Energy Consumption & The Path to Sustainability

1. Vocabulary: The Power Words

- **Grid (noun):** The network of lines and pipes that provide electricity or gas to a whole area.
- **Renewables (noun):** Energy from sources that are not depleted when used (e.g., wind, solar).
- **Energy Audit (noun):** An assessment of how much energy a building uses and where waste occurs.
- **Peak Demand (noun):** Times when the most people are using electricity simultaneously.
- **Retrofitting (verb):** Adding new technology or features to older systems/buildings to improve efficiency.
- **Intermittency (noun):** The challenge that renewable energy sources don't provide power 24/7 (e.g., the sun doesn't shine at night).

2. Reading Task (C1 Level): The Efficiency Paradox

Instructions: Read the text and answer the questions that follow.

The global energy landscape is currently undergoing a "Dual Transition." On one hand, we are shifting the **source** of our energy from fossil fuels to renewables. On the other, we are attempting to revolutionize **consumption** through efficiency. While technological advancements like LED lighting and smart thermostats have reduced the energy needed for specific tasks, we face the "Jevons Paradox." This economic theory suggests that as technology makes a resource more efficient to use, the total consumption of that resource may actually *increase* because it becomes cheaper and more accessible.

To truly save energy resources, experts argue that "Efficiency" (using less energy for the same task) must be paired with "Sufficiency" (simply using less). This involves **retrofitting** older housing stocks, which are often "leaky" in terms of heat, and decentralizing the **grid** so that homes can produce and store their own solar power. However, the **intermittency** of green energy remains a hurdle; until battery storage technology catches up, we remain tethered to traditional power plants during **peak demand** hours.

Questions:

1. What is the difference between "Efficiency" and "Sufficiency" according to the text?
2. Explain the "Jevons Paradox" in your own words.
3. Why is "retrofitting" mentioned as a solution for energy saving?

3. Speaking & Analysis: Descriptive Tasks

Image 1: The Modern Grid

- **Task:** Describe how this technology changes the consumer's relationship with energy. Use the term **"Energy Audit."**

Image 2: Industrial Consumption

- **Task:** Discuss the hidden energy cost of the "Digital Age." How do our online habits impact global energy consumption?

Image 3: Energy Poverty vs. Excess

- **Task:** Analyze the global inequality of energy saving. Is it the responsibility of developing nations to save energy, or wealthy nations to reduce excess?

4. Vocabulary Practice: Gap-Fill

- **Words:** *intermittency, grid, retrofitting, peak demand, renewables*

1. If everyone turns on their air conditioning at 5:00 PM, the system reaches __________.
2. The main disadvantage of solar power is its __________, as it depends on weather conditions.
3. By __________ old office buildings with better insulation, we can cut heating costs by 40%.
4. Smart meters allow houses to sell excess electricity back to the national __________.
5. Investment in __________ has tripled in the last decade to help meet climate goals.

Answer Keys

Reading Questions

1. **Efficiency** is doing the same amount of work with less energy (technological); **Sufficiency** is changing behavior to use less energy overall (lifestyle).
2. **Jevons Paradox:** When we make something more efficient, we often end up using it more because it’s cheaper, so we don't actually save as much as we expected.
3. **Retrofitting** fixes "leaky" buildings, ensuring that energy used for heating or cooling isn't wasted through poor insulation.

1. Peak demand
2. Intermittency
3. Retrofitting
4. Grid
5. Renewables

TEXT by Ian Bartes

A Path to Sustainability: The Natural Step Framework!

What if the key to securing a viable future for our planet and ourselves lies in a structured framework that guides our every decision? In our rapidly changing world, where environmental challenges loom large, the quest for sustainability has become more crucial than ever. The Natural Step (TNS) framework offers a clear and structured approach to achieving sustainability in our businesses, communities, and lives. It’s like going on a journey where a map guides every step you take, shows you the way, and ensures the path is safe for future travellers. This is what the Natural Step provides—a roadmap to navigate the complexities of sustainability while harmonising our ecological and economic “houses.” More importantly, it empowers us, giving us the tools to take control of our future.

At its core, the Natural Step is like a compass for sustainability, founded in Sweden by Dr. Karl-Henrik Robèrt in 1989. It is a guiding framework that helps organisations and communities make strategic decisions to grow environmental, social, and economic sustainability. The term “eco” in ecology and economy derives from the Greek word for “house,” suggesting that these two concepts are not contradictory but part of the same larger idea. Ecology stands for the “study of the house,” while economy means “management of the house.” This notion invites us to explore how we can study and manage our “house” (the Earth) in ways that benefit industry and society over the long term.

Imagine you’re organising a party. You must ensure enough food, fun, and space for everyone while avoiding a mess that takes days to clean up. The Natural Step Framework helps humanity organise its **“party on Earth”** responsibly.

The framework is built on **four system conditions** that outline what must be avoided to achieve sustainability. These conditions are like the rules of a board game, ensuring fair play for everyone—humans, animals, plants, and even ecosystems:

1. **Substances from the Earth’s Crust**: Just as we must be careful not to overuse our pantry supplies, we must limit our extraction of non-renewable resources like fossil fuels and heavy metals.
2. **Substances Produced by Society**: Similar to avoiding unhealthy meal ingredients, we should minimise harmful synthetic substances that can disrupt natural systems.
3. **Degradation of Natural Systems**: Like nurturing a garden, we must protect ecosystems from degradation caused by human activities such as deforestation and pollution.
4. **Meeting Human Needs**: Just as everyone deserves a seat at the dinner table, we must ensure everyone has access to basic needs without compromising others’ ability to meet theirs.

The framework matters because it ensures the goose—and, by extension, humanity—thrives for generations. It helps individuals, businesses, and governments shift their thinking from short-term gains to long-term prosperity, instilling a sense of reassurance about the future.

Therefore, adopting the Natural Step framework is akin to recognising the importance of wearing seatbelts while driving. It's not just about personal safety; it's about protecting everyone on the road. It's as if nature gave us an instruction manual for Earth's operating system. The framework guides and empowers organisations to align their operations with sustainable practices, ensuring they contribute positively to society and the environment.

The benefits of implementing TNS are as follows:

- **Clarity and Focus**: The framework simplifies complex sustainability concepts into actionable principles, like turning a complicated recipe into easy-to-follow steps. It enhances communication among diverse stakeholders—businesses, governments, and communities—creating a shared understanding akin to speaking the same language at an international conference. This shared language unites us in our quest for sustainability, making us feel part of a global movement working towards a common goal.
- **By using backcasting**, which starts with defining a sustainable future and works backwards to identify necessary actions, organisations can create effective strategies for long-term success. This strategic approach ensures every decision is a step towards a sustainable future, instilling confidence in the framework's effectiveness.

So, how does the Natural Step work? Implementing the Natural Step involves several steps that can be visualised as climbing a staircase toward sustainability:

1. **Awareness:** The first step is understanding what sustainability means in your context. It is like checking your compass before setting out on a hike. Visualise the future and picture a world where resources are abundant, minimal waste, and equity thrives—this is your summit.
2. **Baseline Assessment**: Organisations evaluate their current practices against TNS principles, identifying gaps, similar to assessing supplies before starting a project. Analyse where you are today. Are you burning too much fuel? Using too much plastic? Ignoring community needs?
3. **Creative Solutions**: With gaps identified, teams brainstorm innovative ways to bridge them—similar to finding shortcuts on your route that save time and resources. Like planning a hike, identify the steps that will get you closer to the summit fastest and most efficiently.
4. **Devise a Plan**: Finally, organisations outline specific actions and timelines for implementation, ensuring they have a clear path forward, just as you would plan your travel itinerary. Start climbing! Implement the prioritised steps while keeping an eye on the goal.

Here are some everyday examples: Consider IKEA, one of the first major companies to adopt the Natural Step framework. By committing to sustainable sourcing of materials and reducing waste in production processes, IKEA illustrates how businesses can thrive while caring for the planet—like planting trees that provide shade while bearing fruit.

Similarly, local communities can use TNS principles to develop sustainable agriculture or waste management practices. For instance, community gardens, which provide fresh produce, enhance biodiversity, and grow social connections, practically apply the framework. They are like gathering around a communal fire for warmth and storytelling but in a sustainable way. Other examples could include sustainable urban planning, eco-friendly transportation systems, or green building practices.

Imagine your favourite local café switching to renewable energy, cutting plastic straws, and sourcing ingredients locally. That's the framework in action—small steps creating a ripple effect for a more significant impact.

In conclusion, the Natural Step framework is like a compass for those navigating the often murky waters of sustainability. Its clear principles and actionable steps empower individuals and organisations to make choices that honour people and the planet. As we embark on this journey together, remember that every small step counts—like ripples in a pond that eventually reach the shore.

Adopting this framework paves the way for our success and ensures that future generations inherit a world where they can thrive—a legacy worth striving for. As we study and manage our "house" (the Earth), let us recognise that ecology and economy are intertwined; together, they form a foundation upon which we can build sustainable communities for years to come.

Retrieved: *https://www.rudder4life.com/a-path-to-sustainability-the-natural-step-framework/*

Reading Circle Tasks (Group of 4)

1. Discussion Leader

Role: Guide the group conversation

Tasks:

- Prepare **3–5 discussion questions**, such as:
  - Why is the **The Natural Step** compared to a compass or map?
  - Which of the four system conditions is the most important? Why?
  - Do you think businesses can truly be sustainable?
- Keep the group focused and ensure everyone speaks
- Ask follow-up questions like *"Can you explain more?"*

2. Summariser

Role: Explain the main ideas clearly

Tasks:

- Write a **short summary (5–7 sentences)** including:
  - What the Natural Step framework is
  - Its purpose
  - The four system conditions
- Present the summary to the group
- Highlight the most important message of the text

3. Word Wizard (Vocabulary Master)

Role: Explore key words and meanings

Tasks:

- Choose **5–8 important words/phrases**, for example:
    - sustainability
    - ecosystem
    - degradation
    - backcasting
    - framework
- For each word:
    - Give a **simple definition**
    - Find it in the text
    - Create your own sentence
- Ask the group if they know similar words

4. Connector (Real-Life Linker)

Role: Connect the text to real life

Tasks:

- Give **2–3 real-life examples**, such as:
    - A business (e.g. IKEA)
    - A local action (recycling, saving energy, etc.)
- Answer:
    - How can students apply these ideas in daily life?
    - What is one small change people can make today?
- Share a personal opinion: *Would you follow this framework? Why/why not?*

Group Task (Final Activity)

After all roles are completed:

- Work together to create:
    - A **list of 5 actions** your school could take to be more sustainable
- Present your ideas to the class

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Evaluation Rubric (All Roles)

Criteria	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
Discussion Questions	Thought-provoking, deep, clear	Relevant and clear	Basic, some unclear	Very simple or missing
Leadership & Participation	Actively leads, includes everyone	Leads with some support	Limited leadership	Does not lead
Summary Accuracy	All key ideas correct	Mostly correct	Some missing/incorrect	Largely incorrect
Clarity & Organisation	Very clear, well-structured	Mostly clear	Some confusion	Hard to understand
Vocabulary Understanding	Accurate meanings, strong examples	Mostly correct	Some errors	Incorrect or missing
Real-Life Connections	Strong, relevant, insightful	Relevant	Basic examples	Weak or unclear
Creativity & Ideas	Highly creative, practical	Some creativity	Limited ideas	No creativity
Teamwork	Excellent collaboration	Good teamwork	Some issues	Poor teamwork
Reflection	Deep, thoughtful insight	Clear reflection	Basic reflection	Minimal effort

Worksheets:

1. Discussion Leader (/10)

Your job: Lead the group discussion.

Write your questions:

1. ______________________________
2. ______________________________
3. ______________________________

4. ______________________________

During discussion:

- Did everyone participate? YES / NO
- One interesting idea from your group:

Teacher Assessment:

- Quality of questions (/4)
- Leadership & participation (/3)
- Encouraging others (/3)

Summariser (/10)

Your job: Summarise the text.

Write your summary (5–7 sentences):

____
____
____
____
____
____

Main idea of the text:

____

Teacher Assessment:

- Accuracy of content (/4)
- Clarity & organisation (/3)
- Key ideas included (/3)

3. Word Wizard (Vocabulary) (/10)

Your job: Explain important words.

Word	Meaning	Your Sentence
1. __________	__________	__________

2. ___________ ___________ ___________
3. ___________ ___________ ___________
4. ___________ ___________ ___________
5. ___________ ___________ ___________

Teacher Assessment:

- Correct meanings (/4)
- Relevant word choice (/3)
- Sentence quality (/3)

4. Connector (/10)

Your job: Connect the text to real life.

Example 1:

Example 2:

What can students do to be more sustainable?

Your opinion: Would you follow these ideas? Why / Why not?

Teacher Assessment:

- Real-life relevance (/4)
- Thoughtfulness of ideas (/3)
- Personal reflection (/3)

Group Task (/10)

Work together!

List 5 actions your school can take to be more sustainable:

1.

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2.

3.

4.

5.

Teacher Assessment:

- Creativity (/4)
- Practicality (/3)
- Teamwork (/3)

Reflection (/5)

What did you learn from this activity?

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