

REVOLVE

QUARTERLY INSIGHTS INTO A CHANGING WORLD

N°44 | Summer 2022



Power to the People

How energy cooperatives are empowering communities. p.35

Chasing the Sun p.26 Energy Independence p.18 Cyprus' Water Solutions p.68
India's Sustainable Urbanites p.54 Circularity for All? p.76

REVOLVE

Sustainability Policy

**Transparency. Responsibility. Honesty.
Professionalism. Impartiality.**

Ethics & Compliance
Health & Well-Being
Operations & Services
Accountability & Transparency

revolve.media/sustainability

Renewables are Key for Energy Independence

Europe is at a crossroads. Russia's war on Ukraine is causing unnecessary loss and damage while also being a brutal reality check of how dependent Europe is on Russian fossil fuels. Now Europe is faced with the urgent decision on how to shape its energy future to become more energy independent, and embrace cleaner, greener energy production aligned with its long-term climate objectives. In this issue, we delve into the complexities of the war's impact on Europe, and where exactly Europe will source its energy in the future.

"High fossil fuel prices, energy security concerns, and the urgency of climate change underscore the pressing need to move faster to a clean energy system," states the World Energy Transitions Outlook 2022 from the International Renewable Energy Agency. Citizens and small towns hold the key to leading the green energy transition towards this cleaner energy system, changing the current dynamics and facilitating real change in the current energy market, which has already proven to be both fragile and highly pollutant.

Back in the summer of 2015, REVOLVE Magazine highlighted the need to give power back to the people by supporting the creation of energy communities. Since then, we have been giving a voice to these initiatives and are doing so again in this issue. Journey around Europe through our VIEWS, meeting the actors behind the inspiring energy cooperatives that are further accelerating the movement towards a cleaner and more democratic system. You will

also discover initiatives happening outside Europe that are working towards the same objective – reaching energy sovereignty for renewable energy production.

Summer is also a relevant time to reiterate the importance of water security and smart water use. Author Eva Pettersson explains adaptations we can do at home to improve water use in our gardens as our summers become dryer and hotter, and the water crisis becomes a starker reality in the EU. The European Environment Agency warned in a 2021 report that droughts and water scarcity are no longer rare or extreme events in Europe, and that "about 20% of the European territory and 30% of Europeans are affected by water stress during an average year." Exploring this further, we delved into the water crisis that Cyprus is living through and how they are working to overcome it.

The unsecured access to basic resources such as water or energy that we are now seeing in Europe will be just the beginning of what could happen before the end of the century due to the effects of climate change. But there are ways of changing our systems to address these challenges and secure better access to essential resources. We as citizens can be catalysts of that change. ●

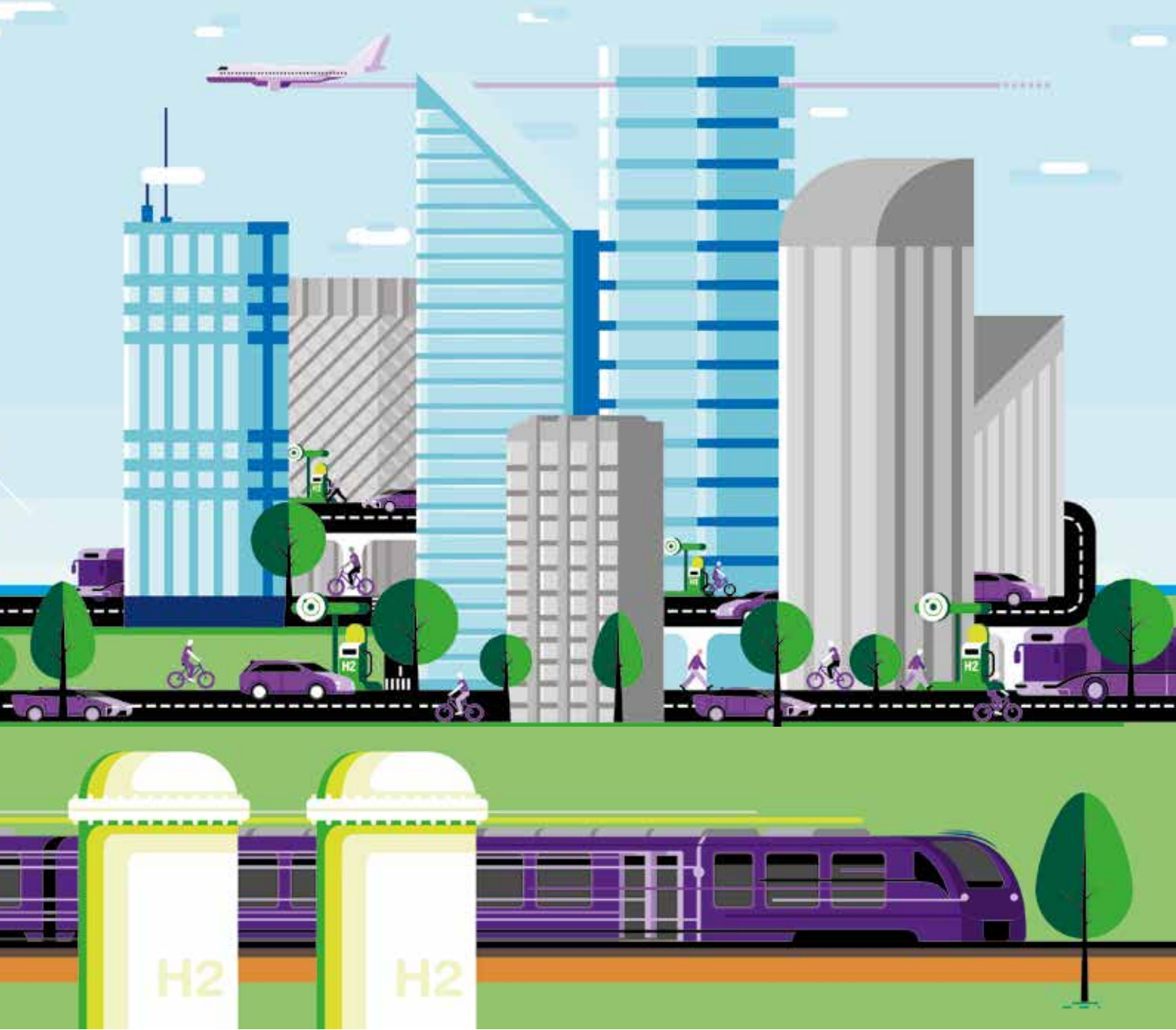
Thanks for revolving with us,

The Editorial Board

Hydrogen x REVOLVE

2022 report coming for COP27

VISIT [HYDROGEN.REVOLVE.MEDIA](https://hydrogen.revolve.media)



In partnership with



Powered by

REVOLVE

Energy

N°44 | Summer 2022

08 Climate Hotspot

How rising temperatures are increasing tensions in the Mediterranean.

10 Intermediary Cities

Smaller cities are the bigger players in the energy transition.

18 Energy Independence

Why the EU needs to get serious over its fossil fuel dependence.

26 Chasing the Sun

Solar offers energy-stricken Lebanon a promise for a brighter future.

35 Power to the People

How energy cooperatives are empowering communities.

60 Meet Dr. Planet

Finland's Planetary Health Physician on the intersection of nature, health, and well-being.

68 Water Management

How Cyprus is combating water security issues.

76 Circularity for all?

How different approaches to circular economy create both winners and losers.



p.18



p.26



p.35



p.60



p.68



p.76



Grammenos Mastrojeni
Deputy Secretary General of the
Union for the Mediterranean

p.8



Adél Strydom
Senior Communications Officer, ICLEI Africa

p.10



Ryan Roberts
Policy Officer, ICLEI Africa

p.10



Marta Castillo Sanchez
Communications Officer, REVOLVE

p.18



Joshua Franklin-Mann
Communications Officer, REVOLVE

p.18



Karem Monzer
Journalist, Beirut Today

p.26



Ilaria Bertini
Director of Energy Efficiency Department,
ENEA.

p.52



Aadhya Shah
Senior Program Manager, Kubernein Initiative

p.54



Priscila Jordao
Communications Officer, ICLEI Europe

p.60



Eva Petterson
Owner, Naturlig Odling

p.66



Martina Valls Carafi
Communications Assistant, REVOLVE

p.68



Jack Barrie
Research Fellow, Chatham House

p.76



Patrick Schröder
Senior Research Fellow, Chatham House

p.76



Sören Bauer
President, REVOLVE Circular.

p.80

Flashback to Issue #16
Summer 2015

Highlighting the energy transition with
local communities and cooperatives

Cover image:
REScoop.eu is a growing network of 1,900 European energy cooperatives and their 1,250,000 citizens who are active in the energy transition.
Photo: REScoop.eu

Photographers

- Quino Al
Awel Aman Tawe
Chadi Bou Hanna
Rinson Chory
Dokumol
Joshua Gaunt
Hanna Haveri

Christelle Hayek
Juha-Pekka Huotar
Hardik Joshi
Natalya Letunova
Petar Milošević
Momen Nabil
Herzi Pinki

Grobler du Preez
Vianet Ramos
Sebastian Ratu
Gunnar Ridderström
Joppe Rog
Tiffany

Graphic Designers

- Filipa Rosa
Émile Noël

Dariana Guevara
Marc Rechdane

Digital Managers

- Raul Jimenez van Hoorn
Gary Leleu

Project Managers

- Patricia Carbonell
Clémence Contant

Danielle Kutka
Sudhanshu Verma

Communication Officers

- Asya Al Marhubi
Lara Barange

Marta Castillo Sánchez
Joshua Franklin-Mann

Junior Communication Officer

- Belen Gutierrez Carmona

Senior Advisors

- Sören Bauer, President, REVOLVE Circular
Peter Easton, President, REVOLVE Mediterraneo

Scientific Advisor

- Josep Crous Duran

Founder

- Stuart Reigeluth

The REVOLVE communication group is about fostering cultures of sustainability. With offices and staff in Barcelona, Brussels, Lisbon, Mumbai, and Vienna, we publish an international magazine (ISSN 2033-2912) that compiles the 'best of' from our online content in quarterly issues focusing on water (winter), ecosystems (spring), energy (summer), and transport (autumn) with the circular economy as a recurrent theme. To subscribe, order back issues, or discover all our publications, including our country and industry reports, visit: www.revolve.media/shop

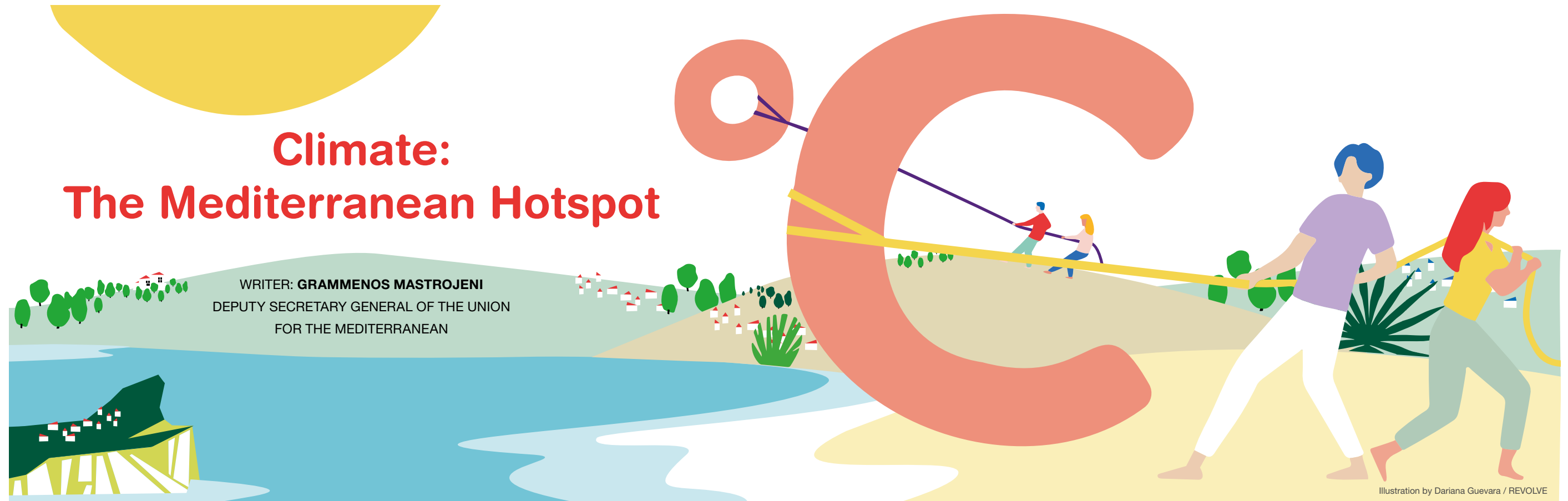


All REVOLVE content is licensed under **Creative Commons** Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0). All content in this magazine can be reused for other publications online and in print, as long as the respective authors and REVOLVE are referred to properly. For additional copies, PDFs, contributor details and other inquiries, please contact: info@revolve.media | +32 2 318 39 84

REVOLVE is committed to climate-conscious reforestation and tree-planting initiatives as part of our company's sustainability policy to mitigate the impact from our business and project travel activities.

 revolve.media/reforest

To date, REVOLVE has planted 261 trees in reforestation projects in Roupage (BE) in 2020, Stoumont (BE) in 2021, and Martouzin (BE) and Zaragoza (ES) in 2022.



Climate: The Mediterranean Hotspot

WRITER: **GRAMMENOS MASTROJENI**
DEPUTY SECRETARY GENERAL OF THE UNION
FOR THE MEDITERRANEAN

Illustration by Dariana Guevara / REVOLVE

The Mediterranean is the fastest-warming place on Earth, set to go beyond 3°C by 2100.

The ocean absorbs over 90% of the additional heat generated by the greenhouse effect and thus acts as a retardant flywheel for global warming. We don't see the ocean as a priority because we are a land species, but ocean warming brings incremental natural disasters to the mainland, such as the fires that raged in Australia and the Amazon in 2020, which are linked to the highest ocean temperatures recorded in 65 years, measured from surface level to a depth of 1.24 miles. The danger is concentrated in one of the most delicate and entangled crossroads of interests and balances known as the Mediterranean – the water mass that has the highest rate of warming around the world.

These water trends intersect with overall regional dynamics that are detailed in the 2022 MedECC Report *Risks associated to climate and environmental changes in the*

Mediterranean region. Beyond sea temperatures, the report highlights that this region is the second in the world for the terrestrial warming too. In the Mediterranean, the average temperature compared to the pre-industrial era has increased by 1.5°C and warming is proceeding 20% faster than the global average. If not countered by mitigation interventions rapidly, some areas will reach up to 2.2°C in 2040, and 3.8°C in 2100, with catastrophic implications for a Mediterranean population that is also growing exponentially.

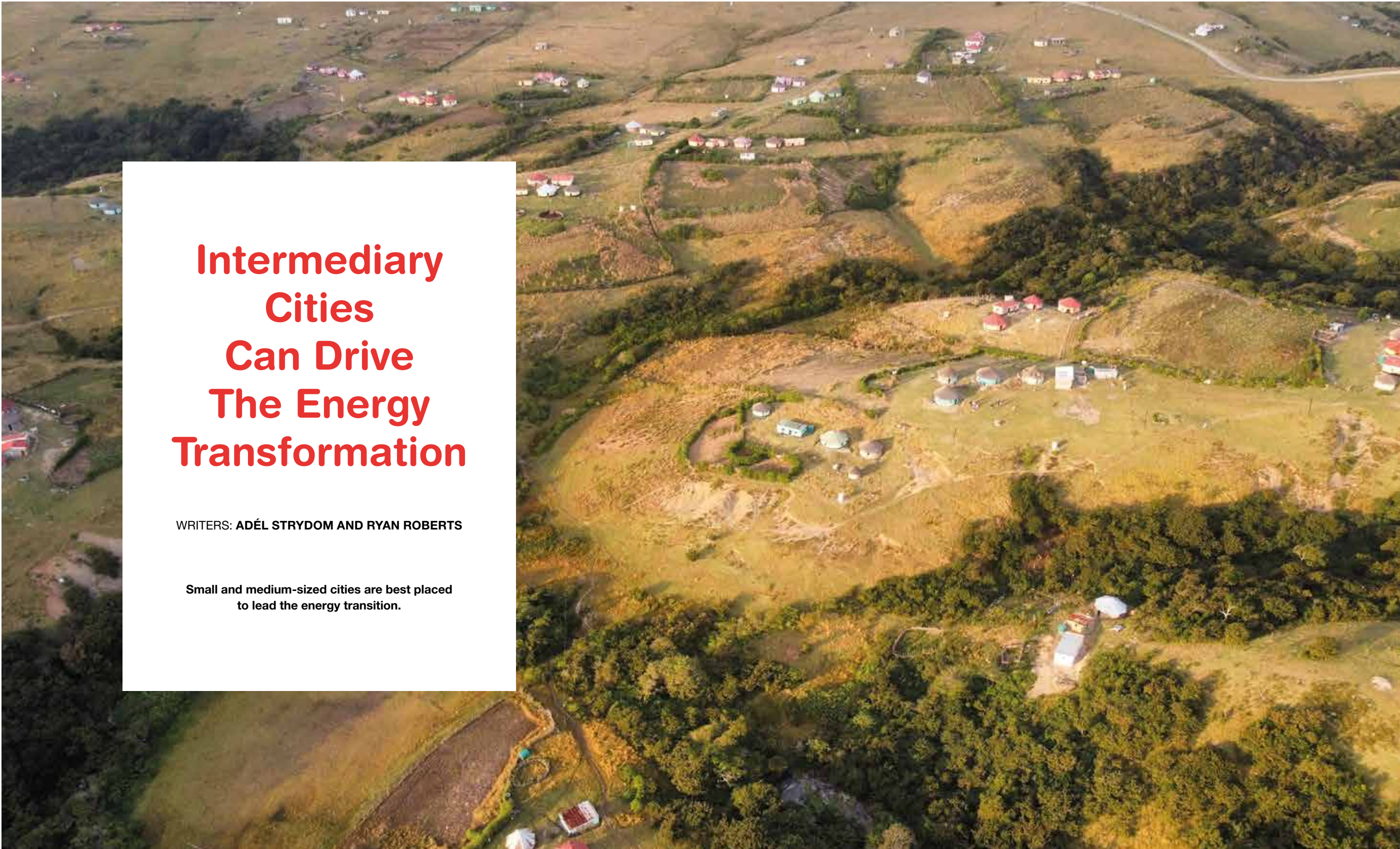
Observing planet Earth, you can see that the idea of Europe represents an anomaly. According to territorial delimitations of all other continents, Europe should not exist: it is a rather small extension of Asia. And yet, Europe continues to feel like a continent apart. What sets it apart? A certain cultural unity and a sense of community in diversity. Few wonder about the roots of this uniqueness that are not based on physical isolation, but someone did: Montesquieu saw the European identity as a product of the exceptional climate that has blessed 'Europe' since the end of the last Ice Age some 10,000 years ago: Europe enjoys a mild climate that is stabilized by the inertia of a large, closed mass of water – the Mediterranean.

The same applies to the southern shore of the Mediterranean which is part of Africa without actually being Africa. As anticipated by Montesquieu in Europe, the southern shore of the Mediterranean has also benefited from exceptional climate conditions that forged its unique cultural identity. However, the destabilizing consequences of global warming means that the Mediterranean Sea level is expected to rise by +20 cm by 2050, which may not seem like a lot but this will be enough to salinize vast coastal plains and the Nile Delta for example, upsetting the livelihoods of millions in Egypt, a significant portion of the +250 million people around the Mediterranean that live with the highest levels of water scarcity in the world.

Europe and North Africa have been interconnected favorably by the stabilizing effect of this 'Middle Sea' that we share, and that created the conditions for the agricultural revolution: the greatest social restructuring ever that led to our civilization today. It all happened around the Mediterranean between Europe, Anatolia, and Phoenicia, with a stable, predictable climate that is essential for planning harvests. However, this climate is changing: the blessing of a stabilizing inertia by a vast water basin such as the Mediterranean no longer

works if its waters store and release increasing amounts of heat into the system, turning its climate into chaos.

The deep foundations of our regional equilibrium are changing and becoming unstable; and the worsening of destructive conflict is looming if we place ourselves in constant competition over the new scarcity of resources. However, if we look at all this from a positive perspective, we discover that the changing climate can bring together all that we have; and therefore this challenge can be transformed constructively into an unprecedented opportunity for peace based on a community that shares its most precious natural resources: water and energy. ●



Intermediary Cities Can Drive The Energy Transformation

WRITERS: ADÉL STRYDOM AND RYAN ROBERTS

Small and medium-sized cities are best placed
to lead the energy transition.

Most electric power in South Africa comes from ageing coal-fired facilities. Scheduled power outages – known locally as ‘load shedding’ – remain a daily reality and are expected to continue in coming years, showing the system’s limits. Rapid, above-inflation price increases over the last decade have made electricity unaffordable for many citizens which is suppressing economic development.

Compared to the rest of sub-Saharan Africa, where less than half of the people have access to electricity, most South Africans (85% in 2019) do have access. But the population is growing faster than its leaders are electrifying households, thus asking even more from an already-pressured energy system.

Optimism soared at COP26 in November 2021 when the European Union, Germany, France, the United States and the United Kingdom pledged \$8.5 billion to finance a move to cleaner energy sources in South Africa. Yet, as the nature and roll-out of these finances remain unclear, change could come from the ground up. South Africa’s municipalities are in a unique position to drive change by decentralizing and stabilizing their own supply with renewable energy and could set an example for other countries to transition away from fossil fuels.

South Africa’s largest population is found in its smaller cities

The country’s large metropolitan areas are forging ahead with renewable energy projects to provide cheap, clean, consistent electricity. But it is the smaller cities and towns where the greatest gains could be made. An intermediary city typically has between 50,000 and 1 million residents. For these municipalities, day-to-day work focuses on

bringing basic services and facilities to their people. As much as 60% of South Africa’s population live in small cities, towns, villages and on farms. Yet they receive only 40% of the GDP distribution within the country and are often plagued with poor service delivery.

These municipalities often make most of their income by purchasing electricity in bulk from Eskom, the nationally-owned power utility, and selling it locally. Electricity purchases account for an average of 22% of a city or town’s expenses. After paying salaries, this is generally their second largest expense. Increasing electricity prices are increasing expenditure and, as South Africans struggle to afford electricity, their revenue continues to decrease.

The problem goes deeper: since electricity sales form the backbone of smaller cities and towns’ income, they often cross-subsidize sectors to provide their people with services like water and waste collection. The failings of the national grid therefore not only put them under financial pressure, but also compromises their ability to provide people with basic services.

Policy changes and finance innovations can help these local-level leaders spearhead a new way. With the right skills, they can take advantage of these changes and create their own future. Many of them already are.

1. The AFMEG project works, among others, with King Sabata Dalindyebo Municipality, where the areas surrounding the mid-sized city of Mthatha are typically dotted with traditional huts. Photo: Joshua Gaunt

2. About 60% of South Africans live in small and medium-sized cities, towns and villages, where policy changes now encourage urban leaders to start generating their own electricity using renewables. Photo: Grobler du Preez





3

Policy and finance innovations can bring clean power to the people

In the past, Eskom – the state-owned electricity utility – was completely in charge of electricity generation and they did so with mostly large-scale coal power plants. In recent years, the private sector started generating electricity. The Renewable Energy Independent Power Producer Procurement Programme (REI4P) is an internationally-renowned example of how a national government created an enabling environment for bringing more actors into the energy landscape.

In South Africa, cities are finally acknowledged as essential in creating a more reliable electricity supply and not

only as resellers of nationally-supplied electricity. New regulations allow cities to generate their own power by building their own energy projects. They may now also purchase power from private generators, not only Eskom.

Constructing projects, of course, costs money, and mid-sized cities often struggle to access the financial resources for renewable energy projects. In fact, accessing finance for infrastructure is a persisting challenge for most African cities. Financiers view new renewable energy projects in smaller cities and towns as risky investments, partly because these business models have not been thoroughly tested.

To combat this issue, the Development Bank of Southern Africa (DBSA), in partnership with the Green Climate Fund (GCF), has set up a \$200 million

Embedded Generation Investment Programme (EGIP) to stimulate growth of embedded generation initiatives in the country. Once all projects are in operation, the proposed investment will add 330 MW of solar photovoltaic and wind generating capacity, thereby directly avoiding emissions of more than 700,000 tCO₂e per year.

While these policy and finance innovations are undoubtedly a step in the right direction, leaders need more than an enabling policy environment and news of a new investment program. Being located outside the large urban areas,

3. Vanrhynsdorp is a scenic town located in the Matzikama Local Municipality, one of the project regions in South Africa. This municipality is working on a 16 MW solar project. Photo: Grobler du Preez

staff in mid-sized cities have a range of responsibilities, and are often under-resourced, making it difficult for them to leverage these new opportunities. It is not surprising that few municipalities can compile a project proposal strong enough to meet stringent finance application requirements.

Intermediary cities can start producing renewable power

A new project empowers the leaders of South Africa's small and medium cities to undertake the journey to producing their own clean power. ICLEI Africa, with funding from the UK PACT programme, is implementing the Alternative Financing for Municipal Embedded Generation (AFMEG) project in four intermediary cities. As program enabler, ICLEI Africa understands the municipal processes and systems, can link projects to suitable funding sources and walks the complex infrastructure financing path with its cities and towns.

The lessons are going into a freely available toolkit to bridge the skills and resource gap that many intermediary cities face, assisting them to produce their own solar and wind energy. At the launch of the project in May 2021, Olympus Manthata, Head of Climate Finance at DBSA said:

“This opportunity came at the right point, and it made perfect sense to partner [with ICLEI] to take advantage of the opportunity. We are pleased we are successful and at a point where we can look at implementation.”

Over 2021, ICLEI Africa has been working with King Sabata Dalindyebo, Matzikama, Walter Sisulu and Ray Nkonyeni Municipalities to apply to the project preparation facility of the

Embedded Generation Investment Programme, making them the first municipal-led projects to apply to this facility. While King Sabata Dalindyebo and Ray Nkonyeni Municipalities are both planning solar projects of around 43 MW each, Walter Sisulu and Matzikama are planning smaller solar projects at 16 MW and 4 MW respectively.

The projects were designed to meet the electricity requirements of the municipality and easily integrate into the distribution network. The Alternative Financing for Municipal Embedded Generation (AFMEG) team supported all four municipalities to develop financial models and pre-feasibility studies, generating cutting-edge knowledge within this new space of local-level climate finance.

In South Africa, cities are finally being acknowledged as essential in creating a more reliable electricity supply, and not only as resellers of nationally-supplied electricity.

Driving a global clean energy transformation

These learnings and other useful resources have a free, online home, that anyone interested in kick-starting a city-led energy transition can access. The Cities’ Embedded Generation Toolkit on *Learn With ICLEI Africa* aims to empower many more city leaders, as this resource hub continues to grow.

Participants will learn about climate change, a just energy transition and mainstreaming gender in the energy sector, as well as the South African policies around embedded generation.

City officials ready to dive into the technicalities will find the sections on technical considerations and financing for embedded generation most useful. This is specifically where ICLEI Africa will continue to add resources and learnings as they move forward with the four project cities through the EGIP application process.

South Africa is a leading example of a global southern hemisphere country transitioning – justly – away from coal power to renewables. If four of South Africa’s intermediary cities can successfully apply for climate finance and start construction on their own renewable energy projects, it can forge a path for

many more to follow. About 75% of the world’s population lives in urban settlements of fewer than 500,000 people, and if these mid-sized cities, towns and villages can get their own renewable energy project off the ground, it can drive the global clean energy transformation. ●

4. Mid-sized cities and small towns in South Africa have ideal climate conditions and land availability for renewable energy projects within, or just beyond, the urban perimeter. The planned developments through the AFMEG project are between 4 MW and 50 MW. Photo: Gunnar Ridderström / Unsplash



1st BUSINESS SUMMIT

GO HYDROGEN

22 SEPTEMBER 2022
BRUSSELS, BELGIUM

PAVING THE WAY
FOR THE HYDROGEN
ECONOMY

GLBUC

On 22 September, Brussels will host electrolyzers, NGOs, energy, oil, renewables companies, technology providers, fuel cell companies and many others in person at the Go Hydrogen Business Summit.

Go Hydrogen covers the production, technology, and key projects, creating an ideal meeting place for value chain players and hydrogen off-takers to network and develop conditions for the hydrogen economy to take off.

KEY SUMMIT TOPICS FOR 2022 INCLUDE:

●
Outlook of the hydrogen economy and regulations development

●
Supply & demand, prices and perspectives

●
Feasibility of hydrogen colours

●
Case studies from key hydrogen projects

●
Scaling up green hydrogen development

●
Innovation and technology

●
Electrolyzers - ideas, projects, perspectives

PROMO CODE
(REVOLVE10)
for 10% off

The Price of EU Energy Independence

WRITERS: MARTA CASTILLO SANCHEZ
AND JOSH FRANKLIN-MANN

As the EU works to free itself from its reliance
on Russian gas, the underlying question is: At what cost?

In 2021, the EU imported 58% of its energy from overseas. Despite renewable energy sources becoming Europe's leading source of energy in 2020, the Continent is still deeply reliant on external energy sources, in particular fossil fuels. The biggest provider? Russia.

According to the EU Commission, Russia provided nearly a quarter of Europe's crude oil, 46% of its coal, and 40% of its natural gas imports in 2021. In total, energy represented 62% of EU imports from Russia, costing €99 billion.

As Russia's war on Ukraine drags on, energy prices continue to rise putting increasing pressure on citizens. Due to the trade and production disruptions that have transpired in the wake of European sanctions, and Russia's retaliatory actions, the World Bank is forecasting a 50% rise in energy prices, with crude oil averaging \$100 a barrel in 2022, more than 40% higher than in 2021.

Now politicians are scrambling to find both short and long-term solutions to make Europe more energy independent, while weathering the storm of what has become a full-blown energy crisis.

Mutual dependence

Europe's energy strategy towards Russia was meant to lead to a relationship that neither could afford to go without, "mutually dependent on one another respectively as buyer and supplier of energy", according to the report 'Europe's Dependence on Russian Natural Gas: Perspectives and Recommendations for a Long-term Strategy, published by the Marshall Center for European Studies.

Energy demand will continue to remain constant, for the foreseeable future, despite rising prices. When given the option between paying expensive bills



2



3

for energy, and going cold through the winter, governments and consumers will almost always take the first option.

European politicians have failed to take into account the fact that Russia has been accumulating revenues from these sales and placing them into a stabilization fund. The report states that "as this revenue is not going to non-discretionary funding, it strongly indicates that Russia could show more perseverance if these revenue streams

1. Construction of berth facilities for the Nord Stream and Nord Stream 2 projects in Vyborg. Photo: Shutterstock.

2. A piece of Nord Stream pipe on public display in Kotka, Finland. Photo: Vuo / CC BY-SA 4.0

3. Ukrainian President Volodymyr Zelensky speaks to the BBC. Photo: President of Ukraine /Flickr /CC0 1.0.

were interrupted than their European customers could tolerate disruptions in energy supply."

This report was published in 2008.

European governments have been long aware that it would suffer more from sanctions targeting the energy sector than their Russian counterparts.

Since 2000, Europe has become more dependent on energy imports. The increase is only slight (around 2%) but it is significant in the lack of foresight that has been shown in preparing for the future.



4

Ending Nord Stream 2

A key example of this policy is Nord Stream 2 gas pipeline. After the Russian invasion of Ukraine, the German government decided to stop the certification of the pipeline "until further notice." The pipeline, which was intended to

connect Russia's large natural gas reserves to consumers in Europe, now faces an uncertain future. Yet the situation we now find ourselves in was foreseen by critics of the plan.

In March 2016, a letter signed by the leaders of eight EU countries was sent to the European Commission

(EC). It warned that Nord Stream 2 went against wider European energy policy requiring that suppliers should not be the ones to "control the energy transmission assets."

The letter also hinted to Russian motives for the plan, predicting that it would "strongly influence gas market development and gas transit patterns in the region, most notably the transit route via Ukraine."

There was also resistance to the pipeline from across the Atlantic, with the US imposing sanctions on Russia in part due to the Nord Stream 2 plans. These sanctions were met with fierce criticism from Austria and Germany.

In a joint statement, Austria's former Chancellor Christian Kern and Germany's former Foreign Minister Sigmar Gabriel, declared that "Europe's energy supply is a matter for Europe, and not for the United States of America."

In 2021, Russia provided 1/4 of Europe's crude oil, 46% of its coal, and 40% of its natural gas, representing 62% of EU energy imports, costing €99 billion.

Source: European Commission

4. European Commission President Ursula von der Leyen speaking on the future of Ukraine. Photo: CC-BY-4.0 © European Union 2022 – Source: EP



5. Anti-war graffiti on a garage door in Vienna, Austria. Photo: Herzi Pinki / CC-BY-SA-4.0

6. Oil tankers. Murmansk, Russia. 2019. Photo: Natalya Letunova / Unsplash

Now, with the pipeline on hold indefinitely, and Russia cutting off gas supply to Europe, the EU is having to look elsewhere for its energy. It is perhaps a little ironic that it is the United States, who have stepped up to fill the void left by the Russians, with the US supplying an additional 15 billion cubic meters of liquid natural gas through the remainder of 2022.

Not the first crisis

The gas crisis the EU is facing is not a first for the Continent. In 2009, Europe faced a similar situation with a cut off gas supply from Russia due to a dispute with Ukraine. That should have been a red flag for the EU and its eastern neighbors to rethink its energy dependence on Russia. However, at that moment, the situation between the neighboring countries was quickly resolved and the EU did not have to work to build a new energy strategy.

The current situation is different for many reasons, the main one being the ongoing war between Russia and Ukraine which started in February 2022 following Russia’s invasion. But additionally, the EC made a clear statement at the

beginning of its mandate in 2019 marking a European Green Deal as one of the priorities for these five years. The energy crisis as a result of Russia’s war on Ukraine can serve as a booster to help make Europe the first climate-neutral continent by 2050 – as the EU Green Deal states.

The EC’s statement is firm and the REPowerEU Plan presented in May 2022 reaffirms the mandate’s priorities. The plan aims to address two of the main priorities for the EC: (1) Ending the EU’s dependence on Russian fossil fuels and (2) tackling the climate crisis. To answer this demand, the plan establishes a set of measures for energy savings, diversification of energy supplies, and an accelerated roll out of renewable energy to replace fossil fuels. The main aim of the EC is to lead the 27 Member States to a greener and more energy-independent future.

What does REPowerEU mean for Europe?

The REPowerEU Plan is a package that includes legal acts, recommendations, guidelines and strategies based on

four pillars: saving energy, substituting Russian gas with other fossil fuels, accelerating the roll out of renewables and financing new infrastructure. The EC has been working in the direction of these pillars with various strategies such as the Renovation Wave and the hydrogen strategy and legislative packages such as the Clean Energy for all European package.

The EC has agreed and defined in the past few months how to gradually phase out Russian coal and oil by the end of 2022. The agreements have been included in the fifth and sixth packages of sanctions against Russia, respectively. Following those agreements, the REPowerEU plan focuses on how to phase out of Russian gas by 2027, making the transition ordered and affordable to EU Member States.

Decarbonization ambitions

Achieving the EC goals of ending Europe’s dependence on Russian fossil fuels by 2027 at the latest and securing long-term sustainability of the EU energy system will require a combination of short-, mid-, and long-term targets and measures, as Ilaria Conti and James Kneebone - researchers from the Florence School of Regulation – stated in their article ‘A first look at REPowerEU’.

According to the authors, in the short term, the REPowerEU plan aims at increasing energy efficiency to reduce



demand. This measure is cost effective because “the cheapest energy is the energy you do not use,” as Frans Timmermans - Executive Vice-President of the EC – said in a read-out meeting on 18 May 2022. But it is also the most sustainable, secure and immediately actionable, as Conti and Kneebone affirm.

In the mid- and long-term, the aim of the plan is to increase renewable energy production within the EU making the continent energy independent while at the same time achieving the net-zero goals ratified by the EC.

“The drawing of sustainability priorities into the forefront of security and competitiveness agendas is a hugely symbolic moment for the formation and prevailing landscape of EU energy policy,” highlight Conti and Kneebone.

However, even if energy demand is drastically reduced and the long-term plan is to focus on renewable energy production and decarbonizing the energy system, in the short- to mid-term there will be a requirement to fill in the demand gap with non-Russian fossil fuels. This is where the risk of becoming independent from Russian

energy sources but not achieving the decarbonization plans arise.

Abandoning fossil fuels

In March 2022, economist and professor of energy policy at Oxford University, Dieter Helm – affirmed to the *Financial Times* (FT) how the shift away from fossil fuels has never looked more complicated. “The energy transition was already in trouble — 80% of the world’s energy is still from fossil fuels,” Helm affirmed.



8

According to the data shared by FT, coal power in Europe rose 18% in 2021, its first increase in almost a decade. Globally, the trend has been similar, reaching record levels and causing a rise in emissions. The war in Ukraine is not improving this situation but increasing the need to burn coal to fulfil energy demands in the short term.

Add to this the several challenges that need to be tackled to fulfil the plan prepared by the Commission: such as the timeframe needed for solar and wind farms projects; the access to raw materials (exacerbated due to the war in Ukraine and the COVID-19 pandemic); and workforce preparation.

While the Commission has been taking action in different fields to address these challenges, the success in overcoming

these bottlenecks will be determined by the engagement of the EU Member States on making the plan a reality. “Most of the proposed measures require either national implementation or coordination between EU countries,” explains Simone Tagliapietra – senior fellow at Bruegel, in his analysis on the REPowerEU plan.

A catalyst for change

Any conflict is ruled by the geopolitics game and has an impact on civilian life, causing human suffering. As of June 2021, there were 15.5 million refugees coming from countries at war or severe crises ranging from Syria, Venezuela, Afghanistan and South Sudan, according to the UN Refugee Agency (UNHCR) data. The number of people living in internal displacement was way higher, reaching 59.1 million as of the end of 2021, according to Internal Displacement Monitoring Centre (IDMC).

Geopolitical games across the world have come at a catastrophic human cost. Now, as these have reached Europe on a scale not seen since the 1940s, European governments are counting the economic and environmental costs as well. The war in Ukraine has already led 7.7 million people to internal displacement and around 5 million refugees in European countries.

Yet the war in Ukraine can be seen as a catalyst as well, potentially boosting the green transition in Europe and achieving the net-zero goals set by the European Commission.

As Thijs Van de Graaf – associate professor of international politics at Ghent University – said to the *Financial Times*, “They say, never waste a good crisis.” After ‘Build Back Better’ and now ‘REPowerEU,’ it remains to be seen if Europe can truly become energy independent. ●

8. Power plant Ljubljana, Slovenia. 2017. Photo: Petar Milošević / CC BY-SA 4.0

OPENING DOORS TO EFFICIENT BUILDINGS
HEART FINAL CONFERENCE

Join us on 11 July 2022

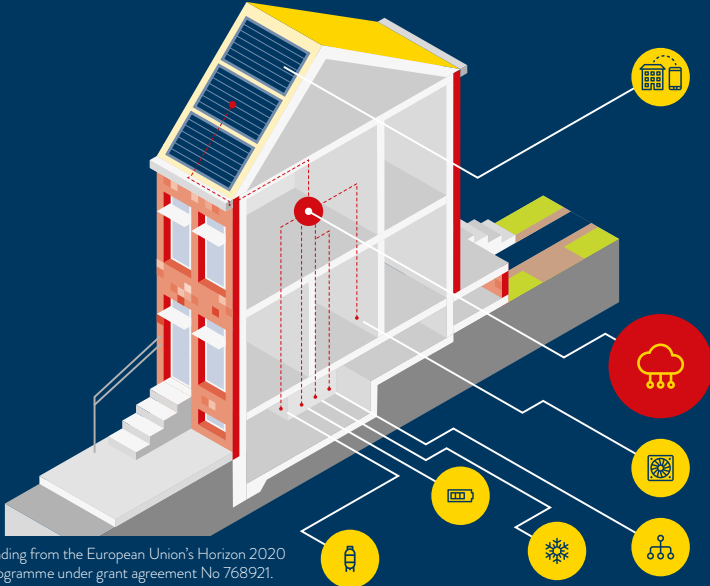
11h00 to 17h00 CEST
Residence Palace
Rue de la Loi 155, 1040 Bruxelles



Live streaming



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 768921.



The ETU Initiative is run by the Interreg MED Renewables Energy project.
Project co-financed by the European Regional Development Fund

The ETU Initiative works to make the energy transition a reality in rural and island areas in the Mediterranean, following five key principles:

- Holistic response to climate change
- Territorial equity
- Social innovation
- Green economy
- Cooperation and commitment

Do you agree with our principles?

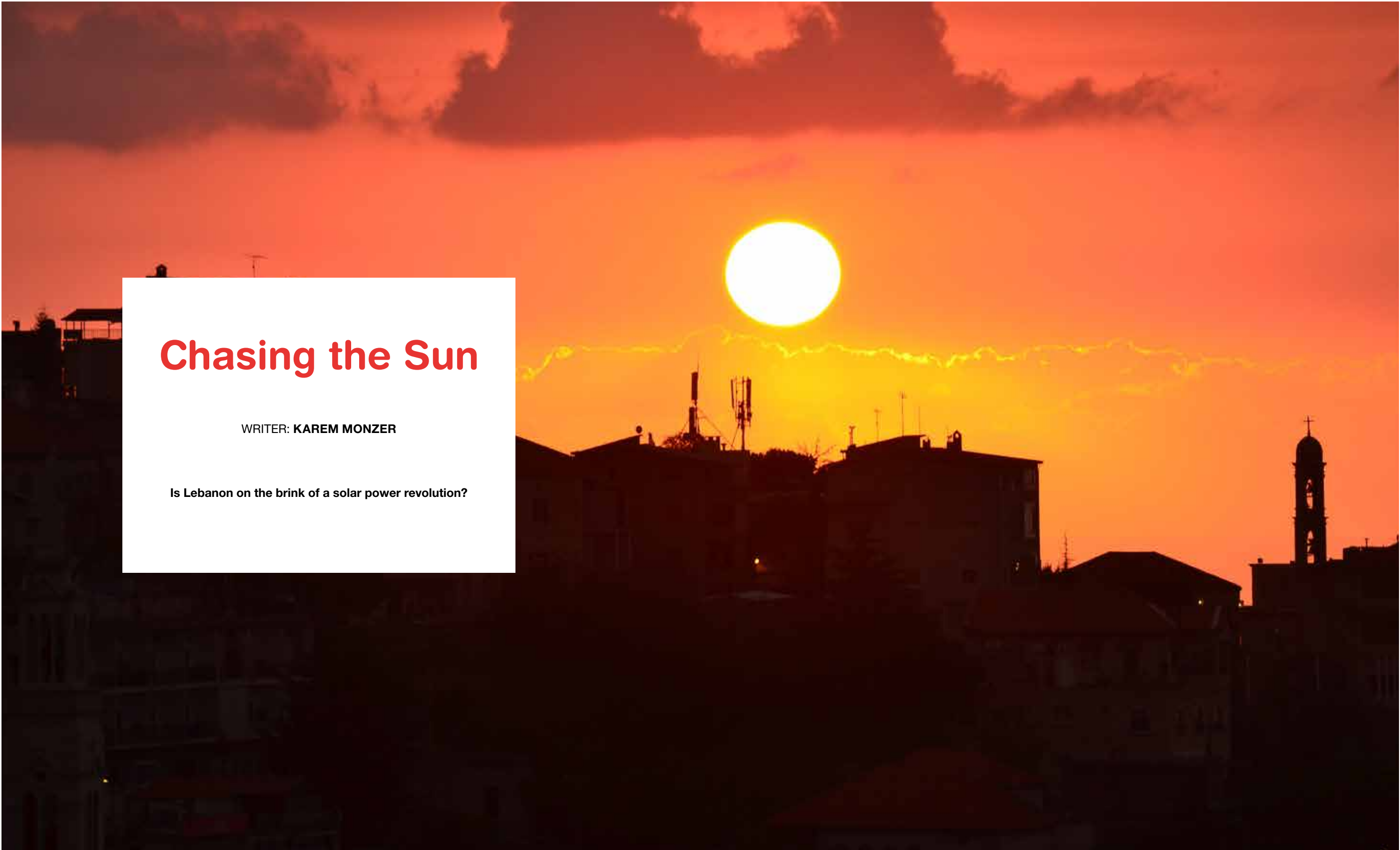
Sign the ETU Manifesto!
www.etuinitiative.eu



Together we'll create a resilient future



Follow us
f in t y



Chasing the Sun

WRITER: KAREM MONZER

Is Lebanon on the brink of a solar power revolution?

There is a Lebanese engineer who is considered by some to be the father of modern electricity, carrying the same weight as Nikola Tesla and Thomas Edison in electrical history. Hassan Kamel Al Sabah altered the development of 20th century technology when he discovered the processes of nuclear fission. He was also the first to develop a television powered by sunlight.

And yet his homeland in 2022 is struggling to deliver more than two hours of electricity per day to its citizens. Without state-provided electricity and fuel to run private generators, everyday people in Lebanon have been forced

1. Sunset behind Bhersaf hills. Beirut, Lebanon.
Photo: Chadi Bou Hanna / Unsplash

3. Sunrise in Beirut, Lebanon.
Photo: Christelle Hayek / Unsplash

to seek out alternative ways to power their homes. Much like the early engineer, they are turning towards the power of the sun.

Why is there no electricity in Lebanon?

Photovoltaic (PV) technology converts sunlight into electrical energy—and brings Lebanon a glimmer of hope in the dark. The country’s energy supply has been inconsistent since the 1975-1990 civil war, but has drastically degenerated in the past two years as a result of an ever-deepening financial crisis.

Blackouts have become a regular feature of everyday life, with those living in Lebanon working out their schedules to host friends over, do their laundry,

and use the elevator based on the availability of electricity.

The issues in the local electricity sector can be divided across three fronts: technical, economic, and political. Marc Ayoub, energy researcher at the Issam Fares Institute (IFI), describes the technical front as mainly relating to the lack of investment in the electricity sector as of the late 1990s.

“The second front is related to the economic and financial sector. The government stabilized the tariff at the price of \$20 per barrel of fuel,” said Ayoub. But in 2022, the cost of that same barrel was at \$70 or \$80—prior to the skyrocketing cost of fuel resulting from the Russian invasion of Ukraine. “From 1992 until the end of 2020, there was an estimated \$43 billion allocated solely to the electricity sector in Lebanon,” he said.

Both high costs and the lack of investment in the sector reflect decades of corruption and the mismanagement of resources by the political elite. Today, Lebanon finds itself short on the dollars necessary to import fuel for the state-run electricity company and diesel for private generators. Sectarian and political conflict—over who gets to take the bigger slice of the cake—means that long-term plans for the energy sector’s reformation have been on hold for years.

“The third front is political, or approaching the electricity sector as a means to profit, broker clientelism, and be divided among political factions,” said the researcher. “This exploded in today’s crisis because there is simply nothing left for them to divide.” The interest in alternative and more sustainable energy sources consequently erupted. People are shifting to solar power, seeking independence from an unreliable governmental power grid.

Can solar energy be a solution for Lebanon?

Lebanon has several competitive benefits that will enable the development of a renewable energy industry, particularly the abundance of sun. Wind, water, and some biological resources are also available, despite the limited availability of land and space. “We are blessed to have this much sunshine to benefit from,” said Carla Nassab, project officer at the UNDP.

UNDP and CEDRO mapped out that most of Lebanon’s households are centralized in cities: 70% live in apartment buildings, mainly in cities, and about 30% live in independent houses, mainly in the country’s rural provinces. Such a division makes it hard to find space to build the structures that solar power systems require, especially

when most apartment buildings have flat ceilings used as shared areas for water tanks, satellite dishes, and air conditioning units. The remaining available space that can be used to install PV systems is estimated to be 20 to 30% of the entire roof surface. In response, integrating solar panels into building fabrics such as walls, glass, and ceilings is evolving to become a more attractive solution as it does not take up space.

In rural areas, space is less of an issue. Al-Haj, the owner of a refrigerated warehouse for vegetables and fruits in the Bekaa Valley, described the area as getting state-supplied electricity for less than an hour daily. For his private generators to stay on for 12 consecutive hours, 750 liters of

fuel are needed—averaging at a cost of \$550 every day. “When you install solar panels, this figure becomes \$130 or \$140. So you save nearly \$420,” said Al-Haj.

While such an investment required a hefty sum of money from him in the beginning, Al-Haj believes that the PV system is worth it in the long-run when you factor in the maintenance cost of generators and the price tag of fuel in today’s crisis. “We have sun, and we don’t have electricity, so we need an alternative, and that’s solar power,” he said.

While good for securing power to homes or for companies, decentralized solutions do not solve the national electricity crisis and not everyone can afford the hefty initial cost of investing

Lebanon needs to produce 4,600-4,700 MW of renewable energy to reach its 30% RES target by 2030.

Source: IRENA



in solar power. “For this reason, the government should project a 10-year plan on how much renewable energy we would like to produce and it should turn towards large-scale solar power systems,” said Ayoub.

How to implement large-scale systems?

“Within the framework of climate change, Lebanon has specified its worldwide contribution to limit climate change by switching 30% of its energy production to renewable energy by 2030,” said Jessica Obeid, a renewable energy and policy expert in Lebanon. “We are currently at around 7%.”

Like the implementation of large-scale solar energy systems, such a commitment requires the cooperation of both the private and public sectors. The Ministry of Water and Energy would be required to transparently receive bids and agree with private contractors to install solar factories, operate them, and take care of their maintenance. The winning contractor would later sell the government electricity for the project’s duration, which lasts for around 25 years in renewable energy. But nothing can be achieved without proper governance. “We need transparency and to be following the Public-Private Partnerships Law,” said Obeid. “We need proper governance in the sector to truly benefit from investments. We also need a regulatory body to provide licenses, and this all won’t happen if we don’t have a financial solution.”

Ayoub highlighted the difficulty in hitting the 2030 goal, with the International Renewable Agency (IRENA) stating in 2020 that Lebanon would have to produce no less than 4,600 or 4,700 MW of renewable energy to hit the target. “We are talking about a large goal, or

rather, a challenge, for Lebanon, seeing as we only have 8 years to reach this but we can no longer rely on costly sources of energy because we don’t have the funds for them” said Ayoub.

Functional grids can integrate solar energy

“Only the Lebanese have to think of batteries,” said Joe Hawi, the chairman and managing director of the solar-panel installing NovaEnergia Lebanon. Hawi gave the example of Cyprus or Turkey, where a 1 GW solar panel is easily installed without a battery. “Why? Because the battery is not meant to generate energy, it’s only meant to store excess power for the grid,” he added. “Usually this means storing energy for the very same day, sometimes to cover the need if a cloud passes by or something. If we had a proper electricity grid that works 24/7, then you wouldn’t need batteries.”

In Lebanon, solar energy systems are meant to function off-the-grid. The system is supported by batteries that store the extra power generated by the panels and keep appliances on and functional during outages. “The solar PV system on its own has large potential that Lebanon can benefit from but we have to pay attention to the fact that solar power does not work at night,” said Nassab from the UNDP. “We have to have another power source that works at night, which is usually batteries.”

Perspectives are changing for the better

Despite that, Lebanon has seen several success stories in terms of how much solar energy can alleviate electricity outages. Qabrikha, a small village in

the south, saw the implementation of a EU-funded solar energy project by the UNDP’s CEDRO 4. The project began in 2014, with Qabrikha selected because it had its own electrical grid that was spread by the municipality and connected to their generators. But people were reluctant about installing PV systems at the start. “Some asked what it is and whether we were sure it would generate electricity,” said Nassab, adding that the residents of the village became more open to



3

the idea when they saw how well the systems worked for their neighbors.

Today’s perspectives on solar energy systems shifted greatly from 2014. “The Lebanese consumer, the homeowner and business owner, was put in a corner,” said Hawi, whose company installs both large-scale and small-scale PV systems. “There’s no electricity today and private generators are no longer a reliable source of electricity, so Lebanese have to be self-reliant

now,” he said, adding that the issue caused the solar revolution we’re witnessing today.

The effects of having no regulation

Without guidance, it can be confusing for customers to break into the world of solar energy and to understand how

such systems are priced. Hawi defined solar power as being modular, meaning that any house owner can increase or decrease its power (and cost) as much as they would.

If a person needs to turn on a washing machine, microwave, and air-conditioner, a bigger system is required. More batteries and panels are needed, which means more cost. But if a person only needs to turn on lights or small appliances when their electricity cuts,

SOLAR POWER

a smaller system would function well and cost them less.

“The bigger your solar power system, the more electricity you have,” said Hawi, adding that budget and space are the only limitations for such a system.

The chairman also broke down the figures as ranging from anywhere between \$2,000 and \$25,000. On average, a lithium-solution to power a fridge, lights, and a television in a house would cost somewhere between \$4,000 and \$5,000. The number shoots up to \$20,000 or \$25,000 in luxury villas where more machines are being powered through solar energy, but the systems that NovaEnergia sells the most range between \$8,000 and \$15,000. Hawi also said the price can decrease to \$2,000 for a small system installed by companies that provide lesser quality equipment and shorter warranties. “This means you can end up changing the whole system every two years,” warned Hawi.

Marc Ayoub issued a similar warning, indicating that many standards are not being respected when installing solar energy systems in Lebanon because of the absence of governmental monitoring. “We need to have a coherent system, batteries need to be compatible with the inverter and the panel, and the specifications respected,” said the energy researcher. “People need to know that they shouldn’t trust everyone to install their systems and that they need to look at multiple offers, consult multiple companies and decide accordingly.”



4

Before prompting the procedure of powering a house with solar energy, homeowners must study their energy use and assess possible efficiency upgrades. Before choosing solar, they should know details that include their total electricity usage and consider low-cost and easy-to-implement efficiency criteria. But so long as we lack proper governance and long-term national strategies in motion, we will only ever be able to speak of solar energy in terms of decentralized and personal solutions that are independent of the Lebanese government.

So long as those in power continue to bicker among themselves and divide the country’s resources among themselves, Lebanon will struggle to create any energy advancements that would have made Hassan Kamel Al Sabah proud of his homeland. ●

This article was first published in Beirut Today.

3. Solar panel structure in Beirut, Lebanon.
Photo: IMF / CC BY-NC-ND

4. The Electricité du Liban building in Beirut, Lebanon.
Photo: Tiffany / Flickr / CC BY-NC 2.0



8th WORLD CONFERENCE ON PHOTOVOLTAIC ENERGY CONVERSION

Registration open

Take a look at the extensive event programme and secure your ticket now. What to expect from the WCPEC-8?

A week’s worth of content awaits:

- A scientific Conference with an abundance of plenary, oral and visual presentations
- A great number of Parallel Events, offering in-depth insight into specific PV topics
- A PV Academy, providing a deep insight into selected PV research & development topics
- A large business-to-business Exhibition, connecting you to important industry players
- A lively Industry Summit, addressing the market’s most pressing issues
- Exciting online features in addition to the fully on-site event
- Social events, networking opportunities and much more...

We look forward to seeing you again in person in Milan in September.

SAVE THE DATE

26 – 30
SEPT. 2022

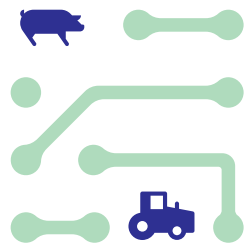
MILANO
CONVENTION
CENTRE
MILAN · ITALY

39th EU PVSEC | PVSEC-32 | IEEE PVSC-50
European Photovoltaic Solar Energy Conference and Exhibition |
International PV Science and Engineering Conference |
Photovoltaic Specialists Conference



WCPEC-8 is hosted
by EU PVSEC

www.WCPEC-8.com



BBTWINS

Agri-Food Value Chain
Digitalisation for
Resource Efficiency

The EU agri-food sector is struggling to meet society's growing demand for a stable supply of healthy food.

For a more resilient food system, the sector must transform its industry losses and inefficiencies into optimised, resource-efficient value chains.

BBTWINS aims to help achieve this by developing an innovative digital platform for the optimisation of agri-food value chains and the supply of quality biomass for processing.

 bbtwins.eu

 BBTWINS

 [bbtwins_eu](https://twitter.com/bbtwins_eu)



 **Bio-based Industries Consortium**



This project has received funding from the Bio Based Industries Joint Undertaking (JU) under grant agreement No 101023334. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio Based Industries Consortium.

VIEWS

↓ Ecopower – Belgium

Ecopower is one of Europe's the largest energy cooperatives with over 60,000 members. They empower citizen by enabling them to own renewable energy generation infrastructure, such as wind turbines.

Photo: Ecopower cv

Energy Communities

Energy communities play an important role in the transition towards a 100% renewable and just energy future.

These communities are based upon a business model in which citizens jointly own and democratically control an enterprise that works on the clean energy transition. Energy communities take on environmental, economic, and social challenges while empowering people, boosting local economies, and reinvigorating communities. The potential is there: research shows that by 2050 around 45% of renewable energy production could be in the hands of citizens, about a quarter of which could come through participation in a cooperative.

Across Europe, we find inspiring examples of energy communities taking back control of the system by jointly developing and democratically managing renewable energy projects. This VIEWS takes you on a journey around Europe and highlights some of the inspiring projects that are accelerating the movement towards a cleaner and more democratic system.



↑ Partago - Belgium

Partago, an e-carsharing cooperative in Belgium, offers e-car sharing services because they want to make electrical vehicles accessible and easy for everyone.

Photo: REScoop.eu



↓ Westmill Solar - UK

Westmill Solar Co-operative members celebrate their successful share raise to buy what was (at the time) the world's largest cooperative-owned solar park.

Photo: Westmill Solar Co-operative



↑ Repowering London – UK

Repowering London energy cooperative empowers urban and disadvantaged communities to plan, fund, build and benefit from a low-carbon future through mentoring, training and work experience opportunities. Photo: Joppe Rog

A member of Som Energia voting at their General Assembly 2019. All members of an energy cooperative have equal voting rights, allowing for democratic control by the members. Photo: Som Energia

↓ Som Energia – Spain



↑ Electra Energy – Greece

To engage the community, the 'Hyperion' project developed 'Hyperion Cafés', a voluntary bi-monthly meeting to share skills and knowledge among members to promote collective investments in solar installations. Photo: Electra cooperative

This 405 kW solar park in Crete is the first project implemented by Minoan Energy Community and produces energy used by the project's 103 members. Photo: Minoan Energy Community

↓ Minoan Energy Community- Greece



→ Community Energy Ireland - Ireland

The Templederry Community Windfarm, Ireland's first community owned windfarm, addressed resistance to the project by involving the local community and making them benefit directly from the green electricity it generates. Photo: Community Energy Ireland





↑ **Awel Aman Tawe - Wales (UK)**

Awel Aman Tawe Co-op manages a 4.7 MW community windfarm, set up in 2015, and works to raise awareness about the role of clean energy in the fight against climate change. Photo: Awel Aman Tawe

The rural Dutch cooperative Lochem Energie installed solar collectors on the local swimming pool to heat the water, helping to reduce the high energy costs of heating. Photo: Lochem Energie

↓ **Lochem Energie - The Netherlands**



↑ **Ecopower - Belgium**

The city of Eeklo favors community-based energy procurement and to meet renewables targets has partnered with Ecopower to develop wind and solar projects as well as a large district heating network. Photo: REScoop.eu

The energy cooperative Urstrom offers their members an e-car sharing service with 8 electric cars at 5 sharing stations as well as cargo bike sharing. Photo: Urstrom eg

↓ **Urstrom - Germany**



↓ Énergie Solidaire – France

A farmer learns to fix his roof with the guidance of a craftsman as part of the Energie Solidaire program which was developed by the Enercoop cooperative to tackle energy poverty.

Photo: Compagnons Bâtisseurs Rhône-Alpes





↑ Energie Samen – Netherlands

Inauguration of a community-owned wind turbine in Neer, the Netherlands.
Photo: Zuidenwind

Members of Cooperativa de Energie meet in the mountains to discuss the cooperative's strategy and potential improvements and co-develop the enterprise's future. Photo: Cooperativa de Energie

↓ Cooperativa de Energie – Romania



↑ Enercoop – France

Members of Enercoop Midi-Pyrénées celebrate the opening of the Lacombe solar park, built in cooperation with local actors on a unused land that was unfit for agriculture. Photo: Enercoop Midi-Pyrénées.

The City of Križevci and the energy cooperative ZEZ have partnered to support the development of solar projects, including a 10 year PV power plant lease agreement. Photo: Zelena energetska zadruga

↓ ZEZ – Croatia





↑ REScoop.eu – EU

REScoop.eu, the European federation of citizen energy cooperatives wants to make the voice of citizens heard in the European energy debate.

Photo: REScoop.eu

Urban Mobility Days 2022

20-22 September 2022: Brno (Czech Republic) & Online

Moving people and goods more sustainably



European
Commission

Register here: www.eumd.org

#UMD22 #UrbanMobility

Breaking Barriers to Energy Efficiency

INTERVIEW WITH: ILARIA BERTINI

As part of the LEAP4SME project, REVOLVE speaks with energy efficiency leaders across Europe to learn more about what can be done to help small and medium-sized businesses (SMEs) become more energy efficient. Ilaria Bertini, Director of the Energy Efficiency Department at the Italian National Energy Agency (ENEA), gives her insights into the work being done on both the Italian and European level.

What is the most important barrier to SMEs adopting energy audits and energy efficiency measures?

We have identified two main barriers, a knowledge barrier and an economic barrier. SMEs commonly lack in capacity, time and resources to work systematically with energy efficiency. They may need support to raise awareness about energy, find a qualified expert to support them in carrying out an energy audit and applying for audit financial incentives, and to implement the result of the audit itself. Support is also needed in implementing energy-efficient solutions including how to finance them. These difficulties constitute together a significant barrier to implementing

energy efficiency and renewable energy measures. Therefore, there is still a large potential for cost-effective efficiency improvements in SMEs.

There is also an economic barrier to be considered, because often SMEs find it difficult to access incentive mechanisms and to therefore then invest in energy efficiency.

What are the most important support mechanisms for SMEs in adopting energy audits and energy efficiency measures?

There are several policy instruments and measures to implement energy

savings and/or efficiency in SMEs: White Certificates Mechanism, Thermal Account 2.0, National Energy Efficiency Fund (to finance interventions), and the Industry 4.0 Plan. The most important support we can offer to enterprises will probably be to correctly guide enterprises and professionals how to access the available funds. In industry, according to the Italian NECP (National Integrated Energy and Climate Plan) the savings target for 2030 is 1 Mtoe for the industrial sector (that is the difference between the estimates of industrial final energy consumption in the reference scenario and in the policy scenario). The development described in the Italian NECP – which was reviewed at the end of April 2021 – shows that the final energy savings from new measures promoted with the White Certificates scheme could reach 1.3 Mtep in 2030.



What would your key message be to stakeholders/market players who are working with SMEs on energy efficiency?

The key message is to underline the importance of carrying out a quality energy audit to obtain significant savings in energy efficiency in SMEs both in the industrial and tertiary sectors. In Italy a new operational plan (2021-2030) has been developed to encourage SMEs to carry out energy audits in their production sites. The plan includes training activities, extensive collaboration with business associations to develop

sectoral guidelines and tools for a first self-assessment of energy consumptions. We strongly encourage market stakeholders and local authorities to get involved in these initiatives and be in touch to overcome together the barriers to energy efficiency in enterprises.

What is your view on how the LEAP4SME project can contribute to progress in the sector?

LEAP4SME can truly represent a turning point for the development of energy efficiency policies and practices in SMEs. Mapping the characteristics of the various SMEs, sharing best practices at the European level, and comparing the various support mechanisms, allows the various

Member States to have a broader and more precise global vision on the European (and national) context of SMEs, enabling them to identify the correct methodologies and solutions to increase energy efficiency. The first technical project outcomes are already being used as a reliable knowledge base for ENEA's activities in Article 8 policy implementation. ●



The LEAP4SME project is funded by the European Union's Horizon 2020 Research and Innovation Programme.

1. Glass art. Photo: Quino AI / Unsplash

India's Urbanites Are Embracing Sustainability

WRITER: AADHYA SHAH

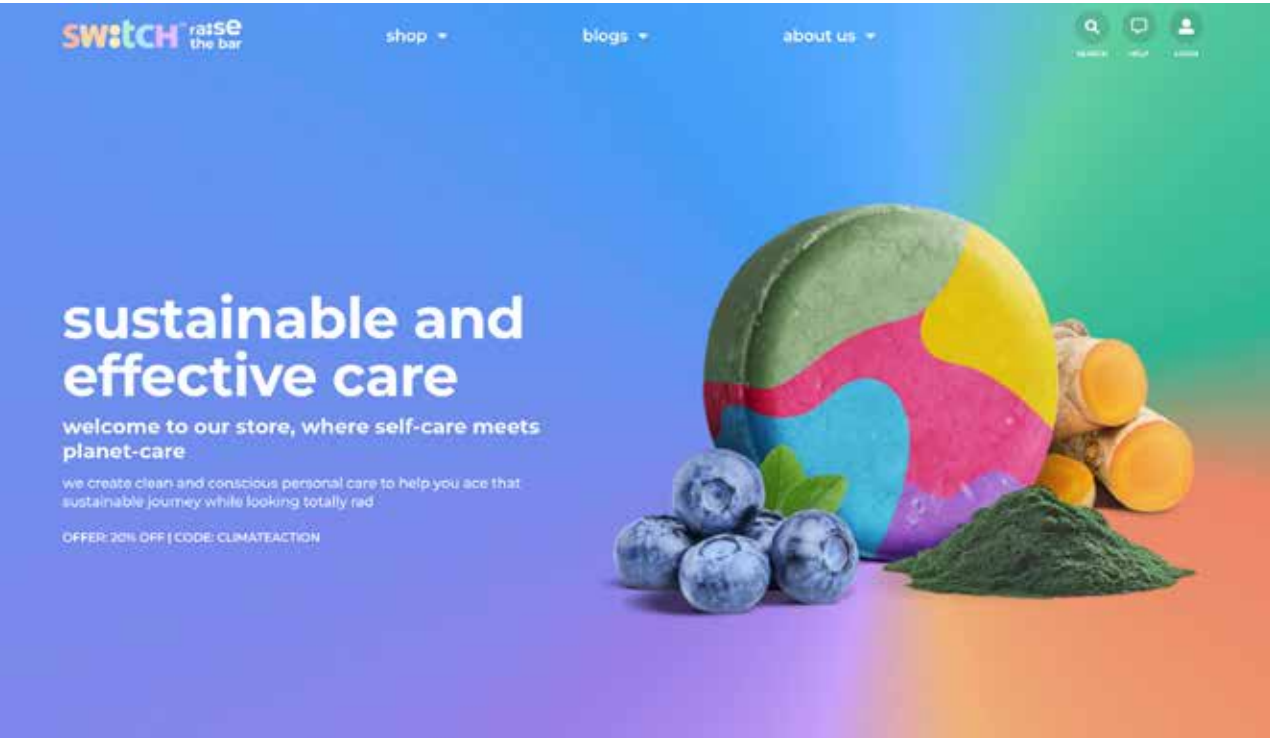
The increase of environmentally-conscious urbanites in India's bustling cities are met with opportunities and challenges.

Urban India, according to data from the World Bank, is home to 35% of the country’s population with nearly 482 million people living in urban centers. Yet a 2020 report by the National Commission on Population predicts a 57% increase in the size of the urban population by 2036. Industrialization and the growth of urban centers has negative implications for the environment, resulting in food security and transportation pressures, air pollution, increases in carbon emissions, and higher generation and discharging of waste. This in turn contributes to environmental degradation and loss of biodiversity, signaling the need for urban populations to live more sustainably.

1. Mumbai, India. Photo: Hardik Joshi / Unsplash

2. The Switch Fix homepage. June 2022.

3. The Mend Homepage. June 2022.



2

Cultivating a sustainable consciousness in India

Sustainable living is defined by the choices we make to reduce both our individual and collective environmental impacts. The changes one makes for a sustainable and environmentally conscious lifestyle can offset climate change and reduce one’s overall carbon footprint. In an urban population as big as India’s, consumers and citizens embracing a sustainable lifestyle could significantly impact their communities and their immediate environments.

What is the urban Indian’s understanding when it comes to living more sustainably? A study on sustainable consumer behavior had promising results. It found that Indians from larger cities and urban areas (Tier 1 and Tier 2 cities) were more aware of sustainability than their rural counterparts. It also revealed that Indian millennials are more aware of the environmental impact of their consumption behavior.

According to a survey of 19,000 people by YouGov across 17 countries, nearly 81% of urban Indians find it important that brands and businesses take steps to minimize their impact on the environment; 50% said they respond to advertisements that speak to global issues such as the environment, and sustainability. Furthermore, a study by Jain and Kaur in 2008, indicates that women are more likely than men to be aware of the consequences their consumption habits have on the environment. The study also found that mothers-to-be tend towards purchasing more eco-friendly and sustainable products.

This awareness around sustainable living is driving both consumer and producer behavior in certain key markets, including organic food, beauty and lifestyle products and everyday goods. While people are looking to buy products that are sustainable for the environment, they are also choosing products that are sustainable for their health and lifestyle.



3

so that the last mile customer does not have to bear the cost of being environmentally sustainable.

Beauty and lifestyle

Urban India is driving companies to think sustainably about various products that are part of a person’s everyday lifestyle. The Switch Fix produces and sells a range of sustainable beauty and hygiene products, catering to a population of sustainably-aware consumers. From products that are made from water-less ingredients to vegan, cruelty free, and non-toxic products, their range helps consumers reduce their carbon footprint in small but impactful ways.

According to The Switch Fix’s Abhishek Kumar, people in Delhi are now asking questions to ascertain how sustainable things are across all aspects of their life. How much water was used to create a piece of clothing? What is the impact of an automobile on the air quality in a city? How much electricity is consumed by household appliances and what effect does that have on the environment? These questions have made brands become more transparent and accountable for their products or services.

Organic food and everyday products such as dairy

During an episode of A Sublime Life, a podcast exploring consumer choices that promote cleaner and greener lifestyles, Vaibhav Nagory, the COO of Greener, a plant-based cafe in Delhi, presented his view that veganism has increasingly become a way of life in India and not just in other countries such as the USA. He observes that people have embraced it as it not only leads to better health and holistic beauty but has a positive impact on the environment

with consumers eating what is often locally-sourced.

Chitale Group, a dairy conglomerate, also offered their views on the podcast, highlighting that businesses such as theirs are moving towards helping urban Indians make more sustainable everyday choices. Before the pandemic, the group partnered with collectors to gather empty plastic milk containers from people in Pune and worked with the government to reuse the material in innovative ways such as building roads. The group is also in the process of creating a recyclable and reasonably-priced solution that works for dairy packaging,

Sustainability across the value chain

While food businesses and lifestyle companies are gearing to meet the needs of environmentally conscious populations, they are being supported by companies that are rethinking an important aspect of how a product can be more sustainable: plastics and packaging.

A case in point is The Mend Packaging, a company that helps brands create

BEHAVIOR CHANGE

sustainable packaging. In their effort to innovate and rethink recycling and eliminating plastics from the value chain, they have come up with forms of packaging that are 100% biodegradable, thereby not causing harm to the soil or contaminating groundwater resources. They are also using the latest technology to create a 100% marine biodegradable water soluble pill, which will eliminate the need for using plastic lines or laminates in plastic cups.

Bottlenecks and challenges of waste management

Consumers are being supported by companies in their attempt to live sustainably but an important question when analyzing the overall impact of these sustainable choices is whether sustainability is observed across all stakeholders in the value chain, especially in the processing of waste. Large quantities of waste, tellingly, is the byproduct of growing urbanization and a huge cause of environmental degradation surrounding urban areas. While people want to help with recycling and waste sorting by taking small steps to do so, urban India's story around government support and integration is in need of further improvement.

Many companies have the means to reuse and recycle but struggle with the front-end collection of this waste, a responsibility that often lies with urban local bodies of cities.

These entities find themselves struggling with operational capacity (transportation, treatment and disposal of waste), lack of funds, and other institutional challenges in order to effectively manage the growing problem of urban waste. Research found that when it comes to door-to-door collection of waste, only 11 states have achieved full collection

capacity, and only 2 states process more than 90% of their waste, while 13 states process more than 60% and Delhi, a main urban center, processes only 55% of its waste, as of January 2020.

Evolving conversations and the path ahead

Despite the several challenges and data suggesting limited success stories, there are examples of urban centers that are moving towards greater sustainability. In 2019-2020, the Swachh Survekshan (SS) initiative, under The Star Rating Protocol for Garbage Free Cities (a framework that grades cities across 24 different categories of solid waste management) awarded 5 stars to 6 urban centers in India: Ambikapur, Rajkot, Surat, Mysuru, Indore and Navi Mumbai.

Policymakers are slowly also supporting businesses, who with the right kind of technology, investment and leaders, can bring down prices, improve scalability and access to a sustainable lifestyle. India's ambitious Plastics Pact is one such supportive initiative, which, backed by the government, aims to bring together businesses, governments and NGOs to reduce, reuse, and recycle plastics in their value chain. Launched by the Confederation of Indian Industry and developed in partnership with WRAP and WWF India, the pact has 22 large and medium-scale businesses and organizations as its members as of 2022. The goal of the initiative is to eliminate the use of plastic in the country by 2023 through four key targets.

As a result of a growing awareness among urban Indians, every participant and stakeholder, from the manufacturer to the consumer, is asking questions on whether the products they sell, buy and use are sustainable. Kantar's Asia Sustainability Foundational Study 2021 covered 9 countries in the region,

including India, and found that 58% of the respondents were concerned about water, air and environmental pollution because nearly all of them had been personally affected by it. They also found that 53% of Asians have stopped buying products and services that negatively impact the environment.

While this conversation has gained traction, a close analysis of age-old practices in India reveals sustainability was always very close to an everyday Indian's life. From the farmer using natural ways of growing ingredients, to older generations conserving food, water and recycling waste through natural methods in the household, India has employed sustainability at its core without being qualified as such by international standards. The new complexities of a globalized world and changing urban centers has meant these age-old sustainable practices have evolved to generate newer ones, supported by companies that cater to this population.

Concentrated impact across an entire circulatory system towards sustainability requires the initiative to be taken by everyday citizens in combination with companies moving in the direction of sustainable products and manufacturing processes. It also requires dedicated support from policymakers, local bodies and the government. Better urban development, management of resources and the establishment of effective institutions that monitor and manage the effects of urbanization on the environment are some steps that can aid urban India's path towards embracing a sustainable lifestyle across several aspects that are currently in need of better environment consciousness; use of plastics, waste management and water conservation, to name a few. ●

A Sublime Life

Conversations **revolving** around
a clean & green lifestyle

REVOLVE **sublime life**
CURATORS OF CLEAN BEAUTY

Engaging in self-care shouldn't hurt the planet. Join the Sublime Life Podcast as we discuss clean living and innovative ideas about how to take part in a global movement to build a greener world.

Listen on
Apple Podcasts

LISTEN ON **Spotify**

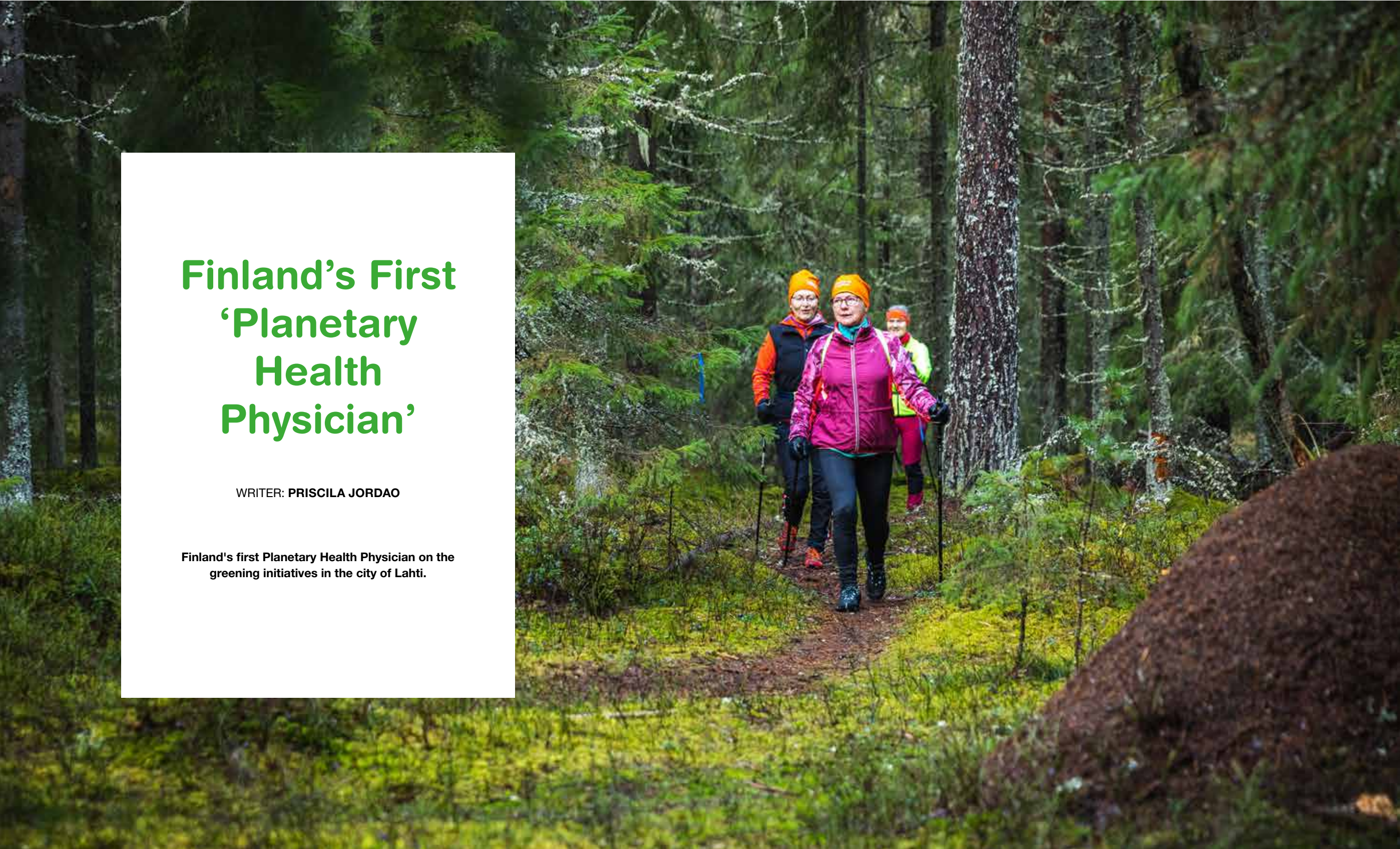
Listen on
Google Podcasts

Listen on
amazon music

Finland’s First ‘Planetary Health Physician’

WRITER: PRISCILA JORDAO

Finland's first Planetary Health Physician on the greening initiatives in the city of Lahti.





2

In November 2021, the City and Region of Lahti announced a 10-year initiative to bring the nature and public health agendas closer together: the Nature Step program. Guided by the concept of Planetary Health – which recognizes and emphasizes the links between human health and the state of natural systems – the local healthcare district and the governor of the program recruited a Planetary Health Physician to help align the efforts of medical, public health and urban planning professionals in the region.

Can you tell us more about the Nature Step program and the context in which you were hired?

The Nature Step program is a 10-year initiative to unite the health and environment initiatives of the Region of Lahti, the City of Lahti, and the Lahti University Campus. It continues the long-term tradition of environmental

work that led to Lahti’s nomination as European Green Capital for the year 2021. We are joining forces so that we can benefit from each other’s knowledge and expertise to achieve better results in mitigating health issues, ecological problems and economical costs that originated from poor health. Currently, 95% of healthcare costs are spent managing diseases but only 5% go to disease prevention. We need to change that logic. It is there that nature comes into the picture.

What does a day in your role as Planetary Health Physician look like and how is it different from the day of a regular doctor?

I am employed as a Planetary Health Physician by the Päijät-Häme Joint Authority for Health and Wellbeing in the region of Lahti, and I am also a neurologist, working part-time in a clinic. As a Planetary Health Physician, I work with people who don’t have a healthcare background such as researchers and city administration staff and bring in my medical expertise. The main goal is to reduce the burden of non-infectious diseases such as diabetes, obesity, and mental health illnesses amongst the population. In our Health and Environment program, a good example for such projects is a nationally funded initiative to achieve

- 1. Nordic walkers out in the forests around Lahti. Photo: Juha-Pekka Huotari
- 2. Dr. Hanna Haveri out in Lahti with her dog. Photo: Dr. Hanna Haveri
- 3. Urban gardening in Lahti. Photo: Lassi Hakkin
- 4. Dr Hanna Haveri in her consultation room. Photo: Dr. Hanna Haveri



3



4

more sustainable food systems in day-care that help children eat healthier diets and avoid food waste. At the same time, I have the same regular work of any other physician. Although the two roles are separated, they mutually influence each other.

Can you give an example?

In my job as Planetary Health Physician, I don’t have much contact with patients. It’s easy to drown in the planning of

large projects and lose sight of everyday life and the issues patients bring up. But as a neurologist, I see patients all the time. So, I can always take the perspective of patients in my job as a Planetary Health Physician as well.

For example, now, as part of the EU-funded project GoGreenRoutes, the City of Lahti is developing a health forest near the city’s central hospital. Along with some other physicians, I take part in an expert group that considers what kind of patients could benefit most from the forest and if we could use it in patient rehabilitation. I try to visualize how we can benefit from nature and take the best out of nature without destroying it. I have also given some suggestions on how to make green routes more attractive for hospital patients.



5. Winter cycling around Lahti.
Photo: Sebastian Ratu

What have you found out about the groups of patients who derive the most benefits from nature?

It is quite widely known that certain groups of psychiatric patients can benefit a lot from being in the forest. Children with regular contact with green areas have a wider spectrum of microbiota in their gut. We are also interested in studying the effects of nature on patients with neurological

issues and on the rehabilitation of both children and adults.

What are the main challenges and obstacles to integrating nature into health care services?

One of the challenges is to motivate people to go out and use green spaces more, be more active and eat more

sustainable food. I think that is the biggest challenge. It is a fact that in western countries people’s well-beings haven’t improved in years. It is worsening, with younger people suffering from obesity and type 2 diabetes. Another challenge is to raise awareness among politicians and decision-makers about the need to invest more in disease prevention. In Finland, there are also challenges related to urbanization and infill development (building in vacant spaces in already urban areas with new constructions) in cities, natural areas are too often subordinated to construction plans.

From your perspective, how can cities create green spaces that motivate hospital patients and regular citizens to use them more often? And how to create restorative spaces that enhance mental health?

Here in Lahti, we already have art installations in the forest. People can

observe wildlife there, such as plants and birds. It would also be interesting to have more interactive trails such as adventure trails with tasks, activities and climbing areas for children. This helps motivate people to come back and not visit the forest only once.

For elderly people and those who are sick, we also need benches and other places where they can sit. Not necessarily metal benches, but benches that are natural and look comfortable.

Do you offer treatment outdoors to any of your neurological patients?

In neurology, this is quite difficult to do as we must be very time-efficient when in contact with patients. Timewise, it would be difficult to have appointments in nature. But it doesn’t mean that other healthcare professionals such as occupational therapists and physiotherapists can’t do it. Right now, we know that nature helps diminish stress, but we need more data proving that it is beneficial enough to justify outdoor appointments. We are trying to do experiments in Lahti where this data can be obtained.

What other experiences did you have as part of the GoGreenRoutes project so far?

We met some researchers from the ISGlobal Institute in Barcelona, and it was very interesting to exchange with countries and cities where the environment is very different from ours. Lahti is quite green and lush, we have a lot of forests, lakes, and water, but Barcelona is less green, even though there are beautiful parks. In Lahti, the challenge is that we are also altering our environment, and many of our forests are not natural anymore. We now are trying to do something about it and conserve nature to ensure there are also untouchable forests. It would be interesting to investigate the differences in the forests if nature is left untouched and what its effects on people would be. ●

Water-Smart Gardening

WRITER: EVA PETTERSSON

Part II

Author of *Sustainable Gardening Made Easy*, Eva Pettersson, invites us to become stewards of more sustainable lives, sharing excerpts from her book on how permaculture is the best tool for doing so. Come along with us this summer and taste what the gardening world has to offer.

Personal note

Summer has finally arrived, and it's time for the first harvest of early annuals. It is fantastic to pick green leaves for your lunchtime salad.

For those of you who want more space to grow food, summer is an excellent time to go on a journey of discovery to find new opportunities.

If you live in an apartment, there may be common areas around the buildings that may be used with permission. Or why not take a trip to the nearest residential area and have a look around. Perhaps there is someone who does not have time for their garden and you can help them in exchange for produce. Ask around, talk to your neighbors and tell them what you are searching for. In many gardens, berries

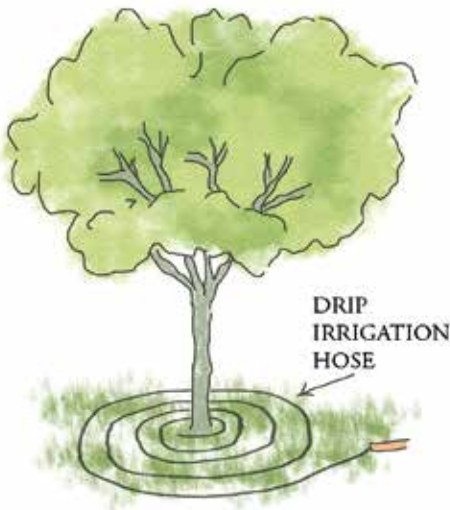
and fruit may be left to rot; maybe there is someone keen to let you pick in their garden. Maybe a farmer would agree to rent you space with others for a community garden. You may be surprised of the opportunities!

Book Excerpt

Save and conserve water

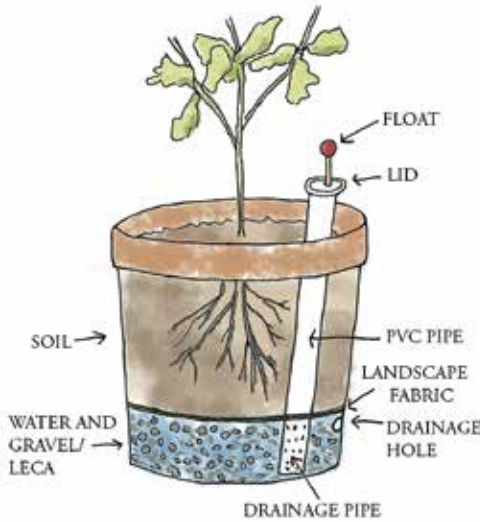
We can no longer take freshwater for granted. We must reduce our water consumption in all conceivable ways or we run the risk of being left without clean water to drink or to water our crops with when rain is scarce. Learning how to take advantage of rain and groundwater in our gardens and using it optimally is essential.

Utilizing different elements and their functions for a sustainable water system is a central design component in permaculture. It may sound repetitive, but water issues are exceedingly essential. Here are some examples:



Avoid overwatering

Although the surface looks dry, there may be enough moisture further down in the soil. A general rule is that the top two centimetres should be dry and the soil below moist to encourage the roots to seek deeper into the soil. This in turn makes the plant more tolerant to wind and



drought. On the other hand, excessively wet soil cannot hold enough oxygen for the plants to thrive, and with too much water, the plants suffocate. It is said that 25-30 mm of water once a week is sufficient for most plants. Still, with different water-saving cultivation methods, this can easily become too much. The best way is to check the soil before watering and make sure that the moisture truly penetrates the soil to stimulate the roots' growth downwards. A good thing to keep in mind is that one millimetre of the precipitation corresponds to one litre of water per square meter.

Reusing gray water

Reusing your gray water is a major step, but if you are building or renovating a house, much is gained by thinking about a solution to separate gray water from the pure wastewater, or perhaps even choosing a waste-free toilet system. The gray water can then be led to a natural purification bed before it is used for your garden beds. Needless to say, such a system requires that you do not use a lot of chemicals in your home.

Irrigation system

There are many ways to reduce water consumption when cultivating. Here are some examples:

Drip irrigation

The most effective way to water is to install some kind of drip irrigation.

Self-watering vessels

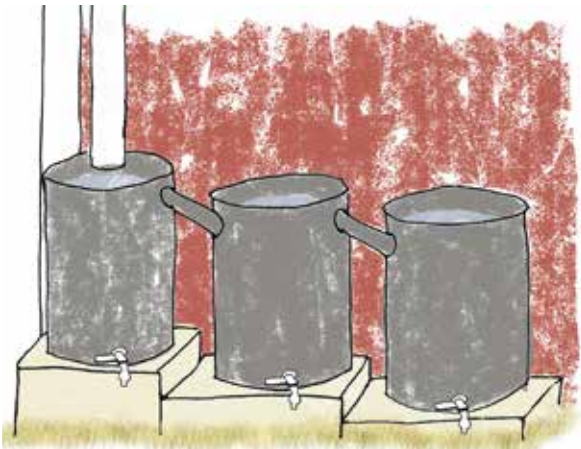
A 1.5-liter plastic bottle can be an excellent self-watering vessel for single sprouts.

Self-watering pots are available to buy, but you can easily and cheaply create one yourself. How long a plant survives on one watering depends on the plant and the size of the pot, as well as where it is placed. For example, a tomato plant in a reasonably large pot can survive for a few days, even if it is warm and bright out.

If you grow in beds, you can, with some additional effort, make them self-watering. Here it is vital to get the bed watertight so that the water does not leak out. The easiest way to solve this is to cover the inside of the bed with a pond liner, big enough to reach up to where the soil level starts.

Barrels and tubs

The most common way to collect rainwater is to place barrels under the pipe. The disadvantage is that they overflow when there is a lot of rain at once, but this loss can be counteracted by making a drain from the first barrel and connecting this to a lower and preferably wider vessel.





Water Management in Cyprus

WRITER: MARTINA VALLS CARAFI

Who, how, when and where do people get their water in Cyprus?

Cyprus lies at the crossroads of three continents; Europe, Asia and Africa, a mix of cultures and civilizations with a common Mediterranean essence. It ranks as the third largest and most populated Mediterranean island with 1.2 million inhabitants.

The island, characterized by the fragmentation of the Turkish invasion in 1974, is partitioned in two; the southern half remains under control of the Government of the Republic of Cyprus whereas the northern part is under the Turkish-Cypriot Administration, accounting for about 37% of the island’s territory.*

The island is classified as ‘water poor’. Water scarcity has always caused a serious problem to the society, the environment, and Cypriot industries. In May 2022, REVOLVE travelled to Cyprus for the WATER-MINING project to investigate the human dimension of the water situation on the island.

REVOLVE interviewed different people during the trip to understand their connection to water. Children showed curiosity and sensitivity towards water uses, speaking their minds on water availability. Some mentioned that “water is used for plenty of activities like laundry, dishes, watering plants, and for showering or swimming”, and others demonstrated that they are aware that in their country there are “machines that remove the salt and mix freshwater so Cypriots can drink.”

One man opened his door to REVOLVE and shared his journey as a farmer on the island from back in 1953 and expressed how much things have changed since then. His message was clear: “Please do not waste water and be very careful with its use.”

In Cyprus, the agricultural sector is the country's largest water consumer, accounting for 69% of overall water usage. Concretely, irrigated agriculture



2



3

in semi-arid areas requires a lot of water, which creates a more challenging situation for the country.

Until the 1970s, groundwater was Cyprus’ primary source of agricultural and drinking water but, as a result of over-pumping, practically all aquifers have been depleted considerably. In the Mediterranean, island states also devote significant portion of their total water supply to tourism, and Cyprus is not an exception.

The country receives almost 2 million tourists every year, which ultimately represents 16.9% of the total urban water use. The lowest water consumption of a European citizen per day is around 105 liters, but this number is multiplied by four during a tourist’s stay in a Mediterranean hotel. This is hardly surprising as most tourists visit the region during the hot and dry summer months and consume a lot of fresh water with the use of swimming pools, water parks and golf courses

coinciding with when water resources are already scarce.

Mrs. Panayiota Hadjigeorgiou, Director at the Water Development Department, explained that “water demand in Cyprus rises from year to year, especially in the domestic sector, and currently the administration uses the agricultural sector as a regulating tool for maintaining the demand for all users, but this tool is not working very well due to the high rise of demand.”

On the other hand, a farmer from Kampia, a small village located in the Nicosia District of Cyprus, expresses concerned that farmers in Cyprus are not allowed to use water from the dams, even if they are located only 300 meters from their farmhouse. As they do not have permission to use the dams, farmers drill for water in the mountains through an energy intensive and costly process to take the water from 300 meters up to the surface.

Maria Avramidi, a researcher in the Unit of Environmental Science & Technology at NTUA, shared with REVOLVE that “when there is drought, then agriculture is the one that suffers the most because they are given limited amount in order to satisfy the demand of the urban and tourist areas.” This bias towards the tourism industry is both causing conflict between the industries and poses a threat to local residents.

Cyprus’ unique location in the eastern Mediterranean makes it one of the global climate change ‘hotspots’ with particularly high sensitivity to climate alterations and impacts. Cyprus is an island that has the lowest water availability per capita in the Mediterranean and suffers from the highest water stress levels in Europe; and that will be threatened even more by the climate crisis.

The island does not have large rivers either; on the contrary, there are no significant rivers, and all are short and dry most of the year. Droughts and limited precipitation are also a common problem on the island.

In 2018, water in dams were at the lowest levels since 2008. According to projections by PRECIS – a regional climate modelling system designed to generate detailed climate change projections to any area of the globe – suggest that precipitation in Cyprus will decrease by 20% by 2050.

At the same time, population growth, technological and economic development, urbanization, unsustainable tourism and consumption trends, among



4



5

1. Larnaca’s Harbour. Photo: Momen Nabil

2. Farm fields, Larnaca. Photo: Momen Nabil

3. Lands, Larnaca. Photo: Momen Nabil

4. Finikoudes, Larnaca. Photo: Momen Nabil

5. Mackenzie beach, Larnaca. Photo: Momen Nabil

others, are increasing the demand for water in the country.

How is water demand met in Cyprus?

Confronted with such environmental and socioeconomic challenges, Cyprus has been implementing a series of plans to satisfy growing

water demand. During the late 1960s, a Water Master Plan, which included leakage reduction, improving irrigation efficiency, water pricing, education and awareness campaigns, among others, was implemented with the aim to increase water availability and access. In 1997, two other unconventional sources of water were introduced: the re-use of wastewater and desalination of sea water.

More than half of the recycled water in Cyprus is used for the irrigation of agricultural and livestock crops and green areas, either directly or through the artificial recharge of aquifers, in accordance with the code on good agricultural practice.

During an interview with Panayiota Hadjigeorgiou, Director at the Water Development Department, she argued that the Government implemented extra measures, such as re-use water with tertiary treatment, in order to satisfy the demand of water, especially that of the agricultural sector.

She explained that this was a mandate of the Government of Cyprus, irrespective of European Union directives, and that they bear the cost of this further treatment to incentivize the farmers to use this water without any fear and to use it extensively for irrigation purposes.

This measure was implemented with the aim of alleviating water demand because if farmers used recycled water, there was an amount of water free for other users such as water treatment. Therefore, the government could use water from the dams for water treatment, so they do not need to go through the desalination water process which is expensive and energy intensive.

The measure was not directly welcomed by the farmers as they did not want to use recycled water. In response the government showed the benefits of the system through a pilot project which was implemented in Limassol for two consecutive years. The Agricultural Research Institute



6



7

6. Tamassos Reservoir, Nicosia. Photo: Momen Nabil.

7. Farmfields, Larnaca. Photo: Momen Nabil

Pilot projects to secure Cypriot's water: the case of WATER MINING

The WATER-MINING project, an EU-funded initiative, is one of the projects working to provide solutions. It aims to develop energy-efficient technologies for treating wastewater from urban and industrial areas and from desalination, whilst promoting the extraction of valuable products from the residues generated during the process.

One of the project's case studies is taking place on the Southern coast of Cyprus at the Larnaca Wastewater Management Plant. Here, water is already recovered and used in agriculture, however, the high salinity of the water effluent and its phosphorus concentration pose problems for its re-use and may lead to problems in the soil.

At the plant they treat the water effluent and provide a higher-quality water that can be re-used and recovered in the form of valuable products such as sodium chloride and

phosphorus. These produce chlorine for water disinfection and fertilizer for agricultural fields respectively. Furthermore, there are on-going efforts for the installation of solar panels on-site, which can cover a fraction of the wastewater treatment plant's energy requirements.

REVOLVE visited the premises and discussed the benefits and the impact for the wider Cypriot society with Maria Marykazi, chemical engineering expert and project manager of the NTUA team, and her colleague Maria Avramidi, who explained the WATER MINING pilot project located in Larnaca.

They explained that during the process, the treated water from the Larnaca station is desalinated through three main steps: 1) by removing phosphorus in order to be used as fertilizer for local agriculture, 2) by removing magnesium and calcium and then sodium chloride and 3) by

recovering sodium chlorine to be used in chlorination units or in industries.

Consequently, the water recovered from the process is water with low salt concentration, suitable for irrigating crops that are currently not allowed to be watered by the water the treatment plant is currently recovering.

Maria Avramidi explained that some of the potential solutions to the water crisis in Cyprus is to integrate recycling water into the existing water cycle to minimize the water demand from the freshwater.

She reinforces the idea that is better to add additional treatment and technologies to the process in order to alleviate the restrictions of using recycled water and to create trust, especially among farmers. If farmers welcome it, this will enable them to irrigate more markable crops which will consequently have a positive impact on the economy.



watermining.eu

info@watermining.eu



#watermining



of Cyprus carried out the research analysis and demonstrated that crops irrigated with recycled water increased yearly by 30%.

Moreover, apart from the reuse of wastewater, four desalination plants are now operational in Cyprus: Dhekelia, Limassol (Episkopi), EAC Vassilikos, and Larnaca, with a fifth desalination plant in Paphos planned to begin operations.

Desalination plants are an additional resource for covering drinking water needs but also to support holiday resorts in arid areas. For example, the desalination plants at Dhekelia and Larnaca meet a large portion of the drinking water requirements of the Nicosia, Larnaca, and Free Famagusta districts.

Desalination plants and water reuse

Even though wastewater treatment plants have been used as an alternative source of water since 1997, they also cause two main problems: greenhouse gas emission and the marine environmental impact.

Most wastewater treatment plants consume large amounts of energy. In 2018, Cyprus needed roughly 240.9 GWh of electrical energy (which was generated by burning imported fossil fuels, oil, and petroleum products.) to produce 69.6 million cubic meters of desalinated water.

According to Maria Avramidi, “Cyprus should incorporate renewable energies as the island enjoys a lot of sun and using solar energy could help minimizing

the cost of energy and so, the cost of producing water quality.” Cyprus gets 300 days of sunshine annually but imports 100% of its fossil energy needs.

Furthermore, the organic matter and nutrients found in wastewater treatment facilities have a direct impact on the surrounding aquatic environment.

The results obtained in a long-term survey by scientists from the Cyprus government’s fishery department show mostly strong impacts on seagrass (*Posidonia* sp) meadows, both iconic and important for marine biodiversity and carbon storage.

8. Wastewater treatment plant Larnaca. Photo: Momen Nabil

9. Sunset at Salt Lake. Photo: Momen Nabil

This, in addition to the fact that in 2008, coinciding with one of the most significant droughts in the country’s history, Cyprus had to import water from Greece, shows that despite the measures taken to provide alternative water sources apart from rainfall (which was the only source of water until 1997), the water crisis in Cyprus has not yet been solved.

Cyprus is still suffering from a chronic shortage of water. Population growth, technological and economic development, urbanization, unsustainable tourism and consumption trends, among others, are increasing the demand for water in the country. All of these coupled with climate change effects poses a threat to the available water resources the island disposes of.

Allocation of water resources to determine who can use water resources, how,

when and where is crucial but also, a complex issue. With the aim to create a sense of water security in the country, the Cypriot government implemented in 1997 two unconventional sources of water: the recycled water of wastewater and desalination of sea water.

Even though these measures were taken with the objective to satisfy some of the water needs in the country, they have not yielded favorable results to all the different actors of the Cypriot society, as it has been the case of the farmers in the agricultural sector.

The Larnaca case-study aims to resolve one of the most pressuring challenges Cyprus is facing; supply re-used and high-quality water to the agricultural sector (the larger consumer of water in the country) and thus prevent ground-water extraction which might be used, in turn, to supply other sectors (drinking

purposes or tourism related activities, for example).

Even though the pilot project in Larnaca is in its initial stages, the project is aiming to be upscaled, thus creating more favorable conditions for farmers to grow more profitable and added value crops and at the same time, increasing water resources availability.

Nonetheless, this is just one side of the coin. The water crisis in Cyprus can only be resolved if other sectors and practices are being reconsidered and addressed. ●



8



9

Circularity for All?

INTERVIEW WITH: **DR. PATRICK SCHRÖDER**
AND **DR. JACK BARRIE**

**Fragmented approaches to circular economy could
exacerbate global inequities.**

What is the circularity divide?

If nations transform their respective economies towards circularity in a competitive race, then “advanced industrialized nations hold a significant competitive advantage,” write the researchers from Chatham House, Saint Mary’s College of California and De Montfort University. This advantage will increase as economic contests and systemic risks in the global economy intensify, and because developing countries are disadvantaged due to unequal power relations in value chains.

“Historical legacies and ongoing dynamics of unequal power structures determine the opportunities of different actors in an unequal world. These existing inequities will enable developed countries to transition to a circular economy more rapidly than less developed countries thereby creating a circularity divide,” explains the researchers’ joint paper ‘The circularity divide: What is it? And how do we avoid it?’

In turn, this divide will reinforce the structural inequities further. They observe that European nations, the United States and China have already started adopting circularity as a domestic economic strategy due to supply chain volatility and the economic pressures brought about by COVID-19. The research has identified five already existing divides particularly relevant for a circular economy and circular transition:

- 1. Digital divide:** The significant inequity between the Global North and Global South in terms of access to digital equipment, skills to use digital technologies, and economic and social opportunities arising from new Industry 4.0 applications.
- 2. Innovation divide:** The capacity for innovation and industrial skill basis to design and produce advanced circular technologies and processes.
- 3. Trade divide:** Trade agreements from developed countries to secure the supply of critical raw and secondary materials to meet domestic demand, while pressuring developing countries to accept low value and hazardous waste in return.
- 4. Finance divide:** Unequal access to circular economy-oriented finance to invest in technological and business model innovation, capacity building and to develop the necessary skills base.
- 5. Development divide:** Developing countries must focus on immediate development challenges, such as basic necessities of life; therefore, enhancing participation and innovation for circularity are secondary concerns.

In a policy brief, “Addressing international impacts of the Dutch circular economy transition,” PBL Netherlands Environmental Assessment Agency calls for enhanced coherence and integration of policies related to circular economy, trade and development cooperation, more investments in knowledge and data on trade and impacts, as well as greater involvement of low- and middle-income countries in designing and implementing circular policies in general.

Such recommendations appear to address a phenomenon described by Chatham House researchers as the ‘circularity divide’ – that nations with a unilateral and fragmented approach to the circular economy will not only “fail to address domestic environmental problems” but, in turn, also create a divide that exacerbates global inequities. REVOLVE Circular spoke with Dr. Patrick Schröder and Dr. Jack Barrie from Chatham House to learn more about the circularity divide and what can be done to ensure circularity for all.

What led you to research the divisions related to a circular economy?

Dr Barrie: This research is part of our general work on an inclusive circular economy and our specific interest in the role of trade flows. We initially conducted a systematic review of the literature discussing how international trade flows are linked to the circular economy. And we had a particular lens on how the changes in global trade flows as we move towards circularity will particularly impact developing countries. This research paper presents a rather simple mechanistic model to generate conversation around these divides, and how they interact with each other and in relation to the circular transition. The five divides are not an exhaustive list; they are just a handful of divides which are particularly relevant



Circular trade:

Any trade in physical goods or services that allow a country or company to undertake circular activities and that contribute to the transition towards a circular economy.

High value trade flows:

Trade of goods from which you can extract high circular value (e.g. scrap metals)

Low value trade flows:

Trade of goods with lower or non-circular value (e.g. oils, chemicals)

2

to the circular economy, while there are numerous other divides in play, and it's a very complex issue.

How does the trade divide exacerbate global inequities?

Dr. Barrie: There is already a divide in terms of efficiency of trading transactions as well as an unequal value capture and quality of flows between the Global North and Global South. Already, developed industrialized countries hold a much more efficient trading capacity than developing countries - not just the trade infrastructure, the ports, the railways, ways to move goods and ship goods, but also the digital systems that underpin these.

Overwhelmingly, 99% of circular trade is captured in the Global North, which tends to be the high value trade flows. The trade flows going from the Global North to the Global South in terms of circular trade flows tend to be very low

value trade flows: these are, for instance, industrial wastes and residues, which are expensive to treat in a country with strong environmental regulations, but cheaper to treat in a country with poor environmental regulations.

What are the implications of the finance divide and unequal access to circular-economy oriented investments?

Dr. Schröder: The finance divide is a general gap that we also see in terms of climate finance. It is not just how governments invest in or spend on circular economy; the key challenge here is to attract private sector investment. And there is a clear gap of private sector investment in circular solutions in the least developed countries, also regarding infrastructure that would enable circular economy. We argue that circular economy finance is mostly going towards the countries which already

have a certain level of industrialization, so it's not necessarily looking at the link between poverty and waste.

How is the innovation divide connected with research and development?

Dr. Barrie: This divide refers to the ability of an individual country to generate innovations, which is generally determined by a national innovation system. This is a combination of institutions, government, academia, and research institutes which produce knowledge that can be used by the industry. There's a significant innovation divide between developing and low-income countries and the advanced industrialized countries in the North. The bigger the already existing innovation gap becomes, the wider the gap for countries to transition to a

1. Photo: Rinson Chory / Unsplash
2. Photo: Dokumol / Pixabay

circular economy. There are research institutes and universities in the Global South doing incredible work on this topic, but it is not being picked up enough, especially in Europe. There is a real need to connect research institutions across these borders to work together more collaboratively.

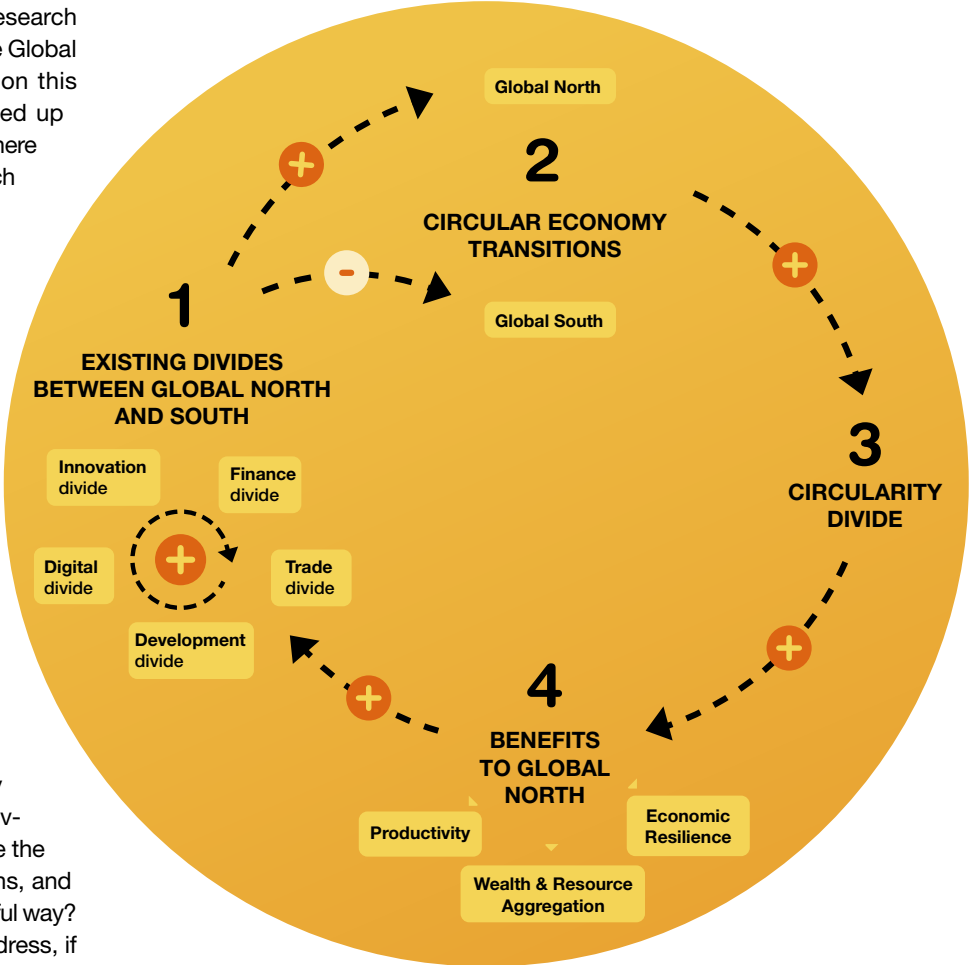
How does the development divide impact the circularity divide?

Dr. Schröder: The development divide goes down to the issues of how society is organized and how burdens and benefits are shared. For instance, how to significantly improve working conditions or living conditions, how to integrate the informal sector into value chains, and how do we do that in a meaningful way? Those are key questions to address, if we want to make the circular economy work for human development objectives.

Dr. Barrie: The job aspect is critical, and it's the link between the development divide and policy. There's a real need now, as countries are being ambitious for their domestic policies, to link that to their trade agendas and the development agendas to make sure that the ramifications are dealt with fairly and inclusively.

How can the world address the circularity divide?

Dr. Schröder: We need to have a multilateral approach and come together to address a global challenge. Circular economy solutions can be integrated a lot more into multilateral development,



Circularity divide between Global South and Global North

Source: Visual based on Barrie, J., Anantharaman, M., Oyinlola, M. and Schröder, P. (2022), 'The circularity divide: What is it? And how do we avoid it?', Resources, Conservation and Recycling, 180.

corporate finance and investments by multilateral development banks. We see that companies and countries are looking at the circular economy, not only as a kind of European thing that they should do, but as an opportunity. They have realized that circularity is already happening in our societies, and this can potentially become a competitive advantage because we're not locked into a linear system. It's a mindset shift.

Dr. Barrie: We need to recognize that everything we do domestically in our

circular transitions will impact others around the world to the global value chain restructuring. We need a global consciousness. A connected consciousness on what a circular transition is. Is it about domestic competitiveness and supply chain resilience? Or is it about meeting global development goals and a global and inclusive transition towards a better society? At the moment, a lot of policies are focusing on the former and we need to shift it to the latter. That's the real key outcome of our research. ●

Waste Has No Nation – Will the Circular Economy Change That?

WRITER: SÖREN BAUER

Limitations of Extended Producer Responsibility (EPR) require a more global approach to waste management.

In the latter half of the 18th century, largely rural, agrarian societies in Europe and America transformed into industrialized, urban ones. New machines and techniques in textiles, iron-making and other industries produced goods - that had previously been crafted by hand - in large quantities. This industrial mass production enabled societies to gradually overcome scarcities of food, shelter and clothing. "What is wrong with this?" asked Walter Stahel, Swiss architect and author of 'The Performance Economy,' in one of our past interviews. "Manufacturers only optimize

production flows up to the point of sale, where both ownership and liability of objects are transferred to the buyer, who later passes the responsibility for derelict objects and 'waste' to the municipality," he explained. In other words: Responsibility for products and what they become is first passed from the producer to the buyer, and subsequently to society.

Walter Stahel explains one of the key issues with such a setup: On the one hand, manufacturers internalize profits; on the other, they externalize the cost of

the risks during the use of objects to the buyer - who then externalizes the end-of-life costs to society, and the environment. Society and nature have to bear these 'externalities' one way or the other, while neither the producer nor the buyer is held responsible.

Fast-forward to the early years of the 21st century: "In the last three decades, the principle of Extended Producer Responsibility (EPR) has been increasingly implemented in waste policy," wrote the Organization for Economic Cooperation

and Development (OECD) in 2001. More recently, in 2016, the organization claimed that worldwide over 400 EPR schemes were in place, "up from about 30 in 1990." These so-called EPR schemes have been implemented in a diverse set of product types, including electronics, vehicles, batteries, tires, packaging and more. And they are promoted and advocated for by many various organizations as a key component of a circular economy. The PREVENT Waste Alliance, for example, describes EPR as "a key concept for 'closing the loop' in the packaging value

1. Photo: Vianet Ramos / Unsplash

chain" and has developed an EPR Toolbox that aims to promote knowledge exchange and enhance the development of EPR systems worldwide.

The OECD, which explains Extended Producer Responsibility as "an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle" would mean the physical and/or economical responsibility is shifted away from society back to the producer. The OECD also describes that EPR schemes are characterized by "the provision of incentives to producers to take into account environmental considerations when designing their products."

Who is responsible for what - and where?

One of the biggest hiccups - or design flaws - of such EPR scheme thinking was recently identified by researchers in the Netherlands, Nigeria and the UK: "Existing EPR systems limit the producer's responsibility to national jurisdictions. When waste is exported to jurisdictions outside the EPR, the producer's responsibility does not apply anymore," they write. And there are consequences: the EPR systems neither result in multiple product use cycles nor, in this case, in safe management of electronic waste. While the researchers had focused on Electrical and Electronic Equipment (EEE) management, one of them, Kaustubh Thapa, states, "We believe 'Ultimate Producer Responsibility' (UPR) should exist for more categories than just electronics. Think of it this way: the current Extended Producer Responsibility Schemes exist

to manage waste in a country. Ultimate Producer Responsibility, on the other hand, exists to manage waste on Earth, irrespective of the country. If we look at the enormous transboundary trade and shipment of waste, such a UPR system is necessary." This limitation of European EPR schemes to national jurisdiction is the first design flaw the scientists identified.

Why UPR?

In total, the researchers discovered three design flaws in EPR schemes which led them to develop and advocate for Ultimate Producer Responsibility. The context: in a world where the Global South is often both the start and the end of a given product's value chain - from raw material extraction via production, to usage, degradation and the (re-) import of much of the Global North's waste - the nationally limited EPR schemes might indeed need to be replaced by UPR. To reinforce their argument, the researchers have outlined a Blueprint for Ultimate Producer Responsibility which also describes the two other design flaws: European EPR systems promote downcycling rather than maintaining value of a product or upgrading it, which results in loss of value, and not the value retention which a Circular Economy aims to achieve. Furthermore, the limited governance arrangements of the existing EPR schemes only involve producers and importers, which reinforces their focus on waste collection and downcycling.

According to the researchers, it is therefore high time to "upgrade these systems by addressing the three major design flaws" they have identified." How do they want to achieve this? The scientists have already developed a petition to engage the Nigerian government and the European Commission on electronic waste, hoping to hold producers responsible, and work towards better waste management around the globe. ●

Quarterly Insights into a Changing World

Covering the sustainability topics that define our times:

Water + Energy + Mobility + Ecosystems + Circular Economy

Support independent journalism and start revolving:

Optimist



FREE

- ✓ Access to our online content
Excluding magazine content
- ✓ Stay informed with our monthly e-newsletter

Enthusiast



7.5€ / quarter

- ✓ Unlimited digital access
- ✓ The current quarterly issue
Digital and/or print
- ✓ Stay informed with our monthly e-newsletter

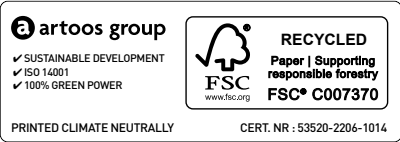
Explorer



27€ / year

- ✓ Unlimited digital access
- ✓ Annual magazine subscription
Digital and/or print
- ✓ Stay informed with our monthly e-newsletter

We ensure that our publications meet the highest environmental standards. Our zero-waste policy means that we reduce and reuse before recycling: all extra copies are distributed at sustainability events.



Printing

REVOLVE is printed on 100% recycled FSC-approved paper at ARTOOS printers that provide carbon certificates to offset their emissions.

Shipping

REVOLVE is delivered to you on bicycle or with e-vehicles. (International shipping via larger carriers.)



Communicating Sustainability

REVOLVE is a communication agency offering a palette of services and expertise to improve your outreach and to increase your impact.



Branding

Benchmarking, visual identity, graphic design, photography, messaging, video production and promotional materials.



Strategy

Audience and target identification, stakeholder engagement, multi-channel digital strategy, and media relations.



Content

Content development, copywriting, and social media management to disseminate your message.



Performance

Reporting activity (KPIs and target monitoring), social media and online marketing control, and multi-channel analytics.



Digital

Digital campaigning, SEO, SEM, web development, UX/UI design, digital publishing, marketing automation and community management.

Our Teams

REVOLVE provides strategic communication, creative design, media relations, marketing planning, and impact reporting.

Communication Experts

Graphic designers, web developers, marketing experts, and communications specialists to create and disseminate your message to the world.

Sustainability Experts

Journalists and researchers from agroforestry, water management, and circular economy, allowing us to create quality content for your project.



26-30 SEPTEMBER 2022
**EUROPEAN SUSTAINABLE
ENERGY WEEK**

**GOING GREEN
AND DIGITAL FOR
EUROPE'S ENERGY
TRANSITION**

Take part in accelerating Europe's clean energy transition. This year's hybrid, interactive event experience is great for getting together, sharing ideas and know-how, and building alliances to drive forward Europe's energy future.

GET INVOLVED
WWW.EUSEW.EU

 EUSEW.EU
 [EUENERGYWEEK](https://www.facebook.com/EUENERGYWEEK)
 [@EUENERGYWEEK](https://twitter.com/EUENERGYWEEK)

#EUSEW2022