YOUNG SMART CITIES

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LESSON PLAN

The Prosumer Challenge: From Household to Climate Actor

Age Level: 14–18
Duration: 8–10 hours of lessons

Role of teacher: Coaching, guiding, moderating
Role of student: Taking agency, acquiring knowledge and skills, collaborating, reflecting

Learning objectives

- Understand household energy consumption as a key factor in climate change and the energy transition.
- Explain the concept of prosumers and their role in smart energy systems.
- Analyse how smart energy technologies and policy decisions influence household behaviour.
- Develop critical thinking, collaboration, and active citizenship skills.
- Produce an evidence-based proposal addressed to policymakers on enabling prosumer models.
- Present and refine a solution after feedback.

Skills development

- Critical thinking
- Collaboration
- Communication
- Empathy

- Active citizenship

Nb: Teachers can explore the Teacher Training on Skills HERE to select those most appropriate.

Material needed

- Large paper/poster boards, markers, and post-its
- Laptops or tablets
- Internet access
- Projector for videos/slides

Relevant YSC Knowledge Pills

1. Sustainable Energy in Cities subtopics: (Energy in Cities, Energy Efficiency, Electrification)
2. Prosumers: How we can all help drive the Energy Transition

Didactic objective of lessons

Lessons	Phase	Didactic objective
Lesson 1	**Explore**	Engage students in the topic by exploring their prior knowledge and everyday experiences related to household energy use, introducing key concepts through the Knowledge Pills on energy consumption, energy efficiency, electrification and the role of prosumers, ensuring everyone reaches a shared foundational understanding of the subject.
Lesson 2–6	**Research, Analyse, and Ideate**	Guide students to identify what empirical evidence is needed, collect and analyse it, and use their findings to develop realistic, fair, and policy-relevant proposals that enable households to become prosumers.
Lesson 7–8	**Present, Feedback, Reflect**	Support students as they present their proposals, gather feedback from peers or stakeholders, and reflect critically to refine and improve their final products.

Nb: timeline is flexible

Problem-Oriented Learning Situation on smart energy and prosumers

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 aimed at policymakers. Working in groups, they adopt one fictional but realistic household and analyse its energy consumption patterns. Based on this analysis, they propose concrete policy measures that could realistically support households in adopting prosumer models.

LESSON OUTLINE

LESSON 1: Explore (1 lesson)

Introduction to Smart Energy and Prosumers (1 lesson)

Objective: *Students build a shared understanding of household energy consumption, smart energy systems, and the prosumer concept, and why policy decisions matter for climate action.*

Opening Discussion

Teacher Action:

- Ask: *“Where does the energy we use at home come from?”*
- Collect keywords (energy use, climate change, renewables, fairness, technology).
- Encourage students to reflect on everyday energy use at home.

Student Action:

- Share assumptions and experiences related to household energy consumption.
- Identify differences between households they know.

Why:

- Activates prior knowledge and highlights the relevance of the topic.

Short Presentation on Smart Energy and Prosumers

Teacher Action:

- Introduce key ideas from the Knowledge Pills on prosumers and sustainable energy in cities.
- Explain smart meters, energy management systems, and the role of households in the energy transition.
- Highlight links to SDG 7 and SDG 13.

Student Action:

- Observe and take notes.
- Relate concepts to their local context.

Why

- Provides conceptual and technical grounding for the research phase.

Introduce the Learning Situation & Driving Question

Teacher Action:

- Present the driving question.
- Present the task and explain the enquiry-based process:
  Explore → Research → Analyse → Ideate → Present → Reflect

Student Action:

- Read the assigned Knowledge Pills.

Why

- Frames the challenge and clarifies expectations.

LESSONS 2–6: Research, Analyse, and Ideate

Objective: *In smaller groups (3–4 persons), students gather evidence, analyse household energy use and policy frameworks, and develop policy-oriented prosumer proposals*.

Nb*: Remind students that effective project management, including careful planning, clear role allocation, and setting realistic deadlines, is essential for completing their work efficiently.*

Step 1: Research & Evidence Collection (Lessons 2–3)

Teacher Action:

- Guide students to identify what evidence is needed to understand household energy consumption and prosumer models.
- Explain evidence types:
    - *First-hand:* household profiles, interviews, surveys
    - *Second-hand:* Knowledge Pills, policy documents, statistics

Student Action:

- Analyse the assigned household type.
- Collect first-hand and second-hand evidence.

Why:

- Grounds proposals in realistic household conditions and policy contexts.

Step 2: Analyse Evidence (Lessons 4–5)

Teacher Action:

- Support students in organising and interpreting collected data.

Student Action:

- Analyse evidence focusing on:
    - **Where:** how energy is consumed and where does it come from

    - **Who:** household characteristics and constraints in adopting the prosumer model at home
    - **Why:** policy barriers to becoming a prosumer
    - **How:** enabling technologies and policies

Why:

- Ensures structured and critical analysis.

Step 3: Ideate Evidence-Based Solutions (Lesson 6)

Teacher Action:

- Encourage realistic, fair, and inclusive policy proposals.

Student Action:

- Propose a prosumer model for the household.
- Identify required policy measures (subsidies, regulations, incentives).
- Explain expected climate and social impacts.

Why:

- Links technical solutions with political decision-making.

LESSONS 7–8: Present, Feedback, Reflect

Presentation & Feedback (Lesson 7)

Teacher Action:

- Facilitate presentations and structured feedback.

Student Action:

- Present policy proposals.
- Reflect on feedback and revise.

Reflection Prompts:

- How do policies shape individual behaviour?
- Who benefits and who risks being excluded?
- How can fairness be ensured in the energy transition?

Why:

- Develops reflection, communication, and civic awareness.

Final Submission & Voting (Lesson 8)

Teacher Action

- Collect refined proposals and facilitate voting.

Student Action

- Submit final proposal.
- Vote based on feasibility, fairness, and climate impact.
- Optionally share proposals with local policymakers.

Optional Extensions

- Guest speaker (energy agency, municipality, energy cooperative)
- Simulation of energy policy decisions

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