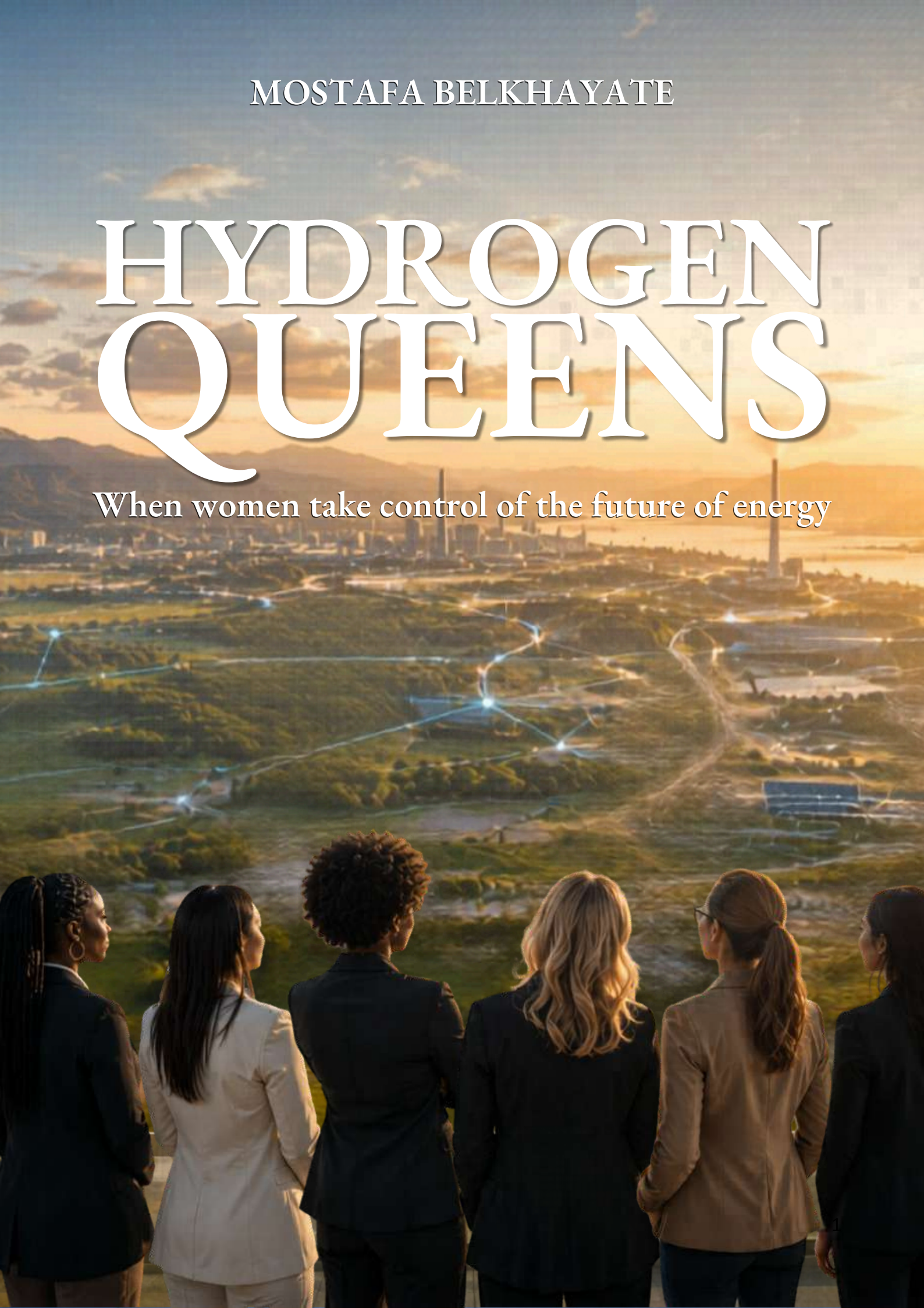
MOSTAFA BELKHAYATE

HYDROGEN QUEENS

When women take control of the future of energy



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To my mother

I dedicate this book to my mother.

In 1960s Fez, as a teenager, she took to the stage to act in a society where this simple act already required a kind of silent courage. My father fell in love with this free-spirited young woman and married her at eighteen. Since then, they have never been apart.

Over the years, I came to understand that she possessed a quality that has become rare: the ability to stabilize those around her without ever seeking to dominate anyone.

For a long time, I didn't realize how much this discreet presence would influence the way I looked at the world.

INTRODUCTION

How an intuition about natural hydrogen became a reflection on the future of ownership

I still remember some nights in Marrakech, about fifteen years ago. The house had been asleep for a long time. Alone in front of my computer, I was reading technical reports on a subject that almost no one was talking about seriously: natural hydrogen.

At the time, the idea seemed marginal. Most specialists believed that hydrogen had to be produced industrially. The idea that it could exist naturally underground seemed too uncertain to be taken seriously.

Yet, something compelled me to continue.

It was with this mindset that I bought my first Hydroma shares: five hundred thousand shares. At the time, this mostly provoked incomprehension. There was neither collective enthusiasm nor general validation. Only the intuition that a still invisible subject was perhaps becoming much more important than it seemed.

Years have passed. Many would have sold. I didn't. Not because I never doubted it, but because I felt that this story went far beyond the scope of a simple investment.

Then one day, I went to Mali.

In Bourakébougou, a technician approached a well, slightly opened the valve, and inhaled some of the gas that was naturally seeping from the ground. A few seconds later, his voice became high-pitched amidst the laughter of his colleagues. The scene was commonplace to them. For me, it was deeply disturbing: this gas really existed, it had been seeping naturally from the earth for years, and the rest of the world was still looking the other way.

It was also there that I met a Canadian engineer who was working on the site. Seeing my astonishment at this invisible yet very real gas, he calmly approached me and said something I've never forgotten:


THE FUTURE BELONGS TO THOSE WHO CAN HEAR IT COMING.
— David Bowie

“Imagine that just 1% of the natural hydrogen present on Earth could be enough to power the entire planet with electricity, fuel, and fertilizer for nearly two hundred years… all without carbon emissions.”

I remained silent for a few seconds.

At that moment, the subject took on a completely different dimension in my mind.

This was no longer simply an energy discovery. It was perhaps the beginning of a major geopolitical shift.

Because from the moment a resource of such magnitude becomes credible, another question immediately arises:

Who will possess this energy if it becomes strategic?

It was during this period that another subject began to occupy more and more space in my thinking: blockchain.

Beyond cryptocurrencies, I saw it primarily as a new way to organize the ownership of real assets.

I remember an evening in Dubai where several ideas that had previously remained separate in my mind began to come together:
energy, tokenization, digital communities, and these new forms of trust that are appearing everywhere on the Internet.

Then something much older came back to me.

I grew up in Senegal between the ages of eight and eighteen. At a very young age, I discovered a fascinating system there: the Tontine.

Women, often without diplomas, bank guarantees, and sometimes without access to the traditional financial system, pooled their resources to lend each other money solely on the basis of trust. One woman would buy fish, another would resell it at the market, and then repay the community. Everything rested on a promise.

At the time, I did not yet realize the depth of this model.

Over the years, I have come to understand that these women have long since built something that modern finance sometimes continues to seek: an economy based almost entirely on collective trust.

Then the internet arrived.

In just a few years, global women's communities have begun to form at an impressive rate. The **#MeToo** movement has probably been one of the most striking examples. Without a central structure, without permission, and without a dominant institution, millions of women around the world have managed to create a dynamic capable of influencing businesses, the media, governments, and sometimes entire societies.

I believe that many people still underestimate what this really means.

A sufficiently aligned community can now shift considerable economic forces.

Recently, another reality has reinforced this reflection in my mind.

I am writing part of this book from Dubai, during a period of high tension in the Middle East. Some days, missiles cross the sky in the distance and our phones start ringing several times a day with messages telling us to take shelter immediately.

This type of moment silently changes the way we look at the world.

We realize how fragile our civilization remains despite all its technology. Sometimes it only takes one man, one decision, or one moment of madness to plunge entire regions into chaos.

I then asked myself a very simple question:

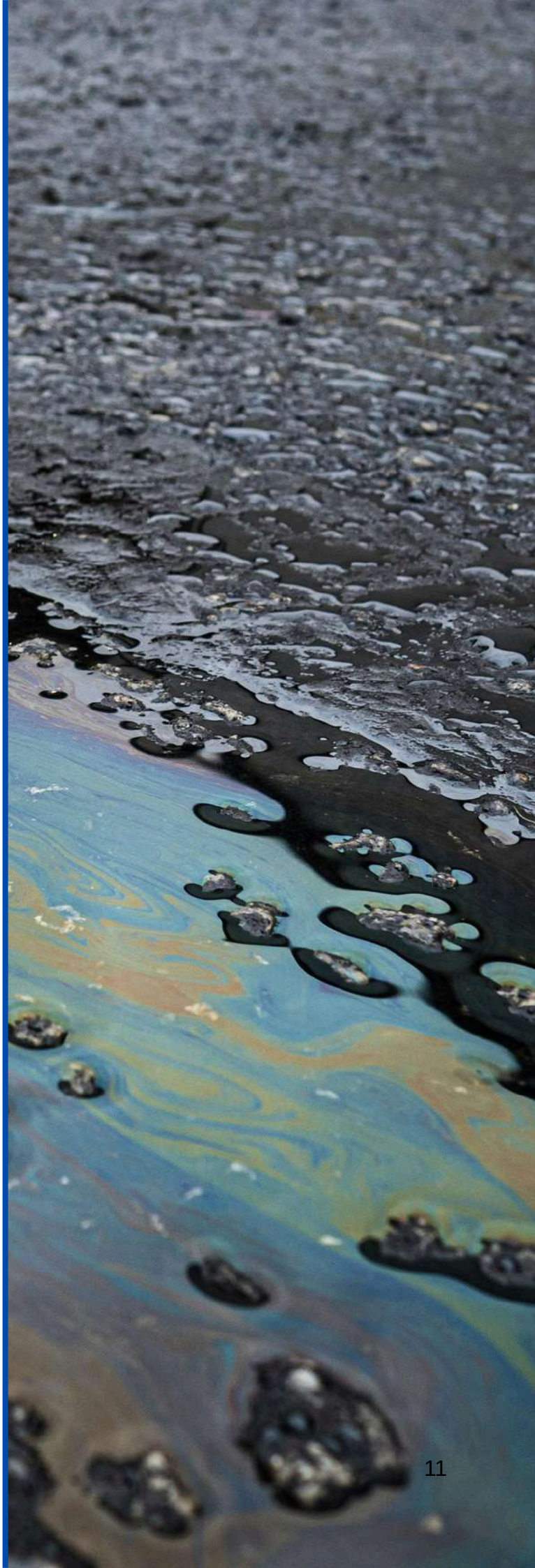
What if the next major global energy cycle were to be driven by a different psychology than the one that dominated previous centuries?

It was probably at that moment that the Hydrogen Queens were truly born in my mind.

Not as a financial project. But as a deeper intuition:

What if, for the first time in the history of energy, women from all over the world participated from the outset in the ownership and governance of a resource potentially destined to transform the centuries to come?

CHAPTER 1



Oil shaped the 20th century

Looking back on the 20th century, we realize that oil has influenced far more than just energy. It has shaped geopolitics, wars, transportation, currencies, industry, agriculture, and even the way modern cities have been built.

For a long time, this domination seemed natural.

Oil was everywhere: in cars, planes, factories, fertilizers, supply chains, and military infrastructure. Much of global growth depended on it, directly or indirectly. Countries able to secure their access to this resource accumulated considerable power. The others became dependent.

Over time, energy has ceased to be merely a technical issue. It has become an architecture of power.

A significant portion of the major international balances of the 20th century can hardly be understood without this reality. Strategic alliances, certain wars, and even the functioning of the global monetary system have long been linked to the flow of oil.

This model produced a gigantic economic expansion. Hundreds of millions of people were lifted out of poverty thanks to industrialization and abundant energy. It would be absurd to deny what this period brought in terms of material progress.

But all architecture eventually reveals its limitations.

Oil also created deep dependencies. The more modern societies developed, the more vulnerable they became to energy tensions. A disruption in supply, a war, or geopolitical instability was sometimes enough to destabilize entire economies.

Over the years, another question has begun to emerge: that of the environmental cost.

For a long time, the world preferred not to look at this subject too seriously. Growth came before everything else. Yet, gradually, the consequences have become more visible: pollution, climate pressure, degradation of certain natural resources and dependence on extremely heavy industrial models.

I remember that in the early 2000s, many people still considered these concerns to be secondary. Today, no one can really ignore them.

But what strikes me most is not just the environmental issue.

It is the fact that our entire civilization remains built around an energy model that has become very fragile.

We live in a world where virtually everything depends on complex energy infrastructures:
transportation, food, the Internet, data centers, hospitals, financial markets, and even the political stability of many countries.

Most people almost never think about it because the energy remains invisible as long as it is functioning.

This is probably what makes major energy transitions so difficult to perceive at first. They advance slowly, almost silently, until a new equilibrium begins to emerge.

I think we are precisely in that type of period today.

CHAPTER 2

What the COPs taught me about the energy future: COP, industrial hydrogen, contradictions of the system.

Heads of state, industrialists, scientists, investment funds, and NGO representatives from around the world were all present. The speeches were often ambitious, focusing on carbon neutrality, energy transition, sustainable development, and green innovation.

But over time, a subtle unease began to settle in my mind.

I realized that many discussions remained trapped in an essentially industrial and financial logic. There was a lot of talk about production, subsidies, technologies and volumes, but much less about life itself.

Air.
Water.
Future generations.
The stability of the world.

And above all, one subject kept coming up: hydrogen.

Hydrogen was presented as a major solution for the future of global energy. Yet, something deeply disturbed me about the way the subject was being addressed.

Because in reality, almost all the hydrogen used today is produced industrially, mainly from fossil fuels.

Even so-called "green" hydrogen remains complex to produce on a large scale. It requires enormous amounts of electricity, heavy infrastructure, and considerable investment. Its cost remains high, and its global deployment will likely take much longer than some political rhetoric suggests.

It was during this period that the work of Alain Prinzhofer began to attract my attention.

Prinzhofer was among the first scientists to seriously study the geological potential of natural hydrogen. He championed a simple but extremely important idea: hydrogen exists naturally on Earth and could represent a primary energy source that is far less expensive and much cleaner than industrially produced hydrogen.

In several of his works, he explains that natural hydrogen could produce fewer carbon emissions than currently dominant industrial forms, while potentially being much cheaper to extract.

This difference changes a lot of things.

Because ultimately, producing hydrogen industrially in order to then save the planet remains a paradoxical logic if this production itself continues to depend on heavy, costly and highly energy-intensive infrastructures.

I then wondered if the world was sometimes looking at the energy transition with the reflexes of the old system.

As if we were still trying to solve the problems of the future with the mental tools of the previous century.

During these conferences, another thing struck me discreetly.

When some women spoke, the discussions often returned to much more concrete topics: health, children, air quality, water or the daily lives of the people.

The difference was subtle, but real.

As if energy were not, for them, merely an industrial or geopolitical issue.

But it's a profoundly human question.

CHAPTER 3

Natural hydrogen: the energy that almost no one expected

For a long time, hydrogen was presented as an energy of the future while paradoxically remaining dependent on the industrial methods of the past.

Most of the discussions focused on how to produce hydrogen from natural gas or through complex industrial processes requiring enormous amounts of electricity. The subject then became highly technical, costly, and sometimes contradictory from an environmental perspective.

Then another idea began to emerge quietly.

What if hydrogen already existed naturally in the Earth's subsoil?

Initially, this hypothesis seemed almost marginal. Many specialists considered it to be an interesting but limited geological phenomenon, without any real global industrial potential.

However, some researchers have begun to observe troubling anomalies in several regions of the world. Slowly, the idea that natural hydrogen reservoirs might exist has become increasingly credible.

The Bourakébougou site in Mali played a central role in this awareness.

For years, this small village remained virtually unknown outside of a few scientific circles. Then the first data began to circulate. Researchers, specialized journalists, and international scientists gradually realized that something important might be happening there.

I still remember my first impression when I began to seriously study the Hydroma case. What struck me was not just the discovery itself. It was above all the contrast between the potential importance of the subject and the low level of attention it was still receiving at the time.

Over time, this silence began to crack.

Media outlets such as The Economist, Financial Times, Science, Forbes, The New York Times and Der Spiegel have gradually begun to take an interest in the subject.

This development is important.

Because at first, many viewed natural hydrogen as an African scientific curiosity. Then, slowly, the subject began to enter into global energy discussions.

In 2023, the scientific journal Nature Scientific Reports published work using, in particular, the geological data of Bourakébougou as an important reference in the study of natural hydrogen formations.

This type of scientific validation changes a lot of things.

We are gradually moving from the realm of intuition to that of industrial credibility.

Hydroma holds a special place in this story today. The company did not simply theorize the existence of natural hydrogen. It is part of the first actors to have actually worked on its exploitation and production under concrete conditions.

Looking back, I think many people underestimated the importance of the time factor in this industry.

Fifteen years' head start in a nascent sector can become considerable later on. While the rest of the world was still debating the very possibility of natural hydrogen, some teams were already accumulating:
geological data, operational experience, technical knowledge, and an understanding of the terrain are extremely difficult to catch up on quickly.

This is probably why I view Hydroma less as a simple energy company and more as a pioneering platform positioned very early on a potentially strategic resource.

Even today, we are probably only at the beginning of this story.

But I think a significant psychological shift has already begun.

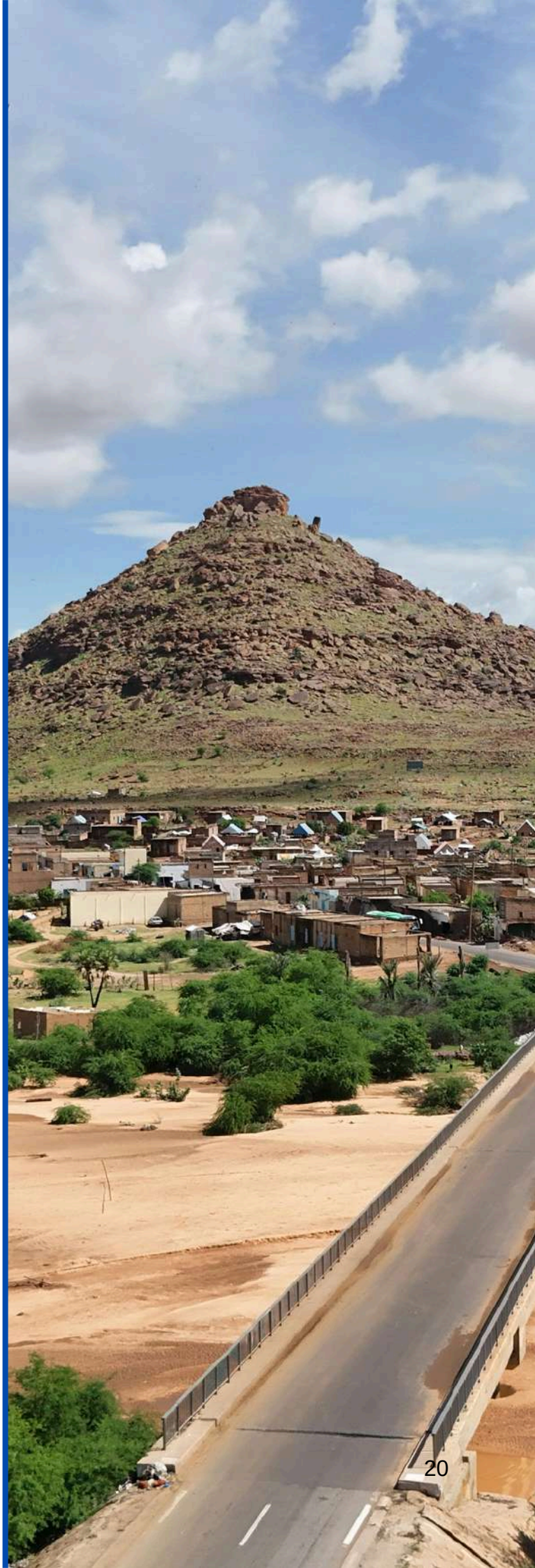
The world is no longer just asking for:
“Does natural hydrogen really exist?”

The real question now becomes:

What role will it play in the future of global energy?

CHAPTER 4

Hydroma and the invisible advance



Some companies appear at the exact moment a new cycle begins to emerge. Initially, almost no one really notices them. Then, over time, we realize that they had been working for years on a subject that the rest of the world hadn't yet understood.

I think Hydroma belongs to this category.

When the company began working on natural hydrogen in Mali, the subject still attracted very little interest. Markets were looking elsewhere. Major global energy strategies remained focused on oil, gas, and more recently, industrial hydrogen.

In this context, developing a project for years around a gas naturally present in the African subsoil could have seemed marginal, almost improbable.

And yet, this silent advance could become one of the most important elements of the story.

Looking back, I believe that great transformations often begin like this: a few people work for a long time in general indifference before the rest of the world suddenly realizes the scope of what they had seen much earlier.

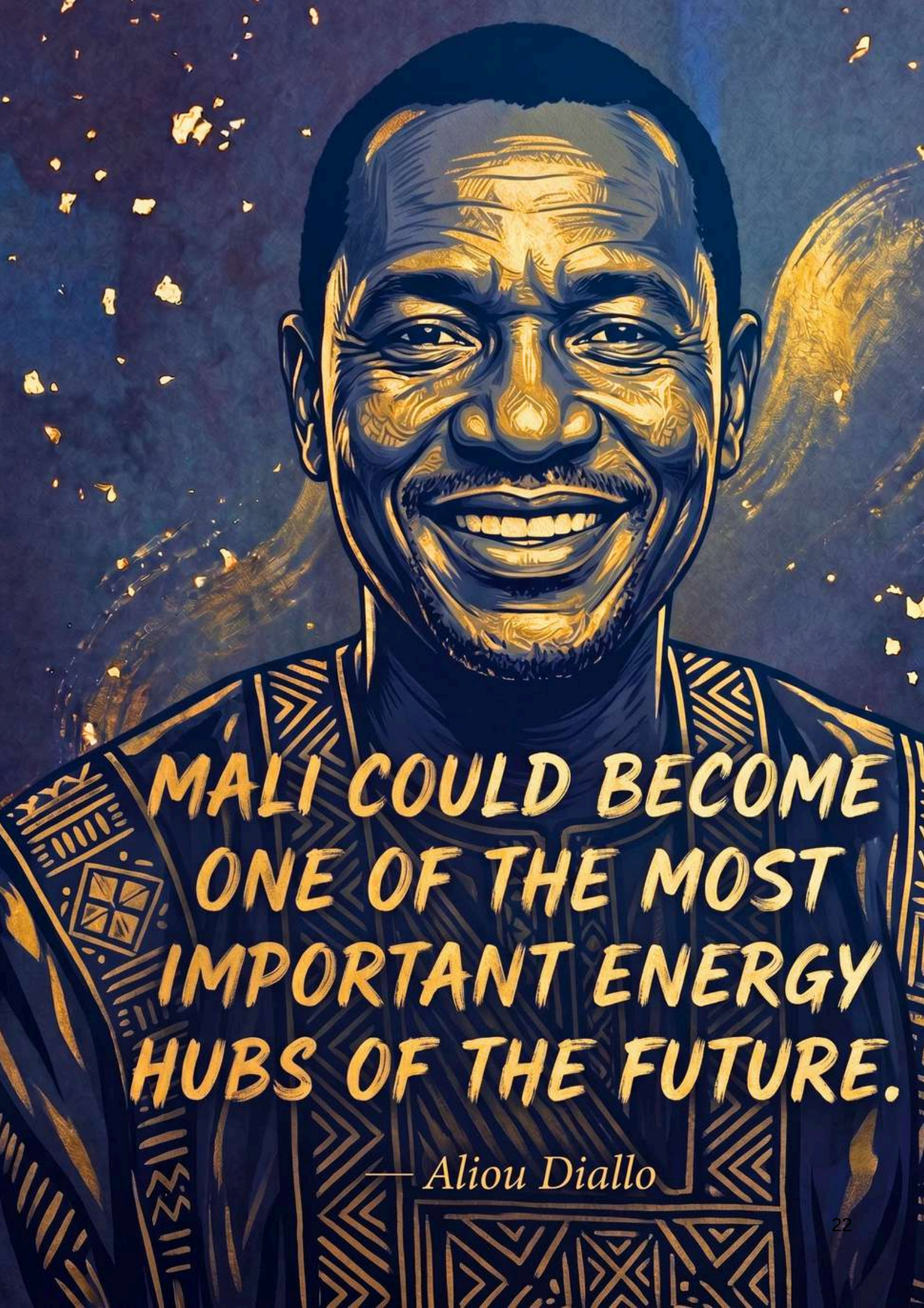
Aliou Diallo, founder of Hydroma, is one of those atypical figures who defy traditional categorization. Early on, he understood that natural hydrogen could represent far more than just an African geological curiosity. At a time when almost no one was seriously discussing white hydrogen, he was already investing time, resources, and energy in this vision.

I remember a phrase attributed to Aliou Diallo that sums up this intuition quite well:
“Mali could become one of the most important energy centers of the future. »

At the time, many probably considered this idea excessive. Today, it already seems less unrealistic than it once did.

What also strikes me about this story is the generational dimension that is beginning to emerge around the project.

Asma Diallo, Aliou Diallo's daughter, is now part of Hydroma's board. This detail may seem minor, but I think it is symbolically important.


MALI COULD BECOME ONE OF THE MOST IMPORTANT ENERGY HUBS OF THE FUTURE.
— Aliou Diallo

Because, fundamentally, major energy infrastructures have long been built almost exclusively around masculine logics of industrial and geopolitical power. The gradual emergence of a new generation more sensitive to environmental, heritage, and technological issues is subtly changing the very nature of the project.

I believe this development will play an important role in the coming decades.

Hydroma now possesses something that is very difficult to rebuild quickly:
accumulated time.

In strategic industries, a fifteen-year head start is enormous. While the rest of the market was still hesitating over the very reality of natural hydrogen, the company was accumulating:
geological data, operational experience, scientific publications, and above all a concrete understanding of the terrain.

Today, this progress is gradually beginning to attract attention far beyond Mali.

Major international media outlets such as the Financial Times, The Economist, Science, Forbes, and The New York Times have begun to treat Hydroma as one of the world's pioneers in natural hydrogen.

But perhaps the most important development is elsewhere.

At the World Summit on Natural Hydrogen in Paris, Hydroma announced that it had begun to offer its expertise in the exploration and exploitation of natural hydrogen in several regions of the Middle East, as well as in the United States and Canada.

I think this evolution is important because it shows that the company is no longer positioning itself solely as a pioneering producer, but gradually as a key player in a field where very few teams still possess real field experience.

In strategic industries, accumulated know-how often ends up becoming as important as the resource itself.

Hydroma also benefits, in certain projects, from pre-emption rights that could gradually strengthen its position in the future global development of natural hydrogen.

This type of advantage often remains largely invisible at the beginning of an industrial cycle. However, over time, it can become decisive.

This is probably why I view Hydroma less as a simple energy company and more as a pioneering platform positioned very early on a potentially strategic resource.
Even today, we are probably only at the beginning of this story. But I think a significant psychological shift has already begun. The world is no longer simply asking:

“Does natural hydrogen really exist?”

The real question now becomes:
What role will it play in the future of global energy?

CHAPTER 5

The Tontine: what African women understood before the Internet

For a long time, modern societies associated economic power with the size of institutions. The more complex, regulated, and centralized a system seemed, the more credible it inspired. Banks, financial markets, and large government agencies gradually imposed the idea that no serious human organization could function sustainably without cumbersome structures, sophisticated contracts, and permanent control mechanisms.

In much of Africa, other forms of organization have continued to exist almost silently, far removed from major economic theories. The Tontine is one of them.

Many saw it as a simple system of popular mutual aid. In reality, the logic is much deeper. A tontine transforms collective trust into concrete economic capacity. This mechanism seems almost fragile from the outside, precisely because it rests on something that modern economies have progressively tried to erase: the spoken word.

In some African societies, trust never completely disappeared behind the procedures. It remained visible, human, almost a daily occurrence. Everyone knew that their personal credibility determined their place within the group. When a woman received money from the community to develop a business or get through a difficult period, she received much more than simple funding. She received a form of collective recognition.

In retrospect, these mechanisms appear almost surprisingly modern.

Much of the global economy already operates on forms of shared belief. A currency only has value because a sufficiently large group agrees to believe in it together. Financial markets themselves remain deeply psychological. The difference is that in modern systems, this trust becomes abstract, institutional, almost invisible. In rotating savings and credit associations (ROSCAs), it remains embodied.
For a long time, major powers believed that technology would gradually replace traditional community structures. The internet has ultimately had the opposite effect. Digital networks have recreated forms of human interaction at a speed that few anticipated.

The #MeToo movement has probably marked a turning point in this evolution.
What is striking in retrospect is not just its media or political impact. It is the demonstration that a global community could now structure itself almost spontaneously around a shared experience, without a central hierarchy or dominant organization.

This phenomenon goes far beyond the issue of gender relations. It reveals something deeper about the 21st century: the capacity of human communities to coordinate globally around common values is gradually becoming an economic, cultural, and sometimes even political force.

An African proverb says: “Alone, we go faster. Together, we go further.” For a long time, this phrase was dismissed as a somewhat naive form of folk wisdom. Yet, it quite accurately describes the workings of the new collective dynamics emerging today.

Major digital platforms understood this before many governments. Communities have become assets. Trust has become infrastructure. When a sufficient number of individuals share the same vision, the same emotion, or the same belief in the future, considerable economic forces can begin to form almost naturally.

This is probably why old African community models deserve to be viewed differently today. They do not represent a regression of the past. On the contrary, they may contain some of the social mechanisms that are now reappearing globally in new technological forms.

From this perspective, Hydrogen Queens is ultimately neither a simple energy project nor a classic financial initiative. The idea is rooted in something much older: the conviction that a community

sufficiently aligned around a common heritage vision can gradually build real power without entirely reproducing the old models of economic domination.

CHAPTER 6

When communities become powerful

For much of the 20th century, power resided primarily in states, large corporations, banks, and the traditional media. Societies were organized around relatively slow, vertical structures, where information circulated in a controlled manner. Even large-scale popular mobilizations often remained limited by geographical boundaries, means of communication, and traditional political apparatuses.

The internet has profoundly altered this balance.

Initially, many saw social networks as spaces for distraction, sometimes even as superficial tools. Yet, behind this apparent lightness, a much deeper transformation was taking place.
Millions of people were gradually learning to coordinate emotionally, culturally, and sometimes economically without going through the old power structures.

The #MeToo movement was probably one of the first moments when this shift became impossible to ignore.

What is striking in retrospect is not only the media attention the phenomenon received. It is the speed with which women living in completely different contexts managed to generate global awareness from experiences that had long remained individual and silent.

For decades, certain realities already existed, but remained fragmented. Each person often believed they were alone in their experience. The internet suddenly allowed these scattered narratives to connect almost instantly. And once linked together, these voices began to form something far more powerful than a simple collection of testimonies.

A community.


CULTURE DOES NOT MAKE PEOPLE. PEOPLE MAKE CULTURE.
— Chimamanda Ngozi Adichie

This is probably what many analysts misunderstood at the beginning. #MeToo wasn't just a social movement. Above all, it revealed that the internet had become a global infrastructure capable of transforming shared emotions into real collective force.

The Nigerian writer Chimamanda Ngozi Adichie said:
"Culture does not create people. People create culture."

This statement seems particularly apt in the current context. For a long time, institutions almost single-handedly shaped dominant narratives. Today, sufficiently large communities can themselves influence social behaviors, businesses, the media, and sometimes even political decisions.

This development goes far beyond the issue of women. It concerns the way in which power begins to circulate in modern societies.

Financial markets themselves are gradually beginning to reflect this transformation. Some digital communities have already demonstrated their ability to influence assets, companies, or economic trends at a speed that would have seemed almost impossible just twenty years ago.

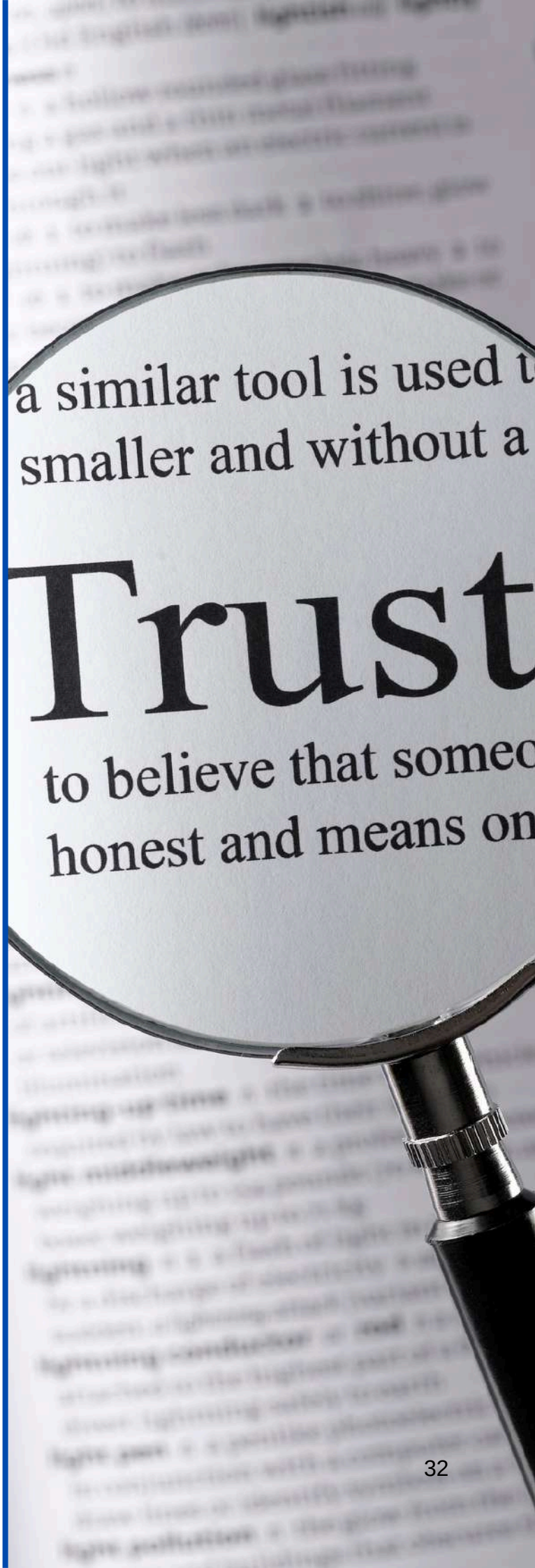
Technology has accelerated the flow of information, but above all, it has accelerated the formation of collective trust. When a sufficiently large group of people shares the same vision of the future, the consequences can become considerable.

It then becomes possible to see the emergence of new forms of economic coordination that are no longer based solely on traditional institutional models.

This is probably what makes our era so unique. Power is not disappearing; it is simply beginning to shift slowly towards much more horizontal, emotional, and community-based structures than before.

And in this silent shift, women's communities already occupy a central place.

CHAPTER 7



Trust capital

In finance, figures often give the illusion that everything rests on mathematics. Markets seem governed by balance sheets, interest rates, statistical models, and increasingly sophisticated algorithms. Yet, when we look at major economic crises with a bit of perspective, another reality almost always emerges behind the graphs: financial systems essentially rely on trust.

A bank can appear extremely solid on paper and collapse in a matter of days if depositors suddenly lose faith in it. A currency can retain its value for decades and then rapidly weaken when that collective confidence begins to erode. Even the most powerful nations remain dependent on the world's perception of their stability.

Ultimately, trust is probably the most important and most invisible asset of modern societies.

This is an age-old reality. In many African cultures, a man could sometimes lose his money without immediately losing his place in the community. However, losing his word or personal credibility became far more serious. Wealth could return. Trust, on the other hand, sometimes took years to rebuild.

An old African proverb says: "Trust is gained in drops and lost in liters."

This sentence seems simple, but it summarizes a fundamental mechanism of human relations. Great civilizations have always relied on systems of trust strong enough to allow individuals to cooperate on a large scale. Without this, neither trade, nor finance, nor lasting institutions can truly function.

For a long time, states and large banks held almost a monopoly on this collective trust. Then the internet arrived and something slowly began to change.

In the early 2000s, it seemed difficult to imagine that strangers spread across several countries could one day:
to jointly finance projects,


TRUST IS GAINED
IN DROPS AND
LOST IN LITERS.
— Old African Adage

to organize themselves economically, or to create communities capable of influencing entire markets.

Today, it seems almost normal.

One of the most telling examples of this transformation is probably that of crowdfunding. For decades, when someone wanted to develop a major project, they generally had to convince a bank, an investment fund, or an institution with the necessary capital. Now, a sufficiently engaged community can sometimes directly fund an idea, a product, or a vision without going through traditional channels.

This shift appears technical from the outside. In reality, it is profoundly cultural.

Because it means that some of the trust is gradually leaving centralized institutions and moving towards the communities themselves.

Some digital platforms have built enormous valuations without possessing industrial infrastructure comparable to that of the older groups. Their real wealth often lies elsewhere: in their ability to maintain a relationship of trust with millions of users.

This evolution likely explains why the concept of community is becoming increasingly important in the modern economy. A community truly aligned around a common vision sometimes ends up producing an economic force that is difficult to reproduce artificially.

Major brands have understood this. Social movements have understood this. So have technology platforms.

But this logic could gradually extend beyond the realms of consumption or cultural influence. It could also transform the way in which certain real assets are owned, financed, and governed.

This is probably where blockchain becomes interesting. Not as a mere speculative technology, but as an attempt to reorganize trust on a large scale without relying entirely on old centralized structures.

In a world that has become more unstable, more digital and more fragmented, trust could gradually become the most strategic resource of all.

CHAPTER 8

Why women might play a different role in the coming century


IT'S THE LITTLE THINGS CITIZENS DO. THAT'S WHAT WILL MAKE THE DIFFERENCE.
— Wangari Maathai

Major energy transitions have almost always been conceived through the lens of power dynamics. Oil shaped industrial empires, military strategies, and geopolitical power relations that defined the entire 20th century. Energy was primarily viewed as a lever for growth, control, and influence.

This vision has not disappeared. It remains very present today in some major global economic decisions. However, something is slowly beginning to change.

The energy issue is no longer solely about production or security of supply. It now touches on much broader topics: climate stability, health, food, quality of life, water, migration, and the ability of societies to maintain a balance over several generations.

In other words, energy is gradually ceasing to be solely an industrial issue and becoming a civilizational one.

It is probably in this context that the role of women could take on particular importance in the coming decades.

This is not about idealizing women or claiming they are morally superior to men. Human societies are obviously much more complex than that. But history nonetheless shows that women often have a different relationship to time, to protecting the home, to passing on traditions, and to future generations.

In many cultures, women silently maintain the continuity of daily life when times become unstable. This responsibility sometimes fosters a different way of assessing risks and priorities.

Wangari Maathai, Nobel Peace Prize laureate and a leading African figure in ecology, wrote:
"It's the little things that citizens do. That's what will make the difference."


IF YOU WANT TO GO FAST, GO ALONE. IF YOU WANT TO GO FAR, GO TOGETHER.
— African Wisdom

This sentence seems simple, but it contains a profound idea: great, lasting transformations rarely begin with spectacular displays of force. They often emerge from patient, repeated, and collective behaviors.

Observing international energy debates over the years, a difference often subtly emerged in certain discussions. Where many leaders spoke mainly about industry, growth or competitiveness, some women naturally brought the discussions back to much more concrete topics: air quality, children, food, health or water.

This approach profoundly changes the way we look at energy.

Because from the moment we start thinking in terms of generations rather than short political or financial cycles, priorities slowly begin to shift.

The writer Toni Morrison said:
"If you want to fly, you must let go of what's holding you to the ground."

For a long time, global energy models remained tied to outdated logics of industrial domination. Perhaps the coming century will gradually force societies to develop a different relationship with power, growth, and natural resources.

Women's communities already possess significant historical experience in organizing networks based on trust, mutual support, and resilience. African rotating savings and credit associations (ROSCAs) represented an ancient form of this. Global digital communities may represent a contemporary version.

In this context, the idea that women could gradually participate in the asset governance of global energy infrastructures no longer seems as unrealistic as it might have once appeared.

The issue goes far beyond the question of energy itself. It touches on a deeper question about how societies will choose to organize ownership, responsibility, and inheritance in the coming decades.


IF YOU WANT TO FLY,
YOU GOT TO GIVE UP
THE THINGS THAT
WEIGH YOU DOWN.
— Toni Morrison

CHAPTER 9

Why blockchain is still misunderstood

For a long time, blockchain was reduced in the public mind to cryptocurrency speculation. Excesses, financial bubbles, and some absurd projects largely contributed to this perception. Many people ended up associating this technology with an unstable, opaque, or purely speculative world.

However, behind the media noise, something much deeper was developing.

The true revolution of blockchain probably lies not in cryptocurrencies themselves, but in how this technology could transform the notion of ownership. For the first time, real assets can potentially be represented, fractionated, exchanged, and transferred globally through a shared digital infrastructure.

Initially, this idea seemed theoretical. Then the world's largest financial institutions began to take a serious interest in it.

When BlackRock, the world’s largest asset manager, began openly discussing the tokenization of financial assets, many understood that a significant shift was likely underway. Larry Fink himself declared that tokenization represented “the next generation of markets.” Behind this relatively understated phrase lies a potentially immense transformation.

For decades, a significant portion of global finance has remained trapped in cumbersome, slow, and sometimes extremely expensive infrastructures. Tokenization opens up the possibility of making certain assets much more fluid, fractional, and accessible globally.

This movement extends far beyond the traditional crypto world. Banks, investment funds, and several major financial institutions are already working on applied tokenization mechanisms:
to real estate, bonds, raw materials, infrastructure, and progressively to strategic real assets.


THE NEXT GENERATION FOR THE MARKETS.
— Larry Fink

In hindsight, this development seems almost logical.

The internet has transformed information. Social networks have transformed communities. Blockchain could gradually transform ownership itself.

But many people continue to view this technology solely through the lens of financial speculation. This is probably one of the reasons why the subject remains poorly understood.

In the coming decades, blockchain may well become primarily an invisible infrastructure, used without most users even noticing, much like the internet today. Few people think about the technical protocols when they send a message or watch a video. They simply use an infrastructure that has become second nature.

Tokenization could follow the same path.

What makes this development particularly important is that it directly impacts the issue of global heritage. Until now, access to certain strategic assets has often been reserved for institutions, states, or very wealthy individuals. Tokenization is slowly beginning to break down this system.

An energy infrastructure, a raw materials reserve or a stake in a strategic company can now be digitally divided into much smaller units and potentially accessible to global communities.

This is where the reflection becomes interesting.

Because from the moment property can be fragmented globally, communities themselves begin to become potential heritage actors.

This idea still seems abstract today. Yet, it could gradually change the way certain strategic resources are held and financed during the 21st century.

CHAPTER 10

When the future begins to finance the present

For a long time, ownership of major strategic assets remained relatively closed. Energy infrastructure, raw materials, large real estate holdings, and certain private companies circulated primarily within institutional networks composed of banks, investment funds, and large family fortunes. The general public observed these movements from afar without being able to truly participate.

Blockchain is slowly beginning to change this logic.

This change remains difficult to perceive because most discussions around cryptocurrency focus on volatility, speculation, or market cycles. Yet, behind this constant noise, a much deeper transformation is likely taking place: the ability to represent real assets on a global digital infrastructure.

When an asset becomes tokenized, it can be fragmented, transferred, and potentially held by a much larger community than before. This development may seem technical at first glance, but its consequences could become considerable over time.

For several years now, even the largest financial institutions have been preparing for this shift. BlackRock, which manages several trillion dollars in assets, has publicly mentioned tokenization as one of the next major developments in financial markets. This type of positioning is rarely insignificant in the world of global finance. When an institution of this size begins to take a serious interest in a technology, it generally means that it already perceives a deeper structural shift.

Ultimately, tokenization changes an old question: who can access ownership of strategic assets?

For decades, certain opportunities remained virtually reserved for very closed circles. Blockchain is gradually opening up the possibility of a much broader fragmentation of this ownership. Energy infrastructure, raw material reserves, or a stake in a company can now be represented digitally in much more accessible units.

But this transformation cannot function sustainably without trust.

This is probably one of the reasons why a new generation of platforms specializing in the tokenization of real assets is beginning to emerge. Their role is not simply to create tokens. They primarily aim to build a credible bridge between the traditional regulatory world and new blockchain infrastructures.

Brickken is one of those players.

The platform has specialized in structuring tokenized assets with an approach much closer to institutional standards than the often improvised early generations of crypto. This aspect seems important to me because it shows that the sector is slowly beginning to move from an experimental phase to a more mature one, where legal certainty, governance, and transparency become central.

It is in this context that the Hydrokken project was launched on the blockchain.

This step goes far beyond the purely technological dimension. Above all, it marks an attempt to make accessible a new form of asset participation linked to natural hydrogen.

In retrospect, it becomes possible to glimpse something quite new: communities capable of gradually participating in infrastructures that were once reserved for much more closed institutional actors.

We are probably still at the beginning of this transformation. As is often the case with major technological transitions, a significant portion of the current excesses will likely disappear over time. But behind the visible speculation, another, more silent evolution is unfolding: property itself is beginning to change form.

And when ownership changes, economic balances almost always end up changing as well.

CHAPTER 11

Why the Hydrogen Queens were born

Some ideas are born suddenly. Others take years to become clear enough to be formulated. The Hydrogen Queens belong more to this second category.

Initially, it wasn't a project in the traditional sense. Even less so a marketing strategy or a simple reflection on blockchain. The idea developed slowly, almost silently, at the intersection of several transformations that initially seemed unrelated: global energy fragility, the rise of digital communities, the resurgence of strategic raw materials, the crisis of confidence in certain traditional institutions, and the growing role of women in new collective dynamics.

For a long time, these elements remained scattered. Then, over time, a coherence began to emerge.

Major energy transitions have almost always produced new forms of power. Coal transformed industrial Europe. Oil reshaped much of the geopolitics of the 20th century. Every major energy resource ultimately alters the economic, military, and financial balance of the world.

But something seems different in the cycle that begins.

For perhaps the first time, a global energy transition is emerging at the very moment when the internet is also transforming the way humans come together, fund projects, and build communities. These two phenomena are advancing simultaneously.

This convergence opens up possibilities that would have seemed almost unrealistic just twenty years ago.

The example of certain digital communities has already shown this. When millions of people share the same vision for a sufficient period of time, they sometimes end up producing real economic effects. Some companies have seen their value skyrocket thanks to the power of their communities. Digital currencies have reached enormous market capitalizations primarily because a sufficient number of people collectively believed in their future.

Modern value is becoming increasingly linked to collective trust.

This is probably where the idea of Hydrogen Queens was born. A simple question gradually emerged: if natural hydrogen truly becomes a strategic resource of the coming century, why should its ownership remain confined to the classical energy models of the previous century?

This question went far beyond technology.

It touched on governance, heritage, and how societies choose to shape the future. For decades, the world's major resources have been controlled by primarily state, industrial, or financial structures. The internet may be beginning to make something else possible: much more distributed and community-based forms of ownership.

The economist Elinor Ostrom, Nobel Prize winner in economics, wrote:
"Communities can sustainably manage common resources without depending exclusively on states or markets."

This statement seems particularly important today. For a long time, the world has contrasted two almost mutually exclusive models: control by large public institutions or control by large private financial powers. Yet, human history also contains other, more horizontal forms of organization, often more discreet, but sometimes surprisingly resilient.

The Hydrogen Queens are part of this reflection.

The idea is not to abruptly replace the old systems, nor to claim to build an ideal utopia. Rather, it is to explore the possibility that a sufficiently aligned global community could gradually participate in the ownership of strategic energy assets through a logic based more on long-term planning, inheritance, and asset stability.

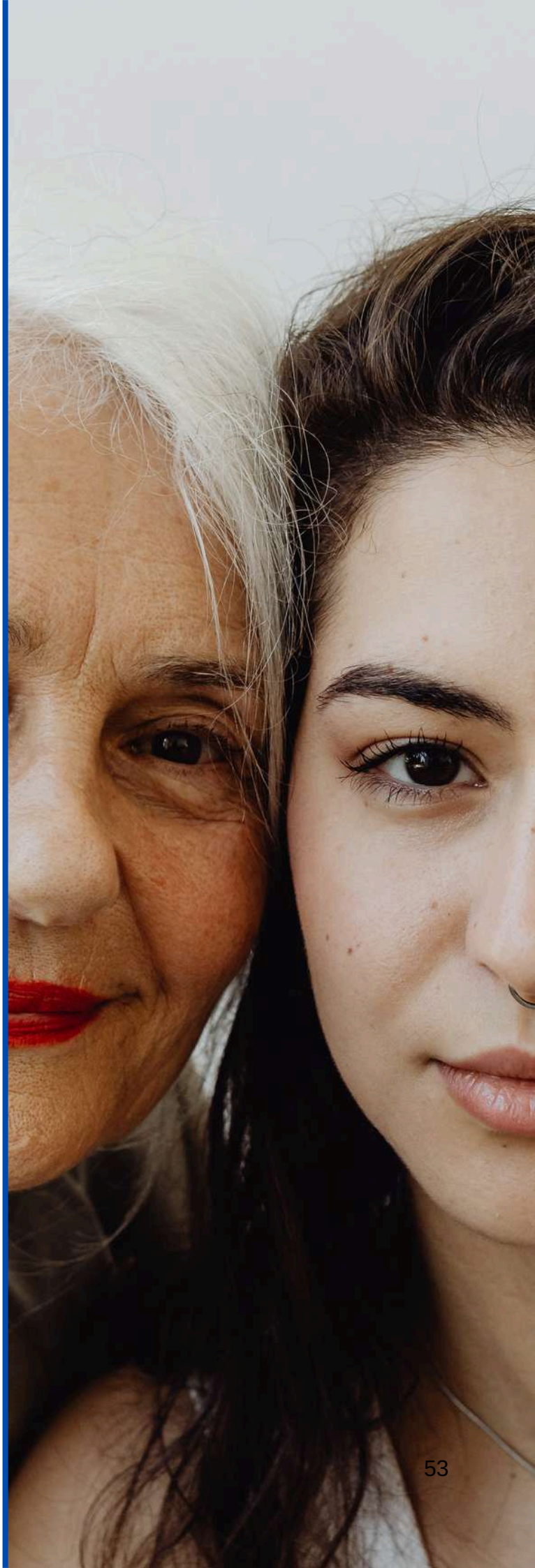
The choice of women is not, moreover, the result of a marketing calculation. It stems from a much older observation. In many societies, it is often they who maintain the invisible structures when systems become unstable: family continuity, transmission, education, solidarity networks, and sometimes even local economic stability.

This ability to think across generations could become much more important in the coming century than it was in the previous one.

In retrospect, Hydrogen Queens appear less as a technological innovation than as an attempt to connect very old mechanisms trust community, transmission to the new digital and energy infrastructures that are beginning to emerge.


COMMUNITIES CAN MANAGE COMMON RESOURCES SUSTAINABLY WITHOUT DEPENDING EXCLUSIVELY ON STATES OR MARKETS.
— Elinor Ostrom

CHAPTER 12



A new heritage architecture

For centuries, major energy infrastructures were financed according to a relatively stable logic. States, banks, or large industrial groups mobilized considerable capital to build assets intended to generate wealth for several decades. This model structured the bulk of modern energy development.

Blockchain is slowly beginning to introduce another possibility.

Initially, tokenization was primarily perceived as a financial innovation linked to cryptocurrencies. However, behind the speculative excesses that have often captured media attention, a much deeper question is gradually emerging: how to organize the ownership of strategic assets in a world that has become digital and global?

When a real asset can be represented on a blockchain infrastructure, it becomes potentially divisible, transferable, and accessible to much larger communities than before. This development may seem technical at first glance. In reality, it could profoundly change how certain assets are held in the coming decades.

It was in this reflection that the architecture of the Hydrogen Queens gradually emerged.

The idea is based on a relatively simple intuition: to use the potential future value of natural hydrogen to gradually build an equity stake around the infrastructure related to this energy.

The first foundation of this architecture is the Hydrokken.

Hydrokken represents a stake linked to Hydroma's shares and remains reserved for a limited community of fifty thousand founding women. This limitation was never intended as a marketing tool. Rather, it reflects a need for stability. Large, family-owned businesses often require a sufficiently coherent core to maintain a long-term vision without being constantly swept away by the emotional or speculative cycles of the markets.

The initial objective is therefore relatively clear: to allow a founding community to gradually become co-owners of an asset positioned on natural hydrogen.

But over time, a second line of thought began to emerge.

If natural hydrogen truly becomes a major strategic resource of the coming century, then its future value could itself become an instrument for expanding wealth.

This is where the Hydrakken comes in.

The Hydrakken operates on a different principle than the Hydrokken. It no longer primarily represents a current asset, but rather a projection of future natural hydrogen production. In other words, a portion of the potential value of the hydrogen extracted in the future could begin to be used to support current acquisitions or developments.

This mechanism may seem unusual at first glance. Yet, commodity markets have long operated according to similar principles. Agricultural producers sometimes sell part of their future harvests even before the full season is over in order to finance their current operations. States themselves regularly finance their infrastructure projects based on expectations of future wealth.

The difference here lies elsewhere.

For perhaps the first time, an international community could collectively participate in this logic through a heritage architecture based on blockchain.

Over time, this reflection began to go beyond the purely theoretical framework.

Several of Hydroma's long-standing shareholders have gradually expressed their interest in a different approach to future energy ownership. Official mandates already exist regarding this possibility.

The idea is relatively simple in principle: some shareholders could eventually agree to gradually exchange part of their shares for instruments related to the future natural hydrogen economy supported by the community of founders.

This hypothesis obviously remains linked to the community's actual ability to build sufficient credibility over time. Because ultimately, this entire structure rests on one central question: trust.

But if this confidence reaches a critical mass, then a relatively new dynamic could emerge. An international community of women could gradually participate in the acquisition of assets linked to what could become one of the world's largest natural hydrogen resource pools, using precisely the future value of this energy as a wealth-building lever.

In retrospect, this architecture almost resembles a reversal of the classic energy model. For decades, large infrastructures were built by industrial or financial power centers before being economically exploited. Here, the movement becomes more organic: a community forms first, then gradually uses the future value of the resource to strengthen its own heritage stake.

This evolution is still in its early stages. A significant portion of current experiments will likely disappear over time, as with all major technological transitions. But behind the visible activity of digital markets, another transformation is advancing more quietly: global ownership is slowly becoming more fragmented, more community-based, and potentially more accessible than ever before.

CHAPTER 13

The 50,000 female founders

Major historical transformations rarely begin with millions of people. They often arise from a relatively small core group capable of sharing a common vision long enough to give it concrete reality.

The idea of the fifty thousand founding women emerged gradually within this framework.

Initially, the question was simple: how to prevent this architecture from immediately becoming just another speculative product in the digital world? Because one of the ongoing risks of blockchain remains the speed at which

Some projects lose their stability when they primarily attract short-term, opportunistic behavior.

It therefore became necessary to build something other than a simple community of investors.

The figure of fifty thousand was not chosen at random. It represents a size large enough to give the project a truly international dimension, while remaining limited enough to preserve collective cohesion and a certain quality of governance. Beyond a certain threshold, human communities often become much more difficult to align sustainably.

The founders' idea also rests on another intuition: the first participants almost always play a decisive role in the cultural direction of a nascent structure. They often determine, without even realizing it, how a community will subsequently evolve over time.

From this perspective, Hydrokken is not conceived solely as a digital asset. It also becomes a form of entry into a much broader heritage architecture linked to natural hydrogen.

The chosen threshold—ten Hydrokken, or approximately two hundred and fifty dollars at launch—also follows a specific logic. The goal was not to reserve this structure for institutional investors or the very wealthy. On the contrary, the idea was to maintain a sufficiently reasonable level of access to allow women living in very different contexts to gradually participate in this founding community.

This dimension is important.

For a long time, access to certain global strategic assets remained reserved for relatively closed circles. Energy, infrastructure, and certain raw materials remained largely inaccessible to the general public in a direct form of ownership.

The blockchain is slowly beginning to change this boundary.

For perhaps the first time, an international community can theoretically be formed around a global heritage framework without being entirely dependent on traditional financial structures. This possibility is still young and imperfect, but it opens up new perspectives.

Economic history also shows that large family-owned businesses often begin much more discreetly than one might imagine in retrospect. Some large family banks, some groups

ndustrialists or even certain commercial powers first appeared as relatively small networks before becoming major players.

The difference today comes from the potential speed of digital communities.

The internet now allows individuals spread across dozens of countries to share a common vision almost in real time. This acceleration profoundly changes collective dynamics. But this speed also contains a danger: communities built solely on euphoria or speculation generally disappear as quickly as they appear.

A sustainable heritage structure requires something else: time, stability and a trust capable of withstanding emotional cycles.

The American writer Ursula K. Le Guin wrote:
"There are things stronger than force."

This statement seems particularly apt when we observe human structures that truly stand the test of time. The strongest communities are not based solely on capital or immediate power. They often rely on a collective capacity to maintain a shared vision over long periods.


THERE ARE THINGS STRONGER THAN STRENGTH.
— Ursula K. Le Guin

IThis is probably why the idea of the fifty thousand founding members remains central to the Hydrogen Queens' architecture. The project is based less on the pursuit of rapid growth than on the gradual creation of a human base capable of supporting a long-term vision around natural hydrogen.

This architecture was never conceived as an opposition between women and men. The central role given to women is based primarily on an intuition linked to long-term perspective, stability, and the transmission of heritage.

The founders naturally remain free to welcome into this dynamic the men they choose: their sons, their husbands or those they consider capable of sharing this vision in the long term.

This family dimension seems important to me.

Because ultimately, great heritage buildings only truly stand the test of time when they become intergenerational.

The idea was never to exclude men from the energy future, but rather to rebalance the way in which that future could be governed and passed on.

Personally, the intention has always been to remain present in this founding core with my own sons. Not to control this dynamic, but because a heritage vision only becomes truly solid when it begins to transcend a single generation.

In retrospect, this logic is almost closer to old community structures than to traditional digital financial models.
African tontines themselves already operated around a similar principle: a limited group, progressive trust and shared responsibility over time.

Technology is changing the scale of these mechanisms today, but their human logic remains surprisingly ancient.

CHAPTER 14

Why the Hydrogen Queens go far beyond the energy issue

Initially, many people will likely view Hydrogen Queens as simply a project related to natural hydrogen or blockchain. This reaction is normal. When a transformation begins to emerge, it is almost always interpreted through the existing categories.

However, in retrospect, energy may only be a gateway to a much broader reflection.

Every major energy transition ultimately transforms far more than just electricity production or industrial infrastructure. Coal altered the organization of cities and labor. Oil reshaped global geopolitics, currencies, and the military balance of the 20th century. Behind every major energy resource lies, in reality, a particular way of organizing power, property, and human relationships.

Natural hydrogen could also produce this type of historic displacement.

Not only because it potentially represents a new source of energy, but because it appears at a particular moment in human history: one where digital communities, blockchain, and the fragmentation of the

Property ownership is slowly beginning to transform the old economic structures.

It is this convergence that makes the current period difficult to compare with previous ones.

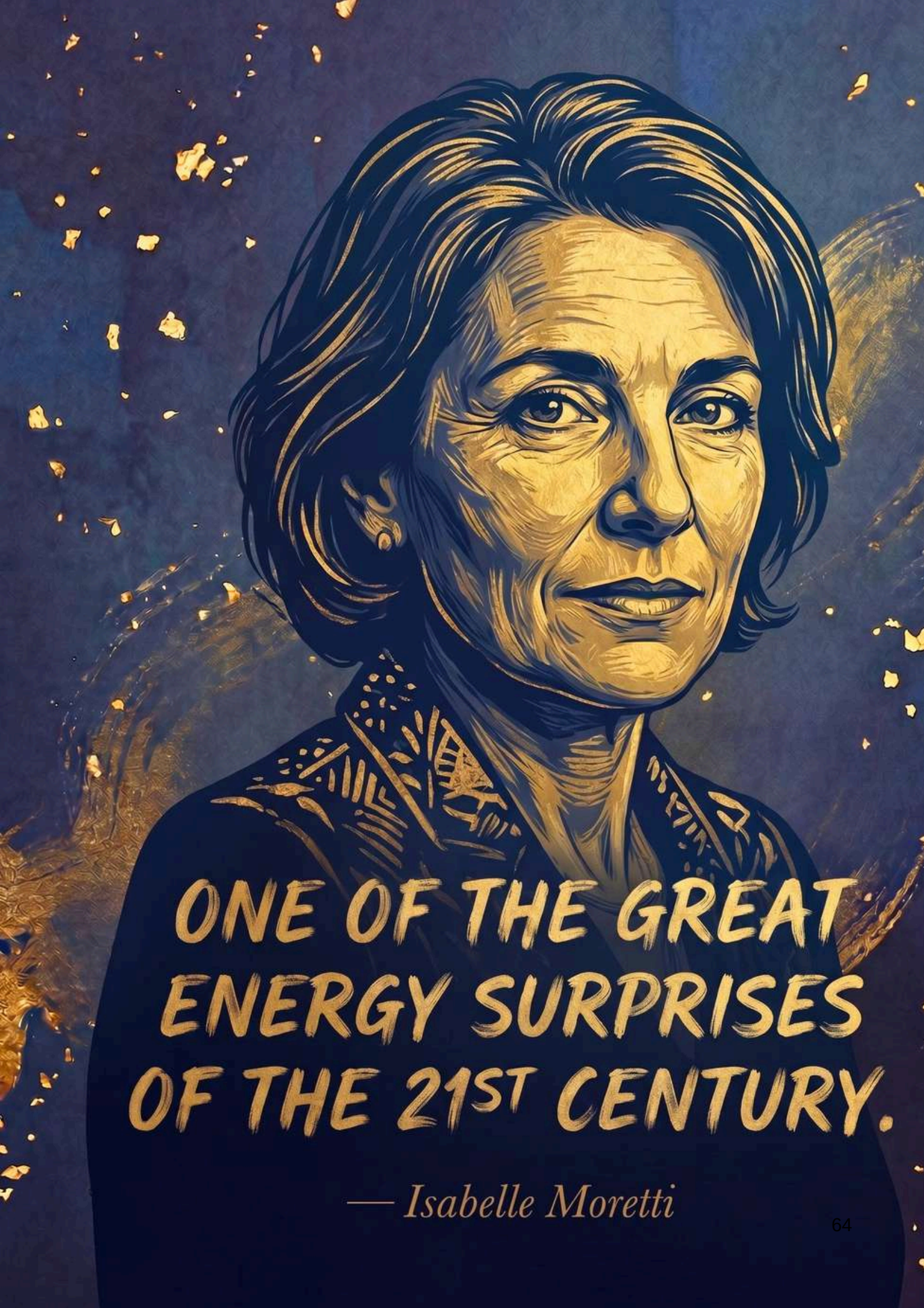
For a long time, major global infrastructures were built according to relatively traditional vertical models. States, large industrial groups, and financial institutions held the bulk of the investment capacity. Populations then participated in the economy primarily as consumers or as a workforce.

The internet is slowly beginning to change this mechanism.

Communities are becoming capable of coordinating, financing projects, and sometimes even influencing certain global economic dynamics. This evolution remains somewhat chaotic, occasionally speculative, and often poorly understood. Yet, it already reveals something profound: collective trust is gradually becoming a productive force in its own right.

In this context, Hydrogen Queens may represent less an energy company than an attempt to reorganize certain heritage logics of the future in a different way.

The central question then becomes much broader: how will societies choose to distribute ownership of strategic resources in the 21st century?


ONE OF THE GREAT ENERGY SURPRISES OF THE 21ST CENTURY.
— Isabelle Moretti

For a long time, this property remained concentrated around relatively limited centers of power. Blockchain now opens up the possibility of much more fragmented, distributed, and community-based structures.

This development could profoundly alter the relationship between individuals and major global infrastructures.

Isabelle Moretti, a renowned expert in natural hydrogen, recently reminded us that this resource could represent "one of the great energy surprises of the 21st century." This statement seems important because it accurately reflects the current situation: we are probably still at the beginning of a transformation whose true scope remains difficult to measure.

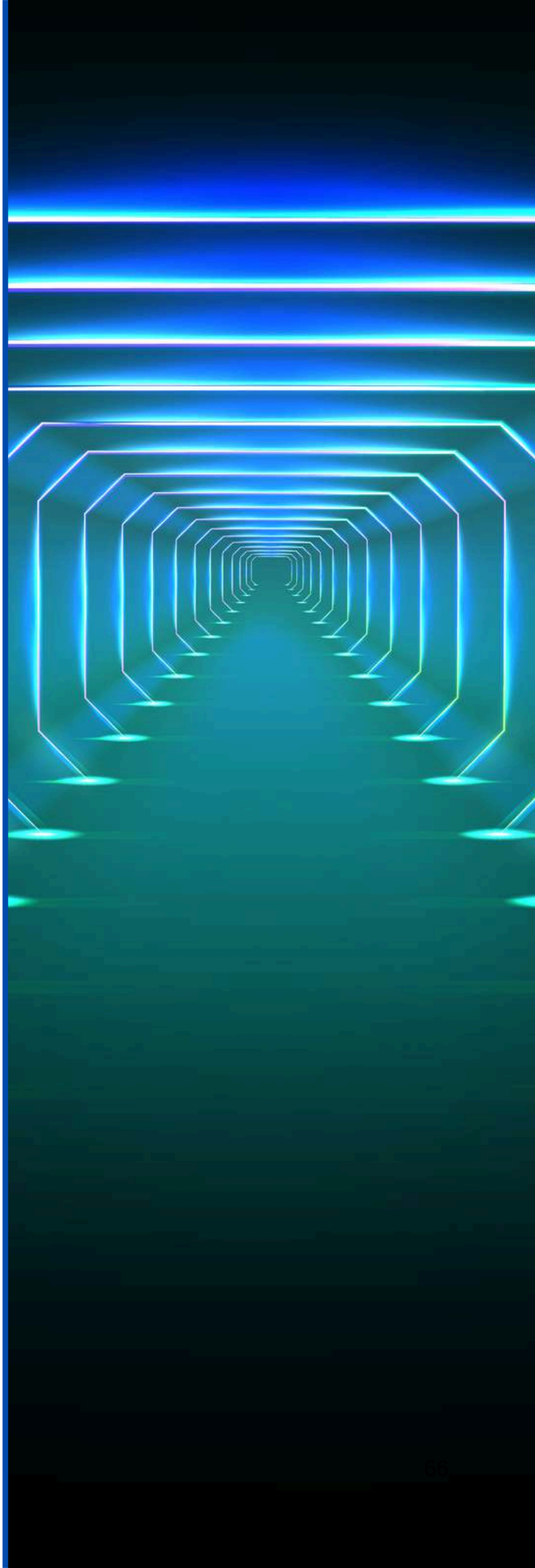
Because ultimately, the real question may not be solely about producing new energy. The real question concerns what current generations will choose to pass on to future generations: a system still based on relations of domination and scarcity, or structures more capable of integrating long-term thinking, stability, and a form of collective responsibility.

This is probably why Hydrogen Queens cannot be reduced to a simple technological or financial project.

The idea touches on something much older: the way humans organize themselves when they begin to understand that certain essential resources condition not only their prosperity, but also their ability to preserve a collective balance over several generations.

In retrospect, the most significant transformations in history often become visible very late. When they begin, they appear marginal, unrealistic, or secondary. Then one day, almost silently, they end up altering the very structure of the world around them.

EPILOGUE



Some transformations become visible very late

When we look at history with sufficient perspective, we realize that major transformations almost always begin in a kind of silence. They first appear on the periphery of the visible world. Few people take them seriously. They seem too new, too slow, or sometimes even unrealistic in the face of the dominant models of the time.

Then the years go by.

And suddenly, what seemed marginal ended up becoming obvious.

It is possible that natural hydrogen is currently entering this strange phase where a still almost invisible resource is slowly beginning to alter some of the fundamental lines of the world's energy future. Perhaps this intuition will prove incomplete. Perhaps, too, it will transform the coming century more than many yet imagine.

Ultimately, this book was never written to predict the future with certainty.

It was born from a series of observations accumulated over time: the limitations of the current energy model, the rise of digital communities, the silent transformation of ownership through blockchain, the return of strategic raw materials and above all this persistent impression that the world is gradually entering a new power architecture.

For a long time, power was organized around industrial, military, and financial strength. The 21st century could shift part of this balance towards something else: the capacity of human communities to coordinate around a common vision stable enough to withstand the test of time.

This is probably where women take on a special role in this reflection.

Not because they are morally superior to men, but because they often have a different relationship to time, transmission, and the continuity of human structures. In many societies, they are the ones who maintain the invisible balances when systems become fragile.

The idea for Hydrogen Queens was born in this very place.

Not as a battle of the sexes. Even less as an ideology. Rather as an attempt to reintroduce into the governance of strategic resources qualities that the modern world has sometimes neglected: patience, stability, transmission, and the ability to think beyond a single economic cycle.

In retrospect, this reflection likely has its roots much deeper than blockchain or hydrogen itself. It connects with very ancient human mechanisms. African rotating savings and credit associations (ROSCAs) were already a discreet form of this: communities capable of transforming trust into collective economic power without being entirely dependent on large central structures.

Technology is changing the scale of these mechanisms today, but their underlying logic remains surprisingly familiar.

There is something almost symbolic about this reflection taking shape around Africa. For a long time, the continent was primarily viewed as a reservoir of raw materials destined to fuel the major industrial powers. Yet, some of the most significant transformations of the coming century could emerge precisely from territories long considered peripheral.

Natural hydrogen could be part of it.

And if that were to happen, then the real question would no longer concern just the energy itself. It would concern how this new wealth will be organized, transmitted, and governed.

Perhaps future generations will view this period as just another technological transition. Or perhaps they will see it as the beginning of a much deeper shift in how humans organize ownership of global strategic resources.

It's still too early to know.

But some insights sometimes deserve to be written down even before the world is completely ready to hear them.

PAGES ANNEXES
GLOSSAIRE DES TERMES CLÉS

Hydrogène Naturel (ou Hydrogène Blanc) : Forme d'hydrogène qui existe et se régénère naturellement dans le sous-sol terrestre, par opposition à l'hydrogène industriel (gris, bleu ou vert). Il est perçu comme potentiellement moins cher et plus propre à l'extraction.

Tontine : Mécanisme traditionnel africain d'épargne et de crédit, reposant entièrement sur la confiance mutuelle au sein d'une communauté (souvent féminine), permettant de financer des projets sans passer par le système bancaire classique.

Blockchain : Technologie de registre distribué qui garantit la traçabilité et l'inviolabilité des transactions et des propriétés. Elle est considérée dans l'ouvrage comme l'infrastructure permettant de réorganiser la propriété des actifs réels.

Tokenisation : Processus qui consiste à représenter un actif réel (parts d'une infrastructure, immobilier, matières premières, etc.) sous forme de jetons numériques (tokens) sur une blockchain, permettant de le fragmenter et de le rendre accessible à une communauté globale.

Hydrokken : Instrument de participation patrimoniale numérique, lié aux actions Hydroma, et réservé aux 50 000 femmes fondatrices. Il représente une form de co-propriété actuelle des actifs liés à l'hydrogène naturel.

Hydrakken : Instrument basé sur une projection de la production future d'hydrogène naturel. Il permet à la communauté d'utiliser la valeur potentielle future de la ressource comme levier patrimonial.

Hydrogen Queens : Communauté mondiale de femmes visant à s'organiser autour d'une nouvelle architecture de richesse et de propriété pour participer à la gouvernance et à la transmission d'actifs stratégiques liés à l'hydrogène naturel.

Hydroma : Société pionnière, notamment au Mali, dans l'exploration et l'exploitation de l'hydrogène naturel (hydrogène blanc).

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An untiring researcher and dedicated educator, Mostafa Belkhayate now shares his proprietary methods globally. He bridges the gap between rigorous mathematics and cutting-edge artificial intelligence to make financial freedom accessible to the next generation of investors.
He currently divides his time between Dubai and Marrakesh, where he continues to develop the predictive algorithms of tomorrow.

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