YOUNG SMART CITIES

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Learning Situation

The Prosumer Challenge: From Household to Climate Actor

Most energy consumption happens at home — heating rooms, producing hot water, cooking, charging devices, or using appliances. Yet households usually consume energy without knowing where it is produced or how climate-friendly it is.

As renewable energy sources such as solar and wind become more widespread, household consumption patterns matter increasingly for greenhouse gas emissions, grid stability, energy prices, and social fairness. Because renewable energy production is intermittent, aligning consumption with supply becomes a key challenge.

The prosumer model offers a new perspective. Prosumers are households that both consume and produce energy, and actively manage their energy use. However, households can only become prosumers if political and policy conditions enable the support needed to move in this direction.

This Learning Situation invites students to explore how policy decisions can support households in becoming prosumers and contributing to climate protection from the bottom up.

Driving Question

How can policy decisions help households become prosumers and support a bottom-up contribution to reducing greenhouse gas emissions from household energy consumption?

Scenario

Local and national policymakers are seeking effective ways to reduce greenhouse gas emissions while ensuring a fair and reliable energy transition. Household energy consumption represents a significant share of emissions, but households differ widely in income, housing conditions, and access to technology.

Your city wants to better understand which policy decisions are needed so that ordinary households can become active climate actors — not only energy consumers.

As students, you have been invited to advise policymakers. You are asked to analyse household energy use and propose policy measures that could enable realistic prosumer models.

Task

Students develop an evidence-based proposal addressed to policymakers. Working in groups, they each adopt one fictional but realistic household and analyse its energy consumption (e.g. independent household with photovoltaic systems, independent household with high electricity consumption and 100% reliant on national grid provision, tenants in apartment buildings and 100% reliant on national grid provision).

Their task is to:

- **identify** where and how the household consumes energy;
- **analyse** which prosumer model could realistically reduce its emissions;
- **connect** this model to climate protection goals;
- **propose** policy measures needed to enable this transition.

The focus is not only on technology, but on political decisions that enable or limit household action.

Students may present their proposal as a policy pitch, presentation, infographic, or role play.

This activity implies a holistic approach.
Students explore the Driving Question by **connecting** household-level energy use with political, economic, and environmental frameworks. They **analyse** how private behaviour is shaped by public policy and **evaluate** how different policy choices influence access, fairness, and effectiveness in the energy transition.
The Learning Situation is intentionally broad and flexible. It allows students to **design** different prosumer pathways for different households, while maintaining a clear focus on the role of policy decisions.

To support this process, teachers may use the Lesson Plan developed for this topic, which guides the activity step by step while leaving students with agency to steer their own work and learning.

Link to LESSON PLAN

Alternative Approaches

In addition to the approach described in the Task above, we also propose alternative ways of implementing the Learning Situation. When choosing one of these alternative options, the Lesson Plan developed for the main Driving Question can still serve as a reference, but it should be adapted to match the different structure and focus of the chosen approach.

1. Single-Challenge Approach

Teachers may choose to focus the activity on **one single specific greening issue** that is particularly relevant to the local context.

This option is often easier to manage because:

- **it may require less time**, since the class concentrates on a single well-defined challenge;
- **it simplifies planning**, as all students work within the same theme;
- **it increases local relevance**, allowing teachers to select a challenge that is meaningful and visible in the school's immediate surroundings.

In the single-challenge approach, all student groups will work on the same overarching urban sustainability challenge. To provide focus and structure, each group can be assigned one of four perspectives to guide their investigation:

- **Where:** Investigating and describing the current state
- **Who:** Exploring community needs and preferences, including residents, schools, and local businesses.
- **Why:** Examining and describing the specific environmental challenges
- **How:** Identifying feasible types of planting, design interventions, or other practical solutions.

This structure allows students to **specialise in one dimension of the challenge** while maintaining a shared focus. At the end of the research phase, the groups will **come together to combine their findings**, creating a comprehensive understanding of the issue and collaboratively proposing informed, well-rounded solutions.

Suggested Local Challenges (What can be done…?)

Enabling households to produce renewable energy
Students **explore** barriers to installing shared rooftop solar panels systems.
What policies are needed to enable shared renewable energy production?

Supporting renters and apartment dwellers
Students **analyse** why many households cannot install their own energy systems.
What legal or regulatory changes could enable tenants to participate in the prosumer model?

Promoting smart meters and flexible energy use
Students **identify** obstacles to the adoption of smart meters for vulnerable households.
What policy measures could increase fair access?

Reducing social inequality in the energy transition
Students **evaluate** who benefits from current energy policies and who is excluded.
What can be done to ensure that prosumer policies support social fairness?

Connecting household energy use to climate targets
Students **connect** household-level decisions with local or national climate goals.
What policies could strengthen this link?

2. Developing Your Own Learning Situation

Teachers may design their own Learning Situation within this topic by narrowing the focus to a specific policy field, such as renewable energy subsidies, smart meter regulation, energy communities, or tenant rights. Teachers may also involve local energy agencies or municipal authorities to identify a concrete and relevant policy challenge.

A good Driving Question should:

- be relevant and motivating for students;
- be feasible within available time and resources;
- support structured group work;
- involve accessible stakeholders;
- be linked to at least one of the project competences.

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