems - New technologies for vehicles and trai • Optimized performance of multimodal tionally fuelled cars in cities by - The use of cars remain high - Conventional-fuelled cars are replacer by new fuels (e.g. electric cars, biofu - European high speed rail network **BUILDINGS** Reduction of CO2 emissions from residential buildings from 1990 levels **MAJOR FEATURES** - Highly resource efficient reno vation of existing buildings 🖌 2010 2030 2050 🚩 - Zero-energy and highly material efficient construction of new -7.3% -29.9% -59.7% Water abstraction for public Recycling of non-hazardous water supply (Change against construction materials - Greater technology integratio 2010 2030 2050 -6.8% (e.g. building-integrated photo voltaics (BIPV)) INDUSTRYReduce CO2 emissions from
Industry (Change against
1990) MAJOR FEATURES - Medium/high GDP and high compet Green Growth: "promoting econd growth while reducing pollution a -61.0% -80.1% greenhouse gas emissions, minimizin waste and inefficient use of natural Reduce energy intensity of resources, and maintaining biodiverindustry (Change against 1995) tair sity. Green growth also means improv ing health prospects for populations and strengthening energy security." 2010 2030 2050 -9.8% -48.9% -66.6% Reduced meat demand per capita (change against 1995) JOR FEATURE Advances and efficiency in provements through new technologies in industrial agricul-FOOD. AGRICULTURE. FORESTS 2010 - Increase in organic agricu ture in the EU to 75% by 205 Loss of biodiversity due t compared to 4.1% in 2010 I land-use change is halted by - As usual, but with somewha more conscious diets - Reduced food waste CO2 emissions (change Agricultural land use (in mio.



203020509.7%9.0%

-41.8% -72.2%

-38.4% -74.8%

Ει	Irope Goes A	head	Civil Society Leads			
tcomes 2050 6 +12.3% 6 +8.6% 1+1.8% Usual" (Reference) 12050 , courageous, all sectors – iness, NGO & foundations 0; the rest of afterwards	The Modeling Process and OutcomesSeparation of the three POLFREE scenarios were introduced to the interlinked GINFORS (environmental-economic) and LPJml (vegetation) models, in order to quantify economic and environmental outcomes across various domains. Key outcomes for the Europe Goes Ahead scenario are presented belowDecommic SectorConomic SectorEnvironmental tax – share of total tax revenuesOutputDivironmental tax – share of total tax revenues0.0%<	Targets for Europe - 2050 Required to Prevent Dangerously Exceeding Planetary Boundaries (As developed in the POLFREE Visioning Process) Image: Compared by 80 to 95% by 2050 (compared to 1990)	Economic Outcomes	Construction Description Accord as a sumption and policies presented in each of the three POLFREE scenarios were introduced to the interlinked GINFORS (environmental-economic) and LPJml (vegetation) models, in order to quantify economic and environmental outcomes across various domains. Key outcomes for the Civil Society Leads scenario are presented below. Decommic Sector Euronomic Sector Resources Driving 2030 2030 2050 0.0% 4.3% 1.6% 0.0% 4.3% 1.6% 0.0% 4.3% 2050 0.0% 4.3% 2050 0.0% 4.3% 2050 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0% 1.61.8 2070 0.0%	Targets for Europe - 2050Required to PreventDangerously ExceedingPlanetaryBoundaries(As developed in thePOLFREE Visioning Process)ImGreenhouse gas emissions reduced by 80 to95% by 2050 (compared to 1990)	
tween adopts or similar o with od policy ngs new Irope (e.g.	becomes more important than markets for primary materials by 2050.als (e.g. metals, electrical and electronic equipment, vehicles, plastics, paper)POWER UCO2 intensity of electricity generation (gCO2/kWh)Final energy demand across EU supplied by renewables0102030205040418525010203020506.9%22.1%54.99010203020500201020302050 <td>2010 2030 2050 -9.1% -39.6% -74.6% Mean carbon footprint per capita reduced 60-80% (below 2004 levels} 2010 2030 2050 -9.3% -33.2% -72.2%</td> <td> MAJOR FEATURES Energy infrastructure is largely decentralised, flexible and collaborative. Centralized large-scale systems and decentralised systems work together and depend on each other. Micro-generation and more localized renewable sources. Some EU countries use fracking and nuclear options, though at a moderate level as demand is reduced </td> <td>Decome some index y attended by 2050.Decome constrained by 2050.Decome constrained by 2050.Decome constrained by 2050.POWERCO2 intensity of electricity generation (gCO2/kWh)CO2 intensity of electricity generation (gCO2/kWh)Final energy demand across EU supplied by renewablesOut of the second seco</td> <td>2010 2030 2050 -9.1% -41.8% -72.2% Mean carbon footprint per capita reduced 60-80% (below 2004 levels) 2010 2030 2050 -9.3% -38.4% -74.8%</td>	2010 2030 2050 -9.1% -39.6% -74.6% Mean carbon footprint per capita reduced 60-80% (below 2004 levels} 2010 2030 2050 -9.3% -33.2% -72.2%	 MAJOR FEATURES Energy infrastructure is largely decentralised, flexible and collaborative. Centralized large-scale systems and decentralised systems work together and depend on each other. Micro-generation and more localized renewable sources. Some EU countries use fracking and nuclear options, though at a moderate level as demand is reduced 	Decome some index y attended by 2050.Decome constrained by 2050.Decome constrained by 2050.Decome constrained by 2050.POWERCO2 intensity of electricity generation (gCO2/kWh)CO2 intensity of electricity generation (gCO2/kWh)Final energy demand across EU supplied by renewablesOut of the second seco	2010 2030 2050 -9.1% -41.8% -72.2% Mean carbon footprint per capita reduced 60-80% (below 2004 levels) 2010 2030 2050 -9.3% -38.4% -74.8%	
engines, mate- ugh new fuels rough informa- ystems hicles and traf- of multimodal high 's are replaced cars, biofuels) il network	NOBBILITYImage: Strain of the strain o	4 -33.2% -72.2% METALS & MATERIALS 5 tonnes of raw materials consumption per capita 2010 2030 2050 12.3 8.6 5.1	 MAJOR FEATURES Highly efficient intermodal transportation options combining public transport, biking and walking Integrated, system spatial planning reduces travel needs People work close to where they live International travel reduced Lifestyle change: an extreme shift in transport modes towards combining public transport, biking and walking - Variable sharing concepts (car & bike sharing schedules and car & van pooling) Less air traffic 	NOBBILITYImage: Strain of the strain o	METALS & MATERIALS5 tonnes of raw materials consumption per capita20102030205012.38.85.6	
ent reno- ngs ily mate- on of new ardous itegration d photo-	BUILDINGS Reduction of CO2 emissions from residential buildings from 1990 levels Reduction in primary Raw Material Input (RMI) into construction (Change against 1995) 2010 2030 2050 -7.3% -29.9% -59.7% Water abstraction for public water supply (Change against 1995) Discreta construction minerals 2010 2030 2050 -6.8% -8.0% -16.0%	No net additions to built-up stock N/A LAND USE Use of global cropland	 MAJOR FEATURES Renovation and refurbishment of existing buildings sourced by high rates of recycled materials from urban mining Modular construction enabling easier repair, rebuilding and rearranging of the building Efficient heating and cooling with the natural advantages of earthen walls, rooftop gardens, and indoor vegetation 	BUILDINGSImage: Substration of CO2 emissions from residential buildings from 1990 levelsImage: Substration of CO2 emissions (Change against 1990 levels)Image: Substration of CO2 emissions (Change against)Image: Substration o	No net additions to built-up stock N/A LAND USE Use of global cropland	
nigh competi- ng economic lution and s, minimizing of natural ng biodiver- eans improv- opulations security."	NDUSTRYImage: Strain of the strain of	(ha/person) 2010 2030 2050 0.31 0.27 0.25 Average annual loss of cropland for EU27 (2045- 2050)	 MAJOR FEATURES Supply chains in all areas are small, with local networks of suppliers working together to build collaborative and sustainable methods of production and delivery to market. Corporate responsibility and transparency is high, but without formal systems of reporting. Most products are of high quality, made from renewable resources, can easily be repaired and upgraded and provide a large amount of service to their users and can be recycled at the end of their lifespan. 	Interview of the systemNotice of the s	(ha/person) 2010 2030 2050 0.31 0.23 0.16 Average annual loss of cropland for EU27 (2045- 2050)	
acy im- w tech- gricul- gricul- by 2050, 010 newhat	LAND FOOD, AGRICULTURE, FORESTSReduced meat demand per capita (change against 1995)Avoidable food waste is halved by 2030 and elimi- nated by 205001020302050N/A10020302050N/A10020302050N/A10020302050N/A10020302050N/A100 <t< td=""><td>-0.05% WATER Mean water footprint per capita reduced 30-50% (below 2004 levels) N/A</td><td> MAJOR FEATURES Local food production by smaller businesses 95% of farms are organic Specialized and niche products Fertilizers and pesticides have been substantially reduced Food supply chains are generally short High self-sufficiency at national level - Diets based on local, regional, seasonal and organic food Less meat-consumption No food waste </td><td>LARD FOOD, AGRICULTURE, FORESTSReduced meat demand per capita (change against 1995)Avoidable food waste is halved by 2030 and elimi- nated by 205001020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A0101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001</td><td><section-header>-0.03%WATERMean water footprint per capita reduced 30-50% (below 2004 levels)N/A</section-header></td></t<>	-0.05% WATER Mean water footprint per capita reduced 30-50% (below 2004 levels) N/A	 MAJOR FEATURES Local food production by smaller businesses 95% of farms are organic Specialized and niche products Fertilizers and pesticides have been substantially reduced Food supply chains are generally short High self-sufficiency at national level - Diets based on local, regional, seasonal and organic food Less meat-consumption No food waste 	LARD FOOD, AGRICULTURE, FORESTSReduced meat demand per capita (change against 1995)Avoidable food waste is halved by 2030 and elimi- nated by 205001020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A01020302050N/A0101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001000101001001	<section-header>-0.03%WATERMean water footprint per capita reduced 30-50% (below 2004 levels)N/A</section-header>	
XT esses of the ade Organization ess on the interna- igh pluri-lateral of the willing, en regional group- n Union, Merco- s, OECD, etc. ssue-focused and ented and stilted.	CO2 emissions (change against 1990) Primary abiotic raw material use (in tons per capita) DEVELOPMENTS 2010 2030 2050 45.6% 82.9% 62.3% 2010 2030 2050 Agricultural land use (in mio. km2) 2010 2030 2050 7.5 9.2 9.1 2010 2030 2030 2050 62.3% Water abstraction (in mio. cbm per day) 9.2 9.1	Water Exploitation Index below 20% in all EU Coun- tries 2010 2030 2050 10.2% 9.8% 9.4%	INTERNATIONAL CONTEXT Most participatory processes take place at the local level but are linked to other initiatives outside of nation-state boundaries. Solutions are not prescribed through international agree- ments but are relevant to local contexts	CO2 emissions (change against 1990) Primary abiotic raw material use (in tons per capita) 2010 2030 2050 45.6% 78.9% 54.9% Agricultural land use (in mio. km2) Water abstraction (in mio. cbm per day) 2010 2030 2050 42.8 45.0 47.0 2010 2030 2050	Water Exploitation Index below 20% in all EU Coun- tries201020302050 9.7%10.2%9.7%9.0%	