

PLENARY 1: SUSTAINABILITY DEVELOPMENT

# SUSTAINABILITY: ACT NOW COUNTRIES AND CORPORATIONS

Presented by

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**DATE: 12 SEPTEMBER 2024**



## Where is Nepal ranked on 2024 EPI?

- Nepal ranks **165th** out of 180 countries.
- Nepal has a score of **32.9**, placing it ahead of Pakistan (**25.5**) and India (**176th**)

- **GHG Emissions in Nepal** in 2022:
  - **0.3%** increased from 56.56Mton CO<sub>2</sub>eq in 2021 to 56.74Mton CO<sub>2</sub>eq in 2022

1990	2000	2005	2015	2020	2021	2022
31.60	36.06	37.51	45.73	55.48	56.56	56.74

## 2023 United Nations Climate Change Conference (COP28) PM Pushpa Kamal Dahal statement – *key points*:

- **Himalayan Crisis:** More glaciers losses expected, endangering ecosystems and livelihoods.
- **Unfair Impact:** Nepal faces severe climate disasters despite contributing little to global emissions.
- **Climate Justice:** Developed nations to meet their climate promises and support Least Developed Countries (LDCs).
- **Adaptation Plan:** Aims for net-zero emissions by 2045 by hydropower and maintain 45% forest cover.
- **Need for Aid:** The need for financial and technological help from developed countries for LDCs.
- **Climate Finance:** Urged developed countries to address the \$100 billion shortfall and double adaptation funding by 2025.
- **Grants and Funds:** Called for grants as a form of justice and a reliable Loss and Damage Fund for LDCs and mountainous regions.

# REALISING NEPAL RE POTENTIAL



## Nepal aims to achieve net-zero carbon emissions by 2045

- 2022, Nepal achieved 100% RE (2.858 GW) of installed capacity.

Energy	Generation (GWh)	% of total energy Generated	Installed Capacity (MW)	% of total Installed Capacity
Solar	103	1.06	115	4
Hydro and Marine	10,176	98.89	2690	94
Bioenergy	11	0.05	53.64	2
Non-Renewable	0	0	0	0

# NEPAL RE: SOLUTIONS – REALISE ALL RE POTENTIAL



## WE NEED A SMART GRID

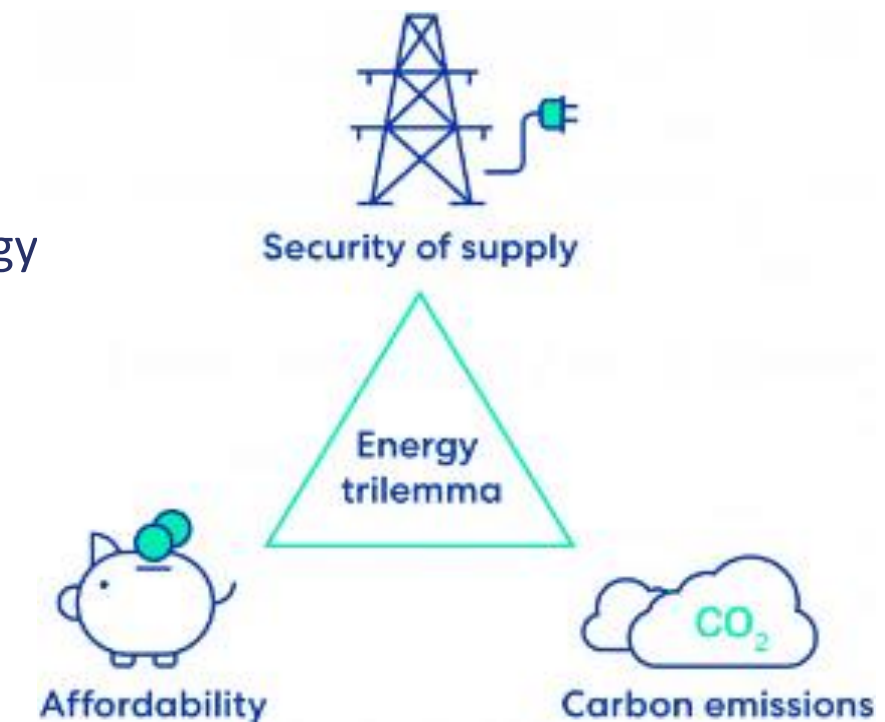
1. Continuous large generators to variable distributed generator.
2. If Variable RE breaches 20% of grid size, it requires Voltage Source Systems (VSS) and Critical Infrastructure Protection Technology (CIPT) and :
  - a) **Battery Energy Storage Systems (BESS)** Store excess energy and provide backup during low VRE generation.
  - b) **Advanced Pumped Hydro Operations:** Stabilize supply by storing and releasing energy as needed.
  - c) **Inertia-Based Fast Frequency Response:** Quickly balance supply and demand to maintain grid stability.

This comes at a substantial cost and tariff increase.

**The man on the street bear this increased cost. Those who can afford should pay.**

Annual CO<sub>2</sub> absorbed by 1 acre of mature forest ≈ 2.5 tons/ year; depending on the type of trees.

**We should only implement SOLAR on Dead space like rooftops and over lakes and not cut down forest or agricultural land for solar**



Remark: Figures above are the technical potential

# NEW TECHNOLOGIES

## Nuclear Fusion

- ☐ Not recommended for Nepal

## Nuclear Fission

- ☐ Scientist says at least 40 years; PE says about 10 years.

## Hydrogen

- ☐ Very expensive; Rs 5.5 tril. for peak demand of 2 GW
- ☐ Many technical issues : Safety / transportation.
- ☐ Not relevant to Nepal because you've got great RE Potential next to RE Demand

## HVDC & Cutting-Edge HVDC Technology

- ☐ Is relevant to Nepal

## CCUS

- ☐ The total solid waste produced in Nepal is 3,023 tons/day
- ☐ If we use that all for CCUS, it will only capture 400 MW of power or 1/5 of current generation – USD 300K a day.
- ☐ Cost may decrease with time, but volume won't. It should still be considered as one alternative.





# NEW TECHNOLOGIES – OTHER EMERGING TECHNOLOGIES

- **Pump Storage Energy System**
  - 95% of all Energy storage Greater strength and lighter. 300GW being built globally.
- **Lithium Sulphur Batteries**
  - Greater efficiency.
- **Extraction/ Mining lithium from the sea**
  - To meet the growing demand for battery materials.
- **Mined Hydrogen**
  - Cheap 1USD per KG.
- **Use of Aluminum-Graphite Core for High Voltage Direct Current (HVDC)**
  - Greater strength and lighter.
- **Ferroelectric Materials for Next Generation Computing and Storage Devices**
  - Magnetic core memories reduces energy usage 10 times.
- **New Thin-film Technology for Solar using Perovskite**
  - Increases efficiency, life expectancy and reduces costs.



**NEPAL SHOULD KEEP ABREAST OF EMERGING TECHNOLOGIES AND ADJUST PLANS AND POLICIES ACCORDINGLY**

# SOLID WASTE MANAGEMENT IN NEPAL

## PROBLEM – 3,000 tons/day

- Inadequate infrastructure
- No separation at source
- Limited recycling and composting facilities
- Urbanization and population growth
- Regulatory and implementation

## CAPITALISE ON NEW TECHNOLOGIES

- Material Recovery Facilities (MRF)
- Waste-to-Energy (WtE)
- Gasification
- Pyrolysis
- Biogas Digester
- Plasma
- Stoker

## RECOMMENDATION

- Collection of data via Nationwide Waste Characterization Study.
- Develop Circular Economy Blueprint – Enhance Producer Responsibility
- Develop a National Solid Waste Masterplan

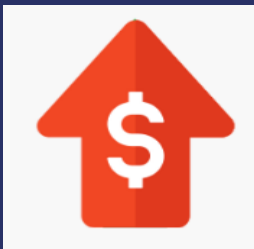


Sources:  
1) *Solid Waste Management: Challenges And Practices In The Nepalese Context (Published In 2019).*  
2) *Waste Management in Nepal: Characterization and Challenges to Promote a Circular Economy*



# NEPAL : WATER

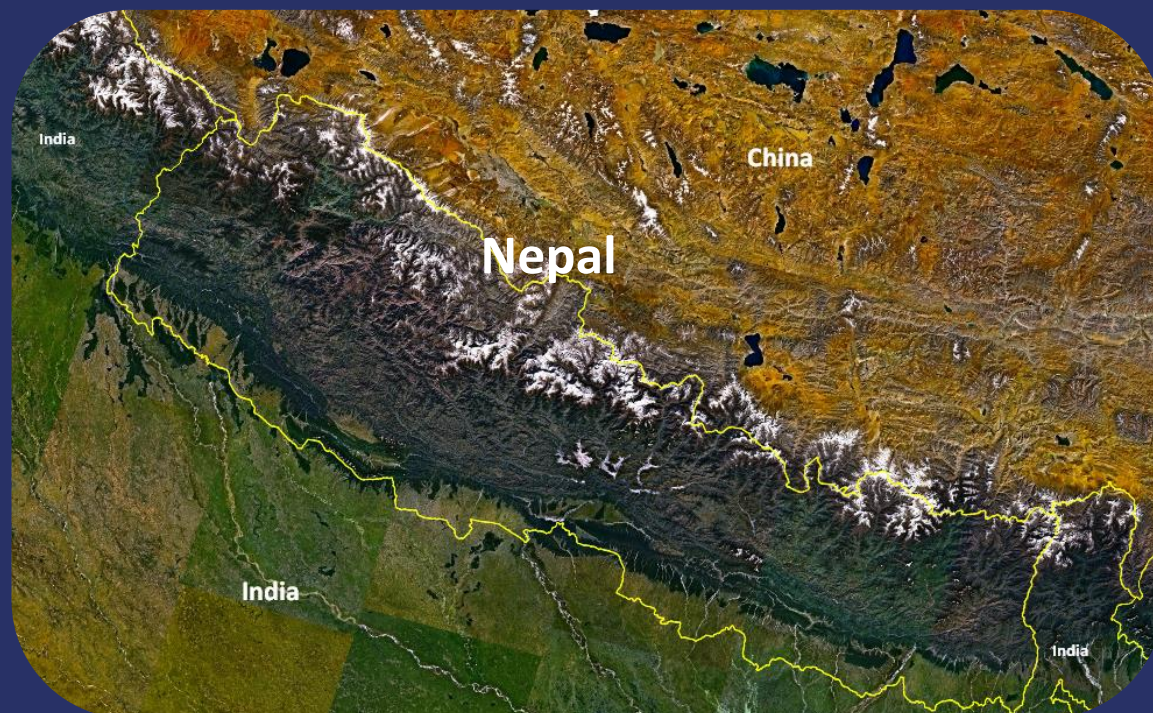
## FLOODING, SEWERAGE & WATER SUPPLY



Highest flood  
losses in Nepal in  
2017

**\$585million**

The damage was estimated by the Government to be USD584.7 Million, with a reconstruction cost of USD375.8 Million to housing alone according to the Government of Nepal National Planning Commission (2017).



### Nepal's Stand in Disaster

- 12<sup>th</sup> position on climate vulnerable country (Global climate index, 2021)
- Floods caused due to both natural and human-induced causes - monsoon rains, glacial lake outbursts, deforestation, poor urban planning etc.
- Flood management & mitigation measures – Infrastructure development & maintenance, Early warning system & monitoring, Policy & Institutional strengthening etc.

August 2017  
Major **FLOOD**



**1.7 million** people affected

Estimated around **80%** of the Terai  
was flooded



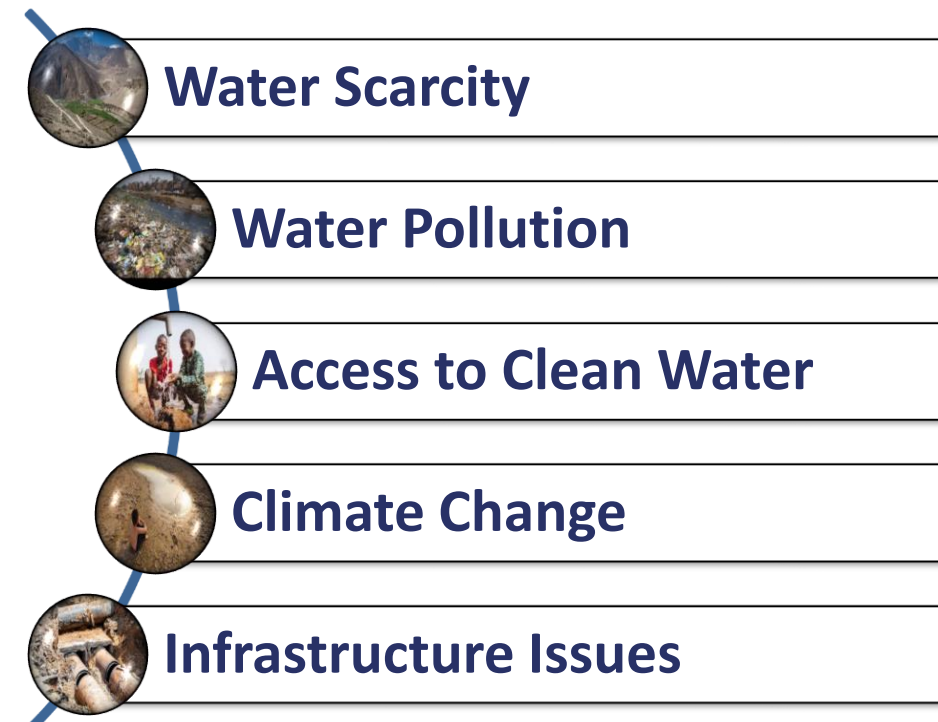
**41,626** homes destroyed

**140+ deaths**  
(ADB, 2019)

## SEWERAGE

- Inadequate coverage, especially in rural and peri-urban areas.
- Lack of wastewater treatment facilities.
- Outdated and deteriorating infrastructure.
- Financial and institutional constraints.
- Improper disposal and management of sewage.
- Geographical and topographical challenges.

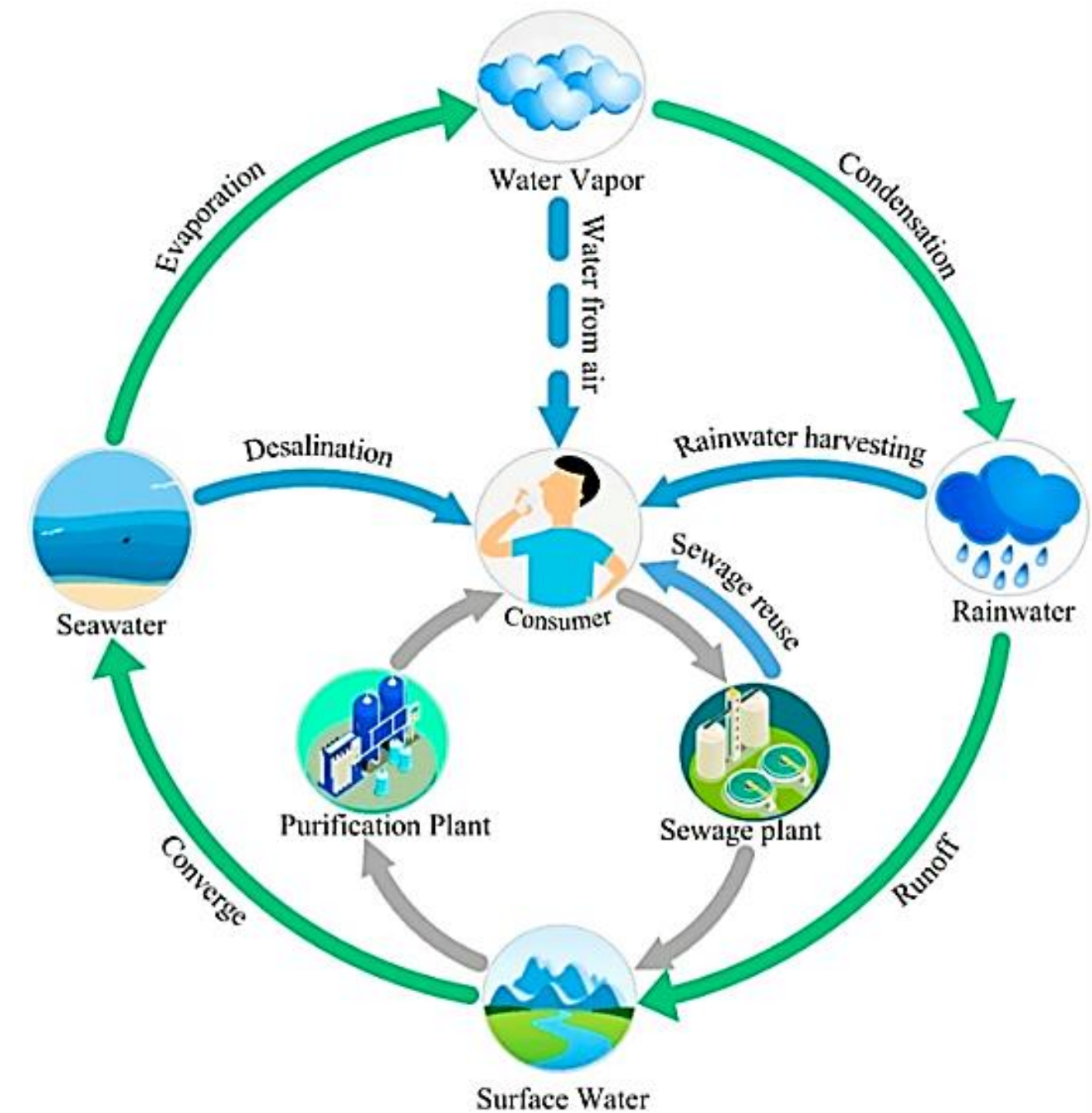
## WATER SUPPLY ISSUES








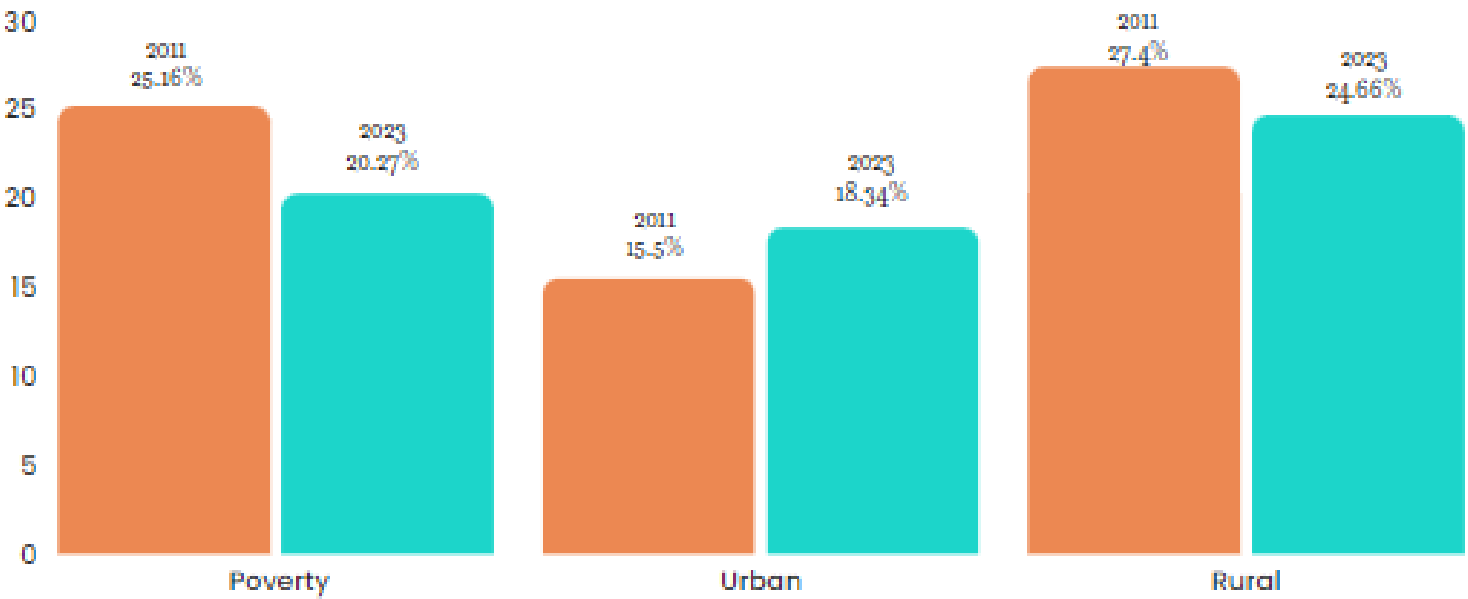
# RECOMMENDATION - WATER CYCLE – BE BOLD

1. Setting-up of a National Commission on Holistic Water Management;
2. Consolidate & Integrate current Water Related Agencies and Departments;
3. Separate the Policy, Regulatory and Management roles of all Water Players.
4. Set-up a National Water Company like there is for power and telecommunication.
5. Manage Water based upon on designated & Integrated River Basins;
6. Set the Right Water Pricing including Green Tariffs;
7. Introduce Polluter-Pay and Beneficiary-Pay policies;
8. Accelerate Circular Economy principles and new business cycles.






# SOCIAL – POVERTY & BASIC NEEDS

- **Poverty rate in 2023** (compared to 2011):
  - Total - 20.27% 
  - Urban - 18.34% 
  - Rural - 24.66% 
- **Highest & lowest poverty Rate by Province:**
  - Sudurpaschim (34.16%)
  - Gandaki (11.88%)
- **Poverty Line (2023):** Rs 72,908 per person per year.



**Basic Needs in Nepal:**

-  **Electricity:**
  - 95% has access to electricity
  - >3.5 million people in rural areas do not have access.
-  **Water:**
  - 91% has access to water but only 25% has access to safe drinking water
-  **Internet**
  - Nepal's internet penetration rate at 51.6% at the start of 2023 and users increased by 1.2%.

**Solutions to basic needs:**

-  **Electricity:**
  - The Nepal Electricity Authority (NEA)
  - Grid densification program
  - Off grid solutions – Solar Battery
-  **Water:**
  - The Rural Village Water Resources Management Project,
  - Urban Water Supply and Sanitation Projects
-  **Internet**
  - Rural Telecommunications Development Fund
  - National Broadband Policy 2015
  - Satellite Solutions

**CAPITALISE ON NEW TECHNOLOGY**



# GOVERNANCE REFORM PROGRAM – NEPAL

- The **Governance Reform Program** aimed to enhance governance
- **Key Objectives:**
  - Capacity development to effectively lead the governance reform agenda
  - Efficiency improvement of the civil service, focusing on performance management and human resources management
  - Enhance governance by reducing corruption and improving transparency and accountability in public administration
  - To address gender imbalances within the civil service and ensure that governance reforms are gender-responsive
  - Civil Society Support for the reform measures, promoting broader participation in governance
  - Independent Monitoring of the program's implementation and outcomes
  - Poverty Reduction through improved service delivery, particularly to poor and socially excluded groups



**EVERYONE IN THIS ROOM HAS A GREATER RESPONSIBILITY**




# MINCONSULT – SUSTAINABILITY PROJECTS

## 1MW BIOGAS POWER PROJECT IN KG VALDOR, PENANG.



The first of its kind in Malaysia, utilizing pig waste to generate renewable energy for supply to the National grid. This project is key to solving one of the State’s most critical issues – environmental pollution caused by current pig farming activities in Kg Valdor.



**Environment**

- Avoided over **1,424 tonnes of CO2 eq** per annum, for 16 years from biogas
- Set target to improve water quality of the river from **Class IV to Class III**


- 99.7%** reduction of BOD, COD and TSS in the river
- Saved **8,600 MWh per annum** from adoption of LED Lights, Solar Panels and Heat Recovery System.

- Anticipate to decrease foul odour within the area from **34.9 OU/m3** (Odour Units).

## PETRONAS LEADERSHIP CENTRE (PLC), BANGI



Cutting-edge training facility for leadership development. Owned and operated by Petronas, Malaysia’s leading oil and gas company, the center offers modern facilities and interactive spaces to foster immersive and impactful leadership programs.



**Environment**

- Avoided over **94.4 tonnes of CO2 eq** from effective planning and design of earthwork soil
- The Tree Conservation Zone** makes up **59.4%** of total project site area.

- 50%** improvement of effluent BOD (10mg/L) from Hi-Clean sewerage system.
- Estimated **1,587 MWh per annum** from solar PV generation.


- 87.46%** of construction waste recycled, and reused materials constitutes **5.1%** of project’s total material cost.

## AUTONOMOUS RAPID TRANSIT HYDROGEN VEHICLE (H2V) FOR KUCHING URBAN TRANSPORTATION SYSTEM (KUTS)


- Hydrogen-powered Autonomous Rapid Transit (ART) system, which is a hybrid of a train, bus and tram.
- 3 Lines in Kuching City (Blue, Red and Green) of total length 72km with 31 stations.




**What are the benefits of the Hydrogen Fuel Cell Technology?**




Eco Friendly




Does not burn H2




Produces only electricity, heat and water.



Never loses charge as long as H2 is supplied



Generate electricity used to power traction motors to drive vehicles



No need for overhead catenary or third rail or fourth rail power system



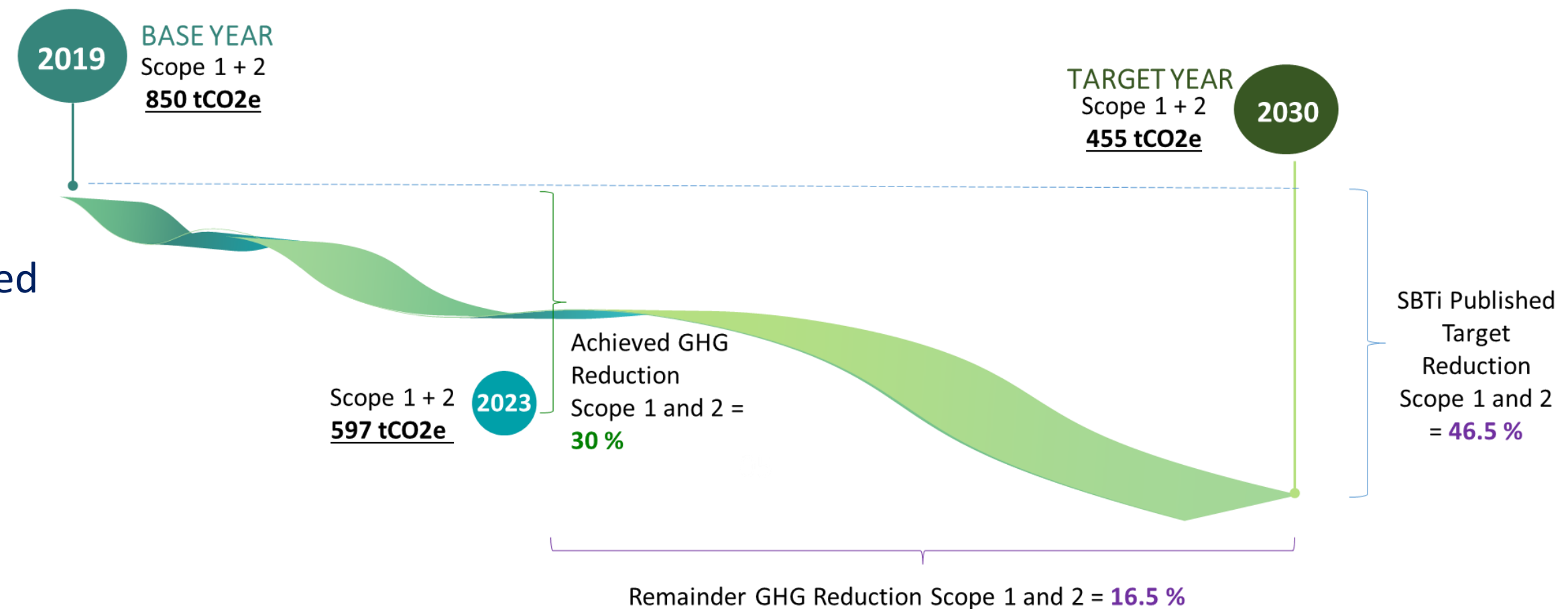
## Commit towards Reducing GHG Emissions



In November 2023, Minconsult became the first company in the construction sector in ASEAN, and the fifth company in Malaysia to have its Near-Term commitments approved by SBTi.

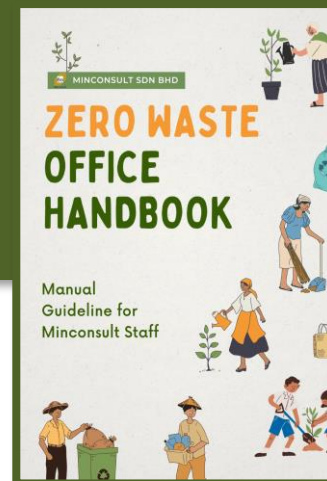
## How Did We Do It?

1. Efficient use of **company fleet** – **0.57%** reduction in GHG emissions.
2. Energy Efficiency Initiatives – **29.43%** reduction in energy consumption, contributed by the following initiatives:
  - **Behavioral changes;**
  - **Thermostat reset** to 26°C and lenient dress code;
  - **Replacement of incandescent bulbs** to LED lighting.



## MINCONSULT E - ZERO WASTE PROGRAMME

- Launch of Zero Waste Policy in 2024 and Office Handbook / Guidelines for waste management.
- Waste Management Awareness Talk and Exhibition for staff by SWCorp.
- Ban of Single-Use Plastics on our premises effective 1<sup>st</sup> January 2024.
- Resource saving practices within the office has resulted in approximately 36% reduction in the use of paper products from 2019 to 2021.
- Upcoming contests and competitions for staff to encourage waste reduction and recycling.



## MINCONSULT – E- BUSINESS & EMPLOYEE TRAVEL POLICY

- Launch of Business Travel Policy in 2024.
- Incentive for use of public transport will be given during increments in September 2024.
- Incentives for carpooling will be launched in 2025.
- Feasibility studies to replace company fleet with Electric Vehicles (EVs) underway.
- Work From Home (WFH) implementation studies are underway.
- Green Commuting Challenges, Public Transport Information System etc are in the pipeline

We can make an impact now





# MINCONSULT - S – MUTUAL RESPECT POLICY

Minconsult is one of the earliest companies to launch our own Mutual Respect Policy in year 2018 which is based on the United Nations Declaration of Human Rights.

The policy is aimed at:

- ✓ Valuing diversity and inclusion;
- ✓ Preventing discrimination and harassment;
- ✓ Providing guidance;
- ✓ Avenue for reporting and investigating of grievances.

A lot of companies have since followed suit to launch a similar policy.



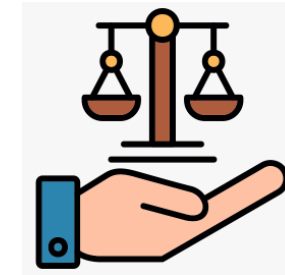
**WE MUST FOLLOW THE LAWS OF THE COUNTRY**

## Policies To Form A Shared Vision



- Whistleblowing Policy

- Integrity Policy and Code of Conduct



- Gift and Entertainment Policy

- Corruption Free Pledge



- Corporate Integrity Pledge

**MORE IMPORTANT THAN GOVERNANCE IN OUR OPERATIONS IS GOVERNANCE IN OUR SERVICES - IN PARTICULAR, ADVISORY WORK**



# CONCLUSION

## NATION

- ✓ ESG - NEPAL CAN BE BETTER
- ✓ WE KNOW WHAT TO DO - **BE BOLD** AND DO IT

## CORPORATIONS

- ✓ START TODAY
- ✓ STOP WASTAGE
- ✓ REVIVE NATURAL HUMANITY







**Sustainability,  
Environment & Process**



**Power Plant &  
Renewable Energy**



**Public Health**



**Minconsult Centre of  
Excellence (MiCOE)**



**Corporate  
Communication**



**Transportation**



**Water Resource**



**Water Works**



**Information Technology**

# THANK YOU