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Energy

Special Guest Editorial

Water Cooperation for Sustainable Development

Water is fundamental for life and survival on Earth. The use of water has intensified dramatically over recent decades and in many places we are now at a point where water shortages, water quality degradation and aquatic ecosystem destruction are seriously limiting the prospects for socio-economic and political stability as well as ecosystem integrity. Recognizing that water is critical for sustainable development, the United Nations designated **2013 the Year of Water Cooperation**, and will focus on the lessons that can be learned from successful water cooperation initiatives.

Without clean water and improved sanitation services, no country can meet its sustainable development goals. Advances in health, food security, access to energy, resilient economic growth and climate change all depend on water. The lack of access to clean drinking water and subsequent exposure to waterborne illnesses remains a leading cause of death worldwide, affecting women and children most of all among poor communities.

To address such water and sanitation challenges, the **United Nations Development Program (UNDP)** and **The Coca-Cola Company (TCCC)** formed a unique partnership to foster community-based solutions. The Every Drop Matters Water Partnership began in 2006 and focuses on Europe and the Commonwealth of Independent States, as well as the Middle East and Asia Pacific regions. Working with local authorities and community groups in these countries, Every Drop Matters supports innovative projects that improve access to clean water and sanitation. With attention to

water stewardship, governance and public awareness, the program helps build local capacities for sustainable water management.

Every Drop Matters is a cooperative model of how private sector partnerships can work towards sustainable development. Breaking from the conventional donor approach, UNDP and TCCC work as partners, from project identification through to implementation, advocacy and communication. It is a functional cooperation, drawing on the partners' respective strengths.

The Every Drop Matters initiative has implemented more than 50 projects in some 20 countries, partnered with more than 30 NGOs/CBOs; and as a result, 320,000 people have gained access to water and sanitation services, around 204,000 people have gained increased resilience to water-related climate change impacts and more than 166,000 individuals have gained knowledge of how to use water more responsibly. This innovative water cooperation mechanism is a model worthy of examination and replication.

Bogachan Benli
Global Program Manager

Every Drop Matters
UN Water & Ocean Governance Program
www.everydropmatters.org



"The water moves on, a little faster than before, yet still the great river flows. It is as fluid and unpredictable in its moods as it has ever been, but it meanders within familiar banks."

– William Dalrymple, *Nine Lives, In search of the sacred in modern India*, 2009.

CONTRIBUTORS

Anders Böhkle
Deepshikha Sharma
Edoardo Da Silva
Laura Beltrán Villamizar
Lubomir Mitev
Nicolas Rossier
Peter Easton
Pol Arranz-Piera
Rajnish Ahuja
Ruth Gamano
Stuart Reigeluth
Tyler Butler

PHOTOGRAPHERS

Gregg Zimmerman
James D'Addio
Juan Herrero
Laura Beltrán Villamizar
Mladen Antonov
Pol Arranz-Piera
Peter Easton
Radinck Van Vollenhoven
Simon Harrod
Thierry Gonzalez

GRAPHIC DESIGN

Filipa Rosa

PHOTO | ART EDITOR

Laura Beltrán Villamizar

ENERGY | CLIMATE ANALYST

Lubomir Mitev

ENERGY ASSISTANT

Edoardo Da Silva

CONTENT MANAGER

Valentina Pinzuti

ASSISTANT | RESEARCHER

Marcello Cappellazzi

EDITOR-AT-LARGE

Bostjan Videmsek

MARKETING CONSULTANT

Douglas Padreca-Ceratti

MANAGING CONSULTANT

Joelle Rizk

FOUNDING EDITOR

Stuart Reigeluth

Cover image of "The Whirl at Play", creating energy during recess. **Source:** Empower Playgrounds.



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Death Valley, California, 2009. **Source:** Radinck Van Vollenhoven



The Internet

On a Cloudless Day

Writer: Tyler Butler is an independent contributor to *Revolve*.

There is something surreal, a little uncanny about the technologies that have become our ubiquitous companions and that are now transforming our societies and behaviors.

Is our information stored in a “cloud”? Where is that cloud? “Cyberspace” might as well be “outer space”. How does the “Web” connect millions of people and yet remain so abstract? What *is* the Internet?

The “cloud”
is just a huge air-conditioned building
packed with servers that do not
belong to you.



If you do not have a fixed,
public and unique IP address,
you do not have a real Internet
connection.

Inter-what?

Compared to more typical telecommunications networks such as the telephone, radio or television, the Internet is very different. Under the auspices of the U.S. Department of Defense, Internet was launched in 1972 by the Defense Advanced Research Projects Agency (DARPA), Massachusetts Institute of Technology (MIT) and American Telephone and Telegraph (AT&T). During the Cold War era, Internet was meant to be a resilient and decentralized communications network virtually invulnerable to attacks.

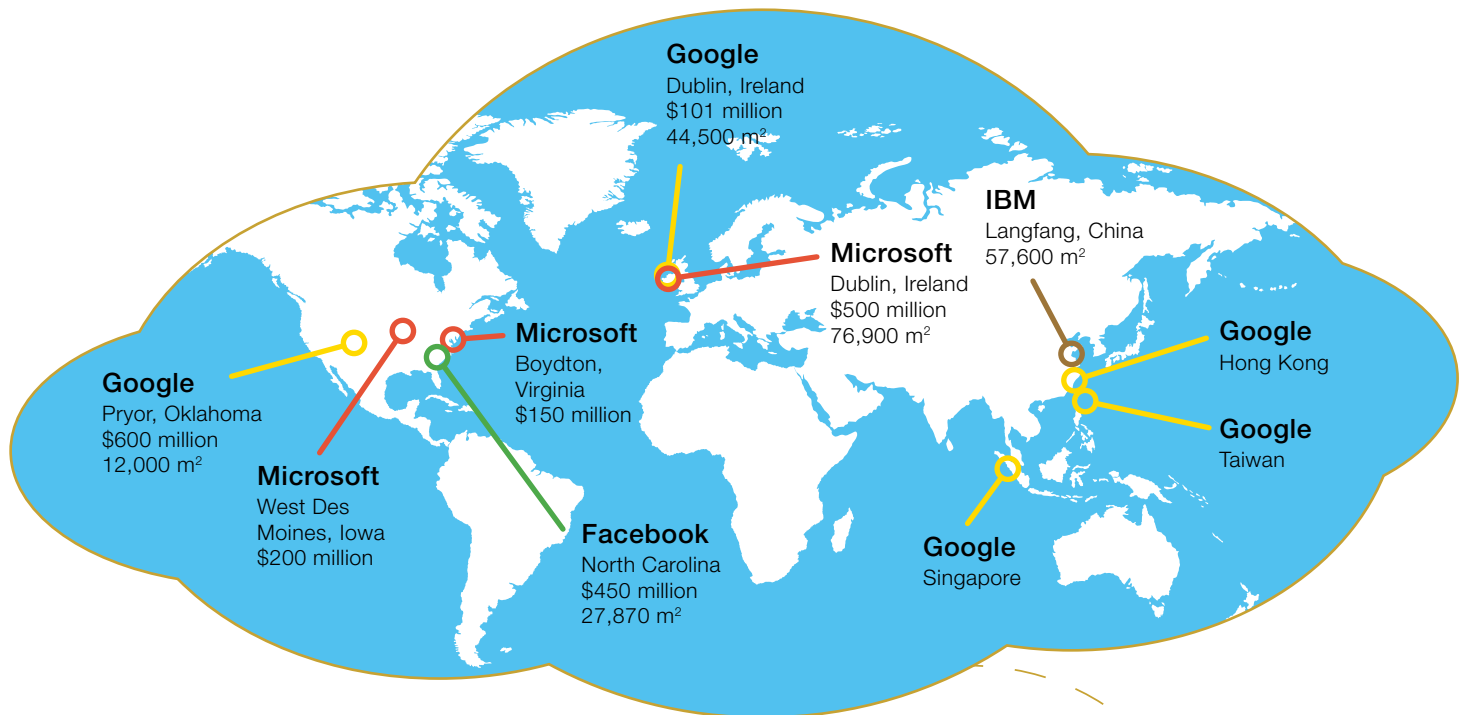
The fundamental idea of the Internet is ingenious. Whereas a phone conversation relies on *circuit switching* to establish an exclusive connection between two numbers, the Internet uses *packet switching* to route the information, which has been segmented into little packets of bits, across different circuits. While the conversation you have on a phone can easily be tapped or interrupted, an Internet connection relies on channeling the signal through different routers, meaning that the message is intact

when it is sent and when it is received, but not in between.

The reason why the Internet is called “the network of networks” or receives the lofty nick-name “the Net” is because it is made-up of countless local networks connected with routers. If one network is tampered with or destroyed, the Internet remains unfazed. The whole point was to establish an adaptable network by connecting one machine to another and by connecting local networks of computers together with as few centers as possible. Whenever a computer is added, a router is turned on and a network is established and the Net actually expands. Networks, like the television, concentrate the “intelligence” in the center, to which passive terminals are connected. The Internet, on the other hand, draws its intelligence from the terminals where information is stored and generated; the rest is just a question of getting the packets of bits from one place to another.

On the Internet every machine is both a **server** and a **client**. This may come as a surprise when all we hear about is big servers storing our data for us, but fundamentally every computer on the network sends and receives information, makes requests and responds. What we call a “server” is nothing more than a computer without any external devices, stored with thousands of others in a huge room, but a server can also be your own computer.





Data Center Expansion Plans

Cloud Computing Prompts Worldwide Expansion

Source: Data center mapping, 2012.

Big Data's dream is
[...] to know you better than
you know yourself.

Each computer has its own unique Internet Protocol (IP) address. One of the few centralized functions of the network is to make sure there are no repeat or faulty addresses. This mission is carried out by the Internet Corporation for Assigned Names and Numbers (ICANN) contracted by the U.S. Department of Commerce. While the ICANN establishes general policy and standards, its regulatory department, the Internet Assigned Numbers Authority (IANA), implements IP address allocations to five Regional Internet Registries (RIR) and administers the Domain Name

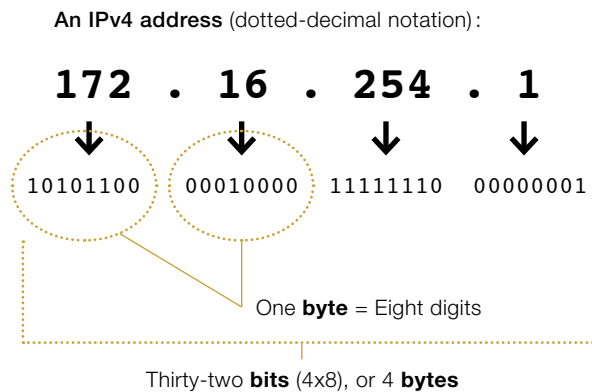
System (DNS), which is basically Internet's address book. The RIR then distribute their IP stocks to the different Autonomous Systems which are most often operated by an Internet Service Provider. Finally, your ISP rents you an IP address.

While this managerial hierarchy may appear as yet another example of technological hegemony emanating from the United States, it is actually currently very independent from both governmental and commercial influences. As it is a non-profit system, it has no shareholders to whom it is account-

able and the U.S. Department of Commerce's oversight is relatively restrained since it is linked solely by contractual obligations. This limited form of centralization is also essential to maintain a working order throughout such a global interconnection of networks. The DNS is replicated on over 200 servers across the world thereby making the quantity of traffic actually transiting towards one central server relatively small.

Back to the Basics

What does an IP address actually look like? In the digital world, the smallest unit of information is a **bit (binary digit)** which has only two possible values – 0 or 1.¹ Each value corresponds to a very concrete state on an electrical circuit – open or closed. Today there are literally tens of millions of electrical circuits etched onto tiny silicon chips and, according to Moore's law, every 18 months the circuit density on a chip doubles. Current IP addresses (IPv4) are coded in 32 bits which can generate over 4 billion different address combinations. They look like this:



Basic Internet principles:

1. The Internet is not an all-encompassing “Net” which has been cast over the world; rather it is the ever-changing process of publicly addressed machines interconnected on local networks.
2. The Internet, as a network, does not care what information it carries; like the post office, it has no authority to open or filter communications.
3. The Internet is a symmetrical network: each digital device theoretically has its own fixed, public and unique IP address.

This may sound like a lot, but the IANA has already depleted its stock and the RIR's available addresses are dwindling rapidly. The worldwide proliferation of computers and more recently of hand-held devices has already pushed us into the next generation of IP addresses (IPv6), coded in 128 bits, which allows for hundreds of billions of combinations. However, because the two addressing systems are not compatible the transition has been extremely slow. Since every machine has an IP address, when your computer and your printer at home communicate they must first be able to identify each other, but the only IP addresses the Internet takes into account are those which have been publicly allocated and which are not redundant.

Due to current IPv4 limitations, your provider normally breaks up its network into smaller ones called subnets that all run off one IP address, or allocates a different and temporary IP address every time you connect to the Internet. This obviously makes it extremely difficult for you to host your own website or e-mail service. Likewise, most mobile devices do not have a public IP address; they only get a private one



Google data center, Atlanta, Georgia. Source: Google.

entirely dependent on the provider's servers. So the average mobile “internet” user can check their Facebook page, sends tweets, read e-mails or watch videos on YouTube, but they are definitely not using

the Internet. Maybe that's the name your provider used to sell it to you... it is called misleading publicity. If you do not have a fixed, public and unique IP address, you do not have a real Internet connection.

1. Bits are exponential: if you code something in 7 bits it gives you 128 possible combinations, but when you code it in 8 bits it allows for 256 possibilities. You read a bit sequence from right to left and mathematically speaking each digit is a power. If you want to write 2 in binary code it will look like this: 0010 or if you want to write 8 + 4 + 1 it will be 1101 which is the same, reading from right to left, as $2^0 + 0 + 2^2 + 2^3 = 13 = 8 + 4 + 1$.

Millions of Cables

If the Internet is all about decentralized communications, how is it that more and more of our data is stored in the digital “cloud”? The cloud is not adrift in cyberspace, it is just a huge air-conditioned building packed with servers that do not belong to you. So while the cloud sounds elusive and atmospheric, it is in fact a stunning infrastructural concentration of computers with billions and billions of electronic circuits. And cables... millions of cables. The notion that data simply flows and information is an ethereal web is totally false. Machines and networks are very material and changing their architectures changes the way we use them.

Your computer is connected to your modem and router, allowing the packets of bits to be channeled through different

routers from your IP address to another where they are decoded and read. If you have heard about fiber-optic cables, your network is probably not wired with them. Fiber-optic connects continents underwater, data centers or ISPs by beaming light pulses through insulated fiberglass lines. What most of us use is an Asymmetrical Digital Subscriber Line (ADSL).² Why “asymmetrical”?

ADSL relies on the electric signal sent through the copper phone lines to provide up to twenty times more download than upload capacity. When the choice was made to operationalize ADSL lines rather than Symmetrical DSL, the underlying presupposition was that the average user receives more data than they send. Verifying such a hypothesis is of little interest

and the speculative claim that humans are essentially information consumers is not the point. The real question is what the Internet’s infrastructure allows and what kind of behaviors it structures. Clearly, widespread mobile “internet” and ADSL connections make it nearly impossible to fulfill the Internet’s original promise: hosting your own webpage or blog, creating your own e-mail service and sharing information from peer to peer.

2. Domestic use of fiber-optic cables is making headway, mainly in the United States and Japan, but its installation costs remain prohibitive and, on a global scale, ADSL remains uncontested.

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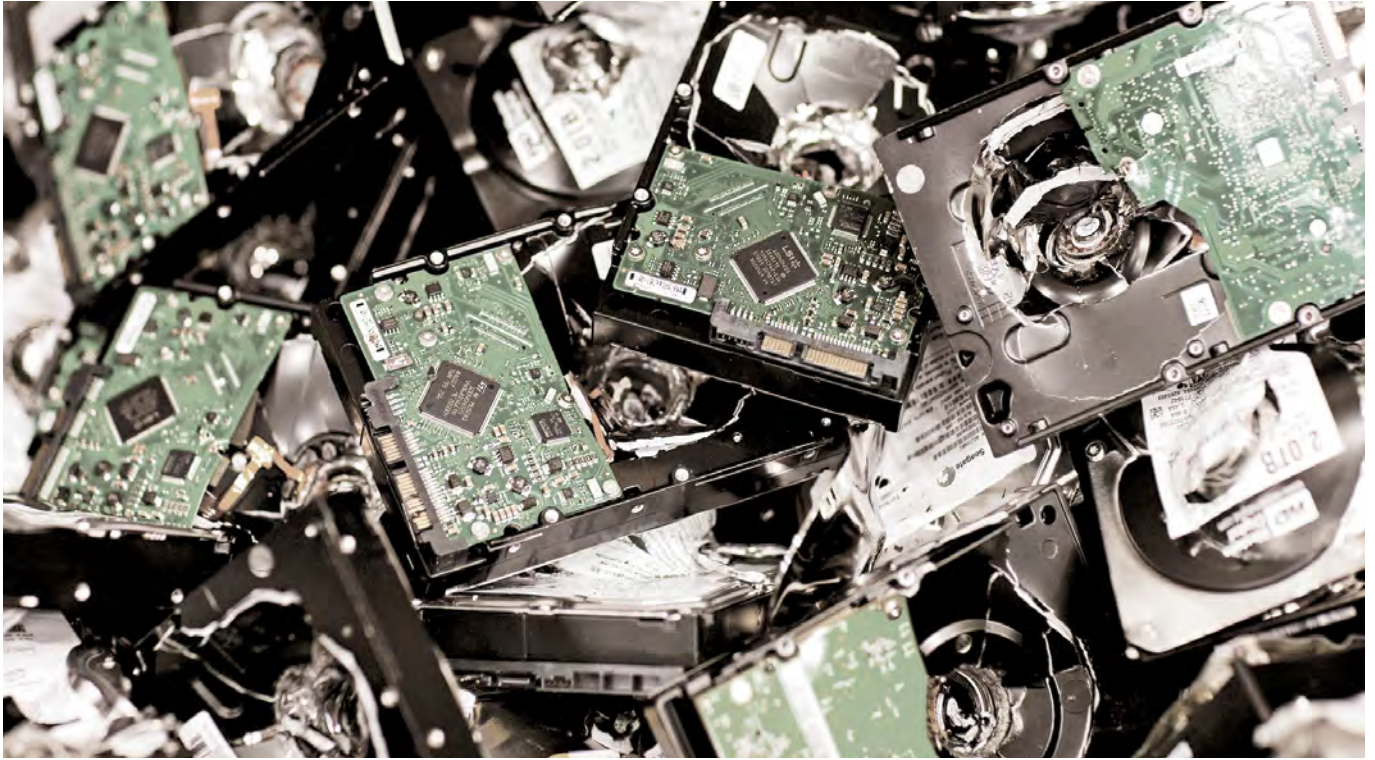
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For more information contact:
Aglaia Ntili
Global Training & Partnerships Manager
E: development@cse-net.org
www.cse-net.org



Defective or broken hard-drives are destroyed at the Google data center in Saint Ghislain, Belgium. Source: Google.

“We know
where you are. We know
where you’ve been. We can more or
less know what you’re thinking about.”

— Eric Schmidt, Google CEO.

Web of Confusions

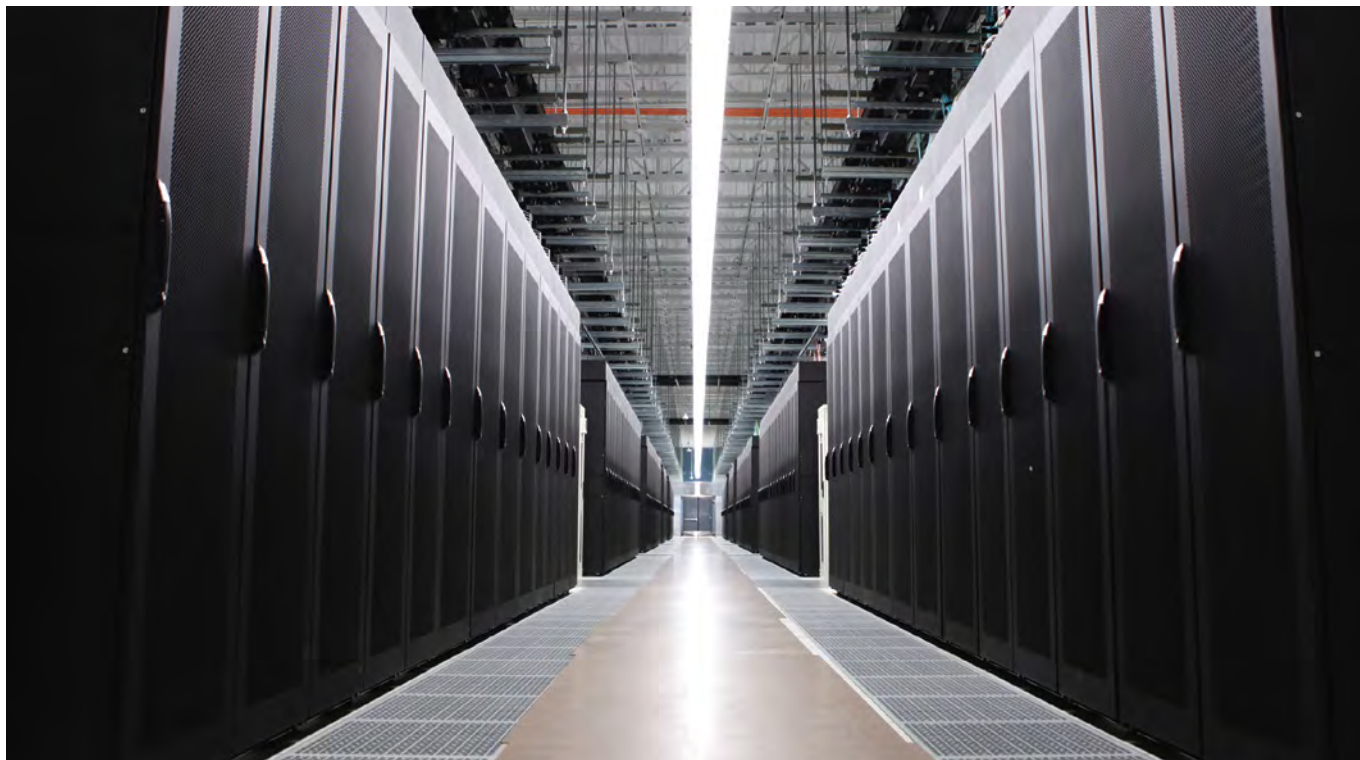
The Web, like other Internet services such as e-mail (SMTP) or file transfers (FTP), is a service using its specific **protocol** (HTTP) which functions on the Internet, but it is not the Internet. The Web was born in the early 1990s and basically allows Internet users to go from one website (URL address) to another using a piece of software called a browser. The Web became truly popular by the end of the 1990s with the advent of efficient and intuitive search engines such as Altavista, Yahoo and Google. The early 2000s heralded what is called **Web 2.0**. After realizing that most of the Web

still looked like a mass diffusion media, where content is generated by few and processed by many, the main actors on the Web searched for its revival and its future.

HTTP is called a “stateless protocol” meaning that, in its original version, every time you visited a page the website had no memory of you ever being there before. **Cookies** are used so websites and browsers can remember where you have already been and what you have already requested. This is obviously very convenient for repetitive tasks such as typing

in a username, filling out a form, online banking or shopping, but cookies also sow fields of data ready to be harvested by the websites you visit.

The Web 2.0, accompanied by “user generated content”, proclaimed a new participatory, fluid and democratic Web culture. Blogs, social networks and wikis all pointed towards a “personalized” and “easy-to-use” communication experience. Yet, what this amounts to in practice is nothing more than creating clickable interfaces that make it easy for a user to upload



GE data center in Louisville, USA.

his opinions, videos, pictures, “likes” and messages onto a central server that conveniently (and freely) keeps your data safe for you. Paradox: while the Web has become more and more personal, seamlessly tracing our lives and guiding our choices, the Internet is gradually slipping out of reach. It is nothing short of an economic aberration that YouTube, Facebook, Google or Twitter actually use your data profile as the backbone of their marketing model.

A new gold rush is underway in the Silicon Valley and it’s all about your data. The sheer quantity of your data that is stored on central servers – not just what we consciously decide to put there, but also what we unconsciously leave in our digital wake – has opened up new forms of scientific research, marketing, policy-making and social interactions. The tenants of “Big Data” are true believers in the power of data to speak the truth. A bank transaction, a purchase on Amazon.com, the geographical location of a phone call, a Google search for pizza restaurants, a Facebook comment, a sent e-mail or a purchase at the supermarket... all throughout your

day, little digital shards of your connections are stored, correlated and profiled.

First comes *data-warehousing*: the indiscriminate and bulk stockpiling of bits by a website, a search-engine or a government. Then comes *data-mining*: the statistical handling of data which is supposed to highlight trends and correlations. And then there is *profiling*: the fashioning of your personalized data profile that tells marketers, search-engines, organizations and ultimately yourself, not only what you read or eat, who you call and where you sleep, but more importantly what you are going to **want** to read and eat, and who you are going to **need** to call and where you will **have** to sleep.

Big Data’s dream is to be one step ahead of you, to know you better than you know yourself... and if you think this is science fiction then you are already one step behind Big Data. Consider the German man who finally received, months after his request, his data file from his cell phone provider. Over a six-month period there was an average of 200 geo-localization

points per day for his smart phone, which means his provider more or less knew the trains he had taken, the hotels he had slept in, and where he had done his shopping. In some U.S. cities, pilot crime-prevention programs have been launched to monitor, predict and prevent a potential crime before it happens in real-time by correlating and profiling as much data as possible.

Google assumes that if you search for a book on Madagascar and also for airline companies, that it might as well just feed you what you are actually looking for: a trip to Madagascar? Google’s CEO, Eric Schmidt, claims: “I actually think most people don’t want Google to answer their questions, they want Google to tell them what they should be doing next.” If you try using Mozilla’s application *Collusion*, you will soon find out that for every website you visit there are at least another six, which you have never visited that have access to some of your data.

All of this data management relies on algorithms which are basically cooking recipes or orders in which operations must

be done. They are the basis of computing and the Internet, but many of the most powerful algorithms such as Google's or Facebook's are patented, meaning that the source-code is protected. So, regardless of privacy policies and good intentions, more and more centralized data is stored, packaged and personalized in ways we do not understand and that even the most expert hacker would have trouble unraveling. With such powerful tools in hand, it is not surprising to hear Eric Schmidt declare bluntly: "We know where you are. We know where you've been. We can more or less know what you're thinking about."

Do you usually open your paper mail, read it and leave it with someone you don't know who could then destroy it or give it to someone else? Probably not. Then why do we do it with the Internet? Do you usually

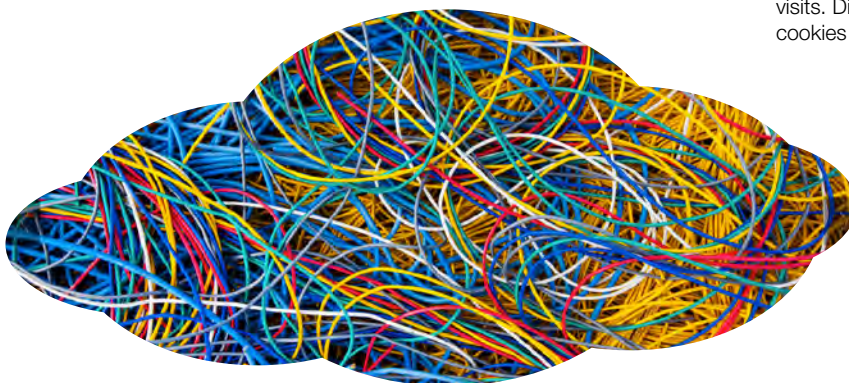
record your wedding video and then give it to a TV program which profits from it with publicities? No. Then why do we do it with the Internet? In an age where Big Data is becoming a resource for economic success and political power, Frank Herbert's aphorism is as evocative as ever: "He who can destroy a thing can control a thing." It is odd to think that the Internet's architecture, originally conceived as a network that could not be destroyed or controlled, is being modeled to the uses and projects of a centralized Web. As long as we see data as a "cloud", networks as "webs" of air and digital communication as "virtual" we will be blind to the ways in which these technologies work and the staggering implications at stake. ☹

Web:

an Internet service designed for directly interlinking hypertext content with the use of a piece of dedicated software called a browser.

Cookies:

small text files that are sent by a website and stored on a user's web browser. This allows the website to remember the state of a user's previous visits. Different kinds of cookies include tracking cookies and authentication cookies.



Protocol:

a system of digital rules and formats that facilitate transmissions; a grammar for communications.

Bit:

stands for binary digit and is the fundamental unit of information in computing. There are only two possible values for each bit: 0 or 1. Either value corresponds to a state on an electric circuit: open or closed. A byte is a packet of 8 bits.

Client/server:

in computing terms a client is the machine that requests information while the server is the one that sends it.

LNG

Fuel of the Future

Writers: Edoardo Da Silva and Lubomir Mitev are energy analysts at *Revolve*.

Liquefied natural gas (LNG) is natural gas (mainly methane, CH₄) that has been cooled and converted to a liquid at very low temperatures (less than -160°C). This condensing process removes sulfur and water, and makes storage and transport easier by trucks, railway tankers and specially built ships known as LNG carriers. LNG occupies less volume than compressed natural gas (CNG), with an energy density 2.4 times higher than CNG and 60% higher than diesel fuel. While pipelines are expensive and difficult to build, LNG transport is cost-efficient over long distances and as a result geostrategic dynamics will intensify over the extraction and global trade of LNG.

Qatar ranks among the major oil-producing countries with reserves worth nearly 900 trillion cubic feet of natural gas – third only to Russia and Iran. This small peninsula is the world's largest exporter of liquefied natural gas (LNG), with companies such as Qatargas and RasGas being the world's leading LNG producers and suppliers. These two companies reached a record produc-

tion capacity of 77 million tons per year in December 2010, with an average since then of 77.4 million tons each year. Since 2012, about 25% of the world's LNG exports come from Qatar, according to *Qatar is Booming*.

Qatar's principal gas export destinations are Japan (32%), South Korea (15%) and Singapore (10%), with demand increasing sharply, especially in China, India, and the fast growing economies of South East Asia. In developing partnerships with other world oil giants, Qatar is expected to take further definitive measures to maintain its position as the world's #1 LNG exporter. Although it is not unusual for great distances to divide oil and natural gas producing countries from their clients, considering the distances involved and reduced LNG transport costs, these large and lucrative demand-driven markets may be tempted by other potential suppliers such as Australia that are closer to home.



Australia and FLNG

Qatar's predominance as the world's leading LNG supplier is being challenged by Australia which is expected within the next five years to compete seriously in the global market. While Qatar's output is unlikely to increase significantly in the near future, Australia's liquefaction capacity of about 20 million tons in 2011 is expected to reach 124 million tons by 2017. This colossal increase has been made possible by the discovery of important offshore reserves and the government's support for the industry.

Another important dimension to the future of LNG is the innovative Floating Liquefied Natural Gas (FLNG) technology. Although FLNG is still at a developmental stage, it is expected to be the game-changer for the industry. Floating above an offshore natu-

ral gas field, theoretically the facility will produce, liquefy, store and transfer LNG from its sea location directly to markets. This presents some advantages: avoiding the construction of pipelines to pump gas to shore and the possibility to assemble the plant in more cost-effective overseas sites. FLNG also addresses the lack of onshore land access thereby decreasing environmental effects.

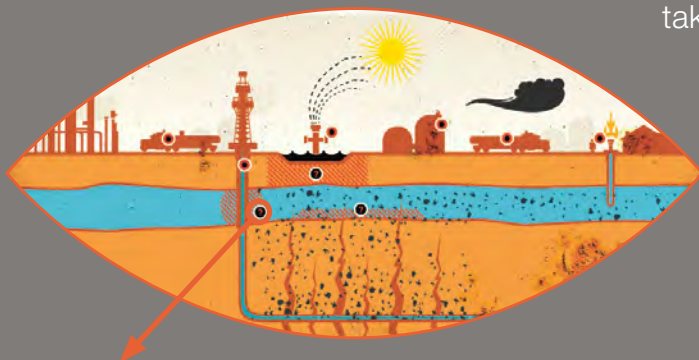
In the short-term, only major companies, such as Shell, have the resources to take the risks involved in FLNG technology. After years of research and development, Shell announced a plan to invest \$500 million in a FLNG project at Australia's Prelude field. The project has a processing capacity of 3.6 million tons and is expected to start operating by 2017, according to *Gas World*. Accounting for 10% of LNG produced globally in the near future, FLNG is extracted from offshore basins, which is around 40% less expensive than from onshore natural gas projects. This is a crucial advantage for Australia.

To optimize this profitable opportunity, Australia needs to act quickly to not be surpassed by an increasingly competitive market. Opposition by state governments to FLNG, due to the fear of losing economic benefits by processing gas offshore, can complicate the industry's development and discourage investment in the country. A problem also lies in the lack of a sufficiently skilled workforce capable of meeting increased demand. If costs in Australia rise too much, oil and gas companies could aim their investments toward constructing FLNG facilities in the Gulf of Mexico or East Africa.



Hydraulic Fracturing or "Fracking"

Hydraulic fracturing (or "fracking") is the process of extracting natural gas from shale rock layers deep within the earth. The drilling process takes approximately a month to penetrate over a kilometer deep and then turns to drilling horizontally into the shale sedimentation. Millions of liters of fracking fluids (a mixture of water, sand and chemicals) are injected into these holes at very high pressure, causing fissures in the shale, hence the term "hydraulic fracturing". The sand particles keep the fissures open. Gases then escape and flow up the pipes into storage tanks where the gas is sent on to be marketed for consumption.



Research is underway looking to discover how fracking solution and other contaminants get into water table.

Source: Image still from animation on www.gaslandthemovie.com



What does wind energy mean for you?
Global Wind Day 2013 photo competition
 Discovering the stories behind wind energy

 +  = 
 YOUR PHOTO YOUR STORY YOUR PRIZE?

 **GLOBAL WIND DAY**
 15 JUNE

Every picture tells a story – what's yours?
 Tell us your wind energy story with a photo plus a description, or a poem, or a song...

Length of story: 50-300 words / **Deadline:** 5 May 2013 / **First prize:** a €1000 Amazon voucher
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Blue Fuel Market Competition

Australia is one of many emerging competitors to Qatar's dominance of the global LNG industry. The United States has been traditionally on the demand-side of the gas market, but has experienced a reversal in its position and is expected to become a major LNG consumer and exporter. The reason is not legislative or economic, but rather due to technological improvements in "fracking" (the extraction of shale gas) with the potential to increase domestic supplies and to export excess production. 

Shale gas production has increased so rapidly that there are problems in storage capacity. In 2007, 36 billion cubic meters of shale gas were extracted and in 2010

output more than quadrupled to 151 billion. In April 2012, the U.S. Department of Energy gave permission for the construction of the country's first liquefaction and export facility for natural gas. A majority of LNG terminals in the U.S. will be constructed in the Gulf of Mexico, which is rather controversial in light of the major 2010 BP drilling oil spill. Participants in this "gas rush" include Exxon Mobil, Chesapeake, Southwestern Energy, Midstream Companies, Cheniere Energy, Kinder Morgan and Enterprise Product Partners.

However, data from the U.S. Energy Information Administration (EIA) shows that U.S. natural gas production leveled off in late 2011. This is also the case for shale gas, despite its dynamic growth in the last few years. According to projections made by the EIA in its Annual Energy Outlook 2013 Early Release, production will grow again after 2015 with total U.S. dry natural gas production in 2040 set to reach nearly

35 trillion cubic feet, from less than 25 in 2012. The report shows that production will surpass consumption by 2020 and will stimulate exportation. At the end of 2012, the price of gas hovered around the \$3.25 mark but must rise above \$4.00 to be considered profitable enough to attract investments. It is not surprising that production in the U.S. has leveled off. If it had continued to increase at the same rate, prices would have plummeted due to such huge supply. There was a warning sign on April 20, 2012, when the market value of gas was \$1.82.

Projections for increases in production result from the expansion of producers in areas of the United States. Since 2007, extensive growth in production has been seen in Oklahoma and Arkansas, not to mention the huge reserves already exploited in Texas and Louisiana. The Marcellus formation, stretching from New York to West Virginia, holds nearly half of

U.S. natural gas reserves and will receive massive investments according to a 2012 report from Standard & Poor's. A University of Wyoming report indicated that activity on the Marcellus formation boosted the economy of West Virginia by \$1.3 billion in 2009, creating close to 23,000 jobs. In the current context of austerity, job creation and the demand for economic growth, the U.S. government sees this as a "golden" opportunity.

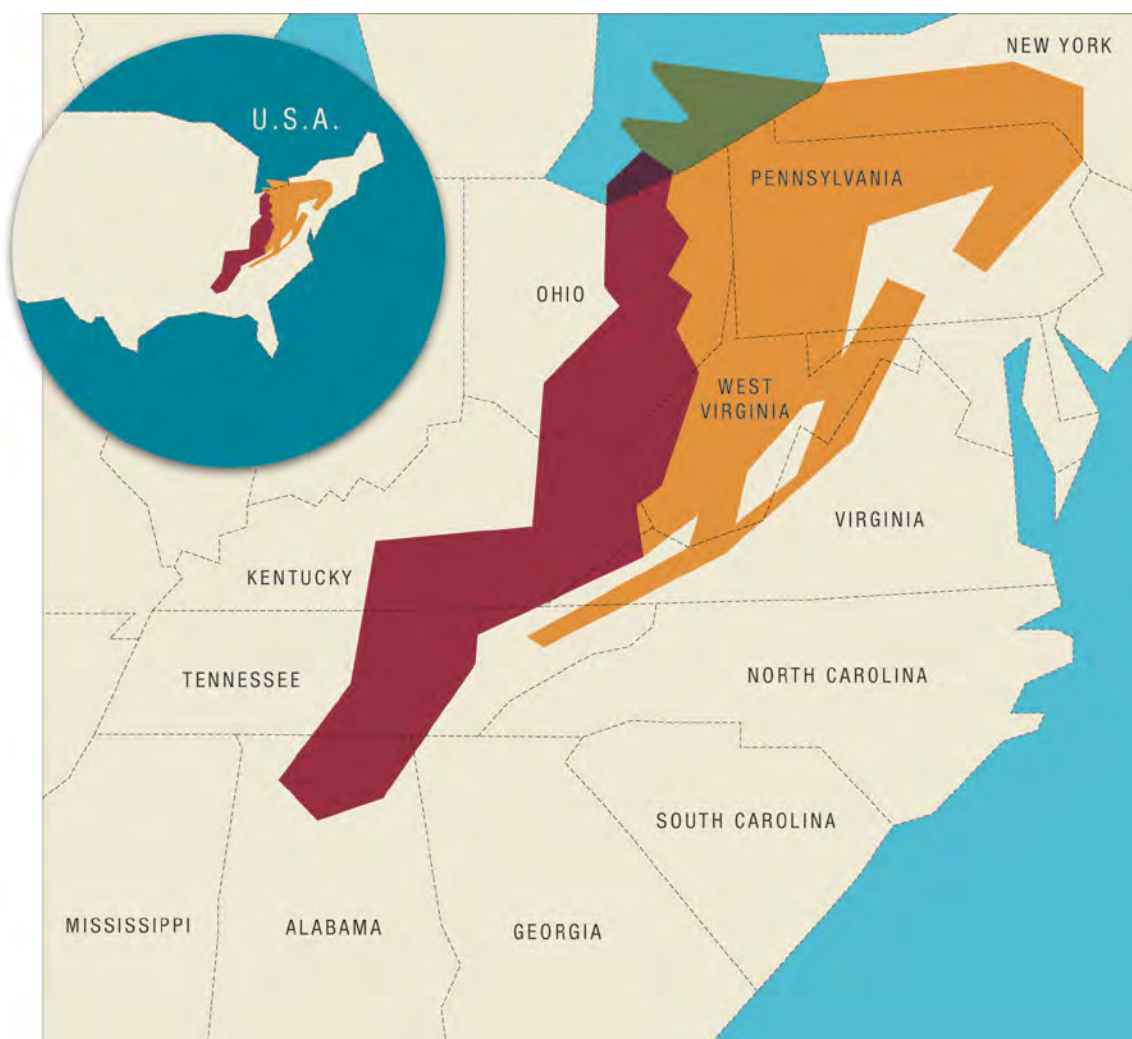
Other countries in the LNG business include Russia, Iran, and Malaysia – all of which have important natural gas reserves that would not hesitate to extend their business to the lucrative and energy-hungry Asian markets. Saudi Arabia, the UAE, and Nigeria also have strong LNG-oriented ambitions. Colossal China is pro-

ceeding to exploit and extract natural gas by drilling wells in the region of Sichuan, which has potentially around 30 trillion cubic meters of shale gas reserves. Even in import-dependent Europe, countries such as the UK and Poland, in particular, are advocating for the liquefaction of shale gas. According to "World Shale Gas Resources" (U.S. EIA, April 2011), Poland's potential could house Europe's largest shale gas reserves of about 22.45 trillion cubic meters.

With demand from the Pacific Basin expected to rise from 120 million metric tons per year to 241 million in 2020, the LNG market is becoming more attractive. However, increasing competition could be problematic for global gas prices. The price of natural gas depends on the local market's supply and is not set internationally like oil. For this reason, countries that have large reserves of gas, such as the United States, Russia, Canada, Australia and Qatar, have low gas prices, while

Since 2012, about 25% of the world's LNG exports come from Qatar.

The Marcellus Shale Formation



Marcellus Shale area:

New research shows an estimated 500 trillion cubic feet of natural gas lies within the rock.

Devonian Black Shale Succession:

The Marcellus shale comprises part of this large formation.

The Marcellus Shale Formation. Source: Appalachian Fracture Systems, modified from U.S. Geological Survey sources.



Fracking drilling in Pennsylvania. **Source:** Mladen Antonov

The global gas market is set to become more competitive, driving prices down.

Global Gas Reserve (2011)

Rank	Country	Proven reserve	Share of total
1	Russia	1680000	25,3%
2	Iran	1045670	15,7%
3	Qatar	895800	13,5%
4	Saudi Arabia	275200	4,1%
5	Turkmenistan	265000	4%
6	US	244656	3,7%
7	UAE	227900	3,4%
8	Nigeria	186880	2,8%
9	Venezuela	178860	2,7%
10	Algeria	159000	2,4%
11	Iraq	111940	1,7%

Rank	Country	Proven reserve	Share of total
12	Australia	110000	1,7%
13	China	107000	1,6%
14	Indonesia	106000	1,6%
15	Kazakhstan	85000	1,3%
16	Malaysia	83000	1,2%
17	Egypt	77200	1,2%
18	Norway	72000	1,1%
19	Uzbekistan	65000	1%
20	Kuwait	63000	0,9%
21	Canada	61950	0,9%
22	Libya	54680	0,8%

Source: *Qatar is Booming.*

the opposite is true for importing countries in Europe and Asia. Producers can make relative profits by exporting LNG to countries where the price is several times higher than at a domestic level while also taking into account the cost of drilling. However, if some major importers turn into self-sufficient producers, this could cause problems for countries whose main export is the so-called “blue-fuel” of LNG.

The world of natural gas and LNG has always been a high stakes game. Traditional exporters have enjoyed consistent demand from foreign markets requiring the resource to sustain their energy consumption. With the increase in environmentally-minded technological developments in Europe and new forces entering the market, it would be ill-advised to consider a conservative point of view in today's world.



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Jetty with loading arms of LNG factory, Balhaf, Yemen. **Source:** Thierry Gonzalez

Australia's liquefaction capacity of 20 million tons in 2011 is expected to reach 124 million tons by 2017.

With the U.S. looking to increase its oil and gas production and new reserves being discovered in Australia and Poland, many demand markets might turn into suppliers. For countries like Qatar, the right tactic is to consolidate its position in South East Asia and expand to other developing markets hungry for energy. One thing is certain: the global gas market is set to become more competitive, driving prices down and allowing import-dependent countries to diversify their suppliers.

In terms of energy security, many would welcome safer imports from the U.S., Australia or Poland in comparison from Russia or the Gulf countries. The development of renewable energy would suffer at the tempting hands of the cheap and abundant natural

gas option. Natural gas has been seen as a "transition fuel" to the "green future" dominated by renewables. The moratorium on the fracking process in France, the Czech Republic and Bulgaria illustrates that these countries will not allow the environmental damage that comes from extracting shale gas in their countries. However, if energy demands continue to rise, this sentiment may not preclude them from buying the blue fuel from other countries that do drill for shale gas. 🌀

GHANA

West Africa's Emerging Energy Hub

Writer | Photographer: Pol Arranz-Piera is Research Associate on Energy at the Institute for Sustainability, Technical University of Catalonia - Barcelona Tech (UPC).

With over 75% of the primary energy coming from its own renewable resources, at first glance one could conclude that Ghana today is close to self-sufficiency; however, the actual rates of access to energy services are low. A favorite for business and entrepreneur opportunities, the country is building a solid commitment with policy, technology and industry players to emerge as an African champion of energy access from renewable sources before 2020.

As the second sub-Saharan African state to gain independence from colonial powers (Liberia was the first one, in 1847), Ghana celebrated its 56 years of sovereignty in March 2013. This can also be the year to celebrate the countdown towards achieving energy independence. An exemplary case of socio-political stability in Africa, Ghana is a favorite for business and entrepreneur opportunities, being the 1st West African country in the 2012 World Bank ranking for doing business; and 5th African country behind Mauritius, South Africa, Botswana and Tunisia.

Recent oil and gas discoveries have awakened international interests and put Ghana

on the list of energy-relevant regions of the world. How does the energy picture really look in Ghana? The country's gross energy

supplies (known as primary energy, Figure 1, totaling 9240kTOE¹ in 2009) are mainly dependent on traditional biomass, often

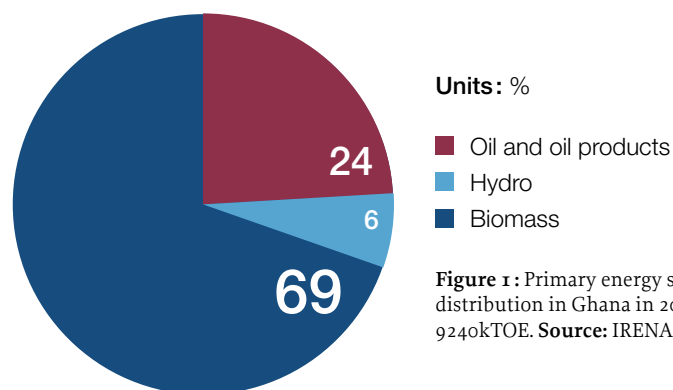


Figure 1: Primary energy supply distribution in Ghana in 2009, totaling 9240kTOE. **Source:** IRENA, 2011

1. Ton of Oil Equivalent (TOE) is an energy unit worth 41.87 GJ

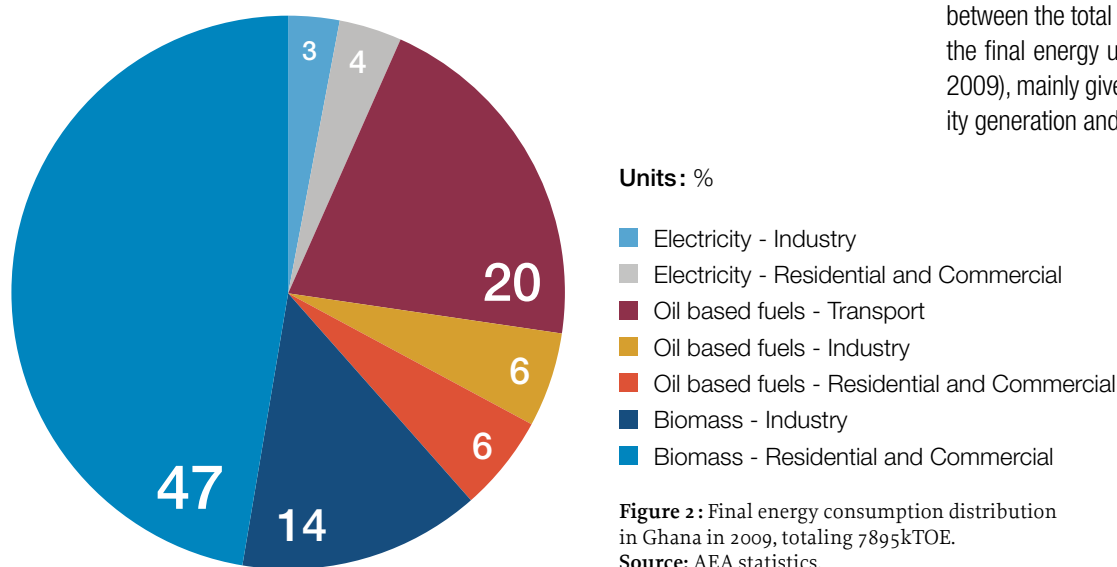
traded on a non-formal – and therefore not recorded – basis, followed by oil, and then a smaller contribution by the hydroelectric plants in Akosombo and Kpong (Lake Volta).

Since over 75% of the primary energy is obtained from its own renewable resources, one could be inclined to conclude that Ghana is already very close to

self-sufficiency and in a very sustainable manner. However, this is not entirely true since the primary energy supply figures only reflect the origin of energy and not the way in which it is used. What brings effective wealth and enables productive activities is the availability of modern energy services, namely electricity, LPG, transport fuels, natural gas, biofuels and mechanical

power (UNDP-WHO, 2009). Two aspects must be considered here: how the primary energy figures turn into forms of usable (modern) energy, and the rate of access to each of these forms.

Looking at the uses of energy in Ghana (known as final energy, Figure 2, totaling 7895kTOE in 2009), about 40% of the total consumption in Ghana occurs under some form of modern energy. The difference between the total primary energy supply and the final energy use are the losses (15% in 2009), mainly given in oil refineries, electricity generation and electricity transport.



Mobile phone charging shop in a rural community without grid connection in the Ashanti region.





Diesel generator set supplying electricity to the mobile phone charging shop.

Regarding the rate of access to modern energy, a study published in 2010 quantified the national average rate of access to electricity to 60%, which, despite being an outstanding achievement compared to neighboring West African countries, was equivalent to 6.8 million people being without access to electricity (AEA, 2010). This lack of access occurs mostly in rural areas (where the rate of access is estimated to be just about 25%), far away from the main cities and district capitals. The regions with the lowest access to electricity are the Northern, Upper East and Upper West Regions.

The Strategic National Energy Plan (SNEP) for 2006-2020 includes a national goal to achieve 100% national electrification by 2020 and a strategic target to achieve 30% penetration of rural electrification via renewable energy technologies by 2020. This target is also quoted as a contributor to the goal of achieving a 100% security of supply fostered by the periodic episodes of drought experienced in the recent years, which affect the hydroelectric generation capacity (Brew-Hammond & Kemausuor, 2007).

6.8 million Ghanaians have no access to electricity.

(AEA, 2010)

REGION	ELECTRICITY ACCESS RATE (Mid 2010)
Ashanti	82%
Brong Ahafo	67%
Central	81%
Eastern	70%
Greater Accra	97%
Northern	50%
Upper East	44%
Upper West	40%
Volta	65%
Western	68%
National Average	72%

Table 1: Electricity access rates by region in Ghana in mid-2010. **Source:** AEA, 2010

Regarding the rate of access to modern fuels or to mechanical power, there are no such detailed figures as for the access to electricity; a joint study by UNDP and the WHO estimated that an average of 27% (urban) and 2.5% (rural) of the population had access to electricity, gas or kerosene as primary cooking fuels in 2008. For the specific case of the transport sector, being (until now) an oil importer, Ghana has one of the higher gasoline and diesel prices in the region.

Considering the figures on energy uses and access, our initial conclusion on Ghana's energy clean self-sufficiency becomes clearly precipitated, but the good news is that the country is taking solid steps towards achieving it, and before 2020.

After numerous pilot projects by national and international developers, the policy ice-breaker was probably the inclusion in the SNEP (2006) objective to increase the use of renewable energy sources to 10% of the national energy mix by 2020. Then, in December 2011, the Renewable Energy Act 832 was passed by the Ghanaian Parliament; this exhaustive and well-organized regulation addressed 4 key aspects:

1. Appointing specific roles and responsibilities to institutions, led by the Energy Commission and the Public Utilities Regulatory Commission (PURC).
2. Setting up of a licensing framework for commercial activities in the renewable energy sector.
3. Establishing a financial framework to promote electricity generation from renewables, via the creation of a feed-in-tariff scheme (guaranteed selling price to the utilities for a minimum period of 10 years), combined with a Renewable Energy Purchase Obligation, which forces power distribution utilities and bulk electricity consumers to purchase a certain percentage of their energy requirement from renewables. Both mechanisms are further regulated by the PURC.
4. Setting up of a Renewable Energy Fund nurtured by finances approved by Parliament, premiums, donors, levies from fuels export, and aimed at supporting research, promotion, deploying renewable energy infrastructures.

Such a policy stepping stone would not have been possible without the backing of Ghanaian research, industry and civil society, as well as the interest of international investors, that are shaping Ghana as the renewable energy hub of West Africa, with multiple components:

Research and Technology hub: Ghanaian technical research institutions are well-linked with top U.S., Asian and European counterparts, as well as with other African centers, and more recently the Kwame Nkrumah University of Science and Technology (KNUST) has become a reference in the fields of solar energy and biomass, training hundreds of future African scientists and engineers every year. More precisely, the feasibility of electricity generation from biomass will be analyzed during this year in a joint study by the Kumasi Institute of Technology, Energy and Environment (KITE), KNUST and the Technical University of Catalonia – Barcelona Tech (UPC) in Spain.

>> p. 30

Serving breakfast cooked with traditional stoves and charcoal in Atebubu district capital in the Brong Ahafo region.

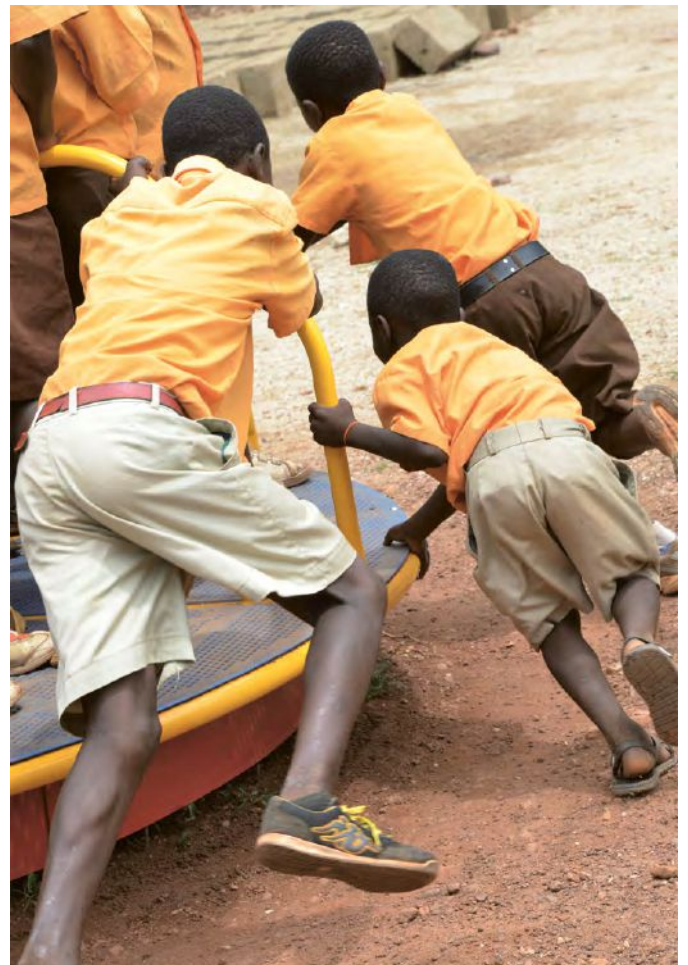


The Energy Circle:

Recess, Electricity, Education

Writer: Laura Beltrán Villamizar is Photo | Art Editor at *Revolve*.

The 'whirls' created by Empower Playgrounds are fun for children and they provide actual energy that increases education, school attendance and social development in Africa.





Lanterns charged by whirls. **Source:** Empower Playgrounds

In a world where technologies are advancing rapidly, one could hardly imagine what life would be without electricity. Most developed nations underestimate the power of electricity and yet according to the energy challenge of the World Bank, 1.3 billion people living in developing rural areas do not have access to energy from a grid or proper sources of electricity – this number includes 550 million in Africa alone. This burden evidently has severe repercussions for general social progress in more rural areas across developing nations. The relation between the lack of electricity and low school attendance and poor education levels is not a coincidence.

Ghana is no exception to the rule. 6.8 million Ghanaians or 28% of the 24.2 million total population were without electricity in 2010 (AEA, 2010). Ben Markham, retired from ExxonMobil, saw the staggering problem when being a missionary in the country for less than a year. As he witnessed the lack of resources in both school/playing equipment and electricity, he saw the link with decreased school attendance and a

major problem for children to study after sunset in dark rooms.

The idea of playgrounds generating electricity evolved and Markham tapped into the experience and creativity of students and engineers at Brigham Young University to engineer and create a ground-breaking solution for the lack of lighting. They developed playground equipment in the form of merry-go-rounds that generate electricity, thus charging smart LED lanterns and hands-on science kits.

Empower Playgrounds was founded in 2007 as a U.S.-based public charity that develops projects and installs playground equipment in rural areas of developing countries. Children push the round plate that generates power for rechargeable lamps giving students the opportunity to study at night. These merry-go-rounds, or 'whirls', can charge LED lanterns for up to 40 hours with energy equivalent to a 25 watt light bulb. Children are more excited about going to school, raising attendance levels and helping to solve the electricity shortages in many rural areas of Ghana.

Over 30 whirls have been installed throughout Ghana with more on their way in 2013. According to Empower Playgrounds, one lantern can last 5 years which raises the perpetual question for development projects: how to maintain the equipment over the long-term? Many such projects expire after several years due to a lack of maintenance or refurbishment, but Empower Playgrounds is convinced that precisely because of the immediate results and long-term potential, local awareness and external support will help make their life-changing 'whirl' a sustainable solution for the next generations. 🌀

Learn more about Empower Playgrounds:
www.empowerplaygrounds.org



Rural community in the forest near Wli in the Volta Region.

<< p. 27

Financial hub: the country's stability and robust policy framework on renewables, together with the incentives put in place, are crucial for national and international investors, who seek long-term guarantees to ensure reasonable returns over the lifetime of a project (which may last for more than two decades). Even in rural, very low income areas, Ghana has a story to tell: the ARB Apex Bank has succeeded in adapting its services and previews to facilitate flexible loan reimbursement models to over 90,000 customers by the end of this year (IRENA, 2013).

Industrial and Transnational hub: the entrepreneurial nature of Ghanaian industry has also reached renewables, which today counts on several companies with large experience in the country and around West Africa, and who often collaborate with international companies, especially from China, Germany, Spain and the U.S. The foreign investor can easily find local business partners. As for cross border electricity interconnections, Ghana plays a central role in the West African Power Transmission Cor-

ridor (from Nigeria to Senegal), thus being in a privileged position to export clean energy.

Like other hubs, setting up has been a first great achievement for Ghana. The next step is to keep public and private investment flowing. This is a goal being fostered by the Minister for Energy and Petroleum, Emmanuel Armah-Kofi Buah, who announced advancing the target year to 2016 for achieving universal access to electricity in Ghana. This ambitious benchmark was met positively by a series of large investors currently competing to develop in Ghana what will be the largest solar plant in the entire African continent. ☀

[The author wishes to dedicate this article to the memory of Professor Abeeku Brew-Hammond.](#)

[This article was prepared as part of the Project "Energy Access for the poor in sub-Saharan Africa to meet the Millennium Development Goals", with funding from the European Commission.](#)

2016 is the target year to achieve universal access to electricity in Ghana

References:

AEA (2010). *National Electrification Scheme (NES) Master Plan Review (2011-2020)*. Arthur Energy Advisors for the Ministry Of Energy, Accra, 2010.

Brew-Hammond, A. and Kemausuor, F. Eds. (2007). *Energy Crisis in Ghana: Drought, Technology or Policy?* Kwame Nkrumah University of Science and Technology (KNUST), College of Engineering, Kumasi, Ghana, 2007

IRENA (2011). *Renewable Energy Country Profiles Africa*. International Renewable Energy Agency, Abu Dhabi, 2011.

IRENA (2013). *Africa's Renewable Future: The Path to Sustainable Growth*. International Renewable Energy Agency, Abu Dhabi, 2013.

UNDP-WHO (2009). *The Energy Access Situation in Developing Countries – A review focusing on Least Developed countries and sub-Saharan Africa*. United Nations Development Programme and World Health Organization, New York, 2009.

Smart Water for Green Schools

The **Green Cross Smart Water for Green Schools** initiative provides people in water scarce communities with access to safe drinking water and clean sanitation.

2.5 billion people lack access to basic toilets and nearly **2,000 children die daily from diarrhea** caused by dirty water and poor sanitation. In rural areas of Ghana, **only 10% of people have access to sanitation**, and around **42% in urban areas**.

Smart Water for Green Schools is providing safe, sustainable sources of drinking water and sanitation to **tens of thousands of people** in Ghana, Ivory Coast, Bolivia, Argentina, China and more countries in the future.

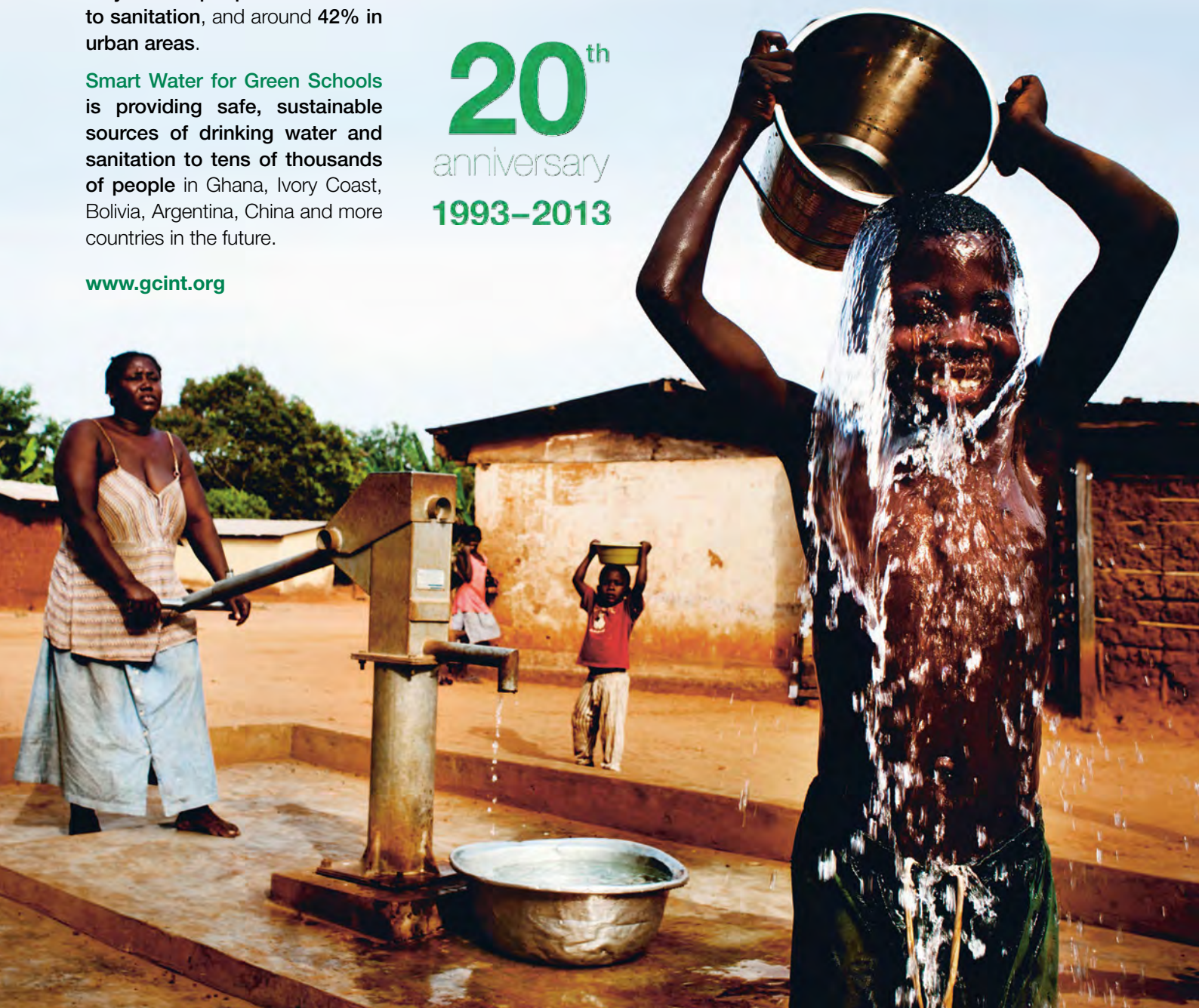
www.gcint.org



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“Water must be seen as a source of peace, not conflict.”

Mikhail Gorbachev, Founding President,
Green Cross International



An aerial photograph of Brussels, Belgium, showing a dense urban landscape with a mix of historic and modern buildings, green spaces, and a major road with traffic.

Brussels:

Brussels-Capital Region: 19 districts

Office stock: 13 millions m²

Converted offices since 1997: 542,000 m², whose 358,000 m² into housing.

Unoccupied office space: Close to 10% in Brussels Capital-Region and 30% in Brussels's outskirts.

Source: Office Observatory of the Brussels Capital Region

Paris:

Central Paris: 20 districts

Office stock: 16 millions m²

Offices converted into housing since 2000: 230,000 m²

Source: APUR 2009 and APUR-SDPCPR

Amsterdam:

Office stock: 7.5 millions m²

Unoccupied office space: 1.3 millions m² (+ 17%)

Source: City of Amsterdam Press Office and PropertyEU

BRUSSELS: WHY SO EMPTY?

Time to turn unused office space
into other habitable functions



Aerial view of downtown Brussels. **Source:** BLOM 2004/2013.

Writer: Anders Böhlke is an architect based in Brussels. He manages the Executive Master in Real Estate at the Saint-Louis University in Brussels and works as an analyst at C.L.I. urban think tank.

Time in the real estate industry is very slow. Studies are long, permits even longer, construction takes months to years and buildings last decades to centuries. To adapt urban space to constantly evolving human needs and to address growing environmental challenges, we have to examine more closely how we use buildings.

In many European cities, most buildings of tomorrow are already built. In Brussels, the

renewal of the building stock reaches 1% of all buildings each year: it could take 100 years to replace or renovate the entire buildings. There are too many offices and too little housing space. Is functional conversion the key to the problem?

Anders Böhlke provides insights into the need to convert more empty office space into new lodging functions to help confront exponential demographic growth with three concrete examples that have already been carried out: a conventional one-family apartment, a retirement home, and an art school.

As the Capital of Europe, Brussels has experienced tremendous growth in the office building sector since the 1960s. As the market went international, many new professions appeared in the real estate industry; demand kept growing with the expansion of EU institutions and the successive European enlargements. For many years now, the pace has slowed and more than 10% of total offices are vacant (available, on the market, or unoccupied). There is too much office space for diminishing demand. This phenomenon is not foreseen to shrink, mainly for two reasons:

- Today's economic context is not conducive to new settlements from local or international companies. EU institutions also rationalize their implementations, as do companies. The actual demand in office space is mainly a replacement demand: companies move to new offices, leaving old ones behind.
- Since the design and techniques of office buildings evolved considerably throughout the last decades, the obsolescence of office buildings accelerates. Occupiers move easily to find better, well-equipped, up-to-date spaces.

Simultaneously, Brussels is facing a large demographic challenge. There is a need for at least 7,000 new housing units each year, but production is only two times that rate. Real estate developers have typically concentrated on traditional housing, and are beginning to look at other housing segments: elderly homes, student housing, and new hotel concepts.

If empty office space is available while population growth continues to increase demand, then converting office space into housing is an obvious response to address this challenge.

*

Adaptive reuse consists of recycling old buildings for a new use. This is not a new phenomenon, in Brussels or elsewhere. The renewal of cities and neighborhoods has often been based on the mutation of preexisting functions. In New York City, the first lofts appeared in buildings in which industrial or commercial activities were no longer viable. The Highline, an abandoned railway became a famous city park. An old office building became the Calhoun private

school. In London, the Tate Modern Museum settled in an old power station. In Brussels, an old custom rail building became offices and shops, stores became museums and nowadays offices become housing units. (see New York City, Green Urban Jungle, for more details on the conversion of the Highline Park, pages 39 to 50.)

Many houses in Brussels are at least a hundred years old. If they have been upgraded technically or refurbished, their layout has stayed relatively stable and has adapted easily to different functions: from one family home, to small offices, day nursery or divided into apartments. Typically, housing in Brussels shows adaptability.

On the contrary, office buildings have considerably evolved throughout the last decades, matching new occupier's needs (EU institutions) and following the evolution of work, workspace organization, technical progress, and information and communication technologies.

Obsolescence is not directly proportional to age. Recent buildings are in general much more specific and therefore less flexible



The Calhoun School, a private school located on Manhattan's Upper West Side, commissioned FXFOWLE to design a four-story addition to the original five-story building. The design, which resulted in an additional 2,800 square meters of space, resolves the formal and programmatic challenges entailed in expanding vertically and horizontally to the 1973 concrete and travertine building. The expanded school contains a two-story performing arts center, with a 234-seat black box theatre as the centerpiece. Surrounded by rehearsal spaces, set design shop, and music instructional spaces, the three-quarter round theatre provides flexible performance space for the arts department and specialized teaching space for all the arts. General purpose classrooms and science labs are included too. The 500 square meters gym is located on the top floor of the addition. A green roof tops the building. The school remained in operation throughout construction.

The Calhoun School, New York, NY

Completion: 2005

Awards: 2007 DesignShare, Merit Award

Images: courtesy of the Calhoun School, James D'Addio

than before. Old office buildings from the 1950s and 1960s make often better homes than the ones built thereafter, only because their layouts and structures are simple.

The new construction and/or refurbishment of office buildings are considered outdated by the occupiers and the market at a higher rate than before. The lifetime of a building's use and function is much shorter than the shell – the actual building. And it is shrinking. Building lifespan was around 50 years after World War II and reaches only 15 years today.

Often offices are located in “grapes” or in central business districts (CBD). In Brussels, they are the two main office districts: the European Quarter and the North District. Converting buildings in office districts is coherent with the political will to encourage the requalification of the mono-functional administrative areas. Implementing other functions such as housing in those neighborhoods helps increase their attractiveness.

Office conversion is also an important way to include an efficient concept of

the energy embodied in buildings: “gray energy”. Re-occupation of empty buildings is a very important saving compared to energy put into the process of demolition and reconstruction.

Brussels has seen numerous office buildings conversion (see book cover below).

The analysis of realized projects shows that mainly up-market apartments have been produced so far through this process. This is due mostly to the high cost of the transformation works. This fact shows the limit of the practice because housing is not just about one-family homes.

The lack of social housing, student housing and elderly homes is important in Brussels: demand is huge and waiting lists grow each year. Social housing represents around 8% of the total housing stock, which is 2-3 times less than in neighboring European cities, such as Amsterdam, Paris, or London.

The future of office conversion relies largely on types of unconventional housing and other facilities, such as schools, which derive from necessary demographic

adaptation. Adapting to existing shells, conversion projects will have to optimize the respective layouts – sometimes rethinking the way we live, proposing new ways of designing space.

4 SOLUTIONS

• Improve access to information:

In real estate, data is less accessible than in other sectors and sometimes difficult to compare (different methods of calculating surfaces, vacancy rates, facial rents vs. real rents...)

• Fight against empty buildings:

Identifying those buildings, putting additional taxes on empty space, you can encourage and support studies of convertibility.

• Move to convertibility:

Designing projects to fit the rules of housing and offices, you can facilitate future transformation facing the evolution of needs.

• Facilitate the conversion:

By knowing the occupiers' needs, implementing incentives for studies and analysis, you can accelerate building permits for conversion.



About the book:

Yesterday's Offices, Today's homes is based on the analysis of a sample of some 200,000 m² of offices converted over the past 15 years in Brussels and showcases 25 examples of transformation in three main axes: the agents of change, the motivations for the transformations, and the location criteria. Based on Brussels' advanced knowledge on the subject and other experiences of large European cities, this book considers the future of functional mutations in the city and the appeal to achieve the objectives of diversity and sustainable development. The book should help encourage the owners of empty buildings to examine the potential for reuse of the property efficiently and profitably.

To order a copy, contact : info@cli.be

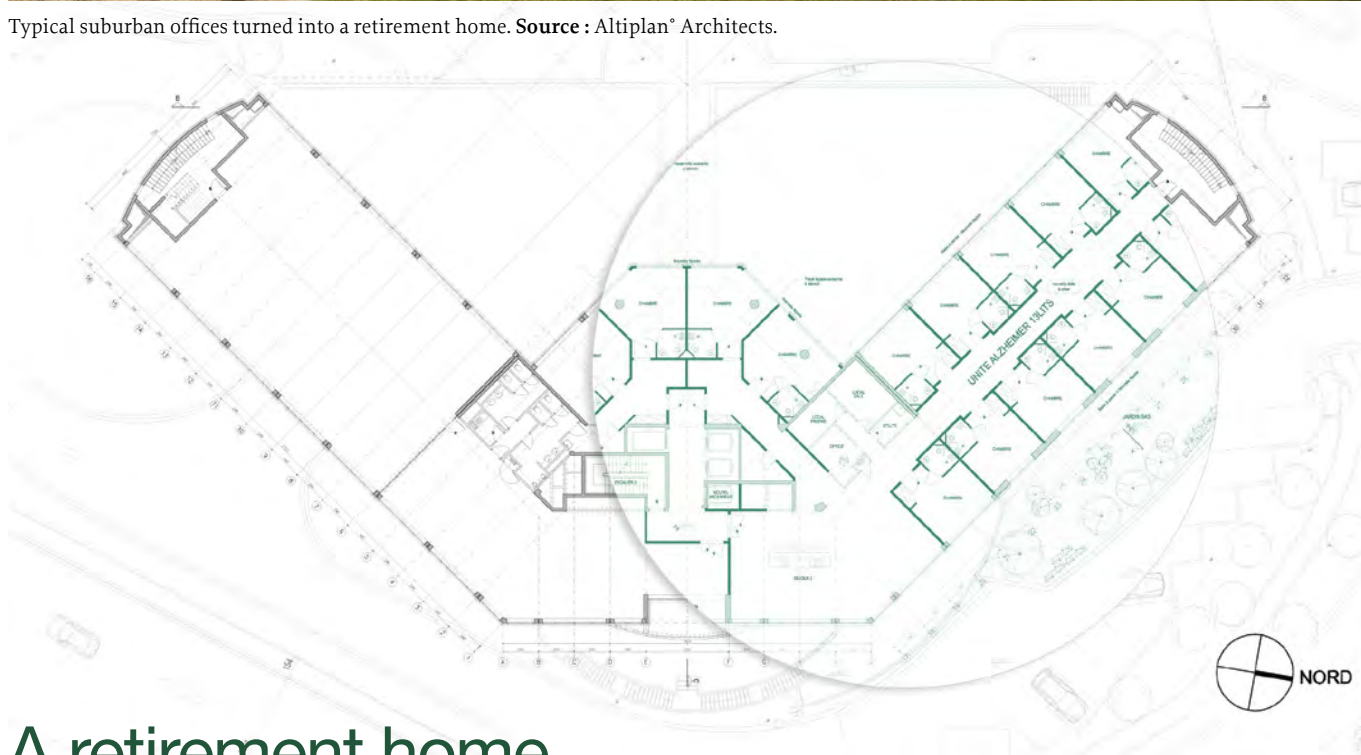
Authors: Christian Lasserre, Pierre Laconte, Anders Böhlke, Béatrice Dooreman.

Editor: Region Bruxelles-Capitale

Available in French and Dutch with an insert in English
Out in March 2013.



Typical suburban offices turned into a retirement home. **Source :** Altiplan° Architects.



A retirement home

Recently converted into a retirement house, this building was for many years, one of the best-known addresses in Belgian media: RTL. The conversion of the building was made without any significant changes to its façade or structure. The blueprint shows how easily open space was compartmentalized into cells, suitable for this particular type of housing. The internal initial design — as a single company headquarters — is well-adapted because of its large common areas. The transformation shows what can be expected of future developments in this type of office buildings located in suburban districts, facilitating conversion into hotels, rooms, and studios without major structural changes.

Year of construction : 1993

Architect : Polak-Stapels

Year of transformation : 2008

Operator : Orpea Belgium

Architect : Altiplan° Architects



Former VAT building on the Place Morichar in Saint-Gilles. **Source :** Region Bruxelles-Capitale.

A public art school

Built in 1974 as offices and leased for more than 30 years to the Belgian Ministry of Finance, this building was converted into an art school (L'Ecole Supérieure des Arts St-Luc Bruxelles) in a central district of Brussels. The school identified this building as ideal for its activity: in addition to the proximity to the historic headquarter of the school, the building presented many advantages:

- The size of the building allowing for the grouping of scattered activities
- Large and rational floors not too deep to be naturally illuminated
- A good fire safety (three staircases for evacuation)
- Conformed sanitary equipment
- Absence of asbestos
- A high ceiling suitable for large workshops
- Opening frames providing natural ventilation
- Movable partitions

In terms of the environment, the building is located on a square where a recreational green area has been redeveloped. Students moved in without any major structural changes to the building other than refurbishment. Municipal authorities requested that the students make proposals to illustrate the façade visually without breaking the transition from being a public administration building to an art school. This is an excellent example of cooperation between the municipality, the institutes and the owners.

Year of construction: 1974

Year of transformation: 2011

Operator: Instituts Saint Luc Brussels

Architect: OZON architecture

In comparison, the Calhoun School in New York City (p. 34) resolved the problem of the need for outdoor space and the lack of a playground in a dense urban area by putting an accessible green area on the rooftop of the building (a semi-intensive green roof).



New balconies were built inside the façade. **Source :** Bureau d'Architectes Emmanuel Bouffieux.



Curtain wall façade before transformation work.
Source : Bureau d'Architectes Emmanuel Bouffieux.

Single-family apartments

This building is perfectly representative of a small office block from the 1960s, designed in an era where most of the office operators also provided housing. The curtain wall façades and their interiors marked the obsolescence of these buildings. At a time when many offices located in the adjacent streets to Avenue Louise had trouble finding occupants, this transformation was one of the first to turn old offices in large apartments. 🌀

Year of construction : 1958

Architect : R. Goffaux

Year of transformation : 2004

Operator : LAM real estate

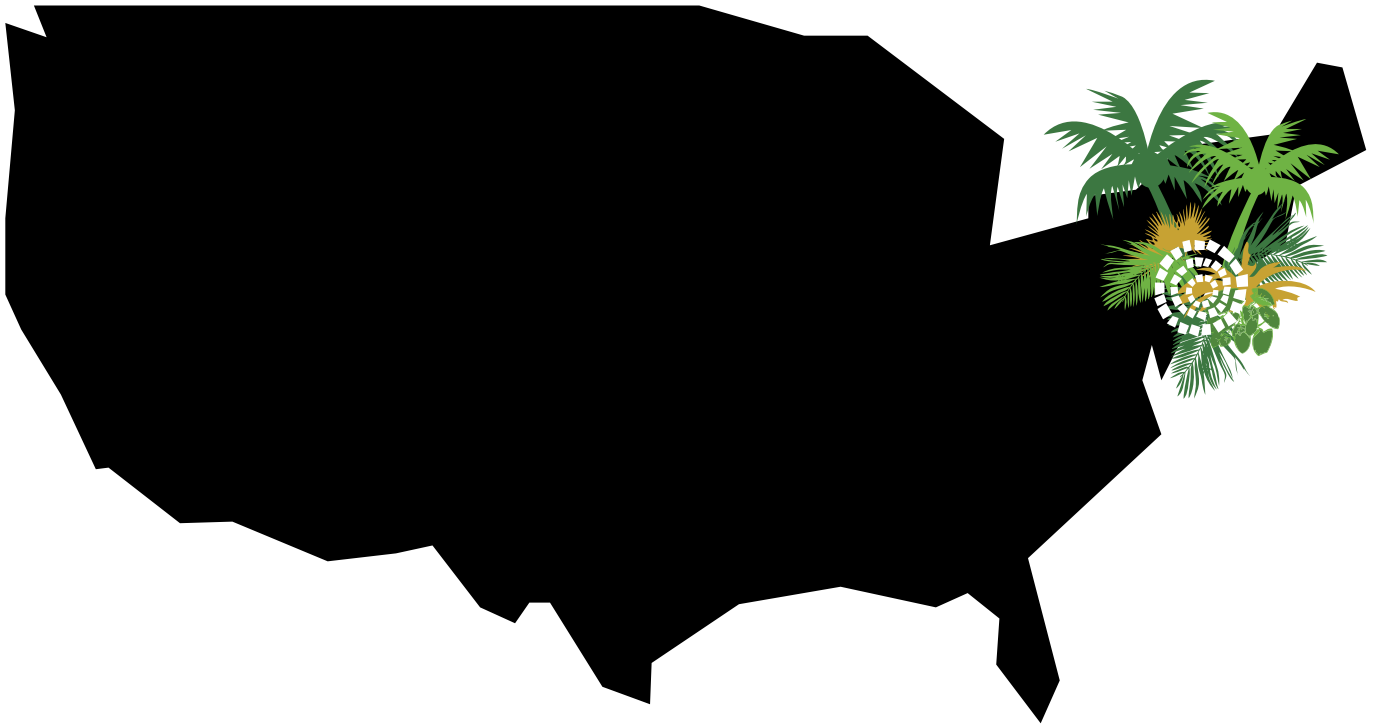
Architect : Bureau d'Architectes Emmanuel Bouffieux

About C.L.I. :

C.L.I. is a Belgian consulting firm specialized in urban studies with expertise in office building conversion and market analysis for the Brussels-Capital Region and the private sector since 1995. In Brussels, C.L.I. contributed to the implementation of a new town-planning rule for new office buildings to fit housing regulations. C.L.I. also worked with different Ministries, developing projects to implement rewards and fees to incentivize owners to analyze the feasibility of conversion projects with young architecture companies. Led by Christian Lasserre, the C.L.I. team includes Anders Böhlke and many other contributors from architecture and city-planning.

C.L.I.
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CITIES



New York City

GREEN URBAN JUNGLE?

“We cannot solve the problems associated with climate change alone here in New York City, but I think it's fair to say we can lead the way”

— Michael Bloomberg, Mayor of New York City

EVERY DAY,
MORE THAN 1 BILLION GALLONS
OF WATER TRAVEL HUNDREDS OF KILOMETERS
FROM UPSTATE NEW YORK TO FEED
THE CITY'S TAPS.

For the first time

in human history, more than half of us live in cities – thriving metropolitan environments where millions of people go about their everyday lives. A prime example of these urban jungles is **New York City**, the most populous city in the United States and 19th largest in the world. Located on a natural harbor habitat, the five boroughs of The Bronx, Brooklyn, Manhattan, Queens and Staten Island are home to 8.2 million people who thrive in an ecosystem of metal and concrete, mixed in with natural parks and waterways.

Writer: Lubomir Mitev is Energy | Climate Analyst at *Revolve*.



New York. **Source:** Laura Beltrán Villamizar

"New York is where the future comes to rehearse," stated the late-Ed Koch, three-time mayor of New York (1978-89). But several issues pose a threat to this iconic city – a growing population, ageing infrastructure and climate change. To address them, Mayor Michael Bloomberg created the Office of Long-Term Planning and Sustainability (OLTPS) in 2006 and released the PlaNYC 2030 as "an unprecedented effort [...] to prepare the city for one million more residents, strengthen our economy, combat climate change, and enhance the quality of life for all New Yorkers". The OLTPS is in charge of coordinating all City agencies for the development and implementation of the Plan.

PlaNYC 2030 brings the numerous challenges and opportunities of New York into a comprehensive action-oriented policy-line. The city's population is expected to reach 9 million by 2030 with around 50 million visitors every year. This growth must be properly equilibrated to avoid erratic development that will exert a serious burden on public infrastructure. Purely statistical additions of housing units and miles of subway

rails will not do. The recognition that opportunity lies in both quantitative growth and qualitative essence is at the forefront of the Plan, which aims to prove once again that when the world changes, New York leads that change.

**43% OF NEW YORKERS
GO TO WORK BY RAIL OR SUBWAY;
23% DRIVE ALONE.**

In the Driver's Seat

At the forefront of the mobility challenge is the subway system, which has more than 1,000 km of track and in 2011 provided 1.64 billion rides, making it the 7th busiest rapid rail transit system in the world. However, the New York Transit Authority announced in 2008 that several subway

lines have already reached their limits in terms of passenger load and frequency of the trains and the only new line in construction will begin operation in 2016.

To address these challenges, New York aims to improve and expand alternative



New York. Source: Filipa Rosa



New York. **Source:** Filipa Rosa

ON FEBRUARY 2, 2013, GRAND CENTRAL STATION MARKED ITS 100TH ANNIVERSARY.

and sustainable modes of transport. The NYC bus service provides 2.3 million rides a day, and in some neighborhoods, such as the Bronx, busses are the only link to jobs, shopping and recreation. For this reason, the Metropolitan Transit Authority (MTA) launched the first Select Bus Service (SBS) in the Bronx in 2008 and has since expanded the program to Manhattan and Queens. The SBS system makes travelling by bus more attractive and comfortable to customers by allowing off-board fare collection, designated bus lanes and signal prioritization. This last technological innovation makes it possible for traffic lights to recognize approaching buses and allow them to pass through a green light

without having to wait. The first SBS line showed a 20% improvement in service and 10% increase in ridership, making it an attractive alternative to other means of transport as well as a step up in quality and speed.

IN 2009, WATER CONSUMPTION WAS AT ITS LOWEST LEVELS SINCE RECORDS BEGAN IN 1955.

Other initiatives are also economically-/ environmentally-oriented. For example, car-sharing can be an efficient and convenient option for the 5.3 million car-

owners, most of whom use their vehicle infrequently. Private initiatives already provide the opportunity for people to share a vehicle whenever needed. Another new policy aims to expand taxi and for-hire car services, which move 1.2 million people around every day. Almost all New York taxis currently operate in lower and central Manhattan and the City's airports, making it nearly impossible for the residents of the other boroughs to use them. By expanding the "yellow-caliber" taxi service beyond Manhattan, many people would be able to take advantage of the system and conduct their daily business without owning a car.

**A 2007 SURVEY SHOWED THAT 66% OF
NEW YORK CAR OWNERS BELIEVED BETTER
AVAILABILITY OF TAXIS COULD HELP THEM
LIVE WITHOUT A CAR.**

operate, and result in a 30% price increase for ordinary citizens. To avoid this scenario, \$462 million were invested in a Watershed Protection Program, which combines land acquisition, environmental protection and economic development along the transit routes of NYC's water, enlisting business, towns and organizations to cooperate. Encouraging sustainable farming techniques, such as limiting fertilizer use, and treating waste products and industrial chemicals, New York is actively seeking to protect its fresh water sources.

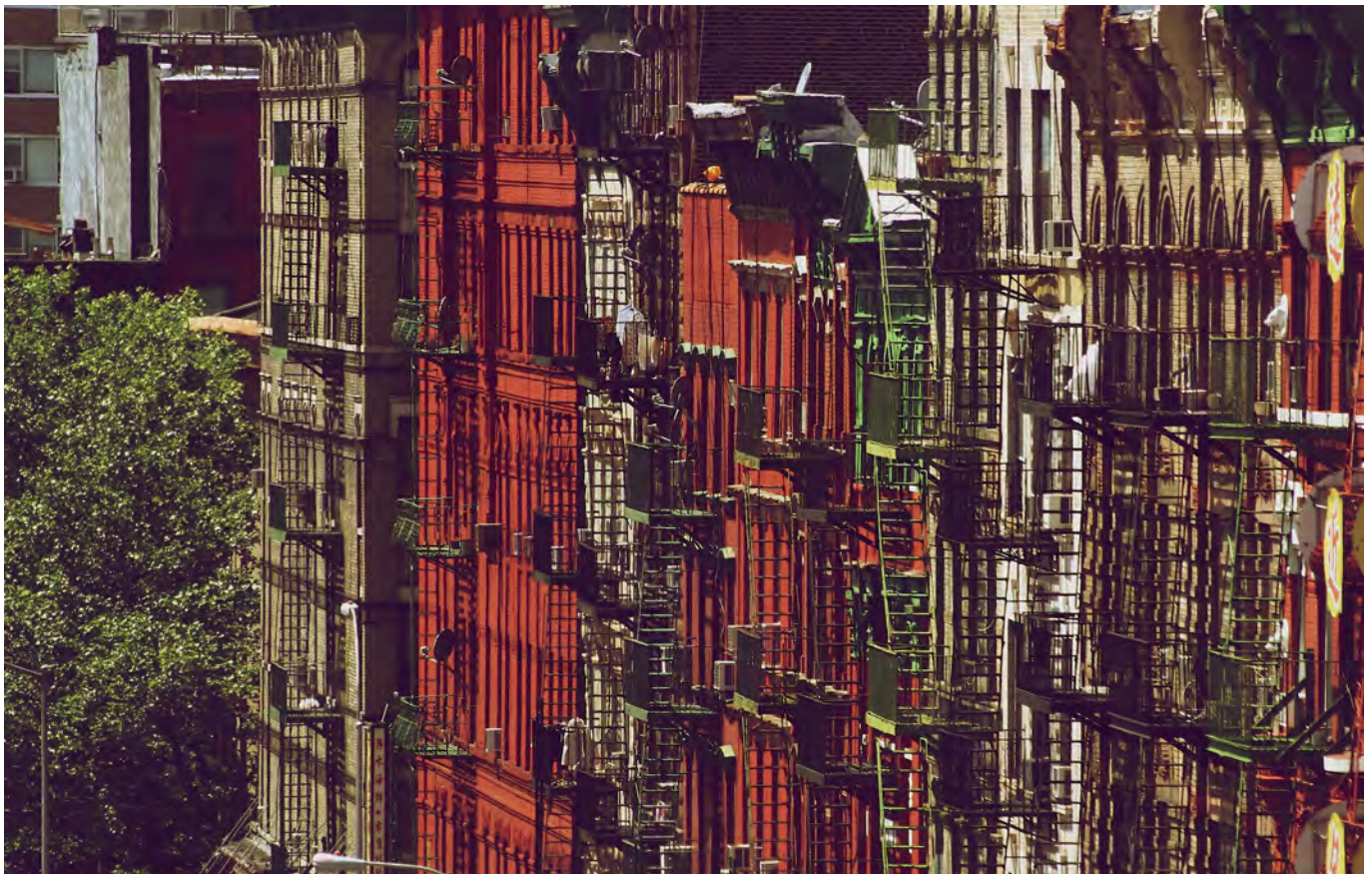
Water Ways and Worries

New York City certainly is a testament that water is the source of life. The city has a single agency of 6,000 employees – the Department of Environmental Protection – charged with the task to monitor the water system. Every day, more than 3.8 billion liters of water travel from upstate New York to the City and provide its residents with an abundant and high-quality source of drinkable tap water. But these pure water sources are now

being threatened by human activity such as hydraulic fracturing (or fracking) for natural gas, which could potentially pollute 90% of the city's daily water supply. (See box: 'Hydraulic Fracturing or "Fracking"' on p.18)

If action is not taken to preserve these natural resources, New York will have to build a \$10 billion filtration plant, which would cost another \$10 million a year to

The Plan NYC also outlines steps to increase water conservation. Recent low-cost refurbishments to government buildings show that it is possible to reduce potable water consumption by 20-80%. In 2011, a manual was released to show how building designs can lead to water conservation. For example, a simple replacement of old toilet systems can lead to a five-time reduction of water usage in the city. The DEC is also currently developing a report with recommendations on how to re-use rainwater or waste-water from showers and sinks in a



New York. Source: Laura Beltrán Villamizar



New York. **Source:** Filipa Rosa

manner that will not threaten public health and ensure long-term sustainability.

Further downstream, the Department of Environmental Protection launched a “leak notification program” in 2011 to inform citizens if their water consumption had suddenly spiked, indicating a leak. This program is reported to have saved \$26 million in 2012 by detecting more than 31,600 leaks and initiating repairs on time. The OLTPS has identified segments totaling 1,600 km (out of 10,800km) of water pipes that are more than a century old and need to be replaced. This is also an opportunity for new technology to be installed which will increase operational efficiency. After decades, or in some cases more than a century of constant operation, the water distribution network needs new tubes.

60% OF NYC ELECTRICITY IS PRODUCED FROM FOSSIL FUELS, 30% FROM NUCLEAR POWER, AND 9% FROM HYDRO INSTALLATIONS.

All the Pretty Lights

In 1882, Thomas Edison created the first central power plant on Pearl Street, New York. Since then, electricity has driven NYC’s expansion and given shape to iconic sites like Times Square and Broadway and Wall Street. However, when Hurricane

Sandy caused a 4 meter high tide to hit Manhattan, the water drained into the “spaghetti network” of electricity cables running underground. After thousands of New Yorkers were left without power, employees of the electricity utility company

had to cramp into the tunnels under Manhattan and check each cable, transformer and switch for damages or malfunctions, sector by sector.

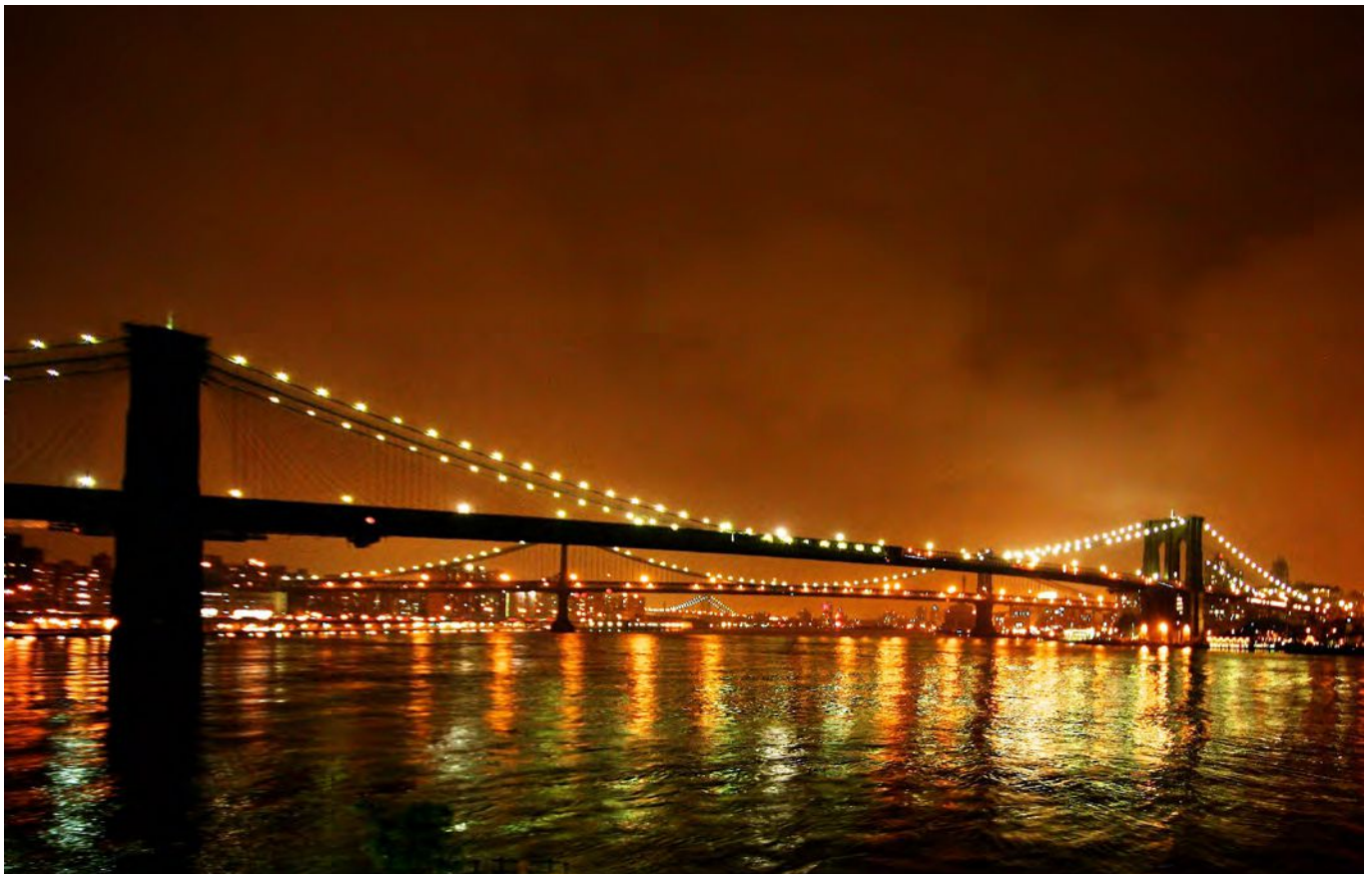
Unlike the water system, there is no single agency to oversee the electricity, gas and steam distribution of New York City. These systems are investor-owned and regulated by the state and federal governments, leaving NYC with little say in matters of energy. The municipal government has an interest in ensuring that New Yorkers have access to clean, reliable and affordable energy, which drove to the creation of the New York City Energy Planning Board that aims to steer policy and encourage renewable energy investment,

effective incentive programs and shared data collection and management.

The City Council did pass four laws in December 2009 targeting energy efficiency upgrades that will impact New York's 16,000 largest public and private properties which comprise half of the built area in New York City. Since energy use in buildings accounts for 75% of New York's carbon emissions and 94% of its electricity use, these new regulatory procedures for the retrofitting of old buildings are set to create 18,000 jobs, save citizens \$750 million per year and reduce emissions by 5% by 2030. Efforts are also underway to inform households of the benefits of energy efficiency and to initiate a competition for the most efficient neighborhood in order to promote the idea in small and medium-sized buildings.

A greater challenge lies at the other end of the energy system – the point of power

**THE CITY'S CARBON
FOOTPRINT DECREASED 11.7%
BETWEEN 2005 AND
2010.**



New York. Source: Laura Beltrán Villamizar

**THERE ARE CURRENTLY
5.2 MILLION TREES IN NEW YORK CITY
AND ANOTHER MILLION WILL BE
PLANTED BY 2020.**

**THE SUBWAY SYSTEM
PROVIDED 1.64 BILLION RIDES IN 2011;
THE BUS SERVICE PROVIDES
2.3 MILLION RIDES A DAY.**

generation. New York's electricity supply is cleaner than the national average, with most in-city power plants operating on gas and imports of nuclear and hydro-power. But NYC also has one of the highest wholesale prices of electricity in the United States. Further complications will arise with the planned shut-down of the Indian Point nuclear power plant without a viable and clean replacement option. New York City actively supports the continued operation of Indian Point to avoid increas-

ing prices, decreasing air quality, and turning the 30% reduction in emissions target into a mirage.

NYC is also in favor of refurbishing old power stations to allow greater efficiency in burned fuel. One of the more innovative projects includes a plan to increase renewable energy production, which has already doubled from 2007 to 2011 to 53,000 megawatts (MW). An additional 60 MW is to be added through a \$125 million pro-

gram to foster solar photovoltaic installations by 2015. The combined generation of heat and power, known as cogeneration, is in the spotlight, with the possible development of 800 MW of clean energy through the capture and use of heat as a byproduct of electricity production and reuse for heating and cooling. In the end, 60% of New Yorkers stated that they are willing to purchase 'green' energy at a premium and in NYC the consumer drives the market.



New York. Source: Laura Beltrán Villamizar

Facing the Future

After Hurricane Sandy, Mayor Bloomberg declared that “the biggest challenge we face is adapting our city to the risks associated with climate change”. With the urban jungles of the world contributing approximately 80% of the world’s greenhouse gas emissions, NYC contributed 54 million metric tons of CO₂ in 2010, or 1.7 tons every second; roughly the same amount as Switzerland. PlaNYC 2030

**IN 2010, NEW YORK CITY
EMITTED 1.7 TONS OF CO₂ EVERY SECOND;
ROUGHLY THE SAME AMOUNT
AS SWITZERLAND.**

aims to reduce emissions by 30% before 2030 in comparison with 2005.

In 2011, OLTPS reports already showed a 12% reduction from the baseline. The plan is working, and exceeding expectations.

More concrete actions to reduce greenhouse gas emissions are also underway. Incorporating sustainability into the design and maintenance of all public spaces, the aim is to create a network of green corridors and plant one million trees in addition to the existing 5.2 million. In the course of improvements to the water system, some major aims include the sustainable use of storm-water, an increase in the operational efficiency of the water supply with new technology, and promotion of water conservation. At the top of the list are improvements of energy efficiency of buildings, fostering the renewable energy market in the city while ensuring the security of power delivery, and easing the adoption of electric vehicles. These actions will decrease the carbon-footprint of the city substantially and therefore increase air quality as well.

There is of course more to climate change than emissions. NYC has over 830 km of coastline and has always been at extensive risk from heat waves, snow storms, hurricanes and flooding. Mayor Bloomberg has set out to update codes and standards in

order to make New York City more resilient. Better zoning regulations will permit buildings located in areas under greater threat of flood to be built or retrofitted to withstand potential disasters. Such higher standards are already required of critical public buildings like hospitals and schools and an expansion into the residential sector will drastically increase damage prevention. Priority has also been given to the city’s critical infrastructure, such as its bridges and tunnels. Also, the NYC Waterfront Revitalization Program (WRP), which provides a framework for the development of areas on the coast and approximately 150 meters inland, has been revised to incorporate climate change considerations.

None of these plans could have been created without the New York City Panel on Climate Change (NPCC), formed in 2008, which aims to provide the city with the best available science. Charged with this task, the NPCC launched an extensive data-gathering and dissemination mission to provide the City with up-to-date information on potential weak spots and measure current and future climate exposure. For example, the Panel has projected that by 2050, New Yorkers would experience more than 30 days a year with temperatures above 32 °C, in comparison with an average of 14 days now. By the same year, sea levels are expected to rise by 17-30 cm. In the face of so many threats, New York City is taking action now to overcome the challenges of tomorrow. Through a mixture of implementing science and policy, Mayor Bloomberg recognizes that “with the stakes as high as they are, just doing nothing is no option”. ☀

FOR MORE FACTS ABOUT NYC

and more about PlaNYC 2030, visit: www.nyc.gov/planytc



THE HIGH LINE STORY

Elevated Urban Gardens

Writer: Laura Beltrán Villamizar is Photo | Art Editor at *Revolve*.

Laura recounts how an old piece of railroad running along the lower west side of Manhattan was brought back to life as an integral part of the city. To view her photo essay of the High Line, visit: www.revolve-magazine.com.

Once upon a time...

Built in 1847, the New York Central Railroad carried freight trains with textiles, fresh fruits, meat, and dairy products in the city. The rail lines were constructed at street-level which quickly proved dangerous for pedestrians and horses. The danger was such and the amount of daily casualties was so high that “West Side Cowboys” (horse riding guards) were hired to ensure greater safety along the rails. Casualties persisted and 10th Avenue became known to New Yorkers as the “Death Avenue”.

By 1934, the State and City of New York decided to elevate 13 miles of the rail lines, eliminating more than a 100 death-threatening crossings and intersections. For better or worse, the gradual disappearance of manufacturing businesses in lower Manhattan meant less business for the New York Central Railroad, hence less train traffic. Consequently, the entire traffic was put on hold and by 1980 the road had its last ride.

What happened after two decades of desolation in the New York High Line, nature can tell best, as it took over the entire road. The elevated landscape became a magnificent playground of wildflowers and grasses as small trees sprouted where the rails were once embedded. The whole structure became a newborn garden on top of urban ruins, making it a vast open space, covered by wildlife and waiting to be brought forth as a proper space in New York City’s urban jungle.



Green Resurrection

Residents of the areas of Chelsea and West Side Yard – both crossed by the high line – along with a group of property owners lobbied to get the entire construction demolished. Since no alternative were being presented, plans to destroy the high

line were advancing. However, when the city announced its plan to demolish the high line, two New Yorkers formed a non-profit organization named “Friends of The Highline” to promote ideas to preserve and boost the value of this public space.

Robert Hammond and Joshua David, founders of Friends of the Highline, pondered about a way to transform and avoid destroying the wild plants and green urban landscapes. Support from local communities to redevelop the High Line for public use grew tremendously. Support was so successful that Major Bloomberg and the New York City government decided to support and commit \$50 million to construct the park.



The High Line Park was renovated as a series of visual episodes, almost becoming emotional encounters with nature. Joshua and Robert wanted designers and creators to translate these lapses of visual nature into a vivid green urban project. “The challenge was to keep this magical and undiscovered landscape in the middle of the city and at the same time allow hundreds of people up there” claims James Corner, the lead designer of the project. Indeed, the notion of its reconstruction is less evident than the feeling of its resurrection.

“The challenge was to keep this magical and undiscovered landscape in the middle of the city and at the same time allow hundreds of people up there”

— James Corner

The Experience

Elevated from the street, the High Line provides a unique experience and exceptional landscapes. Strolling along the wooden board walkway, one passes industrial, rusty surfaces of red and gray... apples, oranges and sweet fruits hang in specified areas and attract insects and hummingbirds, creating a habitat for nature to thrive again in this urban space, creating a sensation of wilderness.

Next to these natural attractions, the Friends of the High Line association organize cultural and artistic exhibitions with young artists and photographers that are shown along the line. Hosting creative and artistic events has become a long-

term developing plan for the New York City Department of Parks and Recreation, making it a catalyst and platform for urban artistic movements.

What one admires the most while experiencing the park's historical value is the fact that the creators have used an old piece of infrastructure without tearing it down or turning it into a piece of heritage and nostalgia. What they have done is provide an innovative and eco-friendly approach for gentrifying neighborhood, adding a green value to a metropolis like New York City and by so doing, adding the greenest chapter to the West Side Story – the High Line Story. 🌀



VIEWS



Mothers with their children wait at a rural hospital which assists malnourished children in the Bayt al-Faqih district. October 2012.



YEMEN

The story of nothing

Juan Herrero

Aid agencies and international NGOs warn that almost half of Yemen does not have enough to eat, including about 267.000 children who face severe levels of malnutrition. During the Arab revolts, the Yemenis eventually ousted their dictator – Ali Abdullah Salah, but his specter looms large and Yemen remains the poorest Arab country. The economic crisis is catastrophic: 50% economic contraction, plus 23% inflation.

“There is food in the markets, but there is not enough money in people’s pockets,” claims Juan Herrero. In a country of extreme poverty and political corruption, Yemen has not gone through a democratic transition and is struggling with the aftermath of more than three decades of dictatorship. Although humanitarian aid is being sent to the Bayt al-Faqih district in western Yemen, monitoring the food crisis and distributing rations to the most impoverished families is far from being over.

Juan Herrero (b. 1984, Spain) started covering development projects in Cuba and Indonesia, while also contributing to Cordon Press agency. In the summer of 2012, he relocated to Sanaa, Yemen, where he photographed daily life and the ongoing hunger crisis in the west of the country that almost erupted in civil war. He has published in *Paris Match* and *Der Spiegel*, among others. To view more of his work, visit: www.juanjoherrero.com

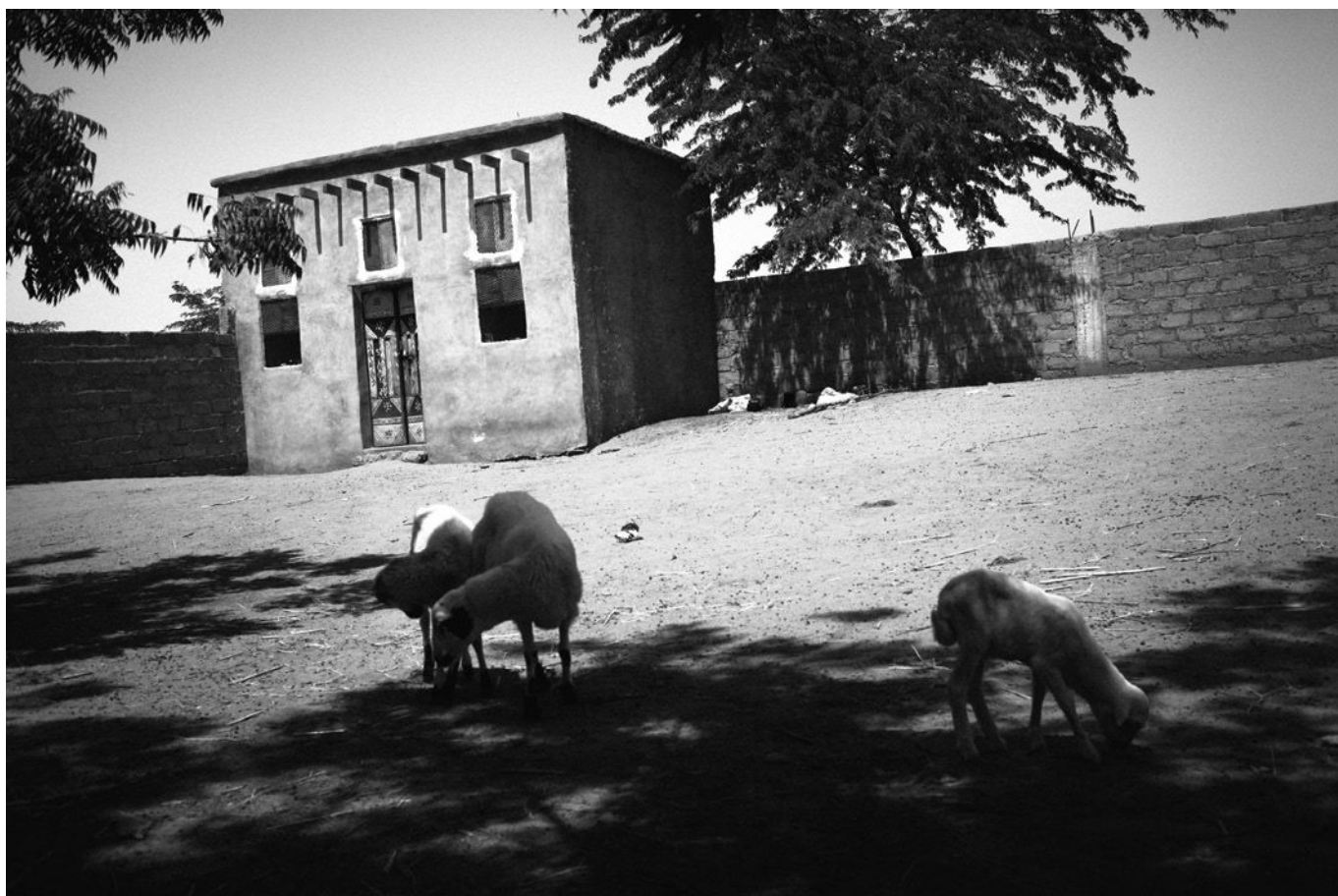
To submit a photo essay, please contact :

Laura Beltrán Villamizar
Photo | Art Editor
laura@revolve-magazine.com





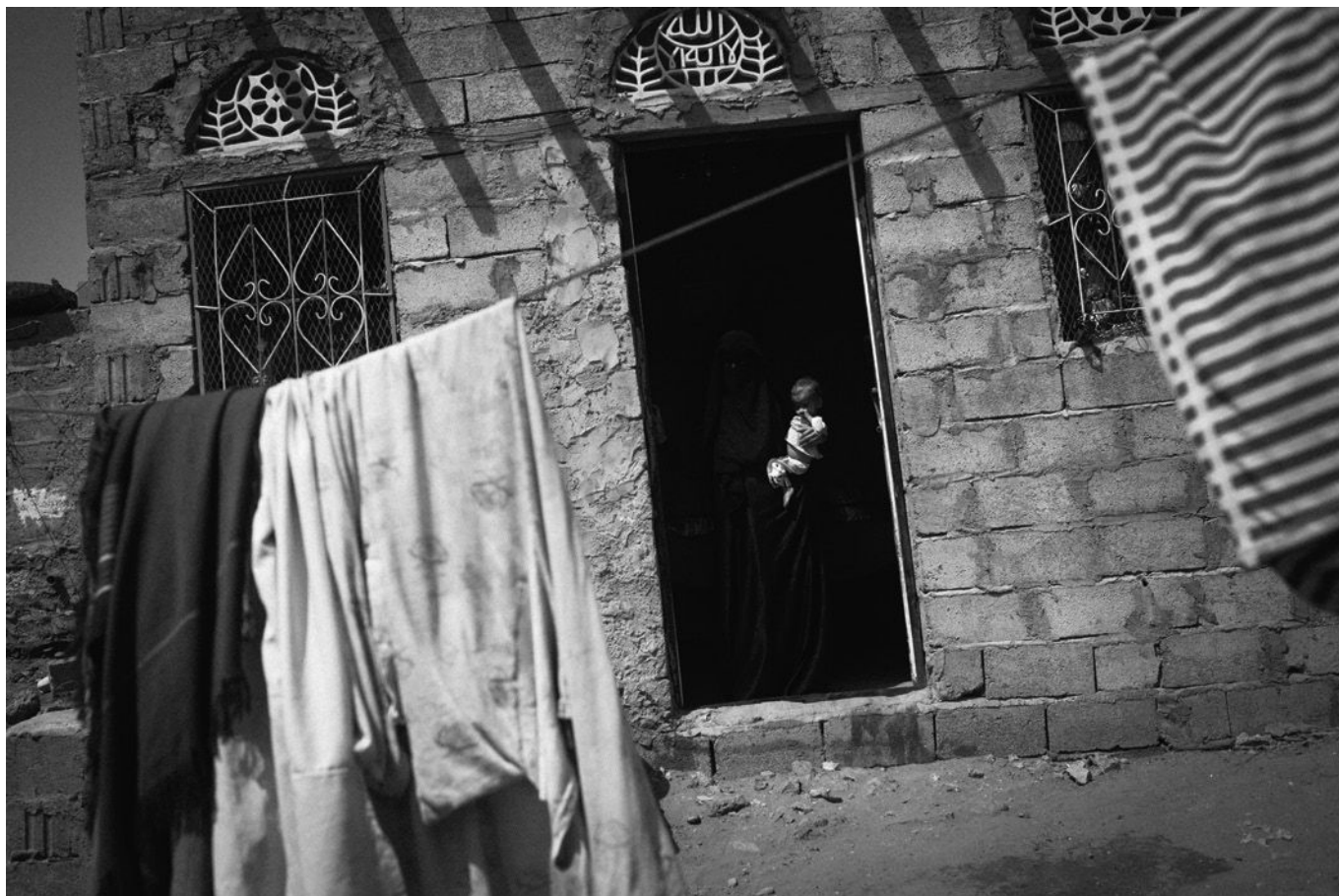
Women waiting at one of the cash distribution points that an NGO operates in the schools of Bayt al-Faqih, October 2012.



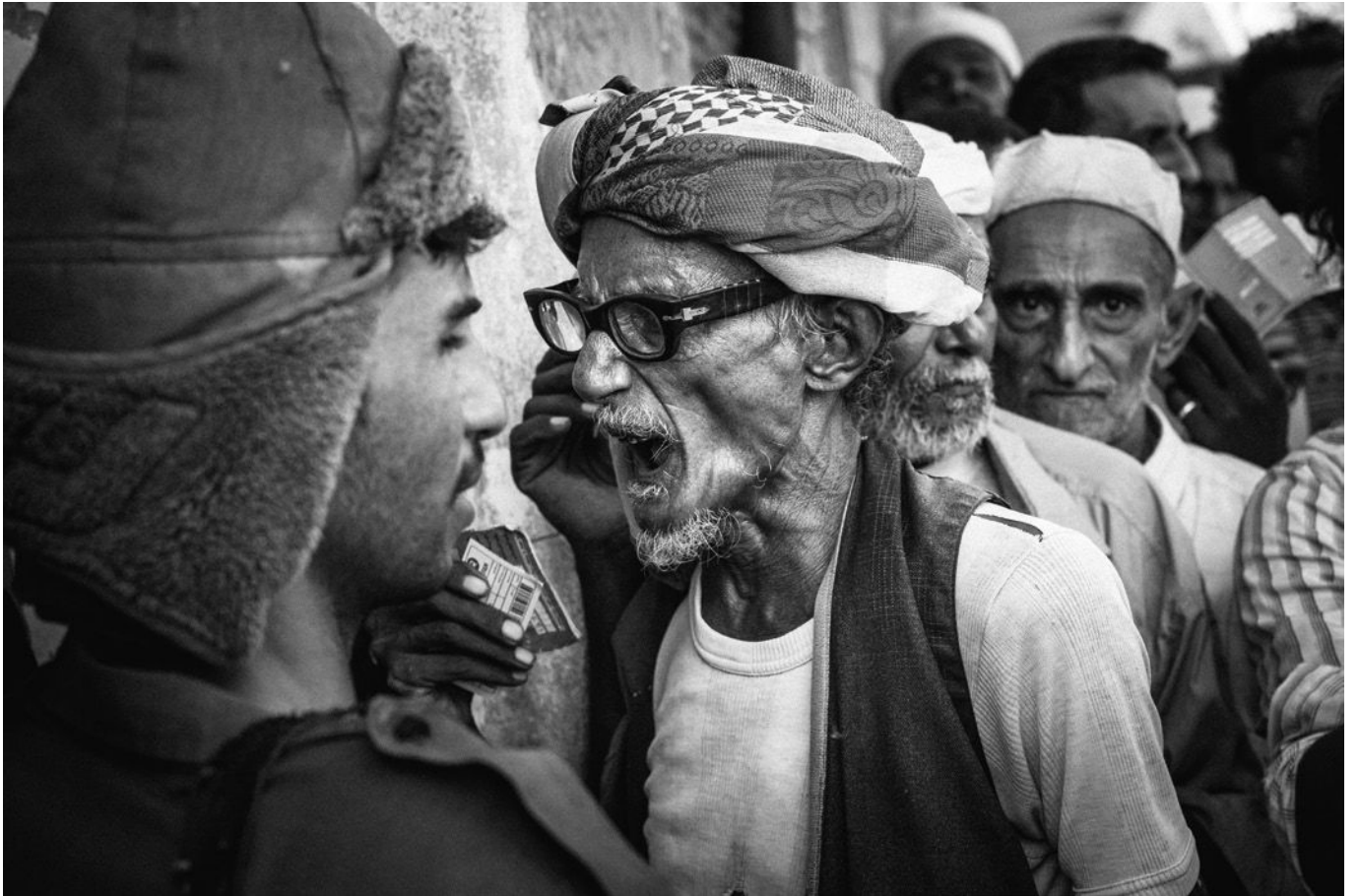
House of Ali Ahmad, a farmer from the village of Al Kadha. October 2012.



"Sometimes we go to bed and our stomachs hurt," says Aisha Mohammadiya by her house. October 2012.



Hend Mohammed (18) holds her malnourished daughter, Rahaf, on the threshold of their home in Attorba village. October 2012.



Men waiting in line at one of the many cash distribution points in western Yemen. October 2012.



Ashima village. View from the road that goes to the port city of Hodeidah. October 2012.



The poor and heavily populated district of Bayt al-Faqih is one of the main targets of international aid in Yemen. October 2012.



Hend feeds her malnourished daughter Rahaf with a fortified nutrition ration given by an NGO. Rahaf's brother, Mohannad (2) was born when Hend was 16 years old. Her husband, Fahman Salim (22), is a taxi driver with a motorcycle that he rents for a few dollars a day. Attorba village, October 2012.



Abdul Salam Yusuf (50), a carpenter from Bayt al-Faqih city, stands in his livingroom with two of his 12 children. His 15 month old son, Abdul Majid, is malnourished. Two of his older sons (17 and 25) work illegally in Saudi Arabia; one is a waiter and the other a carpenter. He and his family are beneficiaries from one of the cash distribution programs. October 2012.



Hend and her family at her house in Attorba village October 2012.



Ali Ahmad, a farmer from Al Kadha village, standing where he used to store food for his family. October 2012.



A woman walking in Attorba village. October 2012.



Dr Yahya Hassan, who operates the outpatient clinic, says "some of the malnutrition cases are the worst I have seen in the past 2 years". 267,000 children in Yemen are at risk of death from malnutrition. October 2012.



Mohannad (2). Bayt al-Faqih. October 2012.

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MALTA

Confronting Water Challenges

Writer | Photographer: Peter Easton is a British hydrogeologist and water resources consultant with 25 years experience studying water issues in a wide range of geographies and climates, including the Middle East, Europe and Malta.

Malta represents the water supply challenge confronting many countries in the Mediterranean region. Although its population has an abundant, affordable and reliable supply of safe drinking water, its aquifers are under pressure from over-abstraction, seawater intrusion and pollution from both urban and agricultural sources. As the population becomes more affluent, the pressures on water quality and availability increase. Desalination technology could supply all of Malta's drinking water needs, but being an energy-hungry country dependent on imported oil, it would be neither economically nor environmentally sustainable. The current water challenges in Malta can be solved through innovation, regulation, good governance and cooperation. If achieved, it will be a model for water management.

Malta is essentially an aquifer (a rock containing usable water) made mostly of limestone (a common aquifer rock holding water in interconnected fractures and cracks), which originally formed on the ocean bed some 25 million years ago. The discovery of fossils from animals originating in North Africa and Europe is evidence that geological force formed a land bridge

between both continents some 10 million years ago. During ice ages, the sea level dropped and then rose again as the ice caps receded. Following the end of the most recent ice age, around 12,000 years ago, the sea rose again leaving the islands of Malta and Gozo isolated.

Malta has two main aquifers. The larger and deeper "sea-level aquifer" forms a solid foundation and provides the largest source of groundwater supply. It reaches the surface in some places ("outcrops") where rainfall can directly infiltrate and replenish the aquifer. In other areas, it is covered by clay, on which lies another limestone unit ("the upper limestone").

This upper aquifer consists of many small isolated units, which provide only locally-important groundwater supplies. Historically, these units were the source of springs with groundwater flowing out at its edges. Springs are now rare due to groundwater abstractions lowering the water tables. Near its south-west coast, close to the Hagar Qim and Mnajdra temples, there are a number of man-made excavations in the limestone rock surface believed to be 5,000 years old, which collect rainwater and are still used for irrigation today.

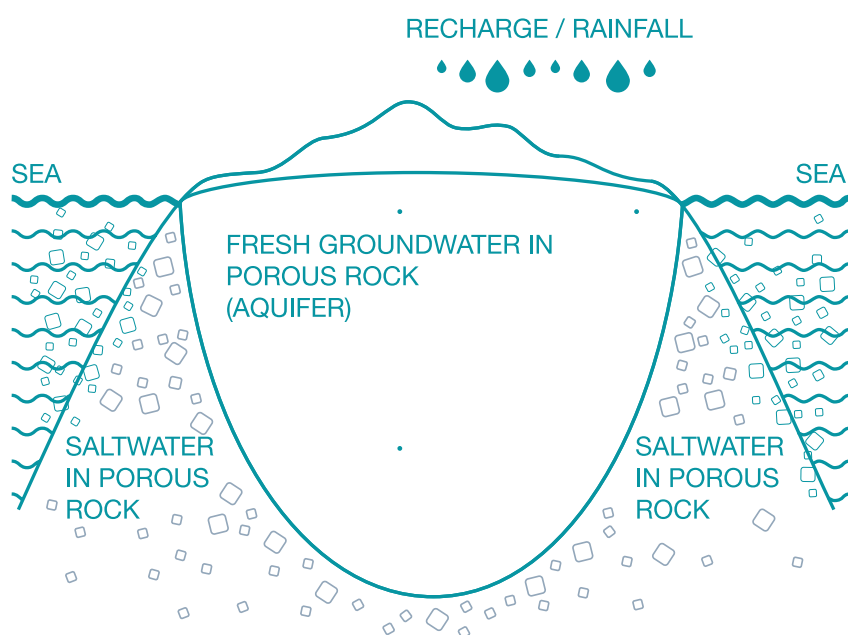
The paradox is that solving earlier water supply challenges has led to another: Malta's current use of water is unsustainable.



The limestone aquifer meets the sea (Gozo). **Source:** Peter Easton



Modern working limestone quarry. It has been suggested that dis-used quarries could be used for capturing flood waters and recharging the aquifers. **Source:** Peter Easton



Schematic of a freshwater lens, typical of many islands .

Historically, Malta had enough rainfall to sufficiently replenish the aquifers with fresh water. In the main sea-level aquifer a “freshwater lens” was created – very typical of small islands – with one beneath the main island of Malta, and the other beneath the smaller island of Gozo. A freshwater lens occurs due to the difference in density between freshwater and seawater; similar to a ‘low density’ iceberg floating in ‘high density’ seawater. Like an iceberg, the volume of a freshwater lens below the surface (represented by sea level) is much larger than that above it. For every meter of freshwater above sea level, there is 40 meters below. The ‘lens’ is not a continuous body of water, but consists of the water contained in millions of inter-connected pores and cracks in the rock behaving as a single body representing 1-5% of the rock volume. The lens may be

static in shape, but not in water flow; it is regularly replenished by rainfall and with freshwater moving through it and escaping at the edges to the seawater. In its natural condition the lens shape is stable with some seasonal fluctuation in size.



On islands with small populations, freshwater can be abstracted sustainably from near the surface, via natural springs or shallow wells, with replenishment matching or exceeding the water used. However, as populations and demand for water grow, an imbalance occurs. If the water table is lowered by just 0.5 meters for a prolonged period, then the base of the lens will rise by 20 meters. The effect is exacerbated by modern drilling technology, which allows wells to go tens of meters deep. When deep wells are over-pumped, then “up-coning” occurs whereby saltwa-

ter is sucked up into the lens thus causing further imbalances. As the freshwater lens continues to shrink, seawater intrusion progresses and groundwater quality deteriorates thereby forming a combination of encroaching seawater from below and surface pollution from urban sewers and agricultural fertilizers and pesticides.

As an island nation, with extremes of dry weather and even drought, agriculture has been crucial for survival. The countryside is blanketed in a patchwork of cultivated fields almost exclusively family-owned and

watered by wells and irrigation. A century ago, the local water cycle and freshwater lens were in balance. Like any present-day under-developed region, easy access to safe drinking water was unreliable. Habitants took their water from natural springs and shallow wells. There was also a tradition that each house had a cistern in which to store rainfall. This was a legal requirement since the times of the Knights of St. John that has seen little enforcement in recent decades.

Malta has invested in schemes to carry freshwater from damaging flash floods to the sea, while paying to convert seawater to freshwater!

Founded in Jerusalem in **1023**, the **Knights of St. John** dominated Malta for 270 years.

The Knights settled in Malta in 1530 as a ‘safe-haven’ from the Ottomans and were eventually **removed by Napoleon in 1798**. Malta then joined the realm of **the British Empire and Commonwealth**.

The islands were **besieged in World War II**, achieved **independence in 1964**, and became a **Republic in 1974**.



Groundwater Bodies in the Maltese River Basin District

- Lower Coralline Limestone Aquifer (Mean sea level aquifer)
- Upper Coralline Limestone Aquifer

Public Groundwater Abstraction Sources

- Borehole
- Gallery Network (Pumping Station)

During the 20th century access to water improved. Deep wells were drilled across the islands to supply drinking water and agricultural needs. Horizontal galleries were extended to intersect more of the shallow aquifers to provide more water. The first desalination systems were built in the 1960s. Infrastructure was installed to distribute water in the growing urban areas. While the situation improved, by modern standards urban water supply remained unreliable with bursting pipes and reliance on privately-owned water delivery companies as back-up to fill rooftop tanks for domestic use.

The need for action was triggered by periods of severe drought in the late 1970s and early 1980s, which resulted in the drinking water supply being limited to sometimes only 2-3 days a week. Simply excavating more wells and galleries was not a solution as the aquifers were already heavily exploited with seawater intrusion worsening the problem.

The first step was to commission a new desalination plant that was built in 1982. The seawater reverse osmosis facility of Ghar Lapsi was one of the largest desalination plants in the world, with an installed capacity of 20,000 m³ per day. Contrary to expectations this was not the solution. Greater supply reliability led to greater demand and the infrastructure could not cope with the increased flows that were lost in leakages due to the pressure of over-capacity. These problems resulted in a multi-year network mapping project, pressure management, repairing leaks and replacing pipes. The desalination capacity has grown with additional plants producing a combined total of 100,000 m³/day.

During recent decades, water use for farming has also augmented considerably. Increased wealth and new technologies for drilling, pumping and irrigation have contributed to a proliferation of thousands of wells. Groundwater is still used today. Public water supply comes from about half groundwater and half desalinated water, while the agricultural sector uses mostly groundwater and some surface water. Trying to ameliorate earlier water challenges paradoxically has created new ones making Malta's current use of water unsustainable. Ironically, Malta has invested in schemes to carry freshwater from damaging flash floods to the sea while paying to convert seawater to freshwater!

Most buildings in Malta are made of golden limestone. As a result, Malta is dotted with quarries of which many are now unused. These have been proposed as a place to divert flood waters to encourage aquifer recharge instead of letting the water flow to the sea. However, floods are worse in the valleys, whereas quarries are mostly on higher ground. Innovation is essential since pumping water uphill is impractical and costly.

Malta is now one third urbanized and with the extensive paved areas, the effects of floods have worsened. Tunnels have been built to carry the water rapidly and directly

The current water challenges in Malta can be solved through innovation, regulation, good governance, and cooperation.



Ghar Lapsi Desalination Plant. **Source:** Water Services Corporation



Ghar Lapsi Desalination Plant. **Source:** Water Services Corporation

to the sea, but this gives even less chance of replenishing the aquifers. For centuries, every house had a storage cistern to collect rain from the roof. While still officially a requirement, this has not been enforced for many years. However, there is now a greater effort to get home-owners to ensure these are in working order. While cisterns are not used for drinking water today, they can be used for such things as irrigation and help reduce flash-flooding and overloading of wastewater systems.

Most of Malta's treated wastewater is discharged into the sea. The technology exists to convert wastewater into higher quality water, whether for irrigation or drinking, less expensively and with less energy than seawater. As in most cultures, there is an instinctive aversion to the concept of reusing wastewater for drinking or food-associated use. While use as drinking water is the hardest concept to accept, using treated wastewater for irrigation or aquifer replenishment is more conceivable. Some pilot projects are starting to use treated wastewater in this way, not for drinking.

“Clean Water”

The first major project to reuse water for drinking was in Windhoek, the capital of Namibia. Surrounded by the Namib and Kalahari deserts, **Windhoek is among the most arid places in Africa**, and one of the only places in the world that practices **“direct potable reuse”** on a large-scale, with recycled waste water going directly into the tap water distribution system. Windhoek's New Goreangab Water Reclamation Plant features a multi-barrier system to make the water extra clean. The process remains expensive and controversial.



Wheatfield (Gozo). As a strongly Catholic country, a church dome is visible on most horizons. **Source:** Peter Easton

Only about 3% of water of drinking quality in households is used for drinking. Most is used for bathing, washing, watering the garden and flushing toilets. Given that 50% of household water supplies are from desalination, whether such expensive and precious water should be used for non-drinking purposes is questionable. Consideration should be given to a dual water supply network that already exists in some cities such as Singapore.

There is the growing realization that the situation is not sustainable. There are campaigns by groups and individuals and ongoing debates in national newspapers, resulting in action and political progress. However, imposing strict new controls is not easy. Private water wells for domestic and industrial use now require a permit, whereas permits for the agricultural sector do not. This is a controversial subject that needs consensus amongst the Maltese; finding a balance between strong cultural traditions and the need for sustainability is essential.

Malta has always been innovative in man-

aging water supply. Many of the dry watercourses, which experience occasional flash floods, had dams built across them to capture flood waters in order to provide a combination of a direct water supply and to encourage recharging of the underlying aquifers. Many of these dams have been neglected and have silted up. However, there are now government supported projects to renovate them.

A 2006 FAO report stated that one reason for Malta's water problems was a lack of coordination between different interests. This is being clearly addressed with the creation of an Inter-ministerial Water Committee to manage implementing the Water Framework Directive (WFD). Under the WFD, the Water Catchment Management Plan identifies a number of key areas to be addressed along with some proposed solutions. These areas include: sustainable abstraction, water quality, ecological impacts, and raising general awareness. Most importantly, there is a recognition that all sectors of society must work collectively towards sustainable water resources.

Strong influential action also comes from EU membership which requires compliance with the WFD. Member states must establish targets for improving water flows and quality, and publish results in River Basin Management Plans. Malta published its plan in 2011. The WFD requires "full cost" pricing of water to include environmental costs and efficiency incentives. Some progress has already been made, but full compliance will remain a social and political challenge. There is also the realization that solutions cannot rely solely on money and new technologies. Simply increasing the desalination capacity is not a viable option because it is costly, energy hungry, and not in the spirit of sustainable use of resources.

Malta faces some big challenges. The process for addressing these challenges may take many years with ongoing debates regarding the priorities and solutions and how to accelerate action. If successful, – and it must be – Malta will provide a better quality of life and set an example for other nations and regions facing growing water scarcity in a rapidly changing world. 

“Water scarcity and drought is an increasingly frequent and widespread phenomenon in the European Union. Water is no longer the problem of a few regions, but now concerns all 500 million Europeans.”

DG Environment, European Commission

Maltese businesses and hotels are saving water and cutting costs using a few simple water saving solutions.

Could you? Find out now:

www.investinginwater.org - freely accessible online resources helping businesses and hotels to save water:

- Analyse your consumption and identify water saving solutions with our self-assessment application
- Consult a set of simple but effective water saving solutions
- Get inspired by success stories from industry

The project is led by the Malta Business Bureau, supported by partners the Malta Chamber of Commerce, Enterprise and Industry, and the Malta Hotels and Restaurants Association. The project receives 50% co-financing under the European Community's LIFE funding programme, with the Ministry for Tourism, Culture and the Environment as the main co-financier, further co-financing and sponsorship from Easydry Malta, APS Bank, Island Hotels Group, and MSV LIFE.



Project partners:



Project co-financiers and sponsors:



Renewables and Desalination

INTERNATIONAL
WATER SUMMIT



The UN year for water cooperation started with a bang with the first International Water Summit (IWS) in Abu Dhabi, the capital of the United Arab Emirates (UAE), on January 15-17, 2013. This was the largest water summit to date gathering leading experts and policy-makers from around the world, coinciding strategically with the World Future Energy Summit (WFES), also hosted by Masdar.

“Water is more important than oil for the UAE,” the Crown Prince of Abu Dhabi stated in the opening ceremony – setting the tone for the Abu Dhabi Sustainable Energy Week and clearly sending a bold message that an economy historically based on oil is now placing water at the top of its agenda. Her Excellency Razan Khalifa Al-Mubarak, Secretary General of the Environment Agency - Abu Dhabi (EAD) stressed the pivotal role groundwater plays in the UAE’s long-term sustainability.

The focus of the IWS, sub-titled appropriately “promoting water sustainability in arid regions” was about advancing energy hybridity: connecting the use of renewable energies with different forms of water treatment; for example, using solar energy in the sun-soaked Arab countries for converting salt water to clean water for domestic and agricultural purposes.

Masdar CEO, Dr. Sultan Al-Jaber, has been a pivotal and visionary force in bringing together a plethora of world leaders, including presidents of France, François Hollande, and of Iceland, Ólafur Ragnar Grímsson, as well as connecting international agencies, such as the UN and OECD with national ministries and private companies.

For instance, during the “Water-Energy Nexus” Ministerial Panel of the WFES, Singapore’s Minister of Environment and Water Resources, Dr. Vivian Balakrishnan, spoke eloquently of how the little island

is 100% dependent on importing energy and food, and 60% dependent on water imports. He stressed the need to get the economics and the politics right surrounding water issues.

Along similar lines, Mohammad Al-Ramahi from Masdar mentioned in an IWS workshop how 2/3 of water in the United Arab

“We have been using groundwater to irrigate crops, forests and plantations and in the oil industry. We have reached the tipping point, and the current rate of abstraction and use is unsustainable. Most of our groundwater does not replenish: when it’s gone, it’s gone forever.”

— H.E. Razan Khalifa Al-Mubarak

Emirates is imported with the highest consumption per capita per day in the world. This phenomenal statistic helps explain Masdar’s intense interest in moving towards more self-reliant methods of acquiring clean water, largely revolving around desalination technologies.

Dr. Adil Bushnak, Chairman of the Bushnak Group, based in Saudi Arabia, emphasized the need for feed-in water tariffs and stated that mega desalination plants were not the only answer. Dr. Bushnak said that aquifer recovery and storage are equally important, and that the future of desalination has to be hybrid integration of renewables, with new technologies being tested at pilot sites.

In a separate panel focusing on the Gulf Cooperation Council (GCC) countries, Dr.

Rabi Mohtar, Executive Director of the Qatar Environment and Energy Research Institute (QEERI), elaborated on the need to regionalize the pilot tests and took the inter-connectedness of the energy-water-food nexus a step further by projecting where the world is headed.

Dr. Mohtar stated the need to explore the quantitative linkages inherent in the water-energy nexus and gave a few figures to depict the importance of water in energy production: nuclear energy has the highest water footprint; biofuels are the most water-intense source of energy; agriculture comprises over 70% of global water use; and by 2030, we will be producing 50% more food...

An integral part of the massive Abu Dhabi Sustainable Energy Week, the first International Water Summit was a resounding success in bringing together the most prominent water sector entities such as the UNDP and leading global companies such as Coca-Cola and Borealis/Borouge, while eliciting new ideas from students and showcasing potential solutions.

An innovative feature of the IWS exhibition hall was the Sustainable Solutions Village that was divided into two sections: one proposed solutions for water management in rural communities; and the other looked at best practices in addressing regional water scarcity. Presentations included examples of successful projects from the UNDP/Coca-Cola initiative: Every Drop Matters.

IWS concluded with the declared launch of yet another Masdar pilot project – already the ambitious 100% carbon-free renewable Masdar City has captured global attention. At the end of IWS, Masdar announced its long-term goal to establish a renewable energy-powered desalination plant by 2020. 



For billions of people, water and sanitation are vital challenges. Climate change, unsustainable practices and growing population needs are now leading to a global water crisis, in rich and poor countries alike. Solutions exist to better manage and preserve the resources we have.

Committed to addressing global challenges with innovative, value creating plastics solutions, Borealis and Borouge initiated **Water for the World™** a programme that fosters local knowledge and partnerships to deliver sustainable solutions for the availability of safe water and sanitation around the world.



waterfortheworld.net



SHAPING *the* FUTURE with PLASTICS

Q&A:

Bindu Lohani, ADB

Revolve asks Mr. Bindu Lohani, Vice-President of the Asian Development Bank (ADB) for Knowledge Management and Sustainable Development, about the future of energy security in Asia.



What policy changes are required from governments to tackle energy security in Asia?

Asia and the Pacific are highly dependent on imported oil and gas. This dependency is only set to grow in years to come. By 2050, the region may be 90% dependent on imports for energy, which makes all our economies highly vulnerable to supply interruptions. And the emissions from using fossil fuels contribute to climate change, resulting in extreme weather that has made us much less secure on many levels. If governments seek to make their countries more energy secure, then they must diversify their energy sources, seek sustainable, low-carbon energy and become more energy efficient.

How can renewables increase in the energy mix, particularly in developing and under-developed economies?

Successful policies have been used in Asia and elsewhere to increase the

share of renewables in the energy mix, including renewable energy tax incentives, renewable portfolio standards, and feed-in-tariffs. ADB is supporting Renewable Energy Certificates (RECs), a market-based instrument that will allow renewable electricity generators to unbundle the environmental attributes of renewable energy from the electricity and make them tradable in a trading market. The public sector should seek cooperation of the private sector in the design of incentivizing policies and long-term plans.

How can countries without good access to renewable sources, such as solar, wind, geothermal, or tidal, solve their problems of energy security?

Areas with strong geographical advantages for renewables can provide electricity to neighboring regions. The opportunities for cross-border trade in energy, and cross-border infrastructure between two or more countries are there: Indonesia currently sells electricity to Malaysia, for example. ADB has supported the Bangladesh-India Electrical Grid Interconnection Project to establish a cross-border link between the western electrical grid of Bangladesh and the eastern electrical grid of India. While both these examples use electricity from conventional generation, the concept could be adapted for cross-border trade in electricity from renewable power.

What could be done to have a fixed share of electricity come from waste in local Asian cities?

For waste-to-energy to be possible governments should implement appropriate policies and the private sector should set up more facilities to generate energy from waste. Each municipality should have a waste collection facility contributing to a centrally-located waste-to-energy facility. To make such a process mandatory would be a policy decision by governments. There have been examples of setting mandatory electricity purchases from specific renewable sources, such as wind, that have worked. This is a type of subsidy program that should be transparent, well-targeted and confined to a limited time-frame. 🌱

Wind mills and farming coexist in Khandke, India. **Source:** ADB



The Delhi Sustainable Development Summit

(January 31 – February 2, 2013) focused on promoting energy conservation and moving towards using more renewables to address current energy demand. The main themes of the summit revolved around low carbon mobility, energy and water security issues. Highlights included the launch of “Electric Vehicles: Challenges & Opportunities in India” by Dr. Farooq Abdullah, Minister of New and Renewable Energy.

Revolve was represented by Rajnish Ahuja and Deepshikha Sharma.

What policy changes are required from respective governments to tackle the major issue of water security in South Asia?

Working with 10 partner organizations, the Asia Development Bank (ADB) and Asia-Pacific Water Forum have developed a framework for quantitative analysis of water security. The Asian Water Development Outlook (March 2013) provides assessments of national water security in Asian countries, highlighting areas for urgent action. Policy recommendations are provided to help leaders of finance, planning and water agencies drive improved water security across 5 key

dimensions: household water security, economic water security, urban water security, environmental water security, and resilience to water-related disasters. The previous edition of the Asian Water Development Outlook (2007) suggested an important link between water sector governance and the provision of water security. The 2013 edition illustrates that countries that have better governance are generally more water secure. 

Wouter Lincklaen Arriens
Lead Water Resources Specialist
Asian Development Bank

How can 24/7 water access be reached in Asian countries that experience energy and water shortages?

Many people in the region do not have continuous (24/7) access to potable water services. The adverse effects on the health and livelihood of communities are obvious and extend to negative economic impacts at local, regional and national levels. There are many interventions that help raise service levels but chief among them is to drive efficiency across all facets of the business of water supply service provision. This applies to both public and private sector utilities.

The prime efficiency measure of peak-performing service providers is a low rate of water loss, typically measured as non-revenue water (NRW): without a low rate of NRW it is almost impossible to deliver economic 24/7 service. In most urban centers in the region, NRW levels range from 30-70 percent. The estimated annual volume of NRW in urban water utilities in Asia is in the order of 24 billion cubic meters. Assuming a value of \$0.30 per cubic meter, Asia's water utilities are



Rajnish Ahuja is a research and business development professional focusing on renewable energy, energy policy and climate change.

Deepshikha Sharma is a research and communication specialist with expertise in water and wastewater management, renewable energy and climate change.

losing nearly \$7 billion in ‘revenue’ per year. Cutting the present NRW level to half could supply approximately 124 million additional people with potable water. 

Alan Baird
Senior Water Supply and Sanitation Specialist
Asian Development Bank

What can be done to minimize the environmental impact of the water-energy nexus?

Energy services need water to run conventional power plants, and energy is needed to transport, pump and treat water. A significant portion of the operating expenses of water projects and water utilities goes to energy costs. Ways to minimize the carbon footprint of the water-energy nexus can be found through increased energy efficiency, in both the supply and demand side of water use. On the supply side, energy efficiency can be achieved through measures like retrofits: bringing in more efficient pumps and motors, and implementing new and better methods of metering and monitoring. On the demand side, efficient boilers, cooling towers, toilets and shower heads are all feasible and available. Both supply and demand must look to control leaks - each cubic meter reduction in wasted water may save up to 1 kilowatt-hour of electricity. 

Pil-Bae Song
Chair, Energy Committee
Senior Advisor and Practice Leader (Energy)
Asian Development Bank

Read the full interviews and view water/energy photo essays:
www.revolve-magazine.com

ILLEGAL LOGGING in South East Europe

Writer: Ruth Gamano is an independent contributor to *Revolve*.

Illegal logging and related activities are a major problem in South East Europe, causing considerable environmental, economic and social damage. **Ruth Gamano** investigates the causes and effects of this illicit industry.



Source: Gregg Zimmerman

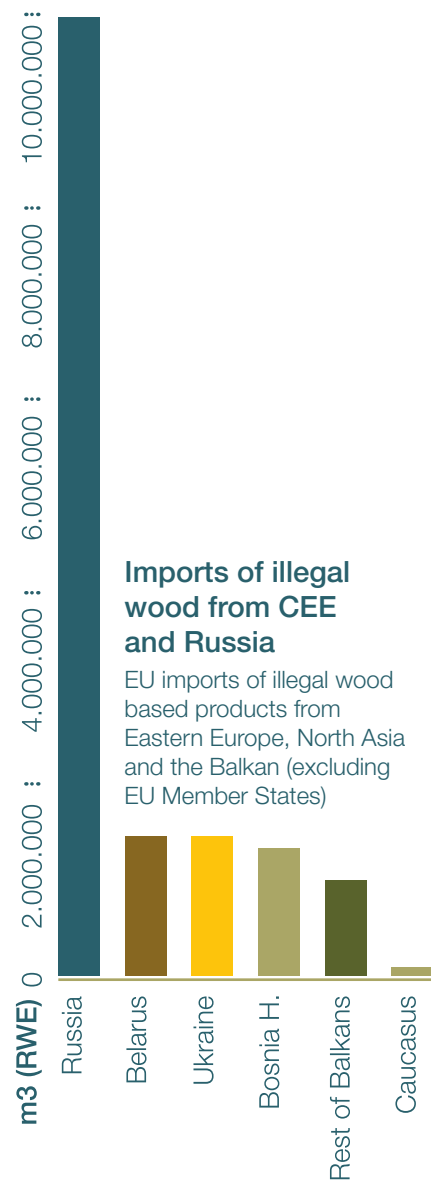
Illicit Activities

The logging industry is extensive and complex, with many stages between the harvesting of trees and their final delivery as processed wooden products. “Illegal logging” refers to illicit activities in any of those stages from harvesting to processing, from transportation to trade. While there is no internationally-recognized legal reference, the main types of illegal logging in South East Europe can be defined as:

- Occurring outside concession areas or inside protected areas
- Being in excess of quotas or without appropriate permits
- Not complying with bidding regulations or required management plans
- Being prohibited in areas such as steep slopes, river banks and water catchments
- Using duplicate felling licenses and processing without the required licenses
- Using girdling or ring-barking to kill trees
- Removing under- or over-sized trees from public forests
- Using bribes to obtain logging concessions
- Using deceptive transfer pricing and other illegal accounting practices to distort prices, volumes, cash flows and debt service levels
- Leading to the illegal transport, smuggling and trade of timber
- Not in compliance with environmental, social and labor laws

Common characteristics can be identified in illegal logging in all areas. Both are frequently associated with transnational organized crime, breakdowns in institutional control and ineffective institutions. These issues have far-reaching social consequences as governments lose revenue, while corruption undermines the rule of law and organized crime infiltrates the fabric of society. International relations are simultaneously damaged as cross-border tensions mount.

The environmental implications of illegal logging are extensive. Forest degradation and deforestation result in loss of habitat and biodiversity. Eroded river basins and increased surface erosion affect the quality of water as well as farming... all contributing to climate change.



Companies will inflate the price of imports such as machinery and deflate the prices and volumes of their exports to reduce nominal profits and their tax liability with the host country and illegally transfer funds abroad.

“Illegal logging results in substantial environmental harm and raises cross-border and international tensions by hindering sustainable development in affected regions. Informal cooperation mechanisms, such as transgovernmental enforcement networks, can foster mutual trust and cooperation and enhance cross border cooperation.”

— Aniko Nemeth, Themis Secretariat, Regional Environmental Center (REC)

Balkan Ways with Wood

The forestry sector in South Eastern Europe has untapped potential which could provide significant benefits through social and economic development, but illegal logging is an inhibiting factor and is contributing increasingly to environmental, social and economic problems.

Common patterns identified in countries analyzed in South East Europe by the Regional Environmental Centre for Central and Eastern Europe (REC) are: rampant

illegal logging in countries with substantial state-owned forest areas, especially areas near borders; a mixture of young and old forests creating a decrease in high quality forests; a lack of reliable and aggregate forest data and forest management structures; and losses of substantial forests resulting from cutting and forest fires.

The political and democratic changes from the late 1990s to the early 2000s have been, for the most part, positive. Corruption has been reduced, new laws have been established to control public procurement procedures, regulation of private forestry companies has improved and stricter financial regulations have been introduced. However, each country has forestry laws, and they are not enforced due to expenses, lack of facilities and corrupt administrations. A lack of administrative coordination creates a dilution of power between institutions causing problems with cross-border traffic control. Insufficient data collection and monitoring systems hamper effective for-

estry management and successful tracking of offenders. Sanctions against offenders are weak and offer insufficient deterrents.

Illegal logging is prevalent in socially- and economically-disadvantaged rural areas with poverty being the most significant driving force. Firewood is stolen, to use or sell, often to entire communities, since it is the only available source for fuel although gas and electricity are becoming increasingly more available. Rural areas are particularly prone to illegal activities due to a lack of resources and technical capacity to cover isolated locations in such vast regions. Forest wardens are also themselves often involved in inadequate monitoring.

However, these local actions constitute only a small proportion of the total illegal logging activity in South East Europe. The majority is accounted for by commercial operations driven by market forces. Illegal logging provides manufacturing plants with easy access to cheap wood, with the same, if

In some countries:

2 m³
legally-purchased firewood
=
3 m³
illegally-harvested wood

Imports of illegal and suspicious timber from Eastern Europe, North Asia and the Balkan Region

(excluding EU Member States) into the EU

Country	Estimated illegal or suspicious quantity of wood	Imported products	Customers in the EU
Russia	10,4 million m3 (RWE) illegal	50% roundwood 24% sawnwood (spruce) 7% paper 5% plywood	Finland (43%) Germany (10%) Estonia (9%) Sweden (6%)
Belarus	1,5 million m3 (RWE) suspicious	36% roundwood 30% sawnwood (spruce and pine) 18% finished wood products, especially flat plates	Poland (29%) Germany (22%) Lithuania (14%) Latvia (13%)
Ukraine	1,5 million m3 (RWE) suspicious	42% sawnwood (pine) 25% finished wood products 6% charcoal 5% firewood	Hungary (21%) Poland (16%) Germany (12%) Italy (11%)
Bosnia-Herzegovina	1,2 million m3 (RWE) illegal	36% firewood 24% sawnwood (beech) 16% finished wood products 7% charcoal	Italy (42%) Slovenia (25%) Austria (12%) Germany (11%)



Source: Gregg Zimmerman

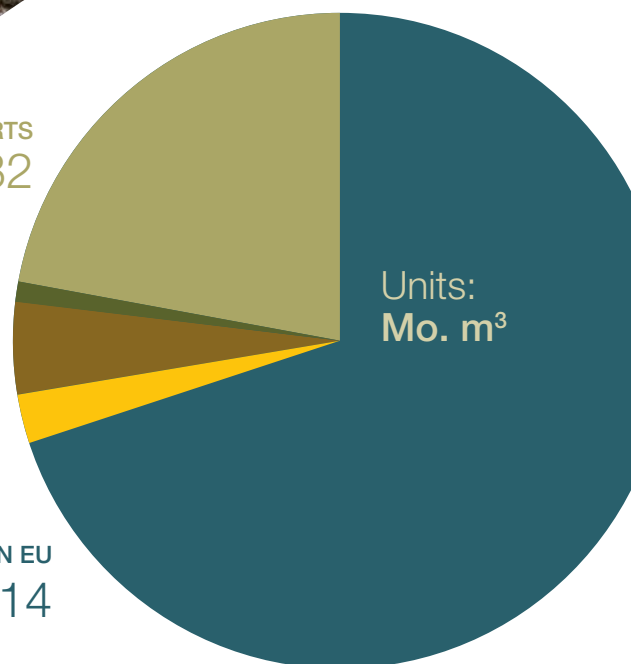
not higher, quality than legally-sourced timber. In some countries, the cost of 2 m³ of legally-purchased firewood can be almost as much as the cost of 3 m³ of illegally-harvested wood. Companies do not have to pay the high costs of logging permits and small scale, often unregistered operations benefit from the short distances between harvesting locations, sawmills, processing plants and factories. Locations deep in the woods make it difficult for authorities to monitor their operations and once the timber has been processed it becomes almost impossible to trace its origin. Even when such crimes are detected, sanctions are weak. Benefiting from illegal logging is harder for international firms since their supply chains are more likely to be scrutinized by the authorities. Foreign companies need the appropriate documentation and certificates. They are also conscious of their public image and the sustainability of their products.

One of the most important factors driving illegal logging in Southern East European countries is that demand for wood far outstrips supply, of both firewood and timber for processing. The legal limits placed on wood

harvesting leave a huge gap between the available supply of legally-sourced timber and the processing and production capacity of sawmills and factories.

The demand for firewood outstrips the legal allowances for supply. For example,

the annual allowance for firewood cutting in Albania is estimated to leave a deficit of 1,594,000 m³ of wood against demand with this gap filled with illegal wood sold without receipts, invoices or documentation.



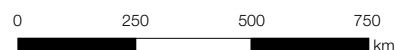
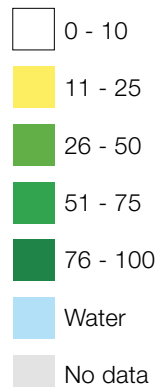
Logging and import of wood into EU
EU wood production and import

Forest Map of Europe

(geographical Europe and Turkey)

Proportion of forest from land area

(% at 1km x 1km resolution)



ETRS89 Lambert Azimuthal Equal Area projection

Data sources

Earth observation data:

EU27, AL, BA, CH, HR, ME, MK, NO, RS, TR: Forest/non-forestmap 2006 (beta version) developed by the EC Joint Research Centre, aggregated to 1km resolution. Based on IRS-P6 LISS-III, SPOT4 (HRVIR) and SPOT5 HRG satellite data of 2006.

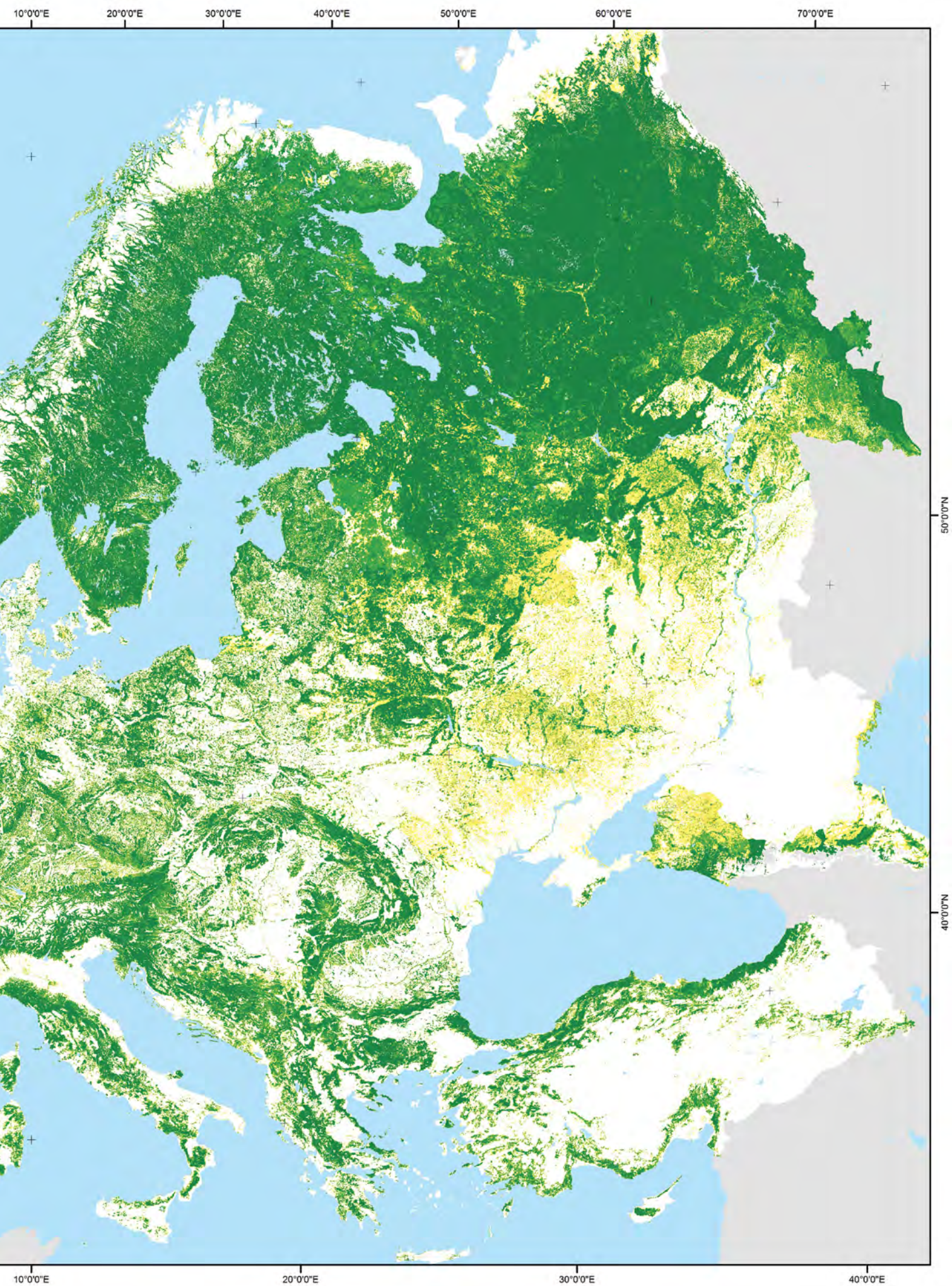
Belarus, Moldova, Ukraine, Russian Federation: Forest share estimates based on AVHRR NOAA satellite data of 1996-1998.

Statistical data:

National forest inventory statistics
State of Europe's Forests country statistics 2011.

European Forest Institute / EC joint
Research Centre September 2011





Estimated data on illegal logging

Country	Year	Estimated Volume of illegal logging (m³)	Legal logging (m³)	Illegal logging as % of legal logging
Albania	2002	28,400	304,800	9.3
Bosnia and Herzegovina	2003	41,159	1,850,938	2.2
Serbia and Montenegro	2004	9,136	3,250,000	0.3
Serbia and Montenegro	2004	2002	3,250,000	0.3

Source: SAVCOR Reports, Europe and Northern Asia Forest Law Enforcement and Governance Fact Sheet, 2005

Illegal logging Serbia

Year	Illegal wood (m³)	N° applications	N° solved applications
2002	10037	1614	411
2003	10349	162	243
2004	9136	1151	310
2005	8213	1489	322
2006	7362	1272	231
2007	10671	1089	198
2008	13713	1345	177
2009	3182	572	167
TOTAL	72663	8694	2059
Average / year	9926	1160	270

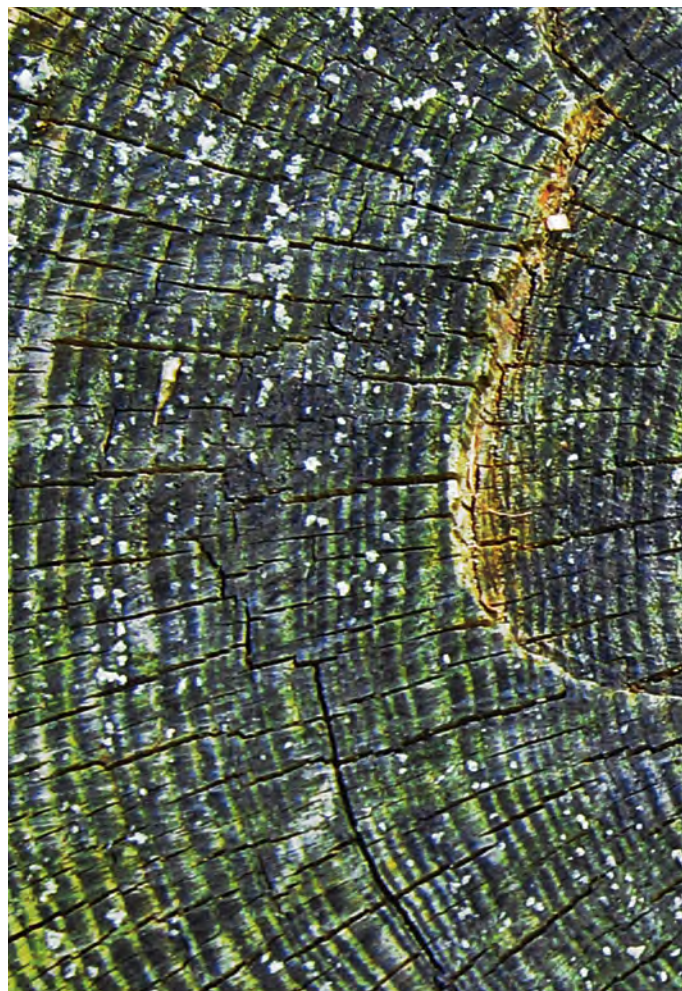
Source: REC working paper, "Illegal Logging in South Eastern Europe", 2010.

Illegal logging in Eastern Europe, North Asia and the Balkan regions

Country	Amount of illegal logging
Russia	27% North West 50% far East
Tadzhikistan	20-30%
Bosnia-Herzegovina	80,00%
Serbia-Montenegro	50% (private) 5% (state forest)
Macedonia	25-30%
Albania	81,00%

Source: "Illegaler Holzeinschlag und die EU 27", WWF-Germany, 2008.

Under the Environment and Security Initiative (ENVSEC), in cooperation with the Federal Belgian Government and the Canadian International Development Agency (CIDA), the Regional Environmental Center for Central and Eastern Europe (REC) is implementing a project to identify actions to combat this form of environmental crime in South East European countries and Ukraine, as well as enhancing dialogue and cooperation between SEE countries. To learn more, visit: www.rec.org



Addressing Illegal Logging

The European Union is taking direct action to create sustainable forest management both within and outside its borders, focusing largely on illicit logging. In 2003, the EU Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT) was adopted to address illegal logging related problems by setting out measures in producer- and consumer-countries in order to facilitate trade in legal timber and to eliminate illegal timber from EU trade.

The range of measures include providing support to timber producing countries, promoting activities to encourage the legal timber trade, advancing public procurement policies, endorsing private-sector initiatives to enhance corporate social responsibility, establishing safeguards for financing and investment, using existing legislative instruments and adopting new legislation to support the plan. FLEGT Action Plan relies on voluntary agreements between timber-producing countries that suffer from illegal logging. FLEGT licenses are used to demonstrate

the legality of timber imported from FLEGT partner countries into the EU.

In 2010, the THEMIS network was established as a South East European regional cooperation initiative between the environmental law enforcement units of Albania, Bosnia and Herzegovina, Kosovo, the former Yugoslav Republic of Macedonia, Montenegro and Serbia. The network aims to increase administrative capacities with the relevant national authorities in order to tackle environmental crime, including illegal logging. The THEMIS network operates under the auspices of the International Network for Environmental Compliance and Enforcement (INECE).

Initial steps to combat illegal logging through shared knowledge and communication between organizations and nations has begun in a wood database developed in the Netherlands. They have compiled information on more than 200 species of trees and included uses, suppliers, availability and technical features thereby

encouraging sustainable timber procurement and promoting the introduction of less well-known timber species.

European governments and other organizations are working to reduce illegal logging in South East Europe and to protect the forests in that area. However, much more needs to be done, particularly in terms of law enforcement and international cooperation to encourage the sustainable use of these valuable and vital natural resources. We too need to do our part by considering the origins of the wood that builds so much in our lives, including holding up our roofs. ☺

Source: Simon Harrod



Q&A: Ela Gandhi

An interview by Nicolas Rossier with the granddaughter of Mohandas Gandhi

Mohandas “Mahatma” Gandhi was the famous peace activist who led Indians to independence from British colonial rule in 1946. His granddaughter, Ela, was born in 1940 in the Phoenix Settlement in the Inanda district of KwaZulu Natal, South Africa. An anti-apartheid activist from an early age, she was banned from political activism in 1975 and was placed under house arrest for 9 years. Prior to the 1994 elections, Ela Gandhi was a member of the Transitional Executive Committee, and became a Member of Parliament (1994-2004), where she aligned with the African National Congress (ANC) party, representing the Inanda district in the KwaZulu Natal province. Since she has left parliament, Gandhi has worked tirelessly to fight domestic violence. She founded the Gandhi Development Trust to promote non-violence and chairs the Mahatma Gandhi Salt March Committee. In 2002, she received the Community of Christ International Peace Award and in 2007, in recognition of her work to promote Mahatma Gandhi’s legacy in South Africa, she was awarded the prestigious Padma Bushan award by the Indian Government.

Award-winning documentary filmmaker, **Nicolas Rossier**, met Ela Gandhi at her modest home in a suburb of Durban to talk about her life and politics in South Africa.

What was life like under apartheid?

There were many, many difficulties that we faced. In the area where I was born there were no government services whatsoever. It's only 20 kilometers out of Durban but we had no electricity, no running water. The roads were never fixed. We had to rebuild our roads whenever there was rainfall. Life was difficult. When I started school, I could not go to a mixed school because there were no schools where they accepted different race groups together. There was this strict policy that you can only run a school for one race group and so I was forced to go to an Indian school. When I

came to high school I had to travel each day from my home at Phoenix Settlement to Durban because there were no high schools in that area. Growing up as a person who was not white, I saw that there were lots of problems that we had to overcome. In Durban, we could not go to the amusement park. The libraries and university were not accessible to us. We had to go to the non-European section of the University of Natal to get our education and it was difficult because we could only attend evening classes. Yes, it was really difficult for us non-white people in South Africa.

When you joined the ANC, how did you

reconcile the armed struggle with your grandfather's passive resistance?

I believe that people have different ways of dealing with issues and if people feel that we have come to a stage when we cannot confront the government – they banned every political organization, some people were charged and put into prison – then different people would react to the situation in different ways. When a group of people felt that the best way was to use violent means, they were not saying that they wanted to kill people. At the beginning it was about sabotage. It was about attacking installations, not people.



Ela Gandhi. Source: "The Other Man" with camera by Naashon Zalk.

the people who commit them.

Do you think that non-violent activities alone could have got things done sooner in South Africa?

Violence is not one-sided. The more violent government policies became, the more violent the people became. The more anxious the people became, the more they wanted to resist because of the violent situation. I lived in Inanda where African people had come to live. In those days, there was a law that was called "Trespassing". Here were people who came, lived in their own homes, yet they were charged for trespassing. They paid

The more violent government policies became, the more violent the people became.

Dom passes (meaning dumb passes) were pass laws in South Africa designed to segregate the population and limit the movements of the non-white population. They were introduced in South Africa in 1923 and were designed to regulate the movement of black Africans in white urban areas.

rent as well and still they were considered as trespassers simply because they did not carry a **dom pass**. If you didn't have this pass on yourself, then you would be arrested. This could happen early in the morning. At 2:00 am, we used to hear our dogs barking and people would start screaming and running. The next morning we hear that all these people were bitten by the dogs and taken to prison for not having their passes – and you could do nothing about it. I mean what law and order, what justice is that; is that not violence? I agree fully that if you use violence you're delaying the process. If the government had used non-violent methods, they were negotiating with the wrong people. They did not ask the community to talk with their leaders. Instead, they find their own people whom they imposed on the community as leaders. At the time, Nelson Mandela said: "Let's sit down and talk." He wrote a letter to them and they ignored him. They banned all non-violent organizations. When they shot people in Southville, they shot them from the back; people who were living quietly – they shot them.

Was there a point when sabotage had failed strategically and a decision was made to target people?

There was that discussion at many levels and people chose whether they would engage in the actual making of the bombs or would choose to engage in non-violent ways. We chose non-violent ways. We chose not to be involved in making bombs and strategizing on how we're going to use them. It was a conscious decision that we made to remain non-violent, but we could be side-by-side with those people who

wanted to use violence and who felt that that was the only way. My grandfather didn't criticize anyone. When General Jan Smuts imprisoned him and did not grant him his rights, my grandfather still respected him and General Smuts had the greatest admiration for him. So that can only happen when you're not enemies, when you realize that there's some humanity in every person and this is what he taught us. We protested against apartheid because it affected many people in very negative ways so we opposed apartheid, not the people. You've got to separate the deeds from



View from Glenwood over Durban City center. **Source:** "The Other Man" with camera by Naashon Zalk.

Have you seen changes in South Africa since the end of apartheid?

I have seen change and there are many possibilities for positive change. If it can happen in one area it can happen in many places. There's a lot of work to be done and unfortunately our country has gone into a mode where there are more divisions. People are just criticizing each other. It's about material benefits and not about what I can give to the community or how I can build a strong foundation for our children. How do we go about building that foundation? That foundation can only be built if the community comes together, not just the government. The government can only do so much and can be kept in check if the community is strong and has a strong moral and ethical background or foundation. I was listening to the radio and they talked about this person who was driving under the influence of alcohol and he gave a thousand rand bribe to the policeman not to detain him. What does that mean? I mean he is a danger on the road, and then he bribes the policeman. He's partly to blame for the corruption. Where do we stop and who do we blame?

I have seen change and there are many possibilities for positive change.

We blame the policeman? We don't blame the person who actually bribed him, and this is what's happening in the country. People do these things and then they blame the government.

Do you think there needs to be some change in terms of how democracy functions in South Africa?

Democracy is about working together. I believe in a participative democracy. When I was in Parliament, we had a government of national unity. That is what Mr. Mandela had talked about and that is what we had when all parties came together to build, but it degenerated. Now the parties are there just to attack each other and today I can say that if another party comes in it is not going to be any better because they are all the same. They are all fighting for power.

One of the problems in the Middle East today is that there are no strong leaders with a vision like Rabin or Mandela or de Klerk or even people like your grandfather to lead the process forward.

True, I think you see there are a lot of people outside Israel that could apply more pressure, pressure in the sense that "Look, time is up now. You have to negotiate. You cannot go on like this." Israelis are not living in peace. They're not happy. They are looking at their windows and doors all the time as to who's going to come in, where the bomb is going to be, the next detonation. So are the Palestinians and they're not happy either. How do you bring them together? The people on the ground want a settlement. They do not want to carry on the way they are carrying on, but the fear in them has



View of Durban boardwalk taken from the OR Tambo Parade. **Source:** "The Other Man" with camera by Naashon Zalk.

been fanned by propaganda on each side where people are saying: "unless we get rid of this these people, they are going to continue. We have to overpower them. We have to have more weapons, a bigger army." When Israel is destroyed, Palestine will also suffer; and when Palestine is destroyed, Israel will suffer. Destruction is not the answer.

In South Africa, the overall impression ANC members and sympathizers give is that the white minority is still holding disproportionate power in the economy.

80% of the wealth of the country is with the white community, but that does not mean that every white person is well off. You have a lot of white poverty. You go on the road and you see white people begging side-by-side with Africans and Indians. There is poverty in every race group and there is wealth in every race group. But there are certain white people, a small group of white people who are wealthier, who have control over the mining industry, over big industry. They are the ones that take the percentage right to the top and they control that wealth and economic

power. It's a small group and similarly there are Africans and Indians who are wealthy and who use their wealth to control, to get power, to further their own agenda.

We can speak to those people and say: "what you're doing is wrong. Give something back to the people of this country. Let's begin to see how you can use your wealth, use your economic power to lay the foundations for a better society in this country." You can do lots of things with that wealth. You can build housing for the poor. You can make medical facilities. There are a lot of things that people who control the economy can do for the rest of the country. The government can be any government. In the U.S. Obama was elected and policies did not change. In the UK, you bring in another person and what happens; how much change is there? We've seen it all over the world.

If South Africa is to progress and set an example for others to see how diversity in a country can be an asset instead of a hindrance, then we would really make a contribution to the world. People like de Klerk can play a major role in bringing the races and communities together, bringing

the rich and poor together to create a more equal society – and all that can happen outside government. Government will become irrelevant if it does not follow. If the community becomes strong and has values then it's not going to look to the government for approval. It's going to find its own leaders, but the community is without leadership now. That's a major part of the problem. Look at how many people voted in 1994 compared to the last elections. It is mind boggling to see how it has gone down; and it will continue to go down as people begin to see reality. 🌀

These excerpts are taken from a taped interview conducted by filmmaker Nicolas Rossier for a documentary called "the Other Man" about the legacy of Nobel Laureate F.W de Klerk – to be released in January 2014. For more on Ela Gandhi and highlights of one of the interviews with F.W. de Klerk, please visit:

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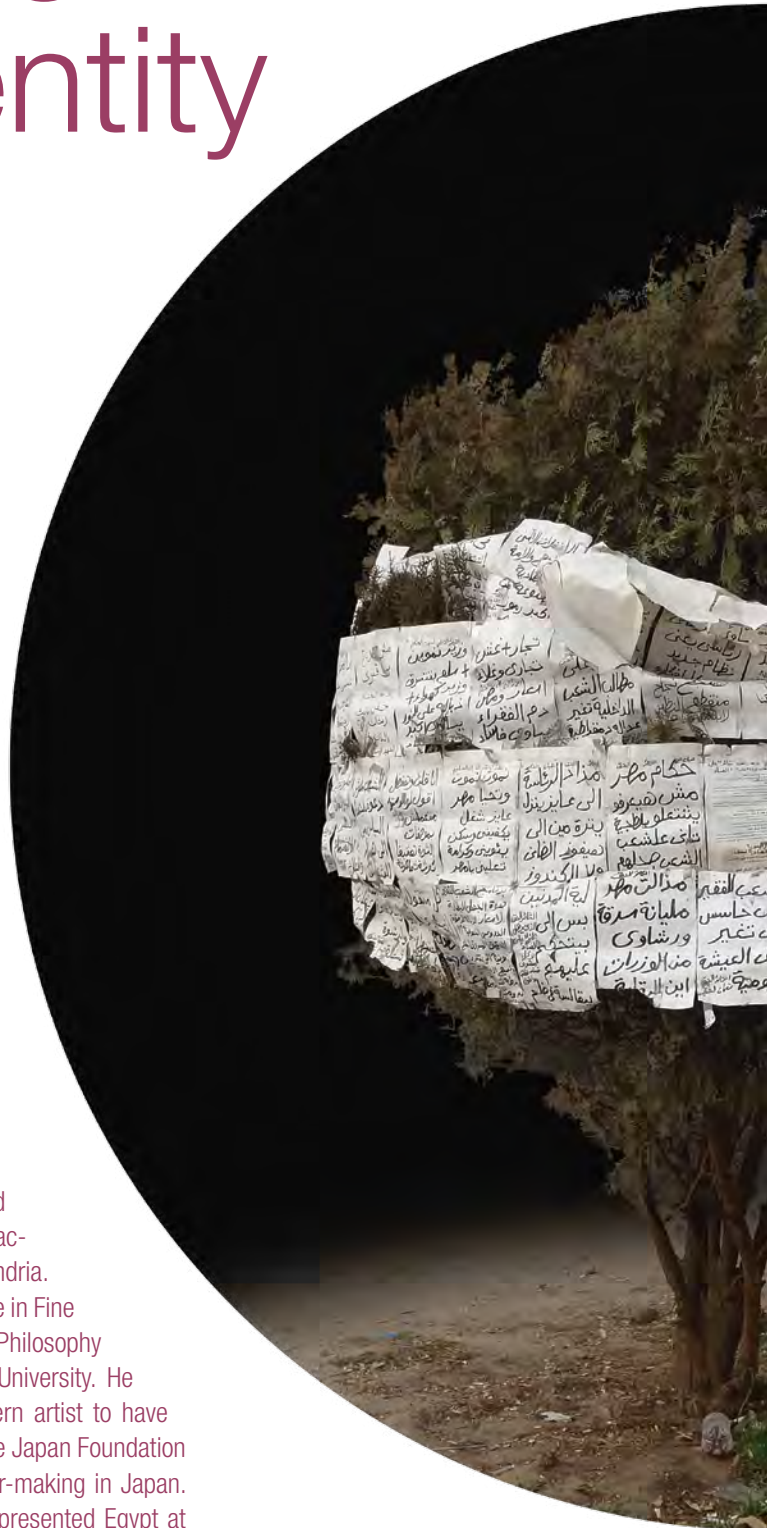
EGYPTIAN ART TODAY

Exploring Egyptian Cultural Identity in Times of Change

Mohamed Abouelnaga

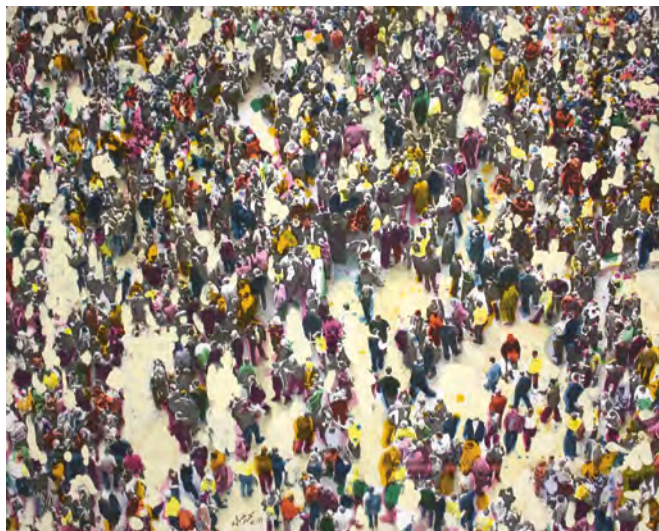
In Egypt, among other Arab countries touched by political transitions in 2011 and 2012, all sorts of 'engaged artists' rallied and rioted, fighting the injustices of 'the system'. Mohamed Abouelnaga was one of them as he explored Egyptian cultural identity along the fight for freedom. His latest work called **Four Trees in Tahrir Square** provides a view of the relationship Egyptians have with their country. In the middle of the revolution in Egypt, people took over the streets, protesting and rallying for freedom. One of the means of more tangible expression was to decorate the trees in Tahrir Square with papers covered with demands, wishes, hopes, dreams and complaints. The trees served therefore as messengers for the people's catharsis and struggle for liberation. To Abouelnaga, the trees act as the glue of Egypt's collective consciousness and cultural identity in times of change.

Born in 1960 in the Egyptian town of Tanta, Mohamed Abouelnaga graduated with honors from the Faculty of Fine Arts in Alexandria. He has a Masters Degree in Fine Art and a PhD in the Philosophy of Art from Alexandria University. He is the first Middle Eastern artist to have received a grant from the Japan Foundation to study the art of paper-making in Japan. In 2002, Abouelnaga represented Egypt at the Venice Biennale and in 2001, he won the first prize of the Alexandria Biennale. He is the founder of the Elnafeza Foundation for Contemporary Art & Development.





Tree in Tahrir Square, from CAIRO 11 series, 2012, photographs, 150x150 cm.



Oil on photograph on paper, 100x70 cm, 2011.



Oil on photograph on paper, 100x70 cm, 2011.

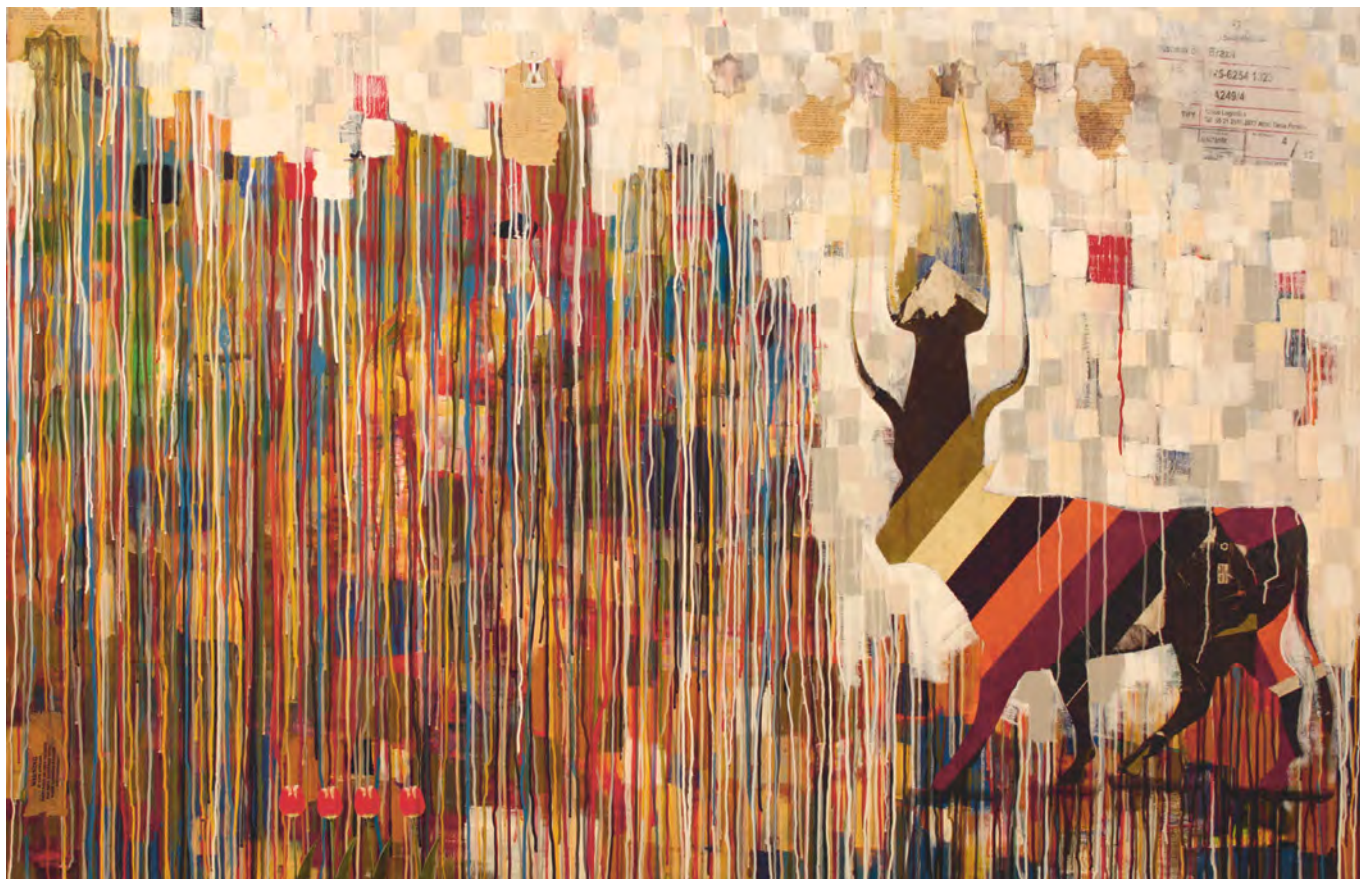


Oil on photograph on paper, 100x70 cm, 2011.

Mohamed Abla

Mohamed Abla's works are characterized by a shimmering dynamic. He shows photography of crowds from above and edits them with oil paint. Through the narrow array of the depicted crowd the single person disappears in a colorful carpet of color dots. Abla does not talk about the individual but about the collective; what seems unthinkable for a single person becomes possible together. Mohamed Abla's works are a homage to the Egyptian people and particularly to Cairo: the bustle, the noise, the colorful hustle on the streets and the humanity that brings such life to the city.

Mohamed Abla was born in 1953 in Mansoura, Egypt. He gained international recognition through numerous exhibitions in museums and galleries around the world, as well as receiving many awards and prizes such as First Prize at the Kuwait Biennale 1994 and at the Alexandria Biennale 1997. In 2007, he founded the "Fayoum Art Center" where artists from around the world work together and exchange ideas. In 2009, Mohamed Abla opened the first "Caricature Museum" in the Middle East.



Stockholm Hathur Rain, mixed media on canvas, 120x200 cm, 2012.

Khaled Hafez

Khaled Hafez's works are characterized by a colorful, nearly expressive style. Duality does not dominate Hafez's work; it is rather the melting of incompatible things. Ancient Egyptian divinities are united with modern western icons. For his works, he chooses comic heroes or fashion magazine beauties. In a playful way, he removes the gap between old and new worlds, between East and West, between high and trivial culture, creating a mirror of society, which according to him is situated in a state of metamorphosis.

Khaled Hafez is a visual artist, born in Cairo in 1963 where he currently lives and works. Hafez's practice spans the mediums of painting, installation, photography and video. His works were shown among others at the Saatchi Gallery, Tate Modern, MuHKA Museum of Art Antwerp, Kunstmuseum Bonn, the State Museum of Modern Art Thessaloniki, and at the George Pompidou Center in Paris.



Stockholm sniper, acrylic on canvas 180x120cm, 2012.

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Artists and galleries interested in profiling their work and shows with **Revolve**, please contact:

Laura Beltrán Villamizar

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laura@revolve-magazine.com



Q&A: Juan Luis Moraza

Nominated by the gallery *Espacio Mínimo*, Juan Luis Moraza won the Audermars Piguet prize for his project called “Arules” shown at ARCO Madrid 2013 (February 13-17). Laura Beltrán Villamizar asks the Basque sculptor about contemporary art in Spain, his sources of inspiration, and the future of art.



Juan Luis Moraza (b. 1960) is a Spanish sculptor from Vitoria-Gasteiz. His latest individual exhibitions include “Software” (2010), “IMPLEJIDADES” (2009), and “Repercusiones” (2007); recent group shows include “Soy el final de la reproducción” (2009). His work is exhibited in leading galleries, such as the Guggenheim (Bilbao), Reina Sofía (Madrid), MACBA (Barcelona), ARTIUM (Vitoria), and collections including Rhona Hoffman, Donna & Howard Stone, and Helga de Alvear. He also curated such exhibitions as “El retorno de lo imaginario, REALISMOS ENTRE XIX y XXI” (Reina Sofía Museum, Madrid, 2010), and “Incógnitas: cartografías del arte contemporáneo en Euskadi” (Guggenheim Museum, Bilbao, 2007).

How do you see the future of art and artists in Spain?

Spain has artists with enormous potential, but this country does not offer development opportunities for artistic and professional growth. We have no actual dialogue with the general debate of international art and we lack a vision of the future. Given the lack of institutional attention and financial hardships, artists must be aware and committed to create, along with the entire art sector, a new situation for artists to develop. Art is very small in Spain but important from a symbolic and heritage point of view, and it could be relatively easy and inexpensive to articulate a legal and fiscal framework favorable to such development. The future will be the result of our decisions.

How do you bring contemporary art to the general public?

I heard a Shakespeare play referred to as a lake, along the shores of which children could play confidently, but in the depths

of which even the most experienced diver could be lost. I like to think of this dual capacity as an aspiration for my works. I think that when experience guides the transmission (or the process of communicating), even the most complex thing can be said in a simple manner, in a roundabout way, through metaphors, or examples.

You are an artist who questions elements, words and meanings, what does the etymology of the word 'statue' mean to you?

A few years ago, while working on a series of sculptures in homage to Bernini, I discovered that the word "statue" is related to height, status and ecstasy, which explains very well its evolution. In fact, words are traces of the experience that created them, and their history, is always

full of layers, loans, and mutations. That is why I inadvertently began to use words as if they were stones, in a free way: cutting, polishing, modelling them, bringing them together, and using them from their

Reflecting on the work of art is an obstacle to the encounter with the piece...

consistency, as one of the many materials available out there.

Gallery Espacio Mínimo decided to not show the physical works at ARCO 2013, creating a 'virtual' stand for your Arules project. Is it necessary to bring the reflection towards the gallery and force the viewer and, in this case, the buyer to think about the oeuvre?

The idea of forcing the viewer to reflect evokes pure rigors and seems terrifying. I do not believe that one should confuse

Source: Espacio Mínimo





Source : Espacio Mínimo

the artistic happening with a reflection of it, nor art with artistic discourse. Any expectations I have as an artist of viewers are fantasy. I want to elicit a reaction, I am not disinterested, but I cannot predict their response. Reflection as a way to bond with the work of art is overrated. Reflecting on the work of art is an obstacle to the encounter with the piece, or a substitute for that meeting making the encounter more difficult.

Do you have a favorite material?

Materials are complex and can be empirical, real, imaginary, perceptual, symbolic, and cultural. I am involved in all these fields of materiality to make them accumulate and associate – to make them no longer different. Matter as a raw material is not just a starting point, but also a result, that only exists in the end of the process. This probably explains why I am not a sculptor of a specific material or technique. Each material arises from pure necessity within the process rather than a stylistic

decision. I understand that virtuosity can be as unproductive as clumsiness. If the first enslaves you from the inability, the second enslaves you from prejudice.

Is there an art for each person, for each sense?

Value is often confused with art, so people use the category of art wherever they want to identify something valuable, and that creates a huge misunderstanding. Even the notion of beauty, reviled by modern art, but not by society, is subject to personal and cultural relativity. Art is rather a coincidence: although the work of art acts independently, each viewer has manifold impressions whether they are an artist, an art critic, a philosopher, a historian, an art dealer, a gallery owner, a collector, or a student; and each viewer is simultaneously many.

Which artists inspire you?

It is always fascinating to see in works the distinctive way in which someone has confronted in an unrepeatably and

unique way a circumstance, a world, offering a synthesis which, even in his blunders, excesses and weaknesses, is the heritage of humanity. Each time I have less and less favorite artists because I constantly admire more artists. Despite what appears in the mass media, the whole mythology of the charismatic genius, irresponsible and intractable, does not really depict what artists actually are. There is much personal investment in the risk of expressive transparency and the prolonged dedication to making art (with very few exceptions) is never paid. The real hidden economy of art is the huge investment, usually unrecognized socially, that engaged artists make in the creation of a symbolic heritage – the value of which is recognized by society. I find, in short, no artist superfluous. 🌀

Read the full interview at:
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