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STRATEGIC
MANAGEMENT

SMART CITIES: ENERGY

2019
PARSONS
PARIS

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SMART CITY 1.0

A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other mean to improve quality of life, the efficiency of urban operations and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects.

SMART CITY 2.0

Beyond improving infrastructure, Smart City 2.0 focuses on enhancing the citizen experience by operating at the intersection of the 3Ds: data, digital, and human-centered design. The goal is to enable better decision-making through the use of data for all stakeholders—government, business, and residents.

The focus of any smart city should be its people, providing benefits such as:

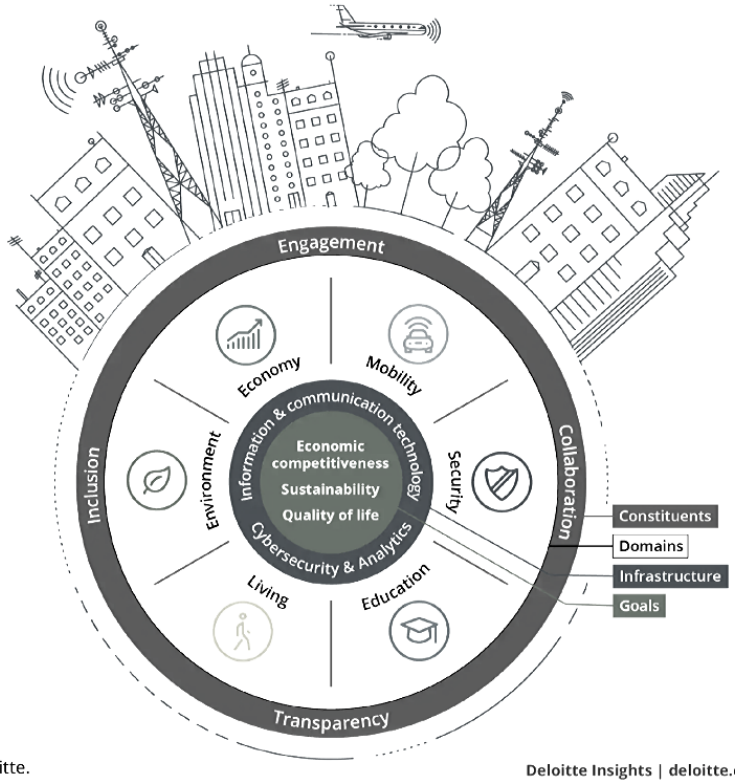
1. A better quality of life for residents and visitors

2.Economic competitiveness to attract industry and talent

3. An environmentally conscious focus on sustainability

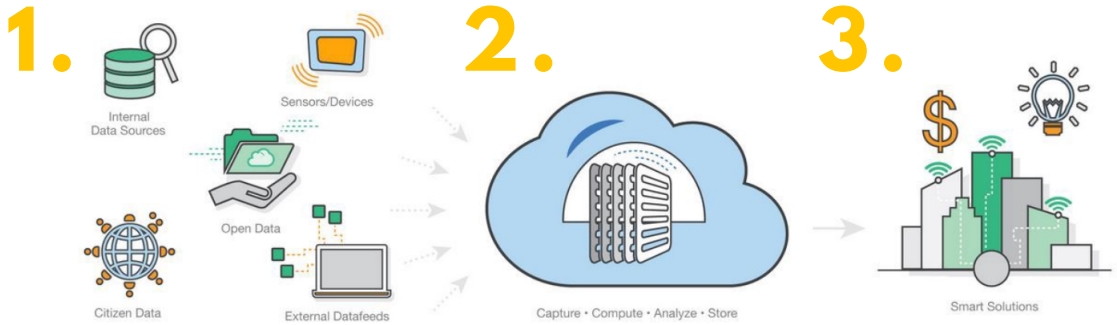
ELEMENTS STRUCTURE

Figure 1. Deloitte smart city framework



Source: Deloitte.

Deloitte Insights | deloitte.com/insights



TRENDS IN SMART CITIES

OPEN DATA

Public policy that requires or encourages public agencies to release data sets and make them freely accessible. Many governments and leading cities now run open data portals, e.g., the UK and Canadian data portals, (data.gov.uk and open.canada.ca) and city portals such as San Francisco (dataSF.org) and London (data.london.gov.uk).

CLOUD COMPUTING

Cloud computing, defined generally as the delivery of computing as a service, has offered organizations such as cities ways to reduce costs and increase efficiency.
Barcelona, Spain, has used public cloud infrastructure to deliver identity services and device management for its field-based workforce11, for data analytics, and to improve its customer records management (CRM) systems for managing citizen interactions.

Examples:

Taiwan has exploited cloud computing to handle the high data volume from its intelligent transportation systems (ITS)

ANALYSIS
KEY TRENDS

Considering that Smart Cities is an independent industry, we analyzed its elements based on the in-depth research.

TECHNOLOGY TRENDS

- Big Data, Connected services, Advertisement linked with BD, Transportation.
- AI
- VR
- Augmented Reality

SOCIO-ECONOMIC TRENDS

- Steady urban growth, suburban growth, a lot of immigration
- Wealth is not equally distributed
- Spendings: healthcare, housing, transport and entertainment, food

REGULATORY TRENDS

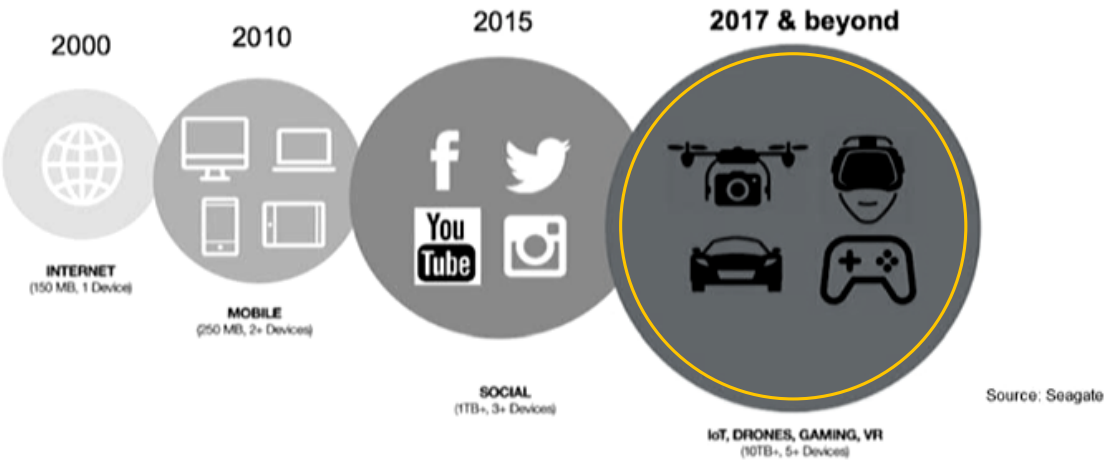
- GPDR - data collection limitations
- Regulations and taxes affecting citizens

SOCIETAL AND CULTURAL TRENDS

- Attention to lifestyle and eco-friendly
- Job insecurities and social exclusion
- Environmental and health inequality
- Autonomous transportation revolution
- Smart transportation and mobility
- Search for reducing energy footprint
- Digital transformation : real time data
- A mindset of sharing services / Sharing economy
- Globalized consumer that can compare cities
- Workplace becoming anywhere

BIGGEST TREND IS

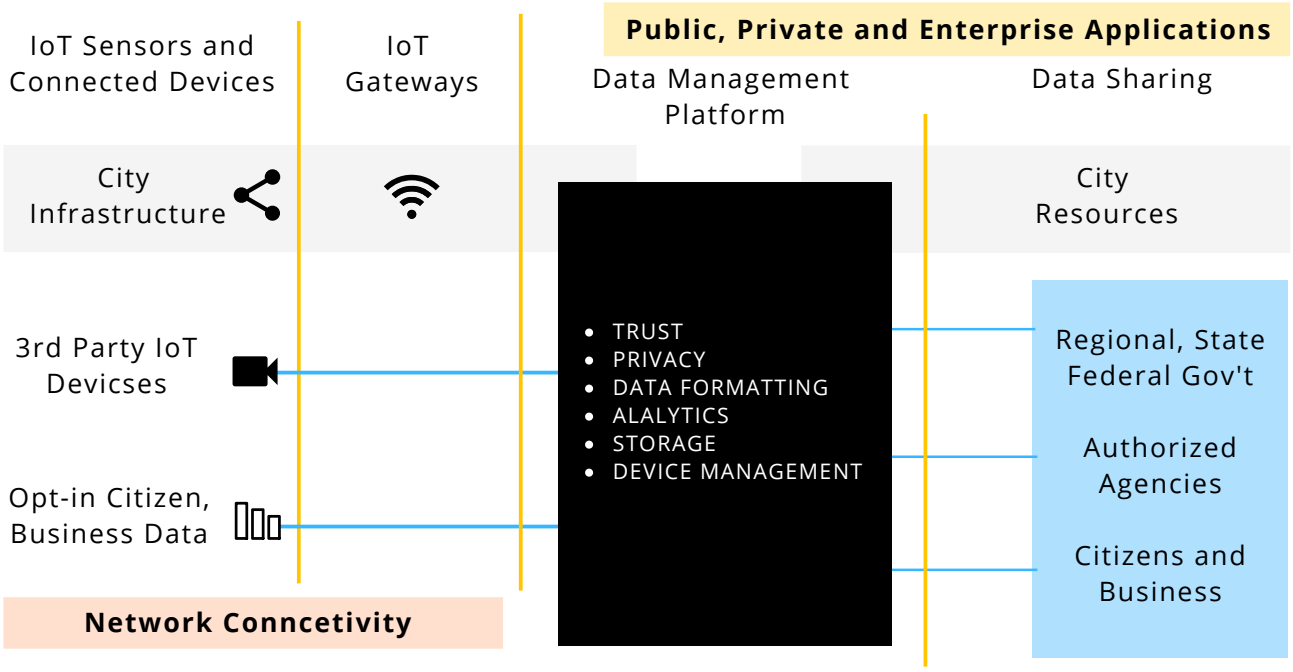
SHIFT IN THE NATURE OF DATA



INDUSTRY FORCES

Smart Cities compete within each other, In this section we will focus on the stakeholders and how they interact with one another.

SUPPLIERS AND OTHER VALUE CHAIN CHAIN ACTORS



POWER OF STAKEHOLDERS

People: low

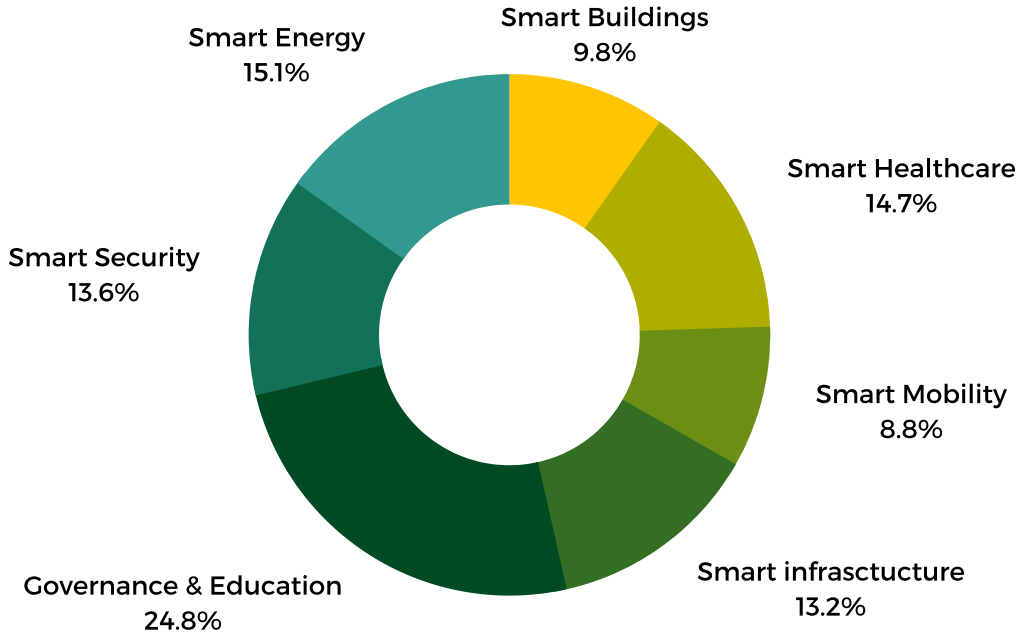
Investors: high

Government: high

Suppliers: high

MARKET FORCES

SMART CITY MARKET SEGMENT



Globally, 2012 - 2020

NEEDS AND DEMANDS

- Customers' needs: easy, fast, efficient access to transport, knowledge and internet connections.
- Biggest unsatisfied customers' needs: Transport, food, housing.
- What do customers want to get done: improve quality of life.
- Demand increasing on: transport, internet.
- Demand decreasing on: crowd, noise pollution and overall, all pollutions.

MARKET ISSUES

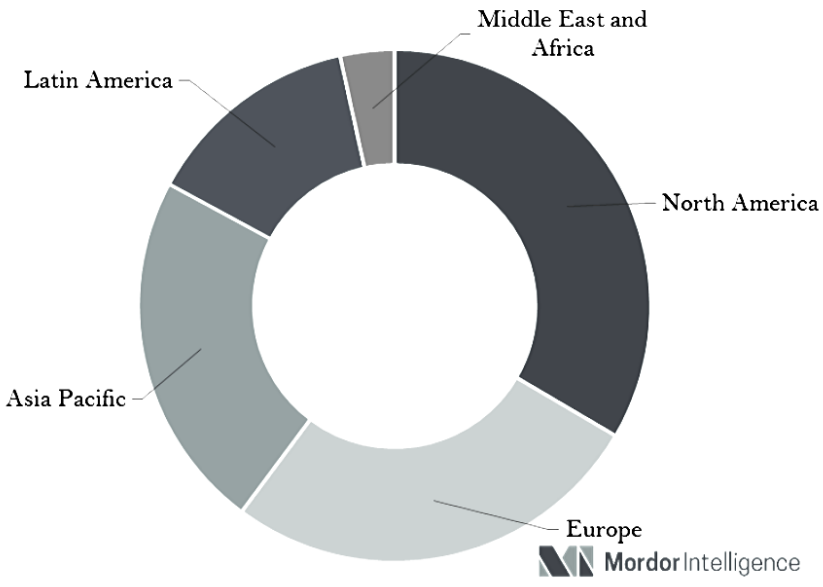
- Risk to see these cities of the future become technological showcases, placing the financial interest above that of the city dwellers.
- Risk to see a security outbreak
- Risk of the city selling data
- Risk of having too much data collected on citizens
- Too many cameras Judging criteria unclear

MACRO-ECONOMIC FORCES

GLOBAL MARKET

- Economy in a boom or bust phase
- A World Bank analysis of 750 cities around the globe found that from 2005 through 2012, economic growth in 72 percent of cities outpaced their respective national economies. By 2025, the world's top 600 cities are expected to account for 60 percent of global GDP. London today accounts for almost a fifth of the United Kingdom's gross product. In the United States, the Northeast corridor (Boston to Washington, D.C.) and the Los Angeles metropolitan area together account for nearly a third of the national GDP.

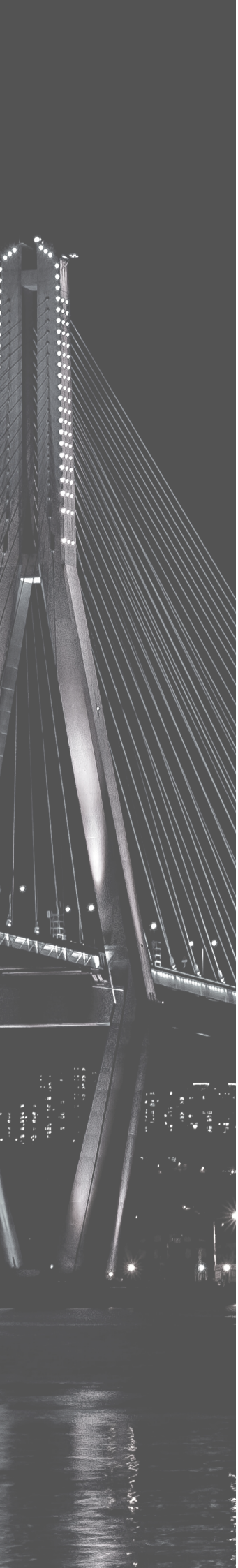
REVENUE DISTRIBUTION WORLDWIDE, 2017



The Smart City industry is projected to be

$400 BILLION

by 2020



MOST ADVANCED SMART CITIES

There are different approaches and criteria to identify and rate the most smart cities. Our research was based on the IESE Cities on Motion Index that include following criteria:

- HUMAN CAPITAL
- SOCIAL COHESION
- ECONOMY
- GOVERNANCE
- ENVIRONMENT
- MOBILITY & TRANSPORTATION
- URBAN PLANNING
- INTERNATIONAL OUTREACH
- TECHNOLOGY

City	Economy	Human Capital	Social Cohesion	Environment	Governance	Urban Planning	International Outreach	Technology	Mobility and Transportation	Cities in Motion
New York-United States	1	4	109	99	38	1	3	5	4	1
London-United Kingdom	4	1	68	40	5	7	2	6	2	2
Paris-France	7	8	87	49	43	3	1	12	1	3
Tokyo-Japan	2	5	48	11	40	32	17	27	22	4
Reykjavik-Iceland	27	83	47	1	27	66	121	7	7	5
Singapore-Singapore	13	39	90	10	8	39	5	2	63	6
Seoul-South Korea	15	11	38	25	22	40	20	10	3	7
Toronto-Canada	28	24	28	55	4	2	25	16	68	8
Hong Kong-China	19	12	147	21	16	10	16	1	87	9
Amsterdam-Netherlands	36	46	26	36	23	13	6	3	13	10
Berlin-Germany	66	7	3	54	14	49	4	33	6	11
Melbourne-Australia	34	18	8	26	2	19	10	48	38	12
Copenhagen-Denmark	12	54	23	3	13	90	32	20	43	13
Chicago-United States	10	10	96	127	46	5	9	28	42	14
Sydney-Australia	35	15	20	22	26	17	21	8	76	15
Stockholm-Sweden	5	55	64	8	19	45	36	25	44	16
Los Angeles-United States	3	2	79	144	7	23	11	38	112	17
Wellington-New Zealand	22	85	15	2	25	14	132	62	15	18
Vienna-Austria	72	31	36	18	18	41	8	23	14	19
Washington-United States	11	6	72	128	21	12	49	32	41	20
Boston-United States	14	3	61	118	12	30	55	39	77	21
Helsinki-Finland	32	57	1	12	6	61	50	55	67	22
Oslo-Norway	17	62	21	13	51	48	64	24	78	23
Zurich-Switzerland	24	40	4	24	9	97	62	31	75	24
Madrid-Spain	64	34	53	50	34	37	19	21	9	25
Barcelona-Spain	78	37	86	66	15	16	14	15	12	26
San Francisco-United States	6	13	75	110	70	28	41	14	98	27
Auckland-New Zealand	18	87	27	14	52	27	70	65	69	28
Bern-Switzerland	47	72	2	73	1	108	131	107	31	29
Dublin-Ireland	16	80	22	35	45	75	44	17	100	30
Hamburg-Germany	57	27	33	67	31	44	48	53	11	31
Geneva-Switzerland	31	70	25	68	3	93	80	13	54	32
Göteborg-Sweden	21	64	62	19	32	76	104	73	20	33
Basel-Switzerland	44	59	5	41	11	100	58	70	18	34
Ottawa-Canada	52	38	14	59	10	8	109	78	71	35
Vancouver-Canada	42	45	37	78	35	4	43	44	105	36
Munich-Germany	38	42	9	72	67	72	42	69	8	37
Montreal-Canada	51	51	39	63	24	9	23	118	80	38
Houston-United States	8	17	59	146	44	25	29	29	107	39
Prague-Czech Republic	82	61	31	23	60	94	27	18	66	40
Dallas-United States	9	19	81	134	57	55	45	66	104	41
Frankfurt-Germany	45	32	67	93	81	29	34	94	29	42
Rotterdam-Netherlands	75	58	18	56	82	11	92	61	21	43
Lyon-France	43	60	45	52	63	38	67	101	36	44
Milan-Italy	69	35	92	57	104	47	46	71	16	45
Philadelphia-United States	20	14	93	143	62	42	59	63	85	46
San Diego-United States	25	23	80	136	17	53	73	19	113	47
Brussels-Belgium	65	95	69	47	71	59	53	45	19	48
Riga-Latvia	84	78	78	5	72	24	106	49	47	49
Tallinn-Estonia	83	84	54	4	96	26	126	30	59	50
Miami-United States	29	20	107	132	89	46	22	46	90	51
Lisbon-Portugal	88	66	77	9	74	95	33	41	93	52
Budapest-Hungary	110	52	101	17	64	70	35	34	65	53
Cologne-Germany	67	47	19	98	37	118	54	60	55	54
Stuttgart-Germany	49	53	13	64	68	113	79	116	45	55
Osaka-Japan	41	49	60	30	83	104	74	96	84	56
Shanghai-China	60	16	148	149	30	56	26	52	5	57
Birmingham-United Kingdom	53	22	29	74	41	63	98	90	116	58
Manchester-United Kingdom	56	21	30	104	58	82	65	75	108	59
Dubai-United Arab Emirates	54	130	44	151	33	112	13	4	102	60
Vilnius-Lithuania	91	68	98	16	39	52	114	84	40	61
San Antonio-United States	23	26	84	133	97	57	101	42	79	62
Valencia-Spain	98	97	50	43	20	60	112	74	25	63
Warsaw-Poland	108	65	58	83	50	15	30	114	58	64
Eindhoven-Netherlands	58	73	7	113	49	21	162	51	60	65
Rome-Italy	76	50	120	107	69	129	15	50	23	66

IESE Business School - IESE Cities in Motion Index Report

FOCUS CITIES

We decided to focus our further research on

a) Songdo, South Korea
b) Hong Kong,
c) Milan, Italy
d) Paris, France

A

SONGDO, SOUTH KOREA

Songdo 1st smart city built from scratch It was build to be envisioned as a sustainable, low-carbon, and high-tech utopia.

2001
Conception

2003-2020
Date of project

252,000
Intended population

100,000
Current population

86 km²
Total size

9 km²
Business district size

FINANCING STRATEGIES

"The project is a joint venture between the City of Incheon, Gale International (61%), POSCO E&C (30%), and Morgan Stanley Real Estate (9%). Stanley Gale, the developer, has invested $100 million of his own money. Asia Development institute, Arup & Partners, and CISCO Services Korea are also key investors." This model is supported by the government, which uses a technology software provider to carry out the project.

ESTIMATED COSTS: USD $40 BILLION

PROJECTS

TRANSPORTATION

1. Car traffic will be constantly measured and regulated through RFID chips integrated with cars.
2. These chips will allow geolocation data to be sent to a monitoring center to identify areas of congestion.
3. Citizens will also be able to consult the status and timetable of public transport at any time via their smartphone.
4. Creation of 25 km of bike paths and extensive walking paths. Cable cars over Songdo's bay.
5. Everything can be done remotely, from opening the front door to attending college classes.

SAFETY

1. Criminal vehicle tracking and monitoring unusual activities through motion detecting technology.

SUSTAINABILITY

1. Waste collection will also generate data. Residents will be able to use a smart card to generate data. The city's goal is to eliminate the need for garbage trucks. Each household will have a unit from which waste will be directly collected and transferred to the treatment centre. The waste will be used to generate energy for the city.
2. Leadership in Energy and Environmental Design Certification
3. Urban farming : 40% green space.

ATTRACTIVENESS

1. 4 universities, Professional dev programming for local corporations; Free Economic Zone & Tax incentives

RESULTING “RICH CLUSTER”

Sanitised, this first South Korean smart city has not been as successful as hoped and attracts above all wealthy families, attracted by the quality of services.

- Building of a Smart City is expensive.
- Expensive schools.
- Suffering from being one hour forty-five minutes away from Seoul
- in the works - Songdo has attracted only 58 foreign companies
- Empty avenues
- No museum
- No cinemas
- Mini-Séoul
- Pollution from coal

NOT CULTURE/ CITIZEN ORIENTED
COUNTER EXAMPLE: MEDELLIN, COLOMBIA.

HONG KONG

According to IESE Cities on Motion Index Hong Kong is the 9th of the list of Smart Cities. It takes a leading position in the development of technology.

338
Skyscrapers (#1 city)

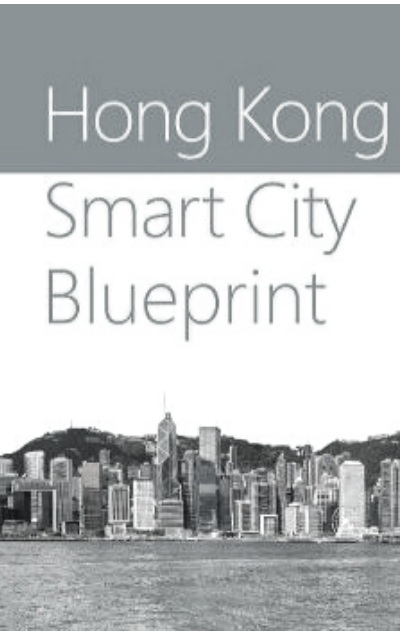
7.4 million
Current population

+0.8%
Pop growth rate

1.106 km²
Hong Kong total size

2017
Smart Blueprint project

Yearly
Updated public reports of smart city development

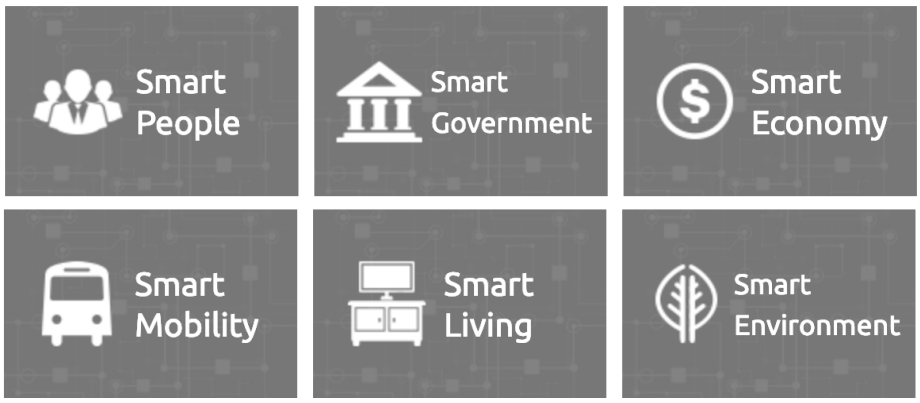


PROJECTS

SMART CITY BLUE PRINT

Embrace innovation and technology to build a world-famed Smart Hong Kong characterized by a strong economy and high quality of living

.The project in divided into:



TRANSPORTATION

- Introduce pilot intelligent traffic signal systems with sensors for pedestrians and vehicles at road junctions starting from 2021
- Bicycle friendly tracks
- Take forward "Walk in HK" and encourage people to walk more by launching a series of initiatives under four themes which include
- "Make it smart" by providing user-friendly information on walking routes
- "Make it connected" by enhancing pedestrian networks
- "Make it enjoyable" by making walking a pleasant experience
- "Make it safe" by providing a safe and quality pedestrian environment
- Octopus card payment system
- Wi-Fi.HK

MILAN ITALY

Milan has been ranked 1st Italian smart city for the fifth consecutive year by the ICity Rate 2018 report.

600 BC
settlement of Milan

1.7 million
Current population

+0.26%
Pop growth rate

181.8 km²
Milan total size

301,338 km^2
Italy's size

2011
Smart city approach

PROJECTS

THE SHARING CITIES PROJECT

The Sharing Cities project partners work in close cooperation with the European Innovation Partnership on Smart Cities and Communities. It works on several different measures, such as: mobility, building retrofit, Smart Energy Systems, Urban Sharing Platform and Smart Lamp posts. Sharing Cities also offers a framework for citizen engagement and collaboration at local level, thereby strengthening trust between cities and citizens.

The demonstration districts in 'lighthouse' cities Lisbon, London and Milan will implement replicable urban digital solutions and collaborative models. The Royal Borough of Greenwich in London, Porta Romana/Vettabbia in Milan and downtown Lisbon will retrofit buildings, introduce shared electric mobility services, and install energy management systems, smart lamp posts and an urban sharing platform through engaging with citizens. 'Fellow' cities Bordeaux, Burgas and Warsaw will co-develop, validate, or implement the above solutions.

GOALS:

1. Aggregate demand and deploy smart city solutions
89 cities engaged and 50 cities using products

2. Deliver common and replicable innovative models
10 replicable solutions

3. Attract external investment
€500 million in external investment

4. Accelerate take-up of smart city solutions
identify three business models that prove the acceleration of uptake (e.g. refurbishment, smart lamp posts)

5. Pilot energy efficient districts
reduce energy bills by €600,000 per annum for 15,000 district residents

6. Shift thinking irreversibly to local renewable energy sources
100 cities engaged and 50 cities using products

7. Promote new models of e-mobility
make at least 10% of local citizens choose electric over fossil fuel vehicles

8. Successfully engage with citizens
Prove the active participation of at least half of the 15,000 locals affected by the building renovations

9. Exploit city data to maximum effect
Demonstrate the real value of city data for users, including SMEs and startups. Achieve a twofold increase in datastore use by 2020

10. Foster innovation at local level, promote the creation of new businesses and jobs
Create at least 100 jobs in three districts

PARIS, FRANCE

Paris is considered the top 3 smart city in the world with the strongest score in transportation. Its Smart City project began in 2017.

500,000 years
Pre-Conception

401 AD
Paris with Gaulois

2.2 million
Current population

+0.52%
Pop growth rate

105.4 km²
Paris total size

643,801 km²
France's size

TOURISTIC DESTINATION
38 MILLION TOURISTS/YEAR

 # OF THE POPULATION
AND
 # OF TOURISTS
CONSTANTLY INCREASES

Musée du Louvre
8 100 000
+9,5%

Château
de Versailles
7 714 389
+15%

Tour Eiffel
6 207 303
+5,6%

Centre Pompidou
3 370 872
+1%

Musée d'Orsay
3 177 842
+6%

Cité des sciences
et de l'industrie
2 439 072
+11%

PROJECTS

SUSTAINABILITY

Since 2007, Paris has had a climate plan that aims to reduce energy consumption in the Paris metropolitan area by 25% by 2020 compared to 2004 levels.

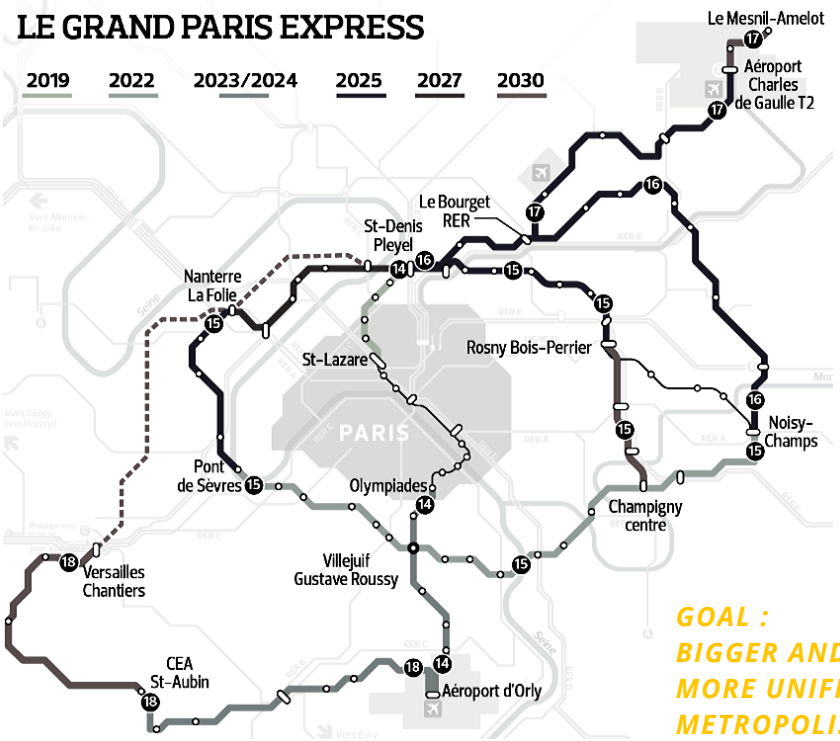
1. Moving towards a post-carbon city
2. Targeting a zero waste strategy: Recycling and repurpose wastes
3. Urban farming & Greening the city to adapt to climate change
4. Sustainable urban logistics : Expanding river and rail transportation, encouraging bulk shipping and rethinking last-mile delivery:

TRANSPORTATION

Sustainable urban logistics : Expanding river and rail transportation, encouraging bulk shipping and rethinking last-mile delivery

GRAND PARIS

200 km of automatic lines, the same as the current Metro, and 68 stations: the Grand Paris Express is the largest urban project in Europe.

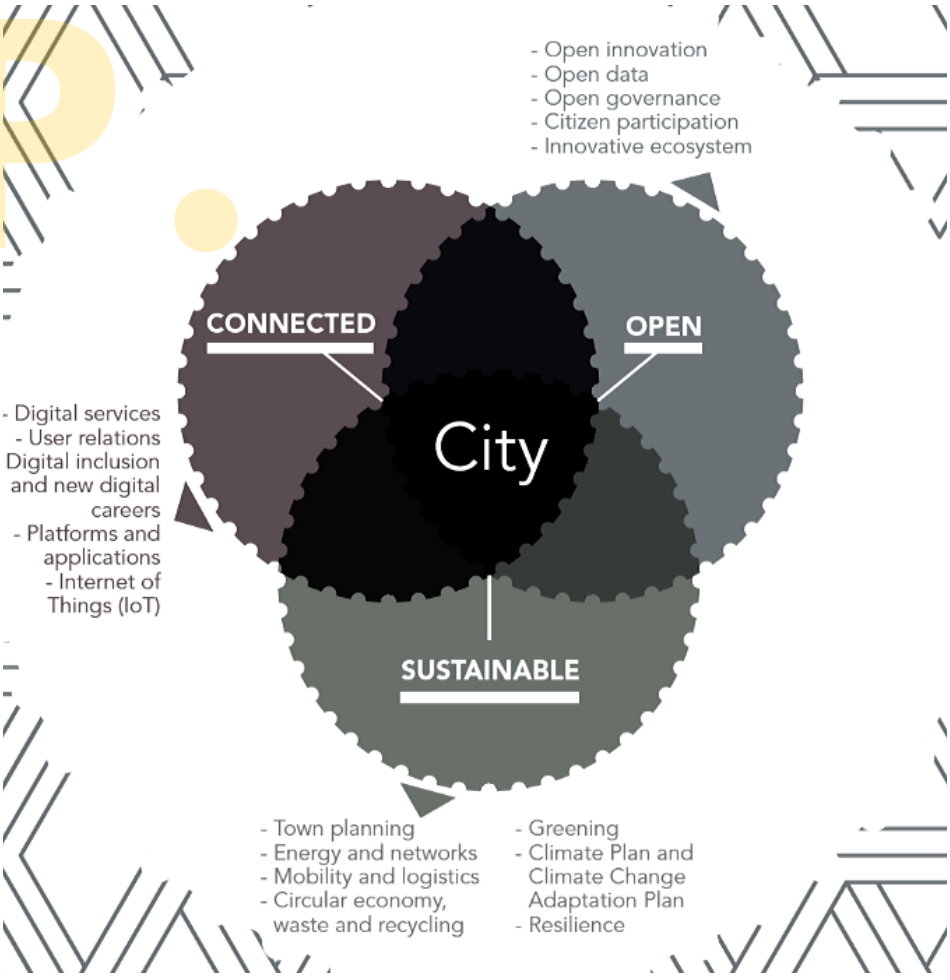


GOAL : BIGGER AND MORE UNIFIED METROPOLIS

BUSINESS MODEL CANVAS (BMC)

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
Entrepreneurs Start-ups Advertisers Telecom brands Big Data companies Government Citizens Inhabitants	Transform data simply and accessibly, in order to produce services that revolutionize citizens lives. Data collection via various sensors and via crowdsourcing, peer-to-pee, feedback and passive data collection... **Key Resources** Sewer system Electricity grid Metro Public spaces Real time data Urban life and the digital economy	OPEN Open innovation Open data Open governance Citizen participation Innovative ecosystem SUSTAINABLE CONNECTED SEE SLIDE AFTER	Citizens do not acknowledge their participation and contribution to Smart Cities and simply rely on their government **Channels** Internet Mobile App Website Social Network Forums Meetings Videos	Government Citizens Tourists Everyone involved with Paris

Cost Structure	Revenue Streams
Cost-driven structure Long-term vision Long and short-term projects Not a supply/demand price dynamic SEE SLIDE AFTER	VAT and overall, taxes Transportation fees Strategic advertisement



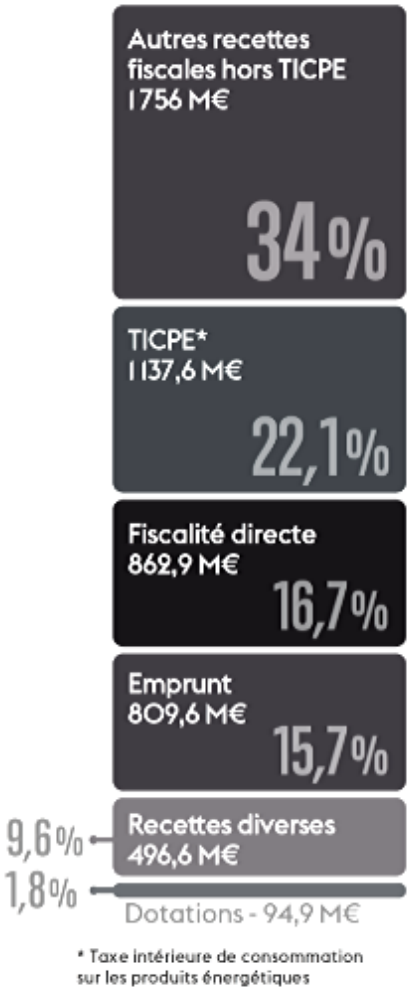
COST-STRUCTURE OF PARIS // IDF // SMART CITY PROJECT

Budget du conseil régional d'Île-de-France

UN BUDGET RÉGIONAL DE 5,15 MILLIARDS D'EUROS

Le budget 2018 s'inscrit dans une maîtrise des charges de fonctionnement, un programme ambitieux d'investissement et des pratiques saines de gestion de la dette.
Il se caractérise par trois axes forts : accélérer la transformation écologique, renforcer l'économie régionale et lutter contre les fractures territoriales.

RÉPARTITION DES RECETTES



* Taxe intérieure de consommation sur les produits énergétiques

RÉPARTITION DES DÉPENSES

Transports et mobilités : 1406,9 M€
27,3% du budget

Économie, innovation et formation : 1091,1 M€
21,2%

Lycées : 778,3 M€
15,1%

Charge de la dette et divers mouvements financiers : 691,8 M€
13,4%

Administration régionale : 545,2 M€
10,6%

Egalité sociale et territoriale : 364,4 M€
7,1%

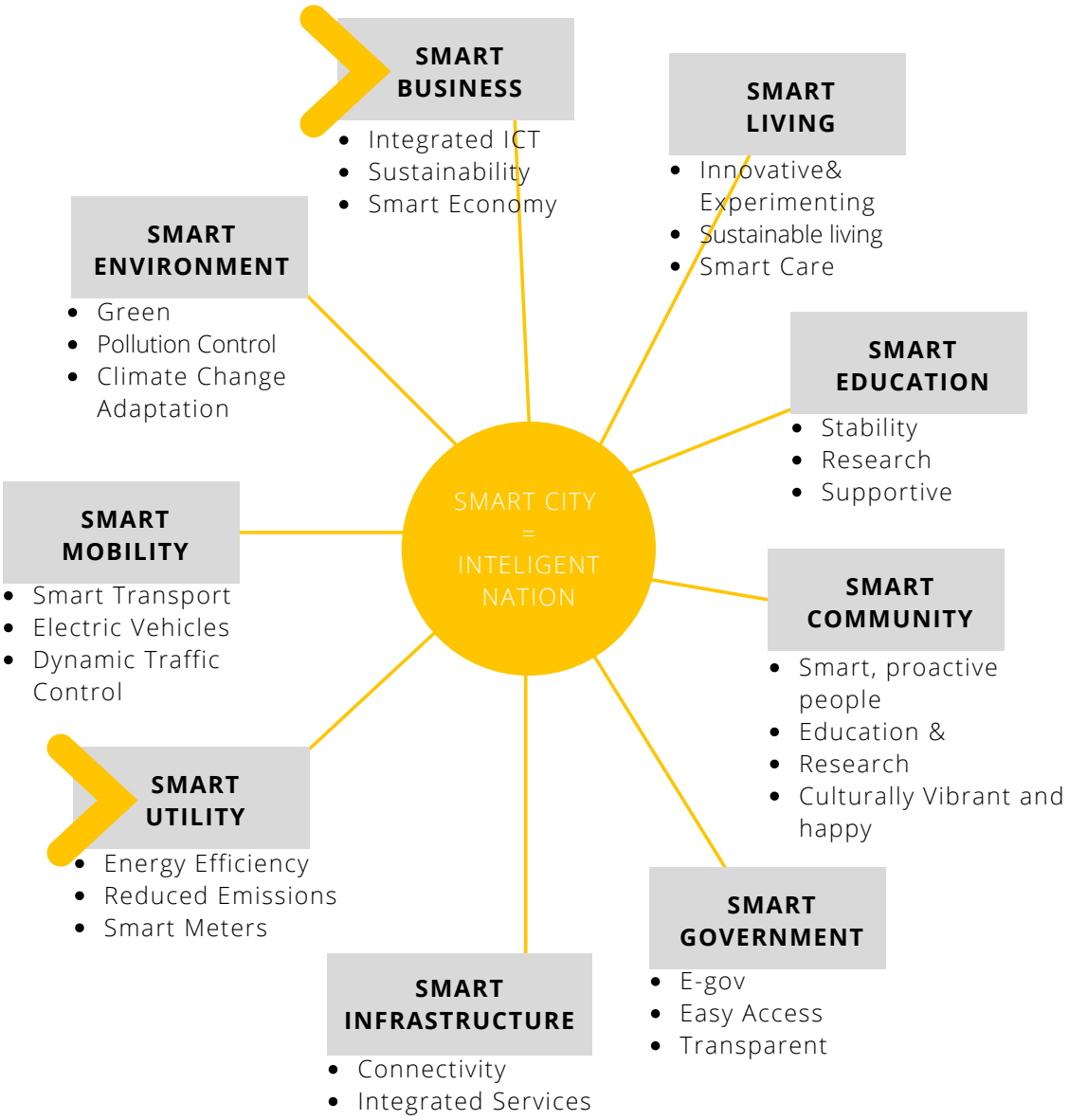
Environnement et cadre de vie : 199,3 M€
3,9%

Action internationale et Europe : 80,6 M€
1,6%

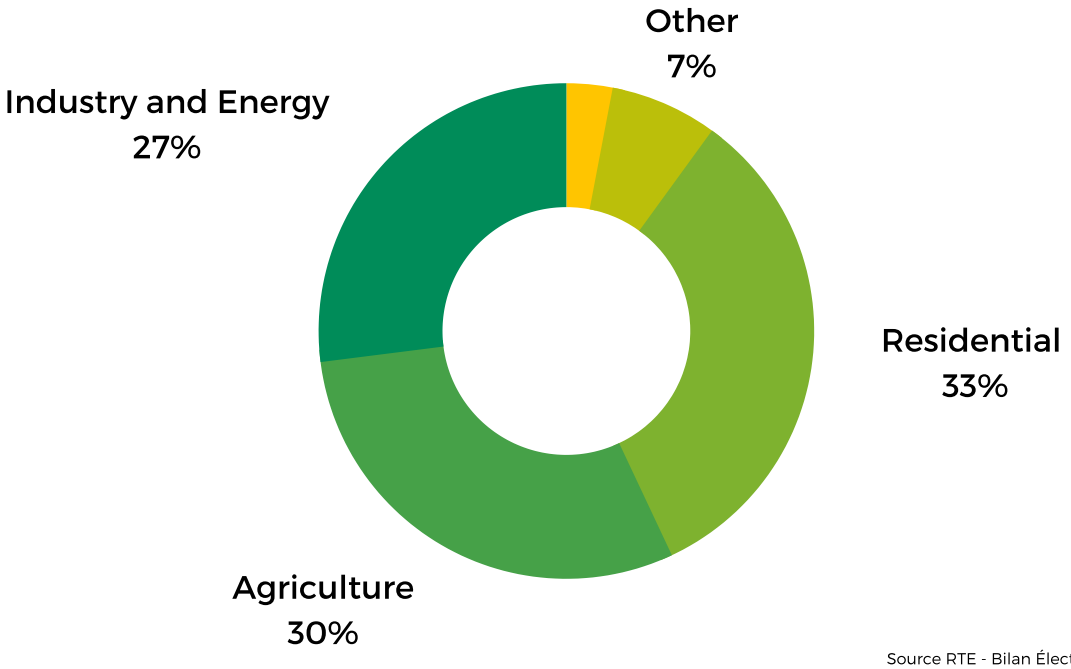
Source : Conseil régional d'Île-de-France

PARIS AND ENERGY

For the further research, we decided to focus on only several aspects of a smart city with the focus in Paris.



ENERGY CONSUMPTION IN FRANCE



Source RTE - Bilan Électrique 2017

ILE DE FRANCE IN NUMBERS

île de France

€17,9 million
Energy invoice per year

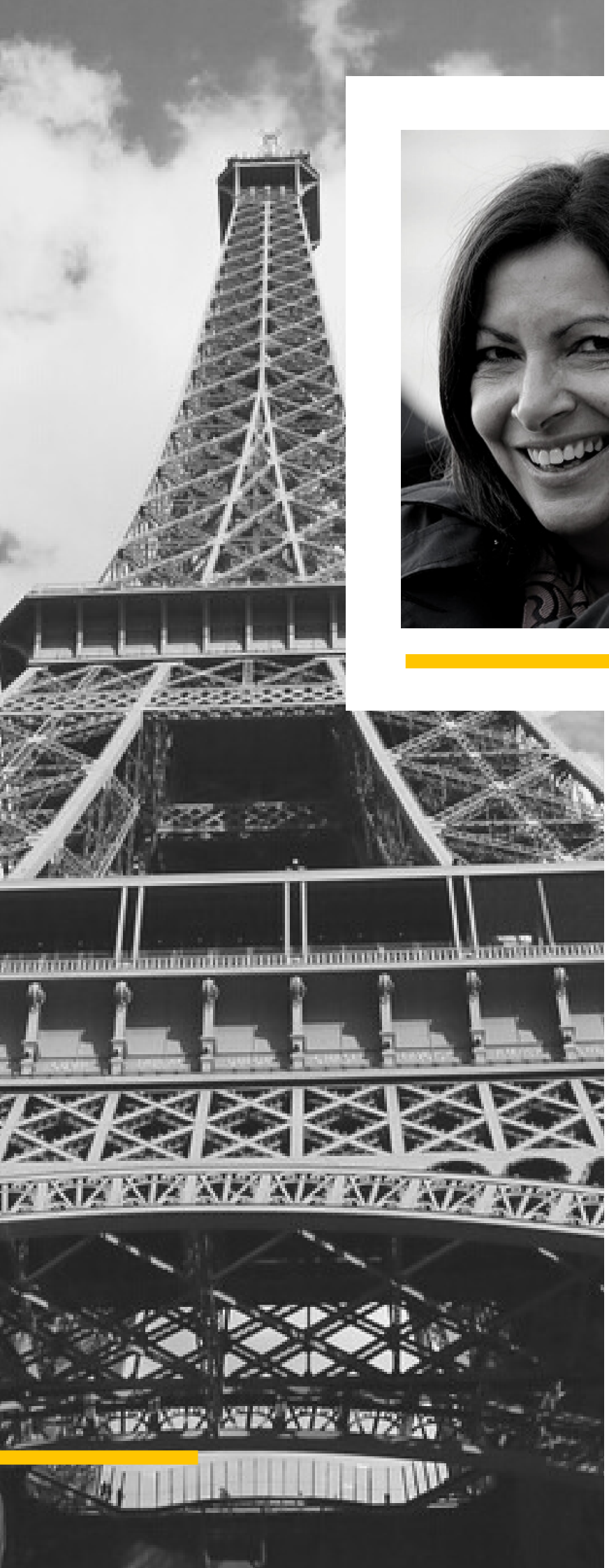
€990
Energie invoice per inhabitant

+24%
Consumption since 1990

287 GWh
Energy consumption per inhabitant per year

303 TWh
Energy consumption per year

+60%
Gas price since 2005



7.8 MILLION KWH OF ELECTRICITY PER YEAR

=

$1.12 MILLION

Energy cost, distribution and production are the current problems that politicians pay close attention to. Paris Mayor Anne Hidalgo even suggested not to light the Eiffel tower in order to save budget on energy.

ENERGY SOURCES

NON-RENEWABLE

- Fossil fuel
- Coal
- Nuclear
- Natural Gas

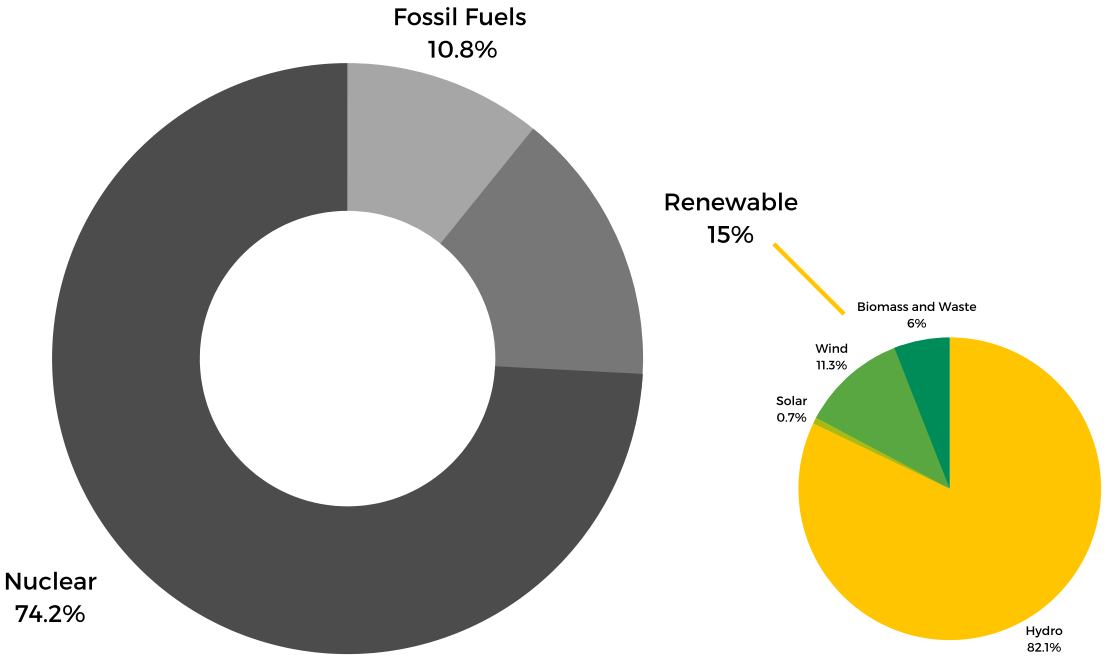
OR

RENEWABLE

- Solar
- Wind
- Hydropower
- Geothermal
- Biomass

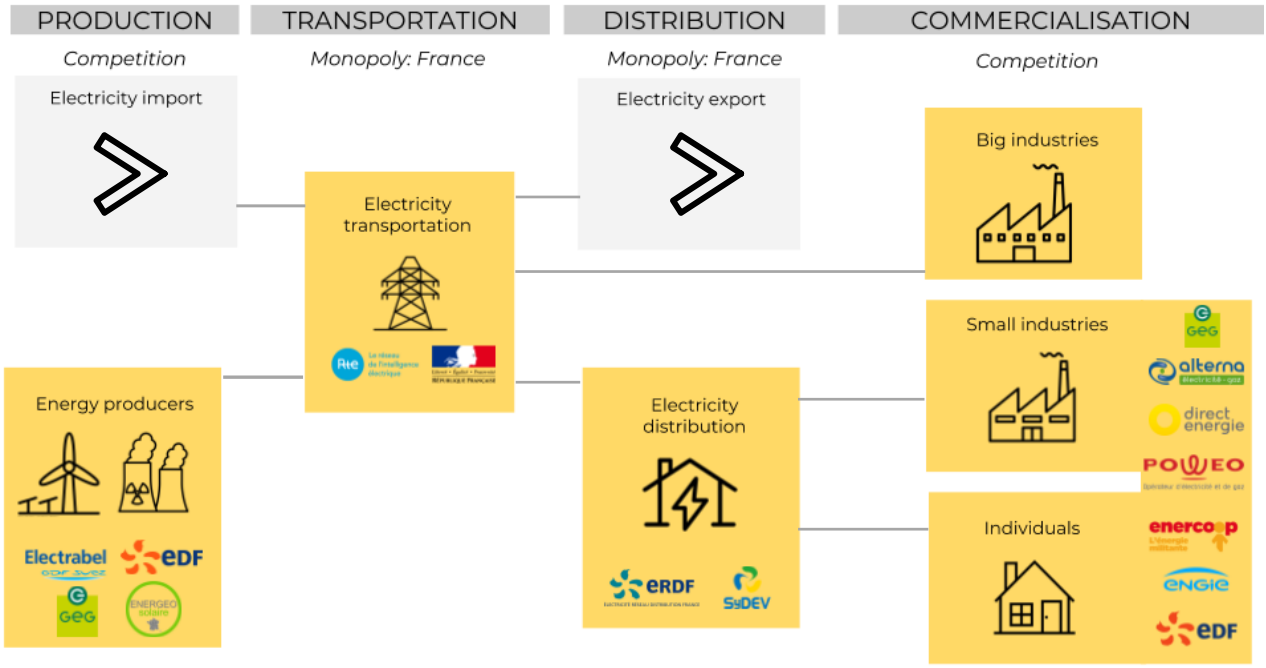
FRENCH ENERGY MIX

On 4th December 2015, over 700 city leaders from around the world joined Paris Mayor Anne Hidalgo at the Paris City Hall in committing to 100% renewable energy by 2050.
And at least 40% renewable energy by 2030.

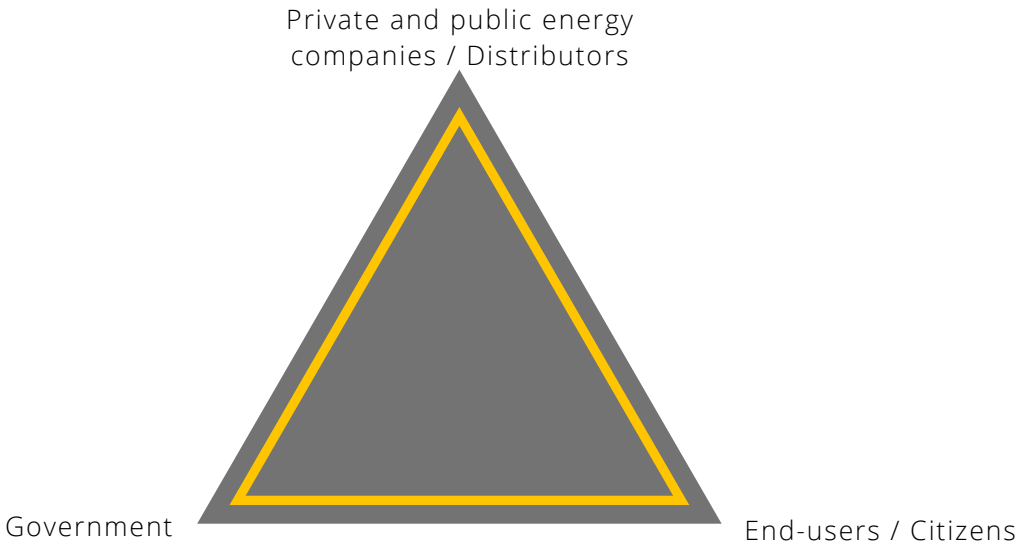


PARIS ENERGY SYSTEM

The urban energy system is an interconnected set of elements that is coherently organized in a way that brings distributes energy through all city infrastructures, using electrical grid.



ENERGY STAKEHOLDER MAP



DOES THE EXISTING SYSTEM AND ENERGY MIX HAVE ANY NEGATIVE IMPACTS?

ANALYSIS OF THE SOURCES OF ENERGY

NUCLEAR

+

- Amount of potential energy is 10 million times more than fossil fuels
- ⅙ of CO_2 emissions (little air pollution)
- Little land disruption

−

- Nuclear waste is highly radioactive for thousands of years
- Low net energy yield due to mining & processing uranium, building & operating the plant
- Storage and disposal of waste
- Safety / malfunction issues

FOSSIL FUELS

+

- Can generate good amounts of energy within a long period of time
- Run on coal, oil and gas

−

- Produce a lot of carbon dioxide
- Affect climate change
- Can cause acid rain
- Can cause sulfurous oxide
- Can cause pollutants
- Is non-renewable

RENEWABLE ENERGY

+

HYDRO

- Renewable as long as water is not overdrawn from river system
- Clean: no greenhouse gas emission

−

- Dams cause numerous disruptive ecological effects to riparian environments
- Dams bring a mix of impacts for people (visual, sound …)

+

WIND

- Renewable as long as wind blows
- Clean: no greenhouse gas emission
- Least expensive source of electric power
- Pay-off over time

−

- Wind does not always blow
- Limited building locations
- Power storage is limited
- Expensive to install

INNOVATION AND ENERGY

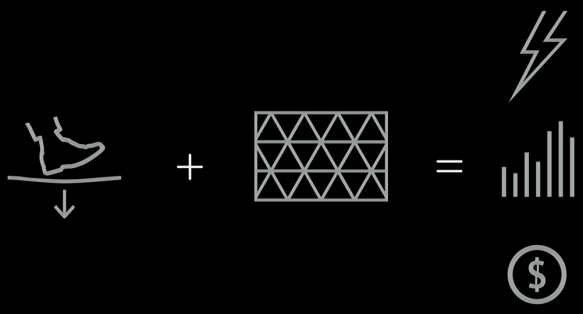
SOUNDSCRAPER: NOISE

The soundscraper takes advantage of city noise pollution by capturing airborne sound and converting it into usable energy. One of the most abundant energy sources is ambient motion. Vibrations can provide plentiful energy, and can be transferred through many media, making this form of kinetic energy very useful.

PAVEGEN PAVEMENT

Pavegen creates high engagement with citizens by converting their footsteps into energy, data and rewards. We do this for smart cities and transport hubs, retailers, brands and educators. Apps, lighting, sounds and rewards provide instant feedback.

HOW DOES PAVEGEN TECHNOLOGY WORK?

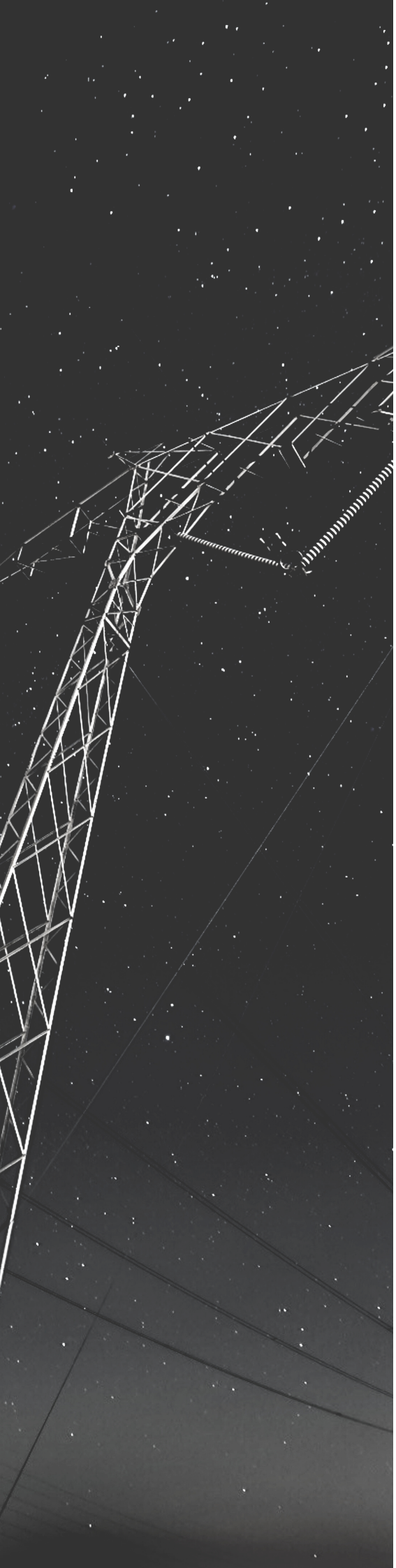


As pedestrians walk across the Pavegen system, the weight from their footsteps compresses electromagnetic generators below, producing 2 to 4 joules of off-grid electrical energy per step.

Low-Power Bluetooth beacons connect to smartphone apps and the system can also communicate with building management systems.

ENERGY FROM SEWAGE

A new data center in the United States is generating electricity for its servers entirely from renewable sources, converting biogas from a sewage treatment plant into electricity and water. Siemens implemented the pilot project, which went into operation in 2014, together with Microsoft and FuelCell Energy.



SUMMARY

Our surprising insight was that France uses mostly non-renewable energy sources, which are polluted and dangerous because the energy system does not allow the increase and distribution of renewable energy efficiently including the citizen in the system. It affects several criteria of the smart city, that are economy, environment and urban planning.

Needs:

1. Renewable and cheap energy (Smart solution)
2. Follow societal trends (local, non-polluting, safe)
3. Paris landscape coherency

ORTHODOXIES

1.

Energy cannot be created inside Paris.

Why? Because storing energy takes space and Paris is crowded.
Why? Because we need huge machine to create it.
Why? Because we are renewable and non-renewable energy sources needs. many treatments before they work.
Why? Because they do not come in the shape of the energy we use.
Why? Because we need a specific type of energy that is efficient and usable.

How might we create energy inside Paris that is efficient, sustainable and usable?

2.

Parisians and tourists in Paris cannot contribute to creating energy.

Why? Because energy is created by energy companies.
Why? Because they have primary resources and elements to transform electricity.
Why? Because it is costly material and only them can afford it.
Why? Because energy creation is not democratized and seems unreachable.
Why? Because no one thinks of themselves and their environment as a source of energy.

How might Parisians understand that themselves and their environment can generate energy and how might they contribute to creating some?

3.

Energy is expensive.

How might we decrease the cost of renewable and/ non-renewable energy by reinventing the system?
How might we create a system where citizens benefit and contribute to the system of energy creation?

4.

The energy system cannot be changed.

How might we include our solution in the current system of energy production?
How might we motivate/encourage the stakeholders to shift to renewable energy?

5.

Population is increasing and they are actors in smart cities.

How might we use overpopulation and tourism growth in Paris to address the creation of smart solution for smart energy.

TODAY

NOT SMART

1. Dependent
2. Wealth unequally distributed
3. High dependency on suppliers
4. People have no power
5. Expensive
6. Increase in health inequality
7. Clustered economic system
8. Energy is expensive

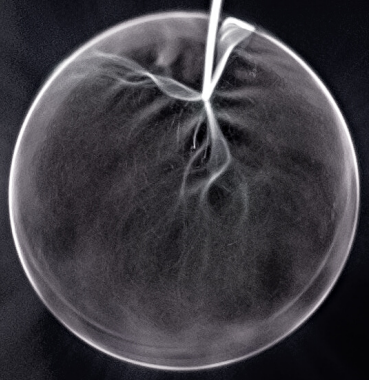
TOMORROW

SMART

1. Removable
2. Distributed health and wealth
3. Dependent on many sources
4. Gives power to people
5. Cheap energy
6. Power equilibrium

PROBLEM DEFINITION

How might Parisians and tourists in Paris contribute to producing renewable energy for Paris' urban usage, by benefiting from Paris's Smart City strengths, using data?



SOLUTION

Addressing the needs for renewable and sustainable energy in Paris we created a prototype of a company that will focus on improving Parisians homes for more eco-friendly local energy production.

DESIGN PRINCIPLES:

1. Benefit from the crowd
2. No change in habits
3. A project that could scale / scalable
4. Easy to purchase and install
5. Crowdsource
6. Stylish
7. Intuitive
8. Good material
9. Long-lasting
10. Renewable energy
11. Efficient

INTRODUCING **THE GRID.**

THE GRID.

THE GRID wants to empower Parisians and its visitors to create their own energy at home by providing them with accessible and easy-to-use energy production devices.

POSITIVE IMPACT WITHOUT CHANGING YOUR HABITS.




THE GRID offers devices that transform your everyday habits into energy.
Flushing down the toilet, taking a shower, exercising and even sleeping can and should be beneficial not only for the environment but also for your wallet.

BMC

Key Partners

- Tesla
- Airbnb
- The ConRan shop
- Habitat
- Collaborators

Key Activities

- Development of devices
- Manufacturing
- Marketing and Customer Relationship
- Funding
- Partner Relationship

Key Resources

- Partnerships
- Manufactures
- Consulting
- Data Analysis

Value Propositions

Empowering Parisians and tourists of Paris o create sustainable energy at home by providing them with accessible and easy-to-use energy production devices, that will shift the way Paris collects and distributes energy in more eco-friendly and financially beneficial way.

Customer Relationships

- Customer support 24/7 (including home visits)
- App
- Online
- Phone
- One-to-one (Events)
- Co-creation +co-branding with partners

Channels

- Social Media Channels
- Events (pop-up)
- Airbnb Experience
- Conferences
- Online Store
- Online retailers (Amazon)

Customer Segments

- Environmentally aware citizens with middle and upper-middle income in Paris
- Tourists that care about sustainable energy
- Millennials
- Generation Z

Cost Structure

- Technology Development and Manufacture
- Patenting
- Healthcare Certification
- Content Creation and Marketing
- Distribution
- Salaries
- Research Development

Revenue Streams

- Sales
- Initial Investments
- Personal Donations
- Partnerships
- Potential Government Funding

HOW DOES IT WORK?

1. **BUY** online and **INSTALL** in your home hydro, kinetic and piezoelectric devices for in-house energy production.

2. **LIVE** your life and do your everyday habits while producing energy.

3. Wireless power transfer technology (WPT) will **COLLECT** produced energy in the battery and **DISTRIBUTE** it around your home.

4. **TRACK** your production and spending of energy from your phone by downloading THE GRID app for IOS or Android.

PRODUCT LINE

1. Kinetic device:
The Kinetic device is attached to any bicycle wheels or objects that can move in a continuous energetic way. The device is portable and converts movement into energy.

2. Hydro device:
The Hydroelectricity device is meant to be attached to water pipes, behind sinks, bathtubs, showers and toilets. The device will convert the water passing through into energy.

3. Piezoelectricity device:
The Piezoelectricity device is placed on the floor under couches, beds and any support on which you apply pressure. The device is meant to absorb pressure and will convert this pressure into energy.

4. Battery:
The battery will receive energy through wireless power transfer technology from all THE GRID devices. THE GRID will use Tesla open-source patents and technology to ensure that your energy is stored safely and in large quantities. The battery redistributes energy around your house, which can be tracked through THE GRID app (information includes production and energy spending, time of the day with the heaviest and lightest spendings).

MARKETING STRATEGY

Basing our marketing strategy on AIDA Model, we propose 3 months campaign in collaboration with our partners, starting in August 2020.

PHASE 1

ATTENTION & INTEREST (4 WEEKS)

- Social Media
- Indirect Posters (outdoors)

PHASE 2

INTEREST & DESIRE (6 WEEKS)

- Development of Social Media (more narrow targeting, increase $ investment)
- Posters
- Video ad release
- Installations of the devices around Paris (Metro, shopping malls and public toilets)
- Airbnb Experience best host competition (for free installation of the devices)

PHASE 3

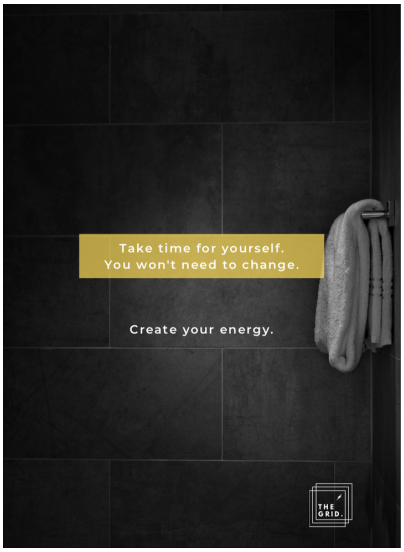
DESIRE & ACTION (2 WEEKS)

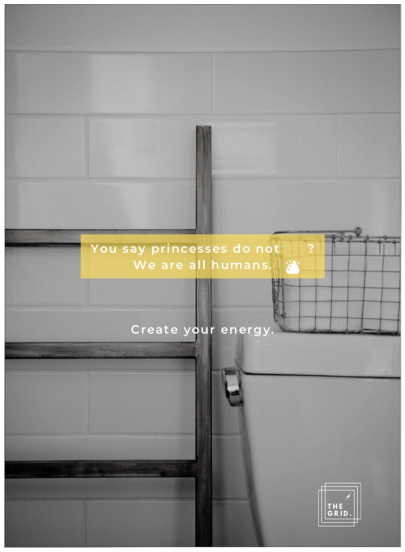
- Airbnb Experience (for guests)
- Products and App. Launch
- Influencer Experience in Paris (Celeste Barber),
- Cross brand marketing with partners.

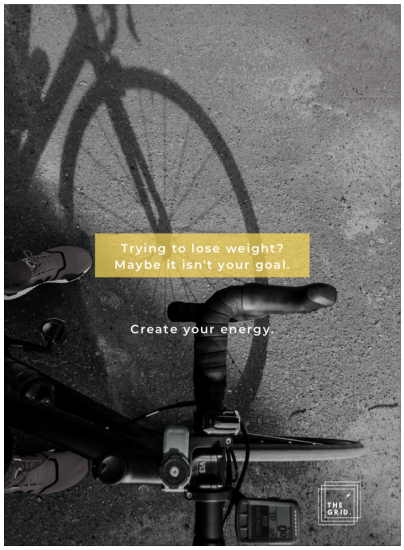
TONE + MOOD

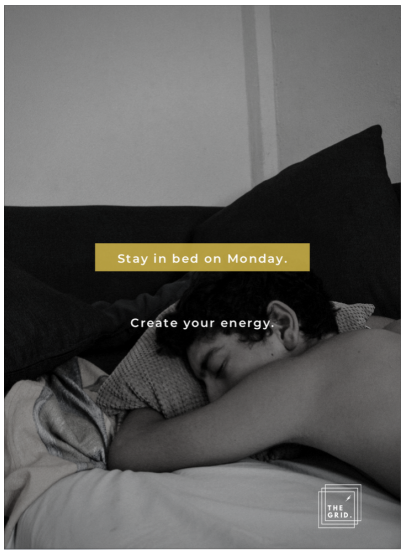
In its campaign THE GRID appeals to human habits and how difficult sometimes it is to change them, proposing solution for "clean energy with no effort".

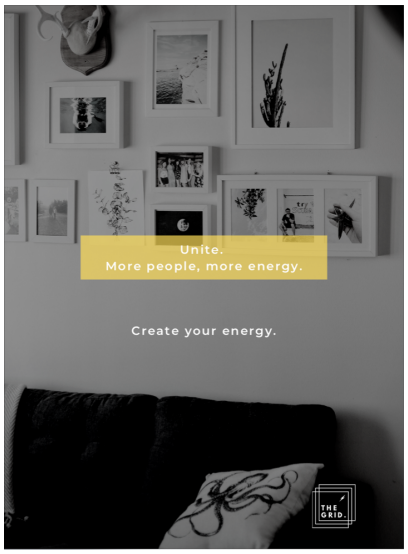
The campaign is **FRIENDLY, UNDERSTANDING, HUMOROUS.**

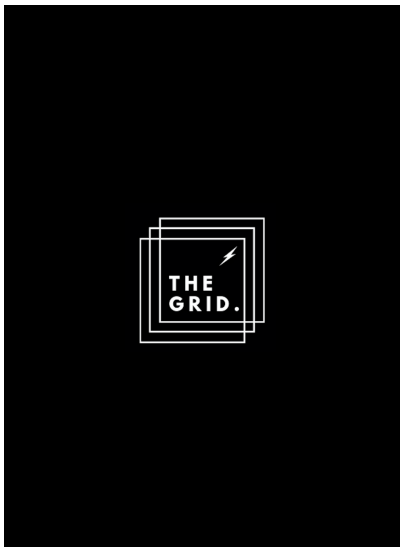












*examples of outdoors posters

TESTING

To predict the success of our business idea and its fit into the market, we have already launched 2 MINIMAL VIABLE PRODUCTS (MVP):

a) Explainer Video
b) THE GRID Website.

Now are testing it with our potential customer segment, collecting the responses on both MVPs.

A.

Youtube

B.

https://zelml734.wixsite.com/thegrid

OPPORTUNITIES MOVING FORWARD

We strongly believe that THE GRID will create smarter and more sustainable energy production for the future that will **a)** create better quality of life for residents and visitors **b)** contribute to economic competitiveness to attract industry and talent **c)** focus on environmental sustainability.

ADDITIONALY:

1. Provide smarter energy.
2. Deliver removable and easy energy devices
3. Distribute health and wealth
4. Dependent on many sources
5. Give power to people
6. Create cheap and sustainable energy sources
7. Contribute to the power equilibrium

THE GRID. + Deutsche Telekom = **OPPORTUNITIES**

Looking for the allies in creating smarter solutions to global problems, we believe that Deutsche Telekom could therefore contribute the data storage and management. Amongst the data generated through THE GRID are the local energy consumption of citizens and the types of devices they use, time, location, amount of created energy and much more. This data management and analysis could allow energy optimization, help to manage consumption and should encourage to use energy smartly.

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