OPENING DOORS

FOR YOUR INVESTMENT
ABOUT HUNGARY

MAIN FIGURES

- **Area**: 93,022 km²
- **Time Zone**: GMT + 1 Hour
- **Population**: 9,830,485 (2016, HCSO)
- **Capital**: Budapest (1,759,407, 2016, HCSO)
- **Other Major Cities**: Debrecen (203,059), Szeged (162,621), Miskolc (158,101), Pécs (145,347), Győr (129,568)
- **Currency**: Forint (HUF)
- **GDP (PPS)**: € 194,248 Million (2015, HCSO)
- **Inflation Rate**: 0.4% (2016, HCSO)
- **Unemployment Rate**: 5.1% (2016, HCSO)
- **Form of Government**: Parliamentary Republic
- **Climate**: Temperate (similar to the rest of the continental zone)
- **Risk of Natural Disasters**: Very Low
- **Membership in International Organisations**: EU, UN, OECD, WTO, NATO, IMF, EC
  - EU member: since 2004

Source: HCSO – Hungarian Central Statistical Office
Hungary is an open economy where particular emphasis is placed on encouraging foreign investment. Partnership with potential investors is a national priority; special attention is paid to the needs of companies already settled in Hungary, and to the further improvement of the business climate.
ABOUT HUNGARY
BUSINESS ENVIRONMENT

INVESTMENTS IN FOCUS

IN ORDER TO IMPROVE THE BUSINESS CLIMATE THE HUNGARIAN GOVERNMENT...

...has modified its taxation and incentive system related to R&D activities to make Hungary the innovation hub of CEE.

...has introduced a new incentive scheme supporting tech-intensive investments.

...has created the most competitive CIT in the EU with 9% flat rate.

...has further improved the practice-based dual education system built on industry needs.

...has introduced its unique economic development plan based on Industry 4.0 requirements.

...has signed more than 70 strategic partnership agreements giving companies fast access to the Government.

...was the first to implement a Digital Nation Development Program in the CEE region.

...is committed to further reduce taxes on employment.

...was the first to implement a Digital Nation Development Program in the CEE region.
BUDAPEST IS THE 2. BEST CITY ON EARTH (Condé Nast Traveler, 2015)

ABOUT HUNGARY

QUALITY OF LIFE

INTERNATIONAL SCHOOLS

Expatriates looking to stick with the curricula of their home countries can choose from a range of private international schools for their children. There are also many English, German or French public and private pre-schools for children aged from three to six. The school year starts in September and ends in June, and school buses are usually available at private schools. There are many opportunities to study in a foreign language at universities too.

EXPAT'S LIKE HUNGARY

Budapest is a city full of surprises and wonders, with its lively centre, pretty parks, majestic river, tall church spires, and lavish spas. One of the most exciting cities in the world, Budapest is full of secrets, hidden spots to explore, and old favourites to revisit. This is the city where being bored is not an option.

According to TripAdvisor, Budapest is offering the best price-value ratio in the world. According to Condé Nast Traveler readers, Budapest is the second best city on earth.

EXPLORE THE COUNTRYSIDE

Hungary’s diverse countryside offers a wide range of outdoor activities: 11,000 kilometres of hiking routes; more than 2,500 kilometres of cycle paths; 22 golf courses; ten national parks; and many protected nature reserves for those in love with fresh air. The protected Puszta-region, the Great Plain, the romantic Danube Bend with its historic sites, and pretty baroque towns, such as Eger, attract visitors all over the year. Lake Balaton, the largest freshwater lake in Central Europe, is a perfect holiday resort.
**RENEWABLE ENERGY POTENTIAL IN HUNGARY**

Hungary has excellent comparative assets in certain areas of green energy sources.

- **Hydropower**
- **Geothermal**
- **Heat pump**
- **Solar energy**
- **Wind power**
- **Biomass**
- **Biogas**

**RENEWABLE ENERGY FORECAST**

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>Amount (PJ)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydropower</td>
<td>532.8</td>
<td>2010</td>
</tr>
<tr>
<td>Wind</td>
<td>102.5</td>
<td>2020</td>
</tr>
<tr>
<td>Solar photovoltaic</td>
<td>1,750</td>
<td>2020</td>
</tr>
<tr>
<td>Biomass</td>
<td>300</td>
<td>2020</td>
</tr>
<tr>
<td>Geothermal</td>
<td>63.5</td>
<td>2020</td>
</tr>
<tr>
<td>Solar thermal</td>
<td>14.4</td>
<td>2020</td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td>2020</td>
</tr>
</tbody>
</table>

**TOTAL**

2,600-2,700 PJ

**RENEWABLE ENERGY IN HUNGARY**

- **Hungary receives as much as 2,200 hours of sunshine each year.**
- **Hungary is the leading high-tech exporter within Central-Eastern Europe.**
- **Hungary’s renewable energy potential is more than 2,200 PJ/year.**
- **Excellent agro-ecological conditions for production of biomass at competitive price.**
- **The geothermal gradient in Hungary is almost 1.5 times higher than the world average.**

**SOLAR PHOTOVOLTAIC (PV)** potential is about 480 billion kWh (based on potentially installable solar modules).

**HUNGARY HAS EXCELLENT COMPARATIVE ASSETS IN CERTAIN AREAS OF GREEN ENERGY SOURCES.**
In Hungary the support scheme for renewable energy production is being modified substantially. From 2017 gradually the former feed-in-tariff obligation system - according to the relevant EU legislation - is going to be changed as a premium type subsidy scheme and competitive bidding procedures are introduced.

Main features of the new support scheme:

• With the exception of wind energy for plants with a capacity under 0.5 MW the slightly modified feed-in-tariff system (KÁT) will be applied.

• Producers in the capacity range of 0.5 MW-1 MW may be granted a premium type subsidy where the premium is calculated as the difference of the reference market price and the administrative price set by Government Decree.

• Renewable energy plants with a capacity more than 1 MW may also receive a premium type subsidy through competitive bidding process. Main features of this tendering system:

  • Producer sell on the market;
  • Support / premium price will be calculated based on offered price and reference market price;
  • The Hungarian energy office (HEPURA) is responsible for tender requests;
  • TSO (MAVIR ZRT.) manages the system.
Hungary has significant growth potential in solar energy. The use of solar energy in Hungary is more than 1% of the total renewable energy usage, and most of that is via solar collectors. The number of PV projects is rapidly increasing.

Most PV panels and collectors are bought by private individuals, and public institutions or establishments.

A new feed-in tariff system will encourage solar energy usage. In addition to public solar projects, the new system will encourage the building of solar power plants with bigger capacities (over 50 MW).
# AVERAGE TEMPERATURE IN HUNGARY

<table>
<thead>
<tr>
<th>Month</th>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>5.0</td>
</tr>
<tr>
<td>February</td>
<td>9.0</td>
</tr>
<tr>
<td>March</td>
<td>13.0</td>
</tr>
<tr>
<td>April</td>
<td>17.0</td>
</tr>
<tr>
<td>May</td>
<td>21.0</td>
</tr>
<tr>
<td>June</td>
<td>25.0</td>
</tr>
<tr>
<td>July</td>
<td>29.0</td>
</tr>
<tr>
<td>August</td>
<td>25.0</td>
</tr>
<tr>
<td>September</td>
<td>21.0</td>
</tr>
<tr>
<td>October</td>
<td>17.0</td>
</tr>
<tr>
<td>November</td>
<td>13.0</td>
</tr>
<tr>
<td>December</td>
<td>9.0</td>
</tr>
</tbody>
</table>

## Power Plant Categories & Power Licensing for Renewable Energies

<table>
<thead>
<tr>
<th>Plant categories</th>
<th>Power licensing</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50 kW</td>
<td>Household size small power plant</td>
</tr>
<tr>
<td>50 kW – 0.5 MW</td>
<td>No license is required small power</td>
</tr>
<tr>
<td>0.5 MW – 50 MW</td>
<td>Small Power Plant</td>
</tr>
<tr>
<td>&gt; 50 MW</td>
<td>Power plant</td>
</tr>
</tbody>
</table>

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**SOLAR ENERGY**

- **Average Temperature in Hungary:** 11.8 °C
- **Average Temperature (°C) / Daytime:**
  - January: 5.0
  - February: 9.0
  - March: 13.0
  - April: 17.0
  - May: 21.0
  - June: 25.0
  - July: 29.0
  - August: 25.0
  - September: 21.0
  - October: 17.0
  - November: 13.0
  - December: 9.0

**ReneWable Energy Potential in Hungary**

- **Renewable Energy Industry in Hungary**
- **Plant categories**
  - Household size small power plant
  - No license is required small power
  - Small Power Plant
  - Power plant
- **Power licensing**
  - Network connection licence but no planning permission needed.
  - Network connection licence but no planning permission needed.
  - For electric power generating equipment (including plants co-generating heat and power): combined small power plant establishment licence, applications to the Hungarian Energy and Public Utility Regulatory Authority
  - Power plant rules apply.
Great prospects in emerging CEE/SEE PV markets. Investors can benefit from government incentive packages, which may exceed 50% of the total value of the investment.

Proximity to existing major solar markets, excellent local logistics infrastructure.

Huge solar potential, but very little development to date; the solar market is poised for major growth.

JÜLLICH GLAS SOLAR
PV panel and solar collector manufacturer based in Hungary.

KORAX
One of the biggest Central European PV module manufacturers.

MANZ AUTOMATION
Production of innovative and highly efficient systems for solar cell manufacturing.

PHOENIX MECANO
A manufacturer of inverter transformers used in solar collectors for the global market.

SEMILAB
Leading manufacturer and measuring technology supplier for microelectronic, display and photovoltaic industrial manufacturing companies.
Did you know that...
...the world’s largest thermal lake suitable for bathing all year round is located in the Western Hungarian town of Hévíz?

The geothermal gradient in Hungary significantly exceeds the global average, representing one of the country’s natural treasures. In accordance with sustainable resource management, special attention must be paid to the preservation of this natural asset when establishing new capacities, which usually necessitates reinjection or recovery for the appropriate purposes.

There is significant potential in increasing the role of geothermal energy in the supply of heat. It is already a widespread heating method in certain sectors (e.g., horticulture) in Hungary. Factors limiting geothermal energy use are the direct costs of wells and reinjection (not always necessary) and the provision of funding for costs associated with building heat supply and distribution systems.
The fact that Hungary has excellent, still unexploited assets in the exploration and utilisation of geothermal energy (as one of the most environmentally friendly types of green energy) greatly contributes to its uniqueness. Geothermal energy facilitates the establishment of a competitive business environment with unique features, fundamentally supporting the establishment of favourable operating conditions for both Hungarian and foreign companies.

The company’s mission is to take major role in the Carpathian Basin’s utilization of geothermal energy in order to create value for future generations. In May 2013 it opened in Miskolc the largest operating geothermal energy capacity in Hungary, providing the city with environmentally friendly heating services. The Geothermal Project of Miskolc won GeoPower Market’s international prize, “Best Heating Project 2013”. PannErgy developed 120 MW heating capacity by building several geothermal plants to heat at least 60,000 flats (2 million GJ p.a.) with geothermal energy, supplying district heating systems in cities and towns. Furthermore PannErgy started to supply multinational companies with heat - like AUDI or Takata.

"The fact that Hungary has excellent, still unexploited assets in the exploration and utilisation of geothermal energy (as one of the most environmentally friendly types of green energy) greatly contributes to its uniqueness. Geothermal energy facilitates the establishment of a competitive business environment with unique features, fundamentally supporting the establishment of favourable operating conditions for both Hungarian and foreign companies."

Dénes Gyimóthy acting CEO
PannErgy
TODAY THERE ARE OVER 170 WIND TURBINES IN THE COUNTRY OF 330 MW CAPACITY

43% of the country’s area is suitable for economical utilization of wind power. In areas that are 75 m above sea level, the annual average wind speed is above 5.5 m/s. At higher altitudes, the opportunities are even more promising. Countrywide wind potential at 75 m above sea level: 204 PJ/year.

SPECIFIC WIND PERFORMANCE (W/m²) AT 75 M ABOVE SEA LEVEL & WIND TURBINES

- 25-75 W/m²
- 100-150 W/m²
- 200-250 W/m²
- > 300 W/m²
Hungarian agriculture can sustainably produce biomass in excess of food and feed demands. There is also a significant biogas production potential.

We decided to bring Veolia Group’s green energy services to Hungary more than 20 years ago, already planning for long-term goals and opportunities. During these two decades, numerous Veolia projects have shown that the company’s green district heating and energy production techniques represent a sustainable service in Hungary, concerning not only business but energy- and cost-efficiency aspects and benefits for industrial and residential customers, as well. Beside the country’s supportive and open sentiment towards foreign investment, Hungary has great potential and ability for widening its green energy sector to support sustainability goals.”

**BIOENERGY**

<table>
<thead>
<tr>
<th>Description</th>
<th>Realistically produced / collected (million tonnes/year)</th>
<th>Energy content (PJ/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From forestry</td>
<td>3.25</td>
<td>45.5</td>
</tr>
<tr>
<td>Produced for this purpose</td>
<td>5.6</td>
<td>74.16</td>
</tr>
<tr>
<td>Agric. by-product, waste</td>
<td>5.4</td>
<td>62</td>
</tr>
<tr>
<td>Other by-product, waste</td>
<td>0.55</td>
<td>6.6</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>14.8</strong></td>
<td><strong>188.26</strong></td>
</tr>
</tbody>
</table>
In its infancy, but the Hungarian pellet market is expected to grow exponentially in the near future. Total capacity of the country is slightly over 100,000 tonnes. Present household consumption is only around 10,000 tonnes per year.

Hungary produces a large amount of agricultural biomass by-product each year (about 6-8 billion tonnes). There is experience in general boiler development, and in special boiler development suitable for green by-product burning (e.g. agripellet).

Theoretically, 7% of Hungary’s total decentralized heat demand could now be covered by pellets, supplying heat and hot water to 234,000 households. A similar number of pellet-devices (boilers) would also be required.

Renewable Energy Industry in Hungary
The first E85 biofuel station opened in 2007 in Hungary.

A market for biofuels is emerging in Hungary, as evidenced by recent investments, but there is still huge potential for growth in biofuel production supported by agricultural products.

Experts agree that more than 10% of the estimated consumption by 2020 can be fulfilled from first generation biofuels, whilst ensuring food and feed provision objectives.

With the emergence of second generation biofuels, via expansion of the raw material range, this volume can be increased further, depending on seasonal variations in the amounts of agricultural produce.

MAJOR PRODUCERS
• Pannonia Bioethanol Ltd. in Dunaföldvár
• Hungrana Ltd. in Szabadegyháza
• Győri Szeszgyár és Finomító Ltd. in Győr

Pannonia Ethanol produces fuel ethanol and animal feed. The company is located in Dunaföldvár. The facility currently utilizes more than 1,000,000 tons of corn annually to produce 450 million litres of renewable ethanol, 325,000 tons of Dried Distillers Grains with Solubles (DDGS), a high protein animal feed, and 10,000 tons of corn oil.

Pannonia Ethanol, the leading renewable ethanol producer in Central and Eastern Europe, adds nearly EUR 500 million to Hungary’s GDP and supports 2000 jobs, mostly in rural areas.

“[Our investors made the right choice when they selected Hungary to realise their first investment in biofuels. The excellent location for logistics, the transparent and reliable regulatory environment, the pro-investor tax system and the vast potential in human resources were all contributors to the success of Pannonia. In addition to these fundamentals, we appreciate the commitment and the efforts of the local community and governmental institutions which helped us to develop our green-field investment into one of the most significant ethanol producing capacity of the European Union.]"
A new National Waste Management Plan has been created for 2014-2020. The newly established National Waste Management Directorate (OKTF NHI) main purpose is to ensure the recovery rates of EU-obligations and to increase the volume of recovery. The waste collection services and disposal are managed by a state owned company (NHKV Zrt.).

The government’s main goals are:
- to decrease the volume of disposing;
- to increase the energetic based utilization (biogas recovery, co-incineration);
- to raise the volume of recycling.

In Hungary around 4 million tons of municipal solid waste is generated on a yearly basis and around 2/3 of it is landfilled, 400 000 tons are incinerated, and cca. 1 million tons are being recycled year by year.
YOU CAN
RELY ON GLOBALLY ACKNOWLEDGED HUMAN CAPITAL AT A REASONABLE COST

TERTIARY EDUCATION IN HUNGARY

ACADEMIC YEAR
2015/2016

NO. OF INSTITUTIONS
66

Undergraduates (BA/BSc) and Postgraduates (MA/MSc)
259,529
of which 195,419 are full-time

6 universities in Hungary appear in the QS World University Rankings® 2016-2017 (which is one of the most widely read university comparison of the world’s top 900 universities).

Source: HCSO

COMPETITIVE LABOUR COSTS IN THE BUSINESS INDUSTRY

Total hourly labour costs, € (2015)

<table>
<thead>
<tr>
<th>Country</th>
<th>Labour Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUNGARY</td>
<td>26.3</td>
</tr>
<tr>
<td>EURO AREA</td>
<td></td>
</tr>
</tbody>
</table>

Source: EUROSTAT
Regarding our talent pool, 259,529 students were enrolled in 66 institutions of higher education in the 2015/2016 academic year. Social sciences, business and law students are the largest single group, numbering 93,739 in 2015. This faculty usually offers Logistics as specialisation at numerous institutions.
SOLAR RELATED R&D IN HUNGARY

- **Thin Film Technology** pioneered in Hungary: the country is one of the industry’s global knowledge centres.

- **Greensolar Equipment Manufacturing Ltd.** in Budapest researches fluorine-less thin film technologies, amorphous silicon technology, microcrystalline technology.

- **Semilab Semiconductor Physics Laboratory Co. Ltd.** in Budapest is a market leader in frontend electrical characterization of the solar cell manufacturing process in the silicon-based photovoltaic market.

WIND RELATED R&D IN HUNGARY

- **Vertical wind turbine**, patented. Working demonstration located in Felcsut (5.5 m in diameter, 29 m height), inventor engineer: Viktor Györgyi.

- **Wind machine with pneumatic power transmission** – developer: Dr. Endre Mucsy, Mucsy Endre Engineering Office.
Hungary is located at the crossroads of three TEN-T Core Network Corridors, granting easy access to the 500 million consumer market of the European Union. Several major European ports are nearby, as are the rapidly growing markets of the Balkans, the CIS states and Turkey.
YOU CAN

BENEFIT FROM HIGHLY DEVELOPED LOGISTICS AND TELECOMS INFRASTRUCTURE

The fact that Hungary has the third highest road density in Europe after Belgium and the Netherlands is a significant competitive advantage. The total length of the Hungarian national public road network is close to 32,000 km including more than 1,800 km of expressways.

- **Extensive railway network of 7,712 km**
- **Connection to the main ports of Western Europe (e.g. Hamburg, Bremerhaven, Rotterdam, Antwerp), the Adriatic (Koper, Rijeka, Trieste) and the Black Sea (Constanta)**
- **Záhony, the Hungarian border city plays a significant role in the East-West rail transport: this is where the European standard gauge railway network meets the eastern broad gauge system**

The country’s main international airport is in Budapest; the city of Debrecen, Gyor (Pér), Pécs and the town of Sármellék at Lake Balaton also operate international airports.

- **Hungary is landlocked but has access to the North Sea and the Black Sea via the river Danube**
- **The Danube-Rhine-Main Canal connects Rotterdam, Amsterdam, Antwerp and the industrial centres of Western Europe with the Black Sea, through the Danube – Black Sea Canal with Constanta**
- **Major inland ports are located in Győr-Gönyű, Komárom, Budapest, Dunaujváros, Paks, Baja and Mohács**

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The fact that Hungary has the third highest road density in Europe after Belgium and the Netherlands is a significant competitive advantage. The total length of the Hungarian national public road network is close to 32,000 km including more than 1,800 km of expressways.
Hungary offers a diverse range of industrial parks: investors can currently choose from more than 650 green- and brownfield sites, depending on their business requirements.
HOW DO WE SUPPORT YOUR RENEWABLE ENERGY PROJECT?

BEFORE YOU MAKE A DECISION
WE OFFER YOU...

- Tailor-made incentive offers and information packages on the business environment, labour market, tax regulations, etc.
- Location search & evaluation + site visits.
- Reference visits at companies that are already established in Hungary
- Assistance with your incentive application

AFTER YOU HAVE CHOSEN HUNGARY

- We are open to your feedback and offer mediation between government and business based on your inputs
- We support your further expansion and plans.

RENEWABLE ENERGY

Renewable Energy Industry in Hungary

HIPA OUR SERVICES

Customer service: investment@hipa.hu
Telephone: +36 1 872 6520
Web: www.hipa.hu
As a member of the European Union, Hungary’s regulations on incentive opportunities are in accordance with the EU rules. One of Hungary’s competitive advantages over other countries in the region is the Government’s strong commitment to increase the competitiveness of SMEs and large enterprises in Hungary. Alongside the regulatory tools that contribute to the competitive business environment of local companies, Hungary offers wide-ranging incentives to facilitate foreign direct investments and reinvestments by local enterprises. Subsidies may be granted as regional aid or specific aid, such as R&D subsidies.

Regional grants are the most typical forms of incentives for greenfield / brownfield investments or reinvestments. The maximum amount of regional incentive is shown on the regional aid intensity map. The map above illustrates that regional aid available for investment for a large enterprise may be up to 50% of the eligible costs of the investment, depending on the region. For investments not exceeding €50 million, the maximum intensity ratio can be increased by 10 percent for medium-sized and by 20 percent for small enterprises.

The maximum available aid intensity decreases if the investment is a large investment (exceeding €50 million): 50% of the maximum aid intensity determined in the regional aid map is available for investment between €50 and €100 million, with 34% of the maximum aid intensity for investment over €100 million.

For information on up-to-date and individual incentive packages, please contact HIPA directly.