

Systemic solutions



Case studies showcasing just
and transformative change

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The purpose of these educational materials is to help young people understand the climate crisis on a systems level through engaging with the topics and foster agency through the skills and techniques of journalism.

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These educational resources have been developed to the best of our knowledge, using reliable and widely-recognized sources. While every effort has been made to ensure accuracy and clarity, we cannot guarantee that the materials are free from errors or omissions. Climate change is a field of knowledge that continues to evolve, and teachers and learners are encouraged to consult up-to-date scientific sources (e.g. IPCC, IPBES or national agencies) to complement and enrich these activities.

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Learning objectives

1. Understand systemic change through real-life case studies
2. Deeply engage with just and transformative change through interviews and reporting

✓ GreenComp alignment:

- Systems thinking
- Futures literacy
- Exploratory thinking

Unit guide

Giving young people the tools, knowledge, and real-world examples to imagine alternative futures, and to question the dominant narratives that have contributed to environmental collapse, is at the heart of what the EYES teaching materials aim to achieve. We hope that these examples of systemic change serve as inspiration to you and your students.

Below are seven examples of just and transformative solutions across the globe. We recommend that you break up your class into groups and assign one case study to each group. Each group should then become an “expert” in their given solution, being able to complete the tasks outlined in the Project Instructions. Students can then interview one another about their solution (“what leverage points were activated?” “could this solution be replicated elsewhere?” “what are the challenges with this particular solution?”).

The Project Instructions should be shown to students as they’re assigned their solution. The idea of the project is that students first become experts in their solution, so they’re able to be interviewed about it, and to report on the solution like a journalist – to produce a story that is engaging and critical.

We suggest you use three to four classes for this unit. One class for students to read through and research their solution, half a class for interviews, one class (or homework) for creating productions, and a fourth class to present to one another.

Here is the link to the **lesson slides**





Storytelling

Become an expert and a reporter

Reading one of the solutions in this unit, become an expert in it – take notes of the main details as you read through: the *who*, *what*, *when*, *where*, and *why* – and the *how*!

Talk with your group about what *leverage points* were activated to bring about this systemic solution – the *goals*, *rules*, and *mindset*. Why is it a just and systemic solution?

Discuss the faults of the solution – in which ways is it not perfect? Could this solution be initiated in other parts of the world? How?

1. Interview and be interviewed

Come up with a list of questions to ask another group about their solution, to challenge them (get them to be critical about their solution) and to extract as much information as possible. Prepare yourself so that you can answer similar questions about your solution.

2. Produce a journalistic report on your solution

Now that you've been asked questions by others, you have a deeper understanding of the details of your solution. Put all of this into a report in a way that would make an audience in your region be engaged and interested. How can you make this solution relevant to your audience? What do they need to know? Present all of the facts and data, and why it's a just and systemic solution, but do so in a critical fashion – it's not an advertisement for your solution.



Your report can be in the form of a video, a podcast, a written article, or a series of graphs or visuals.

When complete, present your report to the rest of the class. They should be able to understand almost as much as you about the solution, but they should be receiving this information in a way that is engaging, simple, and meaningful. This is where your storytelling skills come in.

To gain a better understanding of how to produce a report like this, you can refer to the EYES units on journalism.



1. Introduction

In this unit we will examine some examples across the world that we consider to be inspirational as they try to intervene in leverage points to produce just, systemic change towards a world where everyone lives well within our planet's ecological boundaries.

None of the following examples are perfect, and there are no perfectly just and systemic solutions to the climate and inequality crises. Yet, these examples show that alternatives to our current fossil fuel-powered and growth-oriented systems exist and are achievable – if we get together to implement them.

As you go through these solutions, try to note down the leverage points which are triggered (systems change) and identify whether the solution is just (justice). Here are some examples:

→ The rules of the system: laws, policies, governmental measures

→ The goal of the system: economic growth / living well within planetary boundaries

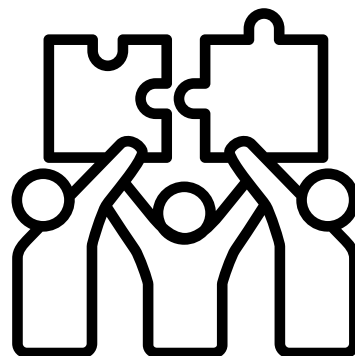
→ The mindset behind the system: growth / wellbeing for everyone and for the planet / separation from and exploitation of nature / valuing nature for its spiritual and ecological values / treating basic goods and services like electricity as a commodity or as a common good / energy dependency on imports of energy / energy sovereignty

→ Justice: Does the solution ensure that no one is left behind, in particular people who tend to be more vulnerable to climate change? Does the solution seek to reduce inequalities? Does the solution make it easier to lead a low-carbon life?

By exploring the below solutions, you'll see that the climate crisis is not caused by isolated problems, but by the way our systems, economic, political, and social, are structured. Addressing it requires more than individual action or technical fixes; it demands systemic and just change.

Systemic change means shifting the rules, goals, and mindsets of our societies to centre the wellbeing of people and the planet, not endless growth or profit. It also means making sure that no one is left behind, especially those who are already most affected by climate change.

The examples you will explore, from Uruguay's energy sovereignty to the Rights of Nature, show that transformation is already happening. These aren't perfect solutions, but they're real and inspiring. They prove that change is possible when people come together around a common vision.





Solution 1: Uruguay's renewable energy transition

In 2005, oil made up 55% of Uruguay's total energy supply. Now, the South American country produces almost 98% of its electricity from renewables.

In less than two decades, Uruguay managed to reduce its carbon footprint while simultaneously reducing its poverty rates from 40% to 10%,¹ by creating a resilient, independent energy system that is now considered one of the most sustainable in the world.

This systemic and just shift came in response to an energy crisis. Uruguay had no domestic fossil fuel reserves and relied heavily on imported oil, which made the country vulnerable to international price shocks. Hydropower, historically the dominant energy source, became less reliable due to recurring droughts, increased by climate change, leading to energy rationing and blackouts.

Climate change brings increased drought frequency, duration and intensity around the world, including the Americas.² During dry years, Uruguay was forced to spend up to \$1 billion, around 2% of the country's GDP, on fossil fuel imports, causing sharp increases in electricity costs.³ Rather than seeing this as a dead end, the crisis was treated as an opportunity.

In 2005, particle physicist Ramón Méndez Galain wrote a national plan calling for the decarbonisation of Uruguay's electricity system. His vision was that Uruguay could build its own renewable energy system.

Recognising that transitioning to renewable energy was a complex task, involving economic, environmental, technological, geopolitical, social, cultural and ethical dimensions, Méndez conducted consultations with experts and civil society through a series of workshops to shape a holistic and inclusive proposal for Uruguay's just energy transition.

This detailed plan reached the then-president of Uruguay, who invited Méndez to become the national director of energy and implement the project.



A solar farm is in Liberty, N.Y., on Saturday, Aug. 23, 2025. (AP Photo/Ted Shaffrey)



Before the full results could be seen, national elections occurred bringing a new president, José Mujica, into power. Crucially, he chose to keep Méndez in his position to continue the work he had started. Recognising the importance of long-term vision for systemic change, the new president José Mujica made it a priority that he and Méndez secure backing for the new policy - key for the energy transition - from all political parties in parliament.

After some minor changes, all the parties supported it. This broad, cross-party consensus ensured the energy transition would survive beyond electoral cycles, an essential condition when tackling climate challenges that require stability and investment beyond the typical four-year political terms, too short to fundamentally change any system.

Implementing the project required adopting many new policies and laws to change the traditional energy landscape. This proposal for a just energy transition required re-thinking the whole energy system and setting up a new model for energy production. It required tremendous innovation, challenging and changing the traditional energy model that was not designed to face uncertainties. In the context of a traditional energy system, energy price surges would occur following unexpected weather events, which are only becoming more frequent with climate change.



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As Méndez reflected:

"What happened in Uruguay was fundamentally the result of public policies... The difference was not just building new infrastructure, but creating a transformative ecosystem: new laws, regulations, training, institutional change, and consensus-building."

The plan enabled the swift adoption of new energy laws. A key factor in its success was that a single, state-owned company, Uruguay's National Administration of Power Plants and Electrical Transmissions (UTE), was in charge of almost all electricity distribution. UTE, not driven by profit, aligned its mission with the public interest: ensuring universal, affordable access to electricity. To finance the transition, Uruguay avoided burdensome loans from international financial institutions, which had rejected its original proposal.



Instead, with only a few million dollars of public funding, the government of Uruguay, following the plan designed by Mendéz, put in place a mechanism where the state-owned electricity company UTE would agree to purchase renewable energy electricity from the producer which offered the best price,⁴ over a 20-year-period at that specific price.⁵



Crucially, the government also ensured a just transition, working with one of Uruguay's universities to develop a renewable energy technology course to retrain staff previously working in fossil fuel electricity generation.⁶

This meant that when fossil fuel electricity generation was abandoned, the existing workforce could also transition to work in the renewable energy sector. It is estimated that 50,000 new jobs were created as a result of the energy transition,⁷ representing 3% of Uruguay's labour force. Labour unions, initially skeptical, became key allies in the process and have since defended UTE's public ownership against attempts at privatisation.

Along with a decreased carbon footprint and a much lower rate of poverty, electricity prices are also much lower than they used to be

(although still high for the population)⁸ and they are predictable, given the state-owned company has already bought the electricity from private companies at an agreed price.⁹

Uruguay's renewables strategy was innovative not just in its energy sources, but in its planning. The country developed software that could accurately forecast wind and solar production a week in advance. This allowed UTE to efficiently manage water levels in hydropower dams, compensating when the sun wasn't shining or the wind wasn't blowing.

Thanks to this complementarity between different renewable sources, Uruguay now rarely uses fossil fuels, even without large-scale energy storage infrastructure, reducing the critical mineral demand, and hence the mining required for renewable energy.



The impact of this transformation was profound:

- Uruguay's electricity emissions are now 30 times lower than the world average per kWh consumed.
- Electricity costs dropped from \$1.1 billion to \$600 million per year, representing savings of nearly 1% of GDP annually.
- Even in very dry years, backup costs fell dramatically from \$1 billion to just \$100–200 million.
- The country began exporting surplus electricity to neighbours like Argentina and Brazil.

Uruguay aimed to change the mindset behind its energy system. By producing their own renewable energy-based electricity, they went from importing fossil fuel to energy sovereignty.

Energy sovereignty means that countries or communities have the right and the ability "to control and develop their energy systems in the way they decide", freed from the interests of private fossil fuel companies focusing on profit maximisation.¹⁰

By changing the mindset behind the energy system, they also reduced CO₂ emissions. Uruguay is number 2 in the Sustainable Development Index for 2022, ranking countries that "achieve relatively high human development while remaining within or near planetary boundaries",¹¹ way ahead of so-called 'developed' countries in the Global North.

The transformation of the mindset behind the energy system was also reflected in the adoption of new laws. Mendéz explained that what made the difference was not just building new infrastructure, but a "transformative ecosystem" with new laws, regulations, training, institutional change, and consensus-building".¹²

Importantly, making sure that workers in the fossil fuel sector have a job by retraining them is essential for a just energy transition and to strengthen people's support for the solution. The energy transition in Uruguay created 50 000 new jobs which is 3% of Uruguay's labour force.¹³





Uruguay's example shows that with political will, cross-sector cooperation, and inclusive planning, systemic change is not only possible - it is effective. The future is not fixed, it is built.

"Many have noted that the answer to our global climate crisis lies in our capacity to imagine," University of Pennsylvania President Elizabeth McGill said "Dr. Méndez's leap of imagination and his ability to share that vision with others has resulted in one of the most striking decarbonisation stories on planet Earth."

[Here](#) you can see a TED talk by Mendez on Uruguay's journey towards renewable energy.





Solution 2: Community energy: Community-led solar power project in Mexico's cloudiest city

In Cuetzalan, Mexico's cloudiest city, the Tosepan Titatniske cooperative, a cooperative of Indigenous People are training the youth to install solar panels, in an attempt to gain energy sovereignty at a local level.

This initiative grew from local resistance to an electricity project by the government, where in 2019, a federal company intruded the hills surrounding Cuetzalan to install electrical infrastructure, on claims that the project would improve the distribution of electricity locally.

When local communities and organisations examined the documentation of the project, they found that the electrical infrastructure actually was destined for tourism, and power mining and fracking projects in the area.

Local communities therefore occupied the site of the electrical infrastructure for almost one year, in practice

blocking the implementation of the project until their construction permits expired.

It was during the site occupation that the first solar panel of the cooperative was built, in order to provide electrical supply to the protestors.

While the government's electricity project aims to increase the share of renewable energy production in its mix from less than 25% to 43% by 2030, local Indigenous and peasant communities feel excluded from any consultations.

These local communities highlight that such large-scale renewable energy projects put their ways of living and their human rights at threat, replicating the fossil fuel industry's dynamics of displacement.

Whilst local communities bear the negative impacts of these megaprojects, they receive little benefit: the generated electricity tends to be distributed to urban centres rather than destined for local use.¹⁴ The alternative enacted by the Tosepan cooperative, and other communities around the world is community energy.





Community energy

Community energy refers to energy initiatives where citizens own or are part of producing renewable energy, placing people at the centre of the renewable energy transition.

Community energy involves citizens directly in energy decision-making, focusing on cooperation, helping to develop common goals and thereby helping build stronger communities overall.

A few characteristics are common among community energy initiatives:

- Groups of citizens own, operate and participate in the renewable energy project.
- The projects are small to medium scales, designed to meet energy needs of the people in close vicinity to where the energy is produced, rather than faraway places or industries.
- The renewable energy project aims to create tangible and collective benefits to citizens involved.
- The organisational structure of the project is democratic and citizen groups demonstrate self-governance.
- The benefits and profits belong to citizens, and either go to the community members or are re-invested into the project.¹⁵

Why does community energy matter?

Community energy challenges the top-down, extractive models of energy production. It promotes a vision of energy as a common good, something communities should control to meet their own needs sustainably and fairly.

Community energy democratises energy production by putting power, both literally and politically, back in the hands of people. It also fosters energy sovereignty- communities choose how their energy is produced and used, and are the owners of their own energy.

This also increases the resilience of communities, by reducing their dependence on external systems.

Ultimately, community energy advances renewable energy in a way that centres people, not profit.





Tosepan Titataniske cooperatives community energy project

A cooperative of Indigenous People, known as the Tosepan Titataniske cooperative, used the occupation of the project area site as an opportunity to train people about energy sovereignty and energy conservation.

Through talking to local people, Tosepan was able to design a renewable energy project based on what local people actually needed and aspired to: "high quality, sufficient electricity for our communities, but not at the cost of our way of life and not under these conditions".¹⁶

Tosepan therefore focuses on two objectives: improving energy savings and producing renewable energy locally. For example, to improve energy savings, the cooperative distributed high-efficiency LED light bulbs.

To produce renewable energy locally, the cooperative focuses on solar panels. Local youth were trained in solar panel installation and some of them then installed the solar panels in the community.

Through this renewable energy project, Tosepan aims to challenge the

mindset behind the energy system in Mexico, where energy is treated as a commodity, controlled by the government and large enterprises.

Tosepan supports local Indigenous people to achieve energy sovereignty. People who had solar panels installed became much more in charge of the energy they use. This community-led project provides local people with an alternative source of electricity to the large-scale electricity projects brought by the government and companies, often in disregard of local people's rights and aspirations.

As you can see in this example and in the case of Uruguay (Solution 1), energy sovereignty can be achieved at the level of a country, but also within a country at the level of local communities, and is equally transformative.

This project is just in that it aims to support poor families to afford solar panels. It also supports the Indigenous youth by providing them with training to develop a meaningful career path in a growing sector.

To see some more inspiring stories about community-energy projects in Europe, visit Patagonia's project on: "Restore Power to the People" [here](#).





Solution 3: The Sacred Forest Law in Benin

Benin is a country in West Africa which is home to rich and diverse forests. Over generations, people developed knowledge of these ancestral forests and how to live in harmony within this environment.¹⁷

Moreover, these communities' ancestral religion, Vodun, honours natural elements and has instilled in people a deep reverence for the forests as their sacred home, to be protected according to strict rules.

Hundreds of years ago, people were not allowed to cut down specific trees or harm specific animals, each family and community had their sacred space within the forest that they were in charge of protecting. These sacred forests allowed people to reconnect with the spirit of their ancestors, conduct ceremonies and collect medicinal plants for healing.¹⁸

When the Portuguese colonised Benin over 500 years ago, they sought to erase local communities' religious beliefs and practices as well as their native languages. Christianity was introduced at the time, and forests were destroyed to make space for churches.

As a result of colonisation, but also due to the more recent extraction of natural resources, the forests significantly declined as they were not revered or protected anymore.¹⁹

Appollinaire Oussou Lio, Prince DJAKA Atawévi, High Dignitary of the Tòlinu Royal Court, is a Beninese Indigenous geographer-naturalist writer, expert in community development and land law.

He has spoken about how he "witnessed the beauty of nature in his village with huge trees and a variety of animals when he was growing up.



A voodoo worshiper washes his face after visiting the Bohouezoun sacred forest in Benin, on Thursday, Oct. 5, 2023. As the government grapples with preserving the forests while developing the country, Voodoo worshippers worry the loss of its spaces could have far reaching effects. (AP Photo/Sunday Alamba)



However, on returning to the village after completing his university education, he was disheartened to see that a lot of trees had been cut down and a lot of wildlife had been hunted. He realised that the younger generation was seeking a different kind of development, neglecting the wisdom of the elders, and often leaving their villages and communities."²⁰

The Portuguese colonisers also tried to erase local people's culture by depicting indigenous beliefs as evil and prohibiting school students to speak their own language."²¹

Apollinaire Oussou Lio explains that "In the past, members of my community were ashamed to speak their language, wear traditional clothing, or perform their rituals. [...] Many people chose to eat food from other cultures rather than their own."²²

To address these problems, the organisation GRABE-BENIN was founded in 1996, seeking to restore the ancestral forests, revive traditions, wisdom and languages, and reconnect the young to the elders and communities to their sacred forests.

GRABE-BENIN worked with the government of Benin to pass the Sacred Forest Law. The law recognizes the sacredness of these ancestral forests and local communities as their guardians.

Based on the Sacred Forest Law, communities can be advised to protect the forests, rather than destroy them, and the government cannot implement any projects which would harm them.

GRABE-BENIN also works with local governments across the country to have these forests recognized as protected areas and respected for their spiritual and ecological values.

GRABE-BENIN's work goes beyond changing the rules of the system. It is changing the mindset behind the system by bringing the government to recognize these forests not as wood to exploit, but as a space with spiritual and ecological values."²³

In Apollinaire Oussou Lio's words: "One thing is to change a system of governance, but it is another thing entirely to change the mentality."²⁴

Among their many different streams of work, GRABE-BENIN also works to revive the ancestral culture of their communities and reconnect youth with elders and with their traditions to ensure the transmission of knowledge and wisdom across generations.



Construction workers work near the last remaining sacred tree of the Odjou Ekoun Oro forest in the village of Houeyogbe, Benin, near Port Novo, on Wednesday, Oct. 4, 2023. (AP Photo/Sunday Alamba)



People including youth have started planting indigenous trees to revive the sacred forests, wearing traditional clothing and speaking their languages. Apollinaire says:

"We need to listen to the community and traditional knowledge to learn more about life. People can go to school, but we need to combine knowledge and treasure it. When we get old, we need to go back to our ancestral lands and listen to the land, the community, and traditional knowledge, because nature is the best teacher. [...] Nature can survive without humans, but humans cannot live without nature." ²⁵

Watch [this video](#) to hear from Appolinaire Oussou Lio about GRABE-BENIN and the first Sacred Forest law in Africa.



Rooting for the Future

Appolinaire OUSSOU LIO is working with communities to restore the sacred forest groves that once rooted people to place. Marking today's annual celebration of Vodun (Voodoo) culture in Benin, we... [Read More](#)

 Gaia Foundation / Jan 10, 2023



Solution 4: Rights of Nature

The Rights of Nature movement seeks to grant legal personhood to natural entities, such as rivers, forests and mountains.

This legal change aims to acknowledge species and ecosystems intrinsic rights to exist, thrive, and evolve by placing these rights in constitutions and laws.

When a river, forest, or another ecosystem is granted legal personhood, the community that uses that ecosystem has the right to take to court a company or any other body that is polluting, or in any way harming the ecosystem.

Although granting nature legal personhood rights may seem radical, just think about how companies have had legal personhood rights for decades, and a company is arguably much less alive than a river.

Rights of Nature as a movement has high potential for catalysing change - it could bring a paradigm shift, or change mindsets, one of the most powerful leverage points.

It challenges traditional legal frameworks that view nature solely as property or a bundle of resources to use, advocating instead for a relationship based on respect and reciprocity.

This in turn can challenge the way many see nature – as a commodity awaiting our consumption.

Legal Mechanisms and guardianship

Granting legal personhood to nature is a groundbreaking approach that shifts how we relate to the environment. It acknowledges nature as more than just an object there to be appropriated by people, but as life that has the intrinsic right to exist.

This concept involves several key mechanisms to ensure the rights of natural entities, like rivers, forests, and ecosystems, are protected and upheld.

What are the rights of nature?

The "Rights of Nature" doctrine says that an ecosystem has the right to defend itself against environmental degradation. It recognises nature's right to exist, flourish, regenerate and naturally evolve.²⁶

- The right to exist: Ensuring that natural entities have the right to continue to exist and not be destroyed, or extinct if referring to a species, by human activities.
- The right to flourish: Protecting the conditions necessary for nature's continued health, ensuring it can grow, regenerate, and thrive.
- The right to evolve: Recognising that ecosystems and species are dynamic and must be allowed the freedom to evolve naturally.





As is written in the Constitution of Ecuador:

"Nature, or Pachamama, where life is reproduced and occurs, has the right to integral respect for its existence and for the maintenance and regeneration of its life cycles, structure, functions, and evolutionary processes. All persons, communities, peoples, and nations can call upon public authorities to enforce the rights of nature." ²⁷

The concept of **guardianship** is central to protecting nature's rights.

Since natural entities cannot advocate for themselves in the same way humans can, but similarly to children, it becomes necessary to appoint human guardians, such as individuals or groups who are entrusted with the responsibility of safeguarding these rights.

There is no blueprint on who the guardians should be. In New Zealand, guardianship was appointed to both indigenous and western representatives.

Here are some examples of who the guardians could be, and they can also act together:

- **Indigenous peoples:** Indigenous people have lived in harmony with nature for centuries, and their knowledge of how to guard ecosystems can be essential here. Other traditional communities could also fit this role.
- **Activists:** around the world there are people who tirelessly advocate and fight to protect nature.
- **Non-profit organisations:** organisations that focus on local communities or issues relating to local ecosystems often have members who love and have intimate knowledge of their surrounding ecosystems.
- **Federal, State and Local Governments:** government representatives can help on the legislation process as well as bring insights from key stakeholders.²⁸

As you can see, a broad range of actors can act as natural guardians, maybe even you in the future.



Neenan Simpson tends a smoldering fire that will be used for a smoking ceremony at an Indigenous Australians protest during Australia Day in Sydney, Friday, Jan. 26, 2024. (AP Photo/Rick Rycroft)



One of the most significant aspects of granting legal personhood to nature is ensuring **legal standing**. This means natural entities are granted the ability to be represented in court by their official guardians.

Legal standing ensures that corporations, governments or individuals that damage the environment cannot ignore the consequences of their activities.

If the rights of nature to exist, flourish, evolve and thrive are violated, the legal system can provide remedies, such as stopping the harmful activities or restoration of ecosystems.



Origins and global spread

The first major breakthrough of Rights of Nature came in Ecuador in 2008, when the country became the first in the world to recognise the Rights of Nature in its national constitution.

Ecuador's constitution acknowledges the rights of Pachamama, or Mother Earth, to "maintain and regenerate its cycles, structure, functions, and evolutionary processes."

This legal innovation allowed citizens to go to court on behalf of ecosystems and led to some of the earliest cases where rivers were defended as legal subjects, including the landmark Vilcabamba River case.

In 2011, the Vilcabamba River faced threats from a government-sanctioned road expansion project. The construction involved dumping debris into the river, narrowing its flow and increasing the risk of flooding. Two residents, Richard Frederick Wheeler and Eleanor Geer Huddle, acting as guardians of the river, filed a lawsuit on its behalf.

They argued that the construction violated the river's constitutional rights. The Provincial Court of Loja ruled in favour of the river, ordering the cessation of harmful activities and mandating the restoration of the affected areas.



This landmark case marked the first time a natural entity successfully defended its rights in court, setting a precedent for environmental protection through legal personhood. It demonstrated how the Rights of Nature can empower communities to safeguard ecosystems against harmful development practices.

Following Ecuador's example, Bolivia passed the Law of the Rights of Mother Earth in 2012, affirming similar principles and connecting them directly to the Indigenous worldview of Buen Vivir, or "living well" in harmony with all forms of life.

In New Zealand, in 2017, the Whanganui River, sacred to the Māori people, was granted legal personhood under the Te Awa Tupua Act. This legislation recognised the river as a living entity with rights, and appointed two guardians, one from the Māori iwi and one from the government, to represent the river's interests.

The law directly reflected Māori cosmology that sees the river as sacred, and nature as kin. For example, for the Māori, kaitiakitanga is the concept of guardianship, often framed as the responsibility to take care of the environment as if it was a relative.

Incorporating these views in legal systems is marking a shift in how a nation-states could embed Indigenous worldviews in legal practice.

In Colombia, the Atrato River was granted rights in 2016 by the

Constitutional Court, which ordered the state to protect and restore it. This legal decision was especially significant because of the river's importance to Indigenous and Afro-Colombian communities, whose way of life depends on its health. The court recognised not just ecological but also cultural harm, signalling a broader understanding of justice.

More recently, in Canada (2021), the Magpie River in Quebec was granted legal personhood by both the local Innu First Nation and the regional municipality. The river was given rights including the right to flow freely, be free from pollution, and preserve its biodiversity, setting a precedent for similar recognition across Canada.

Rights of nature have reached Europe as well. In 2022 the Spanish Senate approved the "Mar Menor Act" granting legal personhood of the Mar Menon lagoon and its basin.

However, the act itself is different from that of the Ecuadorian Constitution as it reflects a more anthropocentric view. While Ecuador recognises the rights inherent to mother nature, the Spanish Constitution does not recognise the legal subjectivity of nature, but puts the human being at the centre of environmental protection, providing that "everyone has the right to enjoy an environment suitable for personal development, as well as the duty to preserve it."

These examples show how the Rights of Nature movement is spreading globally, led by communities, courts, and governments, and inspired by Indigenous knowledge systems.



What is so inspiring about the Rights of Nature movement, is that there are a few rights-based movements that have brought massive and fast change in the world – such as women's rights and abolishment of slavery, giving hope that something similar can happen in this case.

As the climate and ecological crises deepen, this movement offers not only a legal tool, but a profound shift in values.

As we've mentioned, a change in values can offer a leverage point to trigger systemic change.

The [below video](#) animates the main ideas behind the rights of nature.





Solution 5: **Intercultural universities: The** **Intercultural University of** **Veracruz**

Because of their close connection to their environment and rich ecological knowledge, Indigenous people and traditional communities observe early signs of how climate change evolves. This knowledge is essential to how we decarbonise our societies, but also how we can adapt to unavoidable change.²⁹

Indigenous languages and knowledge are threatened

Throughout the colonial and during the post-colonial period, indigenous languages and practices were oppressed and forbidden with the aim to assimilate indigenous populations into western ways of thinking and seeing the world.

Currently, indigenous knowledge and practices are still undervalued, marginalised and left outside key decision-making spaces.

As a consequence, over half of indigenous languages are threatened to disappear.³⁰

In the Inuktitut language, spoken by Inuit people in Canada, there are many root words for snow, each of which can be expanded into dozens of variations using prefixes, suffixes and grammatical forms.

For example, *qanik* is snow falling, *aputi* is snow on the ground, *pukak* is crystalline powder snow and *aniu* is snow used to make water. This means that they have dozens to over a hundred terms they use for snow.

North Sámi, indigenous to northern Scandinavia, have 300 documented snow and ice terms. For example, *cuoŋu* means hard, crusty snow, *sloapsi* is wet slushy snow and *skárta* is a thin layer of snow that barely covers the ground. These distinctions between different types of snow are essential for Sámi survival, helping people assess conditions for travel, hunting or herding reindeer.

In Tzeltal, a Mayan language from southern Mexico, speakers can distinguish hundreds of plants, not just by species, but by their use for medicine, food, construction, their growth stage as well as spiritual significance. Different terms may be used for the same plant depending on whether it's wild or cultivated, young or mature, or associated with certain rituals.





Language encodes local ecological knowledge, built upon place-based relationships between humans and nature. Losing indigenous languages means losing generations of environmental observation and adaptation strategies, knowledge we desperately need to tackle the climate crisis.

Languages form and reflect the way we see the world.

Robin Wall Kimmerer, an Indigenous scientist, echoes in her book "Braiding Sweetgrass" (2015) how linguistic structure shapes a person's worldview. In English, 70% of words are nouns, while in the indigenous language of her ancestors, Potawatomi (living in the Great Lakes Region in North America), 70% of words are verbs, reflecting a worldview that prioritizes action and interconnection.

Potawatomi uses a grammar of animacy, with almost all natural beings such as animals, rocks, water and even days, being referred to subjects, not objects. Nature is not addressed as it, but as who. A bay, for example, isn't a fixed noun in Potawatomi, it's *wiikwegamaa*, "to be a bay," underscoring that the water and everything inside it is alive, dynamic, and relational.³¹

As Indigenous languages disappear, we lose far more than words, we lose entire ways of seeing, knowing, and relating to the world. To let these languages die out means to allow our shared imagination to shrink. This, in turn, limits the ways we can halt and adapt to the changing climate.

Losing indigenous words and languages is not just a cultural loss, but threatens our ability to handle the climate crisis.

Intercultural Universities in Mexico

An estimated 10% of the population in Mexico is indigenous. They are the least represented group in higher education.

Intercultural universities in Mexico emerged as a response to inequalities in the country's higher education system with limited access provided to marginalised communities.

The foundation that allowed for the setup of Intercultural Universities were policies implemented by the central government responding to demands by indigenous organisations and movements for broader, and better adapted higher education.



Mexico's incoming Supreme Court President Hugo Aguilar, center, attends a ceremony with representatives of Indigenous and Afro-Mexican communities before being sworn in at the Zócalo, Mexico City's main square, Monday, Sept. 1, 2025. (AP Photo/Fernando Llano)



These universities are not only aimed at the indigenous population but, in contrast to the "urban-centric and classist university tradition in the country". They are located in indigenous regions where there is high economic and infrastructural marginalisation.³²

They aim to provide bilingual, culturally relevant education and increase recognition of Indigenous knowledge within education. There are currently twelve intercultural universities in Mexico.

Despite facing challenges such as lack of financing, and political vulnerability, these universities contribute to educational equity. Graduates from these universities also feel a strengthening of their ethnic identities. They are often the first to go to university from their families and often act as intermediaries between their communities, working with the governments or NGOs.³³

Indigenous participation in higher education is much needed for finding solutions to the climate and environmental crisis. We need a diversification of solutions and to broaden our imagination to the possible responses we can bring, and Intercultural Universities provide a gateway to do so.

Bridging indigenous knowledge and western science: two-eyed seeing

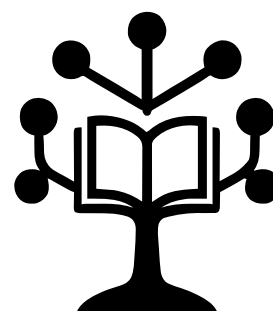
We need indigenous knowledge to deal with the climate crisis. And we also need modern science. If we combine the two, we can use the main strengths of both to find locally appropriate solutions.

However, this is not an easy task and multiple challenges exist. Power inequalities, colonial paradigms, and lack of trust have been cited to be at the core of the challenges that halt effective collaboration between different knowledge holders.³⁴

The Etuaptmuk or "Two-eyed Seeing" provides a framework for bridging different knowledge systems.

As an Elder from Mi'kamaw Nation, an indigenous Nation in today's Canada, puts it: "learning to see from one eye with the strengths of Indigenous knowledges and ways of knowing, and from the other eye with the strengths of mainstream knowledges and ways of knowing, and to use both these eyes together, for the benefit of all."

With this approach, indigenous knowledge is not subjugated under western science, but both are used with equal respect and value.





The Intercultural University of Veracruz

University of Veracruz is a public state university founded in 1944 in Mexico. Veracruz is one of the most culturally and linguistically diverse regions in Mexico, but also one of the most economically disadvantaged and infrastructurally isolated regions.

To address the under-representation of the indigenous population in higher education, the State of Veracruz and the Central Government set up the Intercultural University of Veracruz (UVI). UVI has four regional centers which are located in the most marginalised regions in Veracruz, which are also its main indigenous centers.

The program of UVI focuses on responding to the needs of both the students but also the community in which it is being offered, through building close relationships between local authorities, civil, agrarian and/or religious authorities, as well as NGO and civil society representatives.

Teaching and research topics that are carried out in the university focus on the needs of the surrounding communities and finding practical solutions by bridging indigenous and western knowledge. Community outreach programs are also central to UVI.

Around 60% of the students are native speakers of an indigenous language and 60% are females. While most classes are held in Spanish, courses are also conducted in indigenous languages because of the teaching staff that are native indigenous speakers.

Staff members are chosen on their specialties but also how rooted they are in their region, providing students with local and regional knowledge. The educational model aims at showing the value of indigenous knowledge, allowing it to become part of the academic curriculum, alongside western knowledge.

For example, to transmit indigenous knowledge to students and teachers, 'wise people' from local communities become teachers, contributing their empirical knowledge to find solutions to practical problems regions are facing.

Intercultural universities provide a systemic solution because they challenge dominant narratives which position western science, which is only a few hundred years old, above traditional knowledge that has been built upon for thousands of years. Both are important and should be treated with equal respect and value, which these universities aim to do.





These universities foster preservation and transmission of indigenous languages, worldviews and ecological knowledge, which are all critical to protect biodiversity and tackle climate change. UVI also enables community-driven research, developing projects that have direct local relevance.

Importantly, empowerment of marginalised groups, central to their approach, is essential for dealing with the climate crisis in a just and effective way. Indigenous people are frequently left out of decision making spaces. Graduates from Intercultural Universities often act as boundaries between their communities and decision-makers, which opens doors for indigenous people to impact policy change and access decision-making spaces.

Below is a [video](#) on the concept of two-eyed seeing and Indigenous knowledge.





Solution 6: **Green transition: Gujarat's salt farmers**

In the salt flats of Gujarat, located in western India, a workforce composed mainly of women produces 80% of India's salt, the third highest salt producing country in the world.

Producing and harvesting salt is not an easy job. Many women already start working when they are teenagers. During the salt season, between October and June, salt workers migrate with their families to the desert. The working conditions in the desert are harsh, with working days lasting from dawn to night, sometimes in 45°C heat. There is no electricity, or shade, and clean water is scarce, only being used for drinking, and sparingly so.

Difficult working conditions are not the only issue. Being unregistered, informal and unprotected workers, the money they make does not reflect their hard work or the actual value of the salt they produce.

The Agariyans, or salt-pan workers, spend 40-60% of their yearly income on diesel-powered pumps which are needed for the harvesting process. The pumps are not only expensive, and emit CO₂ and other gases, but also cause health issues as workers inhale the toxic fumes which results in life-threatening respiratory illnesses.

To buy diesel, workers have to borrow loans from traders. These traders, who transport the salt around India, some of which is then further shipped to countries around the world, decide at what price they will buy the salt at the end of the season. While Agariya families earn around \$2 for each ton of salt, the market price is over \$239.

However, the life of some salt workers changed recently.

The Self-Employed Women's Association (SEWA), a trade union that advocates for low-income women workers' rights, asked the women what they would need to improve their working conditions and earnings.

They arrived at a solution that works both for the women and the environment: replacing diesel-powered pumps with solar energy. This cut their emissions, decreased the risk of respiratory illnesses, and cut their costs as they didn't have to buy diesel every year anymore.





The project didn't only provide solar panels, but a program was set up to train women as engineers, so they were able to install and maintain their own panels. These women became solar technicians, able to install and fix panels, both for themselves but also in other villages during off-season which provided them with an additional stream of income.

During off-season, they also move the solar panels from inside the desert and salt marshes where they work, to the edge of the desert. This enables them to sell the energy produced to the central grid.

The women own the whole value chain of the solar energy they have installed - another great example of community energy in practice (see also Solution 2).

"Now, we don't spend on diesel. We save. We decide together." Manguben, one of the salt workers says. "We used to feel helpless; now we feel proud."

The women also started organising into informal workers unions. A workers

or labour union is an organisation created when workers come together to protect and improve their working rights and interests. Employees coming together in unions gives them collective bargaining power because they negotiate as a group rather than individuals, strengthening their position. Creating a workers union allowed them to reach better salt prices with the dealers, increasing the salt price per ton by 20%.

By replacing diesel pumps with solar panels, Agariya workers increased their income by 30-33%. When accounting in the collective solar panel park, and the work opportunities women get from being solar technicians, there is a total rise of salaries by around 600%.

This allows women to contribute financially to their homes, starting to make financial decisions in their families, which is a critical component of gender equity.

Now, 70% of women who participated in the project can afford improved healthcare and education for their children, some covering fees for nephews and nieces.



Indians wearing traditional attire pose for the media as they practice the Garba, a traditional dance of Gujarat state. (AP Photo/Ajit Solanki)



The green energy transition can be an opportunity to fix gender injustices associated with the fossil-fuel powered economy, improving not only women's lives, but also those of their whole families.

However, the project did encounter its own challenges.

Firstly, to get the project running and buy the solar infrastructure, they needed upfront finances. To overcome this problem, SEWA helped the women design a cooperative model, so that they could collectively pool their resources to fund the solar infrastructure, harnessing "the power of community and collective ownership."

Another problem was the regulatory and policy landscape, which often has subsidies and energy policies for renewable energy projects, but these are not always available for small-scale and community-owned projects.

SEWA advocated to government agencies to include community-owned projects into the subsidy schemes and managed to do so. This shows the importance of policy change that should create an enabling environment for systemic solutions.

Training on how to set up and fix solar panels was also not easy. However, they were designed to be hands-on and accessible. The trained technicians also helped guide new learners who, with time, gained confidence in their skills.

This project worked ideally for salt workers, but the model can be expanded.

Community-owned renewable energy where the users are also taught the skills to set-up and fix the panels can be a blueprint for just climate action. The model described here is applicable to other situations where millions of women work in informal and carbon-intensive sectors. The scalability of this solution is shown by other organisations and initiatives looking to replicate the model elsewhere.

This is an example of a systemic solution because it tackles the root issues surrounding climate change, fighting against fossil fuel dependency, while also focusing on gender equality in informal work.

By shifting power from the traders to women workers, and challenging gender norms, the rules of the system were challenged, and power shifted to redistribute decision-making.

SEWA's advocacy that led to inclusion of small-scale and community-owned energy projects in subsidy schemes removed systemic barriers and enabled community projects to access green energy support.



Also, with the creation of new feedback loops, the lives of many started to improve. Through economic empowerment, women could invest into healthcare and education of their family members. Skilled women can now also train others so that the knowledge and opportunities multiply. Many have started to reinvest in community infrastructure, buying first one solar panel, and then more in the coming years, reinforcing a positive feedback loop.

"So tonight, as you reach for the salt shaker on your dinner table, spare a thought for the journey this humble commodity has taken to reach you. This unassuming staple of quotidian life carries with it the invisible labour of countless workers who have toiled in some of the planet's harshest working conditions. But for some of these workers out in the remote salt pans of Gujarat, a transformation is underway; one that brings hope, not just to the world's informal sector workers and their communities, but also to the global fight against climate change."
(Oliver G³⁵rdon)

Below is a video exploring some of the above.





Solution 7: Degrowing Global North Economies

If you have already learnt about degrowth and its principles through our unit on Green Growth and Degrowth, you can use this section as a refresher.

Let's go through degrowth's main principles:

Degrowth vouches for moving away from economic, or GDP growth as a measure of progress and as the main objective of our current economic system.

This is because GDP growth is not a good measure of wellbeing: it doesn't directly measure any aspects of wellbeing, and does not contribute to reducing inequalities, but seemingly increases them.

The main proposals of degrowth are:

- Considering which sectors of the economy should grow and which should shrink, based on what is needed for human and ecological wellbeing and happiness.³⁶
- Restoring the equilibrium between human activity and the rest of the living world through:³⁹
 1. a just transition to renewable energy,⁴⁰
 2. restoring ecosystems with local communities,
 3. regenerative agriculture with less chemical fertilisers, pesticides and modified seeds, and ensuring fair work conditions and wages to farmers.⁴¹

For example, sectors that should grow are healthcare, education, renewable energy, low-carbon transportation, organic farming, public infrastructure for recreation, etc.³⁷

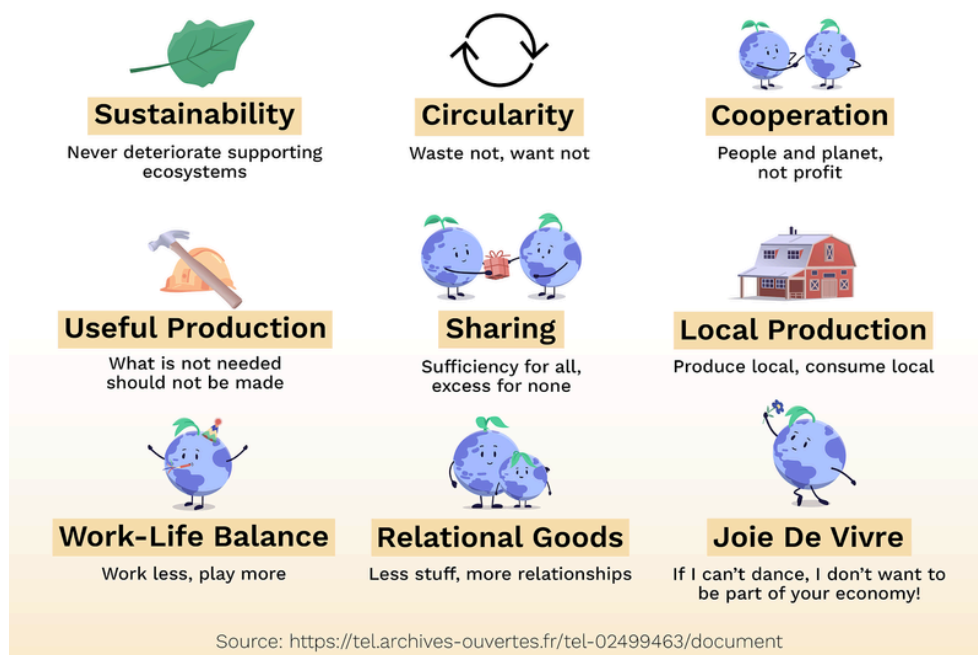
Sectors that should shrink are those that damage the environment while not contributing to long-term happiness of people such as fast fashion, advertising, production of SUVs, etc.³⁸





- Moving towards an economic system pursuing everyone's wellbeing through: - improving employment so that everyone has a job with a good living wage, while shortening the work week,⁴²
 1. making wealth distribution more fair through taxes and other policies,⁴³
 2. expanding the sectors that provide essential goods and services (healthcare education, care, organic food, renewable energy, housing, etc.)
 3. moving away from wasteful consumption as a way to have fun through less materially intense ways of recreation⁴⁴ with a focus on time spent with friends and family, play, arts and sports.
- Debt cancellation for workers, small business owners and Global South countries, both from Global North countries and international financial institutions⁴⁵ This type of measure reflects climate justice.
- Reducing excess energy and resource consumption in Global North countries, but also wealthy individuals from the Global South. In general, many in the Global South still need to increase their use of energy and resources in order to meet their populations' needs.⁴⁶
- 50% of Global North countries' total resource consumption is imported from the Global South. Global North countries' reducing their consumption would then create the space for Global South economies to move away from their imposed role as providers of cheap materials and labour.

Principles of Degrowth



The Principles of Degrowth. Illustration from Arellano, J.P. ⁴⁷



While degrowth still hasn't expanded at scale, there are examples of degrowth initiatives across the world.

Here are a few examples:

VrijCoop Housing Cooperatives, Netherlands

In the Netherlands, VrijCoop is a network of housing cooperatives that exemplify degrowth values by promoting affordable, sustainable, and community-oriented living. These cooperatives focus on reducing material consumption through shared resources, such as communal spaces and tools, and emphasize ecological building practices. By prioritizing social well-being and environmental sustainability over profit, VrijCoop offers a practical model for degrowth in urban housing.

Mondragon Corporation, Spain: democratisation of companies

Mondragon Corporation, located in the Basque Country of Spain, is an example of a worker cooperative model that aligns with degrowth principles. With over 80 cooperatives spanning various sectors, Mondragon promotes economic activities that prioritise community well-being, shared ownership, and environmental sustainability over profit maximization.

This is possible as each cooperative operates democratically, where workers participate in decision-making processes and share the outcomes of their labor. Mondragon offers a practical model for a more sustainable and equitable economy by challenging the conventional growth-driven economic paradigm and demonstrates how businesses can thrive without the constant pursuit of expansion.

Below is a [video](#) on the Mondragon Corporation.



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