



STATE OF LIBYA
Ministry of Economy & Industry

Libyan Iron & Steel Co.

The Libyan Iron & Steel Co.

July 2019



Welcome to LISCO



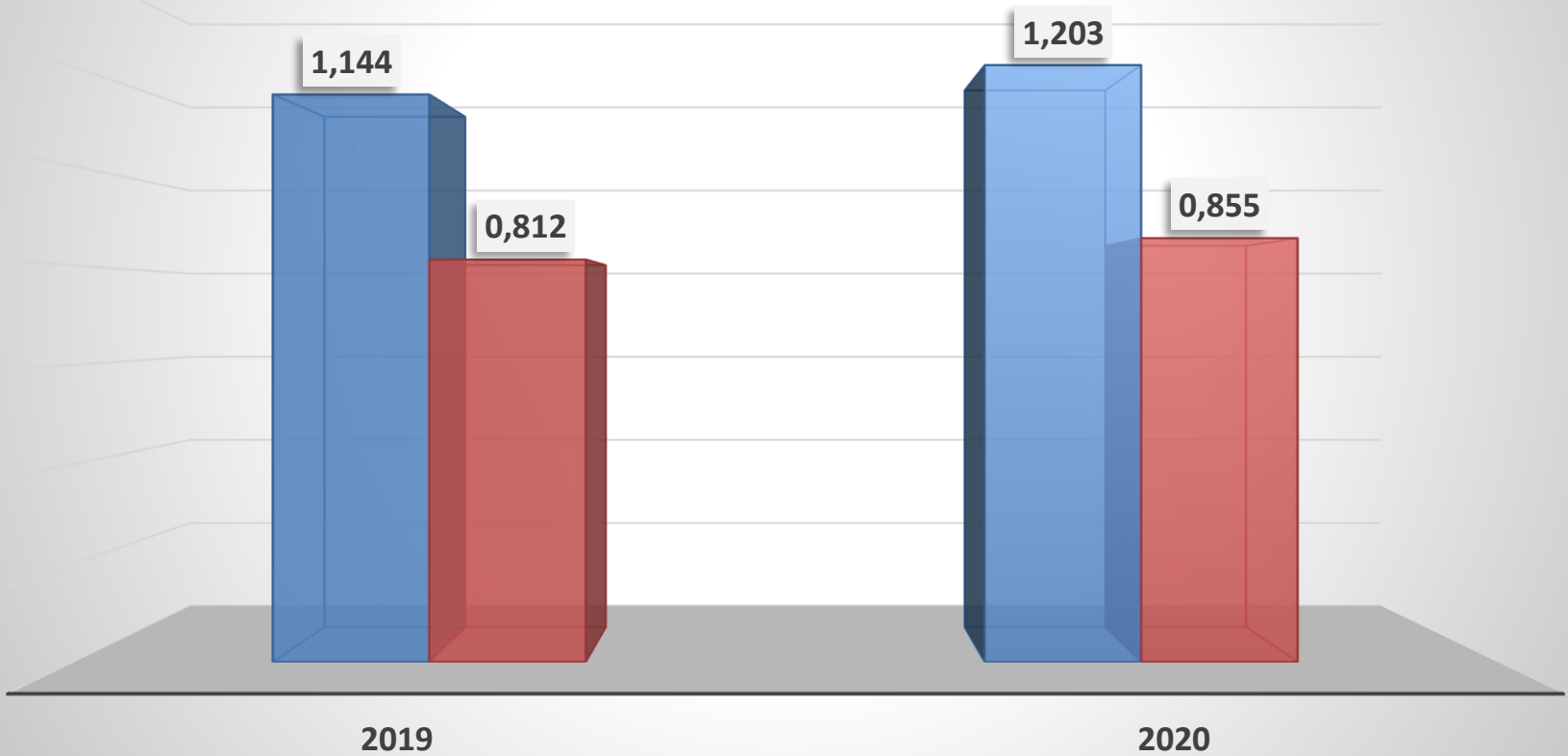
Libyan Iron & Steel in Brief

- In 1955 a study by American Geological Society on iron ore deposit in southern Libya concluded a 1800 mt ore reserve with 40–50% Fe .
- In 1971-1976 an extensive iron ore geological studies on Wadi Shati ore by the French FWG concluded a 3500 mt ore reserve for BF-BOF route.
- In 1973 a feasibility study on launching an integrated iron & steel project recommended DRI-EAF route utilizing imported ore & Misurata as project location.
- In 1974 a 60,000 tpy rebar mini mill was commissioned in Tripoli utilizing local scrap & EAF-CCM process.
- In 1988 the start of commercial operation of Misurata I&S Complex with capacity of 1.3 mtpy of LS producing long and flat steels .
- In 1992 LISCO was declared a state company to manage & operate Misurata Iron & Steel Complex .
- During 2000-2010 private sector rebar mini mills were commissioned producing 20-25 % of total domestic steel output.
- In 2007 LISCO launched expansion MP to reach LS capacity of 4 mtpy .
- In 2018 LISCO commissioned new 800,000 tpy rebar mill.



Libya Steel Demand Forecast (Mt)

■ Total Demand ■ Rebar Demand



Source LISCO MR



LISCO in Brief

- **A state owned Company , established in 1992.**
- **Start of Commercial operation of first plant in 1988.**
- **Capital Asset LD 1.3 billion.**
- **LISCO Complex located in the coastal city of Misurata covering an area of 1200 hectares .**
- **Annual design capacity of 1.75 mt LS & 1.75 mt DRI/HBI irons.**
- **Main facilities : Direct reduction plant , 2 Steelmelt shops, 4 long mills , wire mill,2 flat mills , galvanizing & coating lines.**
- **Infrastructure facilities : Port , Power & desalination Plant .**
- **Auxiliary units : Power distribution ,water treatment & oxygen plants, workshops , labs & stores.**
- **Expansion Master Plan is currently being implemented**

to reach a capacity of 4 million t of LS in 2 phases.



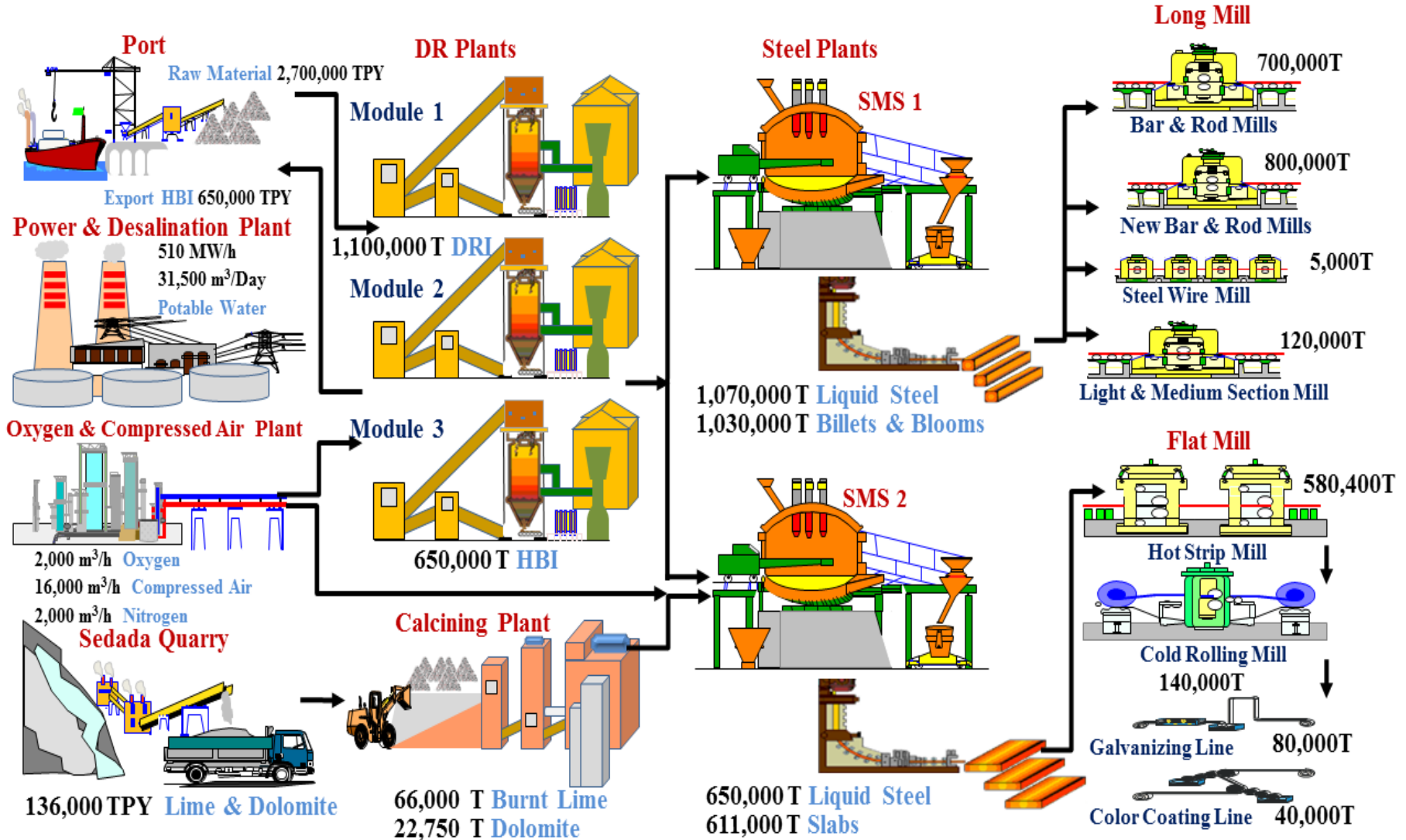
Location of LISCO



LISCO Milestones

1979	Laying the Foundation Stone for Misrata Steel Complex (MSC).
1988	Start of commercial operation of first MSC plant (Bar & Rod mill).
1989	Official inauguration of MSC.
1991	Commercial operation of MSC Plants & declaring LISCO a public company
1997	Commercial operation of first expansion project (HBI Module).
1998	Commercial operation of new rod Mill, Galvanizing & Color Coating Lines
2004	Preparing the feasibility studies for the MP expansion projects .
2005	Start of SMS-1 expansion project.
2006	Updating the Feasibility Studies for expansion Master Plan .
2008	Start implementation of Phase 1 of MP expansion projects.
2012	Restarting production of LISCO plants after Feb 2011 events
2014	Start Commissioning of MP projects (NG Treatment Station)
2017	Start Commissioning of MP projects (new bar mill, RO plant)
2018	Start of commercial operation of new BM2

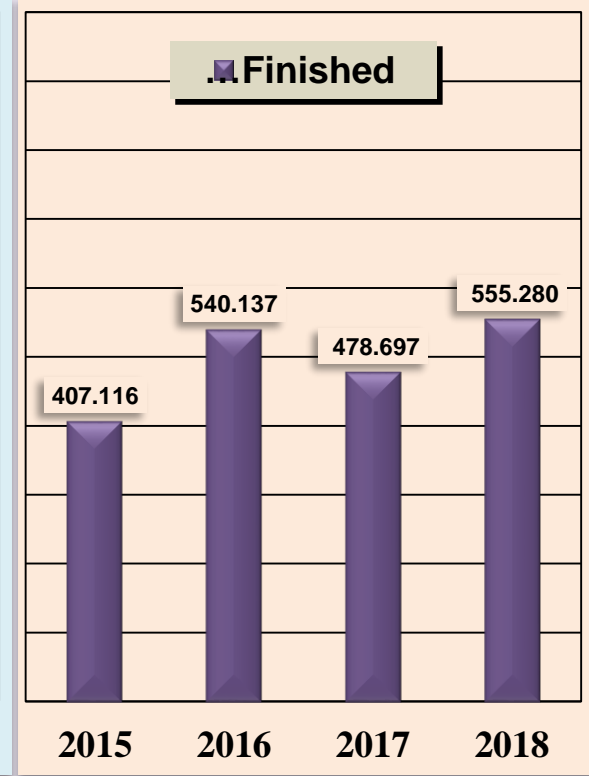
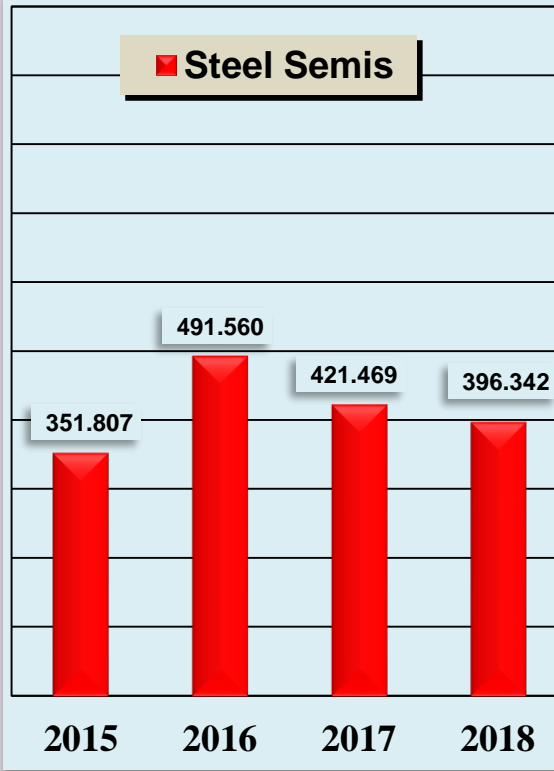
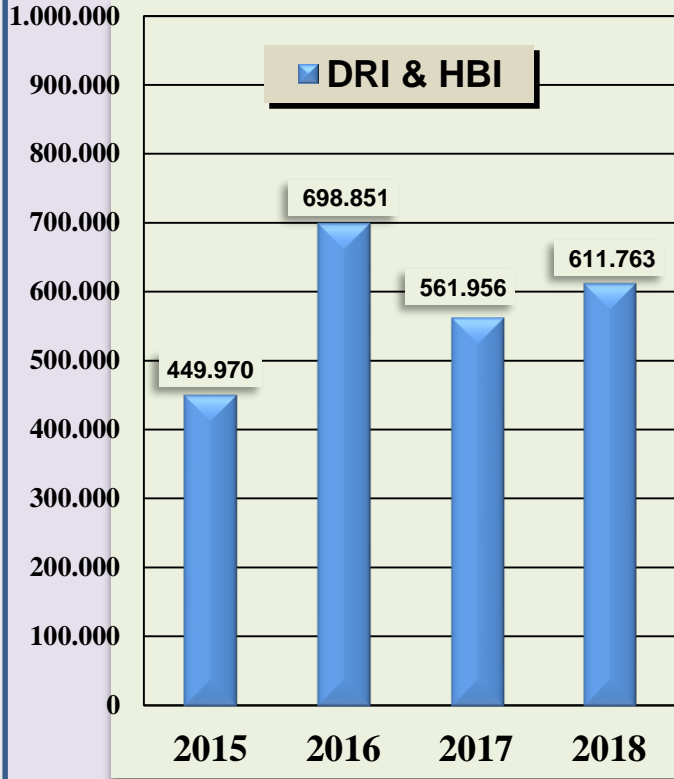
Production & Auxiliary Facilities





LISCO Production (2015 - 2018)

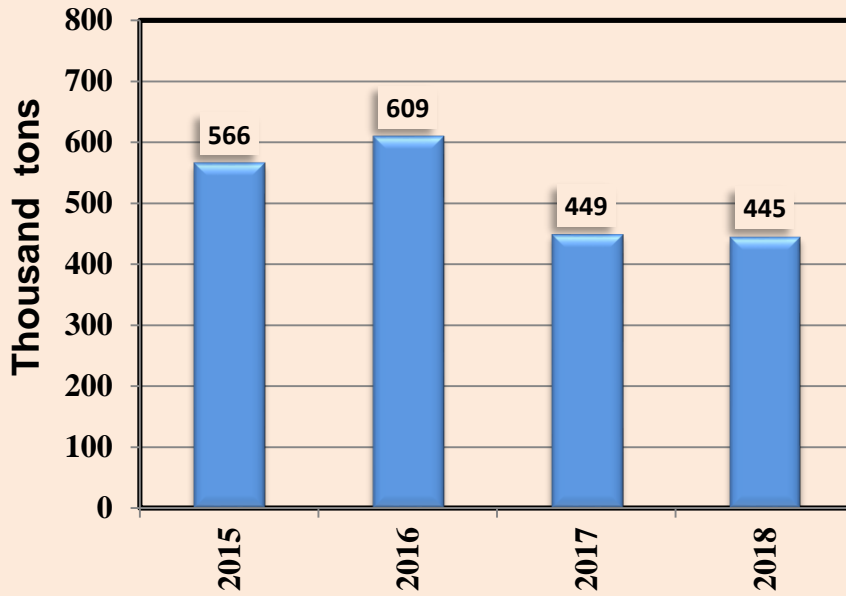
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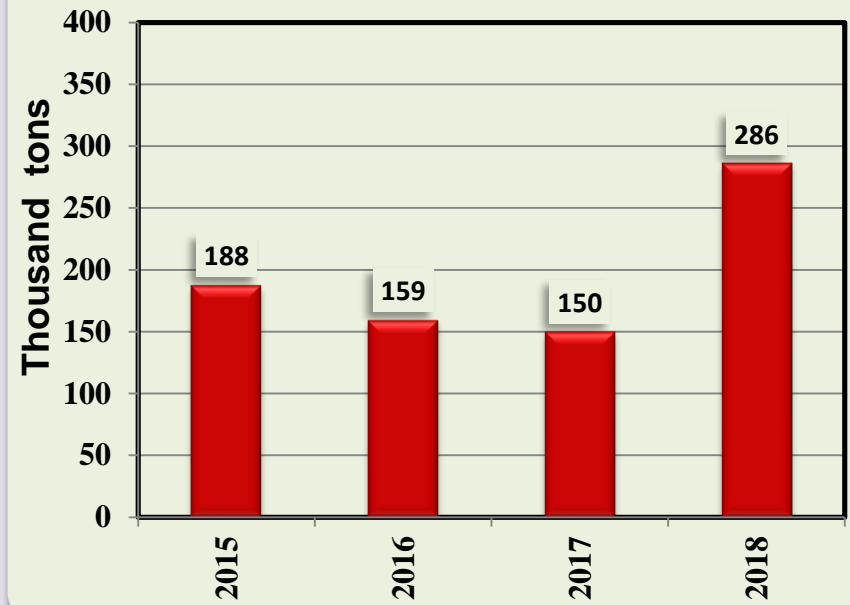


LISCO Sales (2015 - 2018)

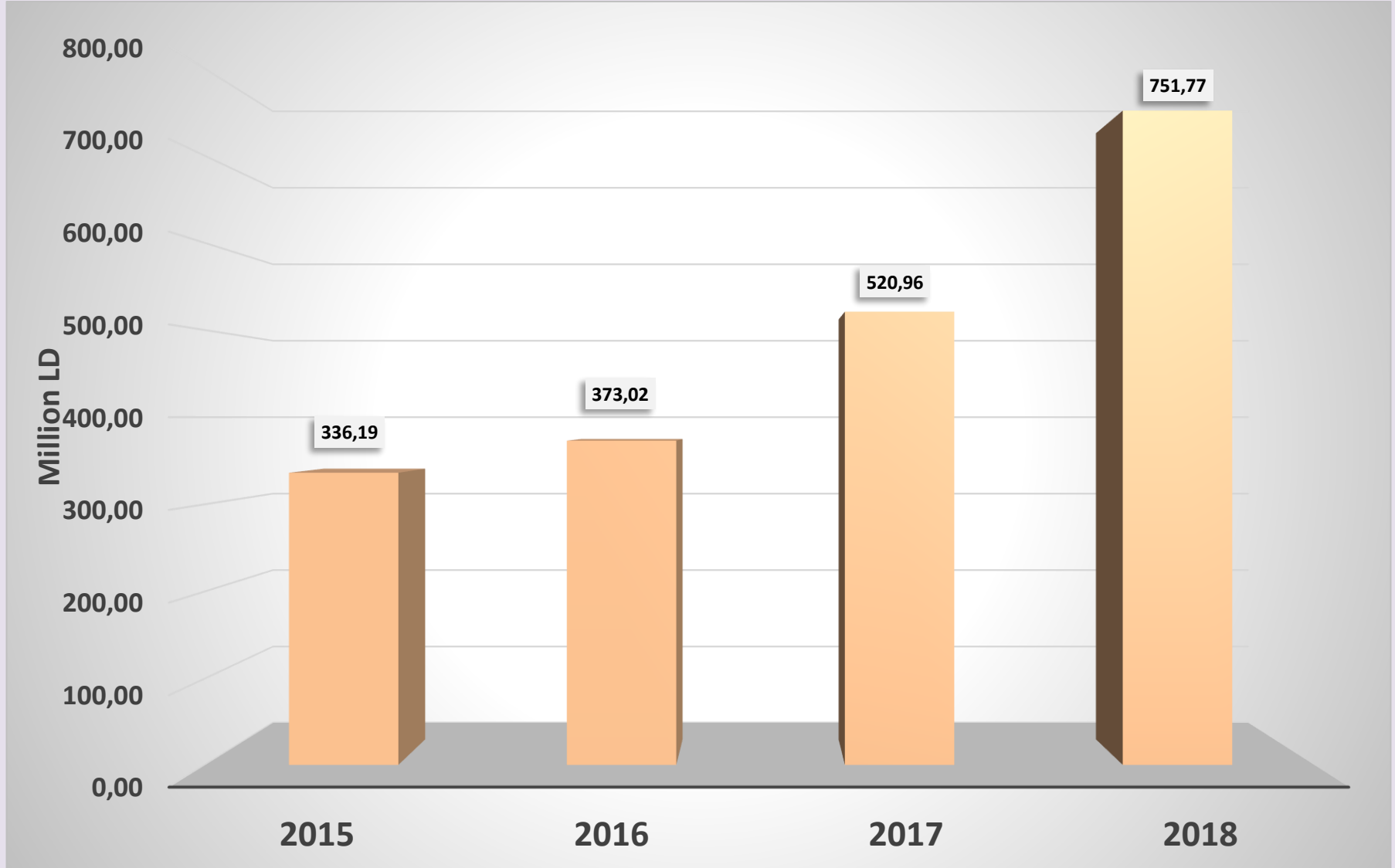
Domestic sales



Exports sales



LISCO Value Added Contribution to GDP





LISCO International Awards & Certifications

- International Golden Star Award for Quality in 1999
- International New Millennium Award for Commercial Excellence 2001
- International Golden Millennium Award for Quality Excellency 2002
- ISO 9001 Certification TQM in 2002/2008
- Latin America Technical Award for Quality & Best Trademark 2002
- The 14th International Award for Industrial & Auxiliary Structures 2002
- International New Millennium Award for Best Trademark 2001
- International Royal Award for Exceptional Performance & Excellence in Quality 2003
- ISO 14001 Certification for Environmental management 2008
- ISO 18001 Certification for Industrial health & safety management 2009
- Global Green Award for Environmental Achievement & Sustainability Practices 2014
- Exceptional Leadership in Crisis Award 2017



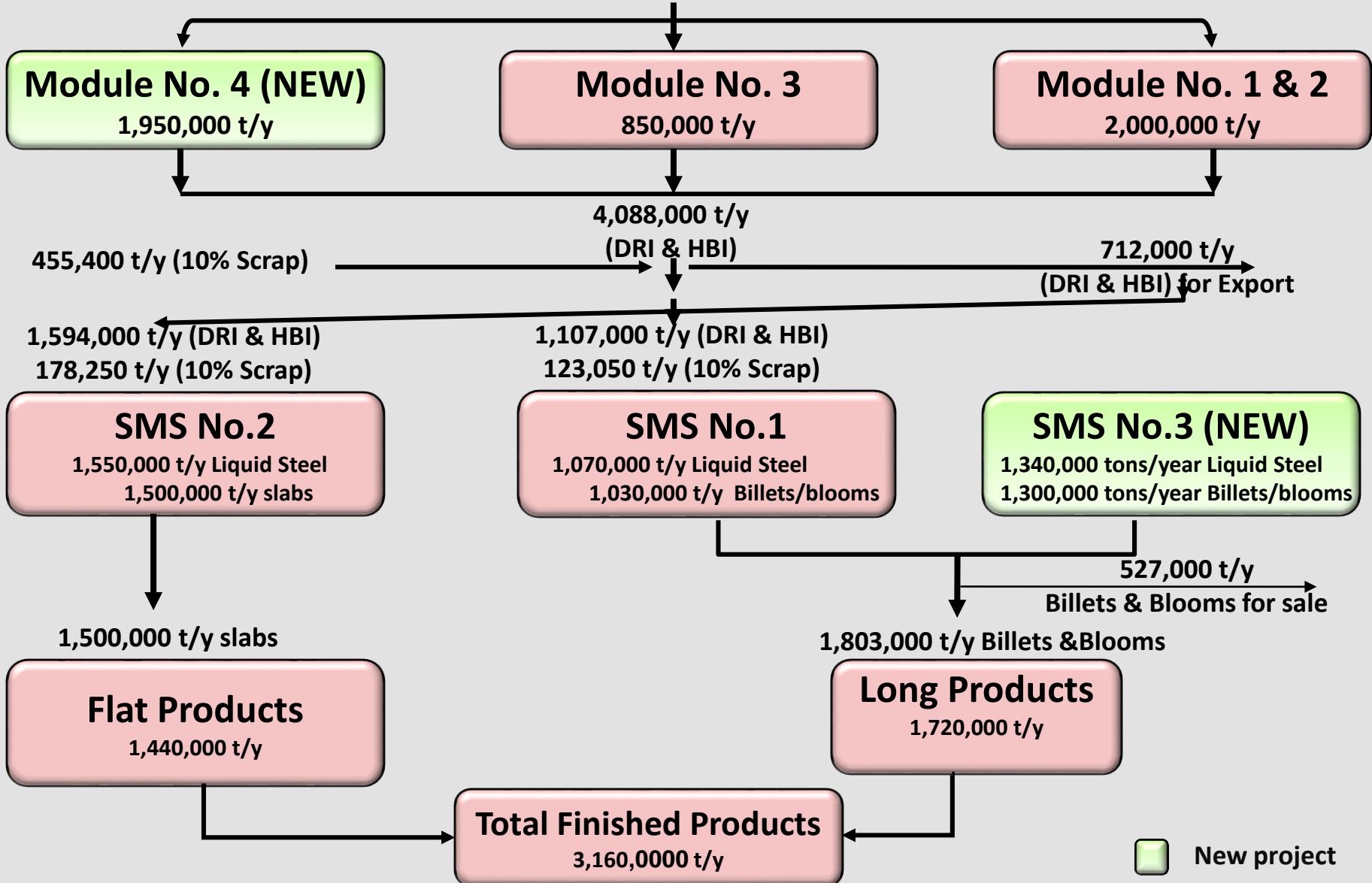
LISCO Expansion Master Plan

- In 2008 LISCO launched a MP to raise production to 4 mtpy of LS to be implemented in 2 phases.
- The Expansion MP comprises green & brown field projects
- Phase 1 of the MP focuses on long products plants expansion , Whereas Phase 2 on flat products plants.
- Completed MP Projects include new bar mill 2 inaugurated in Nov. 2018.
- The new BM2 will necessitate upgrading the upstream SMS1 & DRI plants to meet additional billet demand of 1.64 mtpy, where current SMS1 design output is 1.03 mtpy .
- The new Cold Mill is to be commissioned in the near future which requires upgrading upstream HSM & SMS2 plants to meet new mill HRC demand of 304,000 tpy..

MASTER PLAN - MATERIAL FLOW



7,000,000 t/y Iron Ore (Lumps & Pellets)



Completed MP Projects



Project	Objective
New Bar Mill	Producing 800,000 TPY Rebars. To meet domestic demand
Port Basin Dredging & Berth Extension	Higher ore receiving capacity (7 mtpy)& higher capacity ships (150,000 DLT)
New RO Water Plant	Raise water output by 3000 m3/d
New Electrical Substation LBSS 4	Receive & distribute power to new projects
New Turbo-expander for heavy hydrocarbons removal from NG	Improve NG quality for DR Plant
Ore stock yard extension & new handling facilities	Raise ore stock yard capacity and loading rates (new 2 loader/unloader)
IT Network infrastructure (LAN)	Provide IT services & upgrade existing systems



Near Completion MP Projects

Project	% Completed	Objective
Upgrading Section Mill	95	Produce new section products & sizes
New Cold Mill Stand	93.5	Produce 200,000 tpy CRC to meet Galv. & Coating lines demand
Air Separation Plant (6600 m ³ /h)	91.0	Meeting MP Projects demand of O ₂ , N ₂ & Ar Gases
Upgrading ore unloading & HBI loading facilities	90	Raise ore ship unloading & HBI loading to 4000 t./h
Customized ERP	85	Efficient business processes
Revamping Power & Water Desalination Plant	83.3	Restoring PDP units to original capacities



LISCO Expansion Master Plan

Proposed MP Brown Field Projects

Project	Current Capacity (ton)		New Capacity (ton)	Main Items
DR plant	M1	550,000	1,000,000 DRI	- Gas reformer upgrading - O ₂ injection - New gas compressor
	M2	550,000	1,000,000 DRI	
	M3	650,000	850,000 HBI	
SMS1	1,030,000		1,630,000 Billets & Blooms	- New 90 MVA transformers - New LF
SMS2	611,000		1,100,000 Slabs	- New LF - Water Cooled Roofs - EBT
HSM	580,000		990,000	- New Reheating Furnace - Hydraulic systems



Proposed MP Green Field Projects

- LISCO has green field projects option to meet MP projects material requirement:
 - New DR plant (1.76 Mtpy)
 - New utility units (Power, Water & Ind. gases)
 - New integrated DR/SMS plant (2 mtpy DRI & 1.30 mtpy billets).
- LISCO is seeking investment partnership to implement the above MP projects.



Utilization of Local Iron Ore

- DR-EAF process route has proven to be viable option for MENA region due to abundant NG.
- DR Process share of global iron production will increase due to emission restrictions to take effect by 2030 which will put pressure on DR quality iron ore supply and the need for utilizing lower quality ores .
- Libya has reserve of 3500 mt of iron ore (1000 mt proven)
- The viable ore is mainly Magnetite with 48-54% iron content .
- Ore studies conducted in mid seventies by the French FWG concluded that the ore is suitable for BF process & has high P ($\approx 1.0\%$) and treating the ore can raise Fe to 65 % .
- LISCO & NMC jointly collaborating with renowned international iron & steel companies to find viable beneficiation process to lower P levels to commercial DR ore requirement.



LISCO : The Road to Recovery

- 2018 witnessed the start of commercial operation of new modern BM2 with capacity of 800,000 tpy.
- 2018 saw an increase of total finished products output of 17 % & HBI output of 65% compared to 2017.
- In 2018 an increase of HRC export sales by 300 % & DRI/HBI export sales by 37% compared to 2017.
- In 2018 wire and galvanized coils products saw marked domestic sales increase.
- In Feb 2017 in London ,LISCO received the Best Exceptional Leadership in Crisis Award.
- LISCO revenues has risen **28 %** in 2018 compared to 2017.



Libyan I & S Industry : Opportunities

- Libya has growing economy requiring steel for the various economic sectors (Construction , infrastructure ,Oil & Gas, Manufacturing)
- Vibrant down stream industry private sector that rely on steel products as raw material.
- Libya strategic location with access to MENA, Africa & southern Europe regions .
- Proven iron ore reserve of 1000 mt with ROM 45-55 % Fe .
- Expansion & modernization of the industry to produce value added steel products.

Turkish Companies / LISCO Collaboration



Sezai Turkis	- LISCO Port Project
TML	- Port Berth Extension - New Bar Mill Civil Works Projects
Partner Technic	- Iron ore conveyor & handling systems. - Port berth extension - Revamping of sea water intake unit
CVS	- Steel Melt Shop no.1 upgrading
Makkon	- Supply & installation of Cranes
Primer	- Revamping water desalination units - Revamping of power generation unit no. 3
SA Marine	- Revamping of HFO tanks, piping , steel structure of power station
Rold	- Supply & installation of Hot Strip Mill elevators
Trading Companies	- Supply of spare parts & semi finished products

Conclusion



- Libya GDP expected to grow by 6.8 % in 2019 triggered by the recovery of key sectors which will impact steel demand .
- The need for diverse sources of iron ores necessitates updating the studies on utilization of domestic iron ores.
- Focus on value added quality steels needed for the growth of domestic downstream industries.
- LISCO is key player in the domestic and regional steel markets.
- Economical indicators show the viability of the expansion of the industry.
- Domestic or foreign Investment partnership is needed to complete the expansion projects.
- The industry is making substantial contribution to Libyan GDP, the growth of the industry will diversify the economy.