



Transportation Association of Canada's The Canadian Guide for Greener Roads

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MMM Group Limited

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Why is there a TAC CGGR?

What is the need?



What is the need?

Pressure



Confusion



Resources



How did “we” solve the problem?

What is the Canadian Guide for Greener Roads?

Who is it for?



“We” are MMM + TAC PSC:

FEDERAL (1)

Transport Canada

PROVINCIAL (8)

Alberta

British Columbia

Manitoba

Nova Scotia

Ontario

Prince Edward Island

Québec

Saskatchewan

MUNICIPAL (12)

City of Calgary

City of Edmonton

City of Hamilton

MUNICIPAL CON'T

City of Ottawa

City of Toronto

City of Winnipeg

Halifax Regional Municipality

Region of Halton

Region of Peel

Region of Waterloo

Region of York

Ville de Montréal

ASSOCIATIONS / OTHER (4)

Cement Association of Canada

ColasCanada

Ontario Hot Mix Producers Association

Ready Mixed Concrete Association



What does it need to do?



Provide **objectives** that are clear, meaningful relevant and achievable.

Organize and describe **sustainability practices** to meet the objectives.

Provide a way to **self-evaluate** a “road project”.



What is a “road project”?



Operations



Decommissioning



Planning



Construction

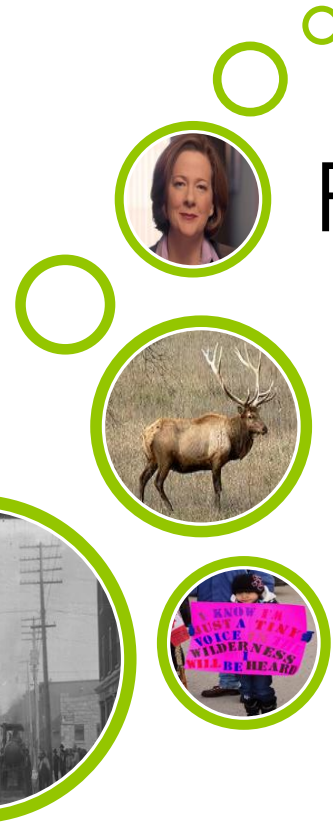


Design



What is a “road project”?

Inside the
ROW / Curb
to Curb +
sidewalk



Policy



Linked areas



Users /
Communities

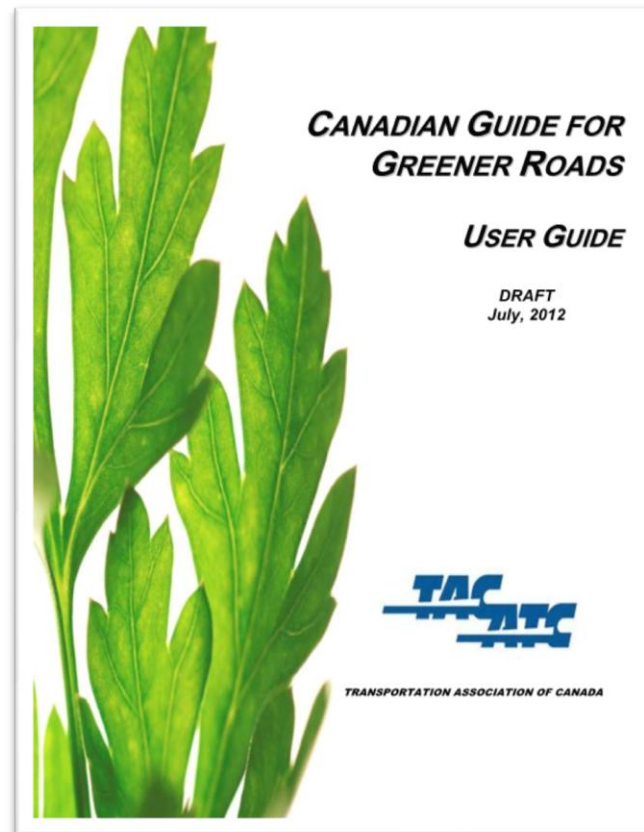


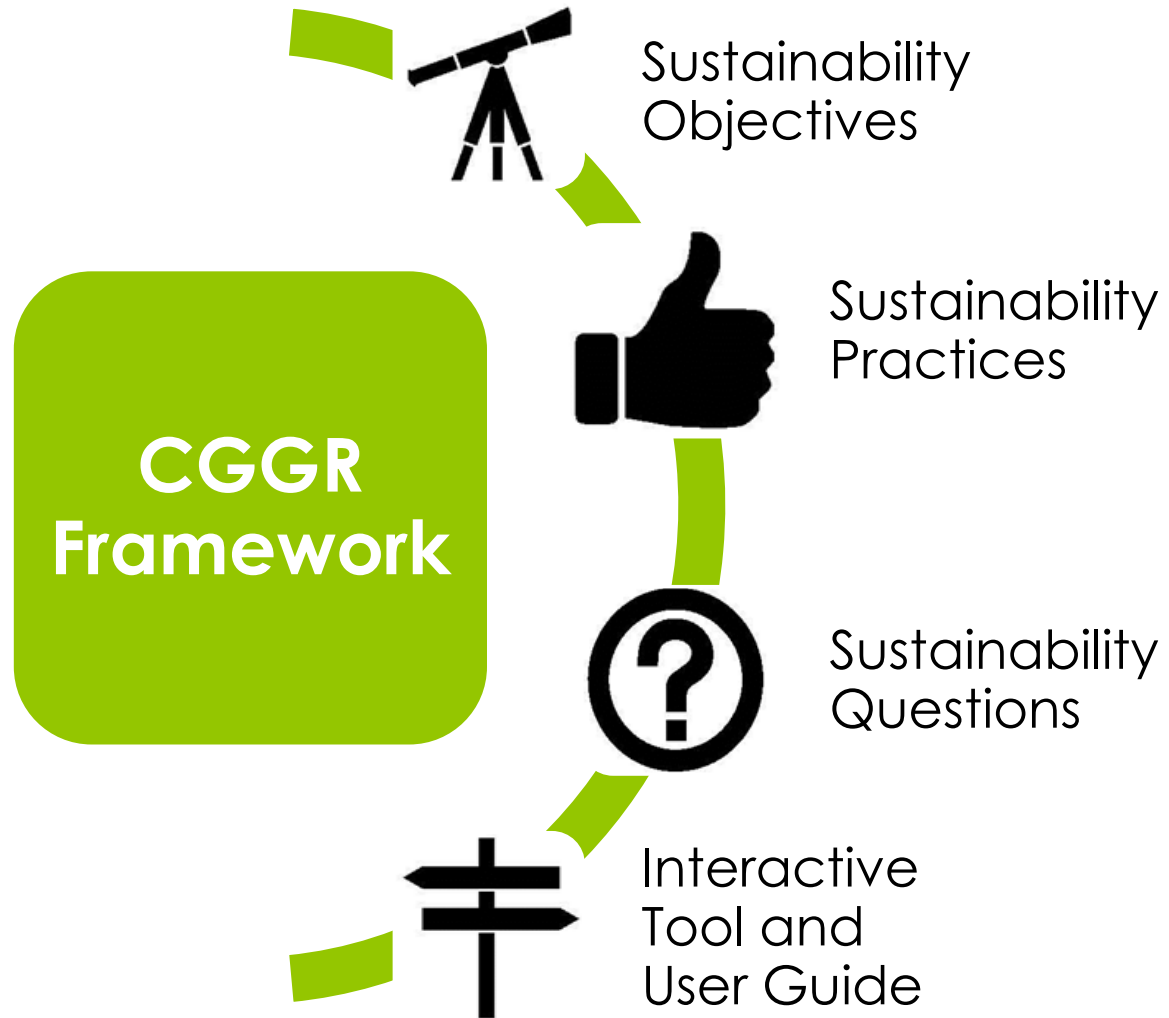
Who's it for?

Technical Layperson



What is the CGGR?





Sustainability Objectives

Why develop them?

Where did they come from?

What are they?



Why develop Sustainability Objectives?

- **Sustainability is an unclear concept** when applying it to a project. It just means “do better” with little insight into what is trying to be achieved and the trade-offs being made.
- **Scope of Sustainability unclear.** Does it include social justice (child labour)
- **Specific reason for doing things / actions unclear.**
 - Using recycled materials can have many benefits. The ones realized depends on the context of the project.
 - **explicit goal**
 - **potential benefits**



Where is the goal?



Sustainability Objectives

- Provide **objectives** that are clear, meaningful, relevant and achievable.



Resources Used

1. **Greenroads** (USA)
2. **Sustainable Highways Self-Evaluation Tool - INVEST** (FHWA)
3. **GreenLITES** (New York DOT)
4. **CEEQUAL** – (UK)
5. **IS Rating Scheme** (Australia)
6. **I-LAST™ Illinois** – (Illinois DOT)
7. **Envision™** (USA)
8. **LEED® ND** (Canada)
9. **GreenPave** (Ministry of Transportation Ontario)
10. **The Sustainable Sites Initiative**



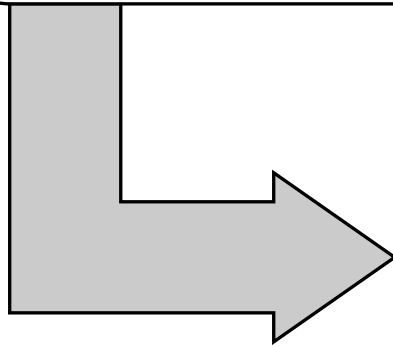
12 Objectives

1. **Reduce Virgin Material Use**
2. **Optimize Waste Stream**
3. **Reduce Energy Use**
4. **Reduce Emissions to Air**
5. Maintain or Improve Hydrologic Regime Characteristics
6. Maintain Biodiversity
7. Engage Community Values and Sense of Place
8. Improve Safety
9. Improve Access and Mobility
10. Improve Local Economy
11. **Increase Lifecycle Efficiency**
12. Promote Innovation



Transportation
Agency
Sustainability
policy, plan or
program

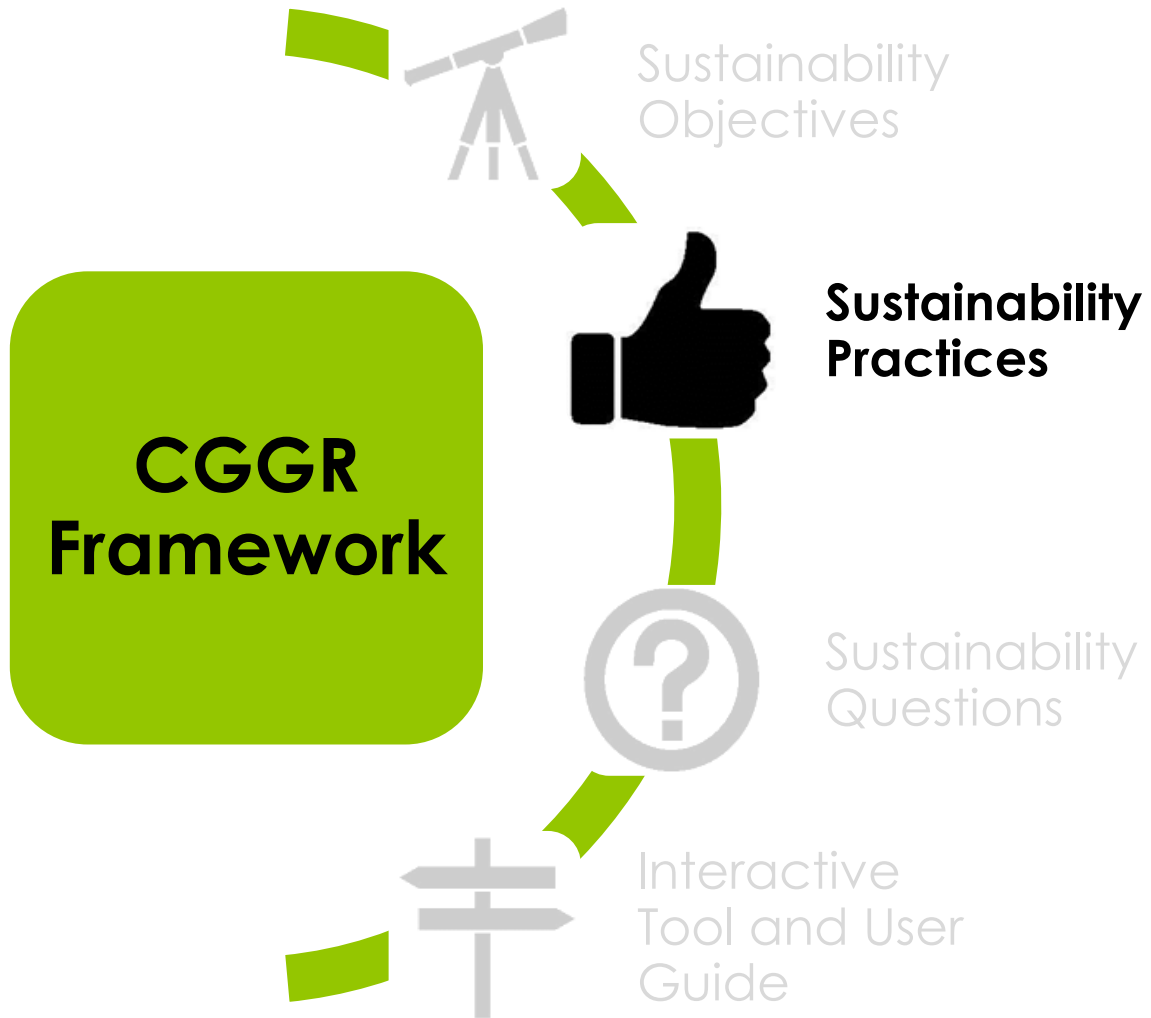
- Waste is reduced towards zero



CGGR
Sustainability
Objectives

- Optimize Waste Stream





The Practice Sheets

Development

1. Survey of TAC Membership
2. Environmental Scan/Literature Review
3. Review of TAC Task Force Suggestions (113)

Result – over 90 practices - PSC picked top 30



The Practice Sheets

Why “Fact” Sheet Approach?

1. Easier to focus
2. Easier to update / add to
3. Discreet information you can take with you



The Practice Sheets

1. Award Winning Case Study: MTQ Environmental Monitoring
2. Bicycle Access
3. Context Sensitive Solutions
4. Earthwork Balance
5. Energy Efficient Illumination
6. Environmental Protection During Road Construction
7. Environmental Protection During Road Maintenance
8. Erosion and Sediment Control Plan
9. Green Procurement
10. Habitat Retention
11. High Occupancy Vehicle (HOV) Lanes
12. Holistic ROW Landscape
13. Intelligent Transportation Systems (ITS)
14. Lifecycle Assessment (LCA)
15. Lifecycle Cost Analysis (LCCA)
16. Light Pollution Control
- 17. Long-Life Pavements**
18. Low Impact Development
19. Non-Pavement Concrete Reuse and Recycling
- 20. Pavement Preservation and Reuse**
21. Pedestrian Access
- 22. Permeable Pavements**
- 23. Recovered Materials in Pavement**
- 24. Reduced Energy Consumption - Pavement**
25. Reuse of Non-pavement Road Elements
26. Road Safety - Urban Bicycles Facilities
27. Road Salt Management
28. Runoff Flow Control
29. Runoff Quality
30. Safe Intersections and Driveways
31. Waste Management Plan



Remember - Who's it for?

Technical Layperson





Canadian Guide for Greener Roads

RECOVERED MATERIALS IN PAVEMENT

Sustainability Pillars



Climate Change



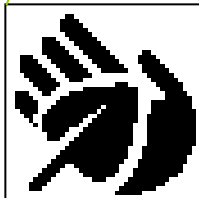
Barriers



Attributes



This is one of a number of Canadian Guide for Greener Roads (CGGR) practices. Each practice is a general outline of a topic for people interested in being part of the “sustainability conversation” for roads. Applicable jurisdictional requirements, technical standards and guidance documents, and professional advice should be consulted when considering the information provided. CGGR Practices support the Sustainability Objectives defined in the [CGGR User Guide](#). Other CGGR Practices can be found using the hyperlinks in this practice or via the interactive selection tool found here: [CGGR Practice Selection Tool](#).



Environmental Integrity



Practice Sheets

Layout & Content

- What Is 'Practice Name'?
- Why Do It?
- How?: 'Practice Name' In A Project
- What are the Barriers and Issues?
- **Who Do I Talk To?**
- **Examples**
- **Targets and Metrics**
- Relation to Other Practices
- **Resources & References**





Canadian Guide for Greener Roads

EXAMPLE 2: CRUSHING AND PROCESSING RECLAIMED CONCRETE FOR CITY OF SASKATOON REHABILITATION OF ROAD STRUCTURES – SASKATOON, SK

In 2009, the City of Saskatoon implemented the “Green Streets” Infrastructure Program. Given the limited success of conventional crushing technologies, an innovative impact crusher with a screener and magnetic metallic extruder was employed to process the concrete rubble materials for the City of Saskatoon’s “Green Streets” Infrastructure Program. Impact crushing production rates averaged between 100 MT and 300 MT per hour, generating up to five alternate sized materials at once with minimal waste in 2009. Recycled HMA and PCC materials produced in 2009 had at least 30 percent improved mechanistic mechanical properties than virgin source counterparts. Through the implementation of the City of Saskatoon’s “Green Streets” Infrastructure Program, on-site recycling methods and recycled materials were used to construct a number of test sections over the 2009 construction season using recycled HMA and PCC in the road structures.



Figure 1: Reconfigured Impact Crusher (TAC, 2010)



Target

- Long-life Pavement

Greenroads :

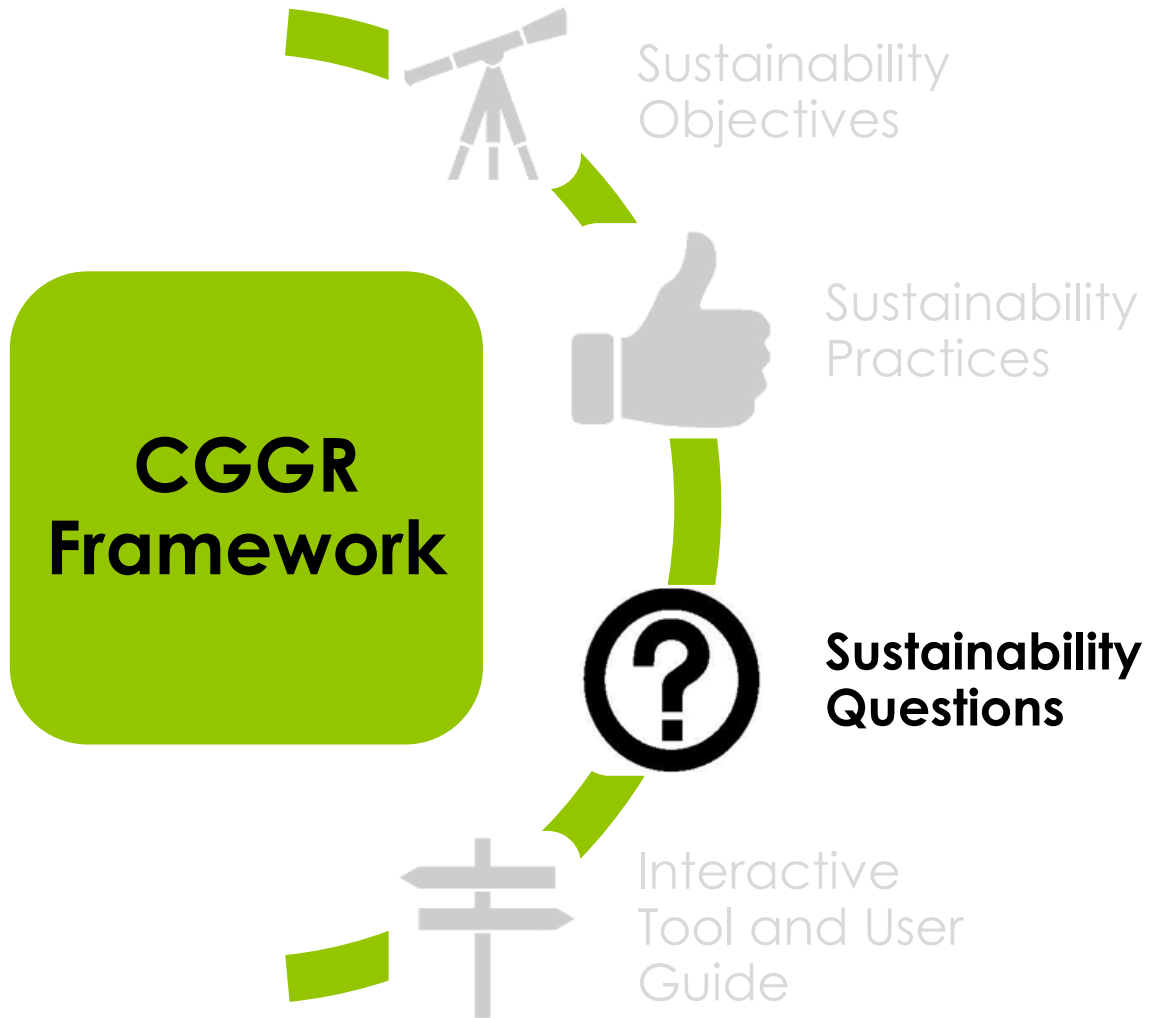
- 75% of the total new or reconstructed pavement... [as] long-life pavement... minimum 40-year design life.

MTO Greenpave:

- 3 Points – Rigid pavement
- 2 points – Composite; perpetual asphalt; deep strength asphalt

FHWA:

- 75% long-life pavement (Greenroads)
AND
- Pavement design is in accordance with a design procedure that is formally recognized,... ...1993 AASHTO Design of Pavement Structures manual or AASHTO MEPDG-1.



38 questions

7

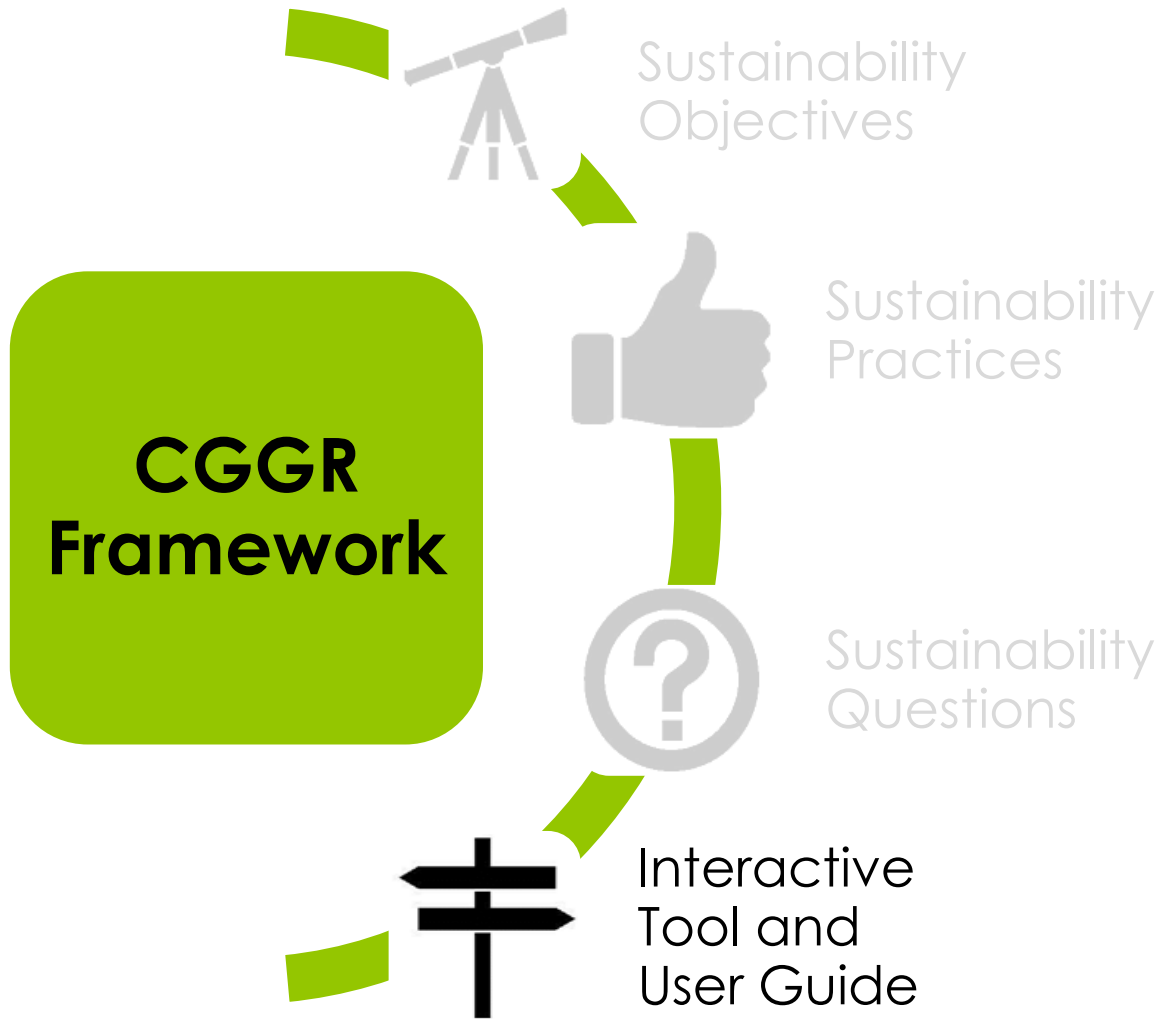
Lifecycle

8

Reduce / Optimize
Waste

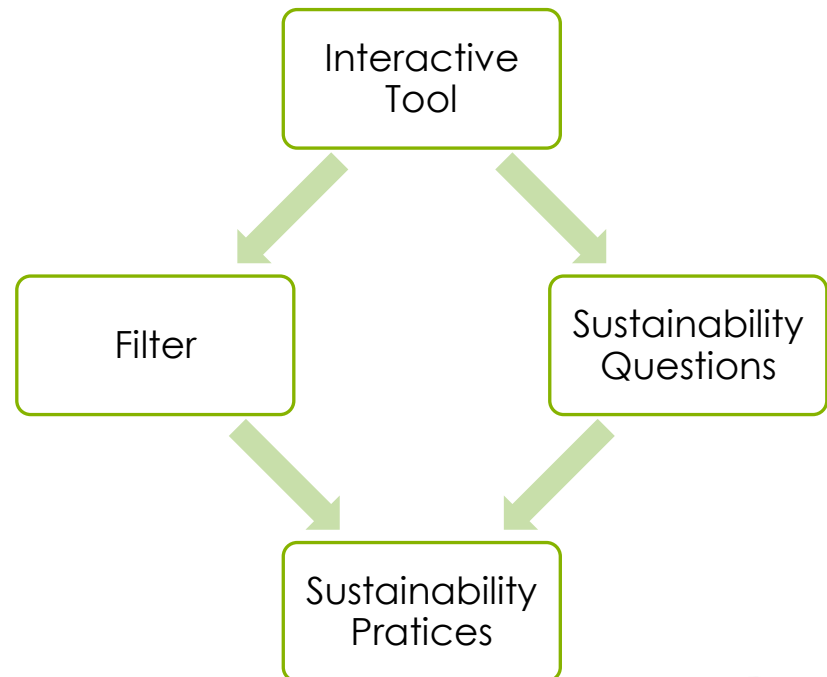


CGGR SELF-EVALUATION		Applicable	Self- evaluation Rating
30	Has beneficial use been made out of any existing materials, structures, etc.	Yes	A
36	During construction and operations, have toxic or otherwise hazardous materials on site been reduced or eliminated to diminish the possibility of contamination?	TBD	
37	Have you sought to minimize the quantities of waste generated by the construction, and/or maximized the opportunities for the waste generated to be recycled or reused?	Yes	C



The Database Tool

1. Filter by project characteristics
 - Objective,
 - Barrier,
 - Cost,
 - Stage,
 - Type, etc.



Final Thoughts

1. **Pavement is a focus of sustainability**
2. **Sustainability**
 1. Needs definition
 2. Needs a vision of a future
 3. Is context dependent



Thank you

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