

# the Millennium Earth Project



a project by:



**INSTITUTE FOR  
CONSCIOUS  
GLOBAL CHANGE**

a presentation by Etta Jackson and Greg LeMaire  
September 30, 2015



- 501(c) 3 non-profit NGO in Special Consultative Status with the Economic and Social Council (ECOSOC) of the United Nations. Founded in 2007.
- **Our Mission:** Visualize, Analyze, Explain and Disseminate data to make sustainable development universally understandable and accessible
- **Our Vision:** Fundamentally Change the Way Humanity Live In and Creates Its Environment
- **Our Goal:** To Build a Visual Framework to meet the UN's Sustainable Development Goals. Using Geographical Information Systems (GIS) technology and its related platforms such as geospatial service, remote sensing and geodesign to virtually design and visualize sustainable development



- The Millennium Earth Project (MEP) was created as a means to accomplish the goals of the Institute for Conscious Global Change (ICGC).
- Our aim is to create a virtual globe, making more visible the needs of each country.
- This computer-generated world will be displayed via our online and mobile apps, where we will be able to highlight the problems of each country in one place.
- Using the Sustainable Development Goals (SDGs) and Targets as a framework, MEP has the ability to assess and report on changes in indicators so that solutions to issues can be quickly and easily sought out, discussed and dealt with.

# The Global Goals for Sustainable Development

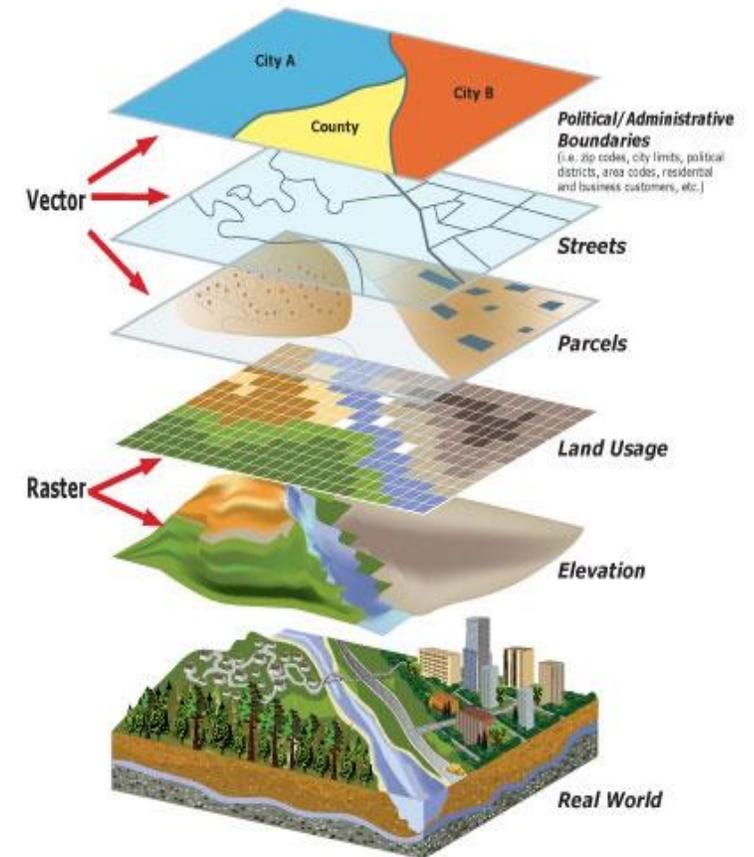
the post-2015 agenda



# Geographic Information Systems (GIS)

## what is it?

- Geographic Information Systems (GIS) are computer-based systems that allow us to visualize, analyze, question and interpret data to understand relationships and trends.
- Through interacting and interdependent geographic components, GIS can be used to describe virtually anything on earth with in depth data.
- GIS improves the efficiency and effectiveness of handling information about geographic objects and events.



# Geographic Information Systems (GIS)

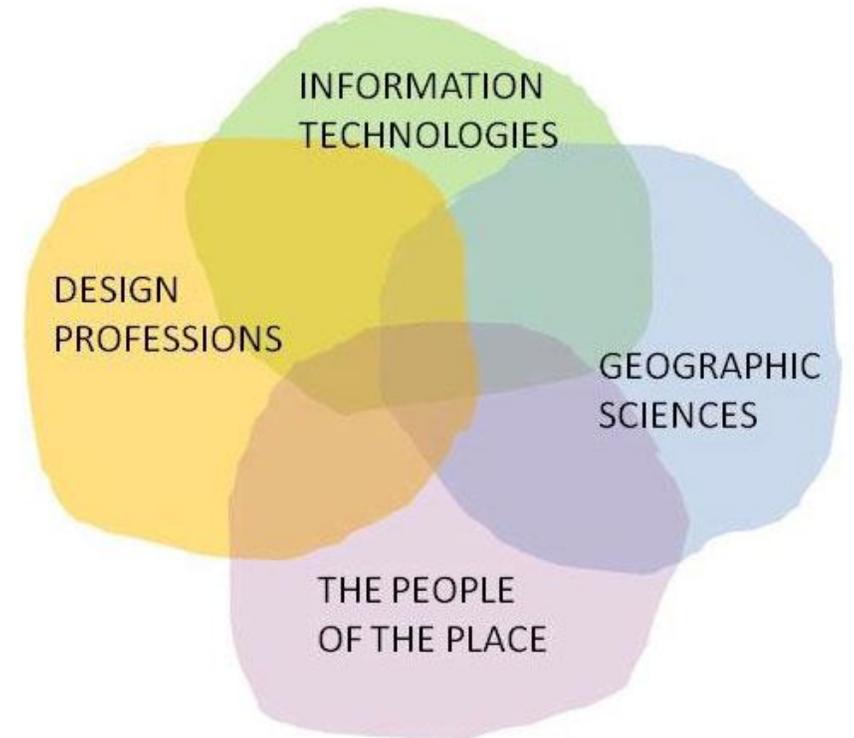
## how can it help?

- Through spatial analysis, government leaders can take a holistic view of a policy, program, or process to understand how to improve their decisions based on a multitude of factors.
- GIS can help communities plan and respond to a crisis.
- By viewing data spatially, government agencies can easily track and view underserved communities and use this information to allocate resources more efficiently, reform policies, or spot distressing trends about communities and offer remediation strategies.
- Through the cloud, organizations can share maps, data and pertinent information to improve collaboration efforts.
- GIS provides increased transparency and accountability for citizens.

# Geodesign

## what is it?

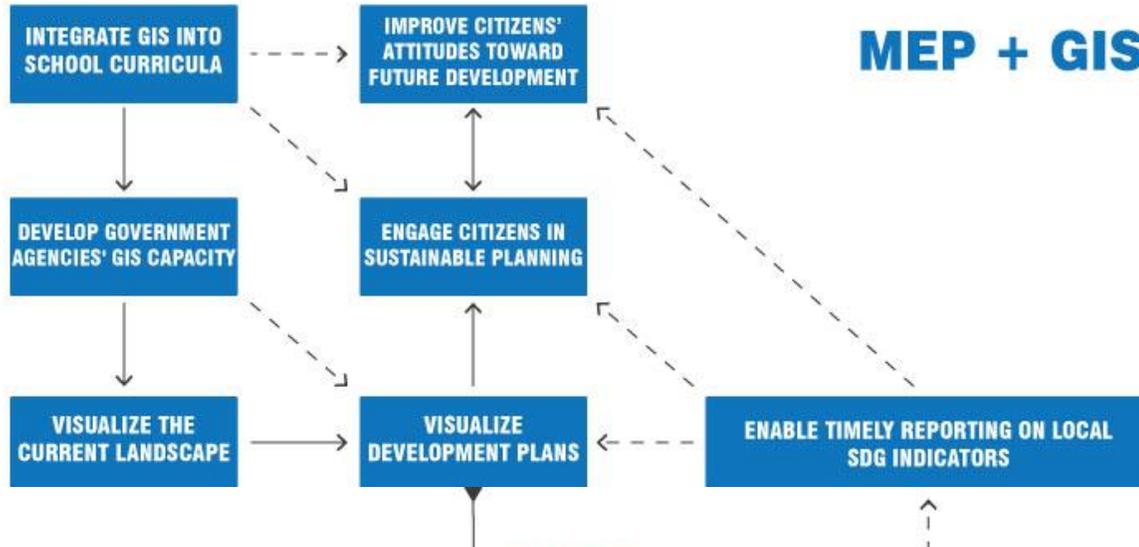
- Geodesign is a set of techniques and computer programs for planning built and natural environments in an integrated process.
- This includes project conceptualization, analysis, design specification, stakeholder participation and collaboration, design creation, simulation and evaluation.
- The main tools of geodesign are geographic information science, computer-aided design, landscape architecture, urban planning and other environmental design fields



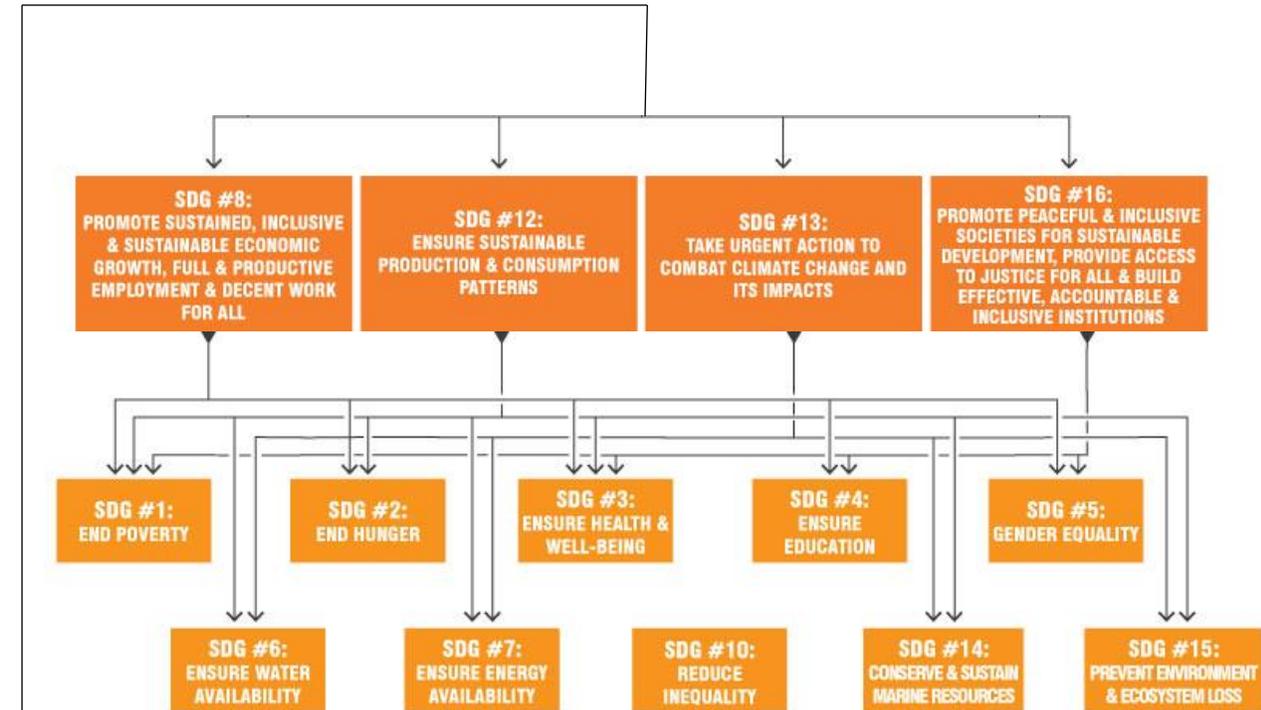
# MEP + GIS + SDGs

how does it fit together?

## MEP + GIS



## SDGs



# The Proof of Concept: St Raphael, Haiti

## why St Raphael?



- Haiti presents an interesting challenge; it is the only member of the African Union outside of Africa, it is the poorest country in the western hemisphere, and it is still recovering from the 2010 earthquake
- Contact with National Center for Geospatial Information (CNIGC) in the Planning Dept. of Haiti who provided geo-spatial data for initial analysis
- Cooperation from the mayor of St. Raphael
- Photographs of St. Raphael with GIS coordinates
- St. Raphael represents an average sized prototypical town
- Data available from various sources (ESRI, Google Earth, Bing Maps, Haiti Data, OpenStreetMap)

# St Raphael

## facts and figures



- Population- City of St Raphael: 13,000  
- Commune of St Raphael: 52,000
- Formal employment: 8% - (men 61%, women 39%) but Haitians are entrepreneurial in nature
- Sits in a valley surrounded by high mountains
- Most old growth forests long gone, causing highly eroded soils though there is an on-going effort to reforest
- Predominantly agricultural economy with a good irrigation system
- Most houses have no indoor plumbing with most water coming from wells and cisterns



# St Raphael

## problems and challenges



- Chronic under-education of the population
- Inaccessibility to basic health care
- Very high rate of unemployment, particularly youth
- Loss of population control
- Inability to create wealth
- Considerably weakened local government
- Extensive environmental degradation
- Continuing impoverishment of the population
- Lack of professional or technical expertise
- Almost total dependence on the outside world

# St Raphael

## problems and challenges – focus on: housing & land management

- Less than 5% officially recorded in registers of public lands with an antiquated system of real estate property registration
- Land transmitted orally from one generation to another, leaving uncertainty about land ownership, causing development plans at a stand-still and bank loans hard to obtain
- Countless deeds & land registry files destroyed in the earthquake
- Squatting problem and land grabbing has become rampant
- Houses are built too closely together with little consideration for light, air, sanitation and other environmental factors as well as access for emergency services



# St Raphael

## solutions – focus on: housing & land management

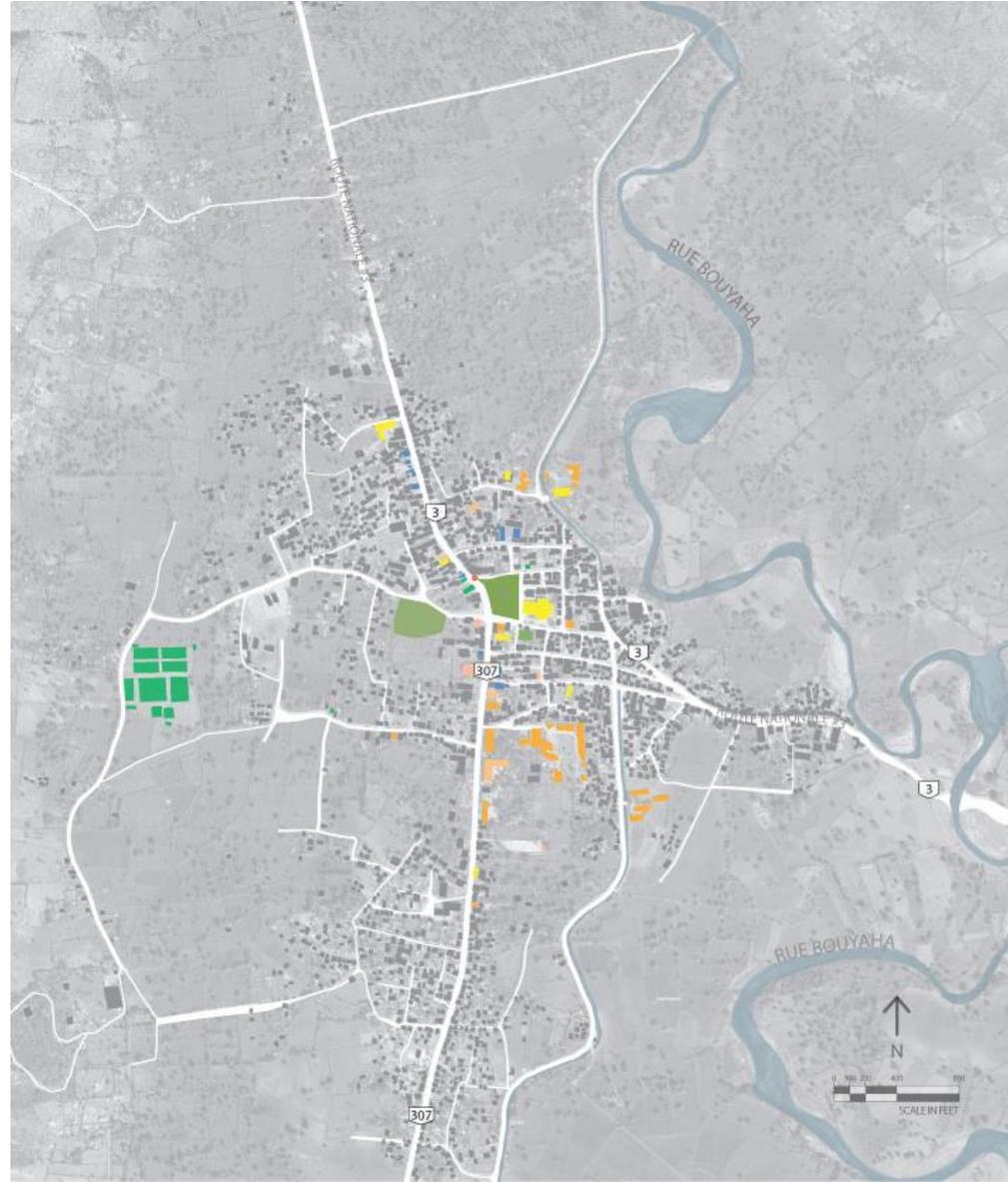
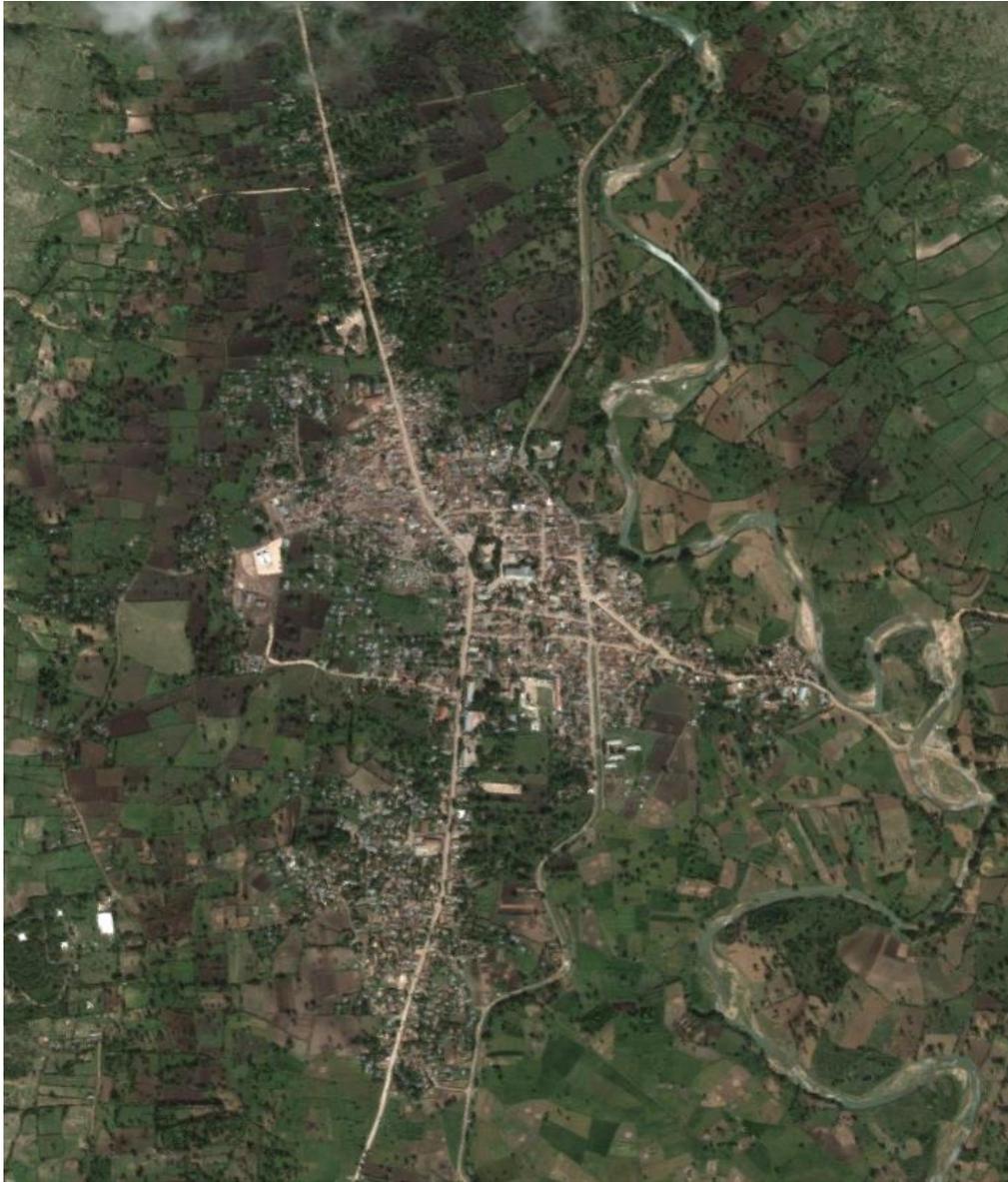
- Work with local and national government to create a Bureau of Land Management responsible for modernizing/digitizing land ownership
- Government to legalize land documentation with GIS as a tool to create modern web-based real estate database
- Government to create land ownership database showing state-owned land, corporations, institutions as well as individuals. Transparency is key.



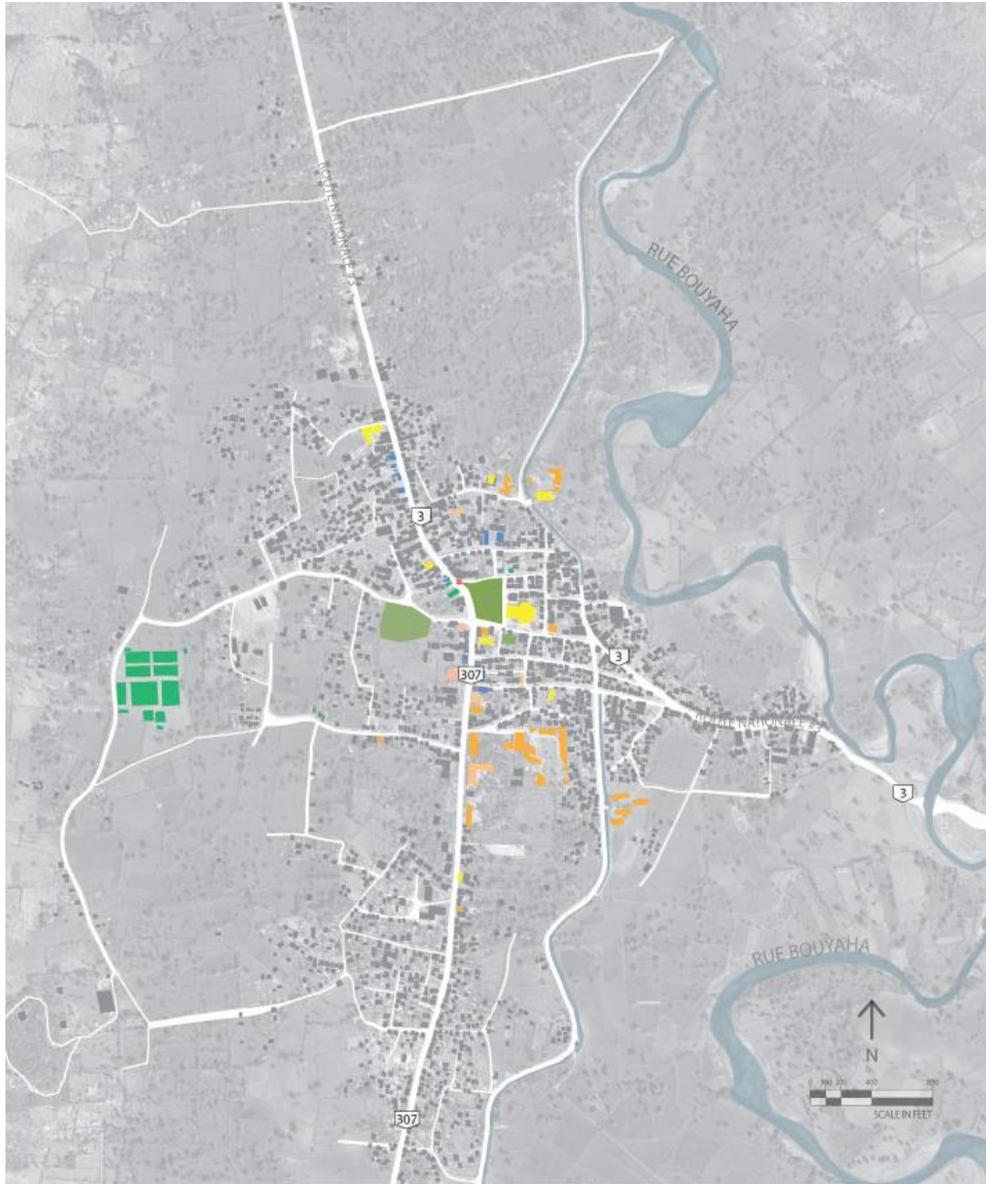
# Geodesigning St Raphael

## the process

1. Collect and compile existing data and maps
2. Engage local groups to fill in the gaps in data
3. Build a staff and volunteer network to begin collecting further data
4. Collect information specific to the SDGs and begin inputting data into maps
5. Data and maps will then be regularly updated to provide up to date feedback on SDGs and overall status of the study area
6. The maps will not only display data that can be easily understood by all and will also serve as a social-media like public forum for comments and submission of issues
7. Data, demographics, maps and 3d models will all be readily available to anyone using the MEP site and app
8. The end product is a data driven, visual and geographically-accurate blueprint. A tool which can be used to envision the future we want by putting equality on the map.

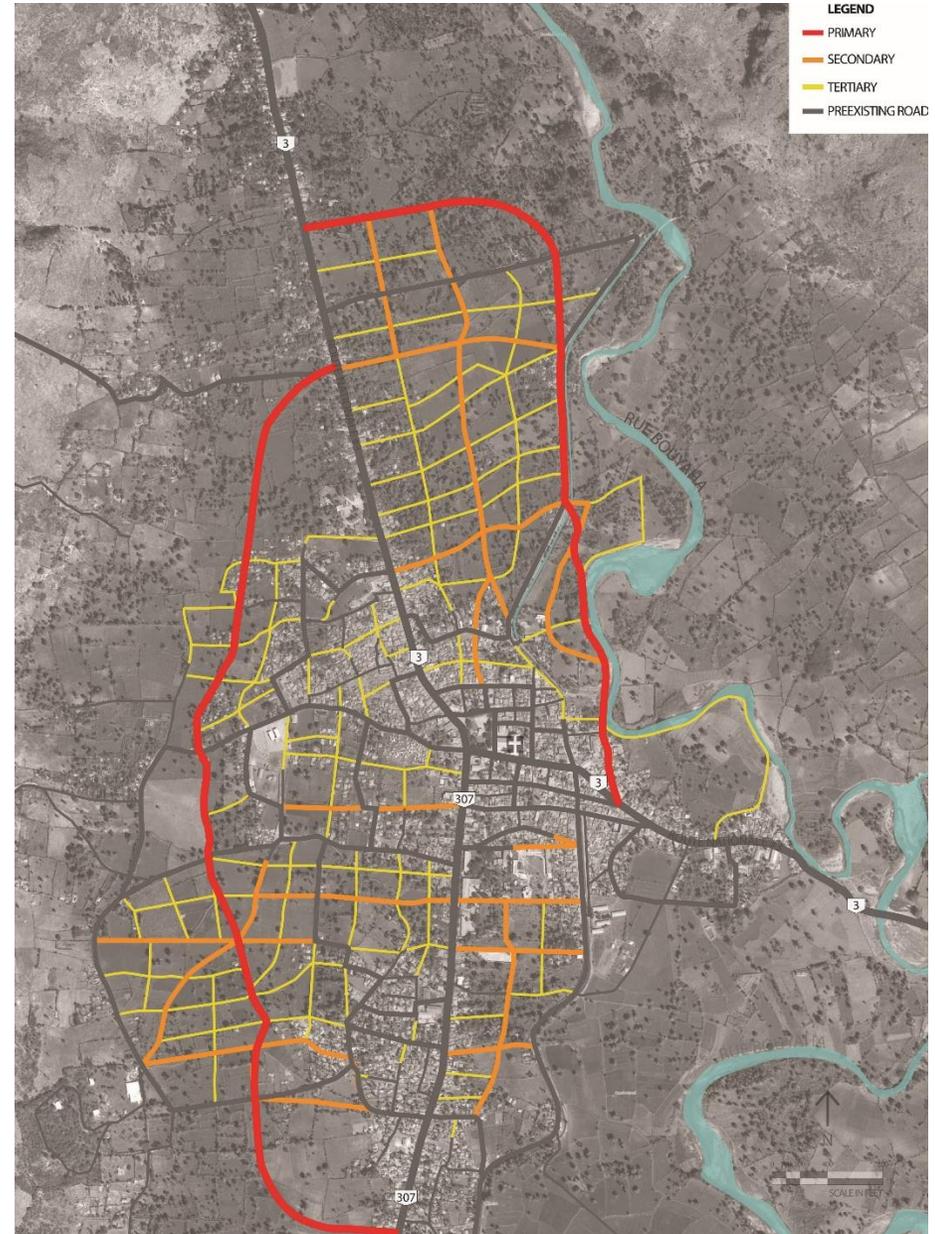
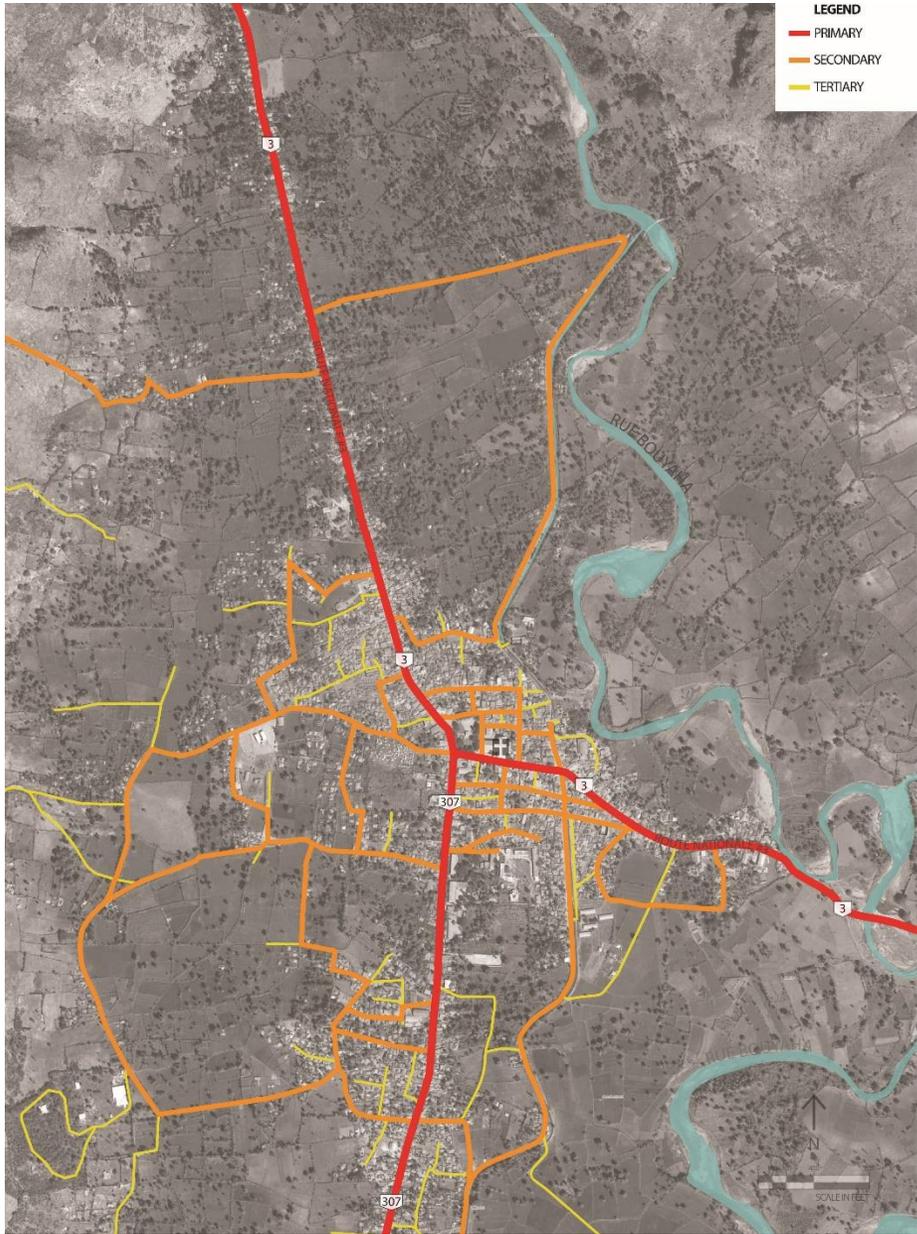


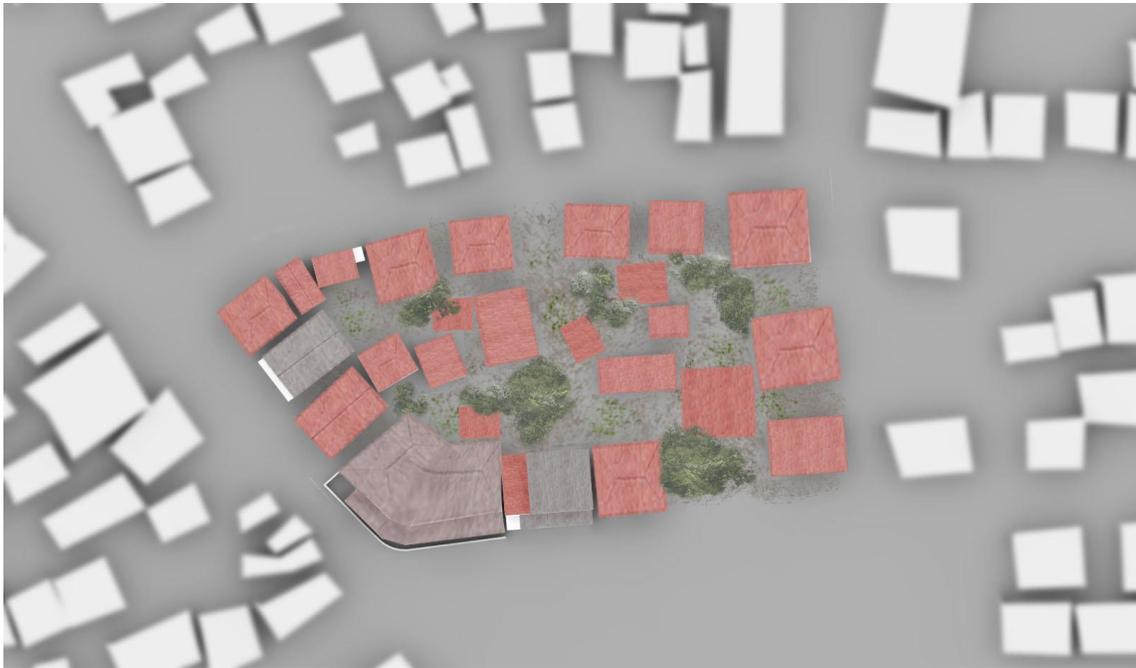
- LEGEND**
- CULTURAL BUILDINGS**
    - WORSHIPPING SPACES
    - COMMUNITY CENTRES
  - CIVIC BUILDINGS**
    - HEALTHCARE
    - EDUCATION
    - GOVERNMENT
    - NGO OFFICES
    - EMERGENCY SERVICES
    - TRANSPORTATION
    - WATER TREATMENT
  - INDUSTRIAL BUILDINGS**
    - FACTORIES
  - COMMERCIAL BUILDINGS**
    - RETAIL
    - HOTEL/TOURISM
    - RESTAURANTS/ MARKETS
  - RESIDENTIAL BUILDINGS**
    - 1-2 STORY
    - 3-4 STORY
    - 5+ STORY
  - RESIDENTIAL BUILDINGS**
    - PARK
    - CITY SQUARE
    - CEMETARY
  - BUS STOP



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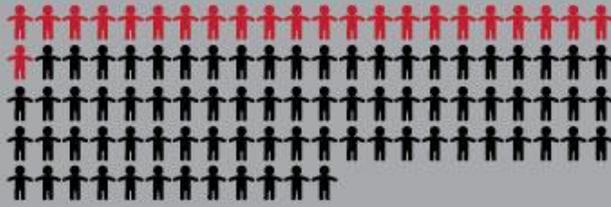
# SDG #4:

## Ensure Inclusive & Equitable Quality Education & Promote Life-Long Learning for All

Current Conditions

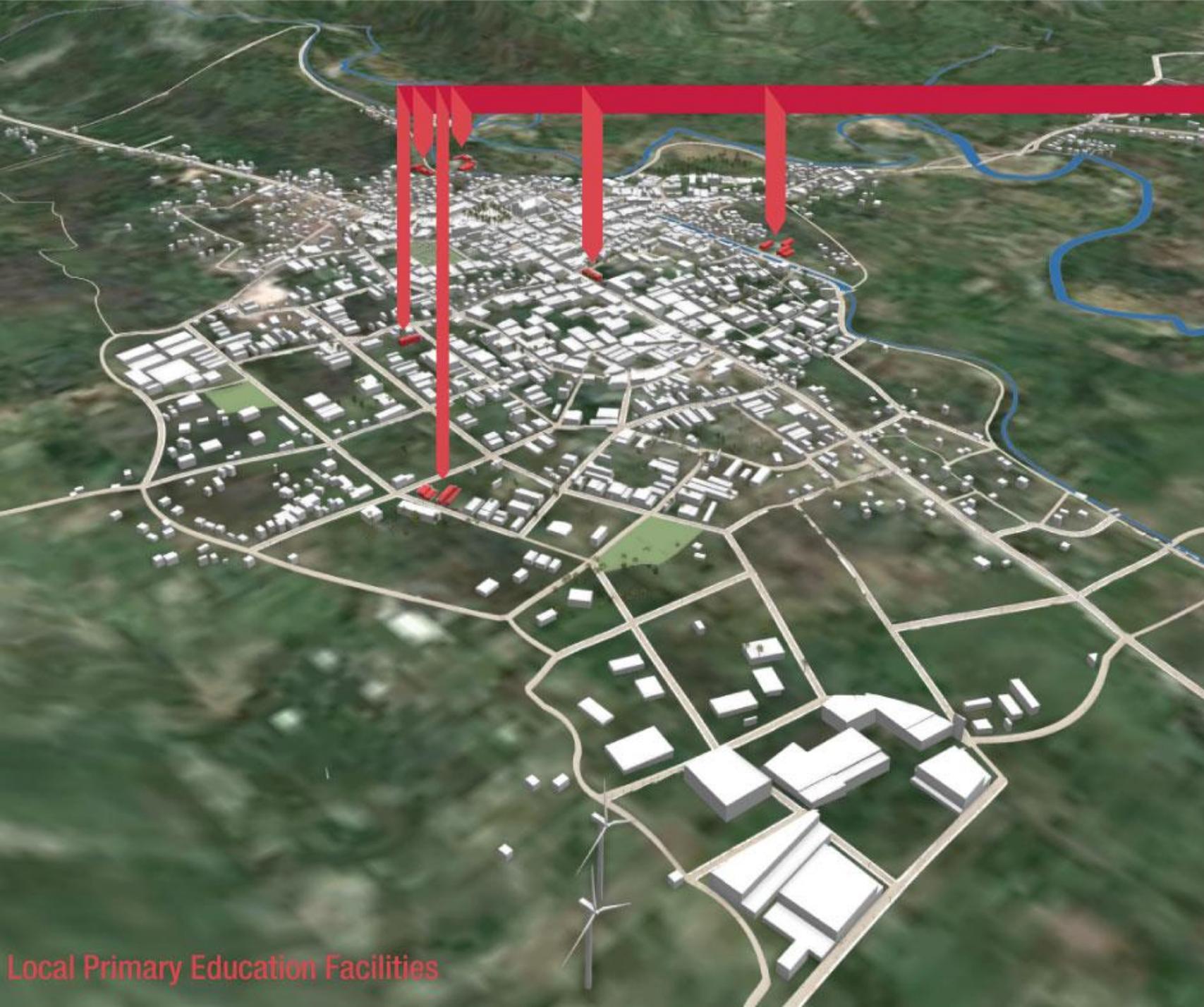
Target 4.1:  
by 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

As of 2012 Primary School participation in Haiti sits at about 77%



Local Primary Education Facilities





# SDG #4:

## Ensure Inclusive & Equitable Quality Education & Promote Life-Long Learning for All

2020

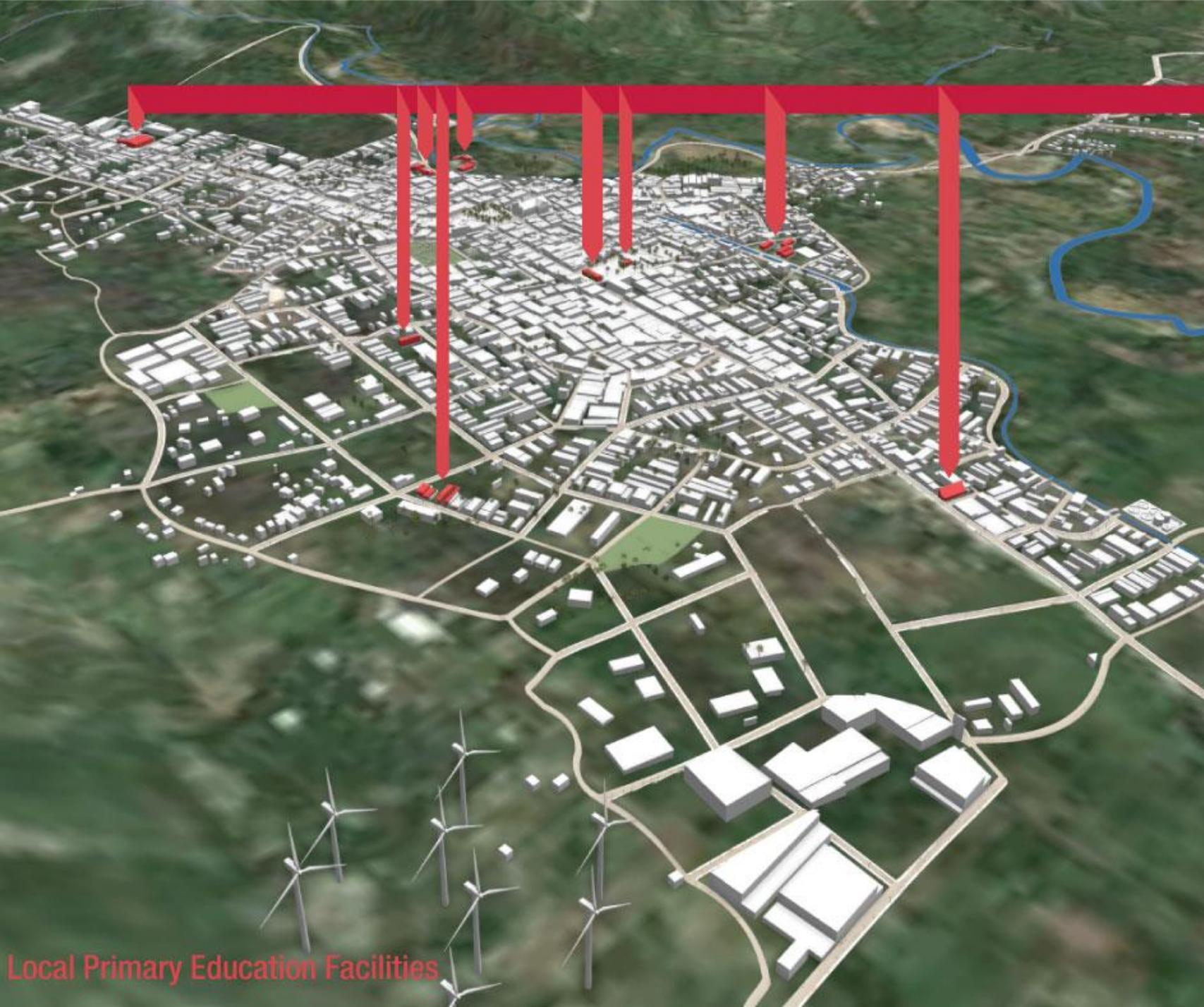
Target 4.1:  
by 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

By 2020 Primary School participation in St Raphael should be about 85% to achieve the target



Local Primary Education Facilities





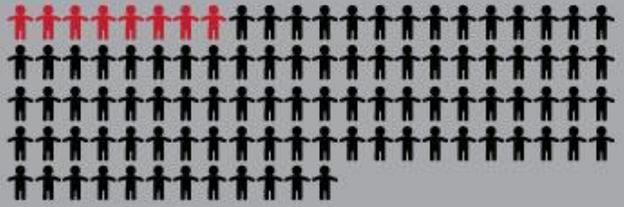
# SDG #4:

## Ensure Inclusive & Equitable Quality Education & Promote Life-Long Learning for All

2025

Target 4.1:  
by 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

By 2025 Primary School participation in St Raphael should be about 92% to achieve the target



Local Primary Education Facilities





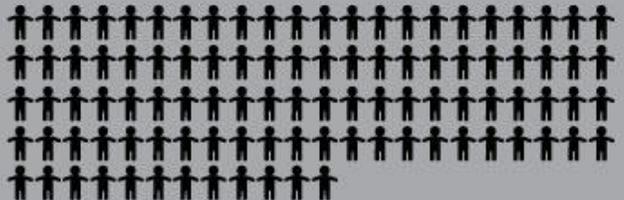
# SDG #4:

## Ensure Inclusive & Equitable Quality Education & Promote Life-Long Learning for All

2030

Target 4.1:  
by 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

By 2030 Primary School participation in St Raphael should be about 100% to achieve the target



Local Primary Education Facilities





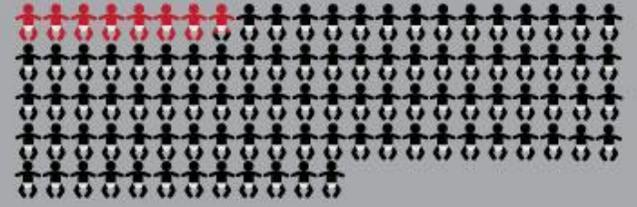
# SDG #3:

## Ensure Healthy Lives and Promote Well-Being for All at All Ages

Current Conditions

Target 3.2:  
by 2030 end preventable deaths of new-borns and under-five children

In 2012 Haiti's Under 5 Mortality Rate was 78 per 1,000 live births

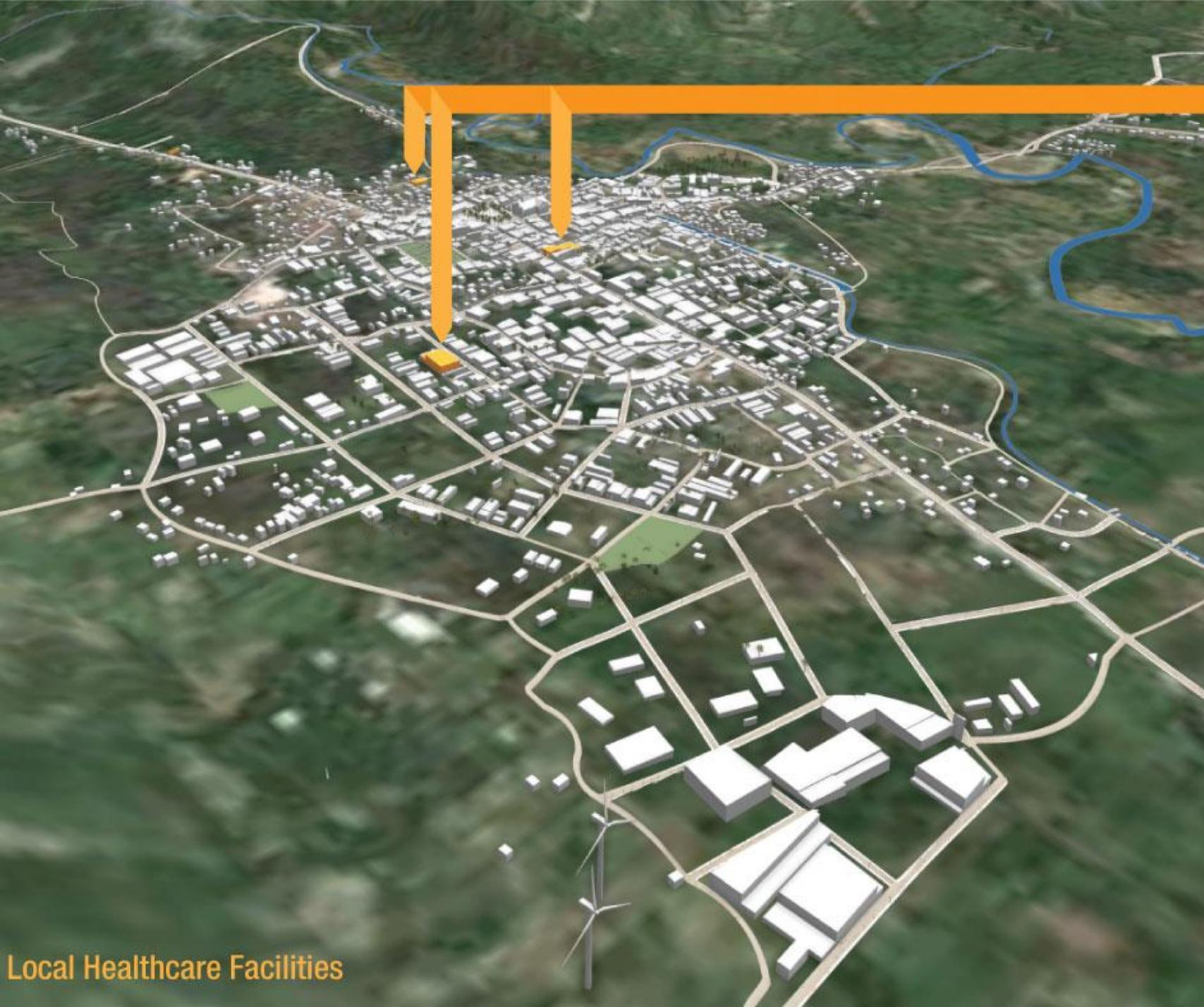


and the Infant Mortality Rate (Under 1) was 57 per 1,000 live births



Local Healthcare Facilities





# SDG #3: Ensure Healthy Lives and Promote Well-Being for All at All Ages

2020

Target 3.2:  
by 2030 end preventable deaths of new-  
borns and under-five children

By 2020 Haiti's Under 5 Mortality Rate can  
be reduced to 65 per 1,000 live births



and the Infant Mortality Rate (Under 1) can  
be reduced to 48 per 1,000 live births



Local Healthcare Facilities



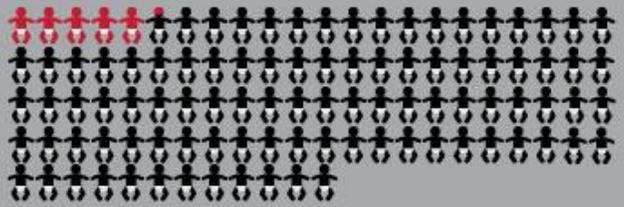


# SDG #3: Ensure Healthy Lives and Promote Well-Being for All at All Ages

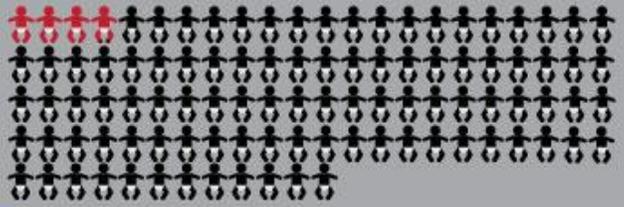
2025

Target 3.2:  
by 2030 end preventable deaths of new-  
borns and under-five children

By 2025 Haiti's Under 5 Mortality Rate can  
be reduced to 52 per 1,000 live births



and the Infant Mortality Rate (Under 1) can  
be reduced to 38 per 1,000 live births



Local Healthcare Facilities







## SDG #6:

# Ensure Availability and Sustainable Management of Water and Sanitation for All

Current Conditions

Target 6.1:

by 2030, achieve universal and equitable access to safe and affordable drinking water for all

As of 2012 only 85% of Haitians have access to improved water sources.

Local Water & Sanitation Facilities





## SDG #6:

# Ensure Availability and Sustainable Management of Water and Sanitation for All

2020

### Target 6.1:

by 2030, achieve universal and equitable access to safe and affordable drinking water for all

With the addition of water treatment plants and new wells, public access to affordable drinking water in St Raphael can be greatly improved. By 2020 up to 90% of Haitians can have access to affordable, safe and clean drinking water.

Local Water & Sanitation Facilities





## SDG #6:

# Ensure Availability and Sustainable Management of Water and Sanitation for All

2025

Target 6.1:

by 2030, achieve universal and equitable access to safe and affordable drinking water for all

With the addition of water treatment plants and new wells, public access to affordable drinking water in St Raphael can be greatly improved. By 2025 up to 95% of Haitians can have access to affordable, safe and clean drinking water.

Local Water & Sanitation Facilities



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Project



## SDG #6:

# Ensure Availability and Sustainable Management of Water and Sanitation for All

2030

### Target 6.1:

by 2030, achieve universal and equitable access to safe and affordable drinking water for all

With the addition of water treatment plants and new wells, public access to affordable drinking water in St Raphael can be greatly improved. By 2030 100% of Haitians can have access to affordable, safe and clean drinking water.

Local Water & Sanitation Facilities



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Layers

SAINT RAPHAEL

2014

2030

TREES

PARK

CANAL

WATERWAYS

HEALTHCARE

PRIMARY EDU

MARKET

FIELDS

SHELTER/FOOD PANTRY

Map navigation controls: Home, Location, Zoom In (+), Zoom Out (-)

Map navigation controls: Compass, Full Screen



# Next Steps

## the pilot



- Our next step here at ICGC is to launch a full scale pilot project in St Raphael
- This will include a full on the ground team, collecting data, training volunteers and putting our systems in place to make St Raphael the first Millennium Earth City
- The pilot process will allow us to work through the realities of on the ground data collection as well as to help us further develop and test our programs and processes
- Once this first pilot is underway we hope to have MEP easily duplicable and deployable anywhere at any scale.

# In Conclusion

- ICGC brings together staff members with many years of experience working with governments, universities, and businesses across the globe and offers solutions specifically tailored to put countries on track to achieve UN Sustainable Development Goals.
- By building the capacity of national, provincial, and local governments to collect, maintain, and analyze SDG indicator data, communities within these countries will be able to make informed decisions regarding sustainable development.
- Why you should leverage GIS:
  - Identify new insights through spatial analysis that would otherwise remain unknown
  - Use visualization as a key to understanding data
  - Improve your communications with stakeholders
  - Facilitate a more open, transparent and collaborative government
  - Improve management of resources and organization
  - Help communities plan and respond to crises.

# Thank You!



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