



BUSINESS PROFILE

Robert M. Friedland

International resources leadership

Founder and Chairman, **Ivanhoe Capital**

- Founder and Executive Chairman, **Ivanhoe Mines**
- Chairman and Co-Founder, **I-Pulse**
- Chairman and Chief Executive Officer, **High Power Exploration**
- Co-Founder and a Director, **Kietta**
- Co-Founder and a Director, **Ivanhoe Industries**
- Co-Chairman, **Clean TeQ**
- Co-Founder and Co-Chairman, **SK Global**,
and Co-Founder and Chairman, **Ivanhoe Pictures**



For more than 25 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 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 Asia, the Asia Pacific Region, Southern Africa and the Americas.

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 followed the U.K.-based **Mining Journal's** successive rankings of Mr. Friedland in **2016 and 2015** 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"*.

Ivanhoe Capital: The Friedland family's enterprise hub

For 30 years now, Mr. Friedland has led the operations of his family's private company, [Ivanhoe Capital Corporation](#), since its founding in **1987**. From bases in Singapore, Beijing, London and Vancouver, Ivanhoe Capital has specialized in the provision of venture capital, project financing and related financial services for a roster of international business enterprises.

Under Mr. Friedland's leadership, executives within the Ivanhoe group and associated companies have raised more than US\$25 billion through a diverse range of financing vehicles on world capital markets since 1993. This capital has been invested in more than 30 nations, 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.

International philanthropic initiatives and engagements by the Friedland family are implemented through the San Francisco-based **Friedland Foundation**. Mr. Friedland is a director of [Fio Corporation](#) and an investor in the Canadian company's Fionet system that is pioneering international use of smart, mobile, hand-held electronic devices that empower frontline healthcare workers to accurately gather on-the-spot medical data that also are transmitted to cloud-based storage for remote oversight guidance, efficiently enabling reliable diagnoses and prompt treatments.

Mr. Friedland holds U.S. and Canadian citizenships 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

From its founding in **1994**, the **Ivanhoe Mines** enterprise brand has evolved as Mr. Friedland's pre-eminent, publicly traded flagship for international mining and mineral exploration. He has served variously as the company's Executive Chairman, President and Chief Executive Officer. Between **1996** and **2012**, the inaugural 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.

In **1998**, Mr. Friedland founded **Ivanplats** to advance mineral prospects in Southern Africa. As Executive Chairman, Mr. Friedland led Ivanplats' successful initial public offering in **2012** that raised CDN\$306 million (US\$308 million) from international investors. It was the largest Canadian mining IPO in more than two years. Ivanplats subsequently assumed the '**Ivanhoe Mines**' name in a strategic corporate alignment in **2013** as the company was structuring an organization to manage its three concurrent mine development projects and ongoing exploration programs. Mr. Friedland is Executive Chairman of the successor [Ivanhoe Mines](#), a renewed and refocused explorer and mine builder 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-gold-nickel-copper 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. South African black-economic-empowerment partners hold a 26% stake in the Platreef Project and 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 partner **Zijin Mining Group**, of China, are developing the tier-one [Kamoa-Kakula Project](#) – now independently ranked as the largest copper discovery in the history of mining on the African continent and the world’s largest high-grade copper discovery. Initial construction of the planned Kansoko Mine is underway at one of the project’s two deposits; ongoing exploration drilling is significantly expanding identified resources at the Kakula Deposit. In **December 2015**, Zijin agreed to invest US\$412 million to acquire an interest in the Kamoa-Kakula Project. Ivanhoe and Zijin now each hold a 39.6% interest in the project and the DRC government has a 20% stake.
- Ivanhoe’s third development project, also in the DRC, is the extensive upgrading of the historic [Kipushi Mine](#), which originally began production in 1924 and is recognized as one of the world’s richest former zinc-copper producers. A **January 2016** independent Mineral Resources estimate reported that Kipushi’s zinc grades of 35% are more than twice as high as the world’s next-highest-grade zinc project. Kipushi, with 68% owned by Ivanhoe and 32% by state-owned Gécamines, is projected to become one of the world’s 10 largest zinc producers after it resumes production.

Oyu Tolgoi: The transformative discovery in Mongolia’s South Gobi

In **2000**, the original **Ivanhoe Mines** began exploration in Mongolia, leading to a decade of discoveries that revealed a 12.4-kilometre-long (7.7-mile), tier-one chain of copper and gold deposits. Construction of the **Oyu Tolgoi** mining complex began in **2010** and production was launched in **2013**. International mining giant **Rio Tinto** acquired control of Ivanhoe Mines in **2012** and, as required under an agreement with Mr. Friedland, surrendered the Ivanhoe identity and renamed the company [Turquoise Hill Resources](#).

The epic Oyu Tolgoi Mine continued to fulfil its promised initial potential during **2016**, producing 201,000 tonnes of copper, 300,000 ounces of gold and 1.4 million ounces of silver from the start-up open pit. 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 2020, advancing Oyu Tolgoi on its course to becoming one of the world’s top three copper-gold-silver producers. 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.

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 and 51%-owned by **Ivanhoe Industries**, has offices in Toulouse, France; San Francisco, USA; Singapore; London, England; and Vancouver, Canada.

Another of Mr. Friedland's technology-focused interests is [High Power Exploration](#) (HPX), a privately-owned I-Pulse subsidiary, which he is leading as Chairman and Chief Executive Officer. HPX is applying proprietary, geophysical technologies to rapidly evaluate underground geological targets and accelerate exploration programs targeting mineral and water resources. HPX's Typhoon data acquisition system is a world-leading, accurate and powerful, induced polarization and electromagnetic geophysical survey technology, whose application may be supplemented with advanced data processing by [Computational Geosciences](#), an HPX subsidiary.

HPX also holds a controlling interest in [Pu Neng](#), a Beijing-based developer and manufacturer of advanced energy-storage systems. Pu Neng has invested approximately US\$90 million on 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 Pu Neng Board of Directors.

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 is a co-founder and principal investor in U.S.-based **Ivanhoe Industries**, which holds 44% of Kietta as part of its portfolio of international technology, energy and natural resource companies.

In **September 2016**, Mr. Friedland was appointed board Co-Chairman of Australia-based [Clean TeQ](#), a company providing innovative and sustainable solutions for metals recovery and water treatment, with stock-exchange listings in Australia and Toronto, Canada. Clean TeQ is developing the **Sunrise Project** in the State of New South Wales, a nickel laterite resource comprising one of the world's largest and highest-grade sources of scandium and cobalt. 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 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 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 CDN\$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. He also has completed selective investments in the international hospitality real-estate sector.

Mr. Friedland entered the international entertainment sector in **2013** when he co-founded [Ivanhoe Pictures](#), which is co-producing with partners in India, Japan, South Korea and China. In **March 2017**, Ivanhoe Pictures merged with **Sidney Kimmel Entertainment**, an independent U.S. film finance and production company, to form [SK Global](#), which is pursuing international film and television opportunities from its headquarters in Santa Monica, California. Mr. Friedland is Co-Chairman of the new SK Global. He also remains Chairman of Ivanhoe Pictures, which now is an SK Global subsidiary with offices in Hollywood, Hong Kong and Singapore.

In an initial **2013** venture into the premium hospitality sector, a subsidiary of Mr. Friedland's **Ivanhoe Capital Corporation** acquired the [Villa TreVile](#) 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 15 distinctive suites contained in four elegant residences on the two-hectare (five-acre) cliff-face site.

During the **1990s**, Mr. Friedland was a founding investor in **Sina.com**, now the largest Chinese-language online infotainment web portal. Ivanhoe Capital also provided founding venture capital for U.S.-based **Sirius Satellite Radio**, which went on to build **SiriusXM** into the world's largest radio company that now has more than 31 million satellite and online subscribers.

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 **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 **Kamoa Project** in the Democratic Republic of Congo. Now known as the **Kamoa-Kakula Project**, it is recognized as one 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 CDN\$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 **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, Ulaanbataar, **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 **Ivanhoe Mines'** Chairman, 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 (details, page four).