



# Annual Review 2021



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# Executive Summary



The GCC Annual Review for 2021 is an opportunity for us to reflect on our achievements and to examine trends in renewable energy certification, enabling us to plan.

In 2021, we saw significant expansion as the Central Issuer for I-REC for Electricity, with a 150% increase in registered facilities compared to the previous year, solidifying GCC's position as the largest issuing body for I-RECs globally. We also expanded our issuance to include new regions. The East Asia and Pacific and South Asia regions saw particularly strong growth, accounting for almost 88% of the total issuance share of I-RECs by GCC.

In 2020, global renewable energy consumption increased by 9.7% despite a significant decrease in overall primary energy consumption due to the COVID-19 pandemic. This robust growth in renewable energy consumption continued into 2021, with a further increase of 15% from the previous year. This trend indicates a positive future for the renewable energy market. <sup>1</sup>

Our work directly supports two of the UN's 17 SDGs: Goal 7 (Affordable and Clean Energy) and Goal 13 (Climate Action). These goals align with our efforts to promote the use of renewable energy sources and reduce impact on the environment. However, the certification of projects that meet other SDG goals demonstrates the broader benefits of renewable energy and inspires us to continue working toward providing access to affordable renewable energy.

At GCC, we are committed to improving our services continually to best support our customers as we all continue to deal with the continued impact of the COVID-19 pandemic. With greater emphasis on creating a sustainable society, we are dedicated to being a responsive and professional partner in assisting organisations to meet their environmental goals- and are committed to being flexible and adaptable to meeting customer needs.

I wish you all well and look forward to continuing existing relationships and developing new ones over the coming years.

Ed Everson  
Director



# GCC at a Glance

As the Central Issuer and Centre of Excellence for I-RECs (International Renewable Energy Certificates), GCC is accredited by the I-REC Standard.

As the demand for renewable energy continues to grow, we provide transparent, reliable, and secure tracking of RECs (Renewable Energy Certificates).

## How does our work help?

Our work at GCC helps companies prove their electricity consumption to international reporting bodies such as CDP (Carbon Disclosure Project), GGP (Greenhouse Gas Protocol), as well as RE100. We ensure that our energy attribute certificates align with these global standards to maintain trust as well as the robustness of attribute certification and help support the journey to a low carbon or a net-zero objective.



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**We are a world leader in certifying renewable energy, with over 20 years of experience. From 2014 to October 2021, we issued 151 million I-RECs across 27 countries.**

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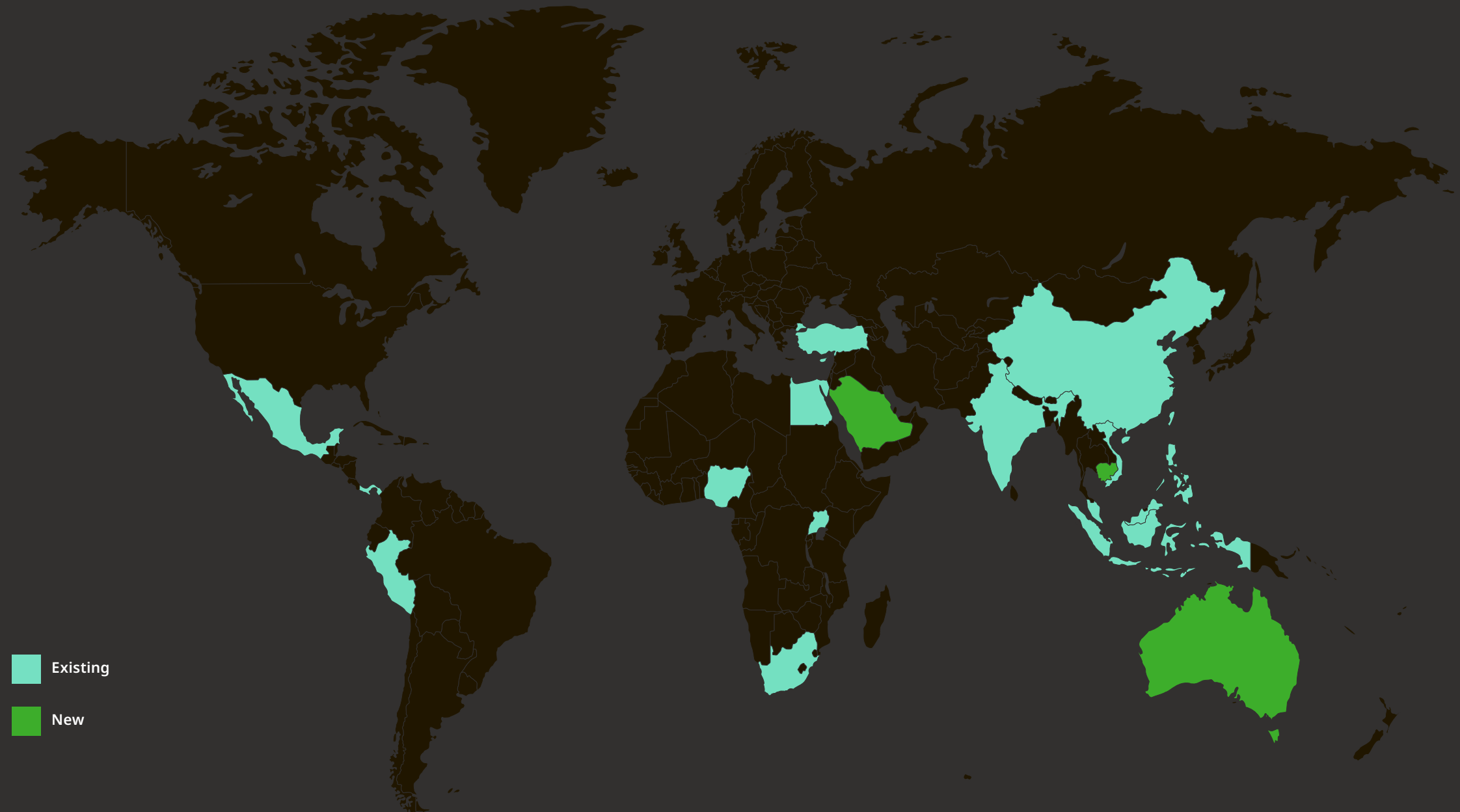


# Market Expansion

During 2021 GCC's issuance of I-RECs expanded further to include three new regions, Saudi Arabia, Cambodia, and Australia. As of 31 December 2021, we were the Local Issuer for a total of 27 countries.

In 2021, GCC was the largest global issuing body for I-RECs, and we were responsible for the issuance of I-RECs in 5 continents.

Figure 1 GCC Global Footprint



# Growth in the Renewable Energy Sector

The significant growth of renewable energy over the last decade is expected to increase further over the coming years. For example, the capacity for renewable energy globally is predicted to rise to over 80% from 2020 by 2026. By 2035, estimates forecast that renewable energy will contribute towards 60% of the world's electricity generation.<sup>2</sup> Likewise, the demand for Renewable Energy Certificates is also predicted to increase, with a CAGR of 25.9% from 2021 to 2030.<sup>3</sup>

Robust policy support has been a key catalyst in the growth of renewable energy. In addition, technological advancements and more efficient supply chains have resulted in economies of scale, thus leading to reduced costs and increased deployment.<sup>4</sup> Net-zero commitments are also growing, and 700 out of the 2,000 largest publicly traded global companies have or are considering a net-zero target.<sup>5</sup>

The International Energy Agency has stated that approximately \$4 trillion should be invested annually in renewable energy by 2030 in order to reach net zero emissions by 2050.<sup>6</sup>

At COP27 this year, the final text contained a provision to boost "low-emissions energy"<sup>7</sup>, and initiatives such as the Just Energy Transition Partnership<sup>8</sup> may further help in the transition towards a clean economy.

The capacity for renewable energy globally is predicted to rise to over

**80%**

from 2020 by 2026

By 2035, estimates forecast that renewable energy will contribute towards

**60%**

of the world's electricity generation

<sup>2</sup> Available [here](#)

<sup>3</sup> Available [here](#)

<sup>4</sup> Available [here](#)

<sup>5</sup> Available [here](#)

<sup>6</sup> Available [here](#)

<sup>7</sup> Available [here](#)

<sup>8</sup> Available [here](#)

The Continued Growth of I-RECs

# Hydropower

Around 69% of certificates issued by GCC were generated from hydropower in 2021, an increase of 531% on 2020.

Hydropower facilities typically have a higher capacity than other facilities, such as solar or wind power. In 2021, the highest number of certificate issuance for hydropower came from large-scale hydropower facilities in China.

The growth of hydropower is indicative of the necessity for delivery of energy through renewable sources in remote areas. The Asia Pacific region dominated the worldwide hydropower market and the increasing construction of small hydropower plants due to declining renewable energy costs as well as well-equipped facilities in this area are catalysts in strengthening the hydropower market.<sup>9</sup>

This rise in the number of hydropower facilities reflects the growth rate predicted for the sector, which is estimated at 17% between 2021 and 2030.<sup>10</sup>

**69%**

of certificates issued by GCC were generated from hydropower in 2021.

**531%**

increase in issuance since 2020

**17%**

is the predicted growth for the sector between 2021 and 2030

<sup>9</sup> Available [here](#)

<sup>10</sup> Available [here](#)

The Continued Growth of I-RECs

# Wind Power

The issuance of certificates for wind power facilities was 73% higher in 2021 compared to 2020, and represented 23% of all issuance in 2021.

In 2021, global wind generation increased by 273 TWh and recorded 55% higher growth as compared to 2020.<sup>11</sup> Wind power is predicted to grow at an exponential rate. The projections for wind power are 4 times higher for 2030 in 2021, as compared to projections made in 2006 for the same year.<sup>12</sup>

The total offshore wind capacity is expected to rise by more than triple till 2026. Offshore wind capacity is set to account for one-fifth of the wind market globally, due to rapidly expanding facilities in markets including South Korea and VietNam.<sup>13</sup>

23%

of certificates issued by GCC were generated from Wind power

73%

increase in issuance since 2020

4x

is the revised expected growth for the sector for 2030 compared to original predictions made in 2006.

<sup>11</sup> Available [here](#)

<sup>12</sup> Available [here](#)

<sup>13</sup> Available [here](#)



The Continued Growth of I-RECs

# Solar Power

Energy generated from solar power accounted for around 6% of all issuance by GCC in 2021. However, when compared with 2020, issuance for solar power facilities increased by 151% compared with 2020.

Solar power generated 179 TWh in 2021, a 22% increase over 2020. Solar power generated 3.6% of global electricity, making it the third largest renewable electricity source behind hydropower and wind power.<sup>14</sup>

The global forecast for solar power stays optimistic, and projections for 2030 are 30 times higher when compared with 2006 projections for the same period.<sup>15</sup>

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**6%**

of certificates issued by GCC were generated from solar power

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**151%**

increase in issuance since 2020

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**30x**

is the revised expected growth for the sector for 2030 compared to original predictions made in 2006.

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<sup>14</sup> Available [here](#)

<sup>15</sup> Available [here](#)

The Continued Growth of I-RECs

# Geothermal Energy

Finally, Geothermal energy accounted for about 2% of the total facilities issued in 2021, and the technology grew by 76% in 2021 as compared to 2020.

One of the main constraints with geothermal plants is that they depend heavily on a particular type of location and environment for setting up a plant, as they require heat from the earth's crust for producing steam. However even with this prerequisite, generation of electricity from geothermal power is expected to grow at an average rate of 2% per year. <sup>16</sup>

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# 2%

of certificates issued by GCC were generated from Geothermal energy

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# 76%

increase in issuance since 2020

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<sup>16</sup> Available [here](#)

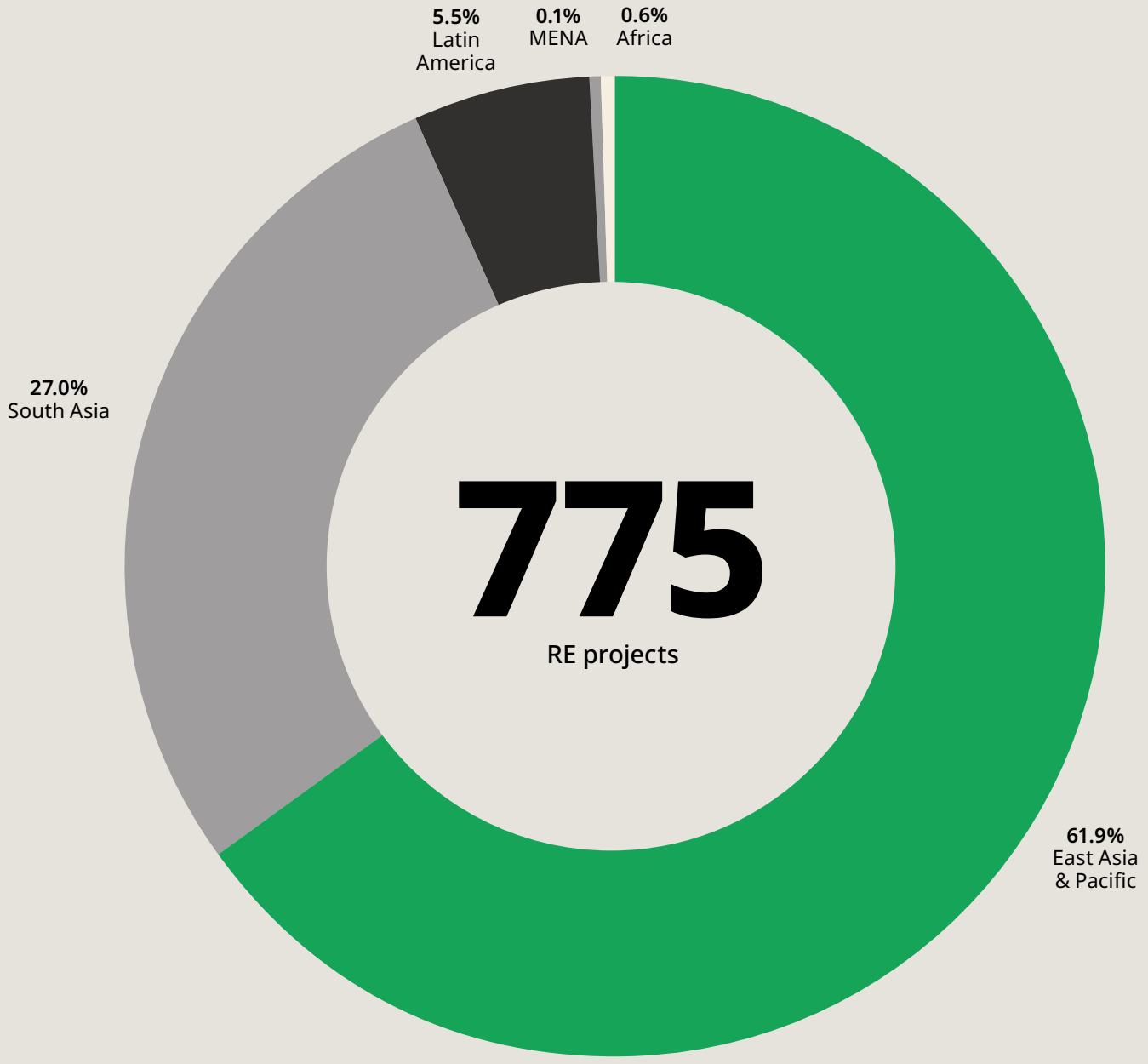
# Continental Distribution of Facilities

An additional 775 renewable energy projects were registered in 2021, a growth of 150% compared to 2020, which saw a registration of 310 energy projects.

Growth in the volume of registrations came from the East Asia and Pacific region, with a share of 61.9%, as shown in figure 2. The growth in the volume of registration was predominantly due to China registering a high number of hydropower facilities.

South Asia represented a further 27% of the facilities registered by GCC. Wind power in India accounted for most of the registered facilities in South Asia. Latin America and the Caribbean registered a total of 5.5% of projects. Finally, the MENA region and Sub-Saharan Africa contribute to the rest of device registrations with 0.1% and 0.6% shares respectively.

Figure 2 Continental Distribution of Device Registration



# Country-wide Device Distribution

China was the most active country, with a total of 369 new facilities registered. Most of the contribution towards hydropower projects came from China, which registered a total of 326 facilities in 2021. The country is the world's largest producer of hydroelectricity and has more than quadrupled its installed hydropower capacity since 2000. China's high mountain valleys and large rivers have contributed greatly to its development of water resources over the past few decades.<sup>17</sup>

India, the second-highest issuance country after China, registered 195 facilities. The majority of these facilities were wind power facilities, making up 92% of the total facilities registered. The wind energy sector has rapidly expanded in India, and the country has the fourth highest installed capacity for wind power in the world.<sup>18</sup> With a coastline of 7600 km, India has great potential for the deployment of offshore wind energy as well, and the government plans to tap into this in the future.<sup>19</sup>

VietNam registered a total of 57 facilities, with most of them being hydropower or solar energy facilities. In addition to the Mekong, VietNam is crossed by a large number of rivers flowing from the highlands of China, Laos, and Cambodia, which makes it an ideal location for hydropower generation.<sup>20</sup> VietNam's solar energy sector is also growing rapidly due to successful investments in the renewable energy sector. VietNam is blessed with abundant sunshine hours and high solar radiation intensity.<sup>21</sup>

<sup>17</sup> Available [here](#)

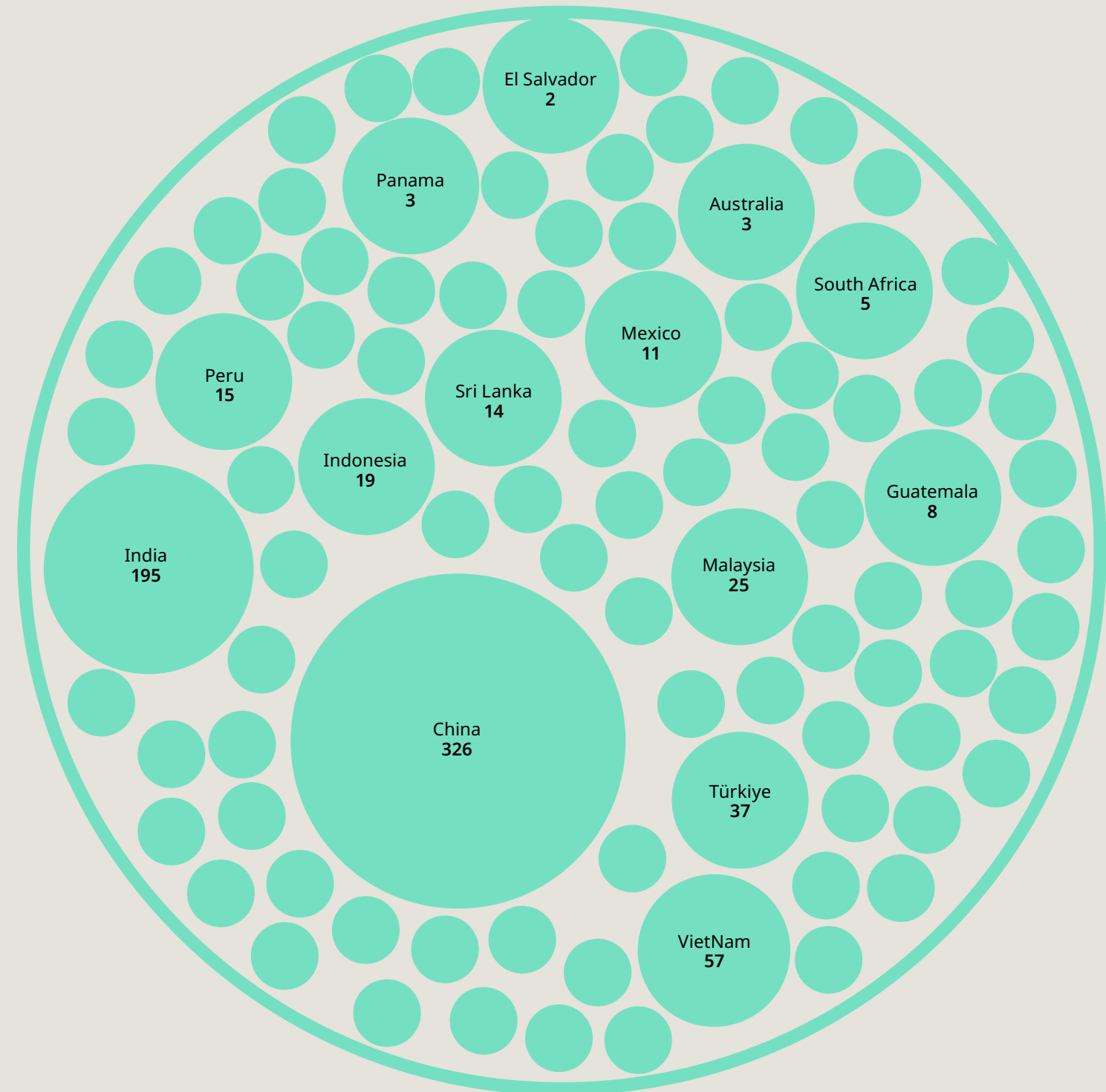
<sup>18</sup> Available [here](#)

<sup>19</sup> Available [here](#)

<sup>20</sup> Available [here](#)

<sup>21</sup> Available [here](#)

Figure 3 Country-wide Device Registration

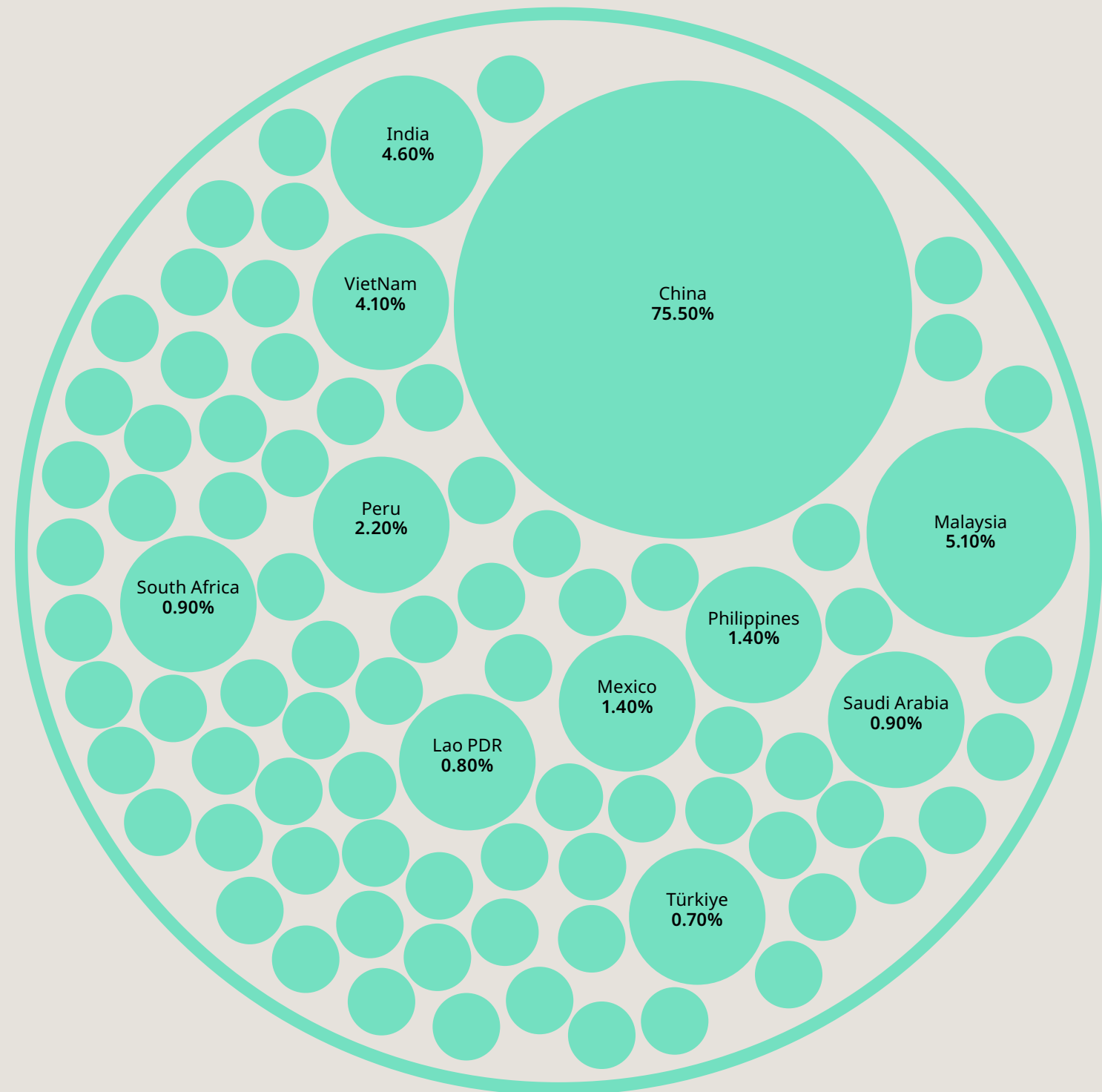


# Leading Countries by Generation Capacity

Figure 4 shows the countries which generated the highest amount of renewable energy, issued by GCC. Unsurprisingly, China ranks first in the list of countries in generation capacity as well, with about 75% of capacity of the total capacity registered with GCC. This demonstrates China's commitment to reach carbon neutrality before 2060. It is predicted that China will reach this goal four years earlier, due to a number of factors including the availability of long-term contracts, improved grid integration, and lower prices of onshore wind as well as solar facilities in comparison with coal generation.<sup>22</sup>

Although Malaysia registered significantly less facilities than India, their contribution to generation capacity was the second highest after China, with 5.1% of total capacity registered. India came in third in terms of energy generation with a contribution of 4.6%. VietNam followed India, with a 4.1% contribution in energy generation. The data clearly shows the growth of Renewable Energy in Asia in 2021 in terms of registered generation capacity, as these four countries combined accounted for around 86% of the total capacity registered by GCC in 2021.

Figure 4 Country-wide Capacity Registered



<sup>22</sup> Available [here](#)

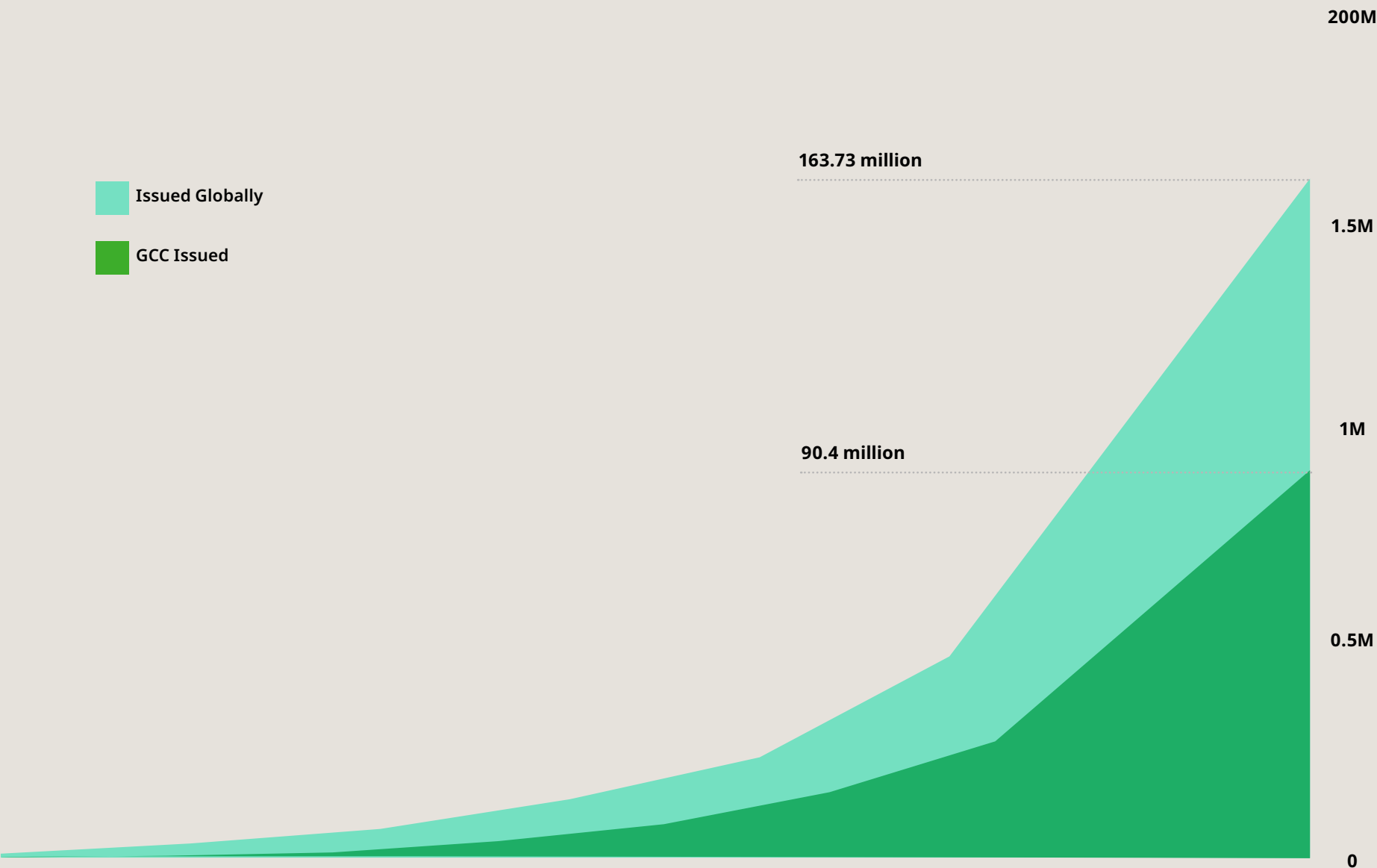
# The Road Ahead for I-RECs

During 2020 the volume of I-RECs issued increased significantly, however in 2021 global I-REC issuance reached a record-breaking growth of 237% (compared to 2020). The future of I-RECs looks set for further growth, and the renewable energy certification (REC) market is projected to grow at 20.2% from 2021-2028.<sup>23</sup>

Key growth drivers include CDP for climate disclosure and the voluntary commitments of corporations towards 100% renewable energy under RE100, which is accounted for in the Scope 2 emissions of the GHG protocol.<sup>24</sup>

Increased integration of the electrical market is projected to be an important factor for the growth of I-RECs in West Africa, with the development of the West African Power Pool, which is a project to establish a common market for electricity.<sup>25</sup>

Figure 5 I-REC growth



<sup>23</sup> Available [here](#)  
<sup>24</sup> Available [here](#)  
<sup>25</sup> Available [here](#)

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## CASE STUDIES

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At GCC, the work we do directly aligns with two of the 17 SDGs goals directly, Goal 7: Affordable and Clean Energy and Goal 13: Climate Action. However, certification of projects that meet other goals highlights the wider impact of renewable energy projects. The following examples serve as a source of inspiration for us to work towards our commitment in helping establish access to affordable, reliable renewable energy and climate security.

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**SUSTAINABLE  
DEVELOPMENT  
GOALS**

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## CASE STUDY

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# San Roque Multipurpose Project

### *Philippines*

Generation of electricity by using the natural flow of water is a technique that has been used for ages, and hydroelectricity amounts to one-sixth of the world's electricity generation!

One such hydroelectric project lies between the municipalities of San Manuel and San Nicolas in the province of Pangasinan, Philippines and makes an imposing impression. The San Roque dam built on the Agno River is 200 metres tall and 1.2 kilometres long and is operated under the San Roque Multipurpose Project (SRMP). It is the largest dam in the country and the sixteenth largest in the world.

The San Roque dam has a 435MW hydroelectric power station and holds a 25-year power purchase agreement with the National Power Corporation in the Philippines that will end on 30 April 2028. Registered with the GCC since 1 January 2021, 328,000MWh of renewable energy has been certified subsequently.

Irrigation to 21,000 hectares of farmland in the Pangasinan province is provided annually after the completion of the Agno River Integrated Irrigation Project. The San Roque reservoir has a large holding capacity, which allows it to store the heavy inflow of water during the rainy season from July to November, and gradually release the water downstream to avoid flooding. During extreme flood events, authorities regulate the amount of water that can be released based on data obtained via communication systems.

The reservoir's dead storage also serves as a settling basin and traps sediments generated by typhoons and upstream mining activities, thus improving the quality of the water that can be used for downstream irrigation facilities.

With so many benefits like water storage, irrigation, as well as flood control and improving the quality of water for the local communities downstream, the San Roque dam is the true definition of a construction that serves multiple purposes!





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## CASE STUDY

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# Dreunberg Solar

*Eastern Cape, South Africa*

The Dreunberg solar facility is situated just outside of the town of Burgersdorp - in the northern parts of the Eastern Cape in South Africa.

With ample sunshine, good weather conditions, and efficient production methods - the 75 megawatt plant generates 156 gigawatt hours per annum.

Officially commissioned in December of 2014 by Scatec ASA, Dreunberg was constructed with a horizontal single-axis tracking solar tracker system - allowing the panels to track the sun and optimise electricity generation by up to 20%. Generation benefits include the ability to power around 38,000 homes and leads to the avoidance of 144,000 tons of CO<sub>2</sub> emissions annually.

The solar plant was won under Round 2 of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and has a 20-year power purchase agreement with the South African national utility company, Eskom. Dreunberg Solar PV Park has been registered with the GCC since 1 January 2021, resulting in the certification of 5,500MWh of renewable energy within less than 2 years.

New job opportunities created throughout the construction of the plant helped about 1 400 people in generating income for their households. This fostered a culture of local community empowerment. Committed to sustainable community investment practices, the Dreunberg project has invested into initiatives covering healthcare, education, youth development, local economy, and community visioning. Some examples include funding of infrastructure, uniforms, and other social support interventions for Early Childhood Development (ECD) Centres and other primary and secondary schools; small business grant funding, mentorship, and training; and a community centre.

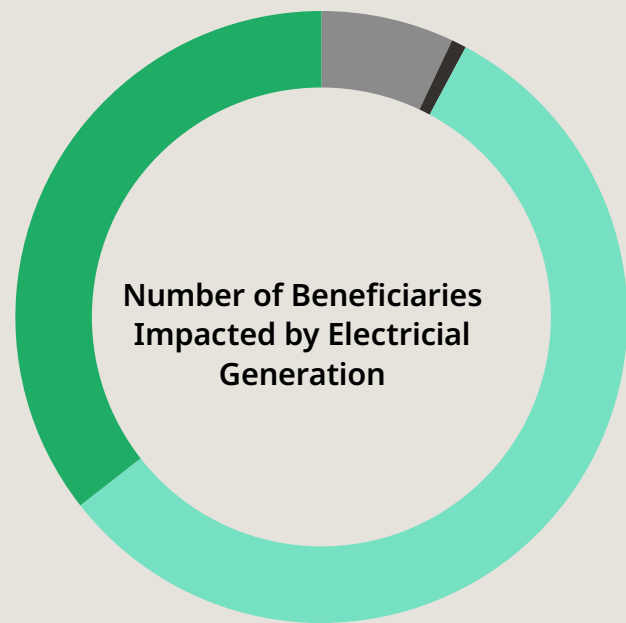
Scatec ASA believes in the power of harnessing renewable energy to 'improve our future' and will continue to invest in the communities surrounding the plant for the remaining project duration.



# CASE STUDY

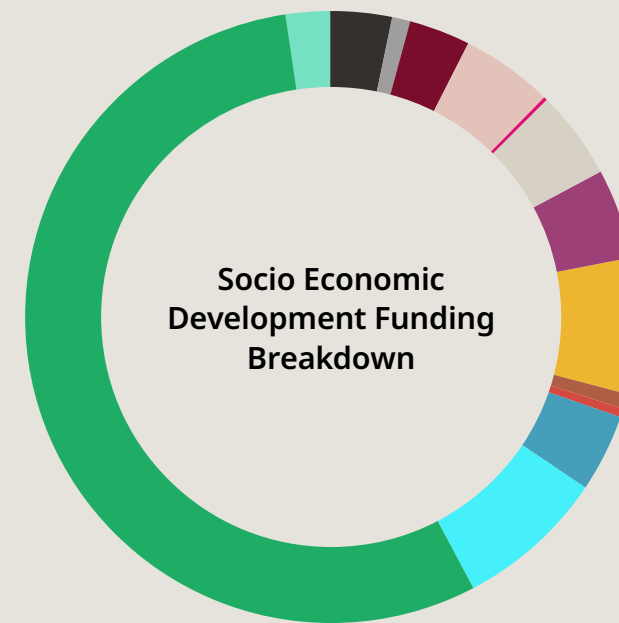
## Dreunberg Solar

Eastern Cape, South Africa

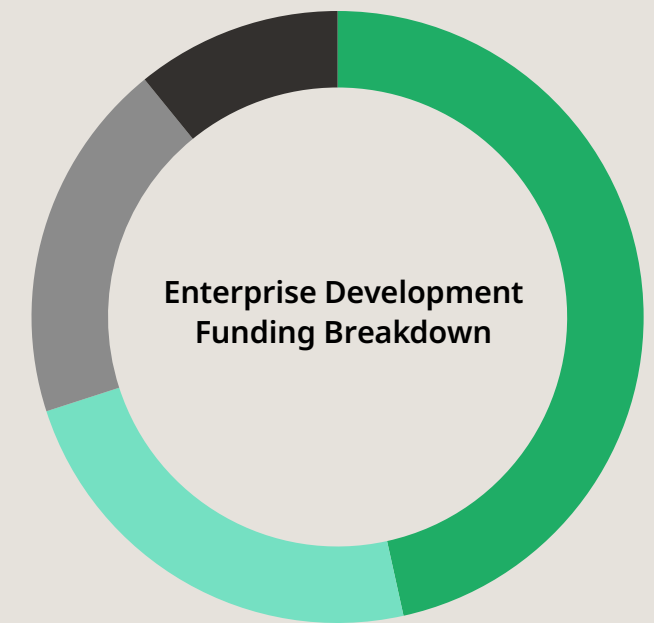


- People supplied
- Industry jobs
- Students
- Patients provided for

Electrical Generation Benefits	Number of Beneficiaries
Households (People supplied with electricity)	36,973
Industry jobs Impacted	4,157
School (Students with electricity)	297,928
Hospitals (Patients with electricity)	187,107
<b>Total</b>	<b>526,165</b>



- Food Security
- SMME Capacity Development programme
- Winter uniform
- Hospital Linen
- Media Post
- I-centre Improvements
- Mandela Day Celebrations
- Construction Industry Development Programme
- Drivers License Programme
- Back to School Support Programme
- Eco Sanitary pads
- Monitoring & Evaluation Framework Design
- Eureka Old Age home support
- School Cleaner Initiative Programme



- Training and development
- Salaries and wages
- Equipment
- Financial assistance



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In line with our commitment to sustainability our annual review is paperless, and we ask you to avoid printing wherever possible. We'd like to know what you think of our review, and invite you to contact us to provide feedback via our website or LinkedIn.

[www.gcc.re](http://www.gcc.re)

