Crafting a Green Legacy

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“The ultimate objective must be sustainable development, which includes achieving the general economic, social, human and environmental objectives”
<table>
<thead>
<tr>
<th>Percentage</th>
<th>Component</th>
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<tbody>
<tr>
<td>39%</td>
<td>Total Energy Consumption</td>
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<tr>
<td>72%</td>
<td>Total Electricity</td>
</tr>
<tr>
<td>13%</td>
<td>Total Water Consumption</td>
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<tr>
<td>50%</td>
<td>Total Greenhouse Gas</td>
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Our planet’s built environments account for:

- 39% of total energy consumption
- 72% of total electricity consumption
- 13% of total water consumption
- 50% of total greenhouse gas emissions
Crafting a Green Legacy

From a tiny outpost in the Arabian Gulf a few decades ago, Qatar has grown into a bustling modern metropolis and international hub of energy, sport, culture, business, education and research. Backed by the country’s vast hydrocarbon reserves, Qatar’s economy was the fastest growing in the world in 2011 with a per capita income in excess of USD 103,000.

Under the visionary leadership of its leaders HH the Emir Sheikh Hamad Bin Khalifa Al Thani and HH the Heir Apparent Sheikh Tamim Bin Hamad Al Thani, Qatar has made giant strides forward and attained new heights of economic wellbeing, socio-political progress, cultural evolution and sporting success.

As Qatar came of age in the modern world, it found itself in an era that was increasingly concerned with the long-term impact of human activity on the environment. The nation’s leadership acted quickly and decisively. The verdict was clear – Qatar would play its part in the global effort to conserve our planet. As Qatar’s stellar rise in the international arena continued, so too did the government’s efforts to address the environmental challenges that inevitably accompanied such growth.

The country’s environmental policy is aimed at protecting precious biological ecosystems and the natural environment while also encouraging industrial growth. The Ministry of Environment works to tackle environmental issues and passes laws and statutes to protect Qatar’s land, seas and air while also encouraging sustainable growth.

With GORD as the vanguard, Qatar is emerging as a leading international voice advocating sustainable development. The country’s leadership remains wholly committed to preserving and protecting the environment without compromising the future prospects of the people.
A CONCENTRATED GLOBAL EFFORT

- Global recognition of the urgent need to address environmental issues
- International cooperation amongst governments and companies
- Widespread public awareness of the issue
- Education and information dissemination to the public
- High quality rating systems for assessing built environments
- Innovative government initiatives and regulations

QATAR’S ROLE IN THE GLOBAL EFFORT

- Strong government involvement in combating climate change
- Inclusion of green standards in Qatar’s building codes
- Incentive programmes to build greener on key projects
- Several mega projects built to GSAS standards
- Outreach activities and awareness to involve the public
- Strong push towards research and innovation
- Widespread implementation of GSAS standards in the country

GORD PLAYS ITS PART

- GSAS: world’s first performance based rating system
- Already rated projects valued in excess of USD 5.5 billion
- Several mega projects being built to GSAS standards
- More than 1000 professionals trained and certified
- Dozens of international research alliances with top organisations
- Involving the youth through “Q-Bright Minds” initiative

ENVIRONMENTAL BENEFITS OF BUILDING SUSTAINABILITY

✓ 30% savings in water consumption
✓ 30% savings in energy use
✓ 30% less greenhouse emissions
✓ 50%-75% reduction in construction waste sent to landfills
✓ Helps preserve the Earth’s biodiversity and ecosystems

SOCIAL BENEFITS OF BUILDING SUSTAINABILITY

✓ Higher quality of indoor/outdoor environment
✓ Preservation of unique cultural identities

ECONOMIC BENEFITS OF BUILDING SUSTAINABILITY

✓ Reduced operation and maintenance costs
✓ Increase in building values
✓ Higher returns on investment
✓ Increase in occupancy and median rents
✓ New opportunities in green products and services

Meeting a Challenge of Global Proportions
Established by Emiri Decree in the year 2008, Qatar National Vision 2030 builds a bridge from the present to the future by envisaging an advanced society that will provide a high standard of living for the people and be capable of sustainable development.

The plan foresees development through the four interconnected pillars of human, social, economic and environmental development. Gulf Organisation for Research & Development answers to the National Vision 2030 by addressing each of the four pillars in its plans and policies.

HUMAN IMPACT

On the human front, GORD facilitates a better, more comfortable indoor environment, which in turn increases the quality of human life and increases productivity to sustain a prosperous society. In addition to addressing some of humanity’s toughest challenges, GORD’s research continually adds to the sum of human knowledge in various associated fields.

SOCIAL IMPACT

By laying the foundation for a long-term action plan, GORD is setting the stage for a low-carbon future for the world’s future generations. Since 2008 GORD Academy has graduated more than 1000 engineers in green building techniques. We also support the government’s Qatarization policy and provide every opportunity to qualified and deserving Qatari candidates.

ECONOMIC IMPACT

The long-term economic benefits of building greener are well established. By helping to minimise the use of water and energy resources as well as reducing waste generation and carbon emissions, GORD is tangibly supporting the economic pillar of QNV 2030.

ENVIRONMENTAL IMPACT

The service that GORD provides on the environmental front are obvious and immediate. By transforming the way builders and planners approach sustainable building, we have joined the ranks of the elite group of organisations around the world that are writing the future of the built environment.
We foresee a world where the environmental challenge has been won by humankind and the threats of climate change and global warming no longer exist. We see the world’s thinkers, planners, engineers and technologists coming together to create new and evermore efficient solutions that will forever transform the way we live, work and build.

More specifically, we look forward to a future where our homes, offices, buildings and public spaces have been transformed beyond recognition; where, rather than being a major source of non-renewable energy use and carbon emissions, they will represent the very epitome of sustainable growth.

Gulf Organisation for Research & Development was established on 23rd of July 2009 to help bring this bold vision to fruition by taking practical, actionable steps to get the ball rolling. We tackle the problem from every conceivable angle – researching new ideas and techniques for the design, construction and management of future developments; assessing and rating all types of current projects; training and certifying professionals; developing tools that can be readily deployed in any location; and finally, encouraging the general public to adopt the sustainability mindset.

Led by a professional, committed and dedicated team of experts, GORD is breaking new grounds in sustainability and its applications to address today’s environmental challenges. In the process it is positioning Qatar as the capital of sustainable development in the Middle East region.

There is no doubt that the world’s collective built environments will become wholly sustainable only in the very distant future. Much of the technology that will enable our future construction projects and building management is still only theoretical or experimental and radical new ideas are evolving rapidly.

But one thing is for certain. Whenever our green future arrives, GORD will have played a key role in making it possible.

Our vision is to be the leading organization driving sustainability endeavors and climate actions in MENA region, by addressing the global challenges in the regional context.

Our mission is to promote best practices on sustainability through development and implementation of standards and guidelines, fostering innovation and research, promoting and building capacity through education and outreach activities.

Our core values are collaboration, commitment, excellence, innovation, integrity, social responsibility, and transparency.
Together we provide the framework by which Qatar will achieve its sustainable development aims and support the global effort to meet the needs of the present without compromising the rights of future generations.

Insights from Our Chairman

It would appear ironic that the country that is sitting atop the world’s third-largest gas reserves would play a pioneering role in the development of sustainable building technology and techniques. But Qatar, and GORD, is taking a very long-term view of humanity’s collective future. In the globalised world of today no country or organisation is an island and we must each play our part in building a better world than we found.

I believe that the phenomenon of climate change owing to human impact is the most significant challenge of this generation. The battle against pollution, carbon emissions and resource depletion is being fought on many fronts and our battleground is the construction and building industry.

Around the world, buildings old and new account for fully half of the total energy consumption and associated emissions. Considering the fact that Qatar’s brisk economic progress is fuelling strong growth in the construction sector, there is an urgent need for research into the development of new technology and techniques that will make future buildings more energy-efficient and environment friendly.

The government of Qatar has been considering this particular issue for a long time and has already set priorities to manage environmental impact. The country’s extensive petrochemicals infrastructure and processing facilities have been engineered, wherever possible, to minimize their environmental footprint.

We are particularly proud of GORD’s holistic approach to sustainable building. In addition to pushing the green envelope and rating projects for their environmental sustainability, we also rate properties and projects for their cultural sustainability based on how far they reflect traditional motifs and architecture. This little addition makes us unique amongst rating agencies around the world and helps preserve the essence of Arabia’s rich cultural heritage.
Wholly owned by the Qatar Investment Authority, Qatari Diar Real Estate Investment Company was established in December 2004 to support Qatar’s growing economy and to co-ordinate the country’s real estate development priorities. Qatari Diar’s vision is to become the most trusted and effective real estate investment company by focusing its value proposition on the creation of quality, well-planned, desirable and sustainable developments. Qatari Diar also owns 45% of Barwa Real Estate Company.

Our Founders
Our Founders

LUSAIL REAL ESTATE INVESTMENT COMPANY

A subsidiary of Qatar Diar, the Lusail Real Estate Investment Company is dedicated to the development, construction and management of the Lusail City project, which is a vibrant new master-planned urban development that will be home to a self-sustaining, mixed-use community of more than 200,000 people.

The declared and issued capital of the company is QR 100 million. Lusail aims to create a family-friendly and sustainable environment with open spaces that will become a destination of choice for Qatari people and international visitors to live, visit and invest in freehold property.
GORD has quickly risen to become one of the premiere sustainability research organizations in the world owing solely to the quality of the people who come in to work here every morning.

GORD personnel from every department represent the cream of the crop, carefully selected for their skill, expertise and passion for their chosen work. The institution is organized as a set of functional, interconnected teams that work independently as well as in collaboration with one another.

Led from the front by our Founding and Chairman Dr. Yousef Mohammed Alhorr, the whole organization has rallied behind GORD’s mission with the confidence that our work has a direct, tangible and positive impact on the quality of life of the people of Qatar, the GCC and indeed the world.
GOVERNMENTS AND MUNICIPALITIES
Implement effective policies and laws to curb carbon emissions in your jurisdiction

- Receive research-based consultancy services to set sustainability standards
- Take advantage of the latest testing simulations and system integration tools
- Get access to the latest research and data on sustainable engineering

REAL ESTATE AND CONSTRUCTION COMPANIES
Get your project GSAS certified and earn market recognition for green building

- Earn a reputation as an environmentally and culturally responsible developer
- Reduce operating and maintenance costs and the use of energy
- Command higher public approval, faster occupancy and lower turnover

UNIVERSITIES AND RESEARCH INSTITUTES
Collaborate with us to produce breakthroughs that will transform the world

- Conduct cutting-edge R&D as a GORD research partner
- Work with some of the world’s top minds in the field
- Get access to funding for joint research projects

CONSULTING FIRMS
Become an authorised service provider and assess and execute projects to GSAS standards

- Secure project submissions to several key institutions in Qatar
- Adopt avant-garde sustainable building solutions tailored for local conditions
- Guide project teams and get access to cutting-edge analysis and decision making tools

ENGINEERS AND PROFESSIONAL COMMUNITY
Earn your GORD membership and be recognised as a GSAS expert

- Be introduced to state of the art concepts and models in sustainable building
- Join an elite professional network of local and international experts

SOCIETY
Enjoy the benefits of greener, more efficient sustainable developments and spaces

- Live in beautiful, efficient homes
- Enjoy a cleaner, richer environment
- Look forward to a low-carbon future for humankind

GORD: Your Trusted Partner
GORD INSTITUTE

Runs multi-disciplinary scientific research programs through its own resources as well as its partnerships with local and international institutions. The aim is to foster innovation, advance knowledge, share experiences and build networks to enhance the sustainable built environment.

GSAS TRUST

Responsible for the development and administration of GSAS green buildings and infrastructure certification framework for the projects in the MENA region seeking GSAS accreditation for their design, construction and/or operation.

GORD ACADEMY

The institution cultivating a life-long learning environment and disseminating most up-to-date knowledge in the field of sustainability for professionals and corporations working together to craft a green legacy. Our members are key innovators and thought leaders of tomorrow’s sustainable world.
GORD Institute is a multi-disciplinary facility that brings together a wide range of researchers to holistically address the challenges of making our buildings sustainable and effective places in which to live and work.

The institute is established to advance human knowledge and investigate new approaches to achieve enhanced sustainability in the built environment. The center runs scientific research programs unilaterally as well as in partnerships with local and international organizations.

The institute promotes collaborative interdisciplinary research across various interconnected fields of study such as architecture, civil engineering and construction, electrical engineering, material science, interior design, environmental psychology and behavioral science.

The research spans both academic and applied realms and is being funded through generous grants from the government, Qatari Diar Real Estate Development Company (QD), Qatar Science and Technology Park (QSTP), Qatar National Research Funds (QNRF) as well as through joint ventures with other institutes.

PUSHING THE BOUNDARIES OF POSSIBILITY

GORD Institute brings together researchers, students and industry to:

- Develop, prototype and test sustainable building technologies and designs for residential and commercial applications
- Perform in-depth experimental and theoretical analysis of the thermal design of buildings
- Develop architectural and structural design tools to facilitate the inclusion of ecological costing throughout the design phase of buildings (e.g. water, energy, carbon)
- Investigate day-to-day behavior of building occupants to improve the effectiveness of building use and design and improve the uptake of environmentally sustainable technologies
- Develop novel control systems and sensor technology for improving building performance
- Develop novel modeling tools to aid sustainable design
GORD Institute’s research activities are inspired by the development of the Global Sustainability Assessment System (GSAS). The themes of research projects include; carbon & climate change, eco materials, energy efficiency, environmental sciences, HVAC solutions, renewable energy, and water resources & technologies.

A building needs to be designed and built from the start with the environment in mind. Problems of energy efficiency and high consumption are nearly impossible to fix even with the best technology after the building has been built.

The institute’s also aim to tackle a variety of renewable energy challenges that exhibit strong potential for application in the local environment. Owing to the abundance of sunlight in the region all year round, several of the projects are focused on harnessing solar energy to achieve various ends.

Research is also being conducted in wind energy, photo-voltaic cells, bio-climatic architecture and network integration of renewable energies. Equipped with state of the art scientific infrastructure and world class laboratories, the institute is in charge of these research projects throughout their life cycle, from testing the theory to building working prototypes.

From Idea to Innovation

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That’s why GORD Institute is focused on maximizing efficiencies by bringing cutting-edge design and technology to every stage of construction.

Research Themes
Carbon & Climate Change

Climate change is the global issue of this millennium requiring urgent actions from all walks of the society. GORD has focused its attention on climate change mitigation, primarily through the development of GSAS framework helping to reduce GHG emissions, combat environmental degradation and create a better living environment. GORD Institute activities on carbon and climate change include the development of optimization model for the design of integrated carbon capture, transport and storage infrastructure and the capture and utilization of CO2 to produce useful materials using sea water brine.

Energy Efficiency

Energy efficiency is the most cost-effective approach to ensure energy security and reduce greenhouse gas emissions. This prompts the search for new effective technologies and materials that have the potential to reduce energy demand and lower the environmental impact. GORD Institute’s research focuses on exploring novel designs and new technologies to reduce energy demands in buildings, efficient systems; and energy harvesting techniques. In addition to the energy-use optimization on micro level, the Institute has also advanced energy efficiency research on urban level.

Eco Materials

Materials are not infinitely renewable. Therefore, reducing the quantity of materials consumed is important in establishing sustainable building practices. Reusing and recycling practices divert materials from the waste stream for the usable purposes and reduce the environmental impacts associated with producing new materials and products. GORD tackles the scarcity of materials through comprehensive research and testing programs. The eco materials related research projects seek the development of sustainable, viable and commercially competitive materials to be used in the construction of durable, high-quality buildings and infrastructure.

Environmental Sciences

GORD Institute’s research activities focus on two broad areas: outdoor native vegetation; and indoor environmental quality. The outdoor native vegetation research includes: propagation of seedlings in nurseries; assessing drought and salinity tolerances of the seedlings; evaluating the performance of the selected plants under different urban conditions; and, determining the germination requirements for the collected seeds of different species.

The human comfort and health research for indoor environmental quality identifies the key performance indicators and document the relationships between occupant health, productivity and behavior change.

HVAC Solutions

In hot and humid climates, air has to be conditioned to the desired comfort level of humidity and temperature. Such climatic conditions impose challenges for the design and selection of appropriate and efficient HVAC systems. GORD Institute aims to develop and deploy Heating, Ventilation and Air Conditioning (HVAC) technologies that can substantially reduce energy consumption and deliver indoor and outdoor human comfort. The HVAC research projects include solar absorption and adsorption cooling, desiccant cooling, membrane heat and mass exchangers, solar and advanced vapor compression air conditioners, and natural gas-driven heat pumps.

Renewable Energy

GORD Institute renewable energy research aims to enhance the performance of new renewable energy technologies as well as testing and assessing the performance of existing technologies under local environmental conditions. The research projects are related to Photovoltaic (PV), Photovoltaic-Thermal Electric Power Generation (PVTEG), Concentrating Photovoltaic systems (CPV); Building Integrated Photovoltaic (BIPV), Photovoltaic and Thermal collectors (PV/T), Concentrated Solar Power (CSP), solar cooling, solar ponds, wind energy, solar driven Organic Rankine Cycles (ORC) systems, thermal and power storages, and on-grid and off-grid integrations.

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The region is among the most water-stressed globally due to lack of adequate precipitation and absence of natural river streams. Overexploitation of limited natural water reservoirs is threatening the balance of ecosystem.

For water conservation, GORD is leading the way through the development and deployment of GSAS framework and its water consumption benchmarks for the built environment. Moreover, water research includes the development of cost-effective desalination technologies, membrane distillation, grey & black water recycling and hybrid units that combine processes utilizing wind, solar energy, solar cooling and combined cycles.
The past decades have seen a proactive global move towards sustainable construction methods and buildings that are energy and carbon efficient. This shift in the construction industry has been driven by several highly regarded and comprehensive rating systems that assess and score projects on their environmental merits.

Such systems typically take into account the energy and water efficiencies, environmental impact of raw materials and management and operations of the project. However until recently there was an urgent need in the Middle Eastern market for a rating system that accounted for the region’s unique desert conditions, scarcity of water and a distinct cultural and social heritage.

The Global Sustainability Assessment System (GSAS) Trust was formulated by GORD with the mandate of filling this lacuna in the Middle East building sector. The first step was an exhaustive exercise that took a hard look at the fundamentals of sustainable built environments as well as current global best practices. Next, the system was engineered to handle the distinctive needs of Qatar and the Middle East.

Finally, after meticulously testing the system in the real world, GORD introduced GSAS (formerly QSAS) – the first performance-based sustainable built environment rating scheme created specifically for the unique conditions and requirements of the region.

With GSAS at its core, GORD has built a comprehensive continuum of sustainability that encompasses everything from assessing and rating built environments to educating and certifying professionals, setting industry benchmarks and researching new breakthroughs in the field. Building upon the foundation provided by GSAS, we have collaborated with leading research organisations in the field, consulted for governments and companies and taken our ideas to foreign shores.

Today the GSAS Trust retains the responsibility of maintaining, improving and furthering the GSAS standards and developing the tools and manuals for the optimal application of the standards.
The Global/Qatar Sustainability Assessment System (GSAS) was developed by GORD through five intense years of collaboration with the TC Chan Centre at the University of Pennsylvania, USA.

The system was developed by drawing best practices adopted from 40 different rating systems known regionally and internationally.

The primary objective of GSAS is to create a sustainable built environment that minimizes ecological impact while addressing the specific social and cultural needs and environment of the region.

First introduced in 2009 as QSAS, it was the Middle East’s first integrated and performance oriented sustainability assessment rating system for the construction industry. The systematic assessment method has since been adapted from the local to a global scale, now known as GSAS.

The GSAS system awards one of six levels of certifications to projects, from one star to six stars, depending on their environmental and social impact. Assessment can be conducted to certify the project in the design, construction and operations phases.

Qatar’s Ministry of Environment has introduced a new section in the latest version of the Qatar Construction Specifications (QCS 2010) acknowledging GSAS as the only rating scheme to be applied for the sustainability assessment of green buildings in the country.

### GSAS Certification

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<th>ADVANTAGES OF GSAS</th>
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<td><strong>A GROUND-UP APPROACH</strong></td>
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GORD ACADEMY

Training a New Breed of Sustainability Experts

GORD Academy is a leading, high-quality training provider and assessment centre of excellence. A wide range of programs is available including GSAS Certification Schemes, GSAS CPD program Levels and Individual Membership Grades. The purpose of these programs is to allow professionals to gain deep understanding of the GSAS categories and criteria from scheme as well as speciality-based perspectives.

Each certificant can select his/her choice of certification schemes based on his/her own interest or the GORD Academy’s progression requirements. GORD Academy was set up to serve the needs of the country and the construction industry at a time of great challenges.

- The GORD Academy programs are developed to suit the needs, challenges and demands of the built environment
- Training with GORD Academy gives you the opportunity to network with enthusiastic and dynamic people
- Our training allows you to benefit from hands-on practical knowledge of our expert trainers
- The GSAS Certification Schemes & GSAS CPD programs are designed to help companies and individuals extend their skills and capabilities

Our programs are relevant and well timed to make sure that practitioners can meet the challenges and fast-pace changes of the built environment with confidence and competence. The academy puts training at the core of everything it does because we believe that knowledge is the key to building a better world.
The Academy’s certification programs allow professionals to gain a deeper understanding of the GSAS philosophies, tools and techniques, thereby extending the capabilities of individuals and companies. Dissemination of this knowledge is key to building the sustainable built environments of tomorrow.

**Certification Schemes**

Developed specifically to answer to the challenges and demands of the built environment, the programs are relevant and well-timed to address current challenges in the field.

Once a professional achieves the basic certification levels, he or she has considerable flexibility in choosing specialisations based on their interest and GORD Academy’s progression requirements. Scheme-based as well as speciality-based certifications may be earned by completing their respective criteria.

**Certified Professionals Also Enjoy A Range of Other Benefits:**

- Participation in academy affairs
- The right to be employed as a GSAS certified project manager
- Access to GORD toolkits and manuals
- Opportunities to network with peers and industry professionals
- Priority invitations to GORD Academy workshops as well as special discounts on seminars

**GSAS-CGP™ (Certified Green Professional)**

The long-term economic benefits of building greener are well established. By helping to minimise the use of water and energy resources as well as reducing waste generation and carbon emissions, GORD is tangibly supporting the economic pillar of QNV 2030.