Ecological and economic perspectives on sustainability in vocational education and training

EcoGreen aims to support teachers at vocational schools in implementing the topic of sustainable economic education. Our strategy strengthens the professional profile of teachers and supports their students in acquiring ecological skills.

Teaching material for use in vocational training:

Module: **Green Cities**

Access our EcoGreen teaching materials for free on our online platform at ecogreenproject.net**!**

Our consortium:

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Co-funded by the European Union

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Module: Green Cities

Learning situation: Developing a sustainability concept for the city

Time value: 16 teaching hours

Authors: Claudia Frank, Dunja Gremmelmaier, Anja Stedeler, Maria Viehöfer

Status: March 2024

Table of contents

Learning situation

Type of school/professional area:	DQR/EQR4
Curricular reference:	(can be used in different types of schools)
Learning field:	(can be integrated into learning fields)
Title of the learning situation:	Developing a sustainability concept for the city
Time reference value:	16 lessons
Authors:	Claudia Frank, Dunja Gremmelmaier, Anja Stedeler, Maria Viehöfer

Brief description of the action situation:

You are a student representative at your school. You are conducting an interview with the mayor for an article for your school newspaper. You want to find out whether your town will develop in a sustainable and forward-looking way in the interests of future generations.

You: The economic growth of this city is obvious and undisputed, but so are the negative effects of economic growth, which are now having a decisive impact on our lives: Diseases such as respiratory illnesses and allergies, many heat-related deaths last summer... And climate change in the city can no longer be denied either: Heat, drought and air pollution lead to dead trees in city parks and streetscapes. Just think of the Bahnhofsallee, a picture of horror! And that's just the beginning. Action must be taken as quickly as possible and you as mayor have the opportunity to do so. You must make this city fit for the future in the face of climate change! That is your duty, because after all, there are environmental laws!

Mayor: I believe that all citizens of this city have a responsibility here. We should all review our consumer behaviour and make our immediate surroundings more environmentally friendly. This starts right on our doorstep, for example in our gardens and front yards. And every day we make decisions about how we get around.

You: It is obvious that these measures are not enough to tackle climate change in our city. Environmental protection has been an issue since my childhood, but the environmental situation is now escalating. I believe the responsibility lies with you and the companies in this city. It is obvious that we cannot overcome the climate crisis if we only focus on capitalist economic growth at the same time. You must adopt bans, ordinances and regulations to consistently prohibit environmental offences and punish polluters. You must take political measures to develop this city into a sustainable city that is fit for the future! After all, you want to be re-elected!

Mayor: At the end of the month, the "Our sustainable city" round table will meet in the town hall with representatives from politics, local businesses, the health department and environmental organisations. They will all present their ideas and demands for a sustainable city. I would like to invite you to take part as a listener so that you can report on the points of view in your school newspaper. I will send you a flyer about the round table.

You leave the discussion motivated: you now have the idea of presenting the viewpoints and demands of the participants at the round table in your article for the school newspaper.

Result of action:

Contribution to the school newspaper:
Own statement on the topic based on a joint catalogue of demands from various stakeholders regarding sustainable urban development

List of demands BRC: X BVW: X VW: X	Listing of demands with the aim of expressing claims to addressees and calling on them to act. The list of demands consists of the following components: • Naming the addressee • Careful analysis of the current situation • Formulation of the target state (goal) • Logically structured and precisely substantiated, realistic demands related to the addressee

Learning content:
Magic square/many-square, economic growth, sustainability, legal basis for sustainability, environmental policy instruments, criteria for environmental policy instruments (cost efficiency, dynamic incentive effect, ecological efficiency), effects of environmental policy measures on the market, requirements for a catalogue of demands
School-related requirements:
Pupils should already have previous knowledge of the following topics, for example: the magic square, graphical representation of a Venn diagram, price-quantity diagrams, gross domestic product.
Notes on distance learning:
Lessons can also be conducted cooperatively in distance learning with selected tools.

Phases of the complete action	**Expertise**		**Contents**	**Social form/ Methods**	**Material/ Media**	**(Partial) result of action**
	Expertise	**Personal Competences**				
	The pupils ...					
Inform	analyse the action situation.		Action situation: Problem area of economic growth, environmental protection and health		M00 Action situation M01 Invitation flyer for the "Round Table"	

Planning	collect questions to be clarified on topics from the action situation. identify topics to be covered. present the topics to be covered in an Advance Organiser.	plan their content-related topics and action results together. formulate their work objective in a comprehensible manner.		Digital tool for a map query (e.g. Oncoo)	T1 Catalogue of questions Horizon of expectations Oncoo card query	Question catalogue as an advance organiser for the subject areas in the form of an overview of digital cards
Decide	analyse the method sheet catalogue of requirements (M02) with regard to the quality criteria. (Alternatively: analyse the given structure of a position paper with regard to the quality criteria).	assign themselves to a stakeholder group according to their interests.	Requirements for a catalogue of demands Positioning of all stakeholders	Group work for analysis Market of possibilities in the characterisation of stakeholders	M02 Method sheet catalogue of requirements M03 Characterisation of the stakeholders (using posters/cartoons/photos/table cards)	Schedule based on the method sheet Organising the teams according to the stakeholders
Perform	explain the concept of sustainability. visualise the dimensions of sustainability (e.g. in a Venn diagram). explain the conflicting objectives of the Stability and Growth Act. discuss the need to add sustainability targets to the Stability and Growth Act.	improve their independence by working through the stations according to instructions.	Sustainability (definition and dimensions, goal) "Magic square/ polygon" Economic growth (GDP) Legal basis for sustainability (Stability	Station learning Plenum (discussion of results)	M04 Route sheets and work assignments T2 M04 Route sheet and work assignments Horizon of expectations M05a Concept of sustainability M05b Sustainability goals Nds. M06 Externalities M07 GDP path with it	Catalogue of questions with corresponding results/answers

Perform	▰ name the legal basis for sustainable action. ▰ explain the concept of economic growth. ▰ represent GDP as an indicator of economic growth. ▰ criticise GDP as an indicator of prosperity. ▰ justify the need for sustainable action (damage to health and the environment due to heat in the city).		Act, catalogue of fundamental rights (Preamble and Article 37), Articles 14 and 20a of the Basic Law, Federal Forest Act)	▰ Plenary (answer questions from the catalogue)	▰ M08a Podcast Urban greening ▰ M08b Transcript podcast ▰ Explanatory video "The magic hexagon" **https://t1p.de/rekj** ▰ T2 M04 Route sheet and work assignments Horizon of expectations	
	▰ assess environmental policy instruments based on the criteria of cost efficiency, dynamic incentive effect and ecological efficiency. ▰ develop exemplary measures for environmental policy instruments ▰ evaluate environmental policy instruments in terms of their impact on the market (GDP).	▰ strengthen their ability to work as part of a team through attentive cooperation and interaction. ▰ practise their presentation skills by presenting the posters they have created on environmental policy instruments at the Gallery Walk.	▰ Environmental policy instruments (planning law, regulatory and economic instruments) ▰ Criteria for assessing environmental policy instruments	▰ Partner work ▰ Group work (mixed, not by stakeholder) ▰ Gallery Walk	▰ M09 a Introduction to environmental policy instruments ▰ T3 M09 a Introduction to environmental policy instruments Expectation horizon ▰ M09 b Allocation of environmental policy instruments ▰ T4 M09 b Allocation of environmental policy instruments Horizon of expectation	▰ Presentation of environmental policy instruments on posters

Perform	➢ graphically represent the effects of environmental policy measures in a diagram. (optional)	➢ increase their personal responsibility by making their own decisions about the use of tips.	➢ Optional: Effects of environmental policy measures on the market (equilibrium prices and quantities)		➢ M09 c Criteria for assessing environmental policy instruments ➢ T5 M09 c Criteria for evaluating environmental policy instruments Expectation horizon ➢ M09 d Gallery Walk Work assignments ➢ optional: M09 e Gallery Walk method sheet ➢ M10 a Environmental policy instruments ➢ M10 b Glossary ➢ M10 c Help cards for the assessment of environmental policy instruments ➢ M10 d Pre-structured poster	
	➢ independently develop requirements from the perspective of one stakeholder at a time.	➢ strengthen their teamwork skills by working together in groups to achieve a result. ➢ strengthen their sense of responsibility by contributing their ideas to the group result. ➢ improve their communication skills by engaging in	➢ Measures and demands to the city council and the mayor	*division of labour group work with Placemat* ➢ Group 1: resident business association ➢ Group 2: Health department ➢ Group 3: Nature conservation organisation ➢ Group 4: City	➢ M11 Placemat Work assignments ➢ Placemat templates	➢ Demands of the individual stakeholders for the "Round Table"

		targeted dialogue in group work.				
Perform	➢ use moderation cards to summarise the individual demands of the stakeholders into a collection of demands. ➢ jointly develop a catalogue of demands for the city.	➢ increase their self-confidence by defending a point of view in the fishbowl discussion. ➢ practise arguing from different perspectives. ➢ Improve their flexibility by being an observer of the fishbowl and specifically recognising the arguments of a stakeholder.	➢ Measures and demands to the city council and the mayor	*Fishbowl* ➢ Distribute handouts to everyone, ➢ in a circle: group representative plus an empty chair, ➢ Outer circle: Observers in the role of city council politicians ➢ Moderator: Teacher as mayor	➢ M12a Method sheet Fishbowl ➢ M12b Fishbowl work assignments ➢ M12c Fishbowl observation sheet ➢ Moderation cards ➢ Round table ➢ Agenda e.g. as PowerPoint ➢ Roll or name plates	➢ Joint catalogue of demands for the town of Rosenlohe
	➢ make a reasoned judgement based on the sustainability criteria.	➢ practise formulating a conclusion. ➢ practise taking their own well-founded position.	➢ Requirements for a political value judgement / statement	*Individual work*: ➢ Each person develops an individual judgement on sustainability in the city based on criteria		➢ Individual contribution for the school newspaper
	➢ review the competences they have acquired in the context of the learning situation.	➢ increase their personal responsibility by taking responsibility for their performance.	➢ Learning content of the learning situation	➢ Individual work	➢ M13 Competence assessment ➢ T6 M13 Skills assessment Horizon of expectations	➢ Written performance assessment

Perform						
Check/evaluate	critically evaluate a classmate's contribution to the school newspaper by comparing it with the requirements.	train themselves to give and receive feedback based on criteria.	Requirements for a political value judgement / statement	Individual work	M14 Method sheet Statement	Feedback on the student contributions
Reflect		carry out a self-assessment of their competences. reflect on their work process.	Comparison of can-do list with Advance Organiser	Individual work Flashlight	M15 Can-do list	completed can-do list

Action situation

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Round Table
Our Sustainable City

A. Meyer
Rosenlohe Environmental Department

The protection of the environment and the preservation of the natural basis of life is the mission and constant challenge of the Environmental Department.

U. Schmidt
Rosenlohe Business Association

As their regional voice we represent the economic and social policy interests of companies from the areas of industry, trade, services, and agriculture.

L. Müller
Rosenlohe Health Department

Our tasks are to sustainably stabilize the health of citizens, avert risks and promote a health-conscious attitude in the people of Rosenlohe.

M. Schulz
Rosenlohe Nature Conservation Association

As a conservation association we are dedicated to practical environmental and nature conservation on biotopes in Rosenlohe and the surrounding area.

Stadt Rosenlohe

City of Rosenlohe–Mayor

Altes Rathaus
Europaplatz 1
49200 Rosenlohe

Telefon: 0642 580-3300
Fax: 0642 580-5086
E-Mail: obm@rosenlohe.de

Stadt Rosenlohe

Round Table

Our Sustainable City

Date:
Time

Altes Rathaus
Europaplatz 1
49200 Rosenlohe

More Green against Fatal Heat Strokes

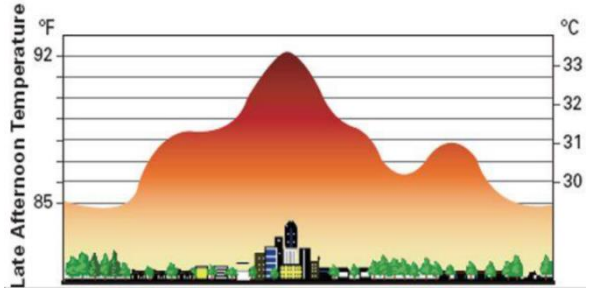
More trees in European cities could have prevented the deaths of more than 2,600 people in the summer of 2015, so health scientists proved in a study that was published in "The Lancet", a scientific magazine. The international team of scientists wanted to ascertain which effects trees have in Europe's heated up cities – and how this effect could be used intentionally if more trees were planted.

The summer of 2022 was the hottest summer since weather recordings. In early November 2022 the WHO announced that approximately 15,000 people died of heat stroke. In Germany, so the WHO, it was 4,500 people who died due to the heat.

The scientists focused on cities because they turn into urban heat isles in summer. Road surfaces such as asphalt and building materials that absorb the heat as well as a lack of a natural vegetation cause cities to heat up more than their urban hinterland.

Urban Heatisles

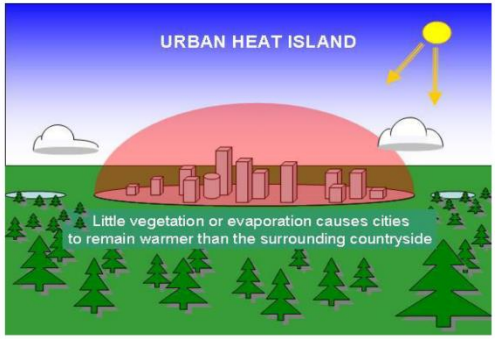
For the summer of 2015 the scientists ascribed the premature deaths of 6,700 people to higher temperatures in the cities. The death toll was highest in eastern and southern European cities. The Romanian metropolis of Cluj-Napoca registered a heat-related death toll of 32 people per 100,000 inhabitants. The Swedish Goteborg on the other hand registered a heat-related death toll of zero.



Lowering temperatures

Using computer simulations, the scientists calculated that a tree population of 30 % would reduce the temperature by 0.4 degrees Celsius on average. They established that more natural shade and cooling would prevent heat-related deaths by 40 %. Currently, the average tree population in European cities totals about 15 %.

DER SPIEGEL. Nr. 6/4.2.2023, S. 93, translated



Pictures:

http://www.cham.co.uk/

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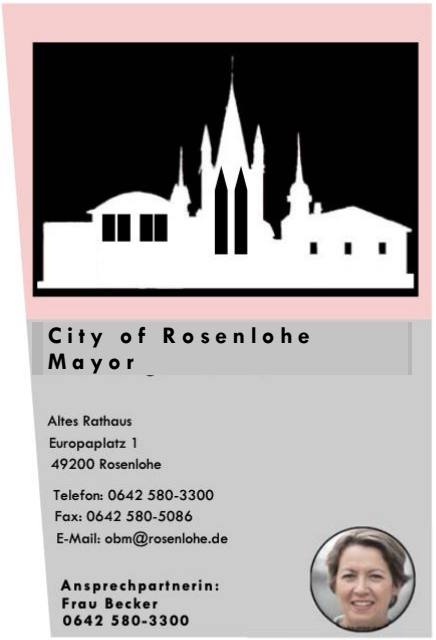
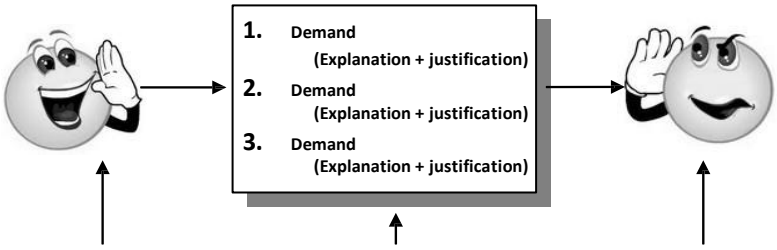
https://labs.openai.com/



Method sheet	Name:	Class / Course:
Subject:	Date:	Version 7 -Ri2013- Number of pages: 1

Method: Catalogue of demands

Use and purpose of the method	Catalogues of demands are used in many areas (e.g. politics, business) to express demands on others. They are intended to prompt the addressee to act.
Action phases	Plan, execute
Definition of the term	The term "catalogue" comes from the Greek and means "list" (of pictures, goods, etc.). A catalogue of demands is therefore a list of requirements.
Procedure/result	Collect information on the topic. • The claimant must be characterised, i.e. it must be determined who is making the demands in the first place. Describe / analyse the current situation. Name addressees. • Think about wishes / demands (always several) for a situation to be changed (note down thoughts) - and from this ... • Formulate demands concisely and clearly. Briefly explain and justify demands. • List the requirements (and possibly the associated explanations and justifications) in a catalogue - in a logical order.
Important notes	Demands must not be made out of thin air, i.e. completely unrealistic. They must be based on facts and there must also be a chance that they can be fulfilled. Demands must be formulated in such a way that they a p p e a l to the addressee and call on them to act.
Graphic explanation	 The **requestor** addresses his **catalogue of demands** to the **addressee**.
Application examples	IHK catalogue of demands for the Bundestag election Catalogue of demands for parents of overweight children Catalogue of demands to the government to stop the decline in birth rates
Formulation example (These requirements are to be supplemented by the **explanations** and **justifications**). www.riepel.net	**We demand ...** 1. safe and healthy food that is produced and marketed in an environmentally friendly way. 2. Prohibition of all risk substances that are added to the food chain (intentionally or unintentionally). 3. the implementation of all measures to prevent the introduction of risk materials or substances into the food chain, including safe slaughtering techniques. 4. generally understandable labelling of all ingredients and additives in our food.

A. Meyer
Rosenlohe Environmental Department

The protection of the environment and the preservation of the natural basis of life is the mission and constant challenge of the Environmental Department.

Sources:

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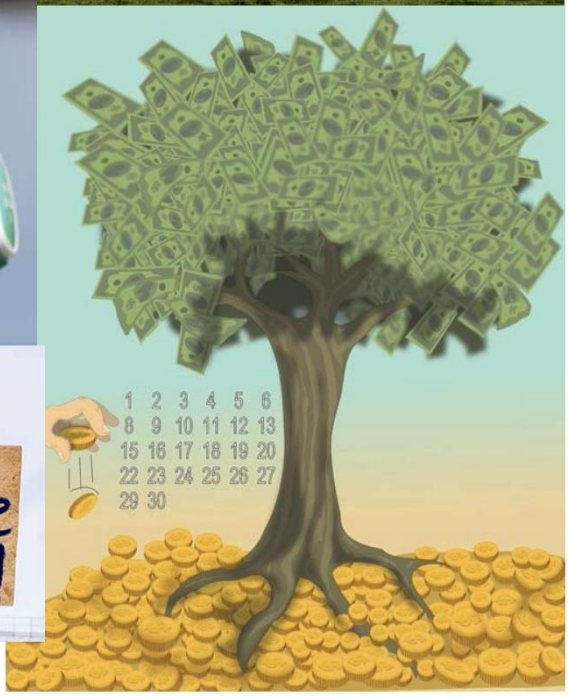

Sources:

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https://pixabay.com/de/photos/pxklimaschutz-klimaschutz-7129877/

https://institut-fuer-welternaehrung.org/der-wandel-muss-von-unten-kommen-kommentar-von-wilfried-bommert

L. Müller
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https://pixabay.com/de/photos/manzana-health-die-gesundheit-apfel-3422179/

Heat exhaustion by Nick Youngson CC BY-SA 3.0 Pix4free

https://www.thebluediamondgallery.com/medical03/h/heat-stroke.html; Pix4free.org - link to - https://pix4free.org/

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Rosenlohe Nature Conservation Association

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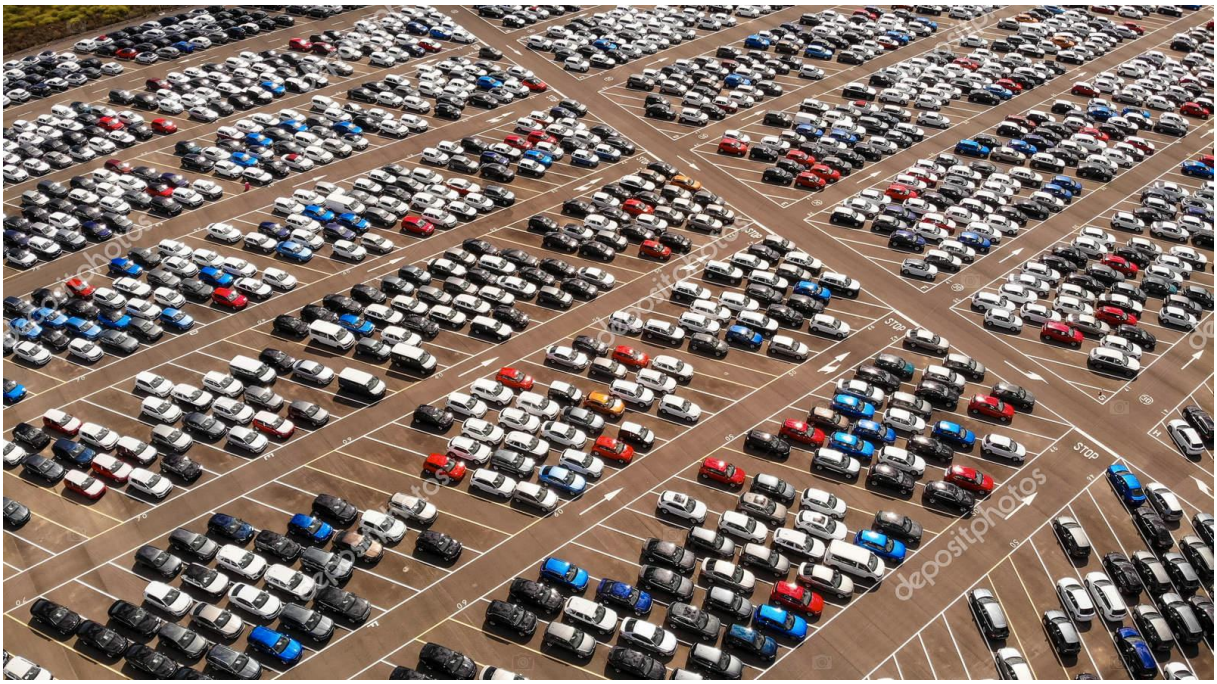
https://pixabay.com/de/illustrations/plastikm%C3%BCll-ozean-verschmutzung-7617451/

Station learning

The rules:

1. **I work through all the stations independently. I can choose the order myself.**
2. **I only go to a station if a maximum of three other people are already working at that station.**
3. **I work calmly and with concentration.**
4. **I'll get in touch if I have a question.**
5. **I record all my answers to the tasks at the stations in writing so that I can present and compare my results later in the plenary session.**
6. **I complete the routing slip and the tasks in full.**



Source:
carlesrgm, Depositphotos, https://de.depositphotos.com/320939296/free-stock-photo-aerial-view-big-parking-lot.html, CC0, accessed on 25/05/2023

Route sheet with tasks

Station/tasks	open question/s	Done?
Sustainability (M05a and M05b) Tasks: 1. Read the articles "Sustainable development" and "Sustainability goals". 2. Explain the term "sustainability" and represent it graphically as a Venn diagram. 3. Explain why sustainable economic activity is necessary for all economic entities. 4. List the legal bases that oblige all economic entities to act sustainably.		☐
Magic hexagon Tasks: 1. Watch the explanatory video "The Magic Hexagon", which deals with the extension of the Magic Square. **https://t1p.de/rekj** 2. Should the Stability and Growth Act be expanded to include the qualitative goal of sustainability? Write down three arguments in favour and three against. 3. Describe three consequences of this reform of the Stability and Growth Act a) for you personally, b) for companies, c) for urban development.		☐
Externalities (M06) Tasks:		☐

1. Read the article. 2. Define what external effects are. 3. Explain the external effects of building more car parks on life in the city. 4. Show the supply and demand of public car parks in a price-quantity diagram. 5. Add the curve for the external costs of soil sealing due to the construction of a car park to your diagram. 6. Analyse the change in the offer price by internalising the external costs.		
Gross domestic product (GDP) (M07) Tasks: 1. Read the article. 2. Explain GDP as an indicator for measuring prosperity in an economy. 3. Research three alternative prosperity indicators on the internet. Record your findings on a moderation card for each. 4. Take your cards with you to secure the results in plenary.		☐
Urban greening (M08a and M08b) Tasks: 1. Listen to the interview. (Alternatively: Read the interview.) 2. Outline various effects of climate damage, the causes of this damage and possible solution strategies.		☐

Watch the video
„The magical hexagon”

https://t1p.de/rekj

Listen to the interview about green cities

https://t1p.de/drsrr

Co-funded by the European Union

Sustainable development

Working together for the well-being of all

The term "sustainable development" is making a name for itself worldwide: the major world conferences of the last decade have invoked it. Coalition agreements at federal and state level declare it to be the "guiding principle" of government policy. There are millions of references to it on the Internet. And yet the majority of the population in Germany knows just as little about this term. Only 15% of respondents had heard of the term sustainable development. It is both a buzzword and a foreign concept. "Sustainability" is a dynamic and normative term, the content of which has to be constantly searched for and agreed upon through evaluation and consideration in discourse.

Despite all the resulting differences, there is an astonishing global consensus on the idea and vision of sustainability. In Germany, too, there is a consensus across party lines that the basic concept of "sustainable development" is the guiding principle for future-proof political action. This may be due to the vagueness of the term. But it is certainly also due to the simplicity and ethical persuasiveness of the sustainability imperative: "Live off interest, not capital",

"We have only borrowed the world from our children" (excerpt from the plenary debate on 20 January 2000). The following elements can be regarded as a description of the concept of "sustainable development" that is acceptable to the majority: "Sustainability" has three dimensions: Ecology, Economy and Social. These form a construct in which each dimension must be weighed equally with the others.

What is (more) *ecologically* sustainable in detail is essentially not very controversial. The "management rules" of the Bundestag's Enquete Commission, for example, are acceptable: "The rate of depletion of renewable resources should not exceed their rate of regeneration. Non-renewable resources should only be utilised to the extent that a physically and functionally equivalent replacement [...] is created".

In contrast, the German economy itself understands "*economic* sustainability" either very superficially as "sustainable economic growth" or it understands economic sustainability as "sustainable management" in the sense of internal environmental management. In particular, this involves saving or increasing the effectiveness of the resources used.

The *social* dimension of sustainability is often described as "social justice". It is narrowly understood as a balance in favour of disadvantaged people. The core content of social sustainability is therefore the goal of preventing local and global conflicts in social

coexistence. This includes "distributive justice" (also across generations) and social equality as prerequisites for peace and security.

Sustainability as a legal definition

The more the concept of "sustainability" overcomes its rhetorical function and is operationalised, the more concretely it influences state and municipal decisions, the more "sustainability" also becomes a legal concept. The European catalogue of fundamental rights adopted at the EU summit in Nice at the beginning of December 2000 continues this development. It refers to sustainable development twice: the preamble states that

"It (the Union) shall endeavour to promote balanced and sustainable development ....". Article 37 continues: "A high level of environmental protection and the improvement of the quality of the environment shall be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.". Although these various mentions of the concept of sustainability in European constitutional law primarily associate sustainability with environmental protection, overall they also reflect the interdependence of economic, environmental and social concerns and the need to weigh them up.

In laws, "sustainable" is used with different meanings. In addition to standards that use "sustainable" conventionally as "ongoing" or "intensive" (e.g. "lasting change, impairment"), the German Federal Forest Act, for example, has called for "sustainable, maximised and high-quality timber production" since 1975, thereby also referring to the historical roots of the concept of sustainability in forestry.

In contrast, the term sustainable development is not found in the Basic Law. Nevertheless, there are certainly interfaces in the constitution for a discussion and, if necessary, greater inclusion of the concept of sustainable development in legal practice. Article 20a of the Basic Law certainly comes closest to the concept of sustainable development: "The state shall protect the natural foundations of life and animals within the framework of the constitutional order, also in responsibility for future generations [...]".

Although the new state objective provision of Art. 20a GG does not grant any subjective rights, it does tend to shift the focus of state action towards ecology and environmental protection. This has consequences for other state objectives and fundamental rights. For example, Article 20a of the Basic Law requires, among other things, that the state awarding of building contracts or services is also orientated towards sustainable development. The budgetary regulations do not require the contract to be awarded to the "cheapest" provider, but to the "most economical". In particular, consideration must be given to products that are characterised

by a long service life, ease of repair and reusability, that result in less or less polluting waste compared to other products or that are made from residual materials or waste.".

However, the following must be criticised on closer inspection. Although state budgets are drawn up for all income and expenditure, Article 109 II-IV of the Basic Law binds them to a macroeconomic balance that is not defined in the constitution. § Section 1 of the Stability and Growth Act describes this term as price stability, a high level of employment, external economic balance and "steady and appropriate economic growth". The demand for steady economic growth in particular is questionable in the context of sustainable development. As a traditional indicator of economic growth, gross domestic product is a less suitable indicator for sustainable development. It ignores the consumption of natural resources, but includes growth-increasing repair measures to compensate for ecological and social damage. Ultimately, sustainable development does not only depend on the absolute monetary values of economic value creation and, in view of the European legal framework and the introduction of Article 20a of the Basic Law, Article 109 II-IV of the Basic Law appears to be in need of revision. At the very least, an amendment or modification of Section 1 StabWG is required in order to realise the comprehensive goals of sustainable development.

Responsibility

Greenhouse gas emissions and resource consumption have risen enormously worldwide instead of falling, the extinction of species has not been halted, the pressure on ecosystems is growing - natural and sustainability scientists are warning of tipping points in the Earth system. It has long been apparent that the carrying capacities of global and regional ecosystems are overloaded. Although more people have access to clean drinking water, the overall management of water resources has not improved.

Consequently, human development without environmental protection is built on sand, because unchecked climate change and species loss undermines human welfare worldwide and makes it an unattainable goal. The fundamental reorganisation of nature-society relations must take place particularly in the rich countries, which have the highest environmental consumption. The large newly industrialising countries are also reaching critical consumption levels in the environmental sector as their prosperity increases. This is particularly evident in China's greenhouse gas emissions. At the same time, the question of income inequality is also arising again in the old industrialised countries; additional challenges such as demographic change or the digitalisation of the economy must be overcome for both rich and poor societies.

The whole is the sum of its parts and this inevitably raises the question "How big should my contribution be?". From a moral and philosophical point of view, people are obliged to commit themselves to a better climate protection policy. However, it is more difficult to clarify the extent to which individuals have to reduce their private emissions. After all, not everyone lives within cycling distance of their place of work. It is undisputed that there are either no or no appropriate institutions or regulations in place for almost all global environmental problems. Nevertheless, numerous possibilities can be identified that can undoubtedly be categorised as reasonable for the individual. Examples include the usual suspects: numerous measures in the area of energy efficiency, which generate benefits rather than costs in the medium to long term, switching to a green electricity provider, eating less meat, using public transport (if available), buying regional products and so on.

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Sustainability goals

At UN level, the adoption of Agenda 21 in 1992 was the starting point for a global sustainability strategy, initially relating to development and environmental policy objectives. Agenda 21 was followed in 2000 by the eight so-called Millennium Development Goals, which were to be achieved by 2015. They related to combating poverty and hunger, school education, gender equality, reducing child mortality, maternal health, communicable diseases, environmental protection and a global partnership for development. In September 2015, the UN General Assembly adopted **17 comprehensive Sustainable Development Goals (SDGs)** and 169 detailed sub-goals for the first time, which replace the Millennium Development Goals and apply not only to developing countries, but worldwide. The target horizon is the year 2030.

Image rights: SDGs

Figure 1: 17 comprehensive sustainability goals Source: //www.undp.org/content/undp/en/home/sustainable-development-goals.html

In the 2016 revision of the German Sustainable Development Strategy, the Federal Government emphasised the SDGs in terms of structure and content. Through its sustainability strategy, Lower Saxony has also adopted these goals - where appropriate and sensible - and is taking them into account in the further strategy process.

Source: https://www.umwelt.niedersachsen.de/startseite/themen/nachhaltigkeit/nachhaltigkeit-199391.html (accessed 24/02/2024)

External effects, external costs, external savings

If the production or consumption of goods or services results in costs (external costs) or savings (external savings, external benefits) for other companies, households or society and no compensation is paid by the party causing the damage or no payment is made by the recipient of a benefit, this is referred to as external effects. In the case of external effects, the price mechanism thus fails, which is generally referred to as market failure and necessitates state intervention.

External effects as external costs arise, for example, when cities only calculate the economic costs of land sealing, but the social costs of these measures are passed on to society (externalised). For example, sealing creates so-called heat islands, as a result of which stress levels increase in the form of respiratory diseases, cardiovascular diseases, material damage and plant death, which must be borne by city dwellers. The consequential costs of sealing, e.g. through the construction of car parks, are not calculated and are therefore not included in the construction price of the car parks. Such a situation leads to undesirable effects from an economic point of view. The price for parking spaces is comparatively too low and leads to an increase in demand for parking space. This in turn leads to an increase in the volume of private transport. Further negative effects would be the consequence. In such a case, the market mechanism fails and leads to economically undesirable results, which makes state intervention necessary. Government regulations (e.g. a ban on sealed surfaces and gravelled gardens) would make parking spaces more expensive and ideally reduce them, thereby reducing the rise in temperatures in the city. The cities and car park users would have to calculate and pay the entire costs (internalisation of external effects). The price of the parking supply generated in this way would be higher and consumers would demand a lower quantity.

External savings arise, for example, for a beekeeper whose bees collect nectar in the fruit plantations of fruit growers. However, the fruit grower also has external savings, as he benefits from the fact that the beekeeper's bees fertilise the flowers.

See *Duden Wirtschaft von A bis Z: Grundlagenwissen für Schule und Studium, Beruf und Alltag. 6th ed. Mannheim: Bibliographisches Institut 2016. Licensed edition Bonn: Federal Agency for Civic Education 2016.*

Image source: Author: carlesrgm, Depositphotos, https://de.depositphotos.com/320939296/free-stock-photo-aerial-view-big-parking-lot.html, CC0 (accessed 24/02/2024)

AWAY WITH THE GROSS DOMESTIC PRODUCT!

By Adolf Theobald (Translation)

In 2013, the Federal Republic of Germany generated 3593 billion euros was generated. Is that a lot or a little? Should we be worried, should we be proud? 3593 billion is neither a little nor a lot, but wrong. Because gross domestic product does not include a lot of things and many things are correctly but incorrectly assessed. THE GROSS DOMESTIC PRODUCT MEASURES PRETTY MUCH EVERYTHING THAT HAPPENS WHAT GOES ON IN THE ECONOMY. JUST NOT WHAT MAT-TERS WHAT MATTERS IN LIFE.

For example: the work of a housewife, provided she has no income, does not count.

Mothers who raise their children without children without pay are overlooked by GDP. If two mothers had the cunning idea of swapping their children and pay each other 1000 euros a month to look after them, GDP would have increased by GDP would have risen by 2000 euros in the same month. Unde-clared work is also barely recorded; it is overlooked by the state and statistics. And what is not recorded the so-called shadow economy, the entire do-it-yourself movement. Both undeclared work and the economy, already account for half of the official gross domestic product in gross domestic product in the Federal Republic of Germany. Oscar Wilde once said that there are people who know the price of every-thing, but the value of nothing. value of anything. He must have been thinking of politicians. They love to draw false conclusions from to draw false conclusions from gross domestic product statistics. For exam-ple, a car that costs a lot of money ultimately becomes more valuable in the national accounts, because the repairs increase the domestic product.

And environmental damage, which can bring us to the brink of ruin can bring us to the brink of ruin, increase our wealth immeasurably - because of the repair, the follow-up costs. For example, to reforest the Black For-est would require 12 billion euros. A great success in our overall accounts. A sick person who keeps the pharmaceutical industry running industry is always a better domestic product producer than a healthy one. producer than a healthy one. After all, he causes costs, i.e. brings in no revenue.

That statisticians are making us rich? That's fine. But when politicians treat the annual rate of increase like an idol that you have to listen to, then it becomes dan-gerous."

Original article, published in GEO 2/1986, updated and shortened.

Source: https://cdn.website-start.de/proxy/apps/aek2oo/uploads/gleichzwei/instances/7FE67B9A-803A-4AAA-8367-74B81BAC1279/wcinstances/epa-per/4640c252-6ba6-46d1-9fff-e7d27d6fbd1f/pdf/Adolf-Theobald---Weg-mit-dem-Bruttoinlandsprodukt.pdf (accessed 24/02/2024)

Transcript podcast urban greening

Anja Stedeler	Hello Mr Bohne, Permanently rising temperatures, increasing heat, extreme weather events. Climate change is in full swing and is not stopping at the cities. Today we want to talk about the effects of climate change on the city. How is the urban ecosystem changing? We want to focus in particular on the changing plant communities in the city. You are an expert in this field because you are - Plant expert - Author of plant and gardening guides - Speaker specialising in urban gardening, - They offer excursions for plant encounters and sustainable gardening. Thank you for being our dialogue partner today! We come to the first question: How do climate changes affect the flora, i.e. the plants, and therefore also the fauna, i.e. the animals, in our cities?
Burkhard Bohne	There are several changes that can be observed. Firstly, it is getting warmer and drier. And that naturally leads to many periods of drought. And especially in the city, this means that many plants have to retreat and others become stronger. The overall effect is that diversity is decreasing and Mediterranean plants, or plants that need the Mediterranean environment, are definitely on the rise. These in turn feed other insects. But in places where there are fewer plants, there are of course hardly any insects. And where there are no insects, there are no birds. It's a downward spiral overall.
A	Which of these effects do you think are the most dangerous?
B	That is the decreasing diversity of species. And associated with this, the food supply for insects is also decreasing. And the heat naturally increases the fewer plants grow. In other words, the climate is becoming more intolerable for us humans.
A	Who is the main cause of this climate damage?
B	Last but not least, of course, the human being. But in different areas. So the climate damage that is noticeable in the city is not caused in the city, we have to make that quite clear. It's simply a question of industry polluting the air, for example, and unfortunate traffic routing. Land consumption, for example, is a very big issue. But industrialised agriculture, which severely restricts biodiversity, all of this, and of course CO_2 emissions, in any case from buildings, are the main causes of climate damage. This is particularly noticeable in the city, because there is also the sealing of surfaces, and mostly concrete buildings, which heat up particularly quickly, and at the same time there is little air exchange with additional high levels of air pollution.
A	Thank you! Who pays the price - monetary and non-monetary - for this climate damage?
B	So let's start with non-monetary. The biggest price is paid by people who are not doing so well. Respiratory infections, older people, circulatory problems. They are now directly affected because they simply have a completely different quality of life, i.e. a poorer one. Monetarily, we will all pay the price at some point, because as

	climate change continues, we will eventually have a water problem and at some point, of course, a raw materials problem. And the longer we don't act, the greater the price will be.
A	Do you have any suggestions for solutions to prevent or at least mitigate climate damage in cities?
B	Yes, there are a whole host of proposed solutions. There simply has to be a clear move towards cities no longer consisting exclusively of concrete and tar. Thank goodness there's a big movement here. The plant actually has to move more into the city, and then we would have to replan and rethink from the outset. What we can do immediately without having to replan and rethink is to green balconies, create communal areas, unseal areas, perhaps green roofs that need to be greened and green façades. That would definitely lower temperatures, increase humidity and make the air a little cleaner overall. Those would be immediate measures.
A	What could a possible solution strategy for cities look like?
B	By thinking about how to counteract climate change. And it starts with the planning of the cities, that you have enough open space between the buildings to be constructed, that these open spaces are also greened more sensibly than with lawns or car parks, that you perhaps bring in a variety of species, that you create common areas where wild plants and cultivated plants can simply be accommodated, which then ultimately have a positive effect on the climate because they cool down areas, but at the same time also offer a good food supply for insects and a quality of life for people. So that has to be considered everywhere.
A	Where do you see the responsibility for this solution strategy?
B	We always want property developers to do something on their own initiative and there are always nice rules and recommendations, but I believe that the responsibility really lies with politicians. The framework conditions need to be changed in a positive way. It has to be said from the outset, in a similar way to social housing for investors, for example, that if you want to develop a building area for which, in the worst case, arable land has to be used, then there must at least be a catalogue of measures, green roofs, green facades, perhaps an obligation to grow crops on balconies. And the areas between the houses should also be cultivated very intensively. Not intensively in the sense that you have a lot of yields, but intensively in the sense that special care is taken to protect species there.
A	In your opinion, what economic policy measures or instruments are required to enable the sustainable development of our city?
B	Yes, as I said, you need specifications, and then of course you also need funding, that is absolutely clear. That will cost money, and of course that means you can't just burden the investors with it, and then of course the buyers or tenants of the flats in the end, but there must also be funding for it. Yes, for me it is quite clear that we need a mixture of subsidies, direct funding and calls for tender for any measures. And it costs money to initiate and organise such things, and that has to be reflected somehow. And of course we also need to invest in awareness-raising, which brings us straight to the topic of education, so that the topic can be addressed and that people can then perhaps deal with different things or in very different ways on this topic.

A	What are the costs to society if we act or if we do not act?
B	So if we act, which is of course necessary and would be ideal, then we would have to make some money available now, we would have to provide funding, we would have to allow subsidies, we would have to channel money flows, which of course cannot be done for free. But if we don't act, we will face immense costs and some cities will no longer be habitable for sick people. We will have problems with water, problems with air quality. That will be many times more than we would invest now.
A	What do you think the city will look like in 20 years, Mr Bohne?
B	I am an optimist by profession, and the cities will be wonderfully green, i.e. facades will be covered in greenery, we will have orchards on the roofs, there will be no private transport between the buildings, we will actually have vegetable gardens. We will have clean air, we will have water in the cities that cools the air even more. And the most utopian image is a forest garden with many buildings in it.
A	If we were planning a school trip to a sustainable city or neighbourhood, where should we go?
B	There aren't that many sustainable cities yet, but for many years there has been a city in Andernach, which is in Hesse or the Palatinate, I'm not quite sure, that has proclaimed itself an edible city. There are many projects in this direction, i.e. there are fruit trees, soft fruit, but also real pome fruit everywhere in the city, in parks and also in front gardens, and there are also vegetable gardens in parks where you can simply help yourself and snack. And wherever food is grown, there is also plenty of space for insects. So that's already a precursor to sustainability. A sustainable neighbourhood, or part of a neighbourhood, can be found in Berlin, as is so often the case. In the Prinzessinnengarten, which has now moved to Neukölln, which is such a molloch of a district, Berlin is the most densely populated, but there, for example, the topic of urban gardening is being worked on in a cemetery that has been decommissioned, creating a great oasis, both for clean air and for flora and fauna, and also for the people who live there. It's definitely worth a look.
A	Mr Bohne, that was very interesting information. You explained very important connections and consequences to us today and also pointed out solutions. And you also gave us a tip. We need to think about this in order to understand the explosive nature of the situation in our cities and to be able to avert climate collapse in the cities. As city dwellers, we must not only act accordingly ourselves, but also consistently demand measures such as the Edible City from the responsible decision-makers. Thank you very much, Mr Bohne, for this stimulating interview!

To what extent can environmental policy instruments make your city more sustainable?

To prepare for the "Our sustainable city" round table in the town hall, you have already familiarised yourself with the dimensions of sustainability, the magic hexagon, GDP and external effects. Now you would like to find out to what extent environmental policy instruments can contribute to actually making your city more sustainable.

Work assignment: (individual work) **5 minutes**

1. **Scan** the following QR code:

https://t1p.de/804j3

2. **Edit** the *LearningSnack*.

Various measures can be used in environmental policy. Now is the time to familiarise yourself with these environmental policy instruments.

Work assignment: (partner work) **5 minutes**

1. **Assign** the environmental policy instruments to the corresponding to the corresponding explanations using arrows.

Environmental policy instruments		
1) Planning law instruments		a) Changes in institutional conditions that change market prices (e.g. taxes, subsidies)
2) Regulatory instruments		b) Co-operation agreements and arrangements between stakeholders. Public advertising campaigns with the aim of changing the behaviour of private actors.
3) Economic instruments		c) In the case of state planning, funds must be determined in advance. In some cases, environmental impact assessments are also carried out.
4) Informal instruments		d) Interference in the actors' freedom of choice, e.g. through bans or requirements

Source: Brehm, P. (2023). *Nachhaltige Entwicklung im volkswirtschaftlichen Unterricht. Umweltpolitik.* Zugriff am 24.02.2024. Verfügbar unter: https://t1p.de/ajhx5

Three criteria are often used to assess these various environmental policy instruments:

- **Dynamic incentive effect**
- **Ecological efficiency**
- **Cost efficiency**

Work assignments: (partner work)

5 minutes

1. **Read** the definitions of the three criteria carefully.
2. **Assign** the correct criterion to the definitions together.

	• Ability to achieve the specified target value at minimum cost.
	• Ability to trigger environmental progress, i.e. to promote investment in environmentally friendly production methods and technologies.
	• Ability to achieve the target value as accurately as possible.

Source: Komar, W; Nutzinger, H. G. (1994). *Rahmenbedingungen und Chancen der deutschen Umweltpolitik.* Marburg: Metropolis.

Gallery Walk

A method for developing environmental policy instruments

Work assignment: Gallery Walk

1. Phase: Preparation

Form the following four **groups**:

Group 1: Experts for **planning law instruments**

Group 2: Experts for **regulatory instruments**

Group 3: Experts for **economic instruments**

Group 4: Experts for **informal instruments**

2. Phase: Group work

a. Use your information sheet to **access** the information on your assigned specialism in environmental policy!

b. **Clarify** questions in your group or use the **glossary** for help.

c. **Present** the instruments of your speciality clearly and attractively on your pre-structured poster!

d. Also **assess** your area of specialisation on the basis of the three criteria:

Cost efficiency - Dynamic incentive effect - Ecological efficiency

There is a note on the teacher's desk to help you.

e. **Put up** your poster (on the flipchart) in a corner of the classroom!

Additional task for quick thinkers:

Develop exemplary measures within your area of specialisation for a more sustainable city.

3. Phase: Presentations in the Gallery Walk

a. **Form** mixed **groups** with at least one expert from each working group.

b. Now **walk** from poster to poster with your group. Time interval **5 minutes**! The experts **present** their poster with the environmental policy instruments they have developed to the other group members.

c. **Ask comprehension questions** as a participant listening! As an expert, answer as competently as possible!

d. Discuss the impact of the respective environmental policy measure on the sales market!

Plenary (optional depending on the ability of the learning group)

Graphically illustrate the effects of the environmental policy instruments in the price-volume diagram!

Method sheet[1] : Museumsgang/Galeriegang (Gallery Walk)

The museum walk, gallery walk or gallery walk focusses on the presentation of the results by the pupils. In addition to movement, the method also offers a wide range of variations and encourages reflexion.

Description

The gallery walk, also known as the museum walk, is a method in which pupils practise presenting the results of group work. The results are displayed on the walls throughout the classroom, just like in a museum or art gallery. The pupils wander through the exhibition in groups, whereby one pupil should be familiar with the respective subject matter. The basic idea of this method is therefore that, ideally, each pupil has to present the results of their working group once. The pupils have the task of discussing the results and exchanging ideas. Accordingly, the method serves both to reflect and penetrate as well as to assess different group results. For support and for a targeted exchange, it is helpful for the teacher to prepare a questionnaire on the topic that has been developed, which the pupils can use to complete the gallery walk or museum tour. At the end, the pupils gather together and present their observations.

Furthermore, the museum tour is a simple method that can be used to eff ectively familiarise many pupils with different perspectives on a subject area in a short space of time, as several presentations are given at the same time. As a result, the museum tour method is also advantageous if the teacher wants to achieve a high level of communication.

The teacher can consider whether the gallery should be offered to a wide audience (parents, other classes) or only to their own class. Prizes could also be awarded, which are chosen by the other pupils.

Tips

- The number of expert groups must not exceed the number of group members, otherwise it will not be possible to fill all "museum visitor groups" with one person with expertise.
- Before the teacher ends the presentations at the respective locations and the small group moves on to the next one, they should announce this, for example, one minute before the end of the agreed time. This gives the students the opportunity to find a conclusion.
- The teacher should also keep a close eye on the timetable so that all class members have sufficient time to discuss the results, ask any questions and note down the results.
- A museum tour with more than 4 stations usually takes longer than one lesson due to the extensive phases.
- If the gallery walk takes place within a room, the teacher should ask the pupils to speak quietly, otherwise the noise level will be too high.
- The method is also suitable for discussing homework.

Material

- The results of group work are required, which can be exhibited and presented in the form of a poster or a picture (e.g. the result of a group puzzle).
- Coloured pencils, felt-tip pens, scissors, glue, sharpie, cardboard, magnets, whistle or similar

[1] cf.: https: (accessed on 24/02/2024)

for signalling a change, texts, tasks
- Optionally, the results can be exhibited on display walls.

Variation

As an alternative to the questionnaire, the pupils can also use sticky dots to evaluate the results. The poster or picture that the pupils like best is given a sticky dot. They then analyse together which result they liked best. The task of the pupils is now to constructively explain the assessment they have made.

The classic forms of information sources for this method are posters, but it is also possible to present short films or audio samples. Small experiments or exhibits are also conceivable in science lessons or science subjects.

Silent museum walk:

It is also possible for the tour of the "exhibition" to take place in silence, i.e. each pupil "walks through" the exhibition - either individually or in groups - in silence without explanations from the poster makers. All participants should also take notes and write down comments and questions. After the tour, the members of the working groups should answer the visitors' questions about their poster.

Active museum tour:

The visitors comment on the posters of the various working groups with the help of small pieces of paper. These are then pinned under the exhibits and each group then changes or improves its exhibit(s).

Museum tour without experts

As a result, the tour without experts is a method in which the information at the stations is new to all group members. This form is therefore suitable if, for example, a critical debate of different perspectives on a topic is to be encouraged. The museum tour can also be used without groups of experts, for example when it comes to analysing or evaluating posters. In this regard, sticky dots can be stuck on or next to the posters, for example, to award prizes for the best poster.

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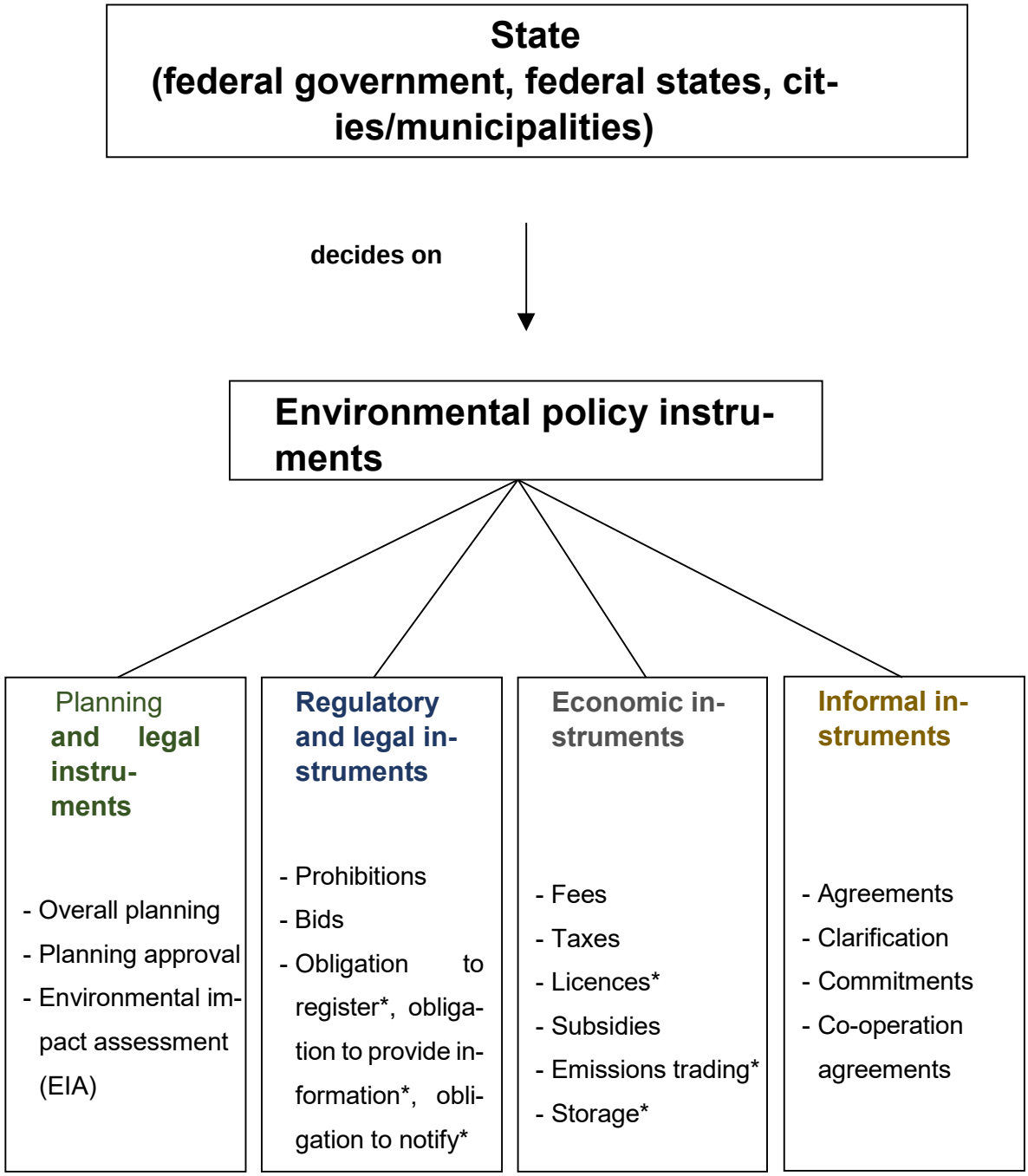
Environmental policy instruments[1]



* These environmental policy instruments are not relevant in the context of this learning situation.

[1] See Sustainable development in economics education: Environmental policy; https://www.vwl-nachhaltig.de/home/unterrichtsthemen/umweltpolitik/ (accessed on 24/02/2024)

Planning law instruments[1]

Planning law instruments play a role above all when public construction measures are planned by the federal government, the federal states, cities or municipalities: the financial resources for the public budget (budget) must be determined in advance for every **overall** state **plan;** environmental aspects must be taken into account, e.g. in energy or transport policy: is money earmarked for the expansion of additional motorways or for new railways?

The **planning approval procedure** is, so to speak, the authorisation procedure for *larger* infrastructure projects (airfields, landfills, waterway expansions) that affect a large number of public and private interests. Federal and state road legislation also prescribes a planning approval procedure for road construction, including for new district, state and federal roads as well as motorways.

Environmental impact assessments are planned for individual projects. The purpose of these assessments is to determine the direct and indirect effects of these projects on people, flora and fauna, soil, water, air, climate, landscape, material assets and cultural heritage, as well as the interaction between these various factors. A specific project can only be implemented once the relevant reports are available.

[1] See Sustainable development in economics education: Environmental policy;
(accessed on 24/02/2024)

Regulatory instruments[1]

State authorities can also prescribe certain environmentally oriented behaviour on the part of citizens by imposing *conditions:* Prohibitions, requirements, obligation to register, obligation to provide information and obligation to notify.

- **Prohibitions:** The state prohibits certain behaviour, e.g. the dumping of toxic waste in the open air.
- **Commandments:** The state demands certain behaviour, e.g. compliance with legal limits for environmental pollution.
- **Obligation to notify:** The state requires prior notification, e.g. the operator must inform the competent authorities before commissioning a mobile phone transmitter.
- **Duty to provide information:** A company must provide information at the request of the state or interested citizens. Example: Under the new European chemicals legislation ("REACH"), companies must provide information on the ingredients of their products within 45 days.
- **Mandatory reporting:** The state requires the voluntary and immediate reporting of environmentally relevant incidents in companies, e.g. incidents in nuclear plants.

Bans and prohibitions are widespread in the environmental policy of most countries. They have a number of advantages: they can be easily adopted by politicians, regulate things clearly, can be reviewed and are therefore quickly effective. As they treat all market participants equally, they are often perceived by people as "fair".

However, environmental policy requirements also have disadvantages:

- If people do not understand the existing environmental problem, regulations often lead to anger and annoyance at government interference.
- Checking compliance with the requirements is usually associated with high administrative costs, which have to be covered by state budgets.
- There is no incentive for market participants to make further environmental improvements beyond complying with the law. The dynamics of the market remain unutilised and there is no incentive for further environmental progress.
- On the surface, requirements appear to be "fair", but they are often economically inefficient: some market participants have high costs to comply with the requirements, others only very low. As a result, the costs for society are often higher and the benefits for the environment often lower than when economic instruments are used.

[1] See Sustainable development in economics education: Environmental policy; (accessed on 24/02/2024)

Economic/market-based instruments[1]

Economic instruments are based on the theory of "external effects": As market participants use the "free good environment" free of charge, they damage it to an excessive extent. Economic instruments therefore assume that those who use the environment as a factor of production must pay a (market) price for it. Ideally, the price is just as high as the damage caused by the use of the environment. The funds collected could then be used by the state to repair the damage. Possible instruments include environmental taxes, charges and (emission) licences.

As every production process has an impact on the environment, countless types of environmental taxes are conceivable in principle: In France, airline tickets will be taxed extra from 2020 for climate reasons, Italy is introducing taxes on plastic packaging, and in Sweden, toxic pesticides have been subject to a special tax for years. In the EU, a minimum tax on electricity and fuels was introduced for all member states in 2003 as part of a pan-European **ecological tax reform** (eco-tax). In Germany, the revenue generated from this was primarily used to reduce statutory pension insurance contributions.

Environmental levies ensure cost-effective protection of the environment: the state has no costs to check whether limit values, requirements and regulations are being complied with. Each individual can distinguish precisely between the levy to be paid and the avoidance costs. They also trigger economic incentives to drive forward technical innovation in order to reduce the costs of environmental protection.

CO_2 tax - why some cars cost more[1]

There is no CO_2 tax in the strict sense in Germany. However, carbon dioxide emissions from transport have been subject to a price since January 2021: CO_2 pricing.

- The vehicle tax has increased for new cars with high CO_2 emissions.
- The prices for petrol and diesel will also be increased.
- The transport sector is number three in terms of CO_2 emissions in Germany.

CO_2 orientation for motor vehicle tax[1]

From 1 January 2021, a higher vehicle tax will apply to cars with high fuel consumption that are registered for the first time. This particularly affects SUVs and sports cars with emissions of over 116 grams of CO_2 per kilometre. This is intended to incentivise people to buy more fuel-efficient cars. The higher the CO_2 emissions, the higher the tax rate. The rate ranges from 2 euros per gram of CO_2/km (for emissions of over 95 g/km up to 115 g/km) to 4 euros per gram of CO_2/km (for emissions of over 195 g/km).

Here are two examples: For a petrol car with a displacement of 1496 cm^3 and CO_2 emissions of 140 g/km, the annual vehicle tax until 2020 was 120 euros. For a vehicle with these data, it was already 126 euros in 2021. For a diesel with the same cubic capacity and 130 g/km CO_2 emissions, it was €212 in 2020 and then €215 in 2021.

[1] See Nachhaltige Entwicklung im volkswirtschaftlichen Unterricht: Umweltpolitik; https://www.vwl-nachhaltig.de/home/unterrichtsthemen/umweltpolitik (accessed on 24/02/2024)
Source for the *short info text CO_2 tax*: Christine Zinner: Wie soll das funktionieren? from 3 May 2019; https://www.cicero.de/innenpolitik/co2-steuer-energieversorgung-steuern-klima (accessed on 24 February 2024)

Environmental taxes and charges are a very recent instrument in state tax and levy policy. Traditionally, the state has generally collected its tax revenue in other ways.

The **introduction of ecological subsidies** and the **reduction of environmentally harmful subsidies**.

Particularly in the area of energy saving, large initial investments are often necessary so that their costs are subsequently recouped (amortised) through lower ongoing energy costs. However, some owners lack the financial capital for the initial investment. The need for state subsidies is seen particularly in the area of energy-efficient refurbishment of old buildings so that homeowners can tackle construction measures that make sense in the long term. Even if an investor has the necessary "small change" for an ecological building project, the psychological incentive of being able to "take home" a state subsidy should not be underestimated. One example of subsidising mobility is the Deutschland-Ticket for local public transport.

Conversely, a review of government budgets reveals numerous subsidies with a negative environmental impact, such as subsidies for the coal and nuclear industries, as well as ill-conceived structural programmes for industrially underdeveloped regions or in favour of an oversupply of industrial areas. If these are abolished, a positive effect on the environment can be expected at the same time as easing the burden on public budgets.

Informal instruments[1]

Informal instruments rely primarily on the voluntary behaviour of market participants. Through close contact between environmental policy and companies, the latter could declare their willingness to comply with certain environmental targets. Voluntary commitments work in a similar way when companies in an industry voluntarily formulate and strive to achieve environmental targets. In practice, such voluntary commitments often replace stricter state laws, which companies try to avoid by making voluntary commitments.

For private households, which are too numerous to make individual agreements with the state, information campaigns and educational measures could encourage people to adopt environmentally friendly behaviour.

There are governmental and non-governmental initiatives to support consumers' free choice. Consumer protection organisations or commercial providers such as the magazine ÖkoTest provide insights into saving energy or the environmental compatibility of consumer products. The state contributes to this by enforcing mandatory labelling of products through laws or regulations. Household appliances, for example, are categorised into energy efficiency classes, while foodstuffs must provide ever more extensive information on the origin and content of the product.

Driven by organic farming and fair trade, trade and industry are increasingly interested in building a positive brand image, including in moral terms. To this end, labels have been developed to provide consumers with information about the ethical safety of the product. Critics now criticise the fact that the ever-increasing number of different labels does not make it easier for consumers to find their way around, but only contributes to confusion.

Some of the best-known labels:

Informal instruments are particularly compatible with modern man's claim to freedom, the economic freedom of choice in the market economy and a highly developed sense of responsibility.

However, markets often fail when it comes to environmental issues because markets are in practice quite future-blind and value current gains over future losses (let alone environmental disasters).

[1] See Sustainable development in economics education: Environmental policy; (accessed on 24/02/2024)

Glossary

Term	Explanation
Levies	Public revenue of the federal government, the federal states and local authorities; specifically taxes including church tax, customs duties, fees, contributions, social security contributions to the statutory social insurance institutions
Dynamics	Change or development
Emissions/emissions trading	Emission: Waste from production, distribution and consumption. Often limited to pollutants (pollutant emissions) Emissions trading: Each emitter of greenhouse gases may only release the amount of pollutants in a period for which it has emission allowances. The emitter is free to decide whether to release the maximum authorised quantity of pollutants or to attempt to reduce the quantity of pollutants through technical progress or the installation of filters etc.
Budget	Financial volume, budget volume
Flora and fauna	Flora = plant world; fauna = animal world
Fees	Tax levied as remuneration for a special service provided by a public authority or public institution
Glossary	Glossary with explanations
Infrastructure	Basic facilities of a country; e.g. transport networks (roads, railways and waterways) and supply and disposal facilities (energy, water, communication networks)
Initiatives	First step in a specific action
Innovation	Term for the innovations associated with technical, social and economic change.
institutional	An "institution" is a public or state institution or organisation that has a specific purpose and has been established on a permanent basis. These are, for example, schools or universities. They also include state research organisations, public television, parliament and political parties.

Investment	Long-term commitment of financial resources in tangible or intangible assets.
Co-operation	Co-operation between mostly a small number of legally and economically independent companies to increase their joint competitiveness.
Labels	Brand
Production factor	Designation of the goods used for production
REACH (something with European law)	The name REACH refers to an EC regulation that is directly applicable in the member states of the EU. The aim is to reorganise the registration, evaluation, authorisation and restriction of chemical substances and to expand the lack of knowledge about most chemicals.
Subsidies	Unilateral transfers from the state to companies; cash payments or non-cash benefits (e.g. tax concessions, discounts on state purchases, guarantees) granted by the state or EU institutions without (market-economy) consideration, usually to companies
Avoidance costs	Costs incurred by the polluter, e.g. of pollutants, to minimise damage.

Help cards for the assessment of environmental policy instruments

Tip for group 1: Planning law instruments

Cost efficiency: Rather cost-efficient, as financial resources must be determined in advance.

Dynamic incentive effect: Rather no incentive

Ecological efficiency: environmental impact assessments ensure increasing ecological efficiency

Tip for group 2: Regulatory instruments

Cost efficiency: Rather cost-inefficient, as high conversion or avoidance costs are incurred (mainly by companies - are usually passed on to consumers)

Dynamic incentive effect: Rather less, instead possibly unforeseen circumvention strategies by companies and consumers (i.e. alternative products etc.)

Ecological efficiency: Very high, but uncertainty due to avoidance strategies.

Tip for group 3: Economic instruments

Cost efficiency: Depends on the type of intervention in the market, but generally results in higher costs that are passed on to consumers.

Dynamic incentive effect: Generally high incentive effect, as the market mechanism takes effect here: companies want to reduce costs.

Ecological efficiency: Dependent on certainty of the information situation - additional uncertainty due to avoidance strategies.

Tip for group 4: Informal instruments

Cost efficiency: Depending on the type of informal instrument - but generally more cost-effective

Dynamic incentive effect: Depending on the public effectiveness of the instrument→ rather difficult to assess. No incentive to continue investing beyond agreements.

Ecological efficiency: Also dependent on the public effectiveness of the instrument→ rather difficult to assess. In the case of agreements, dependent on concrete agreement.

Source: Gawel, E. (2020). *Umweltökonomik und Umweltpolitik. Leitbilder, Theorien und Instrumente der Umweltpolitik.*. Accessed on 24.02.2024. Available at: https://t1p.de/we90s.

Example of a pre-structured poster

Topic:		Group members:
Sketch:		Summary:
Explanation:		
Cost efficiency	Dynamic incentive effect	Ecological efficiency
Examples:		

Placemat - work assignments

Individual work

a. Derive interests from your notes that correspond to the position of your stakeholder group.

   Record your results in your area of the placemat.

Group work

b. Present your collected interests to the group.

c. Agree on three core interests of your stakeholder group. Record these core interests in the community field.

d. Select target-oriented environmental policy instruments (see M10) to realise your interests.

e. Develop requirements for your stakeholders and record your results in writing.

   a) List the demands for realising your interests with the help of the environmental policy instruments that you want to put forward at the "Our sustainable city" round table.

   b) Give reasons for these claims.

f. Appoint one person to be the first to represent your group at the round table.

Method sheet[1] : Fishbowl[2] - Discussion

The room

The special thing about a fishbowl discussion is the way in which you are distributed around the room during the discussion: The immediate participants - the "fish", so to speak - sit in a small inner circle and discuss the topic. Around them - in a large outer circle - sit the observers.

One seat in the centre remains free.

One person in the inner circle leads the discussion as moderator.

The realisation

Each observer can decide to take part in the discussion briefly. If, for example, they feel that the discussion has stalled and their arguments would bring a breath of fresh air, they can leave their seat in the outer circle. He then takes a seat on the free chair in the inner circle and takes part in the discussion. He then leaves the inner circle again and returns to his observer seat, giving another observer the opportunity to take part in the discussion.

The advantages

As only a few people are discussing at any one time, all participants can follow the arguments well. Basically, anyone can have their say, but only the people in the inner circle are allowed to speak. As the observers are also allowed to take part in the discussion, new suggestions can always be added.

It's different when you're discussing with the whole class, for example: It can sometimes get very loud and then you don't understand each other. Or you lose the thread with so many opinions and you can't come to a satisfactory conclusion. The fishbowl discussion is particularly useful for complicated topics.

The evaluation

After the discussion, the observers use their notes or a feedback sheet to analyse the course and results of the discussion. The people from the inner circle can also provide feedback.

[1] cf.: https://www2.klett.de/sixcms/media.php/229/Arbeitsblatt_313273_0023.pdf (accessed on 11/07/2023)
[2] Fishbowl: refers to a round aquarium - a goldfish bowl

"Round table"

Fishbowl - Conduct discussion

Representatives of the individual stakeholders

1. Take your place at the round table in the centre of the circle of chairs.

Listener order

2. Follow the discussion.
3. Edit the observation sheet for the stakeholder group assigned to you.

Evaluation phase

Group work

4. Record the requirements that are compatible with the interests of all stakeholders on green cards.
5. Record on red cards the demands that cannot be reconciled with the interests of all stakeholders.
6. Record on yellow cards the demands that require a compromise between the stakeholders in order to be implemented.

Plenum

7. Create the "Round Table" list of demands by prioritising the cards on the pinboard.

Observation sheet for the round table (fishbowl discussion)

1. Follow the discussion at the round table closely and complete this observation sheet! Focus on the representatives of the stakeholder group assigned to you.

The Mayor / The Mayoress ...						
provides a clear introduction to the discussion.	+ +	+	O	-	- -	does not provide a clear introduction to the discussion.
ensures that the rules of discussion are observed.	+ +	+	O	-	- -	does not observe the rules of discussion.
ensures a discussion result.	+ +	+	O	-	- -	does not lead to a discussion result.
summarises the outcome of the discussion at the end.	+ +	+	O	-	- -	does not summarise the outcome of the discussion at the end.
The representative of the Environmental Department / The representative of the Environmental Association/						
follow on from what has already been said.	+ +	+	O	-	- -	do not tie in with what was said before.
let the others finish.	+ +	+	O	-	- -	get in the way of the others.
stay on topic.	+ +	+	O	-	- -	digress from the topic.
speak clearly.	+ +	+	O	-	- -	do not speak clearly.
listen attentively to the others.	+ +	+	O	-	- -	are inattentive.
formulate their demands clearly.	+ +	+	O	-	- -	do not formulate any demands.
justify their demands in a comprehensible manner.	+ +	+	O	-	- -	do not justify their claims in a comprehensible manner.
relate to the sustainability dimensions.	+ +	+	O	-	- -	do not relate to the sustainability dimensions.
argue according to their role.	+ +	+	O	-	- -	argue without reference to their role.

2. Make a note of the arguments put forward by your assigned stakeholder (the representatives of the group) at the "round table".

	"Developing a sustainability concept for the city"	Class: Date:
Name:		
Points: _____/ 21	Per cent: _____	Note: _____

Processing instructions:

1. **Use a biro or fountain pen in** the writing colours **blue or black to** complete the test.
2. Ensure that the **typeface** is **legible.**
3. **name**→ Answer the task in keywords
4. **explain/justify**→ Answer task in detail in complete sentences

Task 1 - Sustainability (___/ 7 points)

a) **Define** what you understand by the term "**sustainability**". (____/ 2 points)

b) Name the **three dimensions** of sustainability. (____/ 3 points)

c) Name **two legal bases** that include sustainable behaviour. (____/ 2 points)

Task 2 - Magic hexagon (___/ 5 points)

a) Explain why the magic hexagon is called "**magical**". (___/ 2 points)

b) Tick which of the following targets (do not) belong to the magic hexagon.

(____/ 3 points)

	Belongs to	Does not belong
1. High level of employment		
2. Price stability (i.e. prices should not change)		
3. Ecological sustainability		
4. Fair distribution of income and wealth		
5. Consistent economic performance within the national economy		
6. Reduction in imports and exports		

Task 3 - Environmental policy instruments (___/ 9 points)

a) Explain **an** environmental policy instrument. (____/ 3 points)

b) Name **three criteria** for assessing environmental policy instruments. (____/ 3 points)

c) Develop a **reasoned** demand for a more sustainable city. (____/ 3 points)

Method sheet[1] : Statement

A statement is a written expression of opinion on a specific issue. They are often found in newspapers, scientific publications, as statements by politicians, companies, etc. The aim is to clarify one's own opinion to the reader (addressee).

Statements can ...

- Denounce grievances.
- Demand solutions.
- generally deal with contentious issues.
- Support points of view.

An oral statement is referred to as a statement.

It is important to have a recognisable subdivision into ...

- Introduction - Facts of the case
- Main part - Discussion
- Conclusion - own opinion

Introduction

In the introduction, the facts on which the position is to be taken are presented briefly and concisely.

Main part

In the main section, the conflicting objectives to be resolved are named in a sensibly structured text, for example, the effects and consequences of this issue or the alternatives are examined and the opportunities and risks of the alternatives are presented in a differentiated manner. In some cases, new solutions can also be developed beyond the alternatives specified in the assignment.

If the issue is complex, one aspect is considered first: Facts, effects and consequences - own point of view. Only then is the next aspect dealt with.

Final part

In the final section, a separate point of view is presented and justified. The decisive reasons and considerations/prioritisation must be disclosed.

[1] See: http://www.riepel.net/methoden/Stellungnahme.pdf (accessed on 24/02/2024);
Bildungsportal Niedersachsen: Handlungsergebnisse Zentralabitur BRC_BVW_VW_(ab ZA_2017).

Reflect phase: possible can-do list

		1	2	3	4	5	6	7	8	9	10
	I can ...	not at all - rather not			works - partly - reasonably well				good - excellent		
1	explain the term "sustainability".	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	name the dimensions of sustainability.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	explain the goal of sustainability.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	explain the term "economic growth".	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	explain the GDP.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6	name at least three negative effects of economic growth.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7	explain the connection between economic growth, climate change and the negative effects.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8	name at least three environmental laws.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9	Describe the polluter pays principle of environmental policy.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	name at least two instruments of environmental policy.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Planning phase: Expectation horizon of a catalogue of questions

Possible questions about the situation	Answers or investigation requests
What is sustainability?	Definition of Dimensions Goal
What does economic growth mean?	Definition of Stability and Growth Act
How is economic growth measured?	GDP
What are the negative effects of economic growth?	Heat, drought, air pollution, ... Theory of external effects Measure of prosperity
What is the connection between economic growth, climate change and the negative effects of climate change?	Statistics with test results/data
What environmental laws are there?	International, national and local agreements, laws, directives and regulations
What influence does my consumer behaviour have on climate change?	Harmful to the climate Climate neutral
What responsibility ... do I bear as a consumer? carry ventures? do the political leaders bear for the city?	Principles of environmental policy e.g. precautionary principle, co-operation principle, polluter-pays principle, common burden principle, after-the-flood principle, injured party principle
What environmental policy measures are there for sustainable urban development?	Environmental policy instruments
Which of these environmental policy measures are suitable for sustainable urban development?	Utility value analysis
What is the "Our sustainable city" round table?	Discussion forum with interest representatives/experts/stakeholders (representatives from politics, local companies, medical representatives, environmental organisations)

Horizon of expectations Station learning

(see routing slip with tasks M04)

Sustainability (M05a and M05b)

Tasks:

1. read the articles "Sustainable development" and "Sustainability goals".

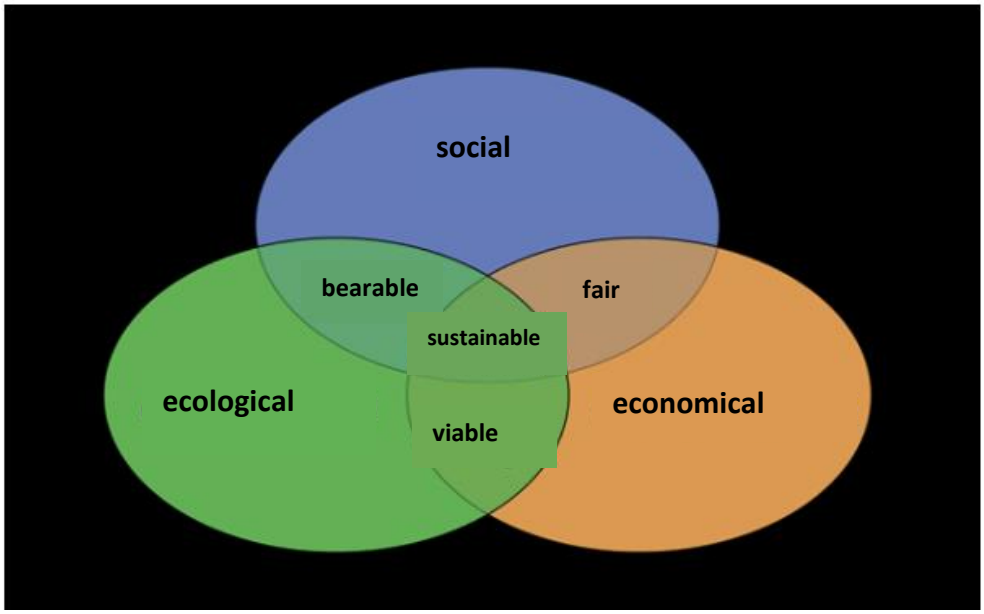
2 Explain the term "sustainability" and represent it graphically as a Venn diagram.

Sustainability concept: Sustainability consists of the three dimensions of ecology, economy and social issues. Sustainability means satisfying the needs of the present in such a way that the natural basis of life for future generations is not restricted. (page 2, line 55)

Three dimensions of sustainability:

Ecology
Economy
Social affairs

Venn diagram:



Voller, R. (2018). Die Tripple Bottom Line findet nach wie vor Verteidiger
Accessed on: 24.02.2024. Available at: https://t1p.de/0th2f.

3. explain why sustainable economic activity is necessary for all economic entities.

- Carrying capacities of global and regional ecosystems overloaded (p. 3, line 55)
- Climate change and species loss prevent human welfare/prosperity (p. 3, line 63)

4. list the legal bases that oblige all economic entities to act sustainably.

- Catalogue of Fundamental Rights of the European Union Art. 37 (p. 2, line 25)
- Federal Forest Act (p. 2, line 42)
- Basic Law Art. 20a GG (p.2, line 55)
- §1 Stability and Growth Act (p. 3, line 23)

Magic hexagon

Tasks:

1. watch the explanatory video "The Magic Hexagon", which deals with the extension of the Magic Square. (see: https://t1p.de/rekj)
2. should the Stability and Growth Act be expanded to include the qualitative goal of sustainability? Write down three arguments in favour and three against.

Pro:

- The problem of climate change is playing an increasingly important role
- The environment is a limited resource
- The aim of politics is to protect the environment through legislation and, for example, to limit emissions

Contra:

- Companies are restricted by strict environmental regulations
- In order not to violate laws, companies have to make additional investments and pay expensive expenses→ this weakens economic growth
- Environmental protection is in constant competition with economic growth

3. describe three consequences of this reform of the Stability and Growth Act.

a) for you personally,

- The more money I earn, the more tax I have to pay (fair distribution of income and wealth)
- Ban on plastic bags, plastic straws etc.
- Heating law (gas heating systems must meet certain standards)

b) for companies,

- Production becomes more expensive as gas prices rise, for example (CO2 price, emissions trading)
- Labour costs rise (minimum wage→ Fair income distribution)
- Competitiveness on the international market impaired, e.g. China, India

c) for urban development.

- Commitment to green spaces
- Rainwater drainage basin
- Flood protection for rivers

Externalities (M06)

Tasks:

1. read through the article.

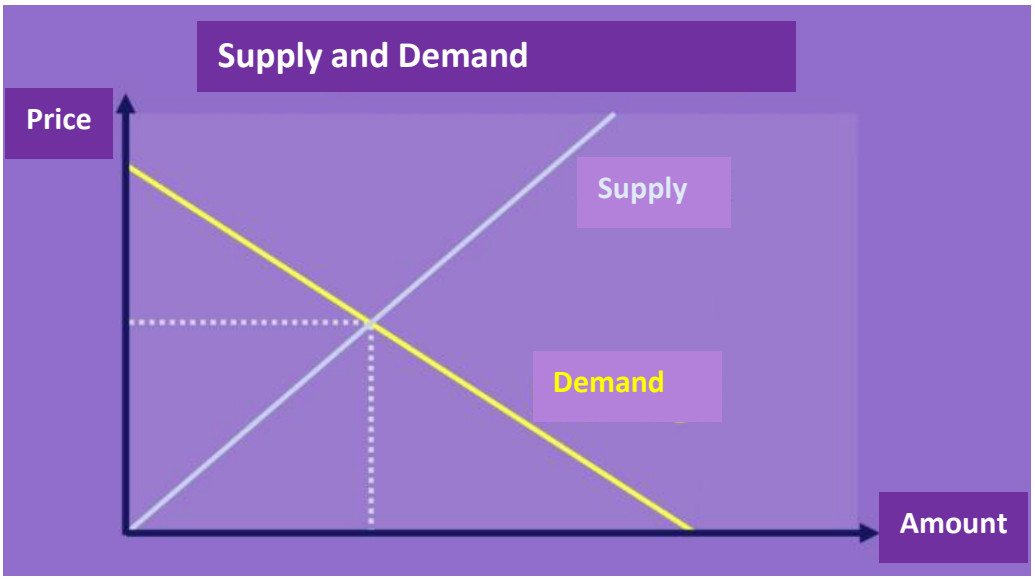
2. define what external effects are.

External effects are a form of market failure. They are costs (external costs) or savings (external savings, external benefits) incurred by other companies, households or society through the production or consumption of goods or services, for which no compensation is paid by the party causing the damage or no payment is made by the recipient of a benefit.

3. explain how the external effects of building more car parks affect life in the city.

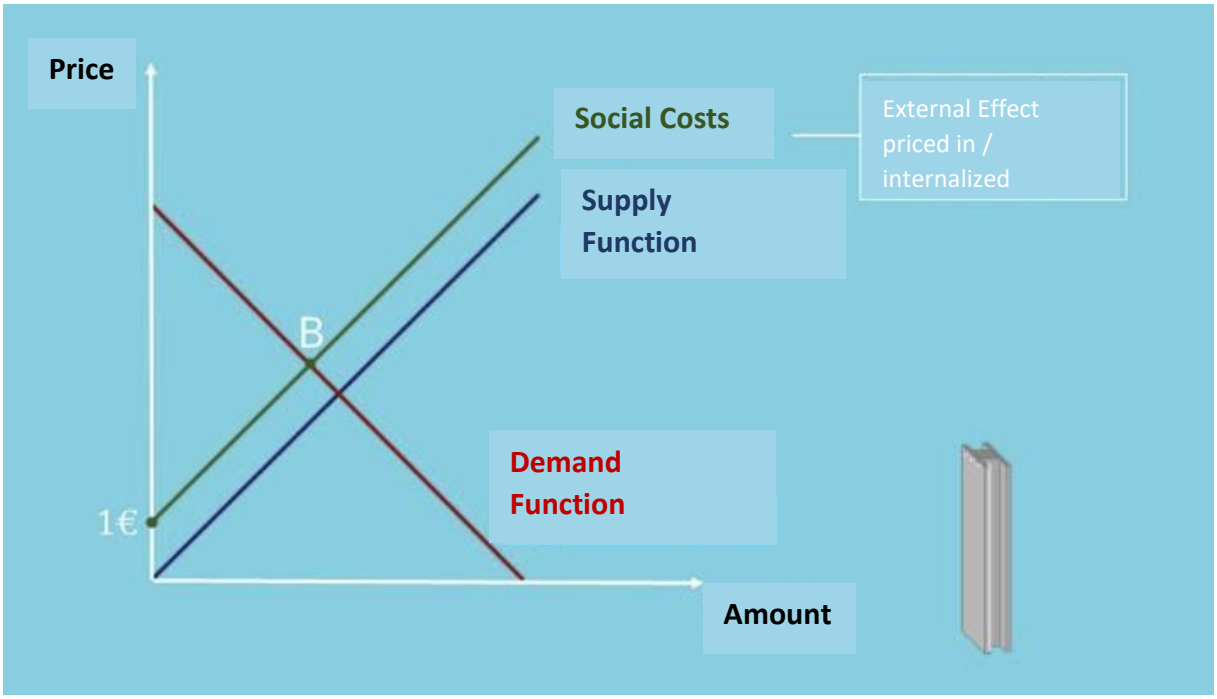
- Sealing surfaces creates heat islands that lead to respiratory and cardiovascular diseases. It also favours the death of plants.
- the volume of private transport is increasing

4. show the supply and demand of public car parks in a price-quantity diagram.



Studyflix. (2023). Angebot und Nachfrage. Accessed on 24.02.2024. Available at: https://t1p.de/oej11

5. add the curve for the external costs of soil sealing due to the construction of a car park to your diagram.



Studyflix. (2023). External effects. Accessed on 24.02.2024. Available at: https://t1p.de/fftgn

6. analyse the change in the offer price due to the internalisation of external costs.

Social costs arise from the construction of new car parks. These social costs become clear through a parallel curve shifted to the left. On this curve, the price for the environmental impact is included in the supply, i.e. it is priced in or internalised. The new market equilibrium is therefore at point B with an increased equilibrium price. The quantity of parking spaces demanded is reduced by an increase in price.

Gross domestic product (GDP) (M07)

Tasks:

1. read the article.

2. explain GDP as an indicator for measuring prosperity in an economy.

Note: Gross domestic product (GDP) is a measure of the economic output of an economy in a given period. It measures the value of domestically produced goods and services (value added), insofar as these are not used as inputs for the production of other goods and services (Federal Statistical Office: National Accounts. Gross domestic product. Accessed on 24/02/2024. Available at: https://t1p.de/85no).

GDP can only be used to a limited extent as an indicator to measure prosperity in an economy. On the one hand, GDP does not include many things, such as domestic labour or undeclared work. On the other hand, the repair of environmental damage increases GDP. In order to measure prosperity in an economy, other benchmarks or indicators must be used in addition to GDP, as GDP neglects ecological and social aspects.

3. research three alternative prosperity indicators on the internet. Record your results on a moderation card.

- HDI (Human Development Index): combines life expectancy, education and income (Human Development Reports, 2023)
- OECD Better Life Index: contains 11 topics→ Housing conditions, income, employment, public spirit, education, environment, civic engagement, health, life satisfaction, security, work-life balance (OECD, 2023).
- National Welfare Index: combines 21 economic, ecological and social components (Federal Environment Agency, 2023).

4. take your cards with you to secure the results in plenary.

Urban greening (M08a and M08b)

Tasks:

1. listen to the interview. (Alternatively: Read through the interview).

2. outline various effects of climate damage, the causes of this damage and possible solution strategies.

Effects of climate damage:

- Periods of drought
- Declining biodiversity
- Heat waves

Originator:

- The human being
- Air pollution from industry
- Surface sealing
- CO2 emissions
- Land consumption
- Traffic routing
- Concrete buildings

Possible solution strategies:

- More plants in the city
- Greening balconies
- Create communal areas
- Unsealing
- Greening roofs & facades
- Sufficient open space between buildings with lawn
- Creating biodiversity

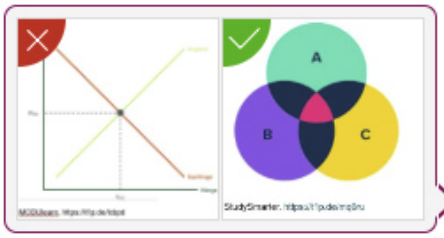
Expectation horizon of the LearningSnack (see M09a)

Good morning! In order to prepare for the round table "Our sustainable city" in the town hall, you have already dealt with the dimensions of sustainability, the magic hexagon, the GDP and the external effects. Now you want to find out how environmental policy instruments can actually make your city sustainable.

But what were the three dimensions of sustainability?

- A Social
- B Politics
- C Ecology
- D Economics

The dimensions can be displayed in a Venn diagram. But what does such a diagram look like?



You will certainly remember the magical hexagon. Two further qualitative objectives were defined for the four quantitative targets. What are these two qualitative objectives?

- A High level of employment
- B Environmental protection
- C Stable price level
- D Steady and appropriate economic growth
- E Just distribution of income and wealth

You have also looked at gross domestic product (GDP). It is an indicator of (prosperity) in an economy over a certain period of time.

You are now well acquainted with the challenges of a sustainable city. But what measures can your city take to become more sustainable?

There are various environmental policy instruments that can be used for this purpose. Environmental policy is based on four general principles. Consider which explanations could belong to which principle.

1. The basic idea is that the costs of preventing or eliminating environmental pollution should be borne by the party responsible for causing it.

- A precautionary principle
- B cooperation principle
- C polluter pays principle
- D common load principle

2. It is usually cheaper to avoid environmental damage than to repair it later. Example: A farmer cultivates a field, but leaves a green strip free, which he plants with meadow flowers so as not to endanger the bees.

- A precautionary principle
- B cooperation principle
- C polluter pays principle
- D common load principle

3. The preservation of the environment is in everyone's interest. Therefore, the community should also pay for the costs of environmental protection and damage. Necessary measures are financed from state/public funds. Example: Decades ago, a company contaminated the soil with waste water. The company no longer exists and the polluter pays principle cannot be applied. Now the cleaning of the contaminated soil is paid for with public funds.

- A precautionary principle
- B cooperation principle
- C polluter pays principle
- D common load principle

4. Environmental protection is seen as a joint task for all. Everyone involved must make their contribution (business, state, citizens). Example: Citizens are involved in the construction of a new road.

A precautionary principle
B cooperation principle
C polluter pays principle
D common load principle

You are now familiar with the precautionary, cooperation, polluter-pays and common burden principles as principles of environmental policy. They are intended to reduce environmental pollution and protect the natural environment. But which environmental policy instruments can be used specifically as measures for a more sustainable city?
Are you ready to get to know the various environmental policy instruments?

0

0% **Of course!**
0% **By all means!**
0% **Always ready!**

Great, get started. Have fun!

Source: Learning Snacks. (2023). Prinzipien der Umweltpolitik.
Accessed 24.02.2024. Available at: https://t1p.de/804j3

Expectation horizon for M09b)

Various measures can be used in environmental policy. Now is the time to familiarise yourself with these environmental policy instruments.

Work assignment: (partner work) **5 minutes**

2. Assign the environmental policy instruments to the corresponding to the corresponding explanations using arrows.

Environmental policy instruments		
1) Planning law instruments		a) Changes in institutional conditions that change market prices (e.g. taxes, subsidies)
2) Regulatory instruments		b) Co-operation agreements and arrangements between stakeholders. Public advertising campaigns with the aim of changing the behaviour of private actors.
3) Economic instruments		c) In the case of state planning, funds must be determined in advance. In some cases, environmental impact assessments are also carried out.
4) Informal instruments		d) Interference in the freedom of choice of the actors, e.g. through prohibitions or commands

Source: Brehm, P. (2023). *Nachhaltige Entwicklung im volkswirtschaftlichen Unterricht. Umweltpolitik.* Accessed on 24.02.2024. Available at: https://t1p.de/ajhx5

Expectation horizon for M09c)

Three criteria are often used to assess these various environmental policy instruments:

- **Dynamic incentive effect**
- **Ecological efficiency**
- **Cost efficiency**

Work assignments: (partner work) **5 minutes**

3. **Read** the definitions of the three criteria carefully.
4. **Assign** the correct criterion to the definitions together.

cost efficiency	• Ability to achieve the specified target value at minimum cost.
Dynamic incentive effect	• Ability to trigger environmental progress, i.e. to promote investment in environmentally friendly production methods and technologies.
Ecological efficiency	• Ability to achieve the target value as accurately as possible.

Source: Komar, W; Nutzinger, H. G. (1994 Rahmenbedingungen und Chancen der deutschen Umweltpolitik. Marburg: Metropolis.

Expectation horizon for M13)

	"Developing a sustainability concept for the city"	Class: Date:
Name:		
Points: _____/ 21	Per cent: _____	Note: _____

Processing instructions:

5. **Use a biro or fountain pen in** the writing colours **blue or black to** complete the test.
6. Ensure that the **typeface** is **legible.**
7. **name**→ Answer the task in keywords
8. **explain/justify**→ Answer task in detail in complete sentences

Task 1 - Sustainability (___/ 7 points)

d) **Define** what you understand by the term "**sustainability**". (____/ 2 points)

Sustainability concept: Sustainability consists of the three dimensions of ecology, economy and social issues. Sustainability means satisfying the needs of the present in such a way that the natural basis of life for future generations is not restricted. (page 2, line 55)

e) Name the **three dimensions** of sustainability. (____/ 3 points)

1. Ecology
2. Economy
3. Social affairs

f) Name **two legal bases** that include sustainable behaviour. (____/ 2 points)

1. Federal Forest Act/ Catalogue of Fundamental Rights of the European Union
2. Basic Law Art. 20a / Stability and Growth Act

Task 2 - Magic hexagon (___/ 5 points)

c) Explain why the magic hexagon is called "**magical**". (___/ 2 points)

The hexagon is described as magical because it is considered impossible to achieve all six goals at the same time. It would therefore only be possible to achieve all goals in parallel using magic. This is because there is (partially) a conflict of objectives between the goals.

d) Tick which of the following targets (do not) belong to the magic hexagon.

(____/ 3 points)

	Belongs to	**Does not belong**
7. High level of employment	X	
8. Price stability (i.e. prices should not change)		X
9. Ecological sustainability	X	
10. Fair distribution of income and wealth	X	
11. Consistent economic performance within the national economy		X
12. Reduction in imports and exports		X

Task 3 - Environmental policy instruments (___/ 9 points)

d) Explain **an** environmental policy instrument. (____/ 3 points)

Individual student response

e) Name **three criteria** for assessing environmental policy instruments. (____/ 3 points)

1. Cost efficiency
2. Dynamic incentive effect
3. Ecological efficiency

f) Develop a **reasoned** demand for a more sustainable city. (____/ 3 points)

Individual student response