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TIME FOR TRANSITION

DEC 2023

HIGHLIGHTS - INSIGHTS - SHARING ON THE ECOLOGICAL TRANSITION

SOLUTIONS EXIST : LET'S DEPLOY THEM TOGETHER !

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THE ASSOCIATION
DISCOVER THE TRANSITION FORUM ASSOCIATION

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SOLUTIONS EXIST : LET'S DEPLOY THEM TOGETHER !

COUVERTURE

Pierre Bonnard (1867–1947)
Paysage à la maison violette
Date : vers 1929
Huile sur toile
Musée d'Orsay

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TIME FOR TRANSITION

DECEMBER 2023

HIGHLIGHTS - INSIGHTS - SHARING ON THE ECOLOGICAL TRANSITION

THE TRANSITION FORUM ASSOCIATION BRINGS TOGETHER AN INTERNATIONAL COMMUNITY OF PRIVATE AND PUBLIC DECISION MAKERS WHO ACT TOGETHER TO DEPLOY AMBITIOUS ECOLOGICAL TRANSITION PROJECTS.

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"THE TRANSITION INVOLVES PHYSICAL FLOWS THAT NEED TO BE REORGANIZED AND STRUCTURED"

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EDITORIAL

Setting a common frame of reference from the start: the key to any ecological transition project

If we are to make a success of the ecological and energy transition, we need to integrate all stakeholders (public and private players, financiers, researchers, etc.). Clearly, if everyone works in silos on a project, that project cannot integrate all the characteristics of the various stakeholders. Until now, however, each party worked in stages on its own, with a pooling of information at the end of the process. This ecosystemic issue is important because we're dealing with the physical: the transition involves physical flows that need to be reorganized and structured. In fact, we save time by establishing a common frame of reference right from the start of each project.

This is the central challenge of the Transition Forum we have been organizing for six years now, and whose spirit we have taken up in our Territorial Meetings starting this year. These regional editions reflect our physical vision of the ecological and energy transition. I am delighted to announce that we are confirming this new organizational structure for 2024: we will be maintaining our national Transition Forum in Paris and organizing five regional Territorial Meetings on each of the association's major themes: production & consumption; food; housing; mobility; protection & preservation, with, as in the Lille, Lyon and Nantes editions this year, a specific issue for the region where the meeting will take place.

This sixth issue of *Time for Transition* once again confirms our ecosystemic vision of the subject and the need, more than ever, to bring people together to act.

I hope you enjoy reading it!

LIONEL LE MAUX
President of the Transition Forum Association
and President of Aqua Asset Management

INTERVIEW

Sylvain Waserman

Chairman and CEO of Ademe,
the French ecological transition agency

Ademe has a dual mission: to inform public decision-making, sometimes to inspire it, and to provide expertise. To do so, it has a "strike force" of over 1,000 collaborators and 150 post-doctoral researchers working on all aspects of the ecological transition.

The Council of Ministers appointed you Ademe's CEO last July. How do you see your new position and what are your prospects in the current fast-moving context?

My career as a local councillor and my experience in an energy company have shaped me. Both made me adopt a different model. And model changes are truly what the whole industry is facing today. Ten years ago, energy was at the forefront (local energy models were geared towards territorial energy transition) and it was a precursor to the current movement.

I began my term of office with a tour of France to see the regions and the realities of the field, and to find out about Ademe's image in the eyes of its partners: chambers of commerce, trade organisations, elected representatives, regions, etc.

All this enabled me to identify six areas of work, the first of which is the modelling of our human resources, an essential point for us, in order to manage them better: it is the *"justification of the first FTE"* (full-time equivalent), just as we have a justification of the first euro in public accounts.

The second priority is to deploy a carbon efficiency indicator for each euro invested. Just as in finance, you cannot look only for the short term, when you invest in a sector, it takes longer. Investing in a full-scale heating network in a metropolitan area is less profitable than in an urban centre, and yet it is essential to do it anyway in order to get local authorities on board with the transition. We are going to have to work on this indicator very carefully, in layers, depending on the partners.

Another key axis is the widespread use of ecological transition solutions. Today, we have ambitious quantified targets: - 138 Mt of CO_2 in seven years. We can measure each of our projects in terms of their contribution to this objective. Thus, it is necessary to scale up the solutions that work. For example, a dairy in Isigny (14) has installed a heat pump and reinjects the waste heat. This solution could be replicated in all 150 dairies in France. Ademe has a role to play in massively disseminating solutions that work. Besides, as part of the forecast budget for 2024 (4,2 Md€), it will benefit from a very strong growth in the Heat Fund, which is set to rise from €500 million in 2023 to more than €800 million.

The fourth axis identified concerns values. For instance, this is the first time I've seen engineers leave their permanent contracts with companies to come to Ademe on temporary contracts *"because it makes sense and because this is where things happen"*. This gives us a responsibility in terms of human resources to retain these talents. And all the more so as we are benefiting from an increase in the employment ceiling with 99 additional FTEs in 2024.

Another of Ademe's major challenges is its ability to mobilise citizens, businesses and elected representatives.

For example, we are working with Olivia Grégoire, the French Minister for Small and Medium-Sizes Enterprises, Trade, Craft Trades and Tourism, on ways to support SMEs using our ACT (Assessing low Carbon Transition) methodology, which is designed to help businesses define a coherent low-carbon transition strategy and a relevant action plan (see *"Act Step-by-step"*). We would like to develop digital tools to help target schemes of interest to SMEs and identify the most appropriate support in each case.

At the same time, we want to develop the idea of having, in each town council, an elected representative who can be given the keys to understanding the ecological transition, so that they have the time to acquire this knowledge and then implement it naturally when making decisions for the town (e.g. planting trees, renovating a village hall, using energy sparingly, etc.).

Implementing these relays or referents would be a great way of anchoring the concepts and reflexes a little more firmly in each town council. We know that the ecological transition is complex and that it takes time to get to grips with it. With our modules, our access to the best experts in France and our engineering skills, we can help those who want to move forward to the next level.

Finally, another important area of work concerns foresight: how to stay one step ahead to shed light on the issues at stake, and, in particular, the way in which artificial intelligence and digital technology can help the ecological transition (until now, we had been working on sustainable IA and sustainable digital technology).All of these areas of work are part of our action plan which will be implemented over the next eight to ten months. With this in mind, a call for ideas was sent out to members of Ademe's ecosystem and we received no fewer than 550 answers.

During the Pollutec exhibition, you said that a company that does not think about its decarbonisation is threatening its future, and that the ecological transition requires a regional approach. Can you tell us more on this subject?

This ecological transition has to be territorial. I had already underlined this necessity in my White Paper in 2016: it is clear that local energy models accelerate the energy transition of territories. We are in an important phase where we need to create alliances to achieve the ecological transition objectives for the regions.

Actually, we have to get away from the idea that all of this is a regulatory constraint imposed on companies: that is a very short-termist view of things.

In reality, we are part of a global decarbonisation movement in the face of climate change. And with methodologies such as ACT, and a very proactive approach to decarbonisation, French companies need to consider that tomorrow, the ones which will succeed will be those that have grasped the decarbonisation objectives rather than simply accepting them, and that have embraced the process as early as possible in an agile and effective way. In doing so, they are proving that they have been able to make a change.

Let's take the case of subcontractors to major groups. For a subcontractor, it is suicidal not to look at the subject. It is matter of survival and not just a secondary issue of putting a label on a report...

French companies and many business leaders have understood this: there are two ways of doing things: either you focus on themes that contribute directly to the challenges, or you make a commitment to be at the forefront of decarbonising your business and you prove it.

We are fortunate to have a methodology (ACT Assessment). For this part, the ACT initiative evaluates the climates strategies of companies, whatever their size or market, and compares them with the requirements of a low-carbon world.

This methodology is recognised worldwide, accessible in French and in open date and it can be applied alone or accompanied. This means that you can immerse yourself in and get up to speed with the latest international standards on decarbonisation and the assessment of your footprint.

Overall, what would be your main message to the business world?

My message is the following: economic players are used to competition; they are fine-tuning their differentiation. In the context of the ecological transition, being agile and in the avant-garde is your best chance to succeed tomorrow in competitive markets and it is an objective argument that will set you apart from your competitors. We have a competitive advantage: let's make the most of it! We are lucky to be in a country where the energy mix is extremely low-carbon.

A French company thus has every asset to differentiate itself from the competition: it has a methodology, a low-carbon electricity, and its engineers have a strong creative capacity. This is true for the industry as well as for digital technology. In every field, France and French engineering have an approach enabling them to score points.

Nowadays, companies have the capacity to go to international markets with one of the most low-carbon offers, with companies which have gone through some of the most advanced impact assessment methodologies and which will be able to put forward a differentiated offer all over the world, compared with their competitors in many countries. We are at the very moment when companies have to make these choices.

I sincerely believe that the French context offers an extraordinary differentiator to business leaders who will quickly realise this and take up the challenge. We have a few years of competitive advantage, but we still need to quantify it, make it tangible and prove it, and that's why impact assessment methodologies and proof are so important here.

6TH EDITION - 2023

TRANSITION FORUM

Launched in 2018 by Lionel Le Maux, president of Aqua Asset Management and of the association, the TRANSITION FORUM aims to provide a high-level exchange framework to implement concrete projects dedicated to accelerating the ecological transition, faster and at a larger scale.

This summit stems from the belief that the transition is inseparable from systemic change and enhanced cooperation among all stakeholders in society. As such, it brings together every year key players driving change and sharing a common commitment to a sustainable world: public decision-makers, business leaders, start-ups founders and entrepreneurs, civil society representatives, investors, researchers and scientists.

THE TRANSITION FORUM TAKES PLACE OVER TWO DAYS AND REVOLVES AROUND FIVE KEY THEMES:

It is characterised by a suite of inspiring keynotes, round tables, interviews and innovative solutions pitches. It also features several business-friendly networking sessions.

More information: https://www.transition-forum.org/le-forum

The sixth edition of the Transition Forum was held on November 14th and 15th, 2023. Organised for the first time in Paris, it brought together over 600 participants at the Orangerie d'Auteuil on the theme *"Time for solutions"*.

"In the fight against global warming, a commitment of means is not enough: we need a commitment of results.", Lionel Le Maux, founder of the TRANSITION FORUM and of Aqua Asset Management, at the opening of the event.

More than fifty high-profile speakers shared their expertise, experience and initiatives during more than twelve hours of exchanges, which were broadcasted in live.

+600 participants

+50 speakers

+12h of discussions

This sixth edition confirmed that solutions to the urgent climate and environmental crisis do exist. It is essential to support their development, implementation and widespread use in order to accelerate the ecological transition. All stakeholders must be mobilised and are encouraged to cooperate in order to bring about the necessary systemic changes.

More information : https://www.transition-forum.org/edition-2023

TRANSITION FORUM 2023
THE SESSIONS THAT MARKED THE EVENT

DAY 1 – NOVEMBER 14TH, 2023

FOSSIL CARBON, LIVING CARBON

In this opening keynote, Christian de Perthuis reminds us that climate and biodiversity are intrinsically linked; biodiversity should not be considered a luxury but a necessity in the same way as climate.

Climate neutrality and carbon neutrality require a profound transformation of our society. Firstly, there is the energy transition, which has two dimensions: the investment in renewable energies and the disinvestment in fossil energies, in other words the conversion of assets currently dedicated to these energies (financial and human assets, infrastructures). Here, the issues of equal access to energy and redistribution are central.

And then, there is the agroclimatic transition, which is based on three components: agriculture, demand, and protection of carbon sinks.

If the challenge for *"fossil carbon"* is to reintroduce scarcity, the challenge for *"living carbon"* is to reintroduce biodiversity.

PRODUCTION AND CONSUMPTION

DECARBONISING INDUSTRY

Isabelle Kocher de Leyritz (Blunomy) invites us to explore a new vision of *"success"* and to invent solutions that will enable us to move towards this desirable future. Exploration, innovation and anticipation are at the heart of decarbonising the industry.

To achieve this, it is necessary to encourage explorers, empowering them for this exploration and creating the conditions for cooperation between all concerned stakeholders.

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REBUILDING A HIGH-PERFORMANCE AND SUSTAINABLE INDUSTRY

This round table, which brought together (Re)set, GRTGaz, Chamatex, Sweep and ACC, provided an opportunity to present tangible projects pertaining decarbonisation (e.g. the relocation of sports shoes production to France by Chamatex), as well as the new measurement and support tools targeted to companies, developed by (Re)set and Sweep.

Diverse issues and challenges were identified, from the impacts of new regulations (CSRD) to the requirement for transparency, addressed by consumers and clients to the companies, including the necessity to take into account all the aspects of the transition – reduction of CO_2 emissions as well as resource optimisation and preservation of biodiversity – and to combine private and public investments to support change in the industry by spreading the risks as evenly as possible.

The need to reconcile time and profitability also arises from the discussions.

MOBILITY

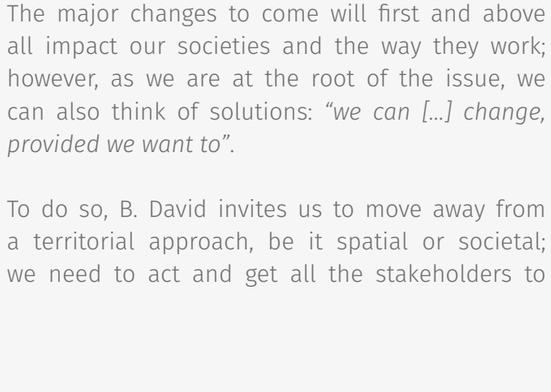
TERRITORIES: SUPPORTING NEW USES

This round table featured Keolis, Safra et Retrofleet who pointed out the new practices and means for mobility that are emerging in the current context of decarbonisation of the sector.

The latter entails environmental and climatic issues, as well as public health (air quality). Public transport and retrofit, in particular, are brought to light as virtuous solutions to be encouraged and developed.

Several levers are presented, among which action on demand, to promote a change in user behaviour, and action on supply, which needs to adapt to these new practices while remaining attractive. A political incentive is necessary as well.

Numerous questions are also raised: what equipment to use, what energy and energy production method, how to save money, what services to offer at recharging points, etc.



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The complexity lies, among other things, in the multiplicity of possible answers, depending on context and use. A key aspect is to take into account the total cost of use.

PRESERVATION AND PROTECTION

WARNING ABOUT THE LOSS OF BIODIVERSITY

Bruno David (MNHN) insists on the need for natural history to fight against *"cultural ignorance"* and *"environmental amnesia"* and to become aware of the multifactorial and insidious crisis we are facing. We are at the beginning of the *"sixth extinction"* trajectory, and we are moving quickly.

The major changes to come will first and above all impact our societies and the way they work; however, as we are at the root of the issue, we can also think of solutions: *"we can [...] change, provided we want to"*.

To do so, B. David invites us to move away from a territorial approach, be it spatial or societal; we need to act and get all the stakeholders to communicate with each other. We have to think differently and to *"adapt our practices to changes in the environment, not [...] the other way around"*.

What is more, biodiversity must be factored into business strategies from the very beginning. B. David reminds us that the role of companies *"is absolutely central [...]"* because *"it is where things happen"*, and calls for a shift from a *"confrontational approach"* to reconciliate ecological and economic approaches.

DAY 2 – NOVEMBER 15TH, 2023

HOUSING

ADAPTING CITIES TO HIGH TEMPERATURES

Elisabeth Laville (Utopies) begins with an overview of the situation: *"we will not see, in our lifetimes, a drop in temperatures"*, given the fact that the current trajectory worldwide is +3°C.

Thus, in 2050, cities will have the same temperature as the ones located 1,000 km to the south. This rise in temperatures is a risk whose consequences are poorly understood and underestimated; they could cost more than 10% of urban GDP by 2100.

On another note, *"the idea that climate comfort is a new fundamental human right arises"*, in relation to the notions of environmental equality and justice.

E. Laville suggests some rules to facilitate adaptation: avoiding *"ill-adaptation"*, better understanding cities and its inhabitants via data, managing the inevitable (action plan and crisis management tools), avoiding the unmanageable (long term solutions to reduce vulnerability), mobilising inhabitants (local decisions and actions), cultivating diversity for an anti-fragile city, and finally, extending infrastructure anti-fragility to behaviours and cultures.

Extreme temperatures have costs but climate adaptation also has hidden benefits: job and company creation, more energy efficiency, better air quality, more individual and collective well-being, more social equity and solidarity...

ENERGY EFFICIENCY AND SOBRIETY IN BUILDINGS

At this round table, representatives from Nexity, Enerlis and BoucL Energie discussed the challenges of decarbonising buildings, urban regeneration and implementing energy transition projects.

Regulation, which enables to speed up the deployment of solutions, is intrinsically linked to a strong social demand. Thus, Guillaume Ayné (BoucL Energie) talked about *"consommacteur"*[1].

Norms and the willingness of players to act must be accompanied by a price incitation. Recruitment and training are major issues as well, both for the workforce and for political and company leaders.

One of the challenges is to combine the imperatives of speed, massification and systematisation while respecting the specific characteristics of the urban fabric and the local ecosystem. Modular construction is one answer.

FOOD

REGENERATIVE AGRICULTURE AND SCALING UP

Impact of climate deregulation on crops, rise in raw material and energy prices, ageing and isolation of farmers, tension between soil depletion and necessity to increase production: the agricultural system is out of breath. How can we return to a profitable and sustainable model?

Permaculture, a tool box for a biomimetic food production system, regenerative agriculture, a set of practices ensuring the preservation of organic matter and soil fertility, and organic agriculture, a label meeting a set of specifications, are part of the answer. However, organic farming is going through a structural crisis: the market needs to be rebuilt so that supply meets a demand, and to do so, we need to start by informing the public.

Perrine Bulgheroni's cooperative farm project (who started the Bec-Hellouin farm), which enables costs to be pooled and agricultural synergies to be put in place, is also a solution for sustaining subsistence farming.

© SMILZZ

Within companies, the tension between the obsession with short-term and the long-term transformation of agriculture, as well as action without cooperation, are constraints that prevent projects from scaling up.

According to Cécile Cabanis (Tikehau Capital), *"we have to stop fighting over names and concepts, we have to act"*.

FOR A LIVING AGRICULTURE: WHAT NEW MODELS TO SPEED UP THE TRANSITION?

In France, we are lacking a shared and viable project to enable the transformation of agricultural world. If companies and agricultural unions are beginning to mobilise, public players need to be mobilised too.

Tools already exist to support farmers in their transition, but they are expensive and sometimes difficult to use. Anne Trombini (Pour une agriculture du vivant) presents the *"regeneration index"*, which can be used to assess the state of a farm and identify areas for improvement in just a few hours.

Based on scientific data, it can then be used to make the link with traditional reporting tools.

One of the challenges of the transition is sharing risks among all stakeholders. *"Innovative territorial coalitions"* are currently being implemented in the Hauts-de-France region; they bring together players who want to work together and pool resources.

[1] A coined term combining *"consumer"* and *"player"* in French.

Replays: https://bit.ly/3R15GJQ

INNOVATIVE SOLUTIONS AT THE TRANSITION FORUM

For each of the five themes, the event features "Innovative solutions pitches" sessions offering start-ups and companies the opportunity to present their projects to the event's qualified audience, in short, dynamic formats. Find out more about some of these innovations in the "Solutions" section of this issue (pages ...).

MEETINGS AT THE TRANSITION FORUM

The TRANSITION FORUM is also a place for meetings and discussions. Thus, the participants had the opportunity to engage and take part in business-friendly moments as well as cocktail lunches, encouraging talks and the emergence of new forms of cooperation.

The gala dinner on the evening of Tuesday 14th November also provided an excellent opportunity for members of the association's ecosystem, as well as the event's speakers and partners, to meet each other.

FOCUS : ANNOUNCEMENT OF THE 2023 CEI WINNERS

The five winning projects of the third edition of the Call for Expressions of Interest (CEI) *"Innovating for the ecological transition of territories"*, supported by Aqua Asset Management and Enerlis, were revealed in the presence of **Laure Verhaeghe**, co-founder and president of Lendosphère, and **Lionel Le Maux**, president of Aqua Asset Management.

Congratulations to **VoltR** in the *Production and consumption* category, **Cygogne** and **Weenav** in the *Mobility* category, **Kellig Emren** in the *Housing* category and **Sabi Agri** in the *Food* category (read more in the *"Solutions"* section of this issue).

TRANSITION FORUM
COMMITTED TO AN ECOLOGICAL TRANSITION

THE TRANSITION FORUM WAS ALSO...

- *The decarbonised margin*
- *Democratising the financing of the transition*
- *Reinventing mobility*
- *Developing river transport for goods*
- *Innovation and mobility*
- *New stakeholders are committing to protecting and restoring biodiversity*
- *0 plastic by 2040*
- *Building the city on the city*
- *Feeding without destroying in the 21st century*
- *How to create value in your farming business?*

Read a full summary of the sessions:

www.transition-forum.org/edition-2023

Launched in January 2021 by the Transition Forum association, the Call for Expression of Interest (CEI) *"Innovating for the ecological transition of territories"* aims to identify innovative ecological transition projects, resulting from public-private-cooperation and to showcase them to a community of decision-makers and investors.

TERRITORIAL MEETINGS

In 2023, the Transition Forum association launched the Territorial Meetings, a new format of pluriannual meetings, based on the conviction that the ecological transition takes place at territorial level.

In addition to the Transition Forum, an annual two-day event (find out more about the sixth edition on page 12 and following), the Territorial Meetings bring together stakeholders from a given region to discuss a specific issue faced by that territory in its ecological transition.

Each edition, organised over half a day, is structured by several sessions – inspiring keynotes, round tables, innovative solutions pitches – offering different perspectives on the chosen theme, which falls into one of the association's five key categories: mobility, food, housing, production & consumption, preservation & protection.

These meetings keep the same formula that made the success of the Transition Forum: to be a privileged framework for exchanges and encounters, while allowing concrete ecological transition projects to emerge and be promoted. Various convivial networking opportunities, and in particular the cocktail lunch that concludes each event, encourage meetings.

In 2023, three Territorial Meetings were organised: the first one in Lille on May 10th on low-carbon mobility (see review in issue 5); the second one in Lyon on September 14th on sustainable food and agriculture; and the third one in Nantes on October 12th on sustainable housing.

HIGHLIGHTS OF THE LYON TERRITORIAL MEETINGS: "AGRICULTURE AND FOODING, MAJOR ISSUES IN THE SUSTAINABILITY OF OUR TERRITORIES"

The second edition of the Territorial Meetings was held in Lyon on September 14th. A hundred people gathered at the Confluences Museum to discuss key issues for the Auvergne-Rhône-Alpes region: agriculture and food.

OPENING

Lionel Le Maux, president of Aqua Asset Management and of the Transition Forum association, emphasized the need *"to bring together doers who talk about what they will do as early as this year and not only about their plans for 2030-2050, in order to change the climate trajectory we are currently on".*

KEYNOTE

Cédric Szabo, director of the Association of Rural Mayors of France, reminded us of the importance of rural areas, whether in terms of representation (1/3 of the French population) or their role in the ecological transition.

Numerous decarbonation projects within the agriculture and food sectors already exist: now, the challenge is to promote and support them. According to him, initiating processes *"from the ground up"* will bring about an effective change in approach.

ROUND TABLE

Jérémy Camus, VP delegated to agriculture, food, and territorial resilience of the Lyon Metropole, **Carole Perrier**, CEO of the ARIA Auvergne-Rhône-Alpes, **Christophe Audouin**, co-founder and president of Bio & Lo and **Fabrice Renaudeau**, CEO of Bonduelle Fresh France and Belux, shared their experience and their expertise.

The discussions covered several major topics, such as collective responsibility and the necessity to take actions at all levels; the importance of supporting stakeholders, including both farmers and industrials; the challenges of security and food autonomy, of accessibility to a healthy and sustainable food for all consumers, and of the conservation of water and energy in production processes.

Several solutions were also highlighted. For example, innovation and technologies are crucial but they are not enough on their own and it is necessary to act both on dietary behaviours and by raising consumer awareness regarding regulations and legislation. Jérémy Camus also presented the "food social security" project, currently being experimented within the Lyon Metropole.

INNOVATIVE SOLUTIONS

This session showcased innovations contributing to accelerating agricultural and food transition, such as **Biomede**'s technology for natural regeneration of agricultural soils, **Feedbac**'s solution for treating and revaluing food waste, **La Fabuleuse Cantine**'s sustainable, creative, social, and educational catering, **Reus'eat**'s reusable and compostable tableware, and **Zoya**'s vertical farms for aromatic herbs and microgreens.

WATCH THE REPLAYS :
event.transition-forum.org/en/content/lyon

HIGHLIGHTS OF THE NANTES TERRITORIAL MEETINGS: "SUSTAINABLE HABITAT: A KEY ROLE FOR THE DECARBONIZATION OF CITIES AND TERRITORIES"

The third edition of the Territorial Meetings took place in Nantes on October 12th. Nearly eighty people gathered at the Little Atlantique Brewery, a location rewarded for the architectural rehabilitation of its building, to discuss a key issue in the Pays de la Loire region: sustainable housing.

OPENING

Lionel Le Maux, president of Aqua Asset Management and of the Transition Forum association, reiterated the purpose of the Territorial Meetings: to bring together, throughout France, stakeholders committed to decarbonising territories.

KEYNOTE

According to **Laurent Rossez**, Deputy General Manager of AIA Life Designers, collective thinking is key to the decarbonisation of the construction sector as it enables action on the right levers and at all levels. Priority should be given to renovation over new construction, and when the latter is inevitable, it must be exemplary (passive housing). Among the action areas presented: optimising the use of existing spaces (vacant or under-occupied housing), considering the use of occasional housing, and initiatives to improve living environments (promoting decarbonized consumption and transportation).

ROUND TABLE

Juliette Lavisse, Project manager at Novabuild, **Hélène Delmas**, Head of the Ecological Engineering Division at Eiffage, **Christopher Rutherford**, urban planner and founder of the Craaft Agency, and **Adrien Pradines**, Director of Development at Bouygues Immobilier, provided a comprehensive insight into the challenges of sustainable housing.

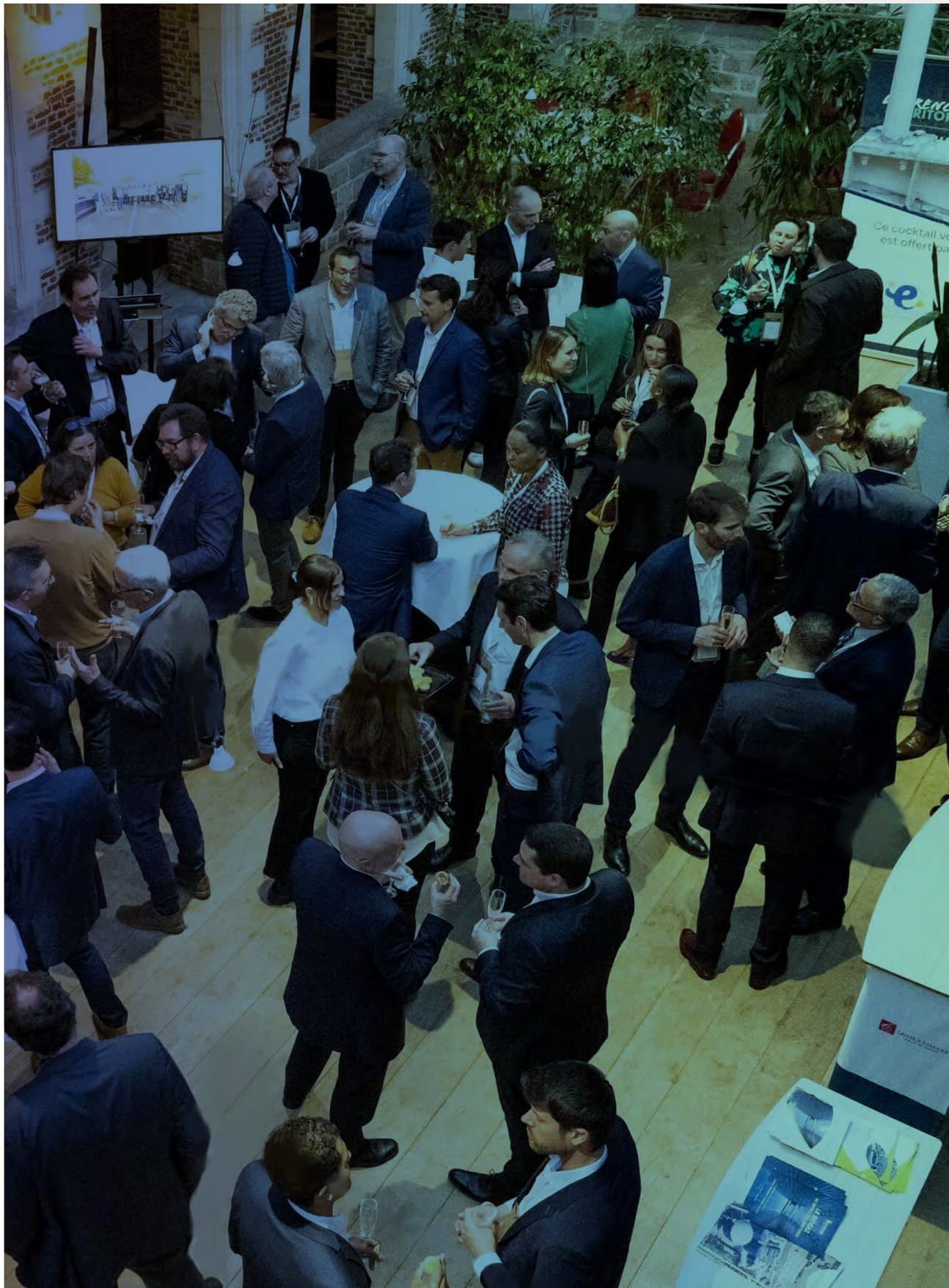
The discussions focused mainly on renovation, adaptation and optimisation of existing structures as significant levers for decarbonisation, as well as on the exemplarity of passive housing, bio-sourced construction and circular urban planning. They emphasized the necessity of a comprehensive vision of housing (location, construction and usage, buildings and biodiversity, considering future usage projections...) and of a commitment from all stakeholders at every level. Additionally, they addressed the challenges and importance of the ZAN (Zero Artificialization Net) concept and land use frugality.

INNOVATIVE SOLUTIONS

Diverse initiatives contributing to the acceleration of the transition towards more sustainable housing were highlighted, such as **Enercool**'s reflective roof paint, which helps lower building temperatures; real estate developer **Hamo+**'s project for renovating brownfields; **Synerpod**'s industrial solutions aimed at scaling up renovation and **Wooday**'s wood-energy market.

During this third edition were also announced the twenty finalists of the Call for Expression of Interest *"Innovating for the ecological transition of territories"*, carried out by the association (see on page 18).

WATCH THE REPLAYS :
event.transition-forum.org/en/content/nantes



TRANSITION FORUM

SOLUTIONS

Ecological transition initiatives and innovative projects identified during the third edition of the Call for Expression of Interest "Innovating for the ecological transition of territories" and the sixth edition of the TRANSITION FORUM

PRODUCTION AND CONSUMPTION

ECO-RESPONSIBLE BATTERIES

The production of lithium batteries has a considerable environmental impact. The extraction phase, in particular, consumes a lot of energy and water, and leads to soil pollution. Repairing used batteries and reusing lithium cells is therefore at the heart of the ecological transition.

VoltR manufactures eco-responsible batteries in France for manufacturers, enabling them to manage their batteries more ecologically and responsibly. This no-neutral solution reduces CO_2 emissions by an estimated 70%.

The company organises the collection and dismantling of used and faulty batteries.

The lithium cells isolated in this way are diagnosed to determine their residual performance precisely, and then used to manufacture new batteries, which are then put back into circulation on a suitable second-life application.

The most degraded cells and batteries are recycled. The project is based in Maine-et-Loire (49) and is intended to be rolled out nationwide.

2023 CEI WINNER — VOLTR

© VOLTR

Website: https://www.voltr.tech/

MOBILITY

AN INCLUSIVE CYCLO-LOGISTICS SERVICE

The "last mile" concept is at the heart of the challenges facing urban logistics, both in terms of costs and environmental impact. This sector indeed accounts for 14 to 20% of urban greenhouse gas emissions. Improving this strategic stage is therefore crucial to decarbonising freight transport.

Cygogne aims to accelerate the decarbonisation of this sector, particularly last mile logistics. To do so, the start-up offers a cyclo-logistics service for local authorities and companies in the Paris Region. This service, which promotes the development of a circular economy, is also part of a social and professional integration initiative aimed at individuals facing hurdles in accessing the labour market.

2023 CEI WINNER — CYGOGNE

© CYGOGNE

Cygogne is currently working on a ready-to-use solution for local authorities to make urban logistics a cornerstone of sustainable urban development, in part by turning underused land into an eco-place focusing on mobility and sustainable freight transport.

Website: https://cygogne.fr/

MOBILITY

HIGH POWER RETROFIT FOR BOATS

11% of global greenhouse gas (GHG) emissions are linked to maritime and inland waterway transport. The retrofit (in this case, the conversion of internal combustion engines to electric motors) is one way of decarbonising this sector.

Weenav, a start-up based in the Provence-Alpes-Côte d'Azur region, is developing a high-power retrofit technology for boats, transforming traditional internal combustion engines into electric propulsion systems.

Weenav also offers high-power electric drive systems for new boats. This innovation helps to reduce significantly carbone missions from existing boats, while avoiding the production of GHG and the use of resources required to manufacture new electric boats.

2023 CEI WINNER — WEENAV

© WEENAV

It also provides the WeeSafe navigation solution, an application with all the data you need to sail serenely without worrying about the boat's autonomy. Weenav is part of a global approach to responsible and sustainable tourism.

Website: https://www.weenav.com/

HOUSING

SUSTAINABLE CONSTRUCTION MATERIALS

According to the Ministry of Ecological Transition and Territorial Cohesion, the building sector accounts for more than 40% of France's annual energy consumptions and emits over 123 million tonnes of C02 each year. It is therefore essential to improve building processes and the energy efficiency of buildings.

Kellig Emren, a company based in Brittany, is working to relocate the production of building materials and produces bio-sourced insulation for the energy renovation of buildings. These insulating materials meet the requirements of energy sobriety, low-carbon materials and the use of renewable resources that currently apply to the sector.

In 2020, the SME registered a patent for a production process for blocks made from a local miscanthus plant aggregate agglomerated with clay and lime. The hydrous, breathable, non-flammable and self-supporting qualities of this material ensure that its performances are equally lasting in both old and new buildings. To date, 1750 m2 of blocks have already been installed on forty-nine sites, including a public contract supervised by three insurers.

2023 CEI WINNER **KELLIG EMREN**

© KELLIG EMREN

More information : lorient-technopole.fr/entreprises/kellig-emren/

FOOD

ELECTRIC EQUIPMENT AND ROBOTICS FOR A SUSTAINABLE AGRICULTURE

According to the French Ministry of Agriculture and Food Sovereignty, agriculture accounts for 21% of France's greenhouse gas emissions. 13% of these emissions come from energy consumption on the farm, particularly by farm machinery. Solutions are emerging to limit the impact of agricultural equipment on the environment.

Sabi Agri is a robotics engineering company working towards the transition to sustainable agriculture. To this end, the SME designs, manufactures and markets 100% electric tractors and robots that enable farmers to produce more efficiently, using less energy. The ALPO electric straddle tractor and the ZILUS all-terrain robot make up the *"robotic agreement"*, the first 100% electric robotic collaborative fleet. This agricultural equipment can be used separately or together, adapting to farmers' needs.

2023 CEI WINNER **SABRI AGRI**

© ACCORD PARFAIT

Sabi Agri controls the entire manufacturing process from its production plant in Saint-Beauzire, in the Auvergne-Rhône-Alpes region. To date, more than fifty vehicles have been deployed in France and Europe.

Website: https://www.sabi-agri.com/

PRODUCTION AND CONSUMPTION

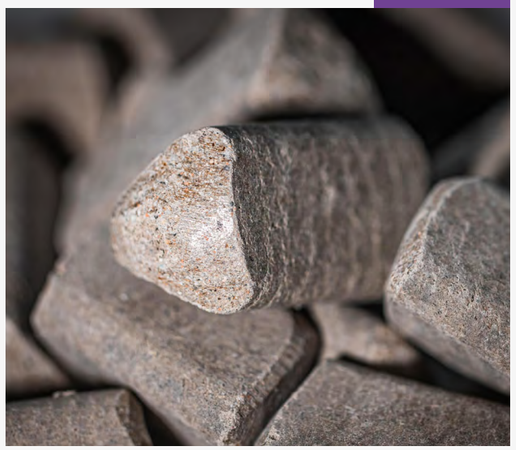
A CARBON SINK MINERAL AGGREGATE

According to the Ademe, nearly 30 million tonnes of waste are incinerated or buried every year in France (household waste, building site waste...). To tackle this issue, Neolithe, a company set up in 2019 near Angers, has developed an accelerated fossilisation process that enables to turn waste into mineral aggregates that can be used the building and public works sector (concrete, roads etc.).

The waste is first crushed and then mixed with a binding agent made by Néolithe, resulting in a mineral paste that is then pressed and modelled to produce aggregates of the desired shape and density.

These aggregates, the *"Anthropocites"*, meet mechanical and environmental requirements controlled by the Inéris (French National Institute for Industrial Environment and Risks), the CSTB (the French Scientific and Technical Center for Bulding Industry) and the Ademe.
Thus, Néolithe makes it possible to reduce carbon emissions from waste treatment, compare with existing. In addition to avoiding carbon emissions, Néolithe generates carbon sinks through fossilisation by sequestrating the biogenic carbon initially contained in the waste. If accelerated fossilisation were applied to all the waste produced in France, it would reduce the country's carbon footprint by 7%.

NÉOLITHE



© NEOLITHE

Website: https://neolithe.fr/

MOBILITY

REDUCING HANDLING TIME IN URBAN AREAS

Today, delivery conditions in urban areas are increasingly complex (lack of dedicated spaces, traffic congestion, etc.) and targets for reducing greenhouse gases and pollutants are adding new constraints. Urban transport generates between 7% and 10% of urban greenhouse gas emissions and a large number of air pollutants (particulates, nitrogen oxides, etc.).

Generally speaking, delivery lorries load at a height of 1.10 meters and unload with a tailgate so that they are level with the ground.

But it takes a lot of time. Incities, a compant created in Lyon in 2019, offers a solution based on the assembly of existing parts enabling trucks to be lowered and unloaded directly onto the ground, with openings on three sides.

INCITIS

© INCITIS

These are electric trucks (the motors are installed in the wheels) that combine batteries and fuel cells. This solution, *"Easy Urban Delivery"*, meets the challenges of reducing congestion, improving safety and enhancing quality of life in urban areas. Incitis aims to equip 1,000 trucks by 2028.

Website: https://incitis.com/fr/

HOUSING

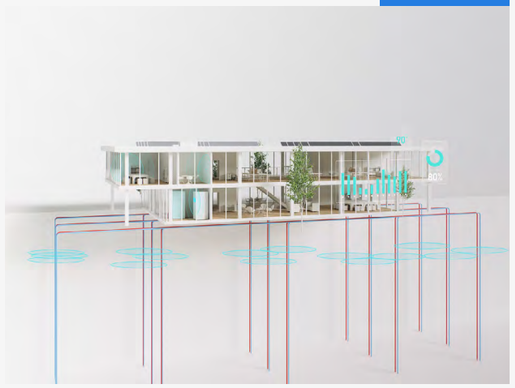
IA AT THE SERVICE OF DECARBONISING REAL ESTATE

Heating and cooling currently accounts for 10% of global carbon emissions. And in a building, the biggest consumption item is thermal consumption. However, thermal renovation faces major challenges, including cost and complexity.

Accenta, a company set up in 2016, has developed a range of solutions for consumption reduction and low-carbon production for commercial property. It combines an energy infrastructure based on geothermal storage and AI to optimise low-carbon production of heating and cooling.

Through geo-storage, the subsoil is used as a battery with charges and discharges, and AI is used to regulate the system (controlling the temperature outside, the use of the building, the desired temperature inside, etc.).

ACCENTA



© ACCENTA

A platform enables real-time monitoring of energy consumptions and savings. This is complemented by Energy Management services. Deployed via an integrated model with guaranteed energy savings and financing, this solution is in line with the objective of massively decarbonising buildings.

Website: https://www.accenta.ai/

HOUSING

MODULAR AND BIOSOURCED LOW-CARBON BUILDINGS

According to the French minister of Ecology transition, nowadays, the building sector accounts for 43% of energy consumption and 23% of CO_2 emissions per year in France. However, low-carbon construction costs between 20% and 25% more than traditional construction.

To address this challenge, Vestack, a company created in Paris in 2019, designs and builds low-carbon buildings in the form of off-site assembled modules.

This solution is based on the combination of two technologies: a digital design tool (*"design for manufacturing"*) and an industrialised off-site assembly process. Buildings are prefabricated in 3D and assembled in a factory, reducing costs and easily accommodating various demands (e.g., using low-carbon, bio-sourced or recycled products).

VESTACK

© VESTACK

This off-site construction method solution allows for buildings to be constructed twice as fast, with a carbon footprint three times lower, all this without additional costs in comparison to traditional construction.

Website: https://www.vestack.com/

CONGRATULATIONS TO THE CEI FINALISTS:

- ***AGOTERRA'S SUPPORT FOR COMPANIES IN FINANCING FARMERS IN TRANSITION*** *(Food)*
- ***BIOANI'S PRODUCTION OF ORGANIC FERTILISERS AND INSECT PROTEINS*** *(Food)*
- ***CHAMPERCHÉ'S BIOPONIC URBAN FARMS*** *(Food)*
- ***COLLABORATIVE ENERGY'S DISRUPTIVE WIND TECHNOLOGY AND COLLECTIVE SELF-CONSUMPTION*** *(Production and consumption)*
- ***FILIATER'S RECYCLING OF EXCAVATED EARTH FOR ECO-CONSTRUCTION*** *(Housing)*
- ***FORESTRY FRANCE'S USE OF LIDAR DATA TO HELP PRESERVE FOREST*** *(Preservation and protection)*
- ***HAPPYMOOV'S ELECTRICALLY ASSISTED TAXI-BIKES*** *(Mobility)*
- ***URBACULTEURS' "URBAN RESILIENCE" OPEN-SOURCE MODEL*** *(Housing)*
- ***PLATFORM.GARDEN'S DATA-DRIVEN APPLICATION FOR GARDEN PROFESSIONALS*** *(Preservation and protection)*
- ***AGRI'SOL, A SOIL STUDY AND DECISION-MAKING TOOL DEVELOPED BY SOL & CO*** *(Preservation and protection)*
- ***UPCYCLE'S DECENTRALISED RECYCLING OF BIO-WASTE*** *(Production and consumption)*
- ***VOLTALIS' ENERGY-SAVING DEVICES*** *(Production and consumption)*
- ***WATERHORIZON'S STOCKABLE AND TRANSPORTABLE THERMAL BATTERIES*** *(Production and consumption)*
- ***WATER2ENERGY'S NEW HYDRAULIC TURBINE TECHNOLOGY*** *(Production and consumption)*
- ***WINDPULSE TECHNOLOGIES' PATENTED WIND TURBINE SYSTEM*** *(Production and consumption)*

Find out more about the finalists:

www.transition-forum.org/ami-

ASSOCIATION TRANSITION FORUM

TRANSITION FORUM

HERE AND NOW

Our members are actively deploying solutions, financing projects and rolling-out operating methods to achieve carbon neutrality.

MEETING THE CHALLENGE OF THE ENERGY TRANSITION

BOREA

The renewable energy sector is a key sector, particularly in terms of job creation. According to a study by the Syndicat des Energies Renouvelables (SER), renewable energies will account for 264,000 direct and indirect jobs by 2028. Thus, the issue of recruitment needs to be addressed.

© ASTRID LAGOUGINE

Founded in 2016 by Jean-Philippe Burtin, borea is a recruitment agency specialising in green energy. It is responding to strong demand both from companies that have historically been involved and from new players that are positioning themselves in this dynamic market.

The low-carbon hydrogen industry requires new talent across the entire value chain. One of the challenges is to transfer skills to meet this need, while taking into account the relative lack of experienced profiles in this recent sector. Another is to make these new markets attractive to applicants.

In addition to the central place given by borea to candidates, their expectations and their motivations, the specificity of the firm lies in its integration within the ecosystem of renewable and low-carbon energies, as it is a member of France Hydrogène as well as Biogaz Valley.

Website: https://www.borea-group.com/

DESIGNING A LOW CARBON AND INCLUSIVE CITY

REDMAN

The C40's *"Reinventing Cities"* initiative is an international call for projects inviting city stakeholders to submit projects for transforming urban space to make it more sustainable and resilient. The city of Lyon took part in the competition.

© NOUVELLE-AOM-ET-VIRGIN-LEMON

The Redman Group and Icade Promotion, in association with Nouvelle AOM and heritag architect Charlotte Vergely, won the "Reinventing Cities" prize with the "Impulsion" project. This project aims to transform the Tour Guillot and the Bourdeix auditorium in Lyon, which were home to the International Agency for Research on Cancer until 2022. It is supported by Essentiel, Base Commune, Office Santé and Lyon Métropole Habitat.

When the conversion is complete, the emblematic site will include housing, offices, shops and health services. The project also includes the renaturation of the site, with the creation of a wooded park. The architectural and urban heritage of the site will be preserved, with 63% of the site being renovated. For new buildings, preference will be given to bio-sourced, geo-sourced and reused materials.

This renovation project is exemplary and is not only part of the ecological transition but is also rooted in the principles of the social and solidarity economy.

Website: https://www.redman.fr/

LET'S CHANGE THE WAY WE INVEST

AQUA ASSET MANAGEMENT

© AQUA ASSET MANAGEMENT

The ecological transition is no longer an option, it must permeate all aspects aspect of the economy, and therefore necessarily the finance and investment professions.

Driven by this firm belief, Aqua Asset Management, an independent asset management company set up in 2017, has chosen to focus entirely on the ecological transition by adopting an entrepreneurial approach based on co-construction with entrepreneurs.

The management company supports the scaling-up of French or European companies working to decarbonise the economy in the fields of biogas, decarbonised mobility, sustainable forest management and decentralised renewable energy production.

Aqua Asset Management is the initiator of the Transition Forum and of the Transition Forum association, convinced that cooperation between all stakeholders is decisive in enabling impact projects to materialise more quickly.

Website: https://www.aqua-am.com/

TRANSITION FORUM

WHAT'S NEXT?

A pesticide-free European agriculture in 2050 is possible!

Despite differences between the member states over the renewal of the authorization of glyphosate throughout the EU, the Commission finally decided to extend it by ten years. In the meantime, a team of researchers and experts, coordinated by the INRAE, had carried out a prospective study whose results show that a European agriculture without chemical pesticides is possible in 2050. Here are the main points.*

** Mora O., Berne J.A, Drouet J.L et al*

The current objective set by Europe is to reduce the use and risks of chemical pesticides by 50% by 2030.

The team behind this prospective study wanted to go further and show that developing pesticide-free agriculture is indeed possible, and has the advantages of preserving human health and protecting the environment, satisfying food demand, reducing greenhouse gas (GHG) emissions and achieving food sovereignty.

Three scenarios identified...

The researchers first developed three narrative scenarios.

Scenario 1

("*Global Market*") generalizes the marketing of pesticide-free products, without making any major changes to diets in Europe.

Its trajectory is through global and European value chains based on digital technologies and plant immunity for a chemical pesticide-free food market.

Scenario 2

("*Healthy Microbiomes*") focuses on the production of healthy foods for healthier diets (less animal products, less sugars and oils, more legumes and more fruit and vegetables).

Its trajectory passes through European value chains based on plant holobionts (i.e. interactions between host plants and their microbiota), soil and food microbiomes, all for healthy foods and diets.

Scenario 3

("*Nested Landscapes*") focuses on human health via food and environmental protection, with diversified landscapes (less animal products and fruits and vegetables). Its trajectory involves complex, diversified landscapes and regional value chains for a healthy, sustainable diet (cf. the "*One Health*" food system throughout Europe).

... and quantified

The impacts of each scenario have been quantified on agricultural production, land use, GHG emissions and trade, based on the results of biomass equilibrium model simulations on a European and global scale.

While each scenario (S) leads to a drop in agricultural production (-4% for S1 and -5% for S2 and S3), they all reduce GHG emissions and should have a positive effect on biodiversity in Europe.

Measures to be taken

In all scenarios, the transition requires strong, coordinated measures to succeed. It relies on the commitment of consumers, citizens and local residents.

It requires policies to regulate the use of pesticides to be genuinely coordinated with policies to support the transition, and an overhaul of the CAP (the Common Agricultural Policy) and food policies.

It requires international trade agreements to develop a pesticide-free European market, as well as specific certifications and labels. This transition also requires farmers to share the risk.

Better to prevent than to cure

According to the authors of the study, effective pesticide-free crop protection relies on several levers that need to be combined: crop diversification in time and space, the development of biocontrol products or bio-intrants, agricultural equipment and digital tools, as well as tools for monitoring the dynamics of bio-aggressors and the environment.

Biological regulation mechanisms at soil, plot and landscape level should be given priority, as should prophylactic measures (disease prevention).

To know more :

https://www.inrae.fr/sites/default/files/pdf/INRAE_prospective2050_FR_WEB-page.pdf

The term *"chemical pesticides"* covers synthetic pesticides and mineral pesticides or pesticides of mineral origin which have a significant impact on the environment and health (e.g. copper, sulphur, etc.). It excludes living organisms (micro-organisms and crop protection agents), which are used for biocontrol. In Europe, over the period 2011-2020, pesticide sales were mainly made up of fungicides (46%), herbicides (35%) and insecticides (11%), with *"bio-aggressors"* mainly comprising crop pests, pathogens (fungi, etc.) and weeds.

The study brought together 144 experts, scientists and stakeholders, who worked for two years in eight specific working groups.

They started with a review of the literature, then carried out their analyses and built their scenarios.

This foresight study was carried out as part of the PRP *"Cultivating and protecting differently"** programme and in conjunction with the European Research Alliance *"Towards a Chemical Pesticide-free Agriculture"*.

*PRP: Priority Research Programme

3 QUESTIONS TO:

CHRISTIAN DE PERTHUIS

Christian de Perthuis, economist, was head of the Climate Mission at the Caisse des Dépôts and founded the "Climate Economics" chair at the Dauphine - PSL University in 2010.

Nowadays, awareness of the climate risks is rising. However, paradoxically, a certain retreat in political decisions can be observed. For example, many people are "surfing" on the restrictive aspects of the energy transition, in particular for the least privileged. What are your thoughts on the matter ?

When it comes to commitments that we thought had already been taken, some governments tend to go backwards. They are back-pedalling. There is a growing feeling that anything restrictive is undesirable for society. It is rooted in English-speaking countries, outside Europe (United-States, Canada, Australia, etc.) where climate has become a highly polarising factor within society.

In the United-States, the Republican party was not overwhelmingly anti-ecologist until the 1980s, when major steps forwards such as the Clean Air Act were taken through bipartisan efforts with the Democrats. Since then, it has become more radical. The movement is spreading to Europe with this theme being taken up by populist parties. And it is beginning to percolate through traditional right-wing parties. Look at the U-turns by the Conservative government in the United-Kingdom, the positions of the Rassemblement National in France that are influencing the traditional right, not to mention Sweden, where climate action was part of a broad national consensus. This movement is quite worrying but it also reflects how climate has become a central issue.

The climate issue does not leave anyone indifferent. At the other end of the spectrum, it is also creating radical oppositions such as civil disobedience movements. In either case, to prevent this polarisation from blocking the movement, climate action must be reconciled with social equity. This is true at both national and international scale. The COPs remind us of this year after year.

Even if low-carbon investment is now being mobilised, what you call in your latest book* "disinvestment" in fossil energies is also needed. How far are we from that?

Disinvestment in coal began two decades ago in developed countries, except from Australia which has increased its exportation capacities. In China, which is by far the first investor in renewable energies, peak coal is imminent and may have already been passed. The only great economy that is still investing in coal is India, but its energy consumption per capita is five times lower than that of the European Union. As far as coal is concerned, we are moving to the right direction, but not at the right pace. We need to speed things up, in particular by providing financial support for producers such as Indonesia or South Africa to help their conversion.

When it comes to oil and gas, the disinvestment has not yet begun. The United-States has increased its oil and gas production capacity over the last twenty years. It intends to continue to do so. Europe reacted to the war in Ukraine by massively accelerating its investments in infrastructures to import liquefied natural gas and by generously distributing exploration and exploitation permits in the North Sea. Coal's role in supply is declining, but not that of oil, which remains the world's leading energy source, or that of fossil gas, which continues to grow.

Disinvestment in oil and gas is going to be difficult to deal with in our economies because we need to introduce sobriety targeted at the most privileged classes without burdening the most vulnerable. This can be done through a redistributed carbon tax.

In France, we have managed to implement a carbon tax, but not to redistribute it. Hence the yellow vests protests... Internationally, we are facing the same problem of equity between countries depending on their level of development. Since the Glasgow COP in 2021, the issue of disinvestment from fossil energies has been on the table, but we have not found the tools that would make it easier to speed up the process while making progress on access to energy in the least developed countries.

Hence the need to balance low-carbon transformation, the reduction of inequalities and the need for equity. As you explain in your book, this quest for balance concerns both fossil and living carbon.

A large number of climate policy instruments are against redistribution. Thus, if we are not careful, low-carbon transition will not only fail to reduce inequalities, it will also increase them. This is the case with non-redistributed carbon-taxes, which weigh much more, proportionally, on the poor than on the rich. We have just talked about this. But there are multiple other examples.

The undifferentiated assistance of 6,000 euros per vehicle for electric cars benefits the wealthy, who are the only ones able to afford new vehicles, which are even more expensive to purchase than traditional vehicles. In the same way, the guaranteed rate for photovoltaic electricity on rooftops for individuals is non-redistributive: the minimum wage earner living in public housing pays for the senior executive who installs solar panels and sells electricity to EDF at a price three times higher.

On the demand side, to avoid being endured, sobriety also implies redistribution by public authorities. Companies have a role to play as well.

They can build economic models of sobriety based on recycling, reusing products, muti-purpose use (e.g., ending single occupant vehicle use) or short supply chains. These innovations transform sobriety from a constraint imposed by climate necessity into an alternative leading towards usage-based economy.

Equity issues also apply to living carbon. I will mention two main ones: the access to natural amenities and the food security challenge. In European countries, the majority of well-off classes live in the western districts, often the most greenery-filled, while the less privileged crowd into the eastern districts where prevailing winds carry air pollution.

The geography of housing reveals a growing inequality in access to natural goods and their amenities. Protecting natural spaces in the name of biodiversity recovery can either exacerbate or reduce these inequalities.

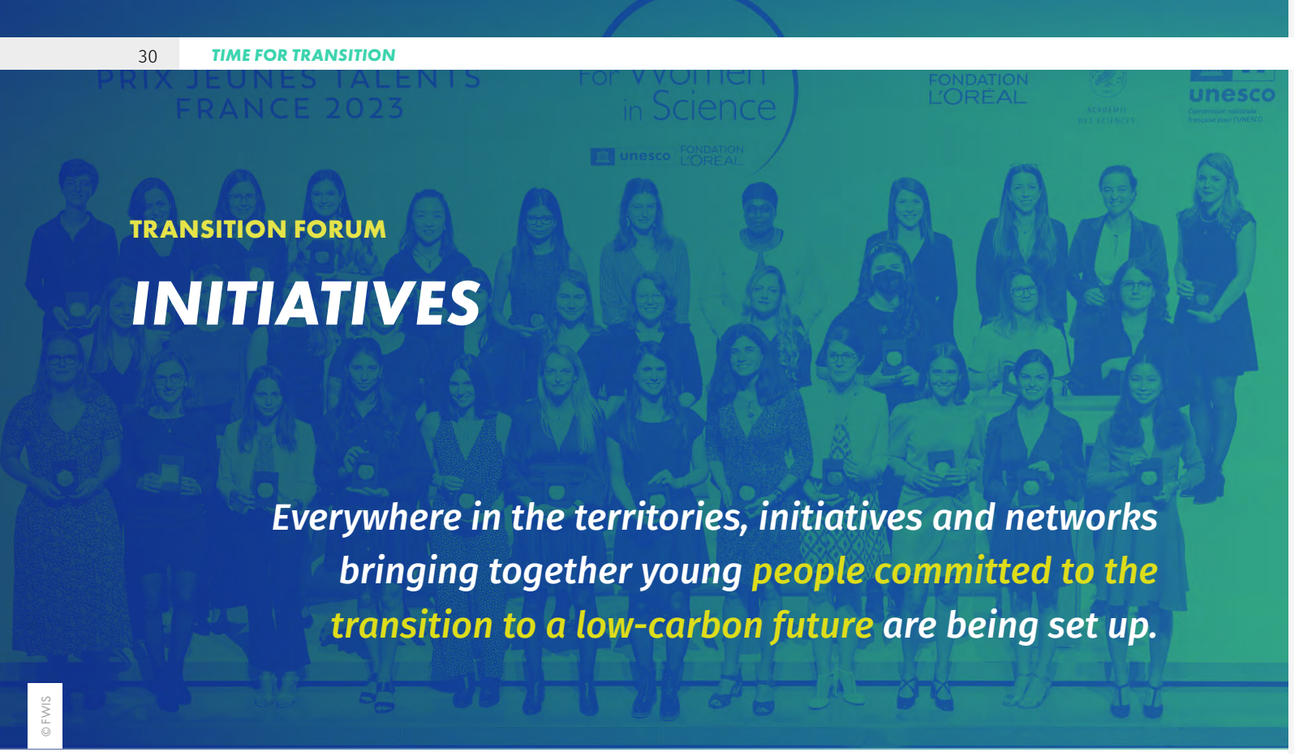
Regarding living carbon, the main equity challenge relates to agriculture and the food system. In wealthy countries, the development of organic products tends to increase food inequalities by reserving the healthiest products to those who can afford them. Fortunately, there are initiatives focusing on short supply chains and participative approaches that counter this trend. Globally, the fight against world hunger, effective until the mid-2010s, has recently faced setbacks.

The number of people suffering from hunger worldwide is rising once again. As I analyse in more detail in my book, efficient responses to this scourge involve agroecology and its ability to develop, in affected countries, resilient food systems using the diversity of living organisms to produce the basic commodities needed by populations. On the demand site, there is also a crucial sobriety component to implement.

The reduction, in our food intakes, of the proportion of items with the most harmful impacts (products derived from ruminant livestock and ultra-processed products) is essential.

This reduction is recommended by all health authorities. By practicing this dietary transition, not only will the climate benefit, but so will our health!

* *Fossil carbon, living carbon: Towards a new climate economy*, Gallimard, coll. Hors Série Connaissance, October 2023.



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TRANSITION FORUM

INITIATIVES

Everywhere in the territories, initiatives and networks bringing together young people committed to the transition to a low-carbon future are being set up.

Young Talent Award for Women in Science : the ecological transition in the spotlight

Nowadays in France, women account for 29% of researchers, compared with 33.3% worldwide. Moreover, they have difficulty pursuing their scientific careers and gaining the recognition they deserve. This year, the L'Oréal Foundation, in partnership with the French Academy of Sciences and the French National Commission for UNESCO, has awarded its prize to 35 young women researchers, ten of whom are working on subjects related to the ecological transition.

The price comprises six categories, including *"Analysing, anticipating and predicting"*, *"Biodiversity, ecology and climate change"* and *"AI, data security and big data"**. The ten 2023 winners involved in the ecological transition fall into these three groups, with seven in the *"Biodiversity, ecology and climate change"* group.

Winners of the "Analysing, anticipating and predicting" group

The winners in this group include **Amandine Asselin**, from the Paris-Saclay Mechanics Laboratory, for *"Making construction more sustainable"*, a research project on the penetration of corrosive chemical species (chlorides) into concrete and the corrosion of steel reinforcements. The aim is to propose a method for measuring the resistance to this penetration under conditions close to reality and to develop a numerical model for predicting this phenomenon.

Eventually, this model could be used to accurately calculate the lifespan of a structure and the quantity of concrete needed to make it resistant.

Another winner of this group, **Helena Teixeira** from Entropie is conducting research to understand the causes of extinction of animal species, and, on that basis, to preserve biodiversity.

She studies threatened species DNA to figure out how they have coped with past environmental disturbances and thus prevent their current decline. Among other things, she has worked on the Iberian wolf, small lemurs from Madagascar, the Bourbon black petrel and will soon be studying the Barau petrel. Her aim is to help draw up more effective conservation plans for threatened species.

Winners of the "Biodiversity, ecology and climate change" group

Among the seven winners of this group are **Cinzia Alessi**, from Entropie, who is working to understand the physiological mechanisms by which corals adapt to climate change (corals develop strategies to survive in inhospitable environment) and to use this knowledge to better restore their distribution area.

Giulia Cheloni, from the collaborative research laboratory UMR Marbc, is working to decipher the interactions between phytoplankton and pollution. She is coordinating the Phycocyp project *"Phytoplankton responses to organic contaminants: the role of cytochrome P450"*, the results of which will be used to evaluate the potential impact of organic contaminants on phytoplankton and the implementation of bio-transformation processes to eliminate these contaminants and remedy the pollution.

Margaux Crusot, from the French Polynesian University, is working to make pearl farming more sustainable: in French Polynesia, island constraints prevent the end-of-life material used in the pearl farming industry from being integrated into a waste management system. But collectors can generate micro-plastics and release toxic substances. After identifying the local pearl farmers practices and estimating their waste production, Margaux Crusot developed a biodegradable collector from a specifically designed biopolymer.

The biomaterial prototype proved to be more effective and less toxic for pearl oysters' larvae than the shaded supports and plastic cups usually used.

Today, a process is being put in place to make it even more resistant, a full LCA (Life Cycle Analysis) of the product is being carried out and a proof of concept in real-life conditions is planned.

Carine Estelle Koné, from the experimental SETE site located in Moulis, is seeking to understand the effects of pollution and global warming on freshwater ecosystems by studying a micro-organism which plays a key role in the stability of these ecosystems. Its results could ultimately help to improve the indicators used to assess environmental risks in these environments.

Clara Marino, from the ESE laboratory, works on the impact of invasive exotic species.

She processes large volumes of online data on threatened and invasive exotic species to better understand their dynamics and impacts and identify, through statistical models, the most problematic species and risk areas.

Sarah Robin, from the university of New-Caledonia, is committed to preserving mangroves in the region. As part of her thesis *"The dynamic of contaminants in urban mangroves"*, she worked on the distribution of trace metals and PAHs in mangrove substrate and their transfer to mangrove organs.

Finally, **Elise Verrier**, from the EGCE laboratory, is working on pollinating insects, whose gradual disappearance is threatening our ecosystems.

During her thesis, she took part in the *"BeeConnected"* project, which monitors 135 bee colonies in France, Greece and Germany, analysing data from sensors (weight and temperatures) installed on the hives to gain a better understanding of the insects' behaviour.

Winner of the "AI, data security and big data" group

One of the researchers of this group is conducting work related to the eco-energy transition. **Margaux Zaffran**, from the Applied Mathematics Centre, is indeed working on models for predicting electricity market prices using probability forecasts.

She is developing a method for assigning a reliability indicator to the price prediction models used by market players.

This view of the market makes it easier to adjust electricity production, to reduce storage and distribution costs (resulting in grid stability) and, ultimately, to reduce the associated carbon emissions.

This method can be transposed to other fields, such as medicine. Hence the title of her work: *"Quantifying uncertainty to optimise electricity production, medical diagnosis or climate modelling"*.

The winners will receive an award (15 000€ for doctoral students and 20 000€ for post-doctoral students) to continue their work and will benefit from leadership training (personal development, negotiation, communication, public speaking) to help them promote their scientific researches.

* The other three groups focus on *"Space, extraterrestrial life, quantum physics"*, *"Genetic mutation, cancers and chronic diseases"* and *"Mental and child health"*.

Laboratories, units and universities mentionned :

CNRS Ecology and Environment Institute laboratories

- EGCE (Evolution, Genome, Behaviour and Ecology, with IRD and Université Paris-Saclay)
- Entropie (Tropical marine ecology of the Pacific and Indian oceans, with IRD, the University of La Réunion, Ifremer and the University of New Caledonia)
- ESE (Ecology, Systematics, Evolution, with AgroParisTech and the University of Paris-Saclay)
- Marbec (UMR Marine Biology, Exploitation and Conservation, with Ifremer, IRD, the University of Montpellier)
- SETE (Theoretical and Experimental Ecology Station, with Toulouse III University)

Other laboratories and universities

- Applied Mathematics (UMR CNRS, Inria, Ecole polytechnique, Institut Polytechnique de Paris)
- Paris-Saclay Mechanics Laboratory (CNRS, CentraleSupelec, ENS Paris-Saclay)
- University of New Caledonia
- University of French Polynesia

WHAT'S NEW?

Forest renewal: a key factor in tackling climate change

In December 2022, France committed to a roadmap aimed at adapting forests to climate change, strengthening the role of forests as carbon sinks and to plant one billion trees in ten years. In terms of adaptation, while technological innovation is important, forest renewal is fundamental.

In France, the natural mortality rate of trees has increased by 80% in only one decade (see the ever-increasing episodes of heat and drought, the increase in pests and diseases: ravaging insects, pathogenic fungi, etc.). Forests, which naturally constituted a considerable carbon sink, are seeing their storage capacity diminish as a result of this weakening.

In fact, explains Eric Boittin, Managing Director of Forestry France, a firm specialising in the expertise and management of forests and trees, *"the forestry sector needs to work on all these challenges and reinvent itself"*. It requires two main areas of focus. First: innovation. For example, the sector needs to forge partnerships with climate change professionals, imagery specialists or others (e.g. themed imagery, algorithm development in order to process images or improve the ability to better preserve assets).

And secondly, the imperative of renewing forests. A forest ecosystem is more resilient when tree species are diversified. For example, pine monocultures in the Landes area were particularly affected by the 1999 storms. In the same way, an area of 5,000 hectares of chestnut trees in the Dordogne department is much more vulnerable than a similar area covered with diverse species. *"The more the forest ecosystem functions according to natural principles, the more it is productive, resistant and resilient"*, confirms Eric Boittin*.

In July 2023, the Higher Council for Forestry and Wood submitted to the ministers of Agriculture and of Biodiversity the "Forest Objective" report, to contribute to the preparation of the national plan for forest renewal. The authors of this report, coordinated by Sylvestre Coudert, CEO of the forest experts in France, estimated the areas to be renewed at between 1.5 and 1.7 million hectares. However, the *"usual"* renewal will not be enough. According to them, an investment of 8 to 10 billion euros will be needed, in particular to diversify the species to be used. And this requires seeds and plants in sufficient quantities and a suitable workforce. But, as Eric Boittin underlines, *"when it comes to forest, the timescale is longer"*. While the France 2030 Plan provides a broader timeframe than the 2020 Recovery Plan, which was rather a crisis-management response, the fact remains that not everything can be achieved in two years. What is more, planting billions of trees is a good idea, provided that companies specialising in forestry seeds have the capacity to supply them. And as climate change affects the regularity of fruiting as well, many are experiencing difficulties. Lastly, in mainland France, forests are extremely fragmented and over 75% of them are privately owned, which makes all this all the more complex to implement.

Since the submission of this report, a €150m renewal measure has been taken as part of France 2030. All of this, combined with the various regulatory changes underway, shows that the issue of forests is increasingly being taken into consideration at national and European level as part of the major challenges of adapting to climate change, and that there is a clear desire to go further.

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ERIC BOITTIN
MANAGING DIRECTOR OF FORESTRY FRANCE

* On the resilience of mixed wood stands, see the article *"Free development of forests and control of the health risks associated with conifer bark beetles"*, by Hervé Jactel and Lorenzo Marini, *Revue Forestière* Vol. 73 n° 2-3 (2021), *"Forests evolving freely"*, https://revueforestierefrancaise.agroparistech.fr/article/view/5477

THE TRANSITION FORUM

ASSOCIATION

Association committed to accelerating the transition towards a low-carbon future

The Transition Forum association, created in 2019 by the independent management company Aqua Asset Management, brings together a community of public and private decision-makers committed to accelerating the ecological and energy transition.

It facilitates the emergence of concrete and innovative solutions addressing the challenges of decarbonisation at territorial level, as well as the development of new forms of cooperation. It also provides elaborated information on the theme of the transition towards a low-carbon future. Its action is organised around three pillars: the organisation of events – the TRANSITION FORUM and the Territorial Meetings, the Call for Expression of Interest (CEI) *"Innovating for the ecological transition of territories"* and the biannual magazine *Time for Transition*.

In 2023, the sixth edition of the key event of the association, the TRANSITION FORUM, brought together over 600 participants and more than 50 speakers at the Orangerie d'Auteuil in Paris, around the theme *"Time for solutions"*.

Three editions of the Territorial Meetings, a new format of events events launched by the association, were organized respectively in Lille, Lyon and Nantes.

Last but no least, the third edition of the CEI identified more than a hundred and fifty projects responding to diverse challenges such as sustainable mobility and housing, low-carbon energy production, the implementation of a circular economy, waste management and preservation of biodiversity.

FIND OUT MORE: https://www.transition-forum.org/

TRANSITION-FORUM.ORG

TIME FOR TRANSITION

HIGHLIGHTS - INSIGHTS - SHARING ON THE ECOLOGICAL TRANSITION

We sincerely thank all the members and partners of the Transition Forum association – territories, companies, investors, entrepreneurs, R&D labs – for their contributions to the animation of the community.

We would also like to thank the hundred and fifty developers of ecological transition innovative solutions, conceived in cooperation with territories, who responded to the third edition of the association's Call for Expression of Interest.

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If you want to promote your ecological transition projects to international decision-makers and join an active community committed to a low-carbon future, write to us at:
contact@transition-forum.org

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