



FOUNDER'S BUSINESS PROFILE

Robert M. Friedland

International executive leadership

Founder and Chairman, **Ivanhoe Capital**

- Founder and Executive Co-Chairman, **Ivanhoe Mines**
- Founder and Executive Chairman, **Ivanhoe Electric**
- Co-Chairman, **Sunrise Energy Metals**
- Co-Founder and Chairman, **I-Pulse**
- Founder and Director, **High Power Exploration**
- Co-Founder and Director, **Kietta**



Ivanhoe Capital: The Friedland family's enterprise hub

[Ivanhoe Capital Corporation](#) has specialized in the provision of venture capital, project financing and related financial services for a roster of international business enterprises since its founding in 1987.

The company, with business bases in Singapore, Beijing, London and Vancouver, is owned and directed by its Chairman and founder, Robert M. Friedland, and his family.

Under Mr. Friedland's leadership, executives within the Ivanhoe group and associated companies have raised more than US\$30 billion through a diverse range of financing vehicles on world capital markets since 1993. This capital has been invested in more than 30 nations on six continents, directed primarily at the minerals and energy resources sectors and communications technologies. Some successive owners have invested billions of additional dollars to advance and expand benefiting projects.

Empowered initiatives by public and private companies have led to several of the world's most significant mineral discoveries and mine developments, applications of disruptive technologies and contributions to significant economic growth in established and emerging markets in the Asia Pacific Region, Southern Africa and the Americas.

Companies presently associated with Ivanhoe Capital include Ivanhoe Mines (TSX: IVN; OTCQX: IVPAF), Ivanhoe Electric (NYSE: IE; TSX: IE), Sunrise Energy Metals (ASX: SRL) I-Pulse, High Power Exploration, VRB Energy, Pure Lithium, and Kietta.

Robert M. Friedland: Business Profile

For more than 30 years, international financier Robert Friedland has been recognized by leaders of the international financial sector and mineral resource industries as an entrepreneurial explorer, technology innovator and company builder.

Mr. Friedland's enterprise and leadership gained prominent, industry recognition in **January 2016** when he was inducted into the prestigious **Canadian Mining Hall of Fame**. The citation acknowledged his **company-building and exploration achievements**, honouring him as *"a dynamic, transformative force in the Canadian and international mining industries"* and *"one of the most recognized mining personalities and achievers in the world"*. Mr. Friedland said at the ceremony that he shared the honour with several teams of dedicated individuals whose efforts with his companies during the past 30 years had contributed to a series of notable discoveries and new mines. Housed at the University of Toronto, the Hall of Fame is featured in the Treasures from Earth galleries at the Royal Ontario Museum, Toronto.

In **May 2017**, Mr. Friedland received a **Lifetime Achievement Award** during the Canadian Mining Symposium at Canada House in London, England – a career recognition by the **Northern Miner**, the century-old flagship of Canada's leading mining-industry media group. This follows the U.K.-based **Mining Journal's** successive rankings of Mr. Friedland from **2016 through 2022** as one of the **Top 20 Most Influential People** shaping the future of the world of mining, declaring him *"the undisputed king of junior development"*. Also in **2016**, Canada's **Financial Post Magazine** named Mr. Friedland one of 25 members of its inaugural **Power List** – termed *"the biggest, buzziest and most influential movers and shakers in Canada and beyond"*.

In **December 2021**, Mr. Friedland was inducted into the **American Mining Hall of Fame** in a ceremony held in Tucson, Arizona, in recognition of his **outstanding lifetime achievements advancing the American and/or global mineral resources industry**. The citation acknowledged Mr. Friedland as "an entrepreneurial explorer, technology innovator and company builder" and someone who "has successfully developed a portfolio of respected public and private companies whose initiatives have led to several of the world's most significant mineral discoveries and mine developments, applications of disruptive technologies and contributions to significant economic growth in established and emerging markets in the Asia Pacific Region, Southern Africa and the Americas."

International philanthropic initiatives and engagements by the Friedland family are implemented through its San Francisco-based **Friedland Foundation**.

Mr. Friedland holds United States and Canadian citizenship and resides in Singapore. He graduated from Reed College, in Oregon, USA, in 1974 with an undergraduate degree in political science.

Ivanhoe Mines:

Writing a storied history in minerals discovery and development

Since **1993**, the **Ivanhoe Mines** enterprise brand has steadily evolved through dual founding companies established by Mr. Friedland, each becoming pre-eminent, publicly traded flagships with portfolios of industry-leading mining and mineral exploration ventures.

In 1993, he launched the corporate precursor to **African Minerals** – which in turn was a forerunner of the **current Ivanhoe Mines** – to pursue mineral interests in Africa. It became Ivanhoe Mines in 2013 and now is developing its three world-scale mining projects in Southern Africa. In September 2018, Mr. Friedland assumed Executive Co-Chairmanship of the company following its completion of a C\$723 million strategic equity investment by China-based **CITIC Metal Africa**, part of China's giant CITIC conglomerate. In August 2019, CITIC completed its second strategic equity investment of C\$612 million, bringing its investment in Ivanhoe to more than C\$1.3 billion (US\$1 billion).

Mr. Friedland has served in several senior leadership roles, including Executive Chairman and Chairman, of both the *current* and the *original* Ivanhoe Mines corporate entities over a combined span of 24 years.

The **original Ivanhoe Mines**, founded under the **Indochina Goldfields** nameplate in **1994**, grew to lead a series of notable mining and exploration projects in the Asia Pacific region after completing a

successful, initial public offering in 1996. Indochina adopted the Ivanhoe Mines name in 1999 and built the brand on its successes during the following 13 years.

The current Ivanhoe Mines: Southern Africa successes making modern mining history

A venture company established by Mr. Friedland in 1993, KBK No. 7 Ventures, later was renamed **African Minerals in 1994** and operated as an affiliate of his family's Ivanhoe Capital Corporation, acquiring mineral prospects in Africa. From November 2000, through roles that included Chairman, Co-Chairman and President, Mr. Friedland helped guide the company's development under subsequent nameplates, including **Ivanplats**. Then, as Executive Chairman, he led Ivanplats' successful initial public offering (IPO) in **2012** that raised C\$306 million (US\$308 million) from international investors. At the time, it was the largest Canadian mining IPO in more than two years.

Ivanplats assumed the '**Ivanhoe Mines**' name in **2013** as part of a strategic corporate alignment as the company was building an organization to manage its three concurrent mine development projects and ongoing exploration programs in Southern Africa. The *current* [Ivanhoe Mines](#) is a renewed and refocused mine builder and explorer whose shares trade on Canada's Toronto Stock Exchange and the OTCQX Best Market in the United States.

- Today, construction is underway on Ivanhoe's 64%-owned [Platreef](#) state-of-the-art, underground platinum-palladium-nickel-copper-gold mine on the company's tier-one Flatreef discovery in South Africa's renowned Bushveld Complex, where established mines already produce more than 70% of the world's annual platinum output. Initial production is expected in 2024. Platreef is independently projected to become Africa's lowest-cost producer of platinum-group metals. South African broad-based black economic empowerment partners hold a 26% stake in the Platreef Project; 10% is held by a Japanese consortium led by **Itochu Corp.** and including the Japanese government's **Japan Oil, Gas and Metals National Corporation, ITC Platinum Development and JGC Corporation.**
- In the Democratic Republic of Congo (DRC), Ivanhoe Mines and its joint-venture partners **Zijin Mining Group**, of China, and the **DRC Government** are producing from, and expanding, the tier-one [Kamoa-Kakula](#) mining complex. Kamoa-Kakula is a very large, very high-grade, near-surface, stratiform copper deposit with adjacent prospective exploration areas within the Central African Copperbelt, approximately 25 kilometres west of the mining centre of Kolwezi. Kamoa-Kakula achieved commercial production in July 2021 and produced approximately 333,500 tonnes of copper in 2022. The 2023 production guidance is between 390,000 and 430,000 tonnes of copper. Phased expansions are projected to make Kamoa-Kakula the second-largest copper complex globally, with peak production of more than 700,000 tonnes of copper a year.
- Ivanhoe's third project, also in the DRC, is the extensive redevelopment and upgrading of the historic [Kipushi Mine](#) together with Ivanhoe's joint-venture partner Gécamines. Kipushi originally began production in 1924 and is recognized as one of the world's richest former zinc-copper producers. A 2022 independent feasibility study projects Kipushi will become one of the world's 10 largest zinc producers after it resumes production, with an average ore grade of 36.4% zinc and production of 240,000 tonnes of zinc a year.
- Ivanhoe Mines also is exploring for new copper discoveries on its [Western Foreland](#) exploration licences in the DRC, in close proximity to the Kamoa-Kakula mining complex.

Oyu Tolgoi: The *original* Ivanhoe's transformative discovery in Mongolia's South Gobi

Between **1996** and **2012**, the *original* Ivanhoe Mines and its subsidiaries conducted or participated in mining operations in Mongolia, Australia, China, Myanmar, South Korea and Fiji, and built a large shareholder base through listings on North America's Toronto, New York and NASDAQ stock exchanges. (Founded in 1994 as **Indochina Goldfields** – a name that reflected its initial mining interests in the Asia Pacific region – it was the first to adopt the more universal **Ivanhoe Mines** identity in 1999.)

Mr. Friedland served variously as Executive Chairman and Chairman for 17 years, until May 2011. He was the founding President, and also Chief Executive Officer from June 1996 to May 2006, and again from October 2010 to April 2012.

In **2000**, Ivanhoe Mines began exploration in Mongolia that led to a decade of discoveries that revealed a 12.4-kilometre-long (7.7-mile), tier-one chain of copper and gold deposits in the South Gobi region. Construction of the **Oyu Tolgoi** mining complex began in **2010** and production started in **2013**.

The epic Oyu Tolgoi Mine produced a reported 780,000 tonnes of copper, 1.8 million ounces of gold and 4.5 million ounces of silver – and generated US\$2.1 billion of operating cash flow (before interest and tax) – between 2014 and 2017. But 80% of Oyu Tolgoi's vast mineral wealth is deposited deeper underground, where copper grades are 360% higher than those found in the open pit. Initial production from the new, underground mine is expected in 2021, further advancing Oyu Tolgoi on its projected course to become the world's third-largest copper mine.

In 2015, the operating company, **Oyu Tolgoi LLC**, signed a US\$4.4 billion project-finance facility – one of the largest ever arranged in the global mining industry – with a syndicate of 20 international financial institutions, including agencies representing the governments of Canada, the U.S. and Australia, which also agreed to a total debt capacity of US\$6.0 billion.

International mining giant **Rio Tinto** acquired control of the *original* Ivanhoe Mines in **2012** and, as required under an agreement with Mr. Friedland, surrendered the Ivanhoe identity and renamed the company Turquoise Hill Resources – completing another chapter in the ongoing Ivanhoe Mines story.

Some milestones of entrepreneurial vision and initiative

Mr. Friedland is Chairman and co-founder of [I-Pulse](#), a private company that is commercializing proprietary, controlled-energy technology aiming to achieve disruptive outcomes across numerous industries. The technology repeatedly compresses and releases pulses of electrical energy in billionths of a second. The extremely-high-powered discharges can generate precise shockwaves directed to 1) shape and assemble metals to previously unachievable degrees of precision; 2) generate electrical fields that reveal chargeable or resistive mineral deposits, or water and oil reservoirs, at depths beyond the reach of conventional survey technologies; 3) crush rock containing minerals or gemstones with significantly reduced energy requirements; and 4) enhance oil-well production and increase reserves. I-Pulse, formed in 2007, has offices in Toulouse, France; Tokyo, Japan, London, England; and Vancouver, Canada.

In November 2022, I-Pulse and **Breakthrough Energy Ventures-Europe** (BEV-E), founded by Bill Gates and backed by many of the world's top business leaders, announced the establishment of **I-ROX**, which is focused on demonstrating that short, high-intensity bursts of energy delivered using pulsed-power technology can quickly and efficiently shatter rocks and mineral ores. This process, which targets tensile weakness in rocks, could substantially reduce the time, energy usage and greenhouse gas (GHG) emissions currently generated by critical mining activities.

In December 2022, I-Pulse and I-ROX announced a comprehensive collaboration arrangement with **BHP**, a world-leading resources company, to identify and develop applications of pulsed-power technology across multiple aspects of the mining industry.

Mr Friedland is Founder and Executive Chairman of [Ivanhoe Electric](#) (NYSE: IE; TSX: IE), an American minerals exploration and development company focused on advancing its portfolio of electric metals projects located primarily in the United States. IE applies proprietary, geophysical technologies to rapidly evaluate underground geological targets and accelerate exploration programs targeting mineral and water resources. IE's Typhoon™ data acquisition system is a world-leading, accurate and powerful, induced polarization and electromagnetic geophysical survey technology, whose applications may be supplemented with advanced data processing by [Computational Geosciences](#), an IE subsidiary.

In May 2023, Ivanhoe Electric announced the signing of a Definitive Agreement with Saudi Arabian Mining Company **Ma'aden**, which sets out the binding framework for a strategic investment of US\$126.4 million by Ma'aden into the common stock of Ivanhoe Electric and the concurrent establishment of a 50/50 exploration joint venture in Saudi Arabia. Ivanhoe Electric will provide the Joint Venture with a royalty-free license to use Typhoon™ within Saudi Arabia for the purpose of mineral exploration. Ma'aden will make available approximately 48,500 km² of land under exploration license or license application within Saudi Arabia for exploration by the Joint Venture.

IE also holds a controlling interest in [VRB Energy](#), a Beijing-based developer and manufacturer of advanced energy-storage systems. VRB Energy has invested approximately US\$90 million in vanadium redox battery (VRB) systems and has installed 51 units domestically and internationally. One unit is part of an award-winning demonstration project, operated by State Grid Corporation of China, which is producing and storing energy generated from renewable wind and solar sources. Mr. Friedland is Chairman of the VRB Energy Board of Directors.

Another of Mr. Friedland's natural-resource focused interests is [High Power Exploration](#) (HPX), a privately-owned I-Pulse subsidiary, in which he is a director and investor. In September 2019, HPX acquired the world-scale Nimba iron ore deposit in the Republic of Guinea, which is estimated to comprise around a billion tonnes of high-grade iron ore containing very low levels of impurities. Iron ore of this quality is essential for reducing energy use, greenhouse gas emissions and slag production during the steel-making process.

Mr. Friedland was Chairman and CEO of **Ivanhoe Capital Acquisition Corp.**, a blank-check company formed for the purpose of effecting a merger, share exchange, asset acquisition, share purchase, reorganization or similar business combination with one or more businesses. On February 3, 2022, Ivanhoe Capital Acquisition Corp closed a business combination with [SES Holdings Pte. Ltd.](#), a global leader in the development and production of high-performance lithium-metal (Li-Metal) rechargeable batteries for electric vehicles and other applications. On the same day, SES's Class A common stock began trading on the New York Stock Exchange under the ticker symbol "SES" and Mr. Friedland served as a director of SES until March 2023.

In **September 2016**, Mr. Friedland was appointed board Co-Chairman of **Sunrise Energy Metals (formerly Clean TeQ)**, an Australia-listed company providing innovative and sustainable solutions for metals recovery and water treatment. Sunrise Energy Metals is developing the **Sunrise Project** in the State of New South Wales, Australia, a multi-decade nickel-cobalt resource which also hosts one of the world's largest and highest-grade sources of scandium. Nickel and cobalt sulphate from Sunrise will be supplied to the lithium-ion battery market; scandium oxide will be used to produce lighter and stronger aluminum alloys for aerospace and automotive markets.

Mr. Friedland is a co-founder and a director of privately held [Kietta](#), a French company established by offshore oil-exploration specialists and technology entrepreneurs. Kietta has designed and now operates a lower-cost system that acquires superior-quality, marine seismic exploration data using a patented cable technology controlled by unmanned, autonomous surface vessels.

Mr. Friedland chaired the Board of Directors of **Potash One** from **2009** to **2011** while it was planning the development of a new mine in Saskatchewan, Canada. Potash One was acquired by the Germany-based fertilizer giant K+S in 2011.

Before founding the *original* Ivanhoe Mines in 1994, Mr. Friedland was a co-founding principal investor in the establishment in Canada of **Diamond Fields Resources** in late **1992** and played a prominent role in the company's public launch. Assuming co-chairmanship in **1994** after company-funded exploration discovered high-grade nickel at **Voisey's Bay** in Newfoundland & Labrador, on Canada's East Coast, Mr. Friedland guided financing and investor strategies and led negotiations for the subsequent sale of the tier-one discovery to **INCO** for C\$4.3 billion in 1996. The mine began production in 2005. Now owned by **Vale**, it is the world's fourth-largest nickel producer and accounts for 30% of Canada's nickel output.

Also in **1992**, Mr. Friedland led the discovery and sale of **Fairbanks Gold's Fort Knox Deposit** in Alaska to **Amax Gold** for US\$152 million. Owned by international miner **Kinross** since 1998, Fort Knox poured its seven-millionth ounce of gold in July 2016, its 20th year of operation.

In addition to his natural resources interests, Mr. Friedland owns and has supported an exceptional portfolio of international technology and media enterprises.

Mr. Friedland entered the international entertainment sector in 2013 when he co-founded Ivanhoe Pictures. In March 2017, Ivanhoe Pictures merged with Sidney Kimmel Entertainment, an independent U.S. film finance and production company, to form SK Global Entertainment, which pursued international film and television opportunities from its headquarters in Santa Monica, California. Mr. Friedland was an Executive Producer of *Crazy Rich Asians*, the movie released in mid-2018 that became the highest-grossing romantic comedy in the U.S. since 2009. He also was Executive Producer of *The Wailing*, a Korean-language thriller and the most-awarded Korean film of 2016.

In an initial **2013** venture into the premium hospitality sector, a subsidiary of Mr. Friedland's **Ivanhoe Capital Corporation** acquired the [Villa TreVille](#) luxury boutique hotel, overlooking the Tyrrhenian Sea at Positano, on Italy's historic Amalfi Coast. The former home of celebrated opera director and moviemaker Maestro Franco Zeffirelli provides 16 distinctive suites contained in four elegant residences on the two-hectare (five-acre), cliff-face site. Ivanhoe Capital is also developing boutique hotels in Asia.

During the **1990s**, Ivanhoe Capital became a founding investor in internet services pioneer Beijing Stone Rich Sight Information Technology, which merged with Sinanet.com in 1999 to form **Sina.com**, now one of the largest Chinese-language, online infotainment web portals. Ivanhoe Capital also provided founding venture capital for U.S.-based **Sirius Satellite Radio**, which later completed a strategic merger and went on to build **SiriusXM** into the largest audio entertainment company in North America that has reported more than 34 million satellite and internet subscribers in 2020.

Additional distinctions, recognitions and honours for Ivanhoe's enterprises, their discovery teams and Mr. Friedland

In **January 2017**, Ivanhoe Mines' exploration geologists **Sello Kekana** and **Dr. David Broughton** were presented with the **2016 Colin Spence Award** for excellence in global mineral exploration by the **Association for Mineral Exploration**, of British Columbia, Canada. The award recognized the geologists' roles as principal members of the Ivanplats team that discovered and delineated the high-grade **Flatreef** – one of the world's major deposits of platinum-group minerals – that is part of Ivanhoe's **Platreef** mine development project in South Africa. Exploration at Platreef began in 2000; early discoveries culminated in the discovery of the tier-one Flatreef Deposit in 2010.

In **September 2016**, the industry publication, **Mining Journal**, presented Mr. Friedland with its **Lifetime Achievement Award** during a Toronto conference for mining-industry interests in the Americas.

In **March 2015**, the *current Ivanhoe Mines'* exploration team of staff and consulting geologists – led by **Dr. David Broughton** and **Thomas Rogers** – received the **Thayer Lindsley Award** from the **Prospectors and Developers Association of Canada (PDAC)** for what it judged to be the industry's most significant **International Discovery**: The first of two major copper deposits to be found at the company's **Kamoa Project** in the Democratic Republic of Congo. Now known as the **Kamoa-Kakula Project**, it is recognized as one of the world's 10 largest copper deposits. A decade earlier, in **2004**, the PDAC's inaugural Thayer Lindsley Award was presented to three senior geologists with the *original* Ivanhoe Mines – **Douglas Kirwin**, **Charles Forster** and **Garamjav Dondog** – who were credited with the discovery of the **Hugo Dummett copper-gold deposit** presently being developed for production as the underground, second phase of the **Oyu Tolgoi Mine** in Mongolia. Mr. Friedland presented the awards to the teams in 2015 and in 2004 on behalf of the PDAC.

In **March 2013**, Mr. Friedland received the **Jury's Award** at the **Mines & Money Asia Mining Awards** ceremony in Hong Kong – a unanimous choice recognizing his role in the 2012 initial public offering by the former **Ivanplats** (rebranded as Ivanhoe Mines in 2013) that raised more than C\$300 million for the company's projects in the Democratic Republic of Congo and South Africa.

In a related, prior acknowledgement of **Ivanplats'** successful 2012 initial public offering, the company was voted recipient of the **Exploration Funding Award** as part of the **Outstanding Achievement Awards** presented at the London **Mines & Money** conference in **December 2012**.

In **September 2012**, Canada's **Financial Post Magazine** placed Mr. Friedland on its honour roll of **The Most Influential People in Canada**, chosen by a panel of corporate contemporaries. Ranking Mr. Friedland among the *"most valuable players" in Canadian mining*, the magazine headlined him as *The Doer*, citing his *"knack for hurdling seemingly insurmountable challenges to turn dreams into reality"*. In **March 2012**, Mr. Friedland was recognized as **Mining Personality of the Year** at the inaugural **Asia Mining Awards**, sponsored by the Hong Kong-based **Asia Mining Club** and the **Mines & Money** conference. The award noted his role in Mongolia's emergence as a major destination for mining investment. **Ivanhoe Mines' Oyu Tolgoi** copper-gold mining complex was voted **Project Development of the Year**.

Mr. Friedland received the **Dealmaker of the Year Award** for the *original Ivanhoe Mines* from Australia's **Diggers and Dealers Mining Forum** in **August 2011**, which acknowledged his success in *"managing some of the more interesting asset development logistics our industry has seen for many years"*. The citation said the award recognized *"the entrepreneurial skills of developing one of the world's major projects (Mongolia's Oyu Tolgoi) while retaining corporate ownership, retaining focus on the end goal as well as unlocking value in ancillary corporate assets (in particular, subsidiary Ivanhoe Australia)"*.

In **2009**, the **Northern Miner** publishing group named Mr. Friedland one of **Canada's Super Seven Dynamos** with track records of turning junior companies into major success stories. The publishing group also named Mr. Friedland the **2006 Mining Person of the Year** for his success in negotiating a strategic partnership with Rio Tinto to develop **Ivanhoe Mines' Oyu Tolgoi Project** in Mongolia, terming it *"a defining moment in one of the world's biggest mineral-development success stories of the past decade"*. The award's citation credited Mr. Friedland as *"a dynamic force for a quarter-century in the minerals industry through a host of private and public-company vehicles"*.

In **2005**, during a state ceremony in the national capital, Ulaanbaatar, **Mongolia's Prime Minister** presented Mr. Friedland with a national **Certificate of Honour formally acclaiming Ivanhoe Mines as a "friend" of Mongolia's**, recognizing the company's investment in a fully repaid treasury bill that helped enable the country's historic repayment to Russia of its Soviet-era debt.

The **Mongolian Government's Foreign Investment and Foreign Trade Agency** recognized Mr. Friedland with consecutive **Investor Envoy of the Year** awards in **2003** and **2002**. As Chairman of the

original Ivanhoe Mines, he was making international media headlines telling the story of Ivanhoe's South Gobi discoveries and encouraging investors and miners to participate in the further exploration and development of Mongolia's largely untapped mineral trove.

In **1996**, Mr. Friedland, then Co-Chairman of **Diamond Fields Resources**, was named **Developer of the Year** by the **Prospectors and Developers Association of Canada** (PDAC) for his work in establishing and financing companies engaged in mineral exploration and development around the world – a recognition, in part, of his leadership role in the **Voisey's Bay** story. Also in 1996, **Albert Chislett** and **Chris Verbiski** – the prospectors who made the landmark nickel discovery at Voisey's Bay, on Canada's East Coast, while conducting exploration for Diamond Fields Resources – shared the PDAC's **Bill Dennis Award for Prospector of the Year**. Voisey's Bay subsequently was developed into one of the world's major nickel mines (reference, page six).

June 2023