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# Use of Innovative Public Policy Instruments to Establish & Enhance the Linkage Between Green Technology and Finance

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# Outline

- **Green (Technology) Finance and Demands**
- **Green Technology Financing Schemes - Selected Case Studies from Europe and Asia**
- **How successful these schemes have been**
- **Results and learning from these schemes**

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```
testing.Development.render  
to:  
  /page.html?database  
  Alias="admin1" Extension  
  Alias="admin2" Extension  
  Alias="user">Lorem Ipsum  
  Type="testing" version="
```

```
Server.new do  
  session = 0.1  
  machine = "machine"  
  directory = "C:/"  
  file = "C:/file"  
  pagerhost = "page"  
  pager = "pager"  
end
```

```
open ($file, "w")  
undef $/  
$row = $/  
close $file  
$row = $/  
$fd = $/  
$pg = $/  
print "Data auto vel wa"
```

```
# send notification  
Mail = (to => $to,
```

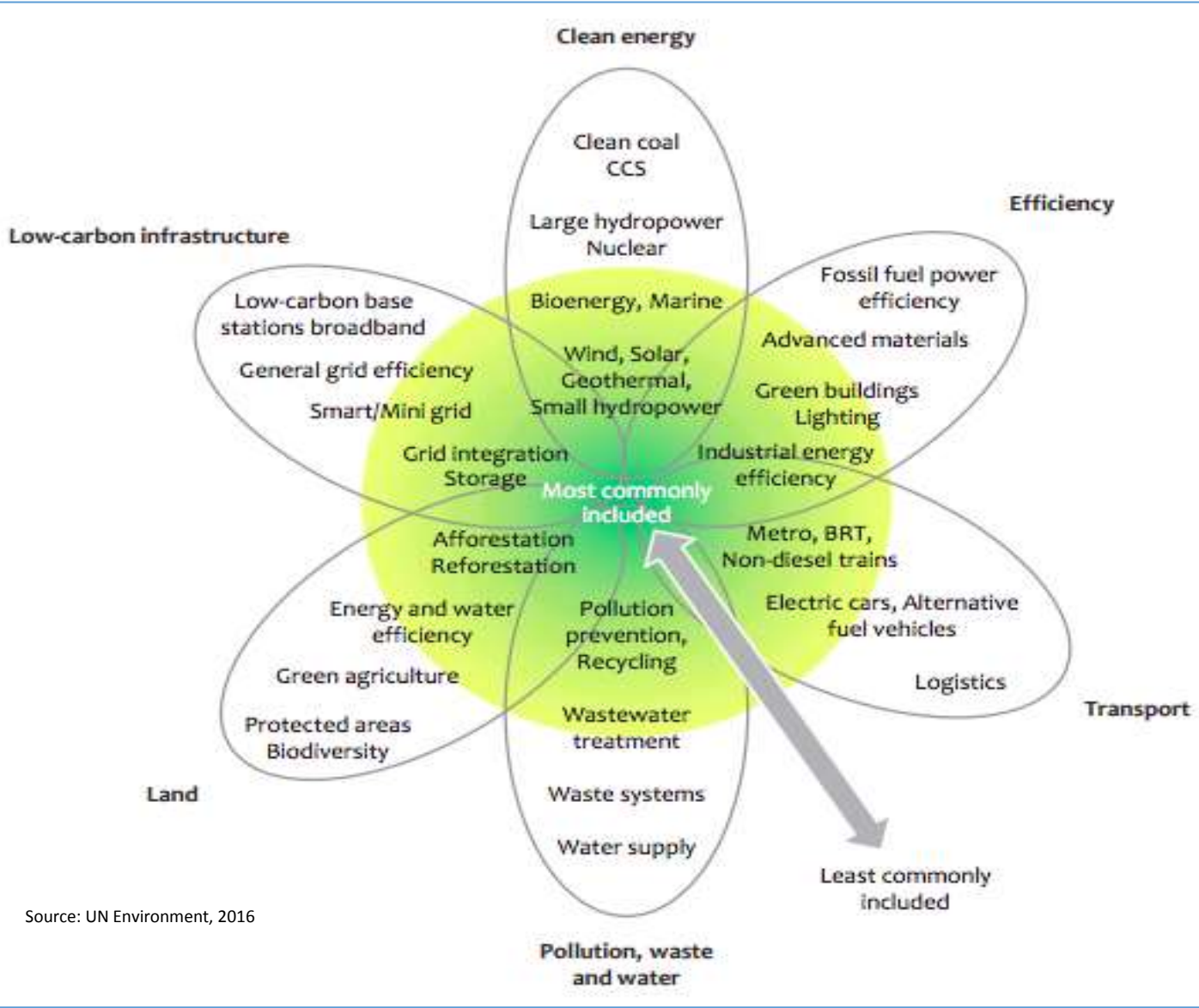
```
machine = $to  
$to = $to  
if $to { $to }  
end
```

```
<table border="1">  
  <tr>  
    <td>admin1</td>  
    <td>admin2</td>  
    <td>admin3</td>  
  </tr>  
</table>
```

```
while ($?) {  
  $stat = Get-ChildItem $file  
  $stat | ForEach-Object {  
    $stat | Write-Output  
  }  
}
```



Context: Green Finance and Demands



Source: UN Environment, 2016

- No universally agreed definition of green finance
- Broad band of definitions
- Definition of UN Environment – Some areas of divergence controversial (clean coal, nuclear and large-scale hydropower)

- Demand for green finance growing
- Global green finance demand: In excess of US\$ trillions
- China: US\$450-600 bn/year - this annual need will grow in line with China's GDP in the short term (Xinhua, 2017)
- Investment need in renewable energy alone in order to meet Paris climate goals: US\$25 trillion until 2050, which is 3 times current investment level (IRENA, 2017)

Green technology financing has emerged as a new alternative financing space because of such rising demands for green solutions globally.





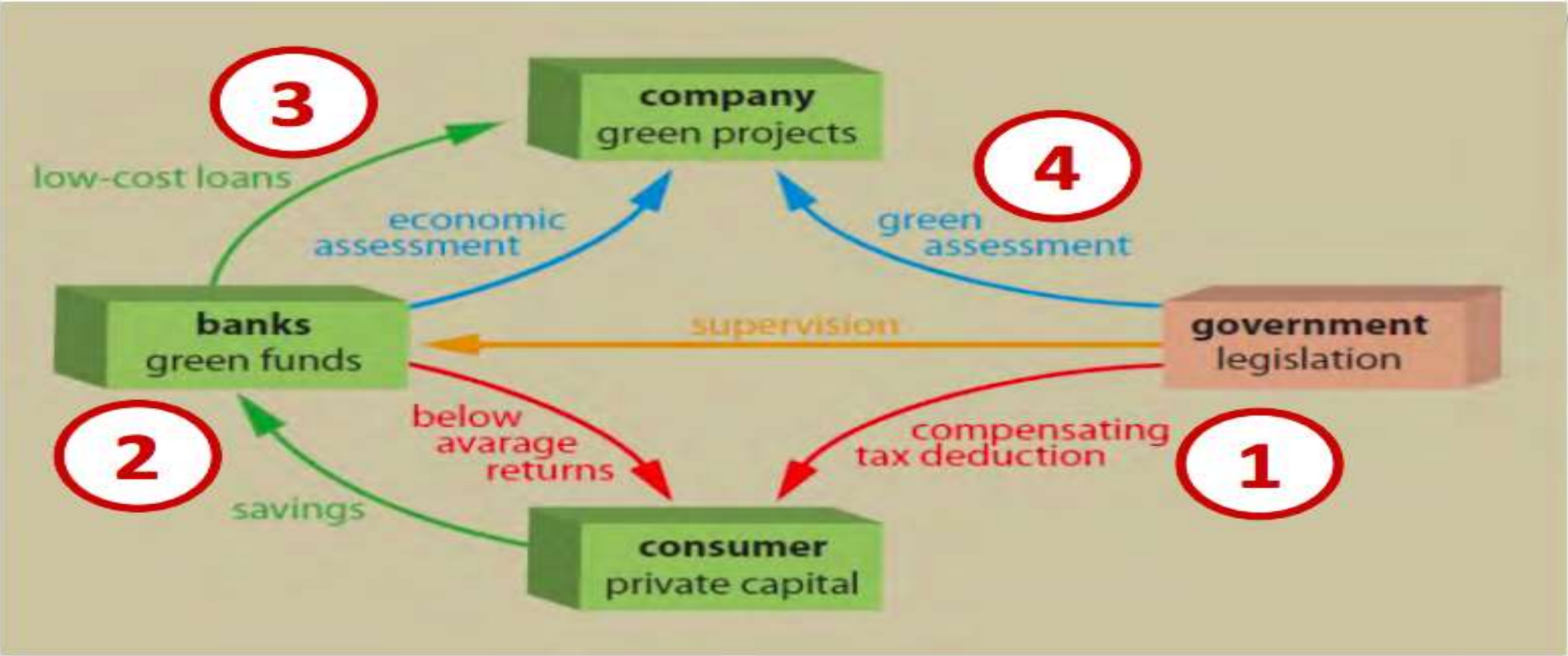
**Context:** Exemplary  
Public-Sector Green  
Technology Financing  
Schemes

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## The Netherlands

The Green Funds Scheme	
Type of Scheme	Tax incentive to individuals + Green loans to companies (1995)
Operated By	4 ministries together: Housing, Spatial Planning & the Environment (VROM); Finance (FIN); Agriculture, Nature & Food Quality (LNV) and Transport, Public Works & Water Management (VenW)
Covered Sectors	Nature, forests and landscape, organic farming, green label greenhouses, agrification, <b>renewable energy</b> , sustainable building, cycle-track infrastructure, soil decontamination and others (mostly early stage)
Certification Issuer	The National Service for the Implementation of Regulations (Dienst Regelingen) at LNV and NL Agency (Agentschap NL) are authorised by VROM to issue green certificates.
Certification Applicant	Green FI that receives financing request from a company
Certification Validity	10 years
Participating FIs	9 major Dutch banks (70% green investment criteria)
Loan Characteristics	An interest rate that is 0.5% lower than market rate (make or break for some high risk projects)
Avg Financing/project	US\$600k
Net Tax Advantage	1.9% (1.2% capital gains tax + 0.7% reduction in income tax)
Guarantee Provision	Green FIs are insured under the Dutch deposit insurance guarantee mechanism and are supervised by the financial authorities

Overview of Green Funds Scheme (The Netherlands)

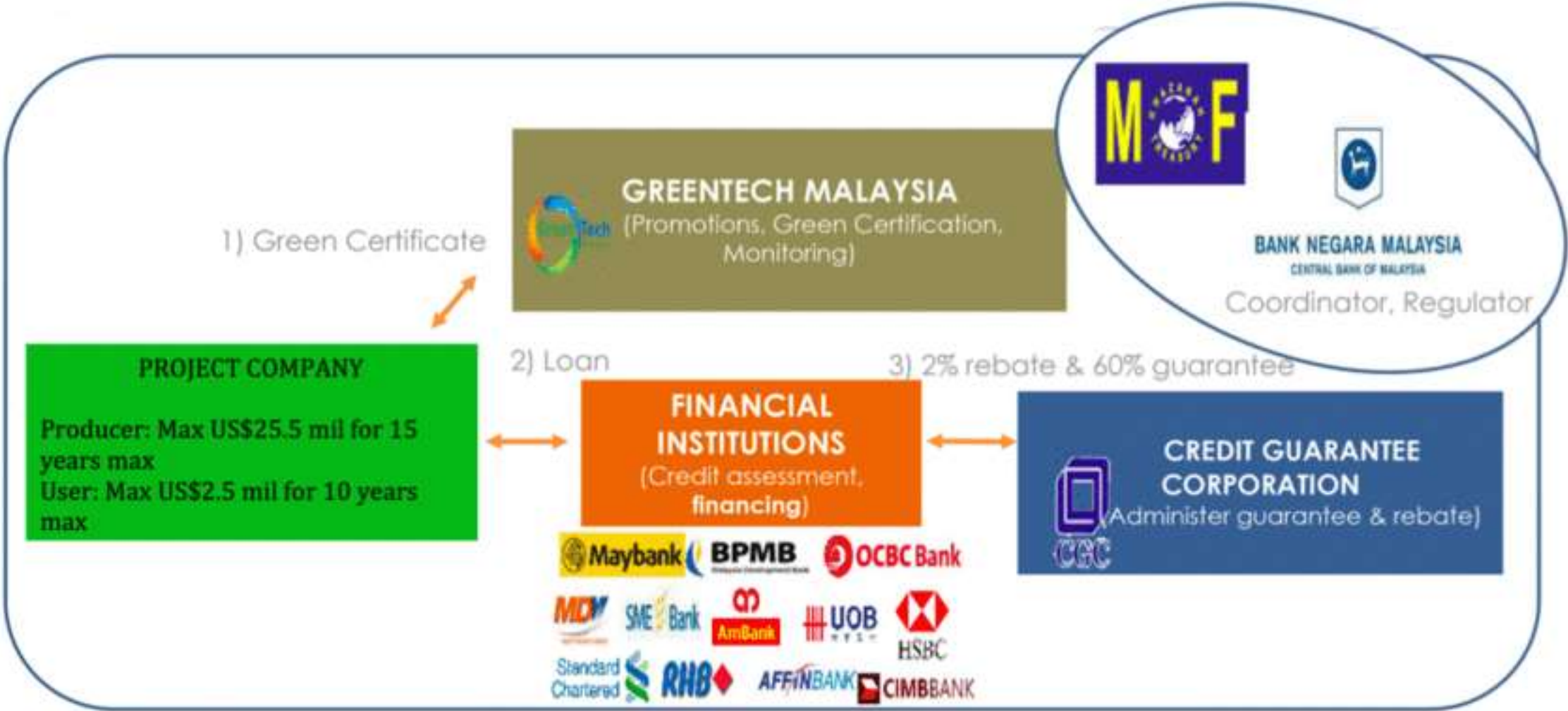


# Malaysia

Green Technology Financing Scheme (GTFS)	
Type of Scheme	Loan (2010); GTFS 1.0 – US\$800m; GTFS 20.0 – US\$1.2bn
Administered By	Malaysian Green Technology Corporation (GreenTech Malaysia), which sits under the Ministry of Energy, Green Technology and Water (KeTTHA)
Covered Sectors	Minimize degradation of environment; zero or low green house gas emission; safe for use and promotes healthy and improved environment for inhabitants; conserve the use of energy and natural resources; and promote the use of <b>renewable energy (incl. on grid)</b> resources. No R&D. Only proven business models.
Certification Issuer	GTFS Technical Committee (GTC) , GreenTech Malaysia
Certification Validity	6 months (training also provided for free)
Certification Applicant	Producer or User Company
Participating FIs	52, only 28 active as of 2017 end
Loan Characteristics	Malaysian government bears 2% of the total interest rate or profit charged by the participating FI on the soft loan issued; Loan tenure is 15 years for producers and 10 years for users. Foreign companies – 51% & 70% Malaysian shareholding requirement
Financing Amount	Maximum of US\$ 25.5 million for producers and US\$ 2.5 million for users. Whole process 30-60 working days
Guarantee Provision	Credit Guarantee Corporation Malaysia Berhad (CGC) provides a guarantee of 60% on the approved loan, and a guarantee fee of 0.5% per year on the guarantee amount is charged to the borrowing company.



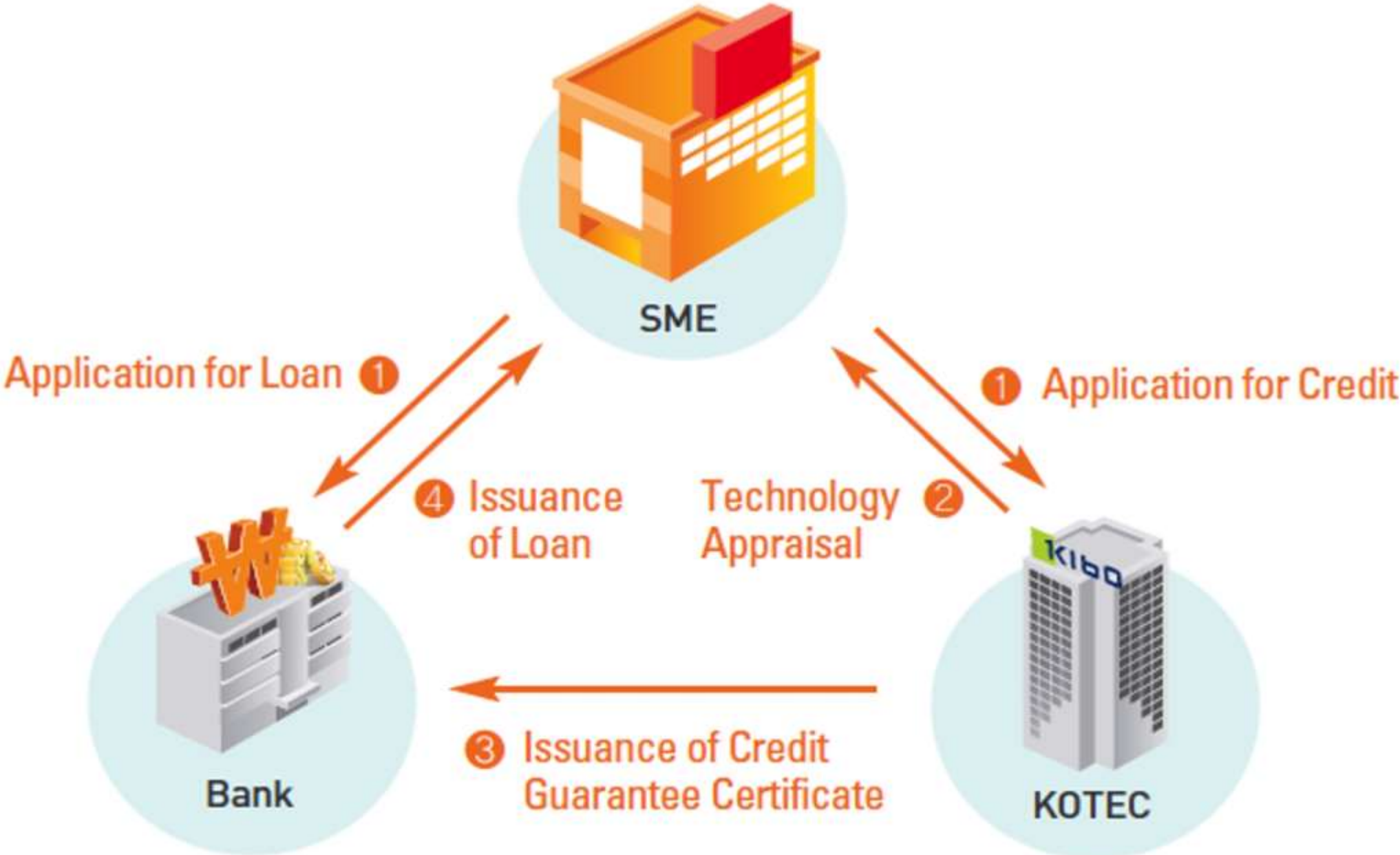
# Overview of Green Technology Financing Scheme (Malaysia)



## South Korea

KOTEC Loan Guarantee Scheme	
Type of Scheme	Loan Guarantee (85-100%)
Operated By	Korea Technology Finance Corporation (KOTEC) (1989), under Ministry of SMEs and Startups; KTRS first conceived in 1999 & developed in 2005
Covered Sectors in Green Technology	61 main areas in ten green growth fields - 01. <b>Renewable Energy</b> , 02. Carbon Reduction, 03. High-Tech Water Resources, 04. Green IT, 05. Green Vehicles and Ships, 06. High-Tech Green House/City, 07. Advanced Materials, 08. Clean Production, 09. Eco-Friendly Agricultural and Fishery Food, 10. Environmental Protection and Preservation. Also R&D.
Certification Issuer	KOTEC and 10 others. KOTEC maintains 25% of total market share in green certification. [Note the difference between NGCS, GTBC & TCB]
Certification Validity	2 years
Certification Applicant	SMEs
Participating FIs	5 public institutions: Korea Development Bank (KDB), Industrial Bank of Korea (IBK), Korea Credit Guarantee Fund (KODIT), KOTEC and Korea Finance Corporation (KoFC)
Loan Guarantee Characteristics	Avg tenor of loan guarantee up to 10 yrs, given as 1-to-3-year term loan & can be rolled over up to 10 yrs; guarantee fee ranges from 1.2% to 1.3% (0.3% for young startups). Guarantee certificate issued to FI (2-7 days).
Financing Amount	US\$ 30,000 to US\$ 3 million (US\$10 million in exceptional cases)
Incentive	If a company applies for loans with KOTEC's guarantee certificate, the interest rate is lowered by up to 2%, which is still profitable after adding guarantee fee.

Overview of KOTEC's Technology Guarantee Scheme (South Korea)





**Context: Results**

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# Achievements of three green financing schemes

## The Netherlands

6066 projects financed between 1995 and 2009 (an average of more than 400 per year)

Total financing US\$ 17 billion as of 2011, with an average investment size of US\$ 631,484

Leverage Ratio: 1:40

Projects receiving most funding cumulatively: GHG reducing projects (40%) and energy projects (26%)

Individuals participating: 250,000 by 2009 with an average individual investment of US\$ 35, 610

Average CO<sub>2</sub>-emission reduction of 0.5 MT per year since 2001

## Malaysia

315 projects approved as of Oct, 2017

Total loans approved under this scheme stands at US\$ 829 million

Projects receiving most funding cumulatively: RE

3.7 million tonnes of CO<sub>2</sub> equivalent expected to be avoided every year through approved projects

## South Korea


Total SMEs supported as of 2016 end: ~ 6000 (418 of them in RE)

Outstanding loan guarantee to green SMEs as of 2016 end: US\$ 2.9 billion (total US\$17bn) i.e. 17%

Average default rate of green loan guarantee in 2016: 5.04% (4.47% overall in 2017)

GTRS – a derivative model of KTRS to help banks understand both real and perceived risk of green technologies – not for guarantee purpose (2013-14; then TCB)

Enhancing PS participation: 18 power and utility companies along with other big companies entered into an agreement with KOTEC and KODIT by contributing US\$ 92.7 million in March 2011 to support RE SMEs (Lvg. Ratio: 1:12)



**Learning and Key  
Take Away**

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# What are the key messages from these three green technology financing schemes?

- The stringent lending and investment criteria of financial players that are primarily based on conventional credit assessment might not be applicable to evolving green technologies (diff. business models; long term financing).
- Green certificate schemes introduced by three countries in this study could be clear benchmarks for others that would like to introduce public policy driven financial incentives for green technologies.
- Financial incentives could be interest/tax rate deduction scheme implemented by the Dutch government or loan guarantee scheme of the Korean government or a combination of soft loan and loan guarantee scheme by the Malaysian government.
- Each scheme could be improved further, and should not be directly replicated elsewhere without first laying the necessary cushion for such schemes. The cushion includes, but not limited to, favorable green technology policy and relevant regulations, strong technical institutions for evaluating green technologies and awarding certificates, and financial institutions that work closely with certification agencies.
- Improving capacity of financial institutions to evaluate green technologies is crucial should countries adopt of these schemes (successful case – TCB, Korea). For instance, in Malaysia, less than 50% of certified projects are financed owing to perceived risk. Same was the case with the National Green Certification Scheme of South Korea.
- Cross-functional coordination among different ministries and institutions is crucial from a very early stage.
- The green technology development and nurturing of green enterprises requires long-term policy focus.
- It also requires revision and update of existing policies, laws and regulations in accordance with both evolving pace of technological development and new national/international green commitments of the country.