

Saline agriculture

A Framework for the evaluation of investment proposals

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ASSESSING THE BANKABILITY OF SALINE AGRICULTURE PROJECTS: QUINOA IN MOROCCO

Master Thesis by Mischa Heer (2764129)



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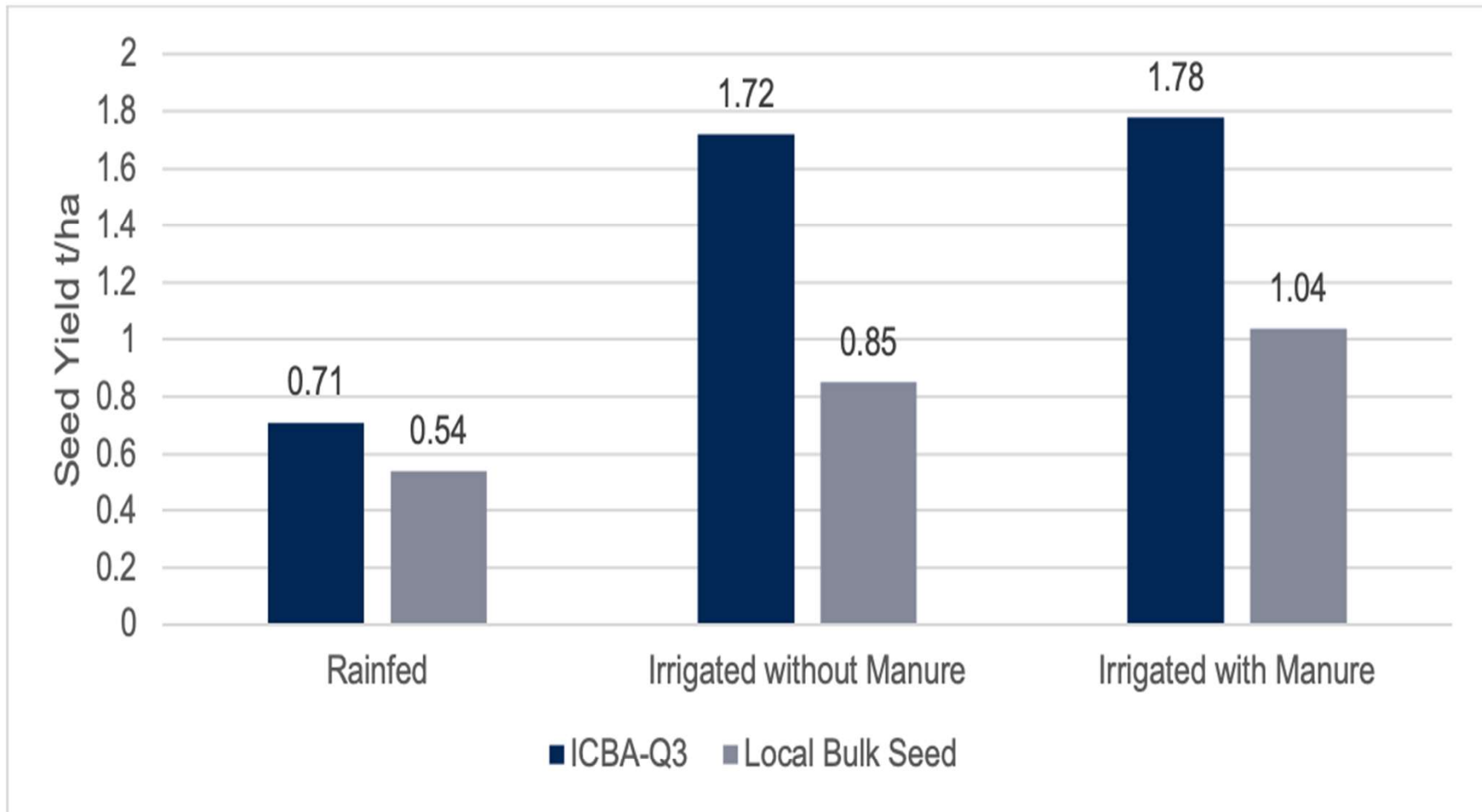


Figure 2: Quinoa seed yield of ICBA-Q3 cultivar and local bulk quinoa seeds under irrigation and rainfed conditions. Adapted from Hirich et al. (2021).

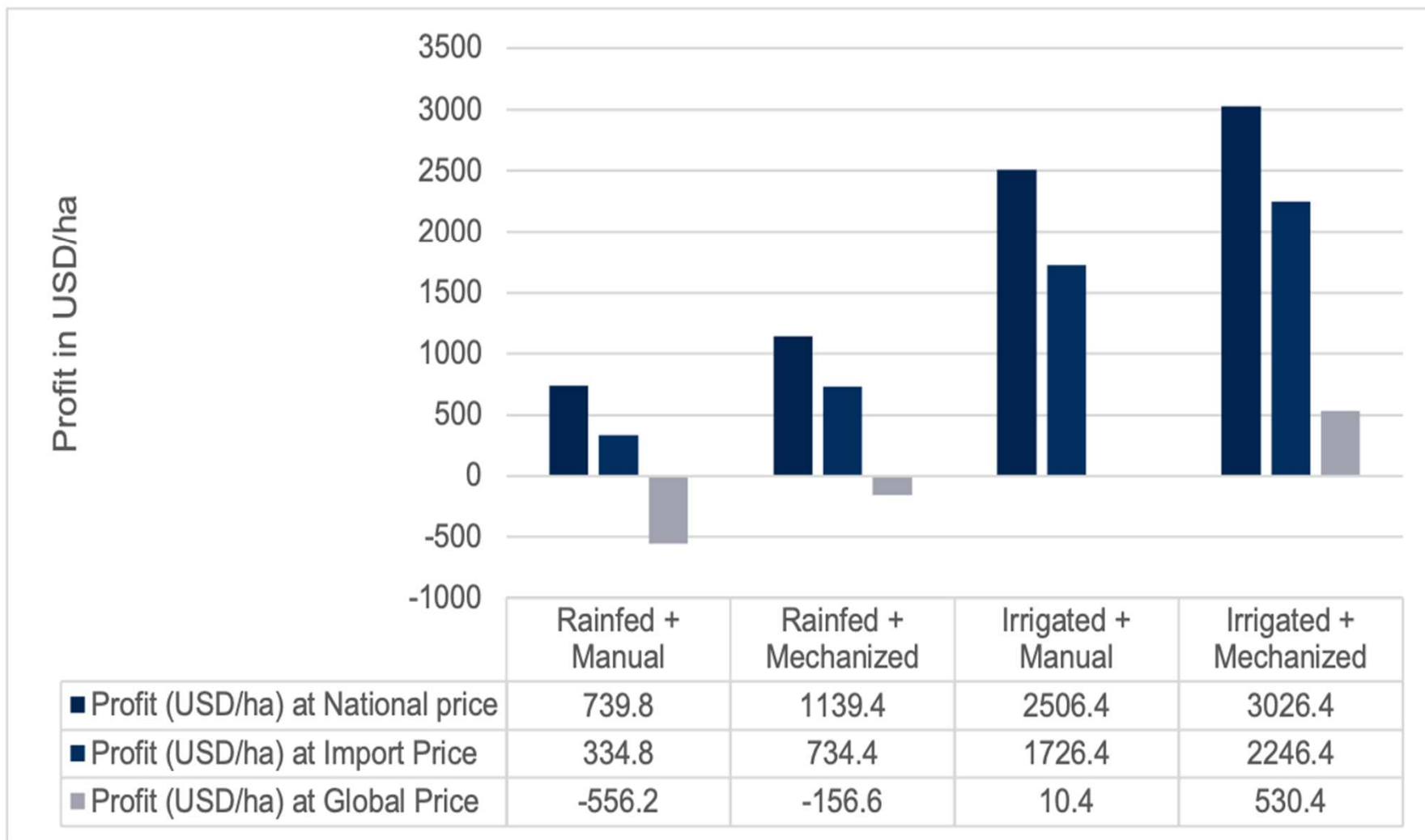


Figure 4: Profitability of quinoa in US dollars per ha. (bulk quinoa seeds) for different scenarios under different price considerations

Quinoa in Morocco

If the production is mechanized and irrigated, it can provide investors with enough financial incentive and security to make the operation bankable and upscale it.

But, the market is widely under-developed.

Therefore, commencing with smaller-scale investments through MFIs is recommended because of the currently small market size.

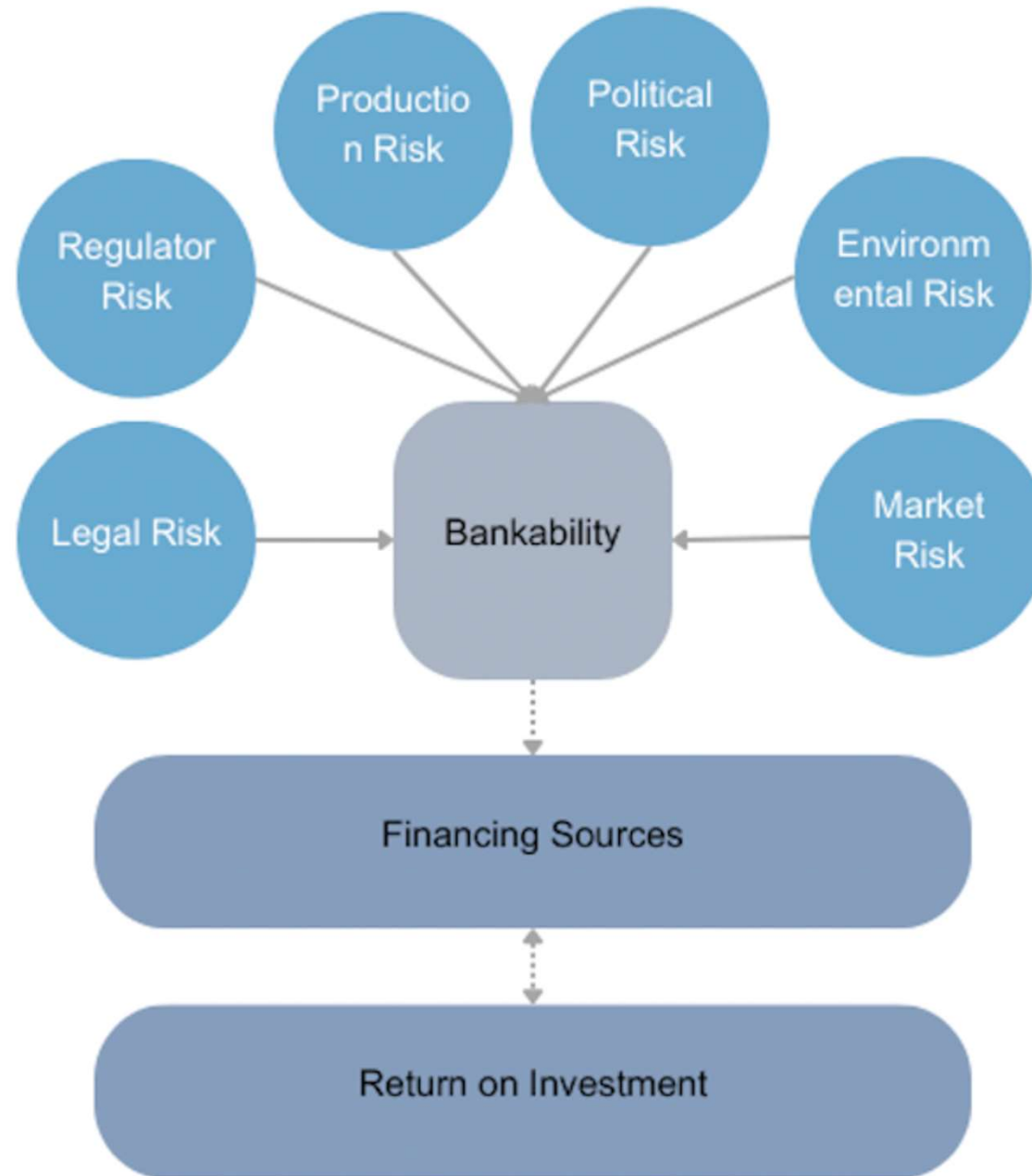


Figure 1: Overview of the bankability framework. Compiled from: Lessambo (2022), Zhu & Chua (2018), and expert interviews.

Table 6: Overview of risks related to the cultivation of quinoa in Morocco

Risks	Description	Sources
Environmental	Droughts, heat, salinity, water-scarcity	Hallam et al. (2021); Oumara (2022); FAO and AWC (2023)
Production	Yield-variability, low-quality	E1, E4; Choukr-allah et al. (2016)
Market	Lack of access, small market size, variable price, high quality requirements	Hirich et al. (2021); Rafik et al. (2020);
Political	Relatively stable, strong subsidies in place	(Hallam et al., 2021); Economist Intelligence (2022)
Legal & Regulatory	Clearly defined laws, and relatively efficient regulations.	E1, E2; (OECD, 2021)

Table 4: Overview of some potential financing sources for saline agriculture

	EDFIS	Governments	MFIs
Criteria	Additionality and Various env. + social standards linked to SDGs. Risk evaluation is key but higher risks are taken.	Investments should align with the country strategy.	Group-lending or individual lending after credit-scoring and morality check. Some ESG considerations.
Instruments	Debt, equity, innovative blended finance, TA, Grants, guarantees	Subsidies, grants, guarantee, regulation, laws, TA	Primarily loans. Short-medium-term
Function	De-risking of investment for private sector; up-scaling under additionality principle	Law & Regulations, De-risking, promotion of private sector	Promote financial inclusion & entrepreneurship
Specialization	Private investor engagement. Highly innovative financing (i.e., blended finance)	Supporting function; Creating an enabling environment	Proximity, micro-entrepreneur focused, up-scaling through micro-finance
Scope	Medium to Large-scale (500k – 200M+)	Small to large	Micro to medium
Sources	Proparco (n.d.); BIO (2019); European Parliament (2021); E2	E1; E2; E4; ADA (2019); FAO/ADA (2016)	E3; Ibtissem & Bouri (2013); TEF (2015)

Table 5: EDFI exposure to agribusiness compared to the financial sector and regional comparison of MENA & SSA. Adapted from: EDFI.eu (n.d.)

EDFI	Agri-business	Financial Sector	MENA	Sub-Saharan Africa
BII	7%	29%	10%	50%
BIO	4%	42%	8%	41%
CDP	6%	64%	3%	33%
Cofides	6%	29%	6%	13%
DEG	7%	28%	4%	21%
Finnfund	23%	20%	7%	48%
FMO	12%	34%	6%	30%
IFU	12%	32%	8%	35%
Norfund	5%	48%	2%	65%
OeEB	8%	46%	5%	15%
Proparco	7%	33%	10%	41%
SIFEM	3%	23%	6%	27%
SIMEST	3%	-	5%	11%
SOFID	-	-	21%	75%
SWEDFund	18%*	37%	1%	58%

There are clearly opportunities for investing in saline agriculture given the list of successful business cases.

But our study revealed a number of challenges:

- 1) There is a mismatch between the scale of demand of funds (say 100.000 euro's required by farmers and farmers cooperatives) and the supply of funds (1 to 10 million euro and more by development banks including the World bank, ADB, EDFI's and Climate Funding Institutions).
- 2) The mismatch can be overcome by Micro Finance Institutions, but the interest rate common in MFI's is too high for farmers, investment cycles are too short and there are few MFI's.
- 3) Blended Finance (grants plus loans in a package) is required to get projects on the road.
- 4) It is not just about support of production but equally important is training and market and food chain development.
- 5) Governments have an important role to play. The National Food and Agricultural policies and and the National Climate Adaptation Plans should include a strategy regarding the use of salt affected soils.

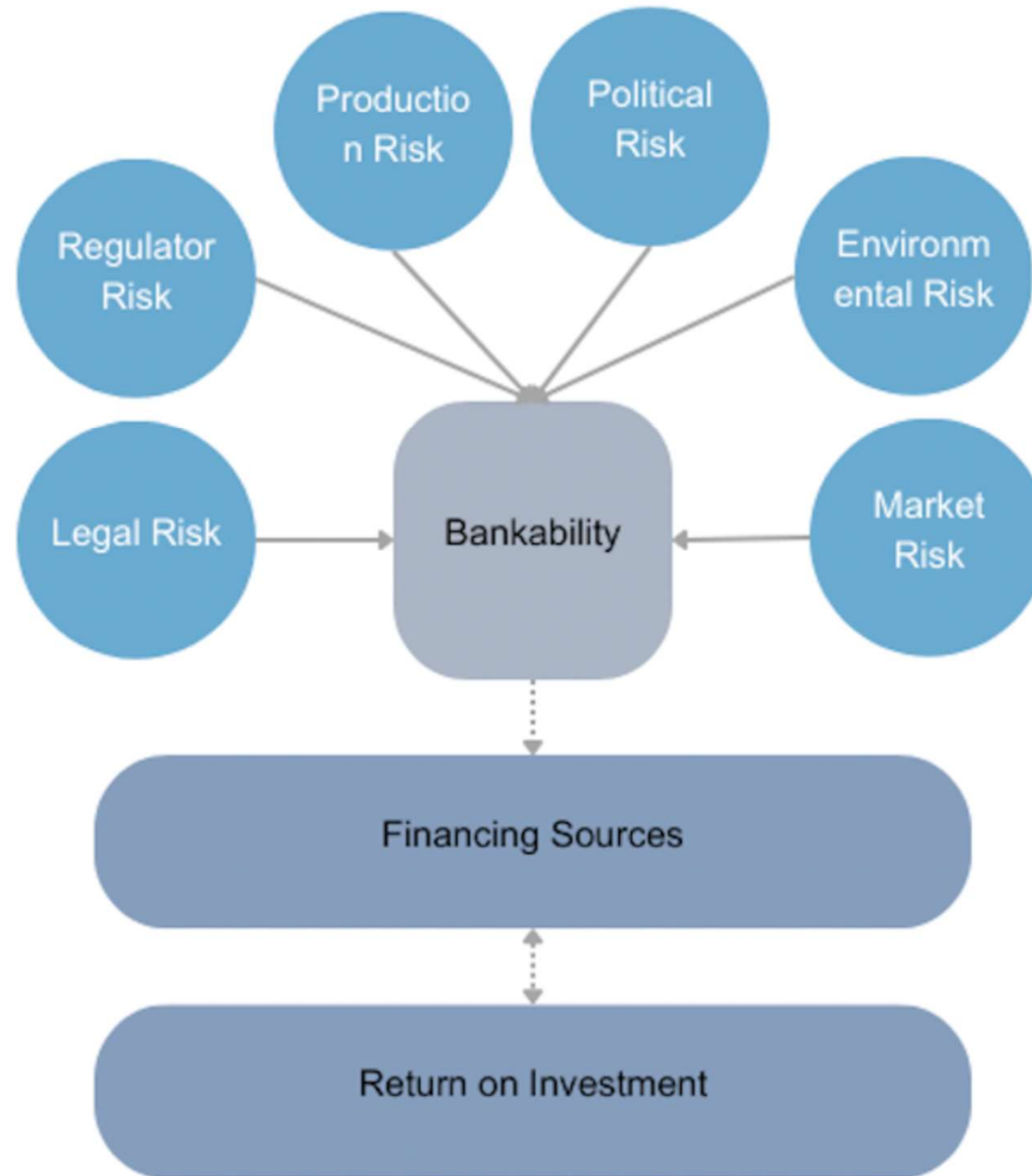


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Thank you for your attention