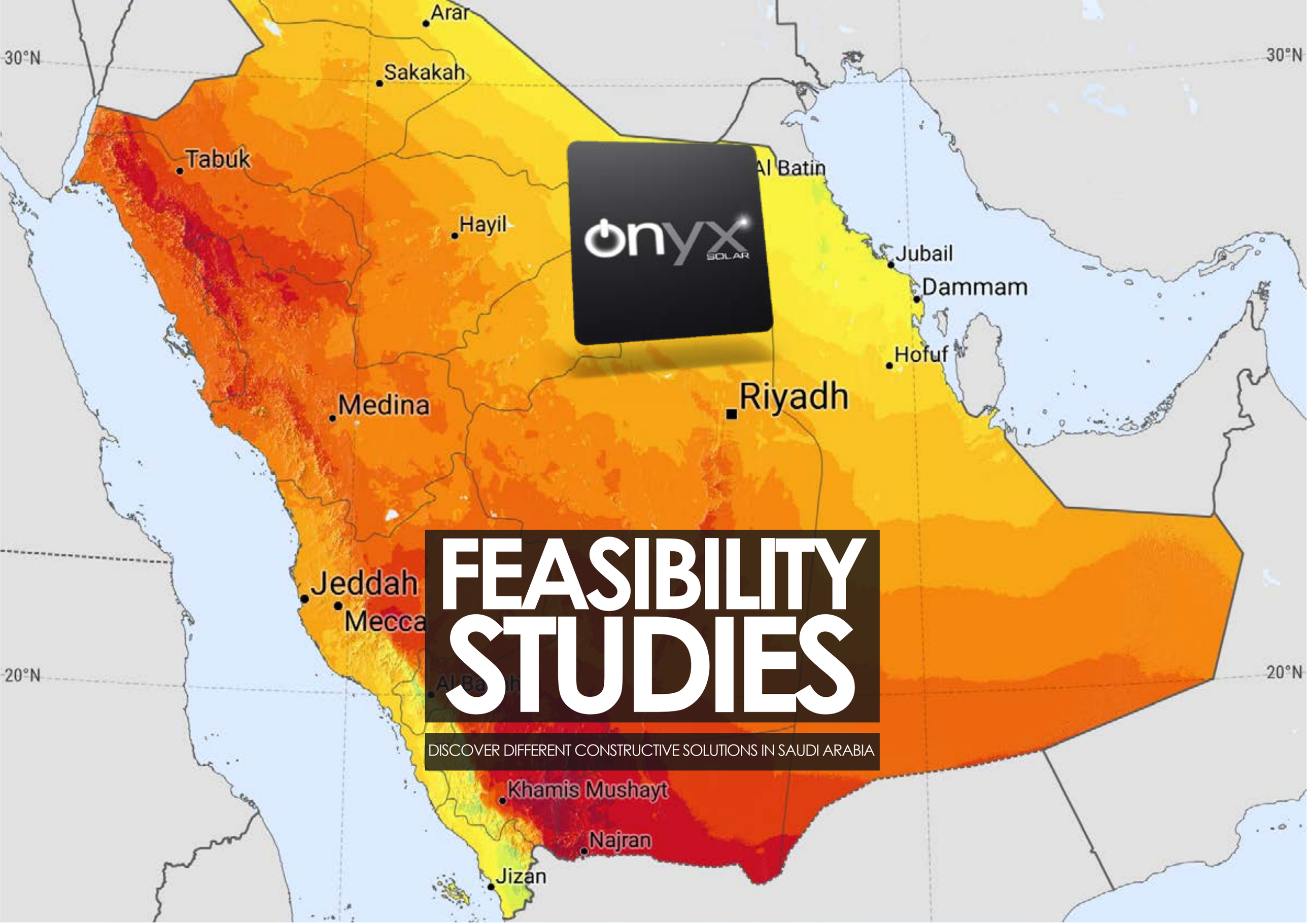
Arar
30°N
Sakakah
Tabuk
Hayil
Al Batin
Jubail
Dammam
Hofuf
Riyadh
Medina
Jeddah
Mecca
20°N
Khamis Mushayt
Najran
Jizan
FEASIBILITY STUDIES
DISCOVER DIFFERENT CONSTRUCTIVE SOLUTIONS IN SAUDI ARABIA

FEASIBILITY STUDY RIYADH

HIDDEN PV IN WHITE COLOR

- INTENSE GREEN 100 W/M²
- WHITE 110 W/M²
- MARBLE BROWN 115 W/M²
- **DEEP BLUE** 160 W/M²

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	110 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	2.946 KWh per m²
Kg of CO_2 avoided	2.222 Kg per m²
Kilometres driven in an electric car	16.945 Km per m²
Light points fed	5,8 per m2/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	1.473 SAR per m²
Return on investment	6 times
Internal rate of return (IRR)	13,65%
Payback time	8 years
Building's value increase**	609 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	2.942 KWh per m²
Payback time (Dammam)	7,8 years
Renewable energy (Jeddah)	3.181 KWh per m²
Payback time (Jeddah)	7,4 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

PV FAÇADE / BALCONY

SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

* The prices considered are merely indicative and may vary depending on the installed glass surface. The data provided in this feasibility study in no case involves a contractual obligation.

** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY RIYADH

HIDDEN PV IN WHITE COLOR

- INTENSE GREEN — 100 W/M²
- WHITE — 110 W/M²
- MARBLE BROWN — 115 W/M²
- **DEEP BLUE** — 160 W/M²

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	110 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	5.571 KWh per m²
Kg of CO_2 avoided	4.200 Kg per m²
Kilometres driven in an electric car	32.033 Km per m²
Light points fed	11 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	2.784 SAR per m²
Return on investment	11 times
Internal rate of return (IRR)	24,63%
Payback time	5 years
Building's value increase**	1.151 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	5.739 KWh per m²
Payback time (Dammam)	4,85 years
Renewable energy (Jeddah)	5.849 KWh per m²
Payback time (Jeddah)	4,47 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 30°

Orientation: S

ENERGY LOSSES PER ORIENTATION

-10% -22% -11%

HIDDEN PV ROOF
SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

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Data Calculated for a 35-year useful life.

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FEASIBILITY STUDY RIYADH

OPAQUE PV GLASS

CELL DENSITY

LOW 111 W/M²	43%	VISIBLE LIGHT TRANSMITTANCE
MEDIUM 141 W/M²	11%	
HIGH 173 W/M²	11%	
OPAQUE 180 W/M²	0%	

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	180 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	4.822 KWh per m²
Kg of CO_2 avoided	3.636 Kg per m²
Kilometres driven in an electric car	27.728 Km per m²
Light points fed	9,5 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	2.410 SAR per m²
Return on investment	7 times
Internal rate of return (IRR)	15,68%
Payback time	7 years
Building's value increase**	996 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	4.966 KWh per m²
Payback time (Dammam)	6,7 years
Renewable energy (Jeddah)	5.063KWh per m²
Payback time (Jeddah)	6,4 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

PV DOUBLE SKIN / SPANDREL

SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION

-32% -69% -8%

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

* The prices considered are merely indicative and may vary depending on the installed glass surface. The data provided in this feasibility study in no case involves a contractual obligation.

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FEASIBILITY STUDY RIYADH

MEDIUM CELL DENSITY PV GLASS

CELL DENSITY

LOW	111 W/M²	43%
MEDIUM	141 W/M²	11%
HIGH	173 W/M²	11%
OPAQUE	180 W/M²	0%

VISIBLE LIGHT TRANSMITTANCE

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	141 Wp per m²
Visible light transmittance	11%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	3.777 KWh per m²
Kg of CO_2 avoided	2.848 Kg per m²
Kilometres driven in an electric car	21.720 Km per m²
Light points fed	7,4 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	1.888 SAR per m²
Return on investment	5,3 times
Internal rate of return (IRR)	12,48%
Payback time	9 years
Building's value increase**	780 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	3.890 KWh per m²
Payback time (Dammam)	8,7 years
Renewable energy (Jeddah)	4.079 KWh per m²
Payback time (Jeddah)	8,3 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

PV CURTAIN WALL

SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION

-32% -69% -8%

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Data Calculated for a 35-year useful life.

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FEASIBILITY STUDY RIYADH

LOW CELL DENSITY PV GLASS

CELL DENSITY

- LOW 111 W/M² — 43%
- MEDIUM 141 W/M² — 11%
- HIGH 173 W/M² — 11%
- OPAQUE 180 W/M² — 0%

VISIBLE LIGHT TRANSMITTANCE

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	111 Wp per m²
Visible light transmittance	43%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	2.973 KWh per m²
Kg of CO_2 avoided	2.242 Kg per m²
Kilometres driven in an electric car	17.099 Km per m²
Light points fed	5,84 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	1.486 SAR per m²
Return on investment	5 times
Internal rate of return (IRR)	12%
Payback time	9 years
Building's value increase**	614 SAR per m²

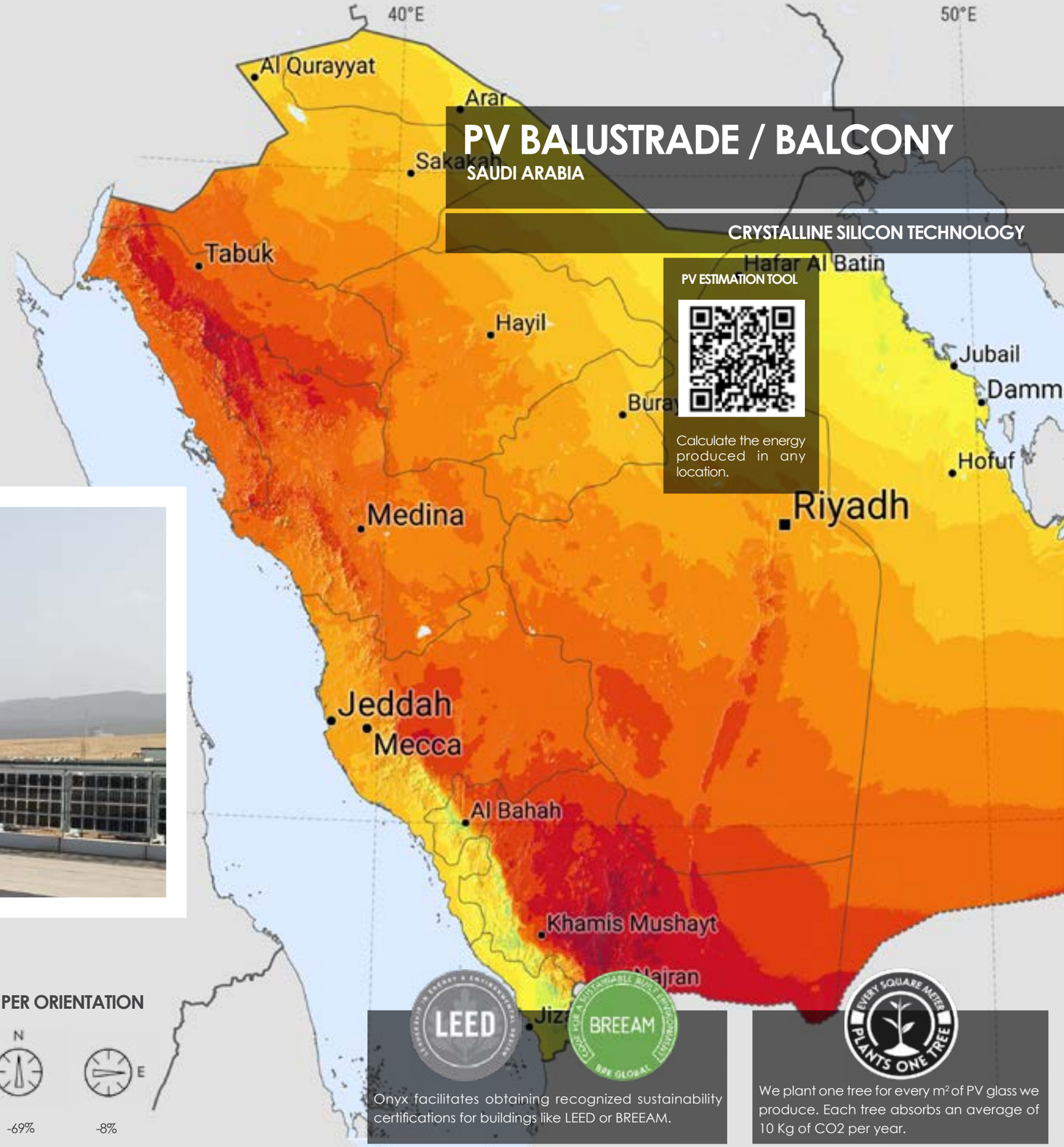
RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	3.062 KWh per m²
Payback time (Dammam)	8,7 years
Renewable energy (Jeddah)	3.210 KWh per m²
Payback time (Jeddah)	8,3 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S



PV BALUSTRADE / BALCONY

SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

ENERGY LOSSES PER ORIENTATION

LEED BREEAM

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

EVERY SQUARE METER PLANTS ONE TREE

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

* The prices considered are merely indicative and may vary depending on the installed glass surface. The data provided in this feasibility study in no case involves a contractual obligation.

** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY RIYADH

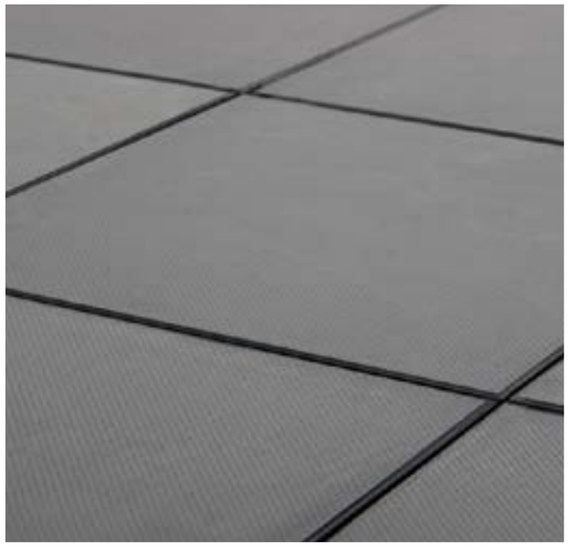
OPAQUE PV GLASS

CELL DENSITY

- LOW 111 W/M²
- MEDIUM 141 W/M²
- HIGH 173 W/M²
- **OPAQUE** 180 W/M²

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	140 Wp per m²
Visible light transmittance	0%



ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	6.592 KWh per m²
Kg of CO_2 avoided	4.970 Kg per m²
Kilometres driven in an electric car	37.905 Km per m²
Light points fed	13 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	3.295 SAR per m²
Return on investment	7,6 times
Internal rate of return (IRR)	17,45%
Payback time	7 years
Building's value increase**	1.362 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	6.789 KWh per m²
Payback time (Dammam)	6,7 years
Renewable energy (Jeddah)	6.921 KWh per m²
Payback time (Jeddah)	6,4 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 0°

Orientation: S

ENERGY LOSSES PER ORIENTATION

WALKABLE PV FLOOR

SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

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We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

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FEASIBILITY STUDY RIYADH

MEDIUM CELL DENSITY PV GLASS

CELL DENSITY

LOW	111 W/M²	43%
MEDIUM	141 W/M²	11%
HIGH	173 W/M²	11%
OPAQUE	180 W/M²	0%

VISIBLE LIGHT TRANSMITTANCE

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	141 Wp per m²
Visible light transmittance	11%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	7.141 KWh per m²
Kg of CO_2 avoided	5.384 Kg per m²
Kilometres driven in an electric car	41.061 Km per m²
Light points fed	14 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	3.569 SAR per m²
Return on investment	12 times
Internal rate of return (IRR)	26,61%
Payback time	4 years
Building's value increase**	1.475 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	7.355 KWh per m²
Payback time (Dammam)	3,8 years
Renewable energy (Jeddah)	7.712 KWh per m²
Payback time (Jeddah)	3,5 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 30°

Orientation: S

ENERGY LOSSES PER ORIENTATION

Data Calculated for a 35-year useful life.

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** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY RIYADH

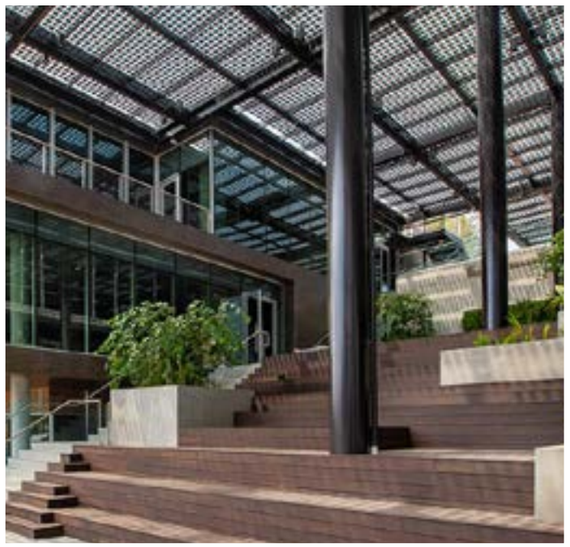
HIGH CELL DENSITY

CELL DENSITY

LOW 111 W/M²	43%	
MEDIUM 141 W/M²	11%	
HIGH 173 W/M²	11%	← VISIBLE LIGHT TRANSMITTANCE
OPAQUE 180 W/M²	0%	

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	173 Wp per m²
Visible light transmittance	11%



ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	8.146 KWh per m²
Kg of CO_2 avoided	6.142 Kg per m²
Kilometres driven in an electric car	46.840 Km per m²
Light points fed	16 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	4.071 SAR per m²
Return on investment	11,81 times
Internal rate of return (IRR)	26,31%
Payback time	4 years
Building's value increase**	1.683 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	8.390 KWh per m²
Payback time (Dammam)	3,8 years
Renewable energy (Jeddah)	8.797 KWh per m²
Payback time (Jeddah)	3,5 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 0°

Orientation: S

ENERGY LOSSES PER ORIENTATION

LEED BREEAM

Onyx facilitates obtaining recognized sustainability certifications for buildings like LEED or BREEAM.

EVERY SQUARE METER PLANTS ONE TREE

We plant one tree for every m² of PV glass we produce. Each tree absorbs an average of 10 Kg of CO2 per year.

Data Calculated for a 35-year useful life.

* The prices considered are merely indicative and may vary depending on the installed glass surface. The data provided in this feasibility study in no case involves a contractual obligation.

** According to the US Department of Energy & Environment a sustainable building will obtain an increase of value between 10 and 20 USD for every USD generated by renewable energy.

FEASIBILITY STUDY RIYADH

HIGH CELL DENSITY PV GLASS

CELL DENSITY

		VISIBLE LIGHT TRANSMITTANCE
LOW 111 W/M²	43%	
MEDIUM 141 W/M²	11%	
HIGH 173 W/M²	11%	
OPAQUE 180 W/M²	0%	

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	173 Wp per m²
Visible light transmittance	11%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	8.761 KWh per m²
Kg of CO_2 avoided	6.606 Kg per m²
Kilometres driven in an electric car	50.380 Km per m²
Light points fed	17 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	4.379 SAR per m²
Return on investment	12,7 times
Internal rate of return (IRR)	28,16%
Payback time	4 years
Building's value increase**	1.810 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	9.023 KWh per m²
Payback time (Dammam)	3,8 years
Renewable energy (Jeddah)	9.461 KWh per m²
Payback time (Jeddah)	3,5 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 40°

Orientation: S

ENERGY LOSSES PER ORIENTATION

-8% -58% -8%

PV BRISE SOLEIL

SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

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Data Calculated for a 35-year useful life.

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FEASIBILITY STUDY RIYADH

OPAQUE PV GLASS

CELL DENSITY

LOW 111 W/M²	43%	
MEDIUM 141 W/M²	11%	
HIGH 173 W/M²	11%	
OPAQUE 180 W/M²	0%	VISIBLE LIGHT TRANSMITTANCE

CHARACTERISTICS OF THE GLASS

Peak Power (Wp/m²)	180 Wp per m²
Visible light transmittance	0%

ENVIRONMENTAL BENEFITS RIYADH

Renewable energy	4.822 KWh per m²
Kg of CO_2 avoided	3.636 Kg per m²
Kilometres driven in an electric car	27.728 Km per m²
Light points fed	9,5 per m²/day

ECONOMIC BENEFITS RIYADH*

Value of the renewable energy	2.410 SAR per m²
Return on investment	6,44 times
Internal rate of return (IRR)	15 %
Payback time	8 years
Building's value increase**	996 SAR per m²

RESULTS IN OTHER LOCATIONS OF SAUDI ARABIA

Renewable energy (Dammam)	4.966 KWh per m²
Payback time (Dammam)	7,76 years
Renewable energy (Jeddah)	5.207 KWh per m²
Payback time (Jeddah)	7,4 years

DATA CONSIDERED FOR CALCULATIONS

Tilt: 90°

Orientation: S

ENERGY LOSSES PER ORIENTATION

-8% -58% -8%

PV NOISE BARRIER
SAUDI ARABIA

CRYSTALLINE SILICON TECHNOLOGY

PV ESTIMATION TOOL

Calculate the energy produced in any location.

LEED BREEAM

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EVERY SQUARE METER PLANTS ONE TREE

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GLOBAL EPD

SCAN THE QR TO DOWNLOAD OUR EPD

GlobalEPD
A VERIFIED ENVIRONMENTAL DECLARATION

ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

EN ISO 14025:2010
EN 15804:2012+A2:2019

AENOR

CRYSTALLINE PHOTOVOLTAIC SOLAR GLASS

G/GM07244
G/GM07211
G/GM03644
G/GM01688A

First publication date: 31-01-2024
Expiry date: 30-01-2029

The declared validity is to registration and publication on www.aenor.com

GlobalEPD Code: GlobalEPD EN15804-063

The Environmental Product Declaration (EPD) is a certified document that provides our clients with reliable, verified, and transparent information regarding the environmental impact throughout the life cycle of a product. This information is based on a **Life Cycle Analysis (LCA)** study conducted in accordance with the Product Category Rules (PCR) developed by the Eco-labeling Program. In our specific case, the study has been carried out under the **Product Category Rule for Construction Products UNE EN 15804:2012+A2.**

ECO PLATFORM & AENOR

ECO Platform is a European Association made up of DAP Verification Program Administrators, industrial associations, and life cycle analysis experts, which guarantees the quality and conformity of environmental declarations of construction products in accordance with ISO 14025 and EN 15084 Standards. ECO Platform represents a common pan-European framework for DAPs. The Programs commit to common quality and verification criteria, which are regularly audited.

AENOR is a founding member of ECO Platform and passed audits in 2014 to issue Environmental Declarations with the ECO Platform EPD EN 15804 VERIFIED™ logo, being one of the first four European Administrators along with International EPD System (Sweden), IBU (Germany) and BAU EPD (Austria).


» ISRAEL


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» EEUU


» DUBAI


» FRANCIA


» ESLOVAQUIA


» ESPAÑA


» ESPAÑA


» ARABIA SAUDITA


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» PAÍSES BAJOS

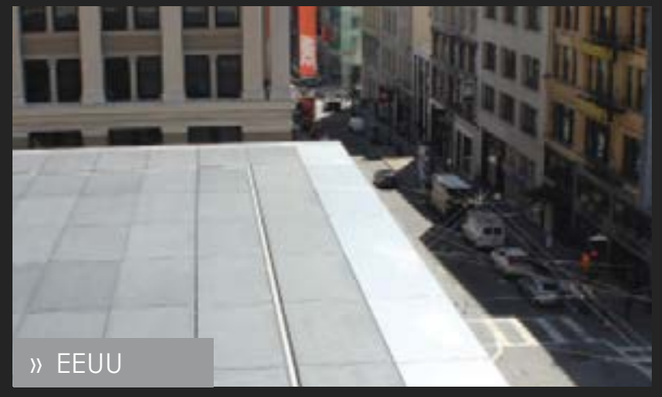
» EEUU

» ESPAÑA

» EEUU

» DUBAI

» DINAMARCA



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UNLOCKING THE POWER OF PHOTOVOLTAIC GLASS:

Are you curious about the potential of photovoltaic (PV) glass for your project? Our team at Onyx Solar is here to guide you through the process and help you harness the benefits of this innovative technology.

WHAT DOES PV GLASS BRING TO YOUR PROJECT?

✓ **Energy Generation:** PV glass generates clean electricity from sunlight, reducing your reliance on traditional power sources.

✓ **Aesthetic Integration:** Say goodbye to bulky solar panels! PV glass blends seamlessly with architectural designs, enhancing the visual appeal of your building.

✓ **Environmental Impact:** By using PV glass, you contribute to reducing carbon emissions. Imagine the positive impact on our planet!

HOW ONYX SOLAR CAN ASSIST YOU

Our technical team offers free feasibility studies tailored to your project. Here's what we provide:

·**Product Datasheets:** Detailed information about our PV glass products, including technical specifications.

·**Shop Drawings:** Visual representations to aid in your design process.

·**Energy Estimates:** Understand the potential energy output based on your installation.

·**CO_2 Emissions Prevented:** Quantify the environmental benefits of using PV glass.

·**Cost Analysis:** Get a clear picture of the investment required.

·**Payback and ROI:** Evaluate the financial returns over time.

·**Tax Credits and Incentives:** Explore available incentives to make an informed decision.

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