



# CREATING and UPDATING ENVIRONMENTAL & NATURAL RESOURCE INVENTORIES

Deborah Kratzer

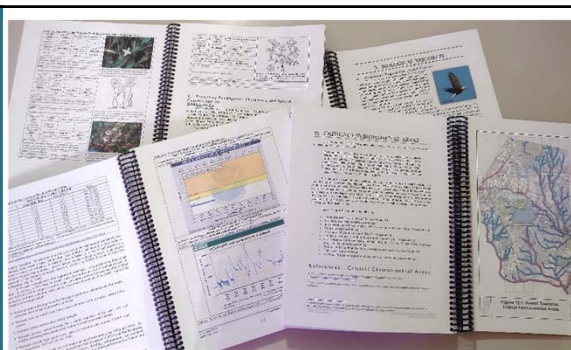


Kratzer  
Environmental  
Services

ANJEC  
Fundamentals for Effective  
Environmental Commissions  
March 8, 2022

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## An ERI is...



- ▶ documentation of natural resources
- ▶ an objective listing, rather than an interpretation or recommendation

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# Environmental vs. Natural Resource Inventory

- ▶ For practical purposes, they are the same

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## The goals of the ERI

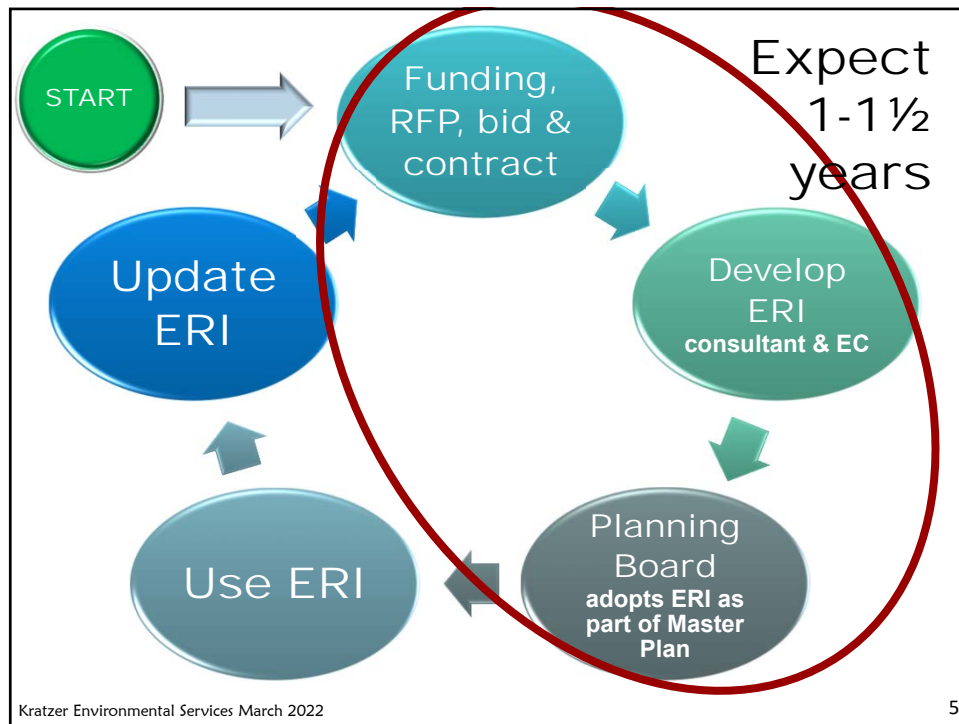


- ▶ to provide objective, reliable environmental data in one document to enable municipal officials to make more informed decisions
- ▶ to better protect the municipality's natural resources and the overall health and welfare of the community

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**START ERI**

- An ERI is usually initiated and overseen by the municipality's Environmental Commission
- Recommended (required) reading:
  1. ANJEC's Resource Paper on ERIs  
<https://anjec.org/publications/>
  2. Sustainable Jersey Action: Natural Resource Inventory (20 points)  
<http://www.sustainablejersey.com/action-s-certification/actions/#open/action/60>

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## Funding, RFP, bid & contract

### ► Funding?

- Municipal funds (e.g. EC budget or money set aside for Master Plan updates)?
- Sustainable Jersey?
- Other grant sources ?

### ► Consult with the appropriate municipal staff (e.g. financial officer, clerk) for specific procedures on accepting grant money, professional services contracts or bid contracts

### ► ANJEC's list of environmental consultants

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- Designate a project leader/ manager/ contact (usually an EC chair or member)
- What resources are in the municipality?
- If you're updating, what needs to be updated?
- Who is your audience?
- Begin to assemble references and resources to get the consultant started (e.g. copies of Master Plan, old ERI, phone or email contacts)

Before  
you write  
the  
Request  
for  
Proposals  
(RFP)



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# Write the RFP

- ▶ Be specific. Include a table of contents, map list, deliverables, schedule and qualifications
- ▶ Use an existing ERI that you like as a guide
- ▶ Sample Table of Contents:
  - Overview
  - Land use & land use change
  - Climate & air quality
  - Infrastructure
  - Physiography, Geology & Topography
  - Soils
  - Ground water & drinking water
  - Surface water
  - Biological resources
  - Open space & recreation
  - Historical resources
  - Regional relationships
  - Environmentally critical areas

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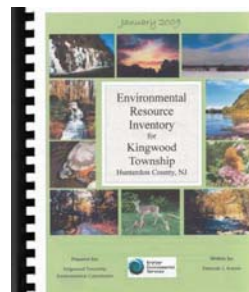
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- ▶ Is this the municipality's first ERI or an update?
- ▶ If an ERI was done, how old is it?

Update  
ERI

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- 2009
- Time to Update!



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## Some sources of mapped data



### ► NJDEP

<https://gisdata-njdep.opendata.arcgis.com/>



### ► NJDEP Geological Survey

<https://www.nj.gov/dep/njgs/geodata/index.htm>

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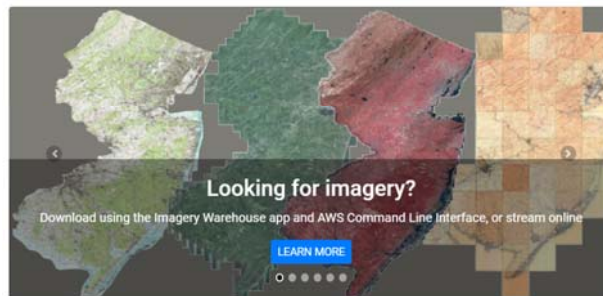


<https://njgis-newjersey.opendata.arcgis.com/>

## NJ Geographic Information Network



Home Enterprise Data Sharing About Resources NJ Geospatial Forum



### Find GIS Data

Search NJGIN Open Data for geospatial content

Search - ex. Stri

Elevation Data

Imagery

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## Other sources of mapped data



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## Mapping Tool: NJ-GeoWeb

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**NJ-GeoWeb** New Jersey Department of Environmental Protection BGIS

Find address or place

**About**

Questions or comments please contact BGIS at:  
Phone: (609) 777-0672  
Email: gisnet@dep.nj.gov

[NJ-GeoWeb Quick Start User Guide](#)

[NJ-GeoWeb Full User Guide](#)

[NJ-GeoWeb FAQ's](#)

[Layer List Groupings](#)

[Instructional Video Playlist](#)

Featured functionality includes:

**Add Data**

- Users can search through ArcGIS Online or upload their own data to be used within the application.
- Data can be uploaded in Shapefile, CSV, GPX, and GeoJSON formats.

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## Mapping Tool: NJ MAP

[kwsV=2Z z z 1wp ds51frp 2](#)

NJ Map is an interactive atlas for ecological resources, environmental education and sustainable communities. The Geospatial Research Lab at Rowan University's [Department of Geography, Planning and Sustainability](#) created this free online map viewer to connect NJ citizens, municipalities and advocacy groups with real time geospatial tools to support their planning and conservation efforts.

**NJ MAP**

HOME ABOUT GALLERY POSTS PROJECTS MAPS CONTACT US

**WELCOME TO NJ MAP**

AN INTERACTIVE ATLAS OF NEW JERSEY FROM ROWAN UNIVERSITY

Map Gallery Discover Blueprint of

Department of Geography, Planning, and Sustainability

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## StoryMaps & Apps: GALLERY FOR NJDEP BUREAU OF GIS

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## Mapping Software: ArcGIS

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- ▶ Metadata is data about data
- ▶ For all mapped data layers, record:
  - Author/source
  - Name of data layer
  - Year
  - Scale
  - Data use agreements, if necessary
  - Include in the ERI as an appendix

## Document Metadata of Mapped Data



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## Describe changes over time

- ▶ Aerial photos from different years

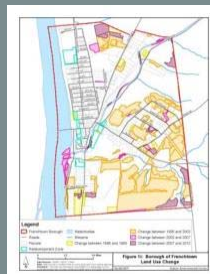
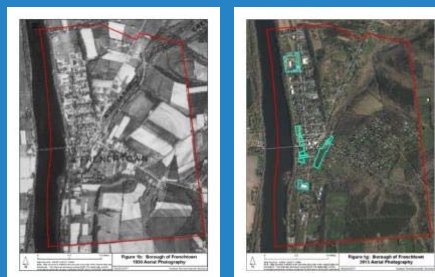


Table 1.2: Change in Land Use Type from 1986 to 2012\*

Land Use Type	26 year change (Acres)	26 year change (Percent)
Agriculture	-19.1	-2%
Barren Land	0.0	0%
Forest	-4.7	-1%
Urban	5.0	1%
Water	17.8	2%
Wetlands	1.0	0%
Total:		

\*Some changes may be artifacts rather than actual changes, such as due to the increase in resolution in 1995 and 2002 or changes in definitions. Red text indicates decreased percent from the preceding assessment, while blue indicates increased percent.

Source: NIDEP 2015, NIDEP 2010, NIDEP 2008, NIDEP 2006, NIDEP 2004, NIDEP 1998

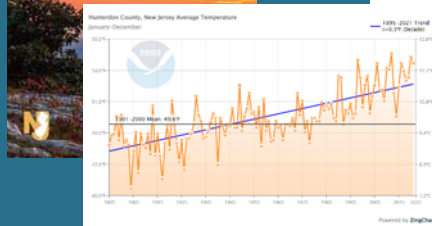
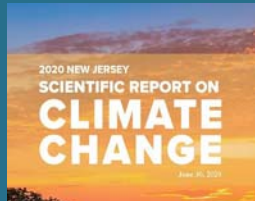
- ▶ Land use change

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# Climate and weather



- ▶ Why does it matter?
- ▶ This section is a required part of ERIs by Sustainable Jersey.
- ▶ Difference between climate and weather
- ▶ Climate trends
- ▶ Normal and extreme weather
- ▶ A couple of sources:

- <https://www.nj.gov/dep/climatechange/data.html>
- <https://www.ncdc.noaa.gov/cag/>

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## Air quality

- ▶ Several air pollutants are among the highest risks to human health & have socioeconomic & ecological impacts.



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## Describe infrastructure



► Where does drinking water come from?

- Is it safe?
- Is it sustainable?

► Where does waste water go?

► Where does stormwater go?



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► Why does topography matter?

- Over 15% slope is considered a ***steep slope***
- Steep slopes present difficulties for construction
- Vulnerable to erosion


## Elevation and steep slopes



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## Soils

<https://websoilsurvey.nrcs.usda.gov/app/Ho mePage.htm>

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### ► Why are soils important?

- Soils influence the capacity of land to support plant life and human uses such as roads, buildings and agriculture.
- Map soil characteristics, for example:
  - Farmland soils
  - Septic Limitations


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### ► Why is geology important?

- Bedrock is the solid rock beneath the soil and surficial rock.
- It's the source of soil and defines the aquifer
- Rock outcrops?
- Historic fill?

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## Geology



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## Ground Water & Drinking Water Resources

- ▶ What is an aquifer?
- ▶ Where do residents get their potable water from?
- ▶ Quality
  - Private wells (Private Well Testing Act) <https://njdep.maps.arcgis.com/apps/MapSeries/index.html?appid=826ec9fae77543caa582a787d5f088e7>
  - Public water systems [https://www9.state.nj.us/DEP-WaterWatch\\_public/index.jsp](https://www9.state.nj.us/DEP-WaterWatch_public/index.jsp)
- ▶ Quantity (e.g. Water Supply Plan)
  - <https://www.state.nj.us/dep/watersupply/wsp.html>

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## Surface Water Resources



- ▶ What is a watershed?
- ▶ Water quality
  - Surface water quality standards designations
  - Integrated WQ Assessment Results
- ▶ Floodplains
- ▶ Wetlands

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- ▶ Why do RT&E species matter?
- ▶ Descriptions and habitat requirements
- ▶ Map
  - Landscape project mapping for animals
  - Natural Heritage Grid Map for plants
  - Natural Heritage Sites for exceptional habitats
  - Other, such as Important Bird Areas

Rare,  
threatened  
and  
endangered  
**plant and  
animal  
species**



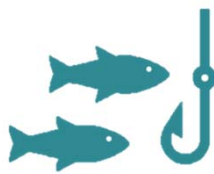
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## Anthropogenic impacts

- ▶ Discharges - NJ Pollutant Discharge Elimination System (NJPDES)
- ▶ Surface, ground & drinking Water Quality
- ▶ Known Contaminated Sites List (KCSL)



- ▶ Contaminated ground water – CKE and CEA
- ▶ Fish consumption advisories

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# Impervious Surface



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## ► Why does IS matter?

- Areas with high proportion of impervious surface contribute greater non-point source (NPS) pollution
- NPS is the leading cause of water pollution
- Watersheds with > 10% impervious surface begin to show signs of degraded biological communities

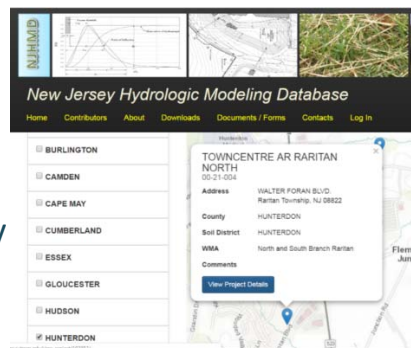
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# Stormwater

## ► Why does stormwater matter?

- Increases erosion, flooding and NPS pollution
- Stormwater regulations
  - [https://www.nj.gov/dep/dwq/msrp\\_home.htm](https://www.nj.gov/dep/dwq/msrp_home.htm)
  - <https://njstormwater.org/>
- Stormwater basin inventory
  - Municipal inventory?
  - <https://hydro.rutgers.edu/>



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- ▶ Why are invasive species considered one of the state's top environmental problems?
- ▶ What invasives are of particular concern in the municipality?
- ▶ Examples of impacts on forest health and agriculture

## Invasive species

**Example:**  
Japanese barberry  
(close up and forest view)




**Example:**  
spotted lanternfly




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## Open Space, Recreation, Farmland Resources



- ▶ Is there an Open Space, Recreation and Farmland plan?
- ▶ Is the inventory up to date?
- ▶ Decide whether to include in ERI before the RFP is developed



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# Historic & Archeological Resources

- ▶ Are historical or archeological resources important in the municipality?
- ▶ Is there an existing up to date inventory?
- ▶ Decide whether to include in the ERI before the RFP is developed



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# Something specific to your municipality...

- ▶ Example:  
Tewksbury  
Scenic Roads



## Scenic Roads

The Scenic Roads Commission is charged with monitoring the preservation of 33 Township designated scenic roads. Scenic roads are shown on Figure 2e.

**Table 2.5: Designated Scenic Roads (alphabetical list)**

Beavers Road (upper portion)	Flint Hill Road	Phillower Road
Bisell Road	Fox Hill Road	Porterstown Road (portion of)
Black River Road	Frog Hollow Road	Ridge Road
Boulder Hill Road	Guinea Hollow Road	Rockaway Road
Burrell Road	Hill and Dale Road	Saw Mill Road
Church Street	Hollow Brook Road	Still Hollow Road
Cold Brook Road	Homestead Road	Sutton Road (portion of)
Cold Spring Road	McCum Mill Road	Vlietown Road
Deer Hill Road	Meadow Lane	Water Street
Farmersville Road	Mountain Road	Welsh Road
Fennley Road (portion of)	Palatine Road	Wildwood Road

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# Something specific to your municipality...

## ► Example: Highland Park Street Trees



Table 7.2: Significant Street Trees

ID	Common Name	Scientific Name	Address
1	Common Elm	<i>Ulmus americana</i>	1475 N. 1st Ave. 1st
2	White Birch	<i>Betula papyrifera</i>	1475 N. 1st Ave. 1st
3	Red Maple	<i>Acer rubrum</i>	1475 N. 1st Ave. 1st
4	Green Ash	<i>Fraxinus americana</i>	1475 N. 1st Ave. 1st
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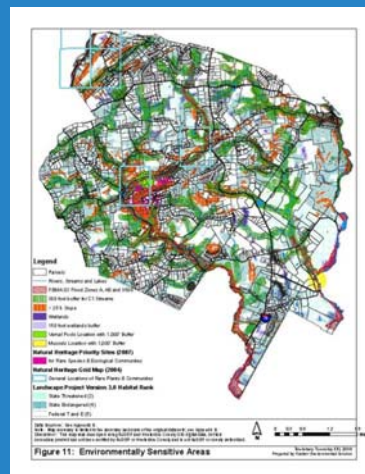
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- May include:
- Steep slopes
  - Floodplains
  - Wetlands & wetland buffers
  - 300' C1 riparian buffers
  - Landscape Project Rank 3-5
  - Vernal pools
  - Natural Heritage Priority Sites
  - Open space
  - Well Head Protection Areas

## Environmentally Critical Areas



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## Planning / Land Use Board


- ▶ Goal is for the Board to adopt ERI as part of the Master Plan
- ▶ Solicit input
  - Don't wait until ERI is final
  - Planning/Land Use Board
  - Municipal elected officials
  - Municipal professionals
- ▶ Give enough time but set deadlines
- ▶ Provide a presentation at a Board meeting
- ▶ Board holds a hearing for adoption of ERI as part of Master Plan
  - Municipal Land Use Ordinances must be consistent with the Master Plan
  - EC should be provided with copies of site plans and proposals





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## Good communication is key!

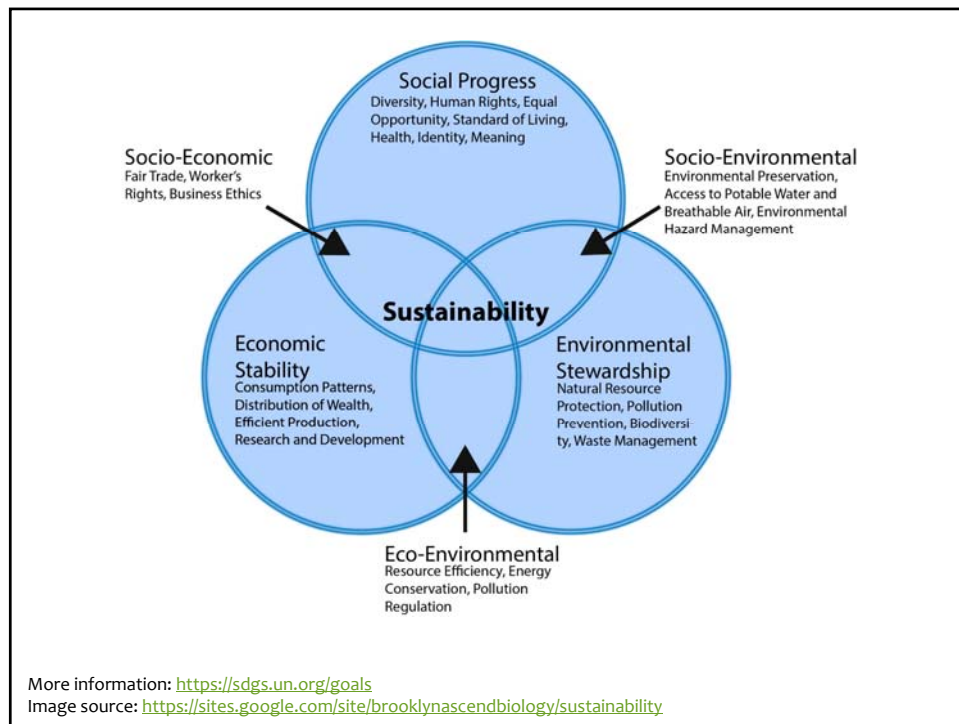








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You cannot protect the environment unless you empower people, you inform them, and you help them understand that these resources are their own, that they must protect them.

— Wangari Maathai —

AZ QUOTES

At its core, the issue of a CLEAN ENVIRONMENT is a matter of PUBLIC HEALTH.

~ Gina McCarthy ~  
www.EcoGentleman.com  
ecog

The world will not be a better place by a few people living a perfectly sustainable life but by billions trying sustainability imperfectly.

STYLE DESTINO

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[KratzerEnv@gmail.com](mailto:KratzerEnv@gmail.com)

