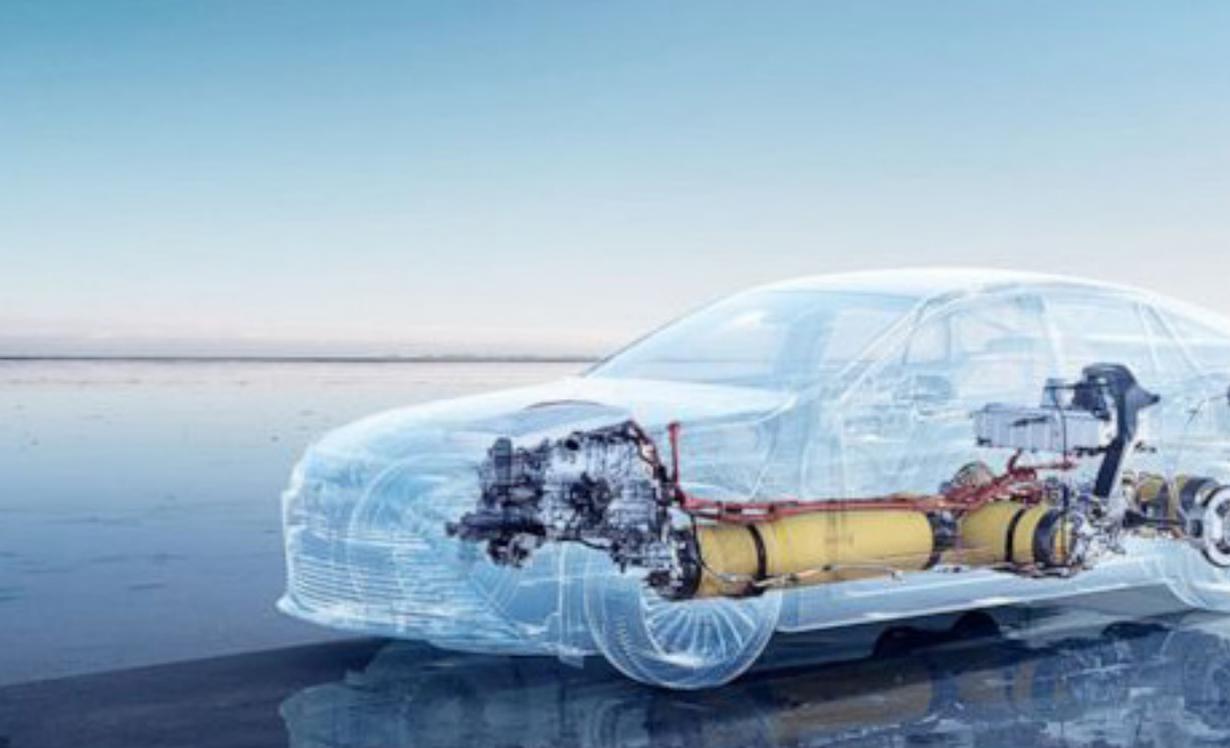


Explore the world of
clean renewable energy.

Proposal



Reimagining african cities

Illizwe Energy is a renewable energy services and solutions company specializing in the project development of Electric vehicle charging units, Solar PV and Green Hydrogen projects.

Our company is a pioneer in the development of the green economy to support net zero emission journey, resource efficiency and just energy transition. Our priority is addressing South Africa's and African continent energy challenges and promoting adoption of clean energy efficient technologies.

We have a team of qualified experts in the field of renewable energy technology and engineering.



EVSE Project Background

As a South African based technology solutions and advisory services company focusing on green technology development projects ,i.e. e-mobility revolution, renewable energy. Illizwe Energy intends to assemble, install and operate locally branded electric vehicle charging units in South Africa.

We are looking to partner with technology companies specializing in the design, development and supply of electronic components required to assemble the electric vehicle supply equipment (EVSE).

Electric vehicle supply equipment (EVSE) is the basic unit of EV charging infrastructure. The EVSE accesses power from the

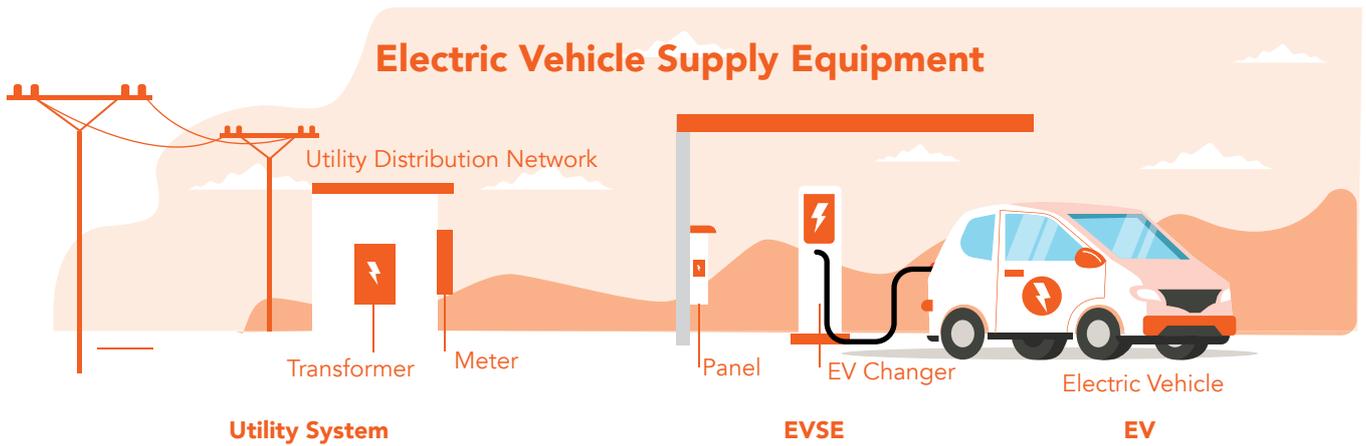
local electricity supply and utilizes a control system and wired connection to safely charge EVs. An EVSE control system enables various functions such as user authentication, authorization for charging, information recording and exchange for network management, and data privacy and security.

SA EV charging market sizing

Analysis of EV charging network projection.

The table below illustrates the potential EV charger market size based on a mix of slow and fast chargers.(At ratio of 1 public charger per 10 EV.)

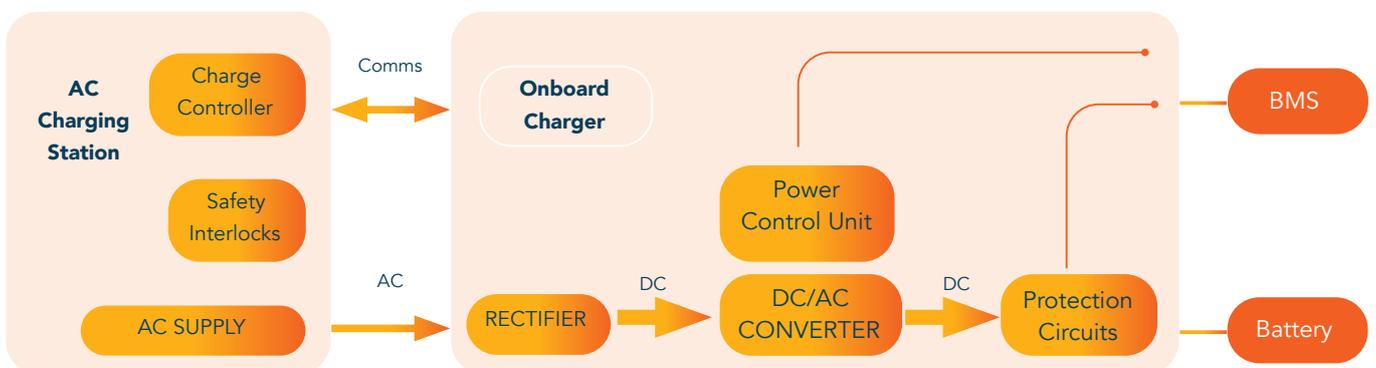
SA new vehicles sales (400 000)	4 000	8 000	12 000	16 000	20 000
EV penetration	1%	2%	3%	4%	5%
Charging points per EV (10)	400	800	1200	1600	2000
Charging points per station (10)	40	80	120	160	200



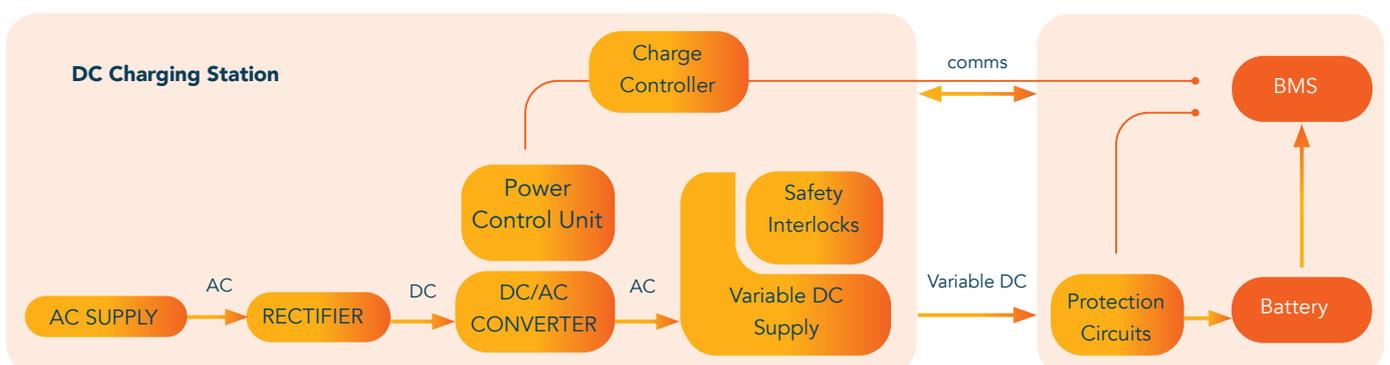
There are different levels of charging depending on power rating.

Level	AC and DC	Power Rating	Range
Level 1	AC and DC	0-10 kW	50
Level 2	AC and DC	10 - 50 kW	50 - 250 km
Level 3 (Fast Charging)	Only DC	> 50 kW (up to 350kW)	250 - 1750 km

AC charging approach uses the vehicle’s onboard charger (AC to DC converter) to charge the vehicle’s battery pack.



DC fast charging systems are designed to bypass the vehicle’s onboard charging system and connect directly to its battery system.



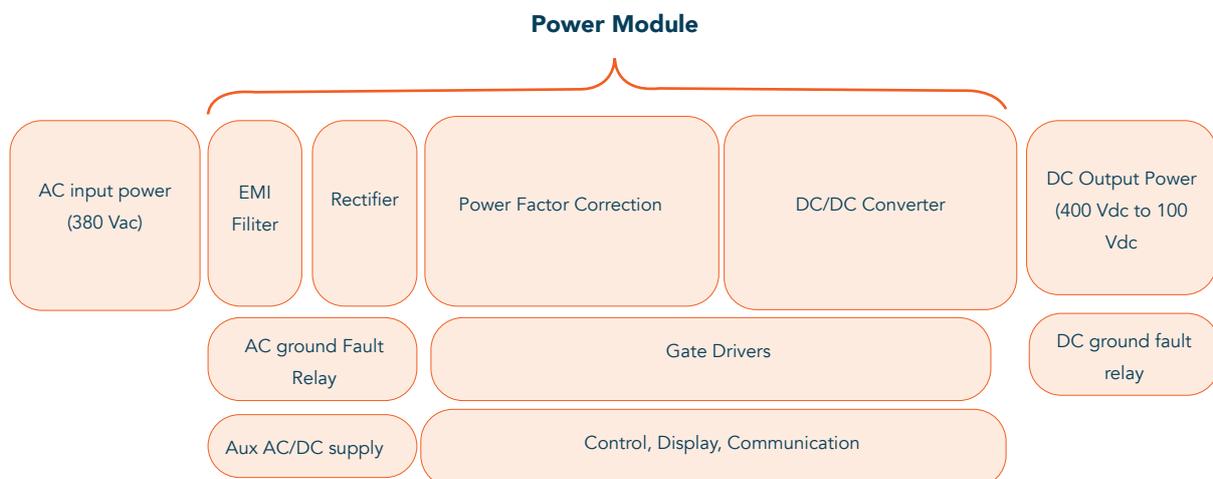
Our Specification

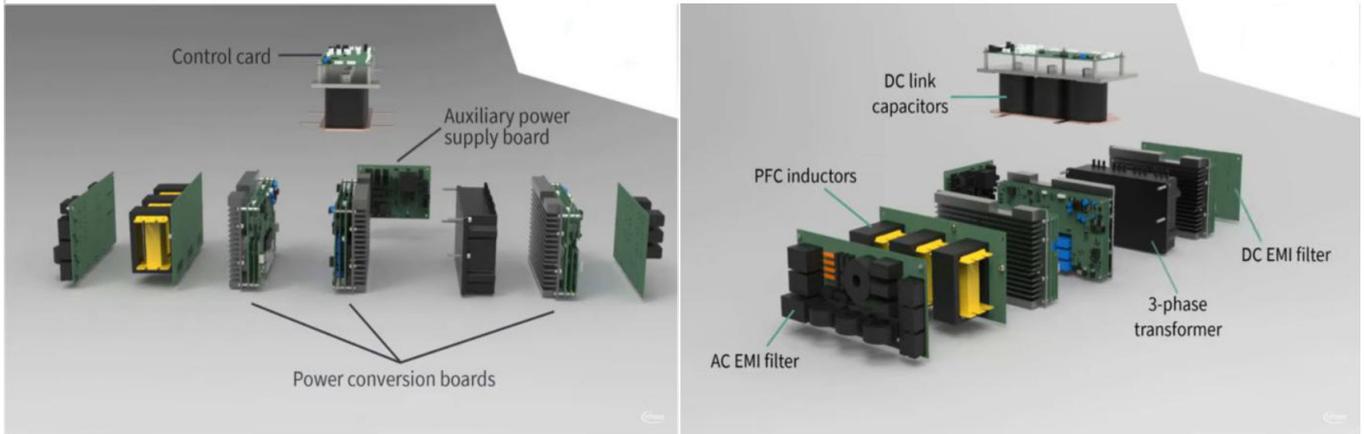
Illizwe Energy intends to develop EVSE chargers according to the following specification.

Power range	22kW	50kW/100 kW/ 150 kW
Input voltage	Single phase 220 VAC +/- 10% Three phase 380 VAC +/- 10%	Three phase 380 VAC +/-10%
Output rating	Type 2 22kW-three phase 32A	0 – 200 Adc
Output voltage		150 – 750 vdc
Input frequency	60Hz	60 Hz
Ambient temp	-30C ~+55C	-30C ~+70C
Installation method	Floor stand	Floor stand
Efficiency		>95%
Power factor		>0.99

Scope of Work

Within the EVSE, power undergoes several conversion stages, each requiring some form of circuit protection. Request for Quotation (RFQ) of the various components as depicted below, i.e. relays, contactors, circuit protection, power module.





<p>Relays, contactors, fuses, circuit protection</p>	<p>AC input power</p>	<p>This requires overcurrent and overvoltage protection, residual-current or ground-fault detection, along with one or more stages of filtering for electromagnetic interference (EMI) purposes.</p>
<p>Relays, contactors, fuses, circuit protection</p>	<p>AC-to-DC rectification</p>	<p>This stage converts the positive and negative cycles of the AC input power to just positive voltage.</p>
	<p>Power Factor Correction (PFC)</p>	<p>Sometimes included in the rectifier stage, this stage compensates for energy-storing components (capacitors, inductors, etc.) used in the power converter to minimize the amount of reactive power (or non-useful power) as much as possible.</p>
	<p>DC-to-DC conversion</p>	<p>This stage uses high-efficiency semiconductors to adjust the DC voltage efficiently to the optimum value(s) for charging.</p>
<p>Relays, contactors, fuses, circuit protection</p>	<p>DC output</p>	<p>This stage demands over-current, overvoltage, ground-fault protection and filtering</p>



Solar Project Background

The Department of Mineral Resources and Energy (“DMRE”) has recently gazetted the amendment of Schedule Two of the Electricity Regulation Act, which allows independent power producers (“IPPs”) to generate up to 100 MW of power without having to go through a drawn-out licensing process with the National Electricity Regulator of South Africa (“NERSA”).

The announcement will open doors for significant investment in new generation capacity in the short to medium term. This will help to reduce the electricity supply gap in the country and assist in the supply of reliable and sufficient electricity for the economy.

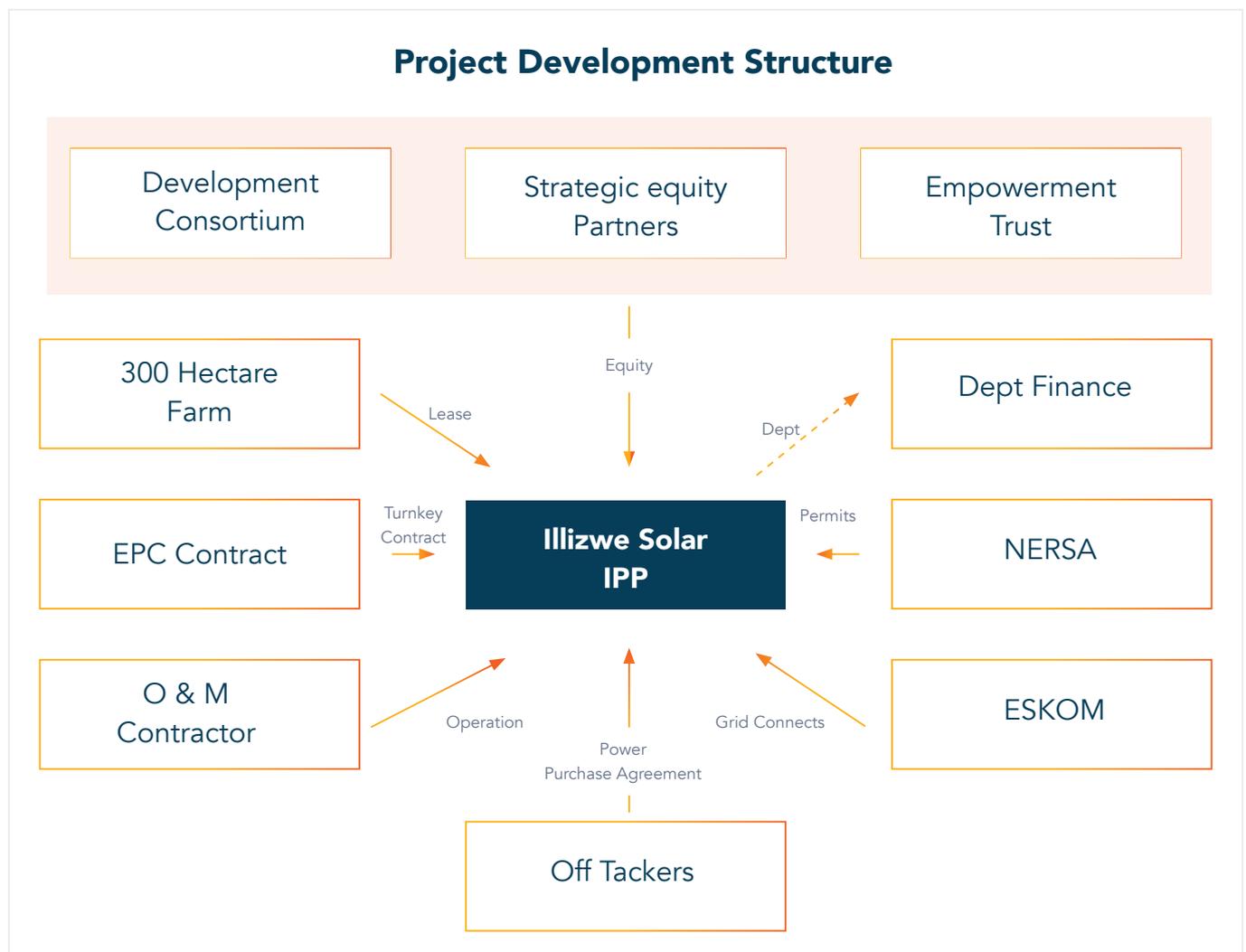
DMRE has also made a call for additional 5.7GW of solar power to be added to the grid by 2030. This equates to 175 additional IPP Solar PV projects.

According to Eskom some 68 000 MW of mostly new variable renewable-energy capacity would have to be added to cater for the 22 000 MW of coal that the utility would be retiring by about 2035.

Our Proposal

Illizwe Energy is seeking to establish a developmental consortium for the establishment of Solar PV power generation in the selected renewable energy developmental zone to a maximum of 100 MW. The consortium will develop the

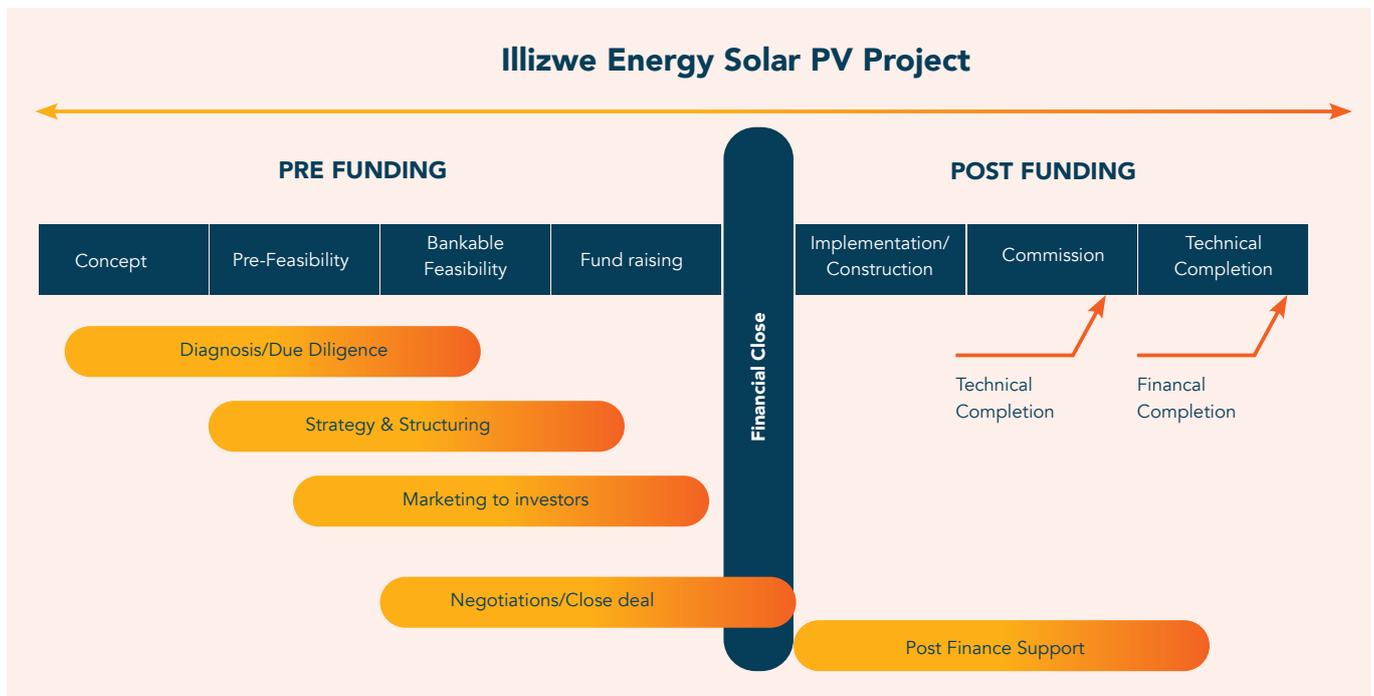
project to a bankable feasibility stage and thereafter seek debt and equity funding for the project. A desktop prefeasibility study will be conducted for the identified area to demonstrate financial viability of the project.



The consortium will be responsible for securing 500 hectares of land in the identified area and raising capital for the development of the project to the tune of R3 million. After the financial close the developers will profit from the developers success fee of up to 5% of the total project cost, i.e. project cost estimated at R20 million per MW. Project developers will also form part of the equity partnership in the operation of project



Project Financing Plan

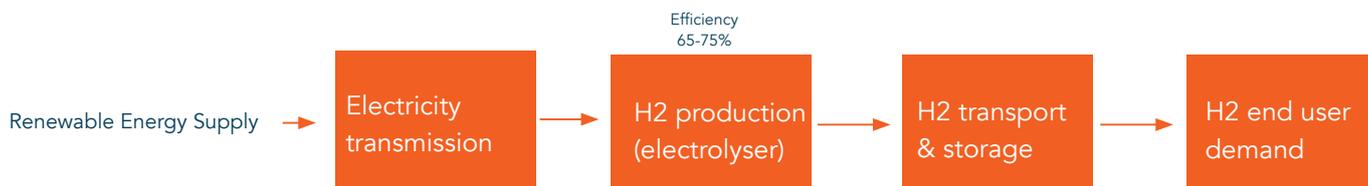


IPP Project to be financed on non-recourse project finance basis through a combination of debt and equity.

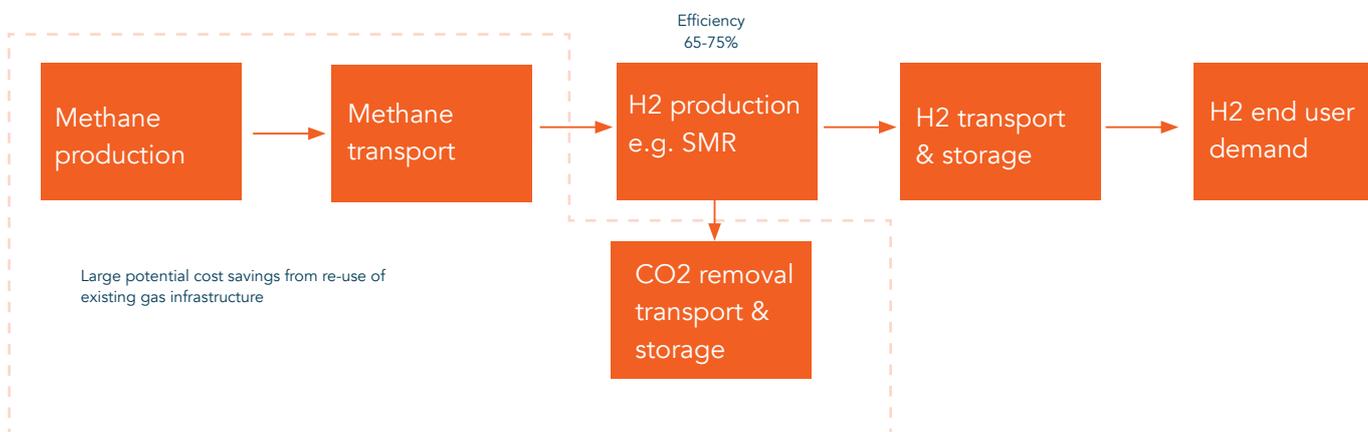
- Typical financing structure is 70% debt and 30% equity, although for large projects the debt portion can go up to 90%
- Debt financing will be secured mostly by project cash flows backed by long-term PPA
- Debt tenure is typically up to 12 years
- Equity Financing Sources
 - Project developers
 - Strategic equity partners
 - Development Financial Institutions (IDC, NDC)
 - Infrastructure funds
 - EPC contractor equity investment
- Debt Financing Sources
 - Export Credit Agencies
 - Development Financial Institutions
 - Infrastructure Funds
 - Commercial Lenders

Green Hydrogen Project Background

Green Hydrogen supply chain



Blue hydrogen supply chain



Illizwe Energy Priority Areas	Other opportunities	Potential market	Investment
Project Development	Solar PV project combined with H2 production	TBA (new Market)	R4750/MWh
H2 production		TBA (New Market)	

Hydrogen Fuel Cell Vehicle

