

Introduction to Formulating Project Proposals for Carbon/Climate finance

National and regional needs of DNAs in the context of the CDM

EIGHTEENTH MEETING OF THE GLOBAL CDM DESIGNATED NATIONAL AUTHORITIES
FORUM

AH Lower Conference Room (Plenary), UN Campus, Bonn, Germany

19–20 September 2017



UNFCCC Secretariat

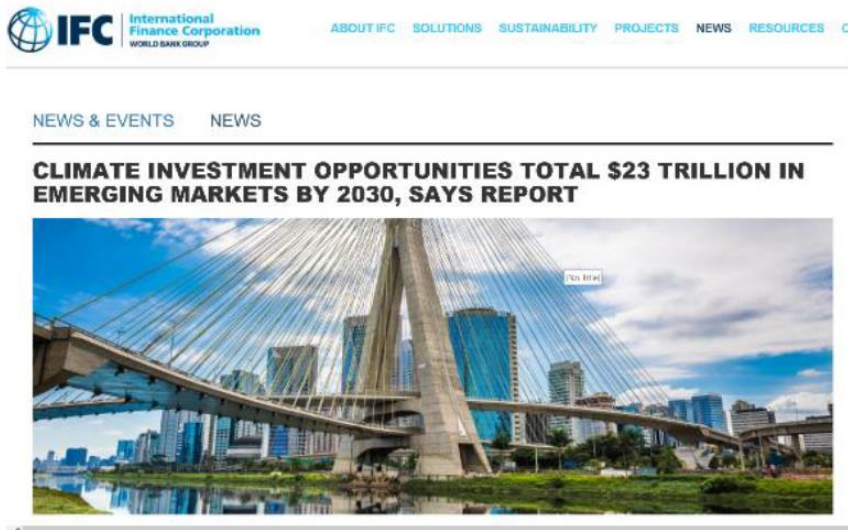
Gajanana Hegde, SDM programme

Outline

- Rationale/Motivation to focus on project proposal for carbon/climate finance
- Content of project proposal for CF
 - a) Identification of the problem/barriers
 - b) Solutions and market transformation
 - Data sources and tools
 - c) Cost Benefit analysis
- Introduction to RETSCREEN- a comprehensive tool for sizing of RE project, cost benefit analysis, sensitivity analysis



Climate investments



The world is expected to invest around US\$90 trillion in infrastructure over the next 15 years, more than is in place in our entire current stock today.

The global South will account for roughly two-thirds (or about US\$4 trillion per year).

Future of the funds: World Resources Institute

Global Architecture of Climate Finance

LEGEND

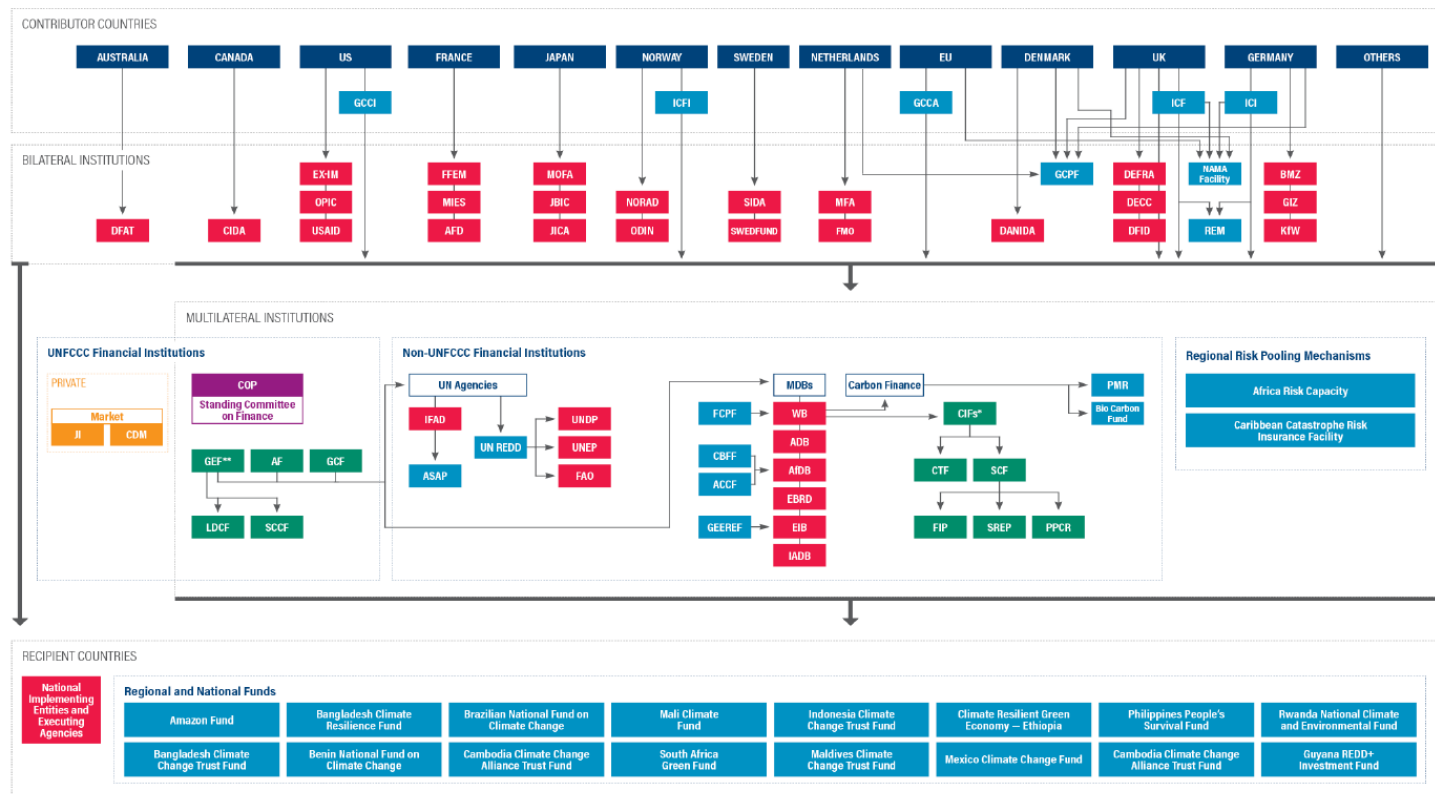
- Funds analyzed in this report
- Implementing agencies
- Funds not analyzed in the report

* The CIFs are administered by the World Bank

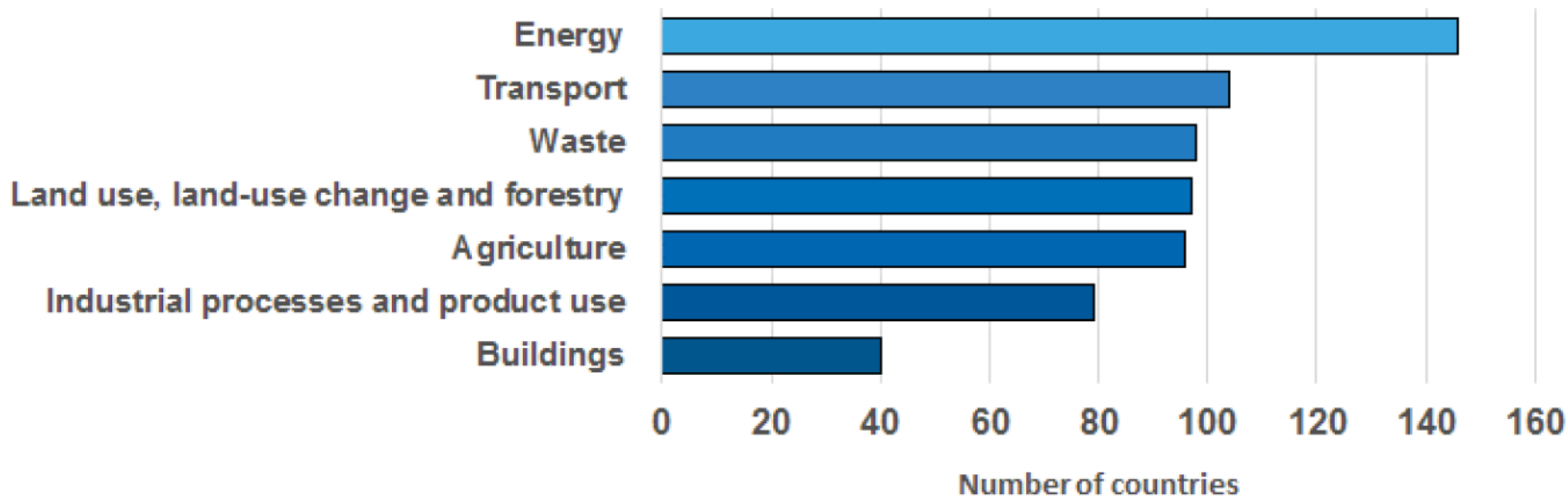
** GEF serves as secretariat for all the nonmarket UNFCCC funds except the GCF

Note: The schematic is indicative and does not capture all countries, climate funds and initiatives.

Source: Adapted by authors from ODI and HBF 2016.



Sectoral coverage of mitigation action in developing country NDCs

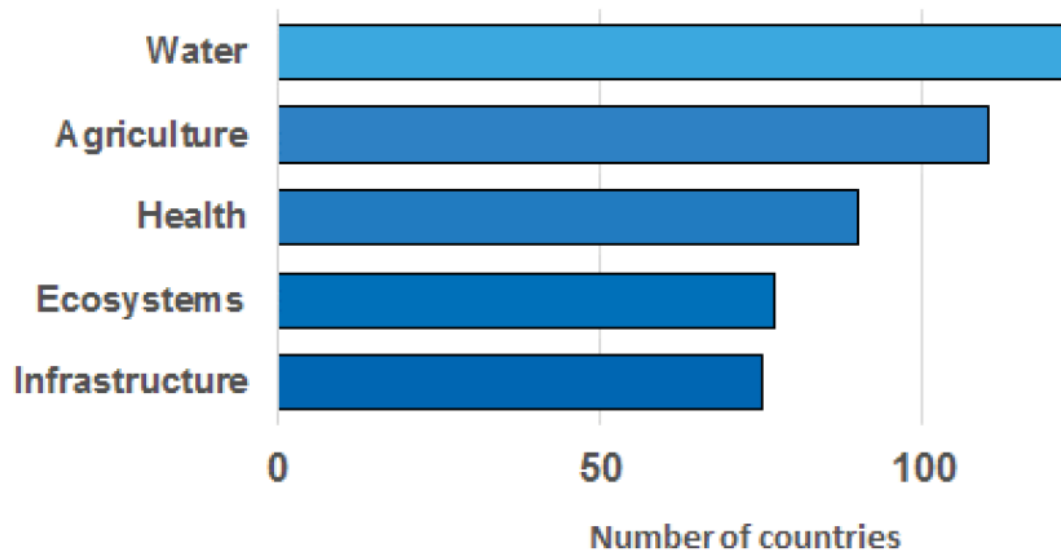


- **146 (99%) NDCs cover decarbonization of energy sector (RE, EE standards and label for appliance, building, industry, T&D)**
- EE in Transport (e.g. public transport, electric and biofuel vehicles, railways)
- Waste (e.g. recycle, reuse, waste to energy)
- Agriculture (efficient use of water, fertilizer, livestock feed and manure management)

Source: *Catalysing the Implementation of Nationally Determined Contributions in the Context of the 2030 Agenda through South-South Cooperation*, United Nations Climate Partnerships for the Global South and the UNFCCC Secretariat, 2017



Priority areas for adaptation in developing country NDCs

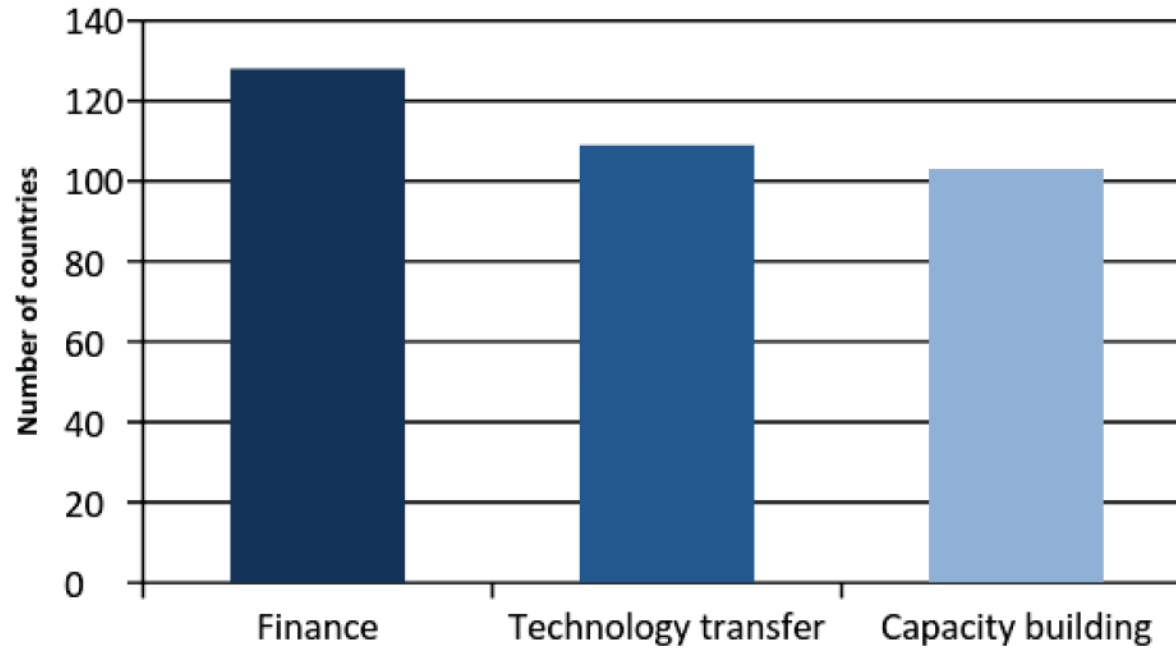


- To address flooding, drought, temperature, sea level rise, storms affecting **socioeconomic areas of water, agriculture, health, ecosystems and infrastructure**
 - **Water security, conservation, efficient use, treatment, national master plan**
 - Sustainable agriculture and land management, early warning systems

Source: *Catalysing the Implementation of Nationally Determined Contributions in the Context of the 2030 Agenda through South-South Cooperation*, United Nations Climate Partnerships for the Global South and the UNFCCC Secretariat, 2017



Support needs reflected in NDCs



Enhanced cooperation and international support, institutional arrangements, access to UNFCCC mechanisms (Existing/New Market mechanisms, GEF, GCF, Adaptation Fund, Technology Mechanisms)

Source: *Catalysing the Implementation of Nationally Determined Contributions in the Context of the 2030 Agenda through South-South Cooperation*, United Nations Climate Partnerships for the Global South and the UNFCCC Secretariat, 2017

Developing a Project Proposal and Concept Note

- A project proposal is a **detailed description of a series of activities** aimed at solving a certain problem. Should normally contain
 - justification of the project;
 - activities and implementation timeline;
 - methodology; and
 - human, material and financial resources required.
- A concept note is a **brief description** of the idea of the project and the objectives to be pursued
- Some financing programs/funding agencies require a concept note before the submission of a full proposal.

SOURCE: NEBIU, B. (2002): Developing Skills of NGOs, Project Proposal Writing. Szentendre: The Regional Environmental Centre for Central and Eastern Europe.

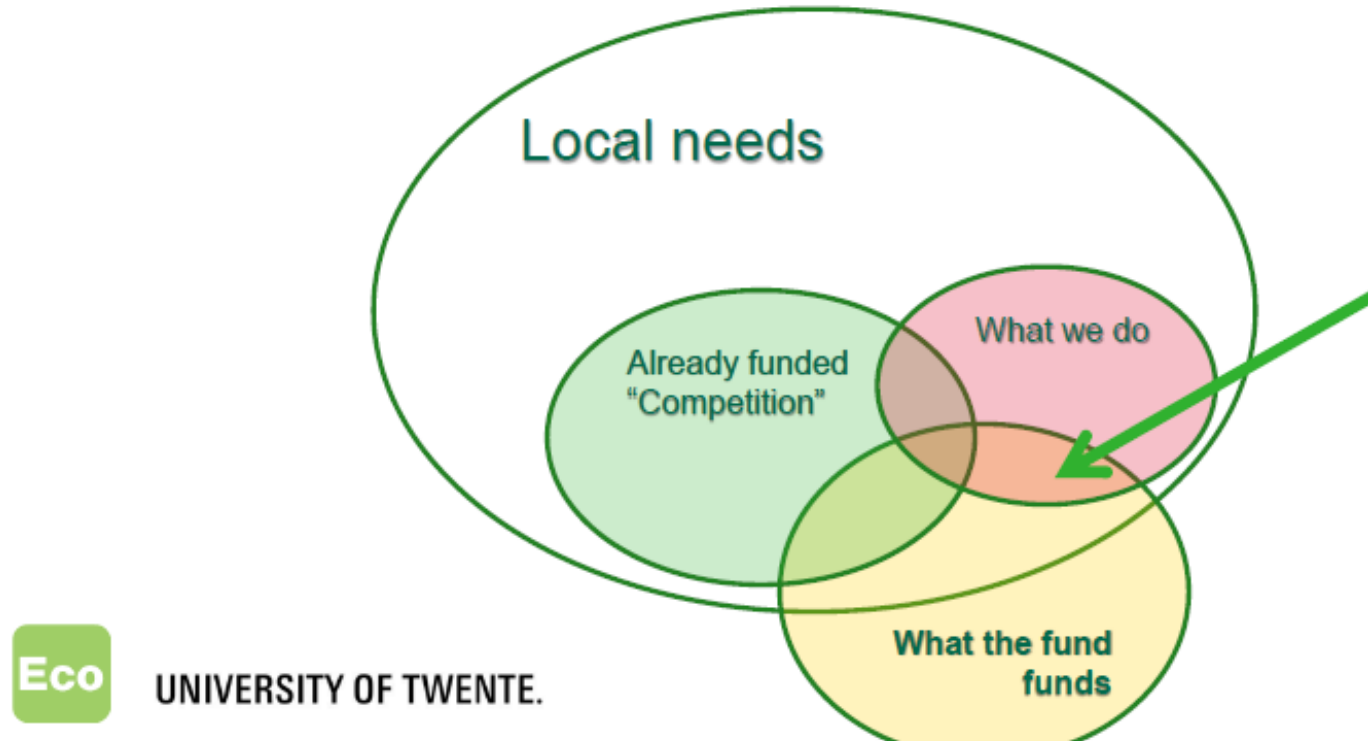


Identifying a viable project idea

- What are the local needs?
- What does the funder fund?
- What are the viable technical options?
- What are the 'peers' doing?
- What is our institutional capacity?
- What are the opportunities for 'Partnerships'?
- What is most strategic for us now?



Understanding project opportunity



Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

what are local needs?

- What are the needs of the beneficiaries?
- What are their priorities?

Sources of information

- a) Baseline knowledge (surveys, consultation, studies, experience)
- b) CDM PDDs, Technical Needs Assessments (TNAs), National Communications, LEDS, NDCs, other projects etc.

What are the viable technical options?

- There are many technical options
 - a) Some are not viable –technically, socially and/or financially
- **Sources of information**
 - a) Good practice –other countries
 - b) Market studies, (pre-)feasibility studies
 - c) Pilot projects



What does donor fund?

- Donors are concerned to avoid overlap –particularly with their own prior funding
- Scaling up of prior projects is sometimes option, but partnership may be essential
- Risk with projects being developed in parallel & competing
- Sources of information
 - a) Funders proposal databases
 - b) Discussions with stakeholders, including fund focal points /national authorities



What is our institutional capacity? With whom we can partner?

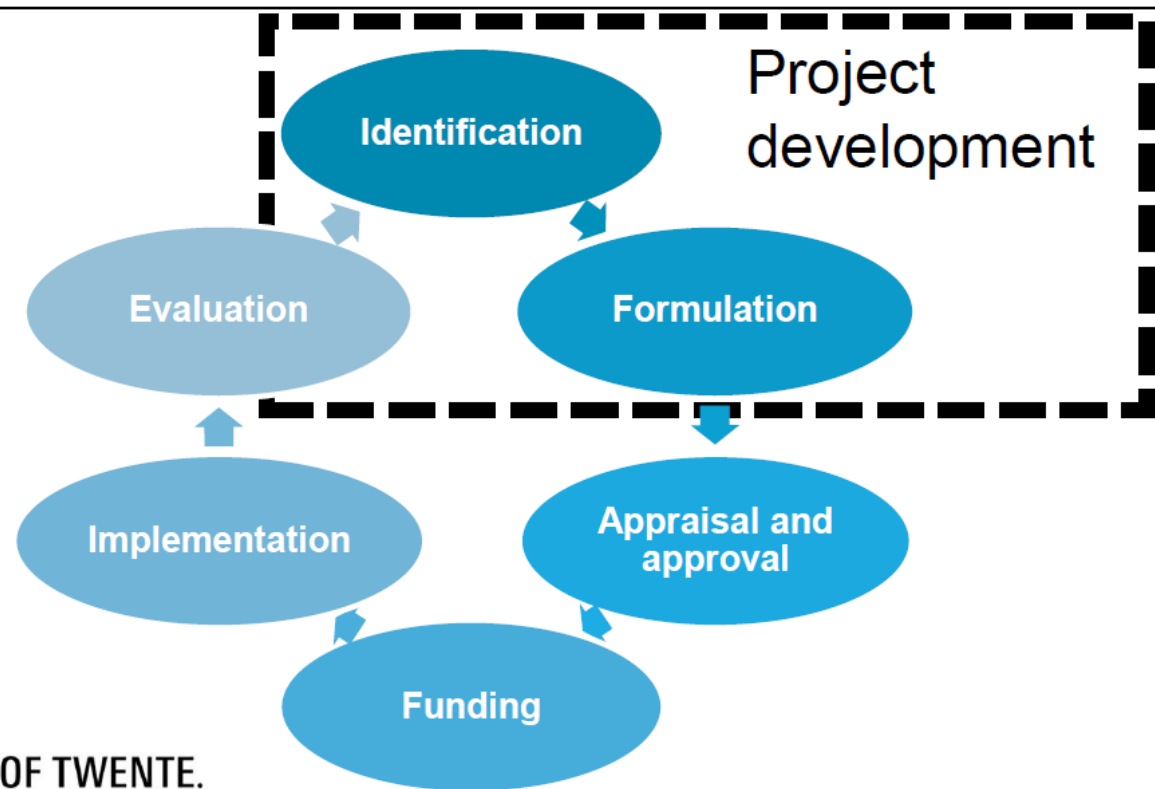
- This is a question of what your organisation is able to do. It includes:
 - a) Knowledge and experience
 - b) Resources –people, money
 - c) Influence
 - d) Legitimacy
 - e) Financial and administrative capacity
- Institutional capability can be enhanced through partnership
- Caution:
 - a) Due diligence –choosing the right partners
 - b) Private sector –procurement rules



What is the most strategic for us now

- This is a question of what works for your organisation
- Ideas you develop need to fit in with your overall strategic approach
- Sources of information
- Mission, Vision, Goals, Values
- Management



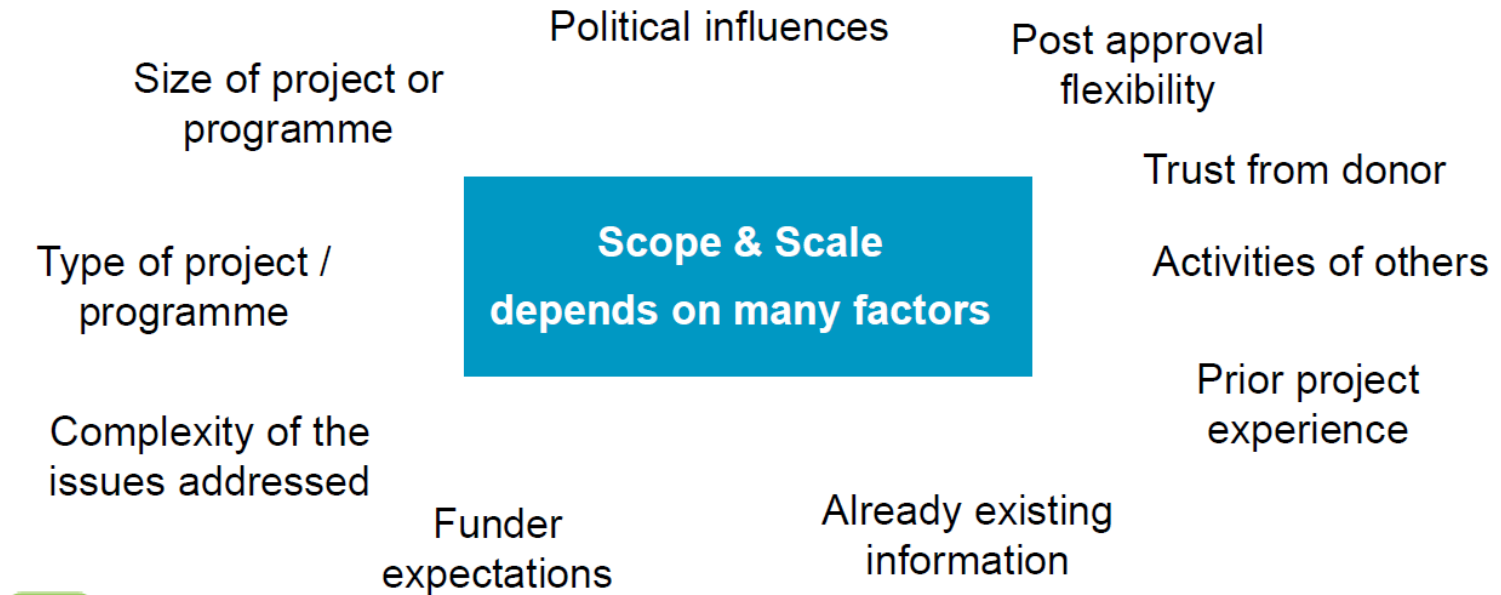


UNIVERSITY OF TWENTE.

Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

Scope and Scale

- How long does the project development take and how does it cost?



Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente



Arranging the Work

- Options to consider when arranging the project formulation

In house

Planning units

**Short term
consultants**

Companies

**Donor led
programming**

**Consultation led
programming**

Stakeholder analysis: identifying the stakeholders

- Who might be affected by the project?
- Who might affect the project?
- Who might become useful project partners even though the project may also be implemented without their contribution?
- Who might become conflict partners as the project is potentially a threat to their role and interests?
- Who will anyway be involved in the project?



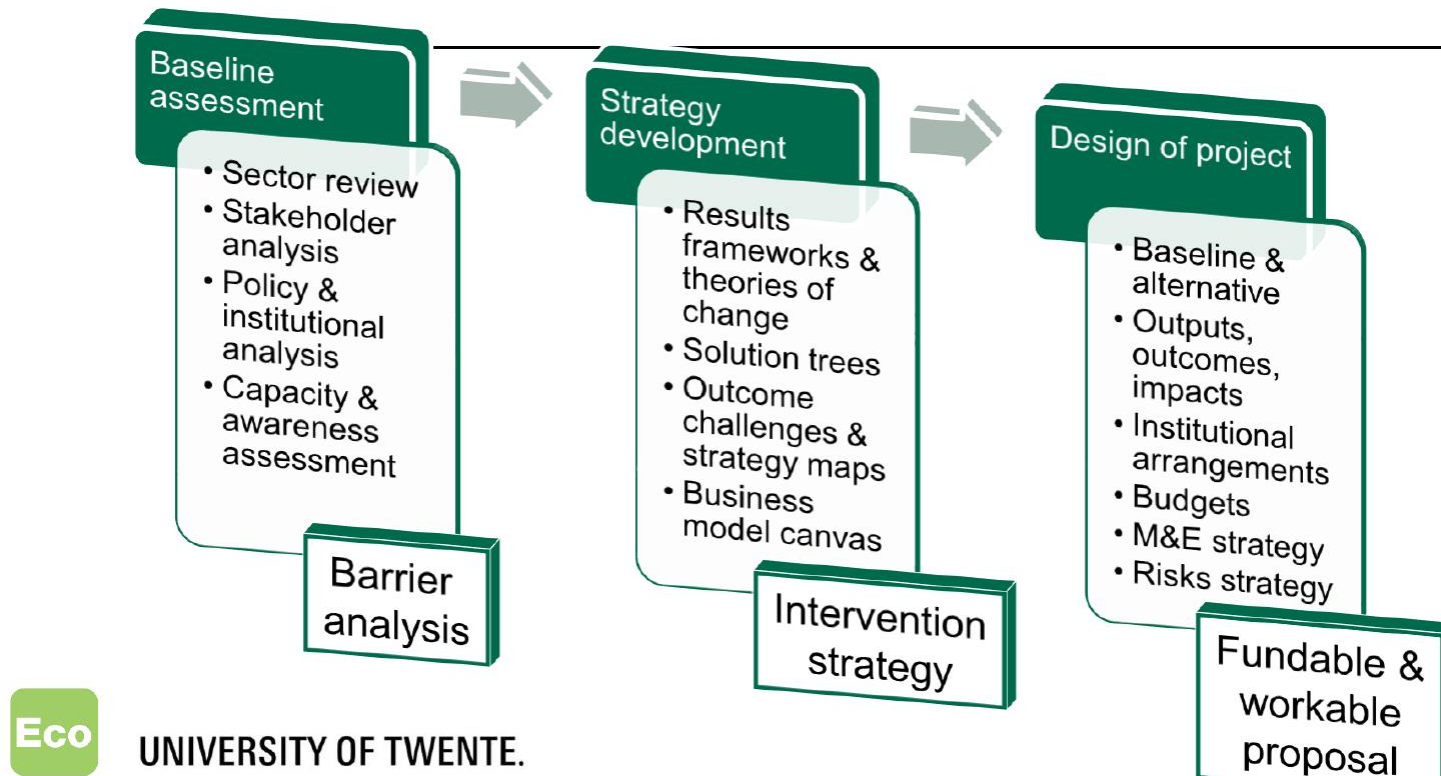
Influence- Importance Matrix

		Importance of stakeholder			
		Unknown	Little / no	Some	Significant
Influence of stakeholder	Significant	C Potential risks; address their concerns		A Build relationships; involve them extensively	
	Some				
	Little / no	D Monitor; keep informed		B Protect their interests	
	Unknown				

Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente



Project development process



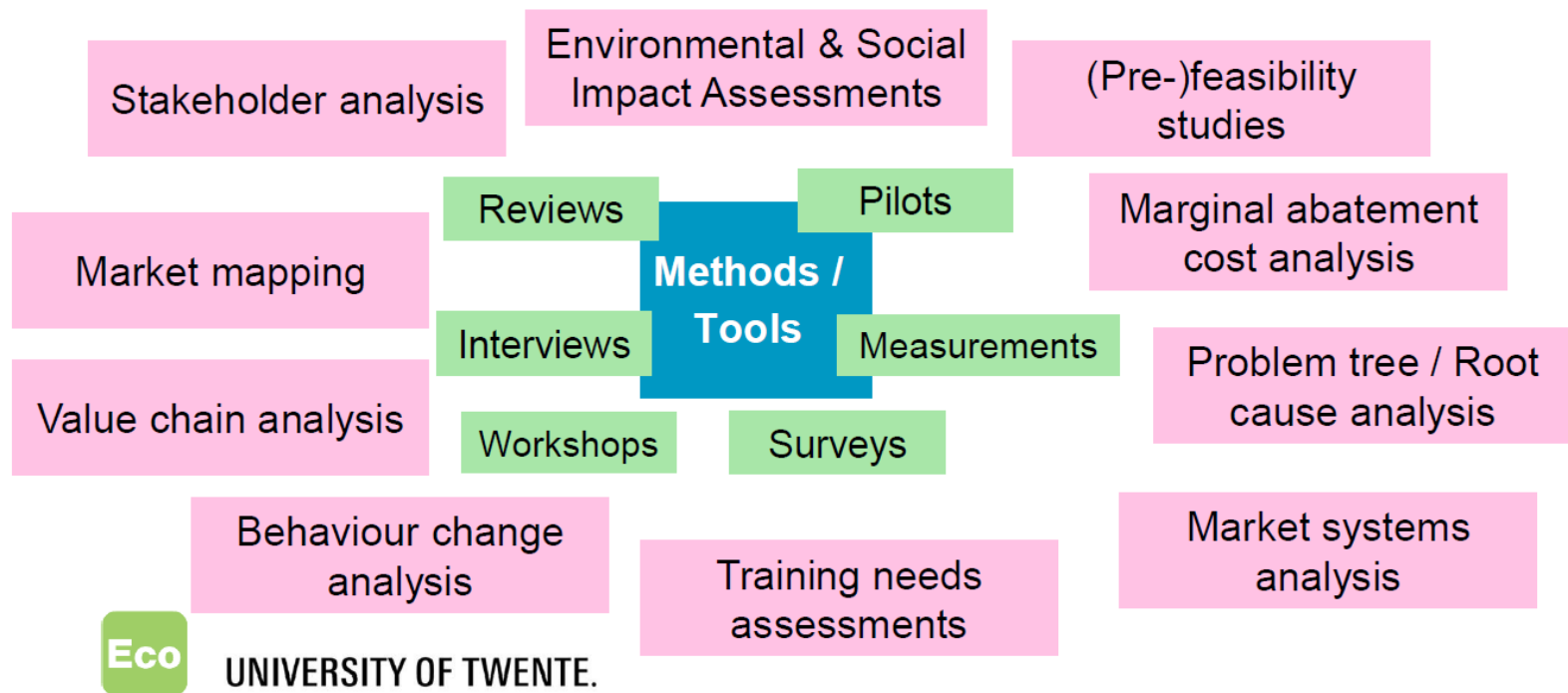
Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

Baseline

- Baselines vary in level of detail and rigor, and technical vs market perspectives –e.g. CDM vs GEF vs NAMA vs GCF
- Barrier analysis techniques are part of baseline determination
- Checklist can be used to guide the scope of baseline activities



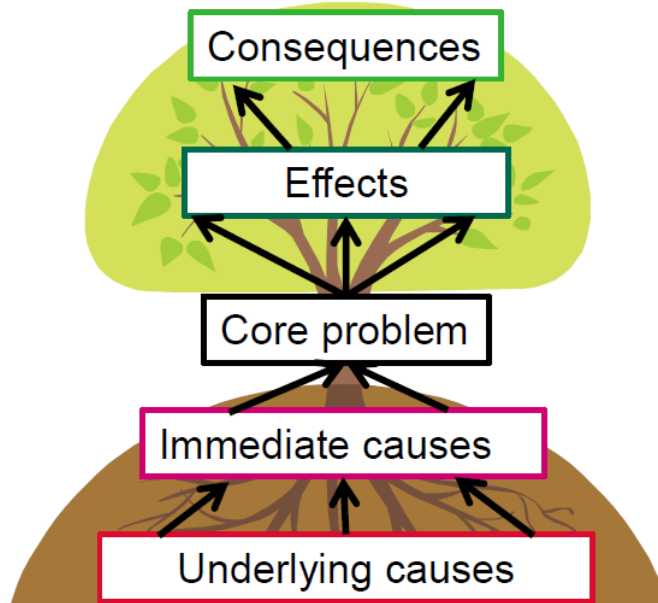
Baseline assessment methods and tools



Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

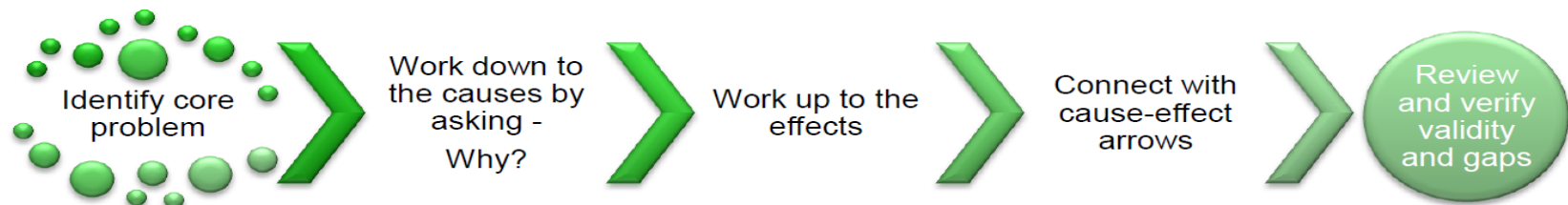
Problem Tree: Key Steps

Objective: To analyse cause and effect relationships



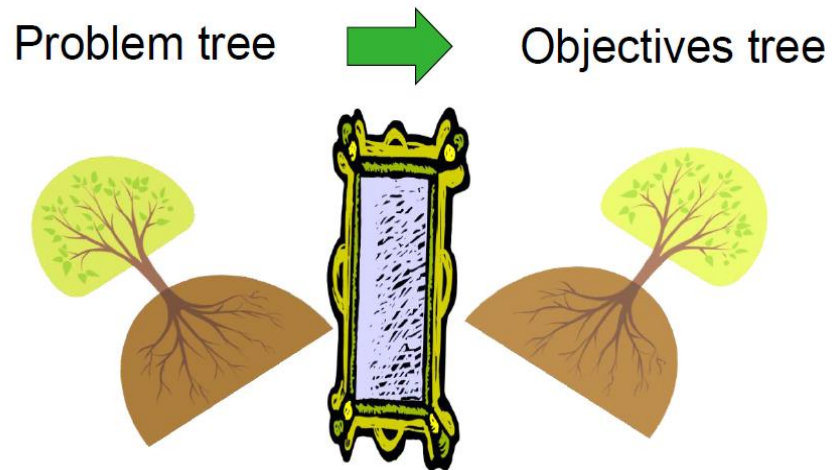
Translate problems into potential objectives

The cause and effect relationships are key to identifying effective interventions

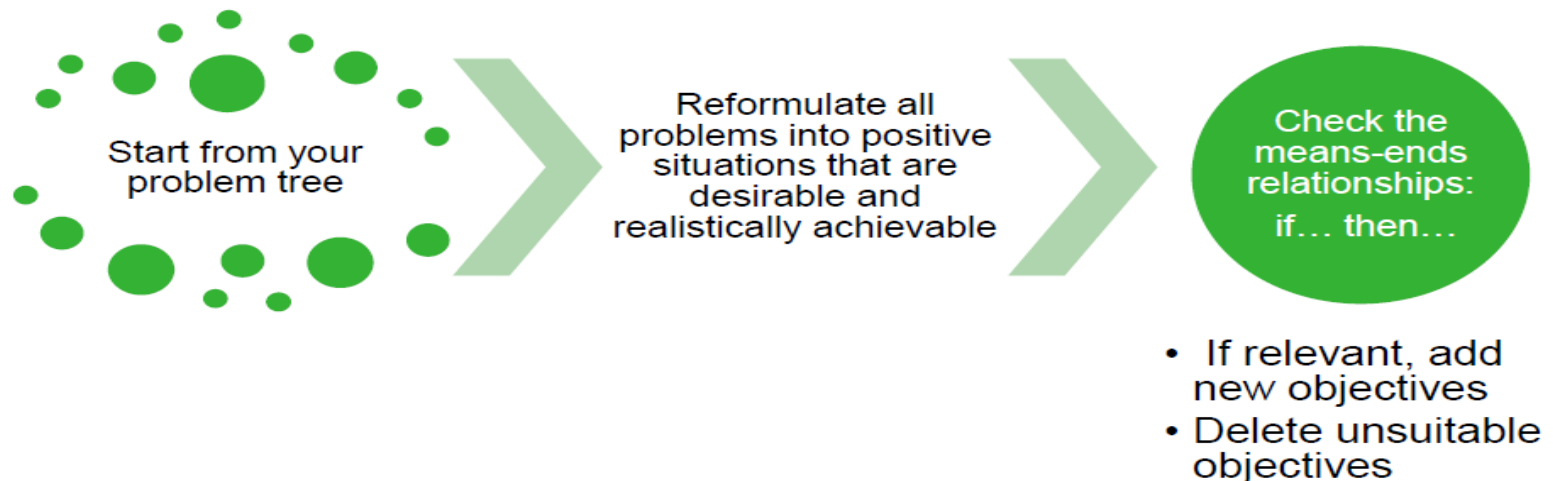


Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

Objective Tree: Key Steps



- Statements of positive achievements,
- Whose relationship to each other is that of means to ends,
- That answer the question: “What if?”



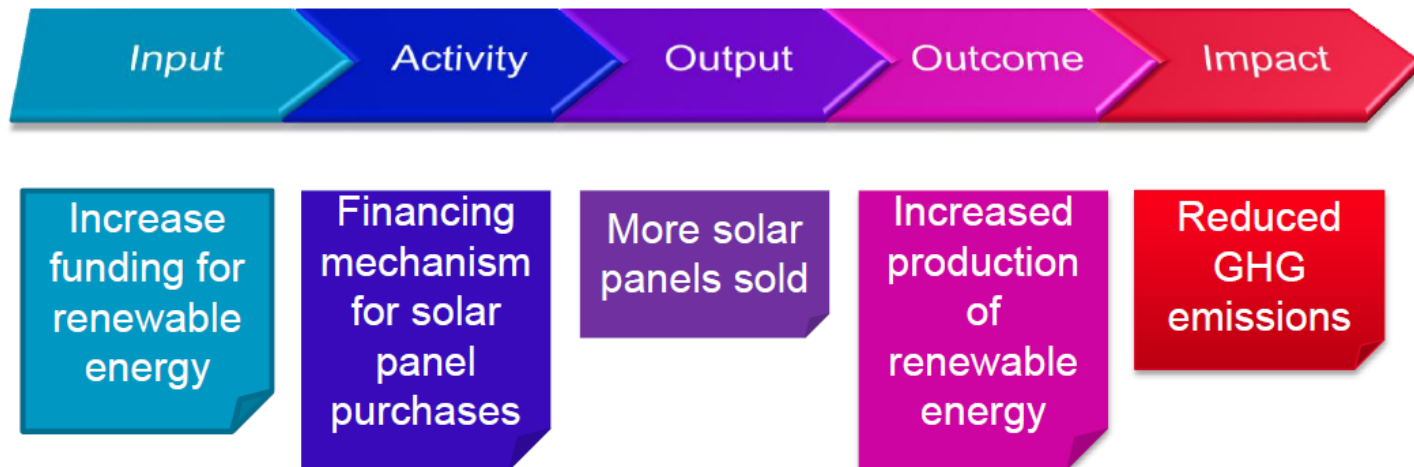
Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP),

University of Twente



Logframe Matrix

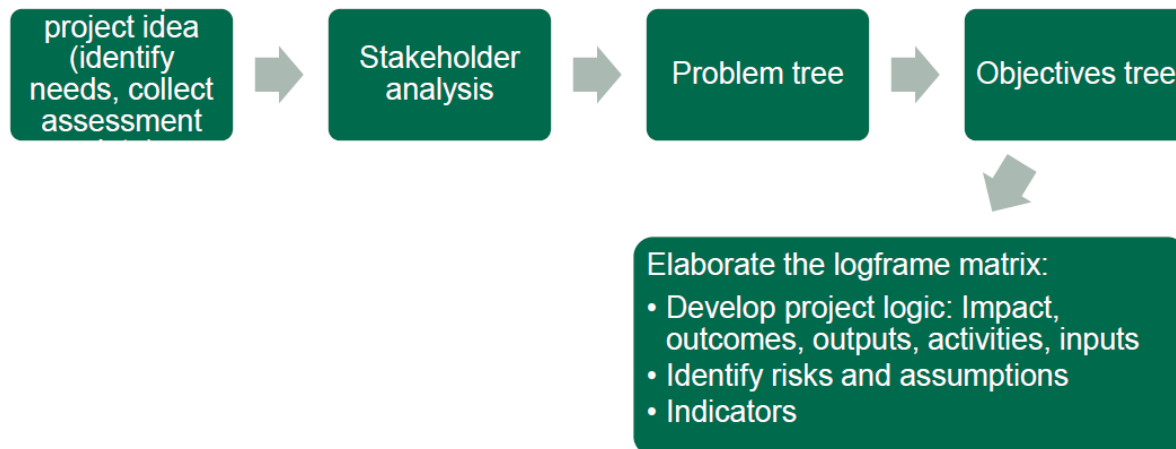
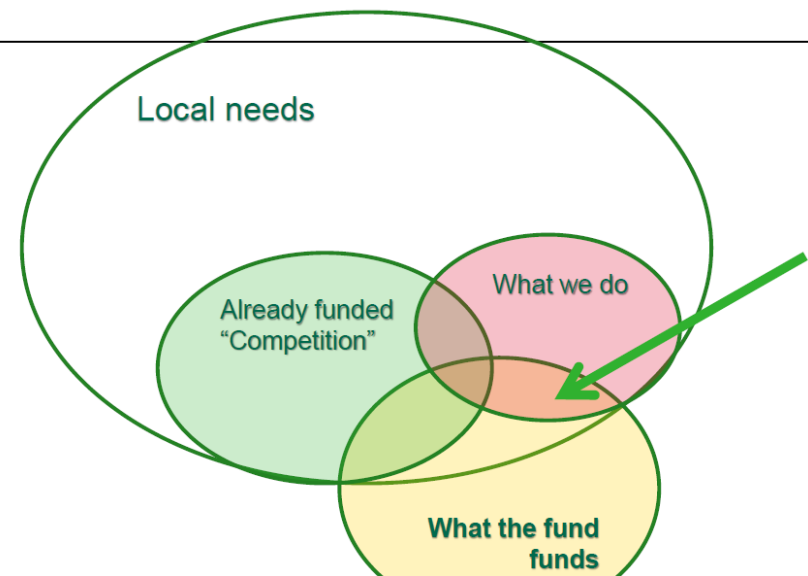
- It is a systematic expression of the results Chain



Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

Key Steps /Process:

- Problem Tree
- Objective Tree
- Understanding the project opportunity
- Structure a Logframe Matrix

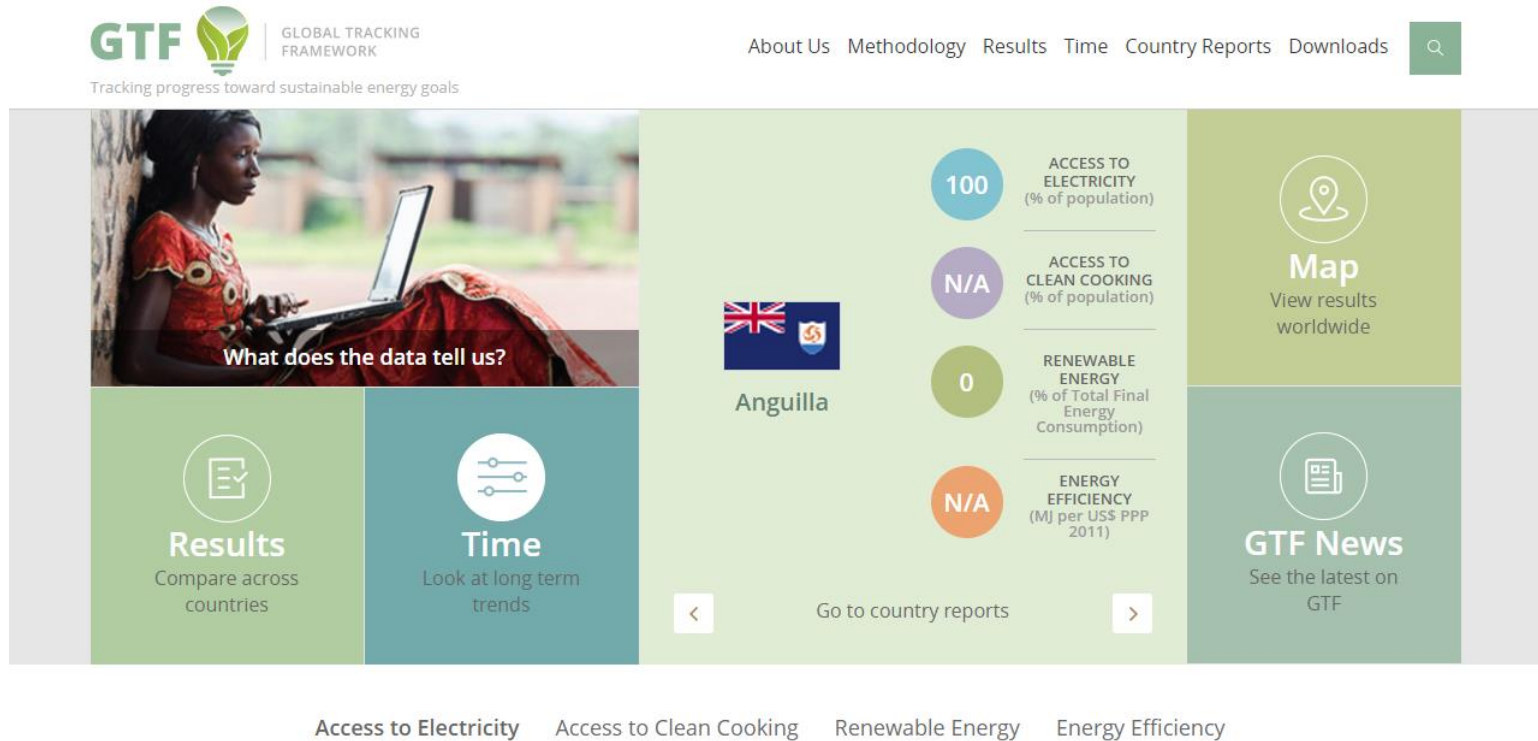


Example Project: Climate resilient infrastructure mainstreaming in country x

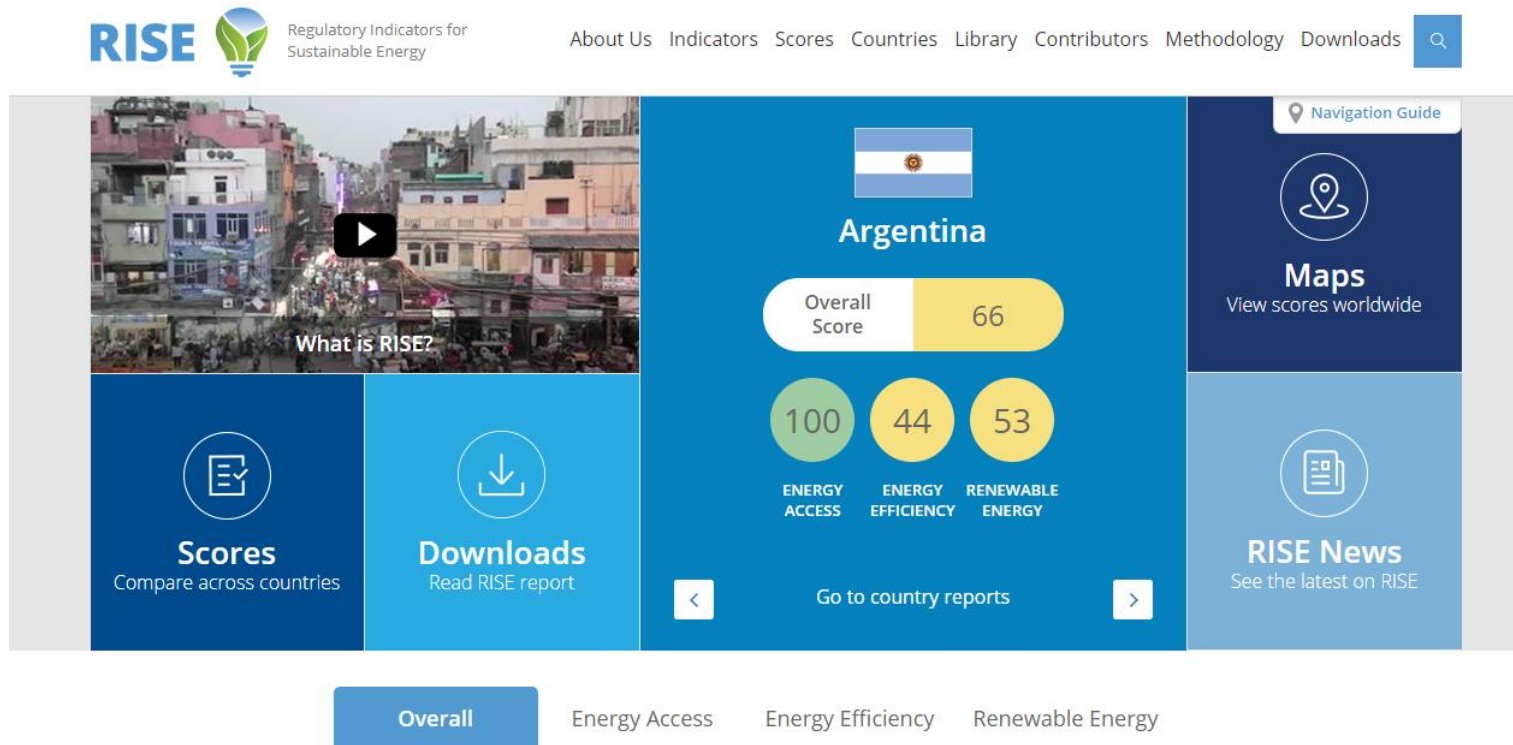
- **Impact:** Increased resilience of infrastructure and the built environment to climate change
- **Outcome:** Strengthened adaptive capacity and reduced exposure to climate risks
- **Outputs:** Pilot rural infrastructure built, rehabilitated or improved
- **Activities:** Build 45 new cyclone shelters

Project Description	Indicators	Means of Verification	Assumptions
Goal	If the OUTCOMES occur; Then this should contribute to the overall GOAL		
Outcome(s)	If the OUTPUTS are produced; Then the OUTCOMES can occur		
Outputs	If the ACTIVITIES are conducted; Then OUTPUTS can be produced		
Activities	If adequate RESOURCES/INPUTS are provided; Then the ACTIVITIES can be conducted		

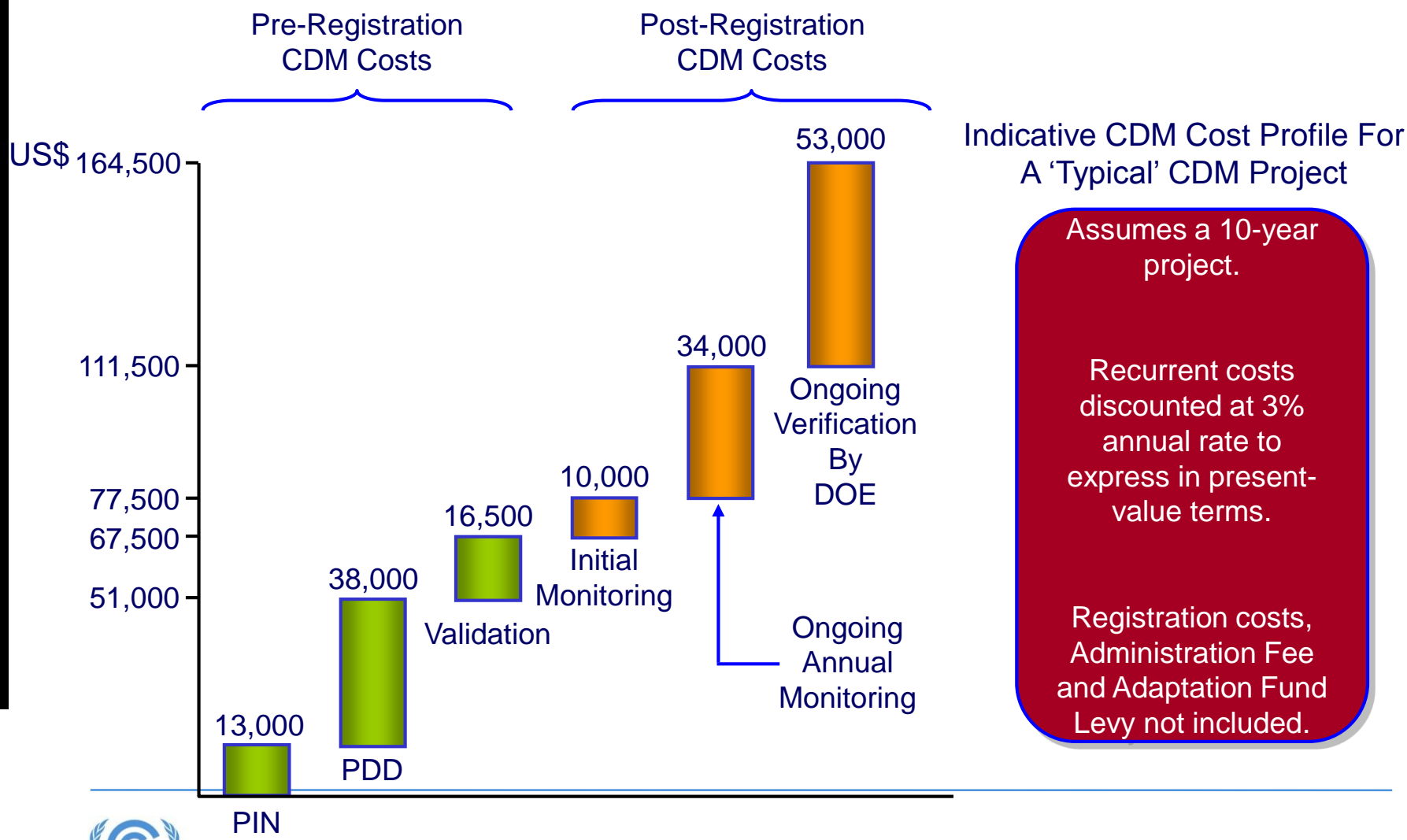
Some useful data sources: global tracking framework



Some useful data sources: Regulatory indicators for sustainable energy

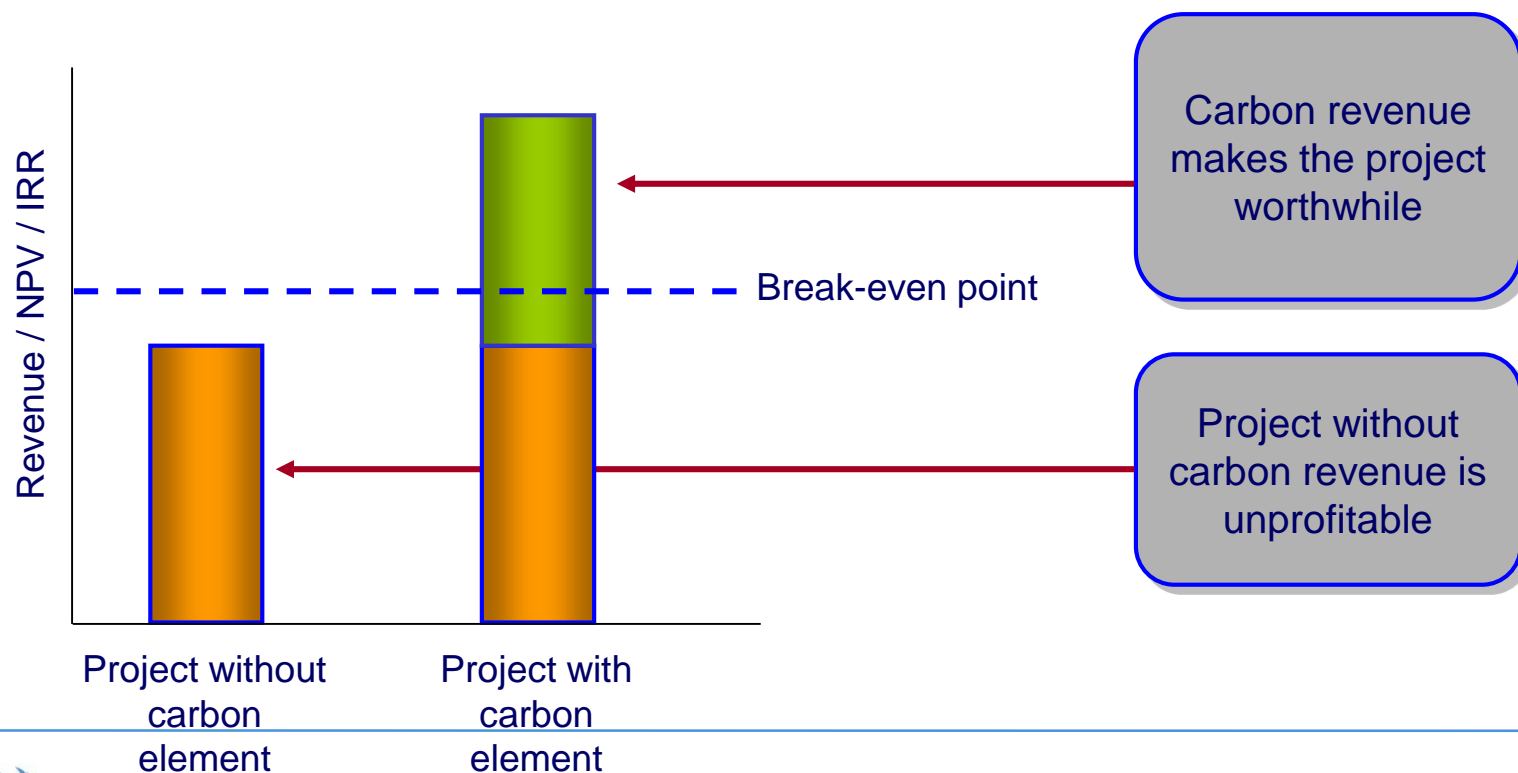


Cost Benefit Analysis



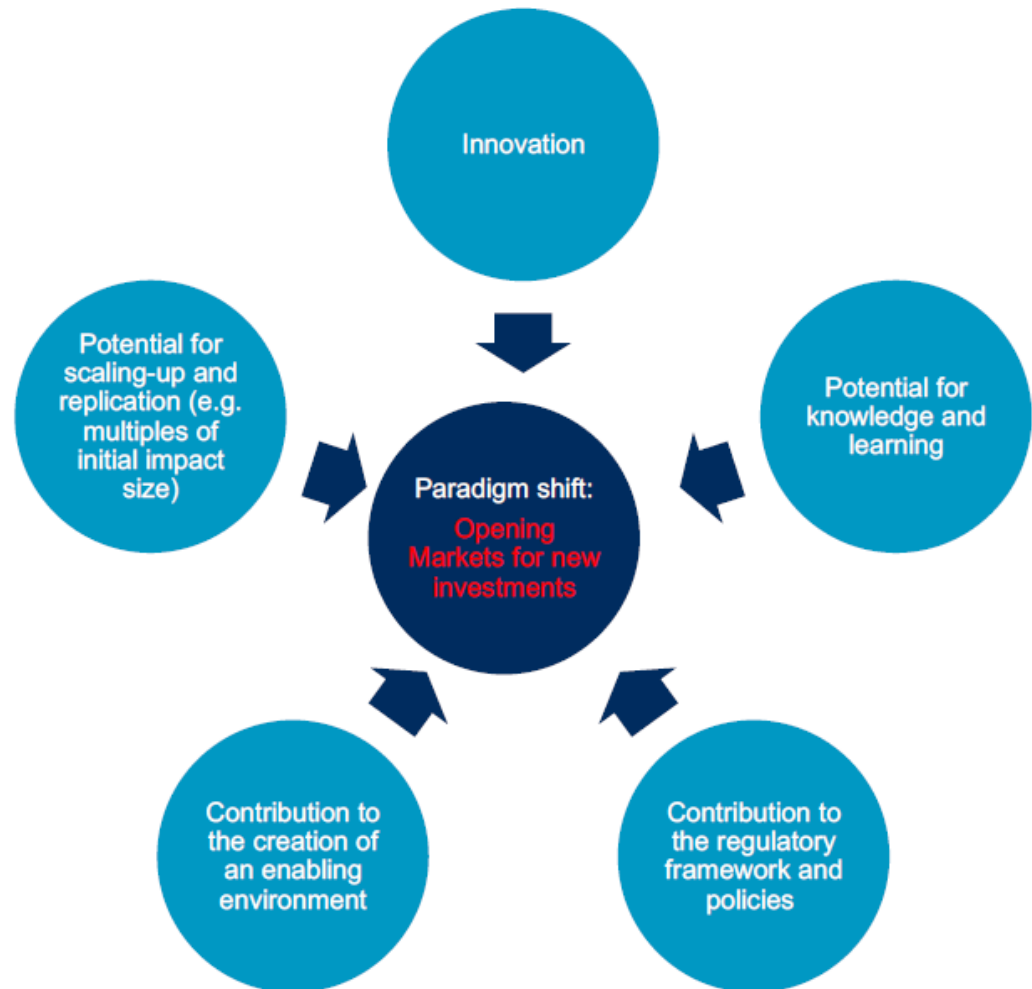
Demonstrating additionality – investment comparison analysis

Choose an appropriate financial indicator, such as IRR, NPV or benefit-cost ratio, to demonstrate additionality



‘PARADIGM SHIFT’ in climate action (example from GCF)

Able to explain whether and how your proposed activity addresses each of the GCF strategic impacts.



Source: Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

RETScreen: Project Evaluation Tool

DNA Forum

Bonn, Germany, September 2017



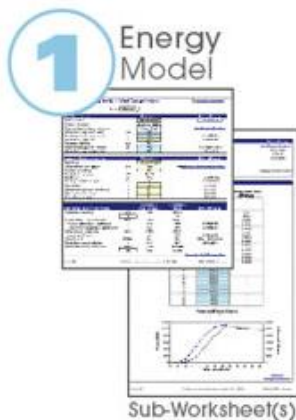
UNFCCC Secretariat

Janak Shrestha, SDM programme

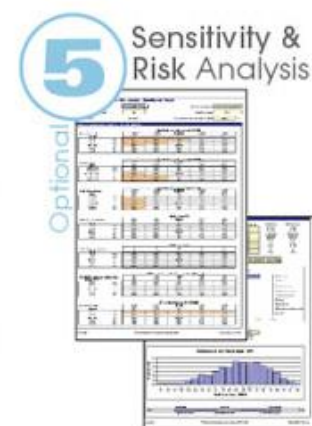
An introduction to Clean Energy Project Analysis with RETScreen® Software



Five Step Standard Analysis ➔



click on blue hyperlinks
or floating icon to access data



➔ Ready to make a decision



Objectives

- Raise awareness of RETScreen as a free tool to help making cleaner energy decisions
- Demonstrate how the RETScreen[®] Software works
- Show how RETScreen[®] makes it easier to help identify & assess potential projects
- Identify projects for which RETScreen is useful



Typical questions for a project

Which option:

- is greenest
- is cheapest
- has highest financial yield (ROI)
- What is a wise option
- RETScreen is decision support software for clean energy projects, it helps to answer many project related questions
- About 435k RETScreen in 222 countries, translated into 37 languages



What type of projects can RETScreen help with?

Power projects:

- PV
- Wind
- Small scale hydro
- Tidal
- Reciprocating engine
- Fuel Cell
- Steam turbine
- Solare thermal
- And more

It is also possible to use multiple technologies



Climate database

Data from ground weather stations from all over the world

- a) Temperature,
- b) Solar radiation
- c) Humidity
- d) Wind speed

Product database

- Wind mills
- PV panels
- Engines
- Turbines

In RETScreen every single cell is explained with the help function

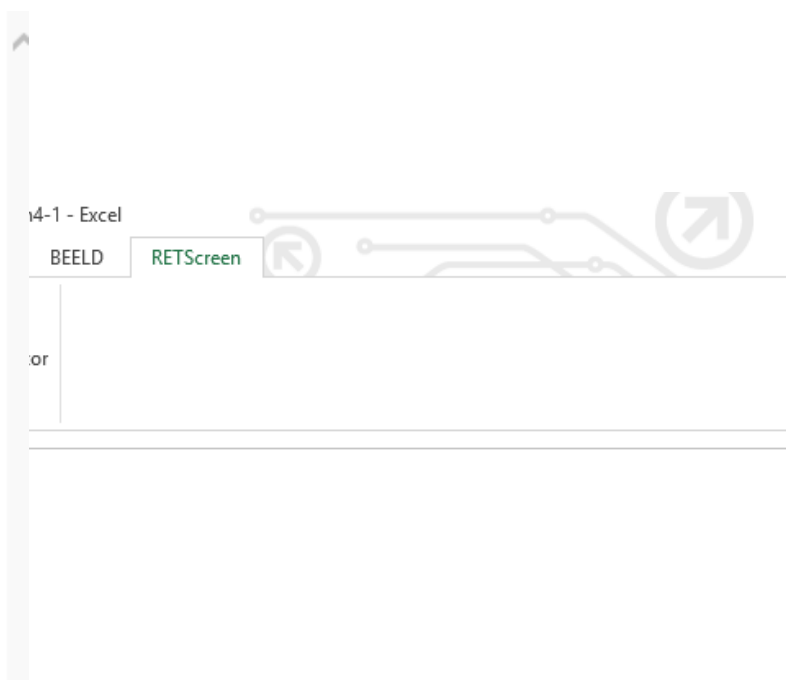
Wind speed - annual
Measured at
Wind shear exponent
Air temperature - annual
Atmospheric pressure - annual

m/s		3,9
m		10,0
°C		5,8
kPa		100,1

Wind shear exponent

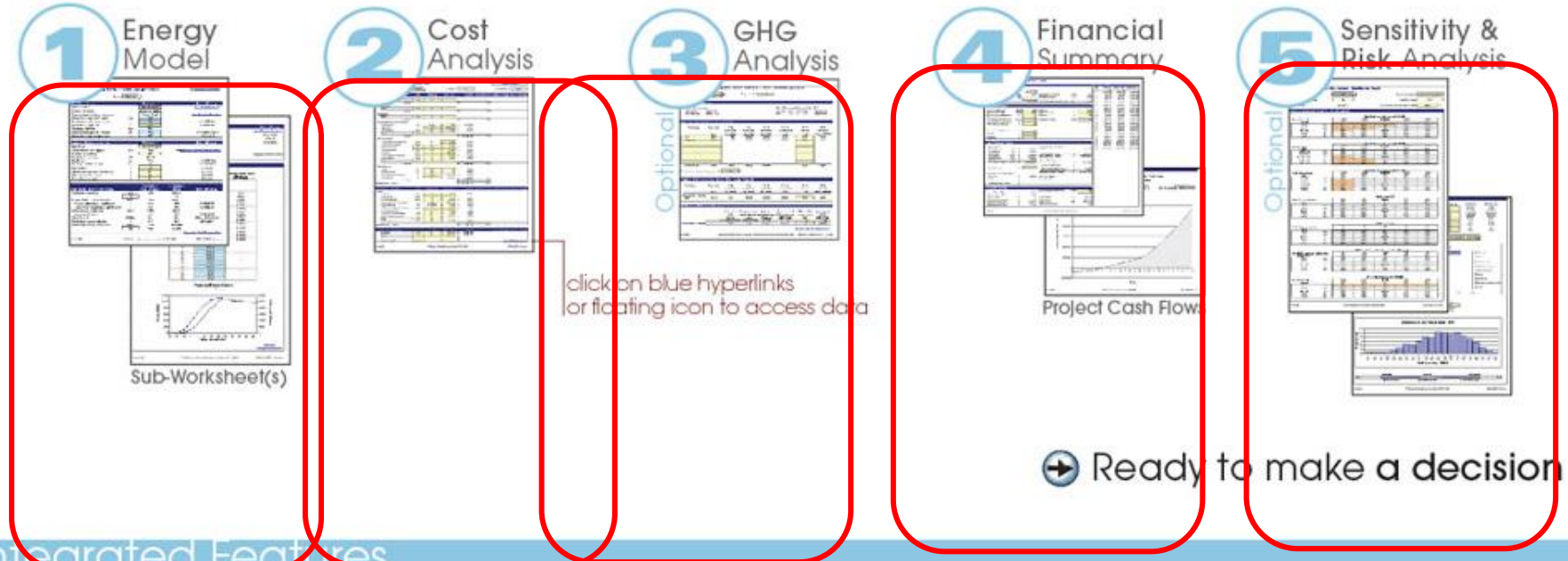
The user enters the wind shear exponent, which is a dimensionless number expressing the rate at which the wind speed varies with the height above the ground. A low exponent corresponds to a smooth terrain whereas a high exponent is typical of a terrain with sizeable obstacles. This value is used to calculate the average wind speed at the wind turbine hub height.

The wind shear exponent typically ranges from 0.10 to 0.40. The low end of the range corresponds to a smooth terrain (e.g. sea, sand and snow from 0.10 to 0.13). A wind shear of 0.25 corresponds to a rough terrain (i.e. with sizeable obstacles). The high end of the range (0.40) corresponds to a project in an urban area. A value of 0.14 is a good first approximation when the site characteristics are yet to be determined [Le Gourières, 1982], [WECTEC, 1996] and [Gipe, 1995].



RETScreen® Software

Five Step Standard Analysis ➔



Integrated Features

Weather
Data



Product
Data



Online
Manual



- Training Course
- Engineering Textbook
- Case Studies
- Online Marketplace
- Internet Forums



Project Viability (Wind Example): Depends on Several Factors

- Energy resource available at project site
(e.g. wind speed)
- Equipment performance
(e.g. wind turbine power curve)
- Initial project costs
(e.g. wind turbines, towers, engineering)
- On-going and periodic project costs
(e.g. cleaning of wind turbine blades)



Project Viability (Wind Example) Depends on Several Factors - cont.

- Avoided cost of energy
(e.g. wholesale electricity price)
- Financing
(e.g. debt ratio & length, interest rate)
- Environmental credits and/or subsidies
(e.g. greenpower rates, GHG credits, grants)
- Decision-maker's definition of cost-effective
(e.g. payback period, IRR, NPV, Energy production costs)



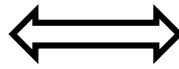
Photo Credit: Middelgrunden Wind Turbine Co-operative



Comparison:

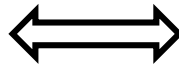
Base Case

- Conventional system
- Scenario 0
- In this example electricity from the grid



Proposed Case

- Clean energy system
- Scenario 1
- Electricity from wind



Software Demo: 20 MW Wind Energy Project

Input/Output (RETScreen®)

- Project location:
- Wind speed:
- GHG emissions reduction:
- Wind turbine cost:
- RE production credit:
- GHG credit (coal plant):
- Debt term:
- **Positive cash flow:**
- **Return on investment:**

Scenario #1

- Location A
- 4.4 m/s
- 25,123 tCO2/yr
- \$1,200/kW
- \$0/kWh
- \$0/ton
- 10 years
- **42.7 years**
- **- 7.1%**



Software Demo :Scenario 1

Scenario #1

(Location A): 4.4 m/s

\$1,200/kW

25,123 t_{CO₂}/yr

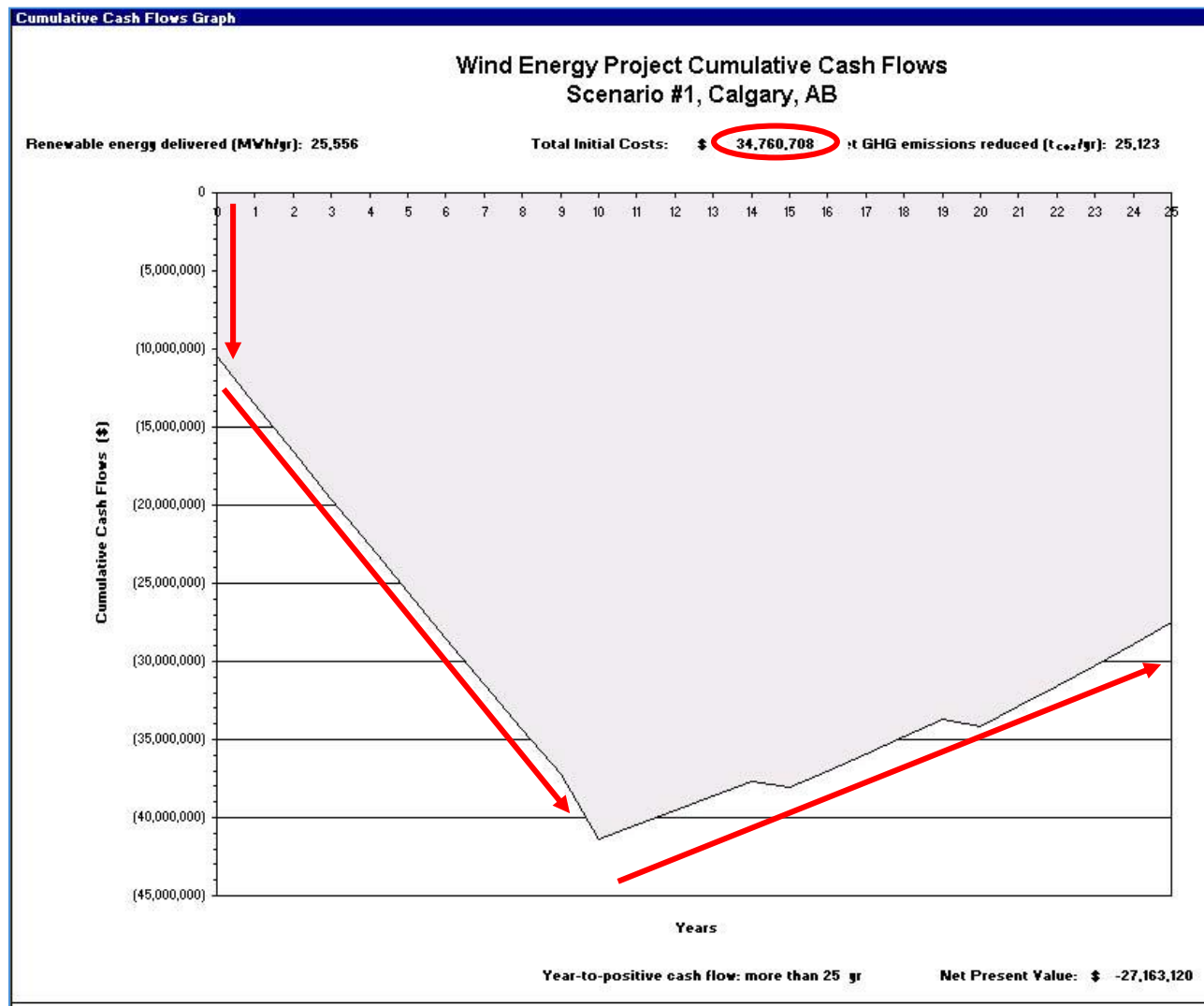
\$0/kWh

\$0/ton

10 years

42.7 years

- 7.1%



Software Demo: Wind Speed & GHG Emission Reduction

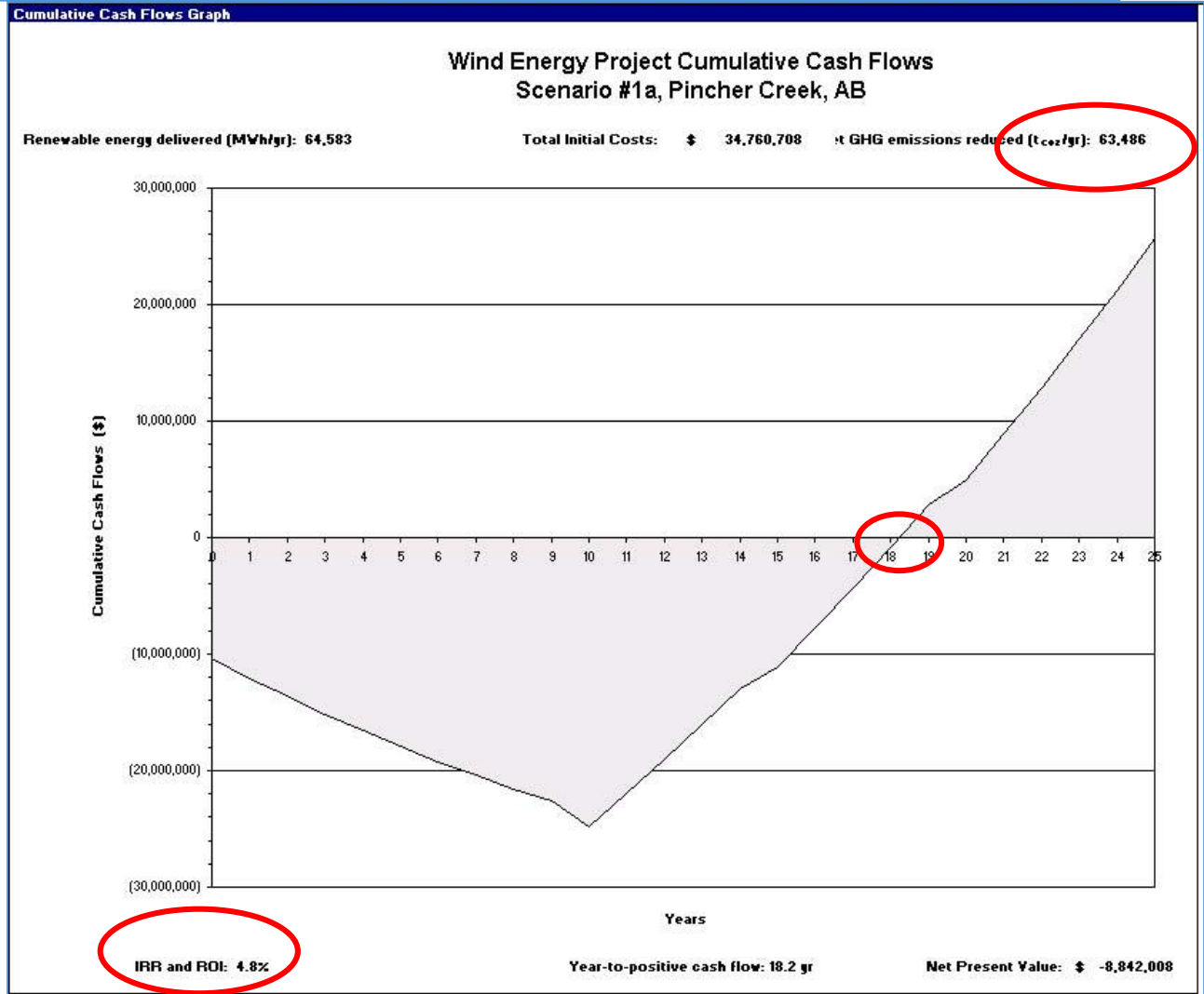
Scenario # 1a

(Location B) → 7.0 m/s

CO₂ reduction:
63,486 t_{CO₂}/yr

Positive cash flow
18.2 years

IRR 4.8%



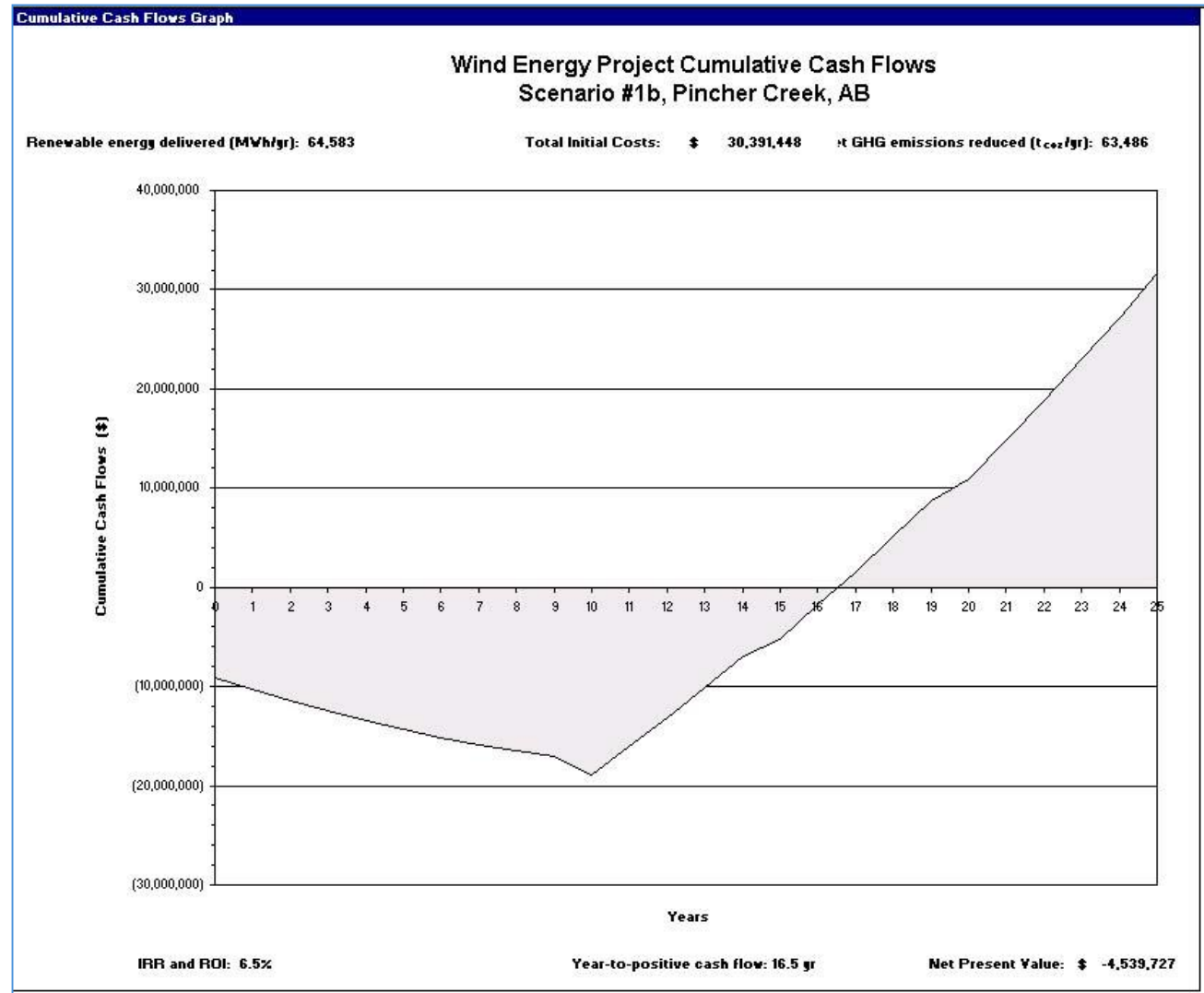
Software Demo Wind Turbine Cost

Scenario # 1b

Reduced Investment
Cost: \$1,000/kW

Positive cash flow:
16.5 years

IRR 6.5%



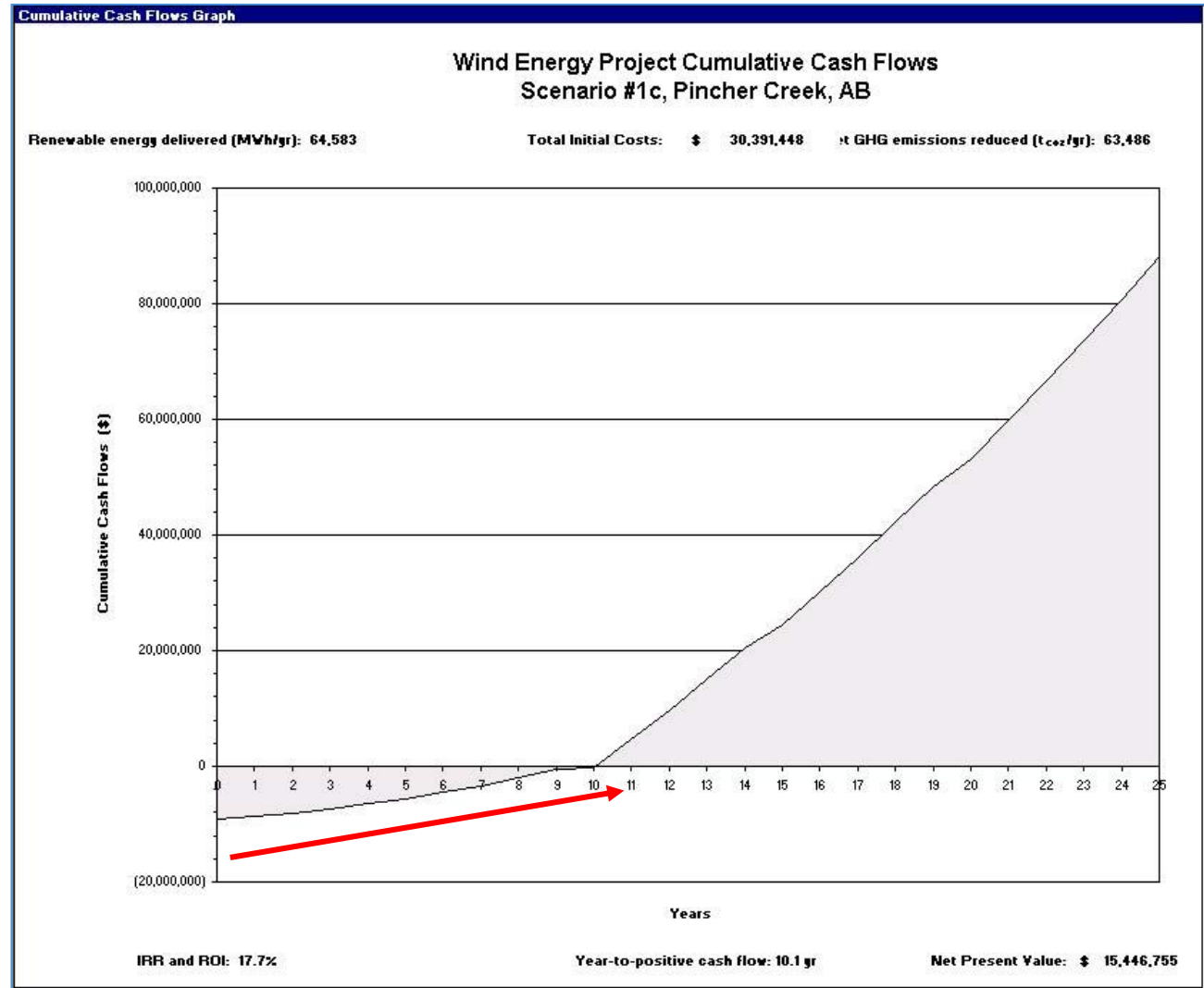
Software Demo RE Production Credit

Scenario # 1c

RE production credit
\$0.025/kWh

PCF: 10.1 years
IRR: 17.7%

Positive cash flow
from the start



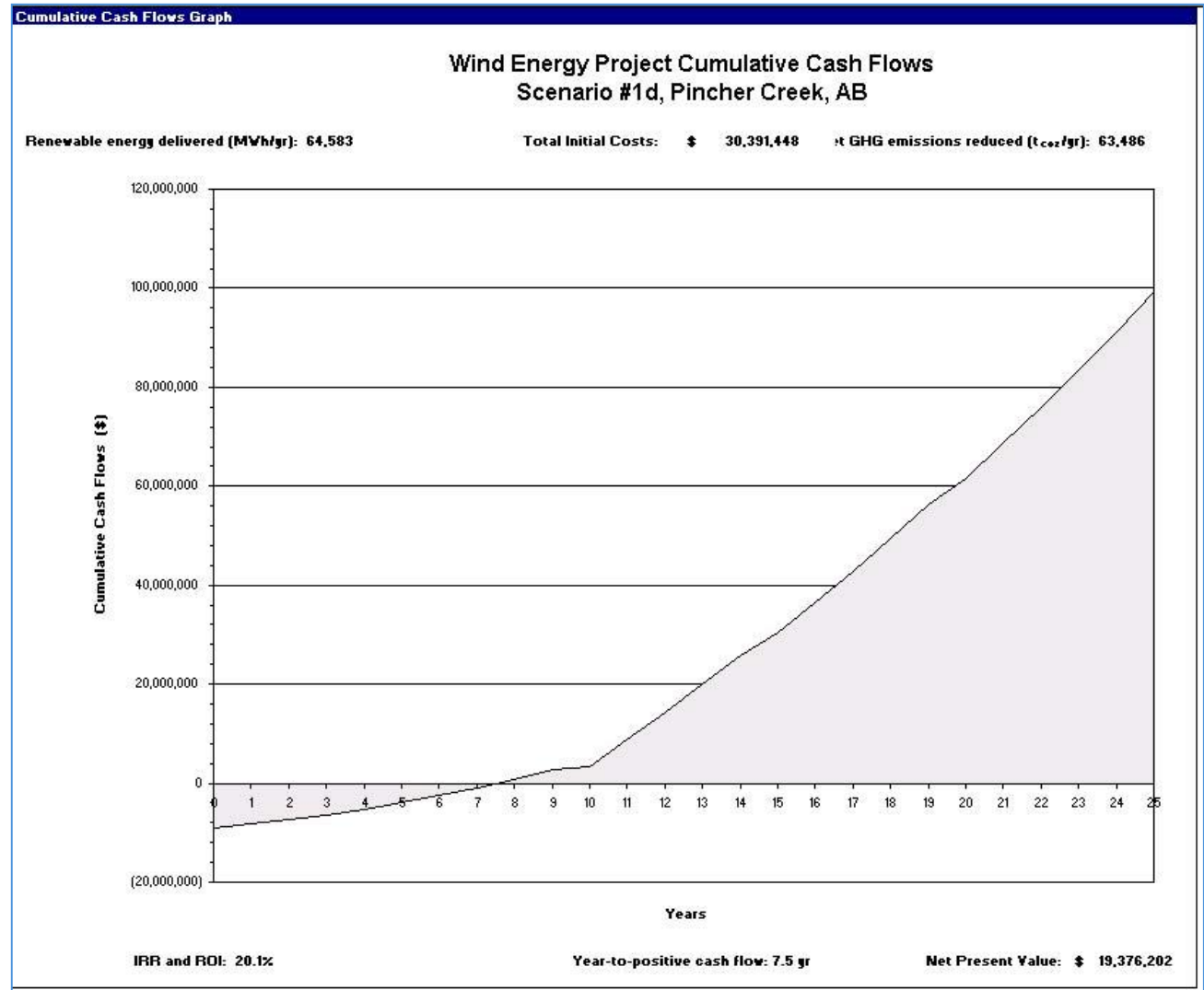
Software Demo GHG Emissions Credit

Scenario # 1d

GHG credit: \$5/ton

PCF: 7.5 years

IRR: 20.1%



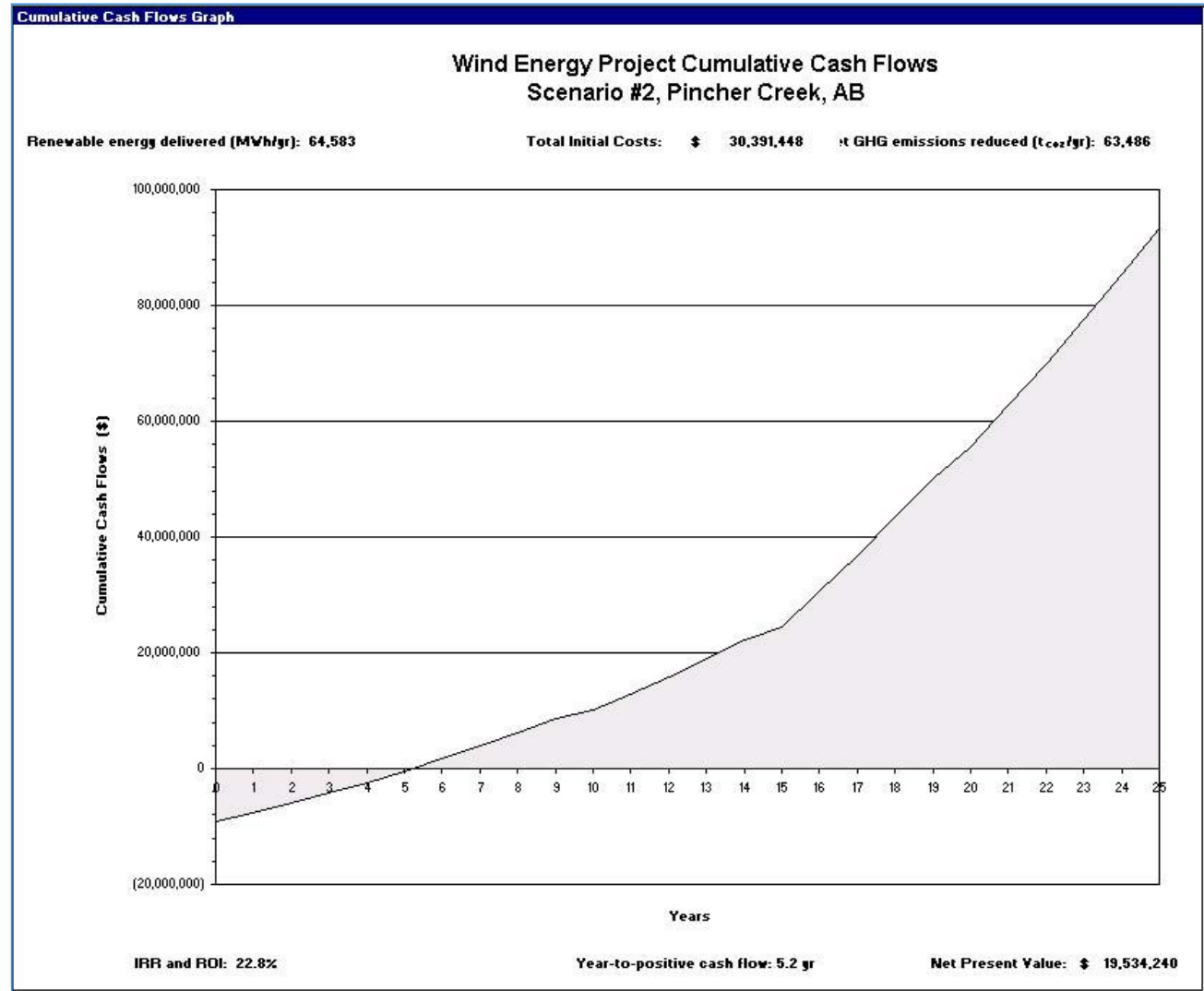
Software Demo: Debt Term

Scenario # 2

Debt term: 15 years

PCF: 5.2 years

IRR: 22.8%



Thank you

Sources used:

- www.retscreen.net
- Formulating proposals for low carbon climate resilient development: designing green climate fund projects (ICREP), University of Twente

[Gajanana Hegde: ghegde@unfccc.int](mailto:ghegde@unfccc.int)

[Janak Shrestha: jshrestha@unfccc.int](mailto:jshrestha@unfccc.int)

