Climate Change Challenge

Theme 3 – Sustainable Roads

President: Aniceto Zaragoza, Oficemen, Portugal
Moderator: Bachar Hakim, Scott Wilson, UK

International Road Federation 16th World Meeting
Lisbon, 25-28 May 2010

Climate Change Challenge Workshop
Theme 3 – 26 May 2010

- Introduction
- Summary of papers
- Seven papers (USA, Finland, Switzerland, France, Spain, and Netherlands)
- Oral presentations (15 minutes each)
- Debate on main statements

Climate Change Challenge Papers

1. **Greenroads: development and application of a sustainability rating system for roadways** - *Steve Muench, Jeralee Anderson and Tim Bevan, University of Washington, USA*

2. **Software tool for environmental, economic and social assessment of road projects** - *Konsta Sirvio and Sari Jusi, Sirway Ltd. Finland*

3. **Monitoring and assessing GHG emissions from road construction and maintenance activities: the IRF GHG calculator** – *Susanna Zammataro, IRF, Switzerland*

4. **A unique eco-comparator for all the French road builders' companies** – *Christine Leroy, USIRF Route de France, France*

5. **Energy sustainable bituminous mixes** - *Maria Del Rio Prat, Elsa Sanchez-Alonso, Daniel Castro-Fresno, Angel Vega Zamanillo and Miguel Angel Calzada Perez, University of Cantabria, Spain*

6. **Adapting transport infrastructure for climate change** – *Adnan Rahman, Ecorys, Netherlands*

7. **Environmental audits for roads** – *Enrique Miralles Olivar, Spanish Road associattion, Spain*

1. Greenroads: development and application of a sustainability rating system for roadways

- Seven key components to sustainability: ecology, equity, economy, extent, expectation, experience and exposure
- Greenroads (V1) has 11 project requirements, 37 voluntary credits (108 points) and up to 10 points worth of customer credits
- Project level sustainability performance can be assessed
- Greenroads sets “achievement levels” for scoring (Certified, Silver, Gold and Evergreen)
- Use as an external standard, a project accounting, a sustainable solution and for competitive advantage.

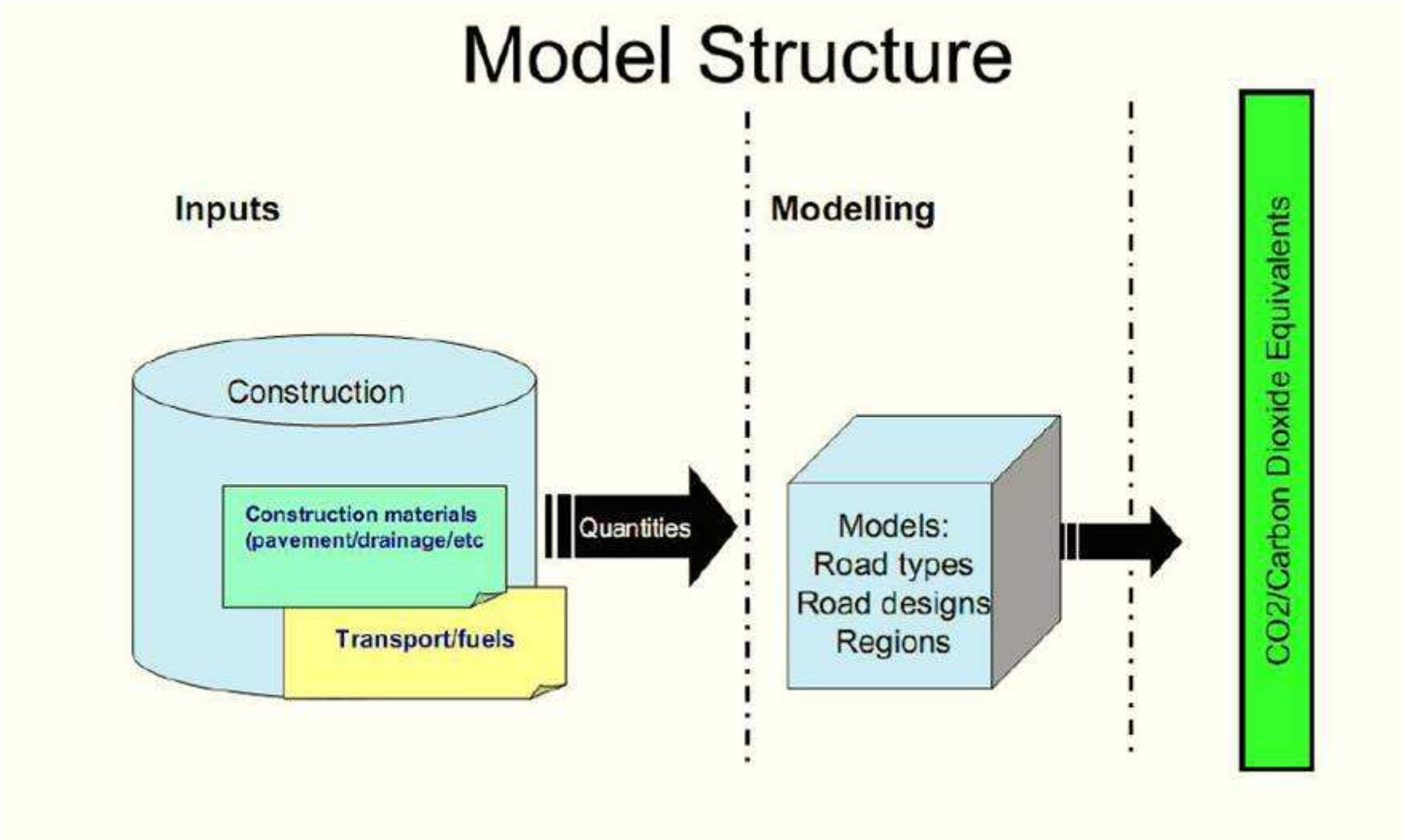
2. Software tool for environmental, economic and social assessment of road projects

- Economic rate of return (vehicle operating cost, travel time and accident costs) for project assessment
- Incorporate environmental and social factors for project planning and post evaluation
- The model is mainly for rural roads
- To assess the impact of road and improve access to markets and services (health and education) on reducing poverty and vulnerability
- Impact on economic growth (reducing cost of production) and quality of life
- Direct impacts (travel time and cost, fuel saving, safety, employment
- Negative impact (environmental, air and water quality, noise and greenhouse emissions)

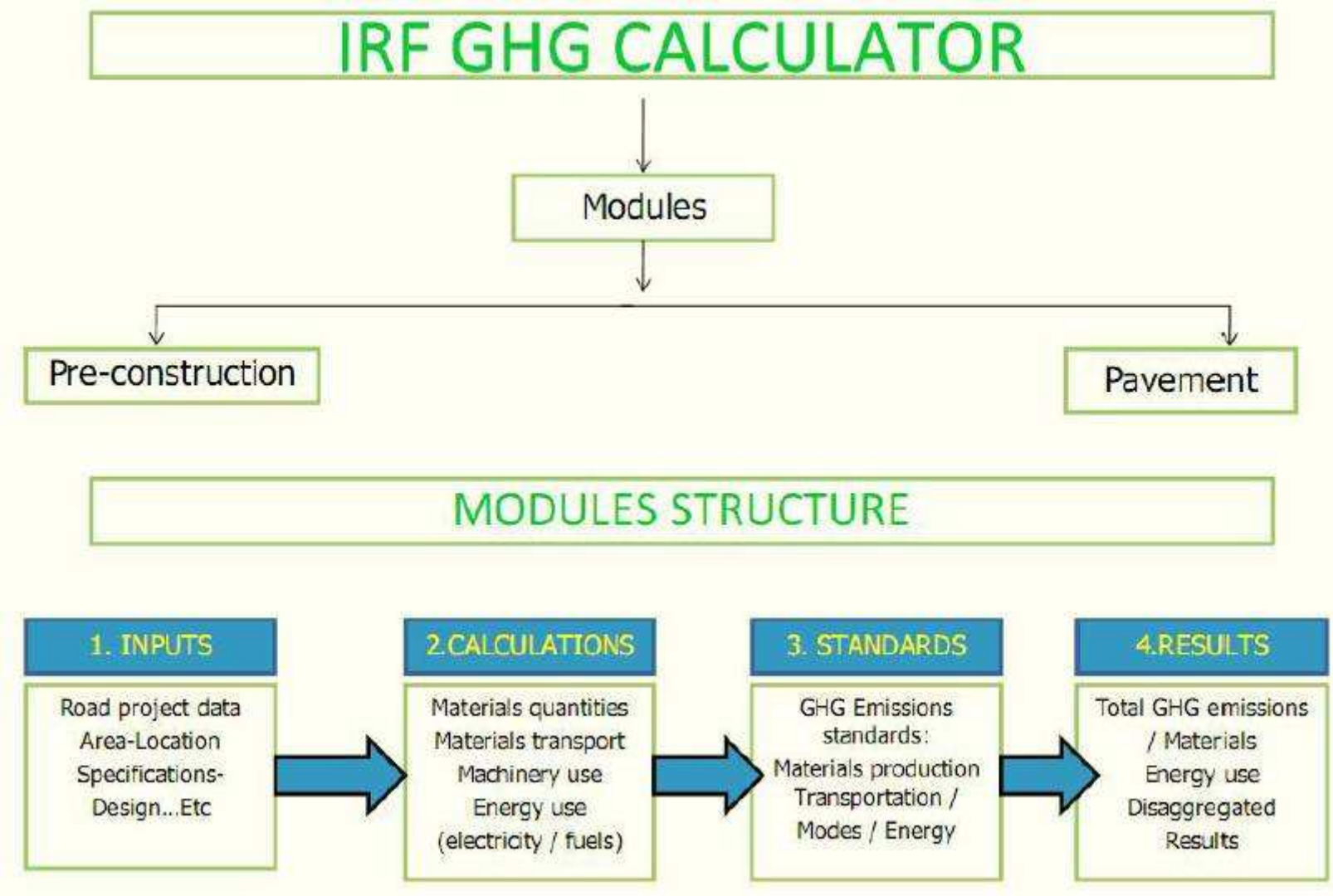
3. Monitoring and assessing GHG emissions from road construction and maintenance activities: the IRF GHG calculator

- IRF has designed a methodology for the calculation and modelling GHG from road construction projects
- Environmental analysis of road projects
- Comparing various road building technique, materials, supply and transport
- Calculate GHG emissions for projects

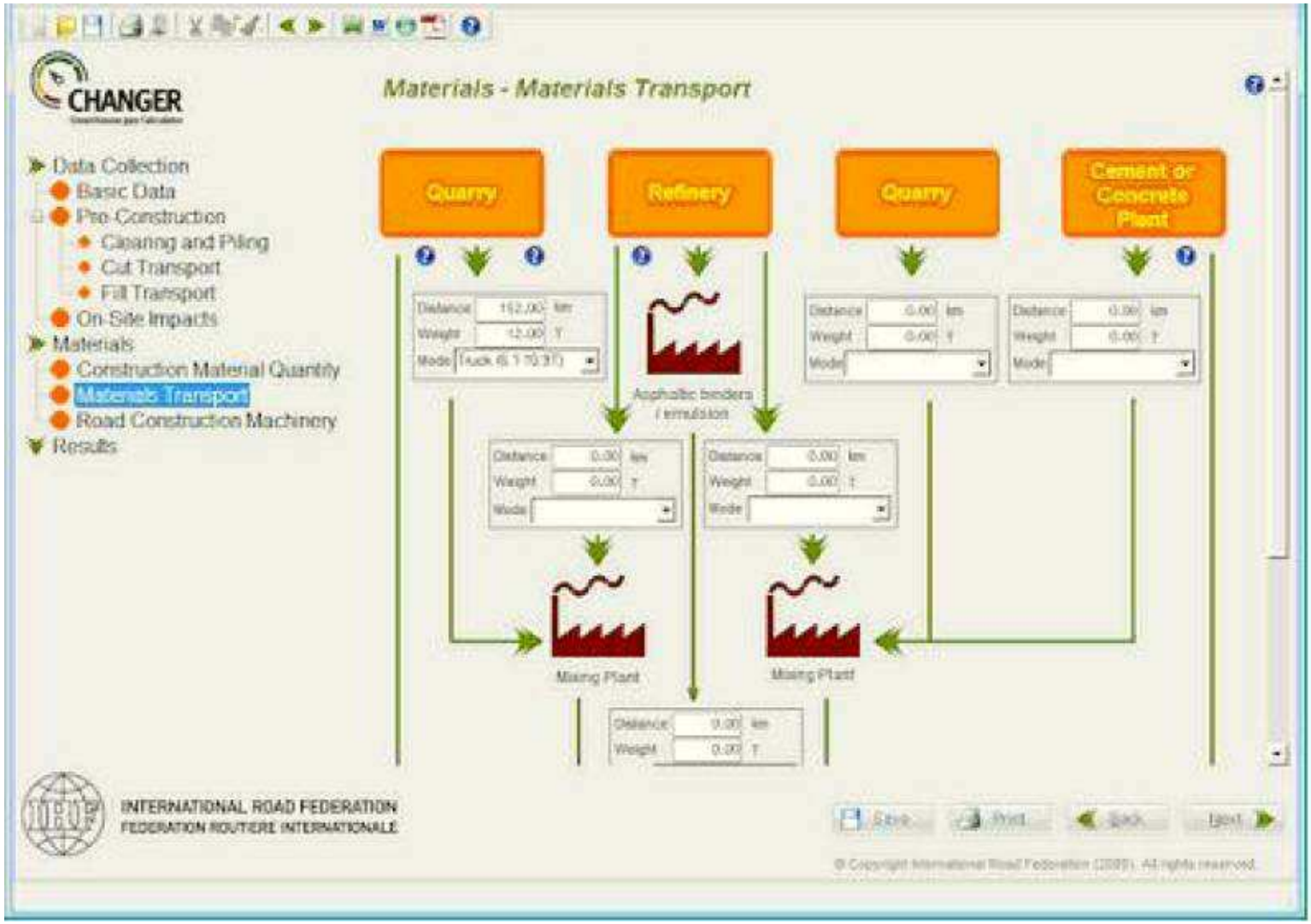
3. Monitoring and assessing GHG emissions from road construction and maintenance activities: the IRF GHG calculator



3. Monitoring and assessing GHG emissions from road construction and maintenance activities: the IRF GHG calculator



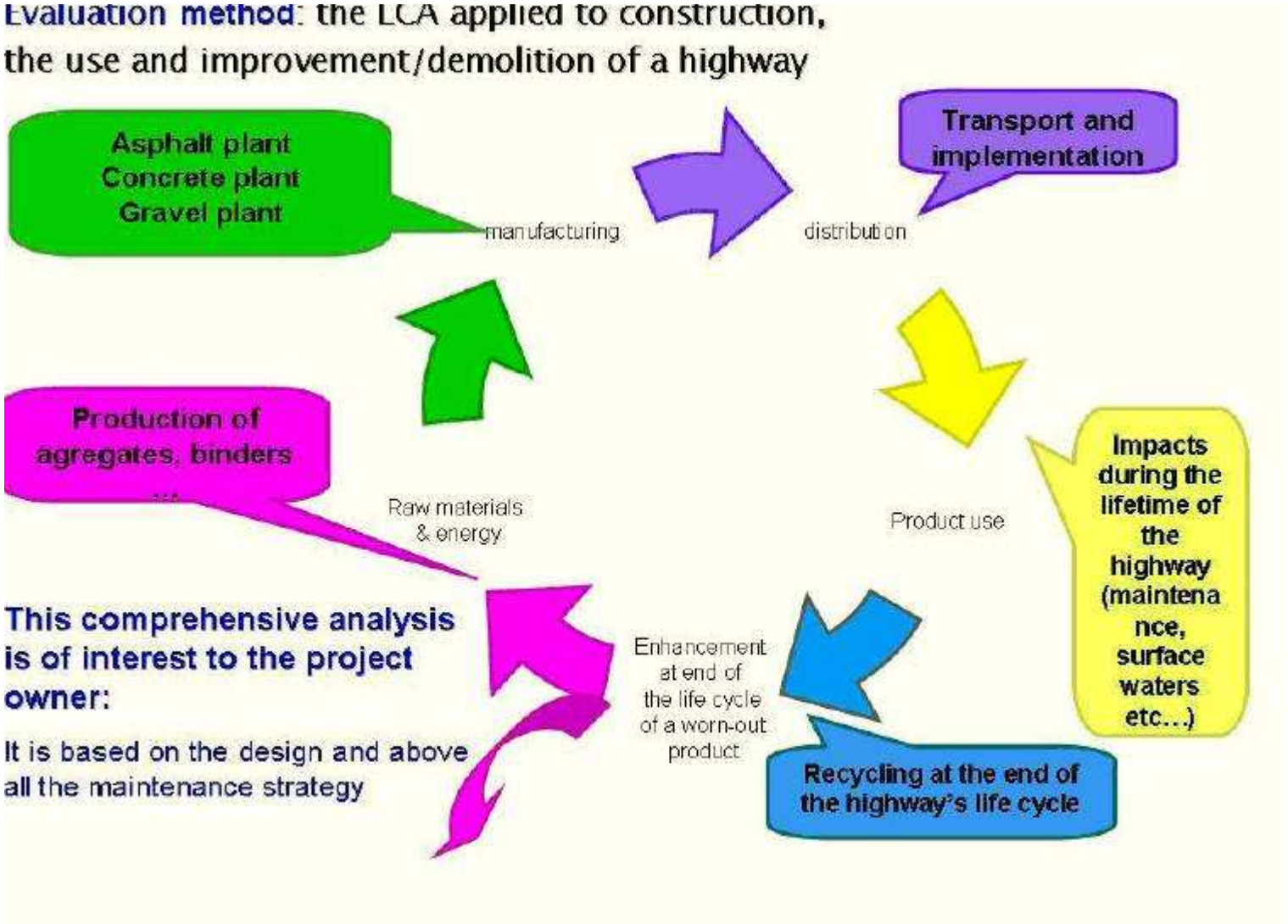
3. Monitoring and assessing GHG emissions from road construction and maintenance activities: the IRF GHG calculator



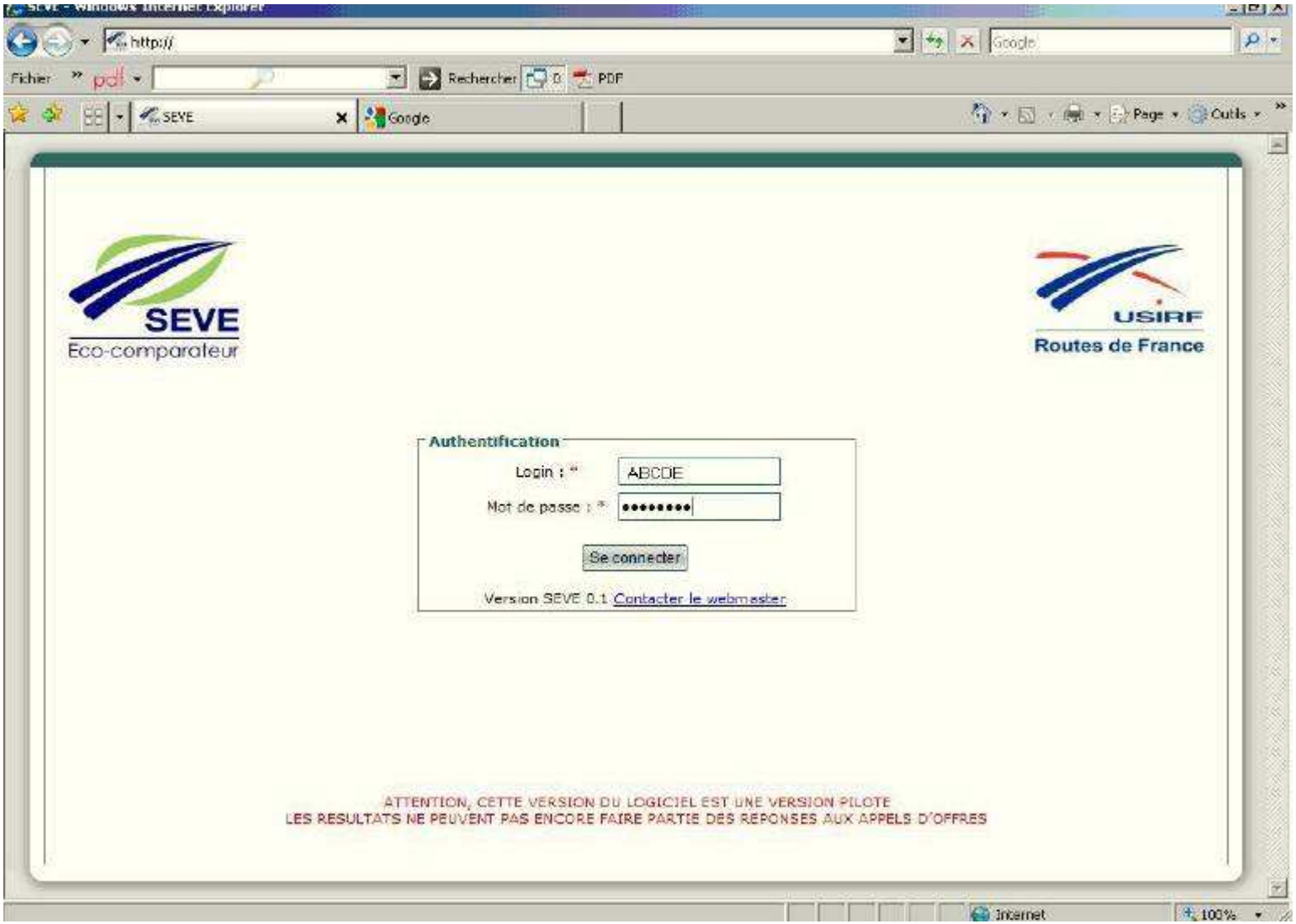
4. A unique eco-comparator for all the French road builders' companies

- Environmental tool for French road builders to compare technical solutions offered to clients
- Independently auditable guidelines
- Life cycle analysis
- GHG emissions, preservation of natural resources, and consumption of coated aggregates (RAP, etc.)
- Current models include Ecologiciel (Colas), Gaia (Eurovia) and Calculette CO_2 (Effiage)
- Financial, technical and environmental assessment of bids (60/20/20)

4. A unique eco-comparator for all the French road builders' companies



4. A unique eco-comparator for all the French road builders' companies



5. Energy sustainable bituminous mixes

- Energy sustainable bituminous mixes with low energy consumption during mixing and compacting
- Comparative study to assess contributing variables on energy and fuel use
- Continuous (AC) and discontinuous (SAM) mixes, natural and crushed aggregates, binder with different penetrations, additives and temperatures were considered
- Conclusions:
  - Higher energy required for continuous mixes with lower binder content, and greater aggregate size
  - Higher energy required for low penetration binder
  - Lower energy required for rounded aggregates

6. Adapting transport infrastructure for climate change

- Actions to slow climate change, mitigate its impact and adopt to it are required
- Technical challenge for the design, construction and maintenance of transport infrastructure
- Challenge for decision makers, planners and policy makers:
  - The sporadic nature and slowness that the climate change impact become visible
  - Uncertainty
  - Lack of adequate information about local impacts
  - Lack of resources to undertake change in the transport system structure

7. Environmental audits for roads

- Lack of criteria on road project environmental assessment
- European guideline on environmental impact (2001) to compare alternative construction solutions but not operations
- Spanish Road Association is developing a methodology considering the environmental impact of road construction, routine preventative and planned maintenance and during operation
- Audit includes
  - Environmental impact assessment
  - Compliance with established measures
  - Maintenance and preservation activities
  - Infrastructure sustainability indicators
  - Landscape integration of roads