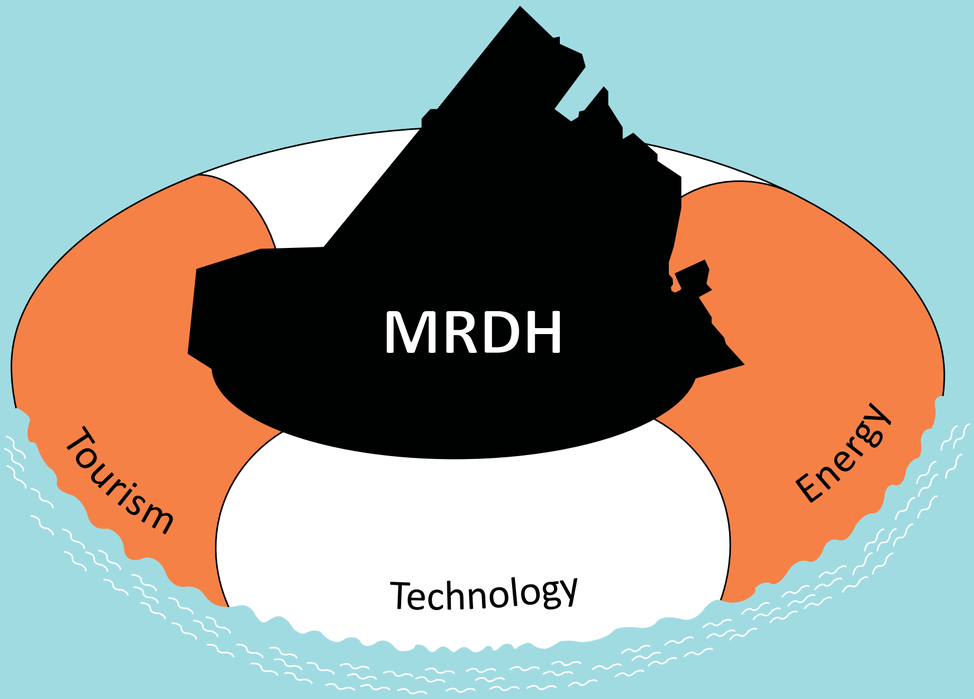


2068

Design Thinking

Cities all over the world are reinventing their positions, either driven by changes in national policies decentralizing governance or reacting to the reality of competition and collaboration on subjects such as economy, services or the changing number of inhabitants. Often this is generated out of a desire or perceived necessity to respond to the changing ambitions of industries and citizens. One only has to think of notions like 'Creative Cities', 'Metropolitan Regions', 'City Branding' and 'Self-regulation' to understand that traditional ways to organize one's community will fail to adequately address these emerging ambitions.
There is a need to improve decision-making and policy processes just as much as there is a need to service and renew spatial structures as demands are changing. One can state that changes in urban developments are driven by changes in population and their needs. Energy and sustainability issues have become a common consciousness deserving appropriate response in terms of policy and spatial planning. One can easily add to these examples.

These current challenges are becoming more complex and interwoven. Fed by a large number of sometimes contradictory and definitely various ambitions, they need to be addressed in a manner that justifies all involved. Changes are good. And by nature, changes are complex and difficult to implement. They are disruptive and evoke resistance. Change needs community, involvement, and commitment. The more complex a challenge is, the more actors or stakeholders need to be involved, and the more inadequate traditional means for development becomes.
One needs to build robust solutions, or better, robust environments and contexts. Solutions tend to address current situations incapable of adjusting to changing realities. It is exactly those rapidly changing realities – economic, political and social – that have led to the realization that innovation in governance and policymaking processes is crucial for a city to keep operating successfully. Intelligent ways to address and implement developments are needed. Intelligent in terms of creating efficient and economically viable solutions for both processes and implementations; intelligent as in being informed by relevant parties.

Current notions on 'Design Thinking' move towards inclusive and collaborative processes. These are aimed at efficiently producing inventories and analyses of stakeholders and context. Organizing effective prototyping presents essentially different strategic options and scenarios. Finally, and foremost, these processes create collaborative structures for professionals, administrators and citizens.

Studio

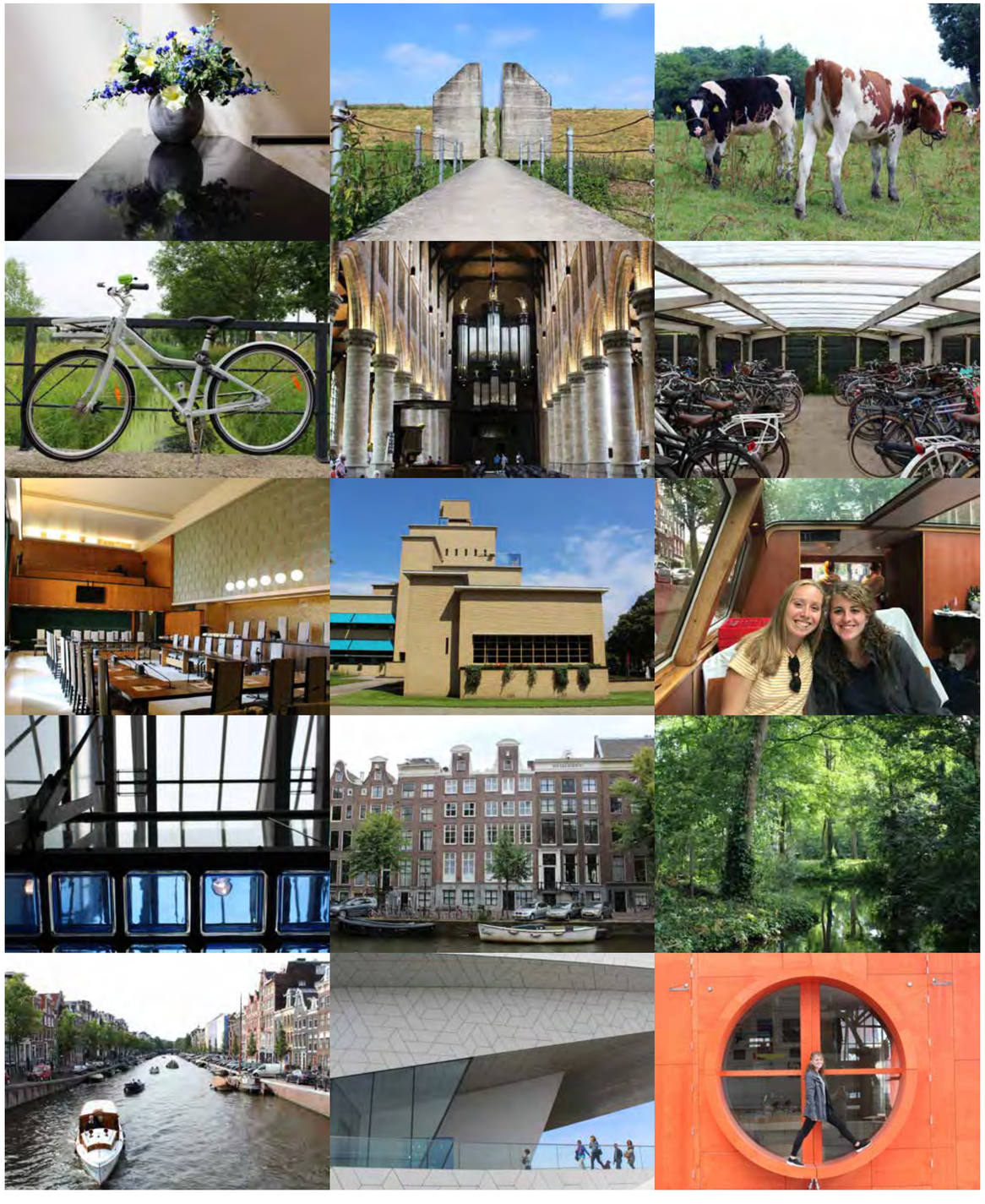
MRDH 2068 is a case study based research & design program. Students from the University of Kentucky – College of Design took on the challenge to research potential interventions for the municipality of Delft. Current global, national and regional ambitions and trends involve the position of the city of Delft in the upcoming Region Metropole Rotterdam The Hague (MRDH), the relation between the Delft University of Technology and the city itself and generic European challenges as changes in demographics, economy and resilience topics like environmental and social developments.

The research includes the current state of Delft in relation to the region and comparisons to similar cities in Europe and the US. Main focus for the development of various extreme scenarios is to enhance opportunities and ambitions with a special interest to the built environment.

Although the subject of research is realistic and based on actual ambitions, challenges and facts, the MRDH 2068 studio produces 'academic' results. It is not our aim to provide 'ready-to-use' solutions for either the municipality of Delft or other stakeholders. Our results are based on an open and suggestive approach and can be as extreme in terms of content and implication conditions (financial, political, etc.) as the research and development of scenarios dictate. As much as the developed scenarios and proposed (spatial) implementations are grounded in actual conditions and political, economic or cultural ambitions they are meant to question and unveil exactly those premises.

UNIVERSITY OF KENTUCKY: Tyler Bryan, Rachel Crosslin, Abbie Winfield
INSTRUCTORS: Siebe Bakker, Dré Kampfraath SUPPORT: Gijs Hoofs, Bob van der Nol
SCENARIOS: EAT, SLEEP, TOUR MRDH – Abbie Winfield, Green Future – Tyler Bryan,
MRDH: Global Smart Tech Connection – Rachel Crosslin,
PUBLICATION: University of Kentucky students & bureaubakker
INFO: Siebe Bakker: mail@bureaubakker.com

DELFT SCENARIOS 06 – MRDH 2068



JUNE JULY 2018

EAT. SLEEP. TOUR MRDH

Tourism started to develop in the early 1900's and is defined as an activity for people traveling to and staying places outside their usual environment for leisure, business and other purposes.

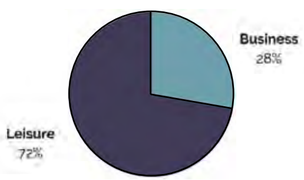
1.1 BILLION PEOPLE Traveled Abroad Globally

EUROPE #1 Destination

THE NETHERLANDS NOW----------

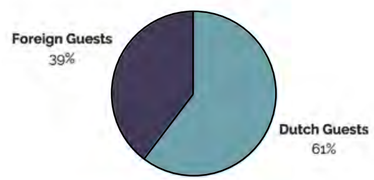
42 MILLION Tourists Stayed in the Netherlands

INTENTION OF TRAVEL

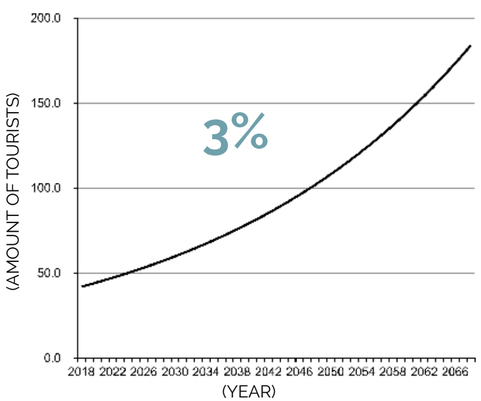


ORIGIN OF TOURISTS

FOREIGN VS. DUTCH GUESTS



Tourists from Germany and Belgium often stay in holiday parks, camping sites and along the coast where as UK tourists often opt for hotels in Amsterdam.



By Year 2068:

184 MILLION

Tourists will be in the Netherlands

1 AMSTERDAM DESTINATION

Amsterdam is popular because it's the capital, has a wide variety of museums, and many other amenities. Since the area is so popular for tourists, Amsterdam is feeling overrun with the increasing amount of tourists in the city and is trying to disperse them.

ECONOMY:

In 2017: **42 Million tourists** created **641,000 jobs**

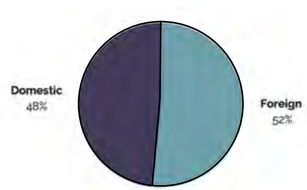
In 2068**: 184 Million Tourists** will create **2.8 Million jobs**

Tourists spent **75.7 Billion Euros** last year → **1,800 Euros** per Tourist

The Current GDP of the MRDH is **86.8 Million.**

By 2068: The 92 Million incoming tourists in the MRDH will spend about **165.6 Billion Euros** **2X** The Current GDP

TOURIST SPENDING

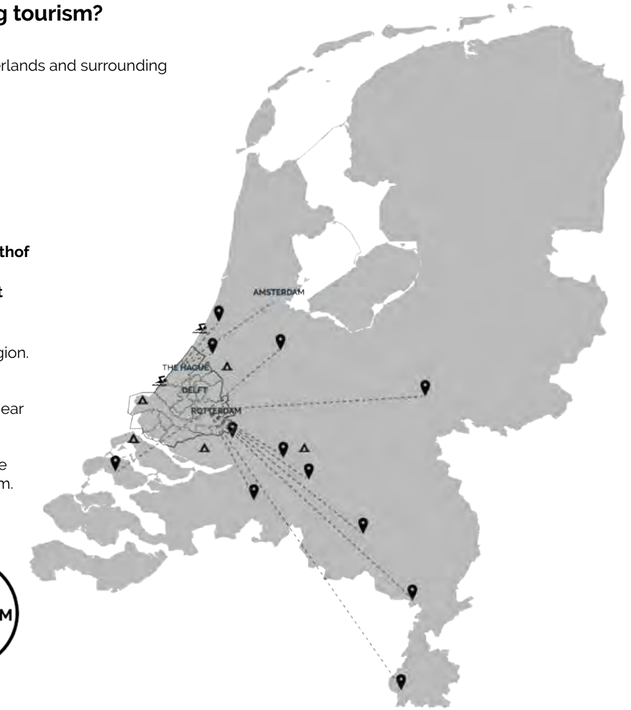


INCREASING TOURISM

How does the Netherlands handle the increasing tourism?

The MRDH is a great place to stay if tourists want to explore the Netherlands and surrounding countries (Germany, Belgium, and France)

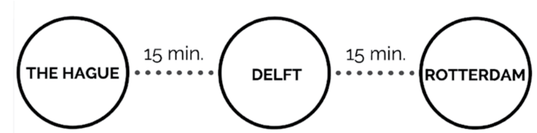
1. Canals of Amsterdam
2. **Leiden Canals**
3. West Frisian Islands
4. **Delft City Hall**
5. **Keukenhof Garden**
6. Hoge Veluwe
7. **Kinderdijk**
8. Rijksmuseum
9. **Masstricht Vrithof**
10. **Delta Project**



6/10 Top Tourist Locations are better accessed by the MRDH region.

70% of the total amount of campgrounds in the Netherlands are near the MRDH region.

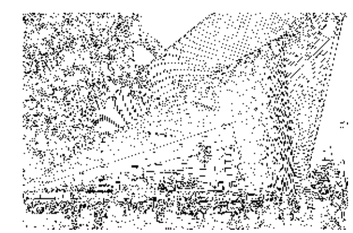
Staying in the MRDH allows for tourists to access more than double the amount of locations around the Netherlands than staying in Amsterdam.



CURRENT TOURIST ATTRACTIONS → FUTURE IMPROVEMENTS 2068

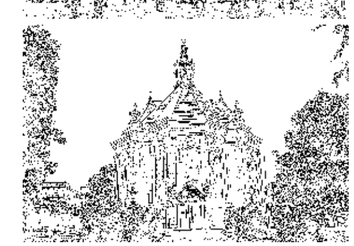
Rotterdam
- Maritime Museum
- Europort
- Markthal
- Zoo
- Euromast Tower
- Erasmus Bridge
- Central Station
- Grote of Sint-Laurenskerk
- Fenix Food Factory
- Cube House
- Parks

Rotterdam
- Grow the Rotterdam- Hague Airport
- More Terminals
- More Train Lines
- More Bus Lines
- More publicity from the media



The Hague
- Mauritshuis Museum
- Binnenhof
- Shopping Opportunities
- Gemeentemuseum
- Political Capital
- Beach

The Hague
- Better spatial organization of the city
- Possibly expand the beach
- Stronger urban environment
-More signage for tourists



Delft
- Nieuwe Kerk
- Delft Blue Factory
- City Hall
- Oostpoort
- Canals
- Market Square
- Windmill
- TU Delft

Delft
- A more prominent night life
- More museums
- Prominent shopping district
- More cultural diversity
- Stronger youth presence
- More attractions

EAT. SLEEP. TOUR MRDH

MRDH 2068

The **GOAL** of the MRDH is to place **17,000** homes in Delft and **240,000** for the rest of the region.

On Average: **2-3** People per House

By 2068, **92 Million** Tourists will be in the MRDH. → If the average is **2.5 days** then **630,000** tourists would be in the MRDH at any given time. → Through out an entire year, there will be an accumulation of tourists in the MRDH

35 to 1
Tourists Resident

315,000 Hotel Rooms will be needed for the 630,000 incoming tourists

2.3 Million Current Residents in the MRDH → **+300,000** Residents by 2068 → Total: **2.6 Million Residents**

The **92 Million** tourists will create **1.4 Million jobs** in the MRDH

By 2068, the residents of the MRDH will need **230,000 jobs** but with the increasing tourism **1,170,000 jobs** will be availble for people moving to the area.

In order to house these incoming people, the MRDH will need **500,000** Extra Homes

TOTAL:
740,000 New Homes for Residents and Incoming People

315,000 New Hotel Rooms for Tourists

HOUSING AND HOTELS 2068

REQUIREMENTS FOR ACCOMMODATING TOURISM

5

Accommodation
Accessibility
Activities
Amenities
Attractions

52,000 of the 740,000 New Houses would be built in Delft. The rest of the housing will be dispersed though out the rest of the region.

The Tourists would stay in hotels dispersed in the major cities such as The Hague, Delft, and Rotterdam. Having the tourists close to the city is cructial to fufill the "5 A's" of Tourism.

Currently Rotterdam, The Hague and Delft have a total of **1,240,000** inhabitants.

HOUSING AND HOTELS

The biggest hotel in the world is called **The Izmailovo**. The building has a total of 7,500 rooms and is made up of four towers combined. If the MRDH were to house all the incoming tourists by 2068, the MRDH would need to build 41 of the biggest hotels in the World.

AMOUNT OF UNITS PER CITY:

ROTTERDAM: .5 (315,000)= **157,500 Units**

THE HAGUE: .4(315,000)= **126,000 Units**

DELFT: .08 (315,000)= **25,200 Units**

TOTAL: **307,700 Units**

AMOUNT OF MEGA HOTELS PER CITY:

ROTTERDAM: **21 Hotels**

THE HAGUE: **17 Hotels**

DELFT: **4 Hotels**

TOTAL: **41 Hotels**

× 41

ADDITIONAL HOUSING WITH AIRBNB

AirBnb hosts resident spaces in **190 Countries** and more than **34,000 cities.**

Last year, the amount of of AirBnb bookings in the Netherlands skyrockets from **75,000 to 1.4 Million** in four years.

31 Thousand apartments, houses or rooms are available to rent on AirBnb in the Netherlands

Currently Rotterdam and The Hague are leading the AirBnb market in the MRDH

Rotterdam: **116,000 Overnight Stays**

The Hague: **126,000 Overnight Stays**

Any overflow of tourists in the MRDH could be housed in AirBnB,

AirBnb is often frowned upon because it is seemingly taking over the hotel market but if Rotterdam, The Hague and Delft become more AirBnb friendly, residents could make a profit off of the tourists and the tourists would have a unique place to stay.

Along with housing, The MRDH still needs to improve with more accessibility, activities and amenities.

One of the main tourist activity for the MRDH could be bike tours. Since the bike transportation system is already well developed. Providing bike tours around each city would familiarize the tourists with and area and possibly create a future biking habit.

All the incoming touists will need an additional mode of transportation such as tourist busses to reach all the top tourist locations around the Netherlands.

If each tour bus has an average of **50 seats:**

By 2068, the MRDH will need **12,603+ Busses**

The MRDH will become the Official Tourist Hub of the Netherlands by 2068

Green Future

Current Global Situation

Global Climate Change is a threat to our planet. This is contributed to by the Carbon Cycle, the release of more greenhouse gasses causes temperature rise, which causes the glacers to melt releasing mathane into the atmosphere and the cycle just keeps going. The cycle leads to extreme heat waves and the acidification of the oceans from the absobtion of CO2 killing sea life as well as the issues listed below in red:

74% of the global energy is non-renewables

83% of th earth has been settled by humans

Global Bad Habits

Rapid Population Increase over the past few years is becoming a major issue. The increase in food consumption accompanied with the affects of climate change are leading to a food shortage.

Consumerism is an issue all over the world. People buy massive amounts of things they do not need or use leading to massive amounts of waste that kills animals while degrading and polluting the planet.

Sprawl has become a massive problem. Cities aren't focused on creating cities that can densely accommodate businesses, living and the creation of local recoures. Cities have also failed to quickly repurpose un-used space. This has caused cities to cover massive areas which leads to the destruction of the local enviorment and increases commutes contributing to emissions through congestion and long commutes. Agricultural sprawl has lead to massive deforestation and soil degradation. Both types of sprawl are hurting the earth.

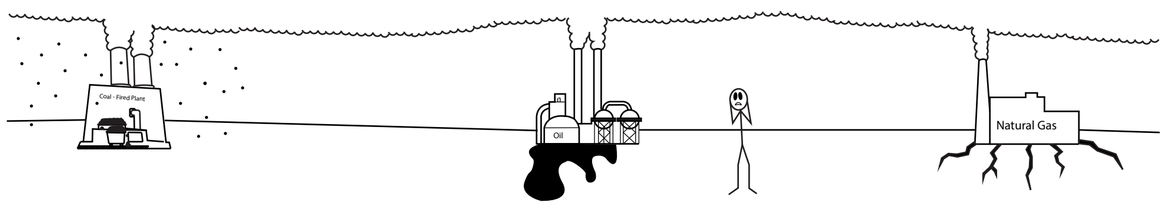
Globalization is a major contributor to the amount of CO2. For instance, 15 cargo ships account for as much pollution as all of the worlds cars combined. This access to anything at anytime has created mass import and export, leading to over production and waste.

The Beginning of Change

Renewables are trending in an extremely positive direction giving us hope for a more sustainable future. Global yearly investment in renewables have risen 200 billion in the past year! Renewables have gone from zero renewables in the 1990s to renewables becoming a major player in 2018. While there are still concerns that this is yet feasible, there is hope here too!

Technology is developing globally at an exponential rate, meaning that the solution to today's problems aren't too far away. Just a few short years ago, robotics on the construction site was thought of as a pipe dream, but now there are several companies around the world that are making it a reality. Advances in artificial intelligence can be used to help interpret the past, optimize the present and predict the future. It still may be years away from being adopted in a large scale, but these advances with the combination of new practices and materials are paving the way to help construct a sustainable future.

Paris Climate Agreement is the first global plan to combat climate change. Signed by 195 U.N. members the Paris climate agreement sets goals for countries to meet in bringing down their CO2 production so that we can prevent the global temp from rising 2 more degrees celsius.



Green Future

Current Regional Situation

Dutch Energy Agenda

To meet the demands of the Paris agreement the Netherlands has come up with a plan of their own...

80-95% reduction in CO2 by 2050 is the main goal. The Energy Agenda was signed in December 2016. After that, the National Government started working on the agenda and is now charting what is necessary and possible to achieve this goal.

Energy-neutral means that only energy from renewable sources, such as sun, wind, biomass and geothermal energy will need to be used for all buildings and for traffic and transport. This is necessary because fossil fuels run out and global warming needs to be reduced.

No more natural gas from 2050
Natural gas is a fossil fuel and during the combustion CO2 and greenhouse gasses are released. In addition, there are more and more problems with the extraction of natural gas. Think of the earthquakes in, Groningen for example. Natural gas also runs out and leads to dependence on other countries.

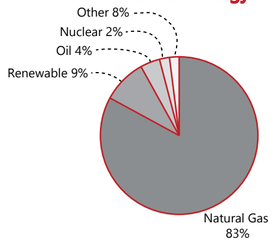
Complex Issue is always synonymous with nation energy solutions, especially when the new solution has to be 100% renewable. The goverment is still planning to use massive facilities such as solar and wind farms which will consume hectares of limited Dutch landscape.

Dutch world class agri-food sector
also has to become more sustainable under this plan while remaining globally competitive. This means considering the climate, health of the soil, animals, plants and how to still supply all of the necessary people.

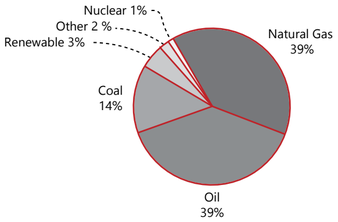
Netherlands Statistics

The Netherlands currently consumes almost 2x the amount of energy they produce.

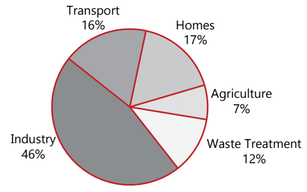
Produced Energy



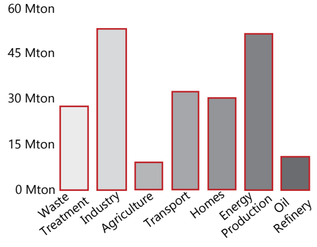
Consumed Energy



Energy Consumed by Sector

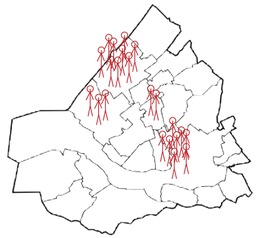


National CO2 Emissions
260 Mton Total

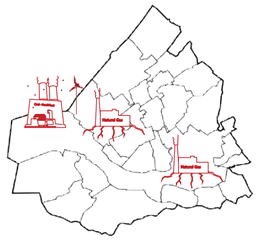


MRDH Statistics

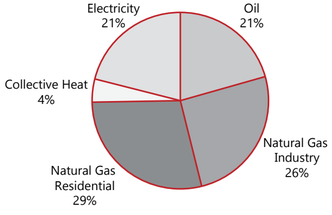
To complete this massive transition to renewables the Netherlands will need to go region by region to create lasting flexible solutions. A good place to start is the most densly populated region the MRDH.



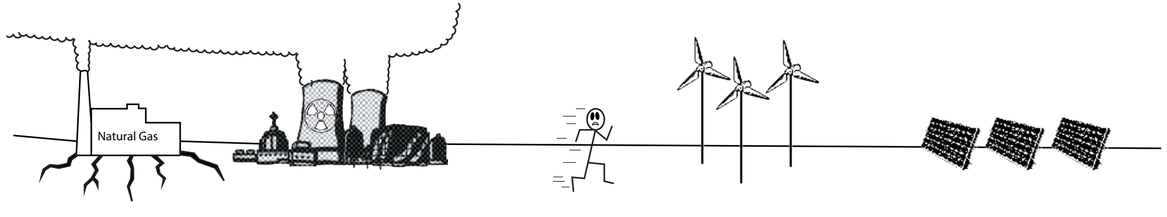
The MRDH has four sources of power that produce only 12% of the energy required to power the region.



MRDH Consumption

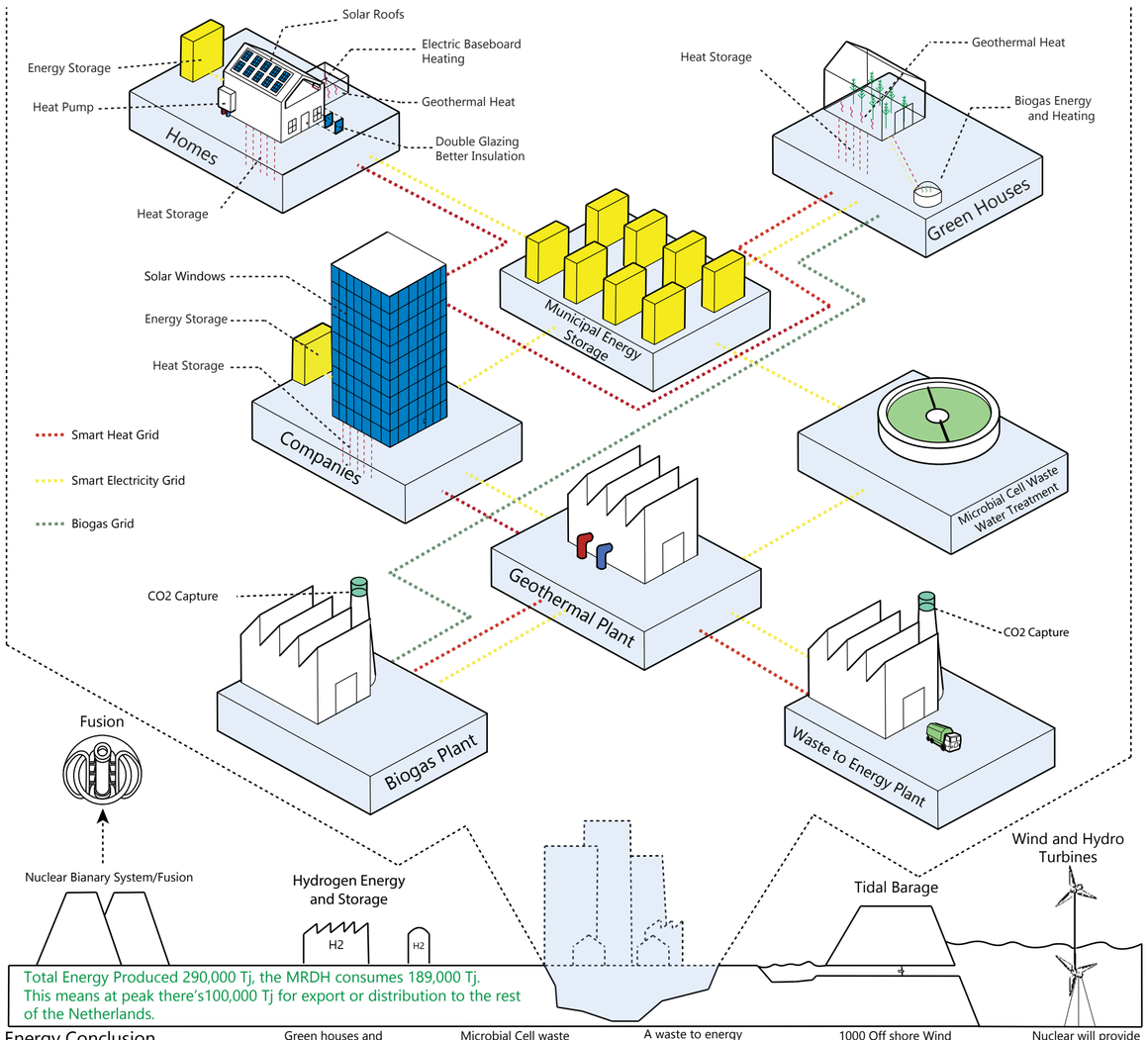


To fill all of the extra energy the needs and supply the energy currently supplied by the regions non-renewables the MRDH will need a flexable system because of the unreliability of renewables.



Green Future

Energy Plan City - Region



Total Energy Produced 290,000 Tj, the MRDH consumes 189,000 Tj.
This means at peak there's100,000 Tj for export or distribution to the rest of the Netherlands.

Energy Conclusion

The homes produce at peak on enough energy to fully power all of their needs while still producing extra energy to either store for future use or to send to the grid, creating an accumulative 5,263 Tj. This is more than enough due to the heating being taken care of with geothermal heating, a heat pump, and when needed electrical baseboard heating.

Green houses and vertical farms will be able to heat and power them selves depending on their size and contribute biomass to the biogas plant.

Companies in the city will cover their abundance of windows with solar glass creating an accumulative 13,272 Tj. Also storing heat and electricity to cut down on use.

Microbial Cell waste water treatment will create enough power to power its self while producing a minute amount of extra power.

Geothermal plant would produce 2048 Tj. While also producing massive amounts of heat for the grid.

A waste to energy plant would process the annual waste of 2 million people. Turning the waste into 718 Tj, also producing heat for the grid.

The Biogas plant takes bio waste from farms and produces 62,334 Tj of electricity. 25,344 Tj of heat for the grid.

All of the excess energy is stored in a municipal facility for later use.

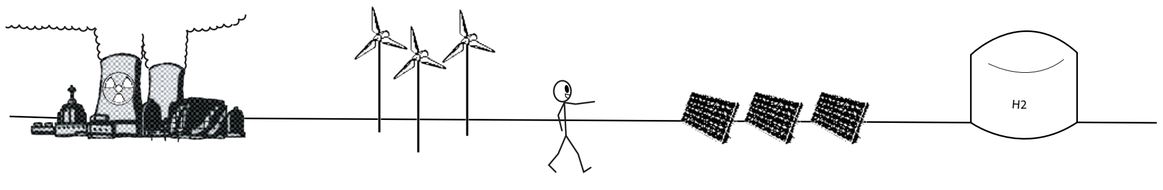
1000 Off shore Wind Turbines would be a major source of energy for the MRDH producing 78,840 Tj.

1000 sea turbines attached to the bases of the wind turbines would produce 78,840 Tj.

A tidal barage facility built into an existing dike on highway N57 would produce 756Tj.

Nuclear will provide a stable source of energy 13,782 Tj. This plant would produce a minute amount of CO2.

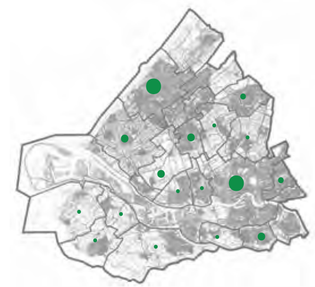
A Hydrogen cell plant would produce 9460 Tj and pure water. Hydrogen is also a great storage medium for energy that could be used for export.



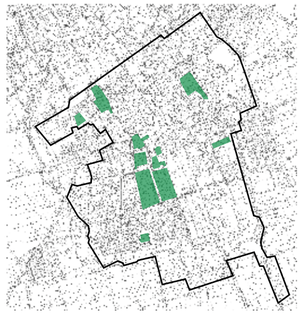
Green Future

Sustainable Tower

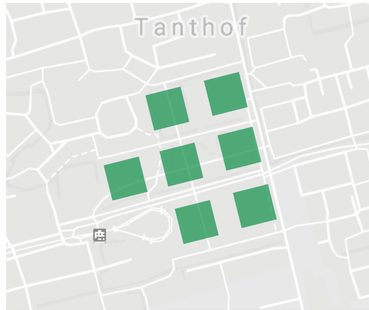
How could the MRDH incorporate some of the energy solutions mentioned to supply the residents of 2068 with 240,000 homes and where would some of these homes be in a municipality such as Delft?



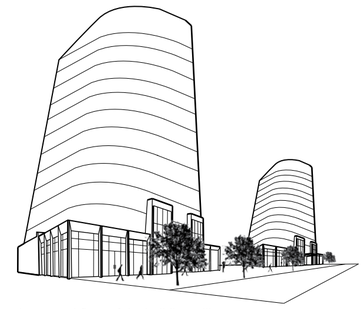
To fulfill the 240,000 new homes the MRDH would need 1,739 towers, however to feed the 2.6 million residents would require 2,879 towers that would be dispersed based on area and population.



Delft would require 170 towers to house the new 17,000 units and the roughly 6,500 homes temporarily displaced by the construction and revitalization of certian areas.



The towers while large are placed with enough space it provide social space in between. Adding a whole new social aspect to the area around.



The ground floor of the building will contribute to the revitaliztion of the area surrounding the tower providing shops and atmosphere to the locals.

The tower will have 138 units and produce 1.1 million pounds of food

Food Produced

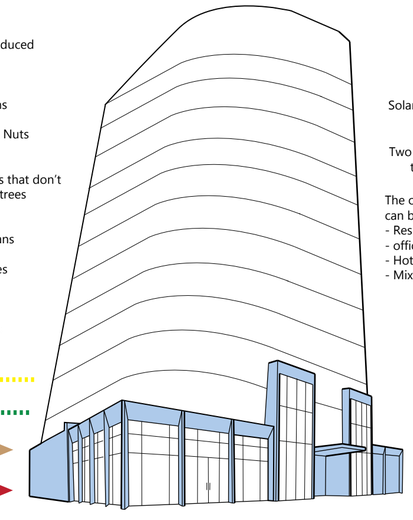
Protien
- Fish
- Chickens
- Beans
- Various Nuts

Fruits
- All fruits that don't grow on trees

Dairy
- Soy Beans

Vegitables
- All

Starch
- Potatos
- Wheat
- Rice



Solar Glass will allow the tower to produce 23.6 Tj

Two layers of glass alows for temperature control

The other half of the building can be used in multiple forms:
- Residential
- offices
- Hotels
- Mixed use

Excess Electicity

Sends Biomass to Biogas Plants

CO2

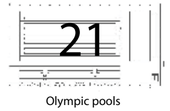
Takes in eat from the grid

A tower would save over:

2 million miles of transport.

the distance to the moon.

13 Million gallons of water or

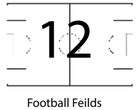


Olympic pools

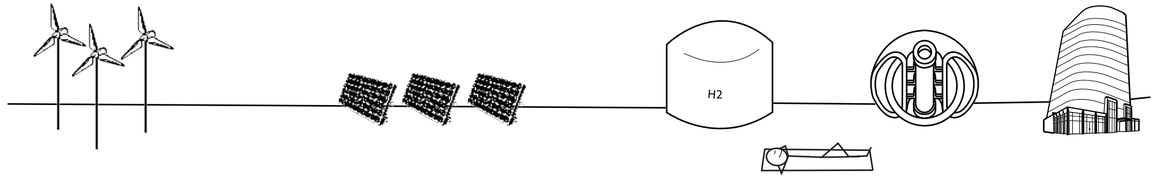
1000 tonnes of CO2 the same weight as

Humpback Whales

15 acres of land or



Football Feilds



MRDH: GLOBAL SMART TECH CONNECTION

INNOVATION **EDUCATION** **INDUSTRY** **IDENTITY**

TRENDS
Energy transition, connectivity, demand for technology, increase in locality, multi-use buildings, rapid population increase, re-use, globalization, increased speed of tech

AMBITIONS
Paris Agreement, NL 2050, Delft 2040, Circular Economy, Gas-less NL, 240,000 New homes MRDS (17,000 Delft), Tech students staying in Delft after graduation
TU wants to update buildings

World Rankings for Tech Cities

Rank	City	Population	Prime residential rent/wk	Startups/1.000 people	Cost of a single journey on local transport	Annual passengers across the city's airport(s)	World Happiness Index
1	Austin, US	932.000	$1.002	2.7	$1.75	11.9 million	18
2	San Francisco, US	865.000	$1.484	26.3	$2.25	71 million	18
3	New York City, US	8.5 million	$1.482	1.8	$2.75	126.7 million	18
4	London, UK	8.7 million	$1.981	1	$3.32	153.5 million	19
5	Toronto, Canada	2.9 million	$968	1.1	$2.29	43.4 million	7
6	Amsterdam, NL	840.000	$1.315	1.3	$3.20	58.3 million	6
21	Buenos Aires, Argentina	2.9 million	$374	0.2	$0.43	2.6 million	29
22	Cape Town, South Africa	3.7 million	$840	0.1	$0.77	9.7 million	105
	Delft, Netherlands	101.034	$372	1.48	$2.68	n/a	6
	MRDH	2.3 million	$606	0.520	$5.23	1.77 million	6

The Dutch scored a **71.45** on the Proficiency Index, making them the most English proficient country in the world.

60% of all Forbes 2000 companies active in IT have become established in Holland.

97% of Dutch households have access to the internet. This is **11%** greater than the average for the EU.

87% of people in the Netherlands (aged 16 to 74) have mobile internet access.

70% of all Dutch innovation is IT-related.

The Netherlands ranks **#1** as the most connected country in the world (DHL Global Connectedness Index.)

The Netherlands is ranked **#6** in the World Happiness Report 2018.

32% (aged 25-64) hold a university degree (tertiary-type A), which is well above the average of 24%.

The Netherlands in Statistics

Introspection: As you can see, the Netherlands has many outstanding statistics that set it apart from other places. According to the MIT Entrepreneurship Review, there are 6 elements that can help attract new companies and start-ups to a region: pillar companies, universities, human capital, investment capital, mentoring, and values. Which of these can the Netherlands say it is strong in? Which ones can be improved upon?

Dutch Tech Triangle

Imagine the Netherlands with a completely connected technological economic sector. The MRDH has just as many resources and opportunity as Amsterdam and Eindhoven. How can the MRDH emerge as a center for knowledge and innovation within the "Dutch Tech Triangle"?

Amsterdam

Best possible digital set-up due to the Amsterdam Internet Exchange, the largest data transport hub in the world.

60.000 people work at the 1,052 tech companies (11% of the total job market).

Ranked 5th globally for sustainability. 4th for developing apps.

Combination of affordable housing, culture, and history make Amsterdam desirable.

MRDH

2 highly ranked educational institutions (TU Delft and EUR).

Two major cities of Rotterdam and the Hague.

The horiculture economy provides work for 200,000.

The region has many great resources and opportunity for branding the MRDH as a tech center, yet lack a real sense of connection.

Eindhoven

Tech Campus is comprised of 160+ companies.

11,000 researchers, developers and entrepreneurs work on developing.

Responsible for 40% of all Dutch patent applications.

"Triple helix" collaboration between government, business and knowledge institutions.

The MRDH: an Abundance of Resources

The Hague is Europe's largest security cluster, the Hague Security Delta (HSD). Comprised of three hubs, HSD is a network of businesses, governments and knowledge institutes.

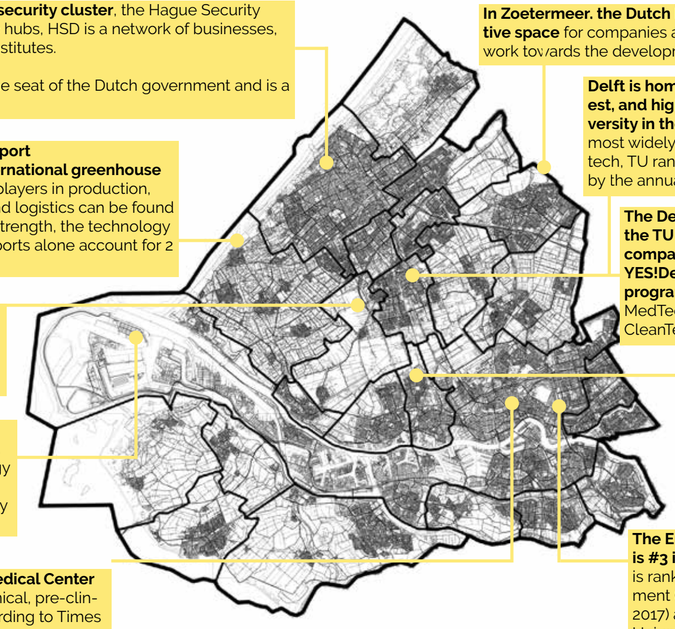
Additionally, the Hague hosts the seat of the Dutch government and is a huge business center.

The Westland-Oostland Greenport is the Netherlands' largest international greenhouse horticultural cluster. All world players in production, trade, knowledge, innovation and logistics can be found here. Bringing great economic strength, the technology and supply sector of the Greenports alone account for 2 billion sales.

There are also **various centers for horiculture** in Den Hoorn and near Maasland in the municipality **Midden-Delfland**.

Rotterdam is Europe's largest port, and 10th largest globally. Spanning 42 km, new technology allows for the container cranes at Maasvlakte 2 to work as a fully automated system.

Also in Rotterdam, Erasmus Medical Center (MC), ranks 36th globally in clinical, pre-clinical and health institutions according to Times Higher Education.



In Zoetermeer. the Dutch Innovation Park is a collaborative space for companies and educational institutions to work towards the development of applied IT innovations.

Delft is home to TU Delft, the largest, oldest, and highest ranking technological university in the Netherlands. Even though it is most widely recognized for engineering and tech, TU ranks in the top 100 in 13 subjects by the annual QS World University Rankings.

The Delft Tech Park, located next to the TU campus, hosts 58 tech-related companies. Also in close proximity is YES!Delft, which offers tech startup programs for in the areas of: Blockchain, MedTech, Artificial Intelligence, Aviation, CleanTech, Robotics and Complex Tech.

Although much smaller in comparison to its neighbor Rotterdam, **Schiedam is home to 9 business parks.**

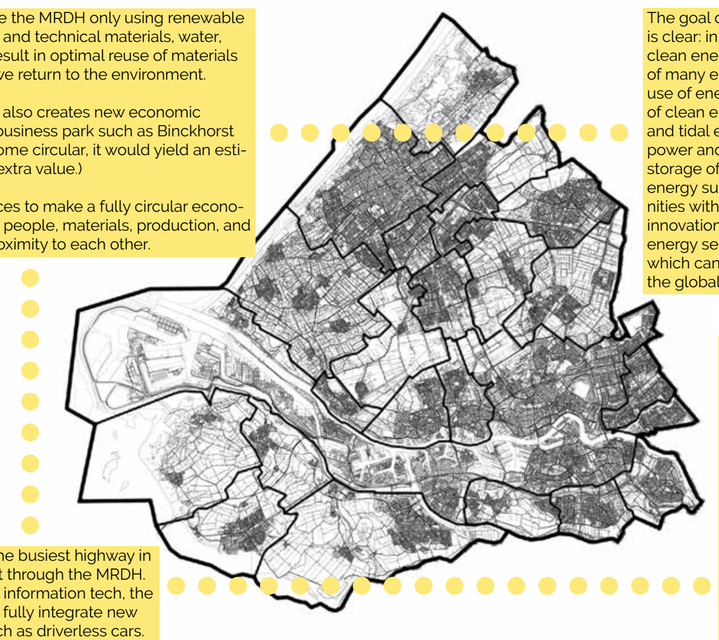
The Erasmus University Rotterdam is #3 in the Netherlands. Globally, it is ranked 21st in Business & Management (QS World University Ranking, 2017) and as 26th most innovative University in Europe (Reuters, 2016).

Improvement of Utilization of Resources in the MRDH

Circular economy: Imagine the MRDH only using renewable resources: energy, organic and technical materials, water, earth and air. This would result in optimal reuse of materials and minimising the harm we return to the environment.

Moving towards circularity also creates new economic growth. (For example, if a business park such as Binckhorst in The Hague were to become circular, it would yield an estimated 20 million euros in extra value.)

The MRDH has the resources to make a fully circular economy happen: the necessary people, materials, production, and knowledge are in close proximity to each other.



The goal of having a **Smart Energy Delta** is clear: in 2050, the region will have a clean energy supply. The solution consists of many elements: energy saving, efficient use of energy and residual heat, more use of clean energy sources like sun, wind and tidal energy, clean fuels like green power and hydrogen and the capture and storage of CO_2. Moving towards a clean energy supply offers economic opportunities within the MRDH: opportunities for innovation, new forms of services in a new energy sector, and thus a stronger region which can provide a better response to the global competition.

Smart Mobility: The A13, the busiest highway in the Netherlands, runs right through the MRDH. Using communication and information tech, the MRDH has the potential to fully integrate new strategies for transport such as driverless cars.

Improve the **Investment Climate**: Nearly all of the top economic sectors of the NL can be found within the MRDH. However, often new companies found within the region do not fulfill their potential. By creating an environment that facilitates innovation across all sectors, it provides an environment where entrepreneurs can grow fast. An example of how this can be realized is Eindhoven's "triple helix" collaboration between the knowledge institutions, the government, and businesses.

MRDH: GLOBAL SMART TECH CONNECTION

TU Delft

4,633 international students (20%)

18,828 NL students (80%)

World Rankings
#3 Architecture
#4 Civil Engineering
#13 Mineral & Mining
#13 Mechanical Engineering
#14 Environmental Sciences
#18 Chemical Engineering
#24 Material Sciences
#32 Electrical Engineering
#40 Earth & Marine Sciences
#49 Physics
#52 Overall

Diplomas given out each year (approx).

2,254 Bachelor's 42%

58% 3,137 Master's

Delft Tech Park & YES!Delft

Delf Tech Park was formed as a business park specifically for the **innovative and knowledge-intensive**. The Tech Park aspires to promote sustainability and innovation, to optimize the cost-quality ratio, and to connect the companies with each other and with the city of Delft.

YES! Delft is a **tech incubator** specializing in Blockchain, Artificial Intelligence, CleanTech, MedTech, Aviation, Robotics and Complex Technology. Over the last decade, they have supported 200+ companies. YES! Delft also has a network of 20+ student entrepreneurs, has 5,000+ visitors and 70+ events a year.

Delft

TU Delft Aula Congress Centre
Number of rooms: 11
Capacity: up to 1000
Location: TU Delft
Architect: Van den Broek & Bakema

Largest Conference Centers in Rotterdam and the Hague
1. Rotterdam Ahoy, capacity: up to 2,750
2. World Forum (Hague), capacity: up to 2,161

RAI Convention Center (Amsterdam), with the largest space's capacity up to 12,900 with 22 conference rooms and 11 halls.
In 2017, 1.6 million visitors generated a €123.3 million (with an operating result of 9.6 million).

Current Convention Centers

A Few of the Many Dutch Inventions (above)

On Holland.com, it notes that there are **4 main museums in Delft**: Vermeer Center, Museum Het Prinsenhof, Royal Delft, and the Oude & Niewe Kerk. All of these showcase Delft's history, but **leave out a very important factor: the tech**. Since it is such a major element of Delft and with all of the innovation that has come out of the Netherlands, a museum of technology would be an unparalleled **opportunity to showcase and educate visitors** of the innovation on a local, national, continental, and global level.

Museums

Delft Tech Expansion: Promoting the MRDH Global Tech Connection

The main idea of the Delft Tech Expansion is to further connect TU, YESDelft!, and Delfttech by utilizing the surrounding space for a campus designed by top architects. The space will aspire to bring even more tech companies to the region, inspire the young and bright TU students to stay and work in Delft upon graduation, and create an environment for tech education on a global level.

Precedent: The Vitra Campus (Weil am Rhein, Germany)
While the Vitra Campus is known for designing furniture and other objects by the masters of design, it is a good precedent for how commissioning top architects to design a space can create a sense of pride and respect for not only those who visit the space but also the people who must inhabit it daily to work.

The Vitra Campus is essentially a gold mine of buildings and grounds designed by leading architects. Rolf Fehlbaum, the chairman of Vitra, essentially commissioned the campus to have any city's wish list of architects to design it all: manufacturing spaces, ceremonial halls, retail and trade showrooms, storage facilities, a museum, and more.

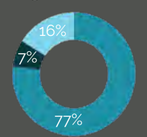
Fehlbaum was the first to actualize one of Zaha Hadid's designs. He also gave Frank Gehry and Tadao Ando their first European commissions. The campus also includes impressive works by Álvaro Siza, Herzog & de Meuron, and SANAA.

Top L: VitraHaus by Herzog & de Meuron, 2010
Top R: Fire Station by Zaha Hadid, 1993
Bottom L: Vitra Design Museum by Frank Gehry, 1989
Bottom R: sketch of Conference Pavilion by Tadao Ando, 1993

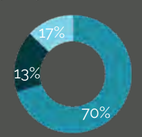
Why choose to invest in commissioning the top architects who are the best of the profession to design the campus?

Stats:
85% of people agreed with the statement 'better quality buildings and public spaces improve the quality of people's lives'.

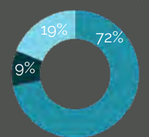
"People work more productively in well designed offices"



"Well designed schools improve the quality of education"



"Well designed houses will increase in value quicker than average."



Agree Disagree Indifferent

Case Studies

According to architect Norman Foster, when considering the average costs over a 25 year period, **the physical envelope of the building makes up only 5.5% of the total cost whereas occupying represents 86% of the total cost**. This shows that a small investment in quality can make a significant impact.

A European survey of people's attitude towards town centres found that the highest incidence of disliking town centres was recorded in British towns. The distinguishing factors were **the lack of car-free spaces to relax, the low desire to participate in social activities, and an unstimulating visual environment**.

A study carried out by international property consultants FPD Savills in 2002 indicated that volume house builders who had invested in **higher quality design** in residential schemes could expect to **yield a residual value per hectare of up to 15% more** than conventionally designed schemes.

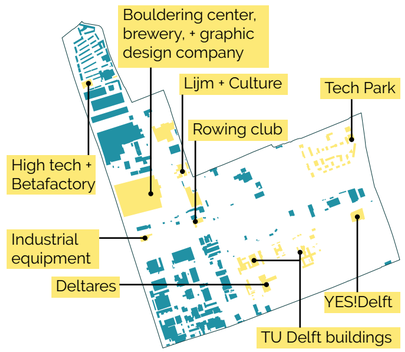
Delft Center of Technology Now (2018)

Potential for Tech Expansion (to be completed by 2068)

Old Town
TU Delft
Train Station
Delft Tech Park and YES!Delft
Tech Expansion

The tech expansion will cover 22km square kilometers (23,000,000 square feet). Its perimeter is approx. 7.81 kilometers (4.85 miles).

What Stays and What Goes



Certain buildings types fit the scenario of a high tech campus, so they were kept within the site. However, buildings such as auto and furniture shops will be torn down or reused. In 2068, there will be no need for these types due to new technologies such as driverless cars and 3D printing.

+ MORE TECH SPACE

+ 4,000 STUDENT
+ 10,000 TECH WORKERS
+ 3,000 OTHER
= 17,000 NEW HOMES

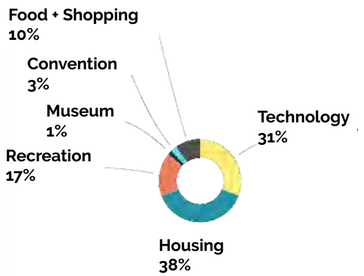
+ MUSEUM SHOWCASING TECH

+ PLACES TO EAT
+ PLACES TO DRINK
+ PLACES TO SOCIALIZE

+ CONVENTION CENTER

+ RECREATIONAL ACTIVITIES

The Delft Tech Expansion



Program
- Museum and Convention Center
- Tech Center
- Recreational Facilities
- Housing
- Eating, Drinking, Social Activities