



Eckdaten auf einen Blick

Jahrgang	ab Mittelstufe
Fächer	Englisch, Geographie, Geschichte, Sozialkunde, Physik, Naturwissenschaften, Wirtschaft & Politik
Themen	<ul style="list-style-type: none"> • Shared Socioeconomic Pathways (Sozioökonomische Pfade) - Grundlage von Klimawandelberechnungen
Kernkompetenzen	<ul style="list-style-type: none"> • Kernkompetenz 1 - Informationsbeschaffung und -verarbeitung • Kernkompetenz 3 - Analyse des globalen Wandels • Kernkompetenz 10 - Handlungsfähigkeit im globalen Wandel
Anregungen zur Durchführung	<ul style="list-style-type: none"> • Um das Material einzuordnen, ist dieses Video hilfreich: https://youtu.be/Tn5Q6X1rsLk?t=13498 • Das Video behandelt Klimastudien und deren Konzeption. • Das englische Material eignet sich z.B., um gängige Zukunftsszenarien zu analysieren oder um weiter in die Klimafolgenforschung einzusteigen. • Nach der Bearbeitung könnte z.B. weiter auf die Klimaphysik, politische Maßnahmen oder weitere Folgen (Wasserknappheit -> Dürren; Meeresspiegelanstieg -> Überschwemmungen; Gesundheitsfolgen, ...) sowie Klimagerechtigkeit eingegangen werden.
Referierende	<p>Felicitas Beier ist Doktorandin am Potsdam-Institut für Klimafolgenforschung (PIK) und arbeitet im Forschungsbereich „Klimaresilienz“ in der Landnutzungsgruppe. Ihr Forschungsschwerpunkt sind globale Süßwasservorkommen und deren Verteilung, insbesondere für die landwirtschaftliche Bewässerung.</p> <p>Vor ihrer Tätigkeit am PIK hat sie Volkswirtschaftslehre mit dem Schwerpunkt Empirische Datenanalyse, Entwicklungsökonomie und Handel studiert.</p>

Sozioökonomische Pfade: Szenarien, die sozioökonomische Veränderungen der Welt bis zum Jahr 2100 betrachten - wissenschaftlich quantifiziert, um diese in Modellen verwenden können.



Klimastudien: Shared Socioeconomic Pathways

Task 1

Choose an SSP and summarize what it says about population, economy, politics, technologies, environment, energy and resources. You can use the table below to summarize your results.

Task 2

Exchange your results with students who have chosen a different scenario.

SSP4						
SSP3						
SSP2						
SSP1						
	Population	Economy	Politics	Technology	Environment	Energy and Resources



Shared Socioeconomic Pathways - Solutions

Task 1

Choose an SSP and summarize what it says about population, economy, politics, technologies, environment, energy and resources. You can use the table below to summarize your results.

Task 2

Exchange your results with students who have chosen a different scenario.

	SSP1	SSP2	SSP3	SSP4
Population	Demographic change is accelerating	Population growth is moderate and declining. Investment in education is too low to reduce fertility rates in developing countries.	Population growth is low in industrialised countries and high in developing countries.	Conflicts and unrest spread. Population growth is low in industrialised countries and relatively high in developing and emerging countries. Development expenditures are unequally distributed.
Economy	The well-being of the population is more important than economic growth. GDP can still grow.	The economic structures are the same as in the past.	Economic output and also world trade are growing slowly.	Moderate economic growth in industrialised countries and emerging markets - developing countries lag behind.
Politics	Better management of global public goods leads to a reduction in inequalities.	Most economies are politically stable, but they develop differently and incomes grow asymmetrically.	As a result of a resurgence of nationalism, politics is increasingly oriented towards national and regional concerns. The number of authoritarian forms of government is increasing, inequalities remain or grow.	Power is concentrated in a small upper class in politics and business.
Technology	Technologies are being developed particularly with a view to environmental friendliness, which is also increasing interest in renewable energies.	Advances continue to be made in technology, but without any groundbreaking ground-breaking developments.	Technological developments are slowing down as a result of lower investment.	Only in the high-tech economies and sectors is technological progress great.
Environment	Investments in new technologies and changes in tax incentives improve environmental conditions -> higher efficiency and lower consumption of energy and resources.	Although energy and resource intensity is decreasing, especially in industrialised countries, the environmental burden continues.	The limited number and low effectiveness of global organisations and low priority given to environmental protection lead to high environmental impacts.	Environmental policy in industrialised and emerging countries is concentrated on individual areas, vulnerable regions and global problems are hardly taken into account.
Energy and Resources	Resource and energy intensity decreases Decoupling of economic performance and energy use Only renewable energies (except biomass) are socially accepted energy sources.	Fossil resources will continue to be used (possibly with the use of new extraction methods).	Trade barriers high, especially for the energy and agriculture sectors. The consumption pattern causes a high demand for raw materials. economic success and energy use are strongly linked.	To compensate for price fluctuations for fossil fuels, energy companies invest in both CO2-intensive and low-carbon energy sources.



Shared Socioeconomic Pathways

SSP 1: Taking the Green Road

The world is moving towards a more sustainable path that respects perceived ecological limits. Driven by an increasing commitment to achieving development goals, inequality is reduced both across and within countries. Increasingly effective and consistent cooperation between local, national and international institutions, private companies and the population is improving the management of global public goods. High education and health expenditure accelerate demographic transition, leading to a relatively low population. The well-being of the population is slowly being brought to the foreground, although this results in slower economic growth. Nevertheless, Gross Domestic Product (GDP) can grow strongly, especially in developing and threshold countries. Investment in environmental technology and changes in tax structures lead to improved resource efficiency, reducing overall energy and resource use and improving environmental conditions over the longer term. Increased investment, financial incentives and changing perceptions make renewable energy more attractive. Consumption is oriented towards

low material growth as well as lower resource and energy intensity. Hence, environmental conditions are improving. More sustainable consumption patterns (especially in industrialized countries) and a decoupling of economic output and energy use lead to a decrease in resource and energy intensity. Only renewable energies (except biomass) are socially accepted energy sources.

Text orientiert an: Umweltbundesamt: Sozioökonomische Szenarien als Grundlage der Vulnerabilitätsanalysen für Deutschland zu finden unter: https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-05-29_cc_25-2019_soziooekonomischenzenarien.pdf und O'Neill, B. C., Kriegler, E., Ebi, K. L., Kemp-Benedict, E., Riahi, K., Rothman, D. S., ... & Solecki, W. (2017). The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century. *Global environmental change*, 42, 169-180.



Weltklimakonferenzen

Klimastudien
ab Mittelstufe



KLIMA
BILDUNG
E.V.



Shared Socioeconomic Pathways

SSP 2: Middle of the Road

Social, economic, and technological trends do not shift markedly from historical patterns. Most economies are politically stable, but development and income growths remain unevenly. Progress in achieving sustainable development goals is slow. Global population growth is moderate and levels off in the second half of the century as a consequence of completion of the demographic transition. However, education investments are not high enough to accelerate the transition to low fertility rates in low-income countries and to rapidly slow population growth. This growth, along with income inequality that persists or improves only slowly, continuing societal stratification, and limited social cohesion, maintain challenges to reducing vulnerability to societal and environmental changes and constrain significant advances in sustainable development. There is technological progress but without groundbreaking developments. Environmental systems experience degradation, although there are some improvements and overall, the intensity of resource and energy use declines. Even though fossil fuel dependency decreases slowly, there is no reluctance to use unconventional fossil resources.

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Shared Socioeconomic Pathways

SSP 3: A Rocky Road

A resurgent nationalism, concerns about competitiveness and security, and regional conflicts push countries to increasingly focus on domestic or, at most, regional issues. Over time, policies become increasingly oriented towards national and regional security issues, including barriers to trade, particularly in the energy resource and agricultural markets. Countries focus on achieving energy and food security goals within their own regions at the expense of broader-based development, and in several regions move toward more authoritarian forms of government with highly regulated economies. Investments in education and technological development decline. Economic development is slow, consumption is material-intensive, and inequalities persist or worsen over time, especially in developing countries. Many countries struggling to maintain living standards and provide access to safe water, improved sanitation, and health care for disadvantaged populations. A low international priority for addressing environmental concerns leads to strong environmental degradation in some regions. The combination of impeded development and limited environmental concern results in poor progress toward sustainability. Population growth is low in industrialized and high in developing countries. There will be a dependency on fossil fuel along with a growing resource intensity. Population growth is low in industrialized and high in developing countries.

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Shared Socioeconomic Pathways

SSP 4: A Road Divided

Highly unequal investments in human capital, combined with increasing disparities in economic opportunity and political power, lead to increasing inequalities and stratification both across and within countries. Over time, a gap widens between internationally connected, well-educated society and a lower-income, poorly educated society. Power becomes more concentrated in a relatively small political and business elite, even in democratic societies, with little representation of vulnerable groups. Economic growth is moderate in industrialized and middle-income countries, while most of the low-income countries will struggling to provide adequate access to water, sanitation, and health care for the poor. Technology development is high in the high-tech economy and sectors. Uncertainty in the fossil fuel markets lead to underinvestment in new resources in many regions of the world. To compensate for price fluctuations for fossil fuels, energy companies invest in both CO₂-intensive and low-carbon energy sources. Environmental policies focus on local issues around middle- and high-income areas. Challenges to adaptation are high for the substantial proportions of populations at low levels of development and with limited access to effective institutions for coping with economic or environmental stresses.

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