

Robert M. Friedland

International resources leadership

Founder and Executive Co-Chairman, **Ivanhoe Mines**

- Founder and Chairman, **Ivanhoe Capital**
- 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**



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 international financier Robert Friedland, each becoming pre-eminent, publicly traded flagships with portfolios of industry-leading mining and mineral exploration ventures.

He launched the forerunner of the **current Ivanhoe Mines** in 1993 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**.

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 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. Its use of the Ivanhoe name ended in 2012.

For more than 25 years, Mr. Friedland has been recognized by leaders of the international financial sector and mineral resource industries as an entrepreneurial explorer, technology innovator and company builder. He 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.

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*”.

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

In **1993**, Mr. Friedland established a venture company that 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 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. *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 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.* Construction of accesses to the planned Kansoko and Kakula mines is underway at two of the project’s adjacent deposits. Ongoing exploration drilling is significantly expanding identified, ultra-high-grade 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 each hold a 39.6% indirect interest in the project; the DRC government has a direct 20% stake.
- Ivanhoe’s third project, also in the DRC, is the extensive redevelopment and 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 **July 2018** independent Mineral Resource estimate reported that *Kipushi’s current zinc grade of 35.3% is more than twice as high as the world’s next-highest-*

grade zinc project. Kipushi, 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.

CITIC Metal Africa, part of China's giant CITIC conglomerate, acquired an ownership stake of approximately 19.5% in Ivanhoe Mines in September 2018 through its strategic equity investment of C\$723 million (US\$556 million). Mr. Friedland is Ivanhoe's second-largest shareholder, with an interest of approximately 17%. Zijin Mining Group, of China, holds a 9.7% interest in Ivanhoe Mines that it acquired in 2015.

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 adopted 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. 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.

Ivanhoe Capital: The Friedland family's enterprise hub

For more than 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 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.

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; 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 [VRB Energy](#), a Beijing-based developer and manufacturer of advanced energy-storage systems. VRB Energy 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 VRB Energy 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 43.5% 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 [Clean TeQ](#), an Australia-listed company providing innovative and sustainable solutions for metals recovery and water treatment. 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 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. 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. Mr. Friedland is Executive Producer of *Crazy Rich Asians*, released in mid-2018 and projected to become the highest-grossing romantic comedy movie in the U.S. in a decade. He also is 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.

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 32 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 company's **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 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 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 (reference, page four).

October 2018