

The Energy Sector in Malta

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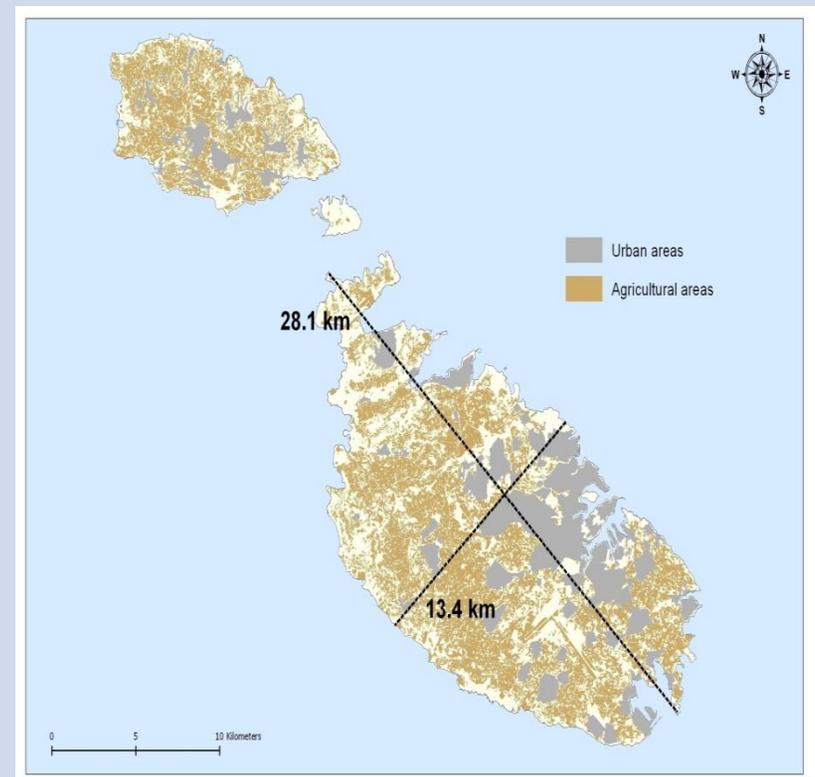
21st February 2013

Malta - Setting the context



- ▶ Population: 417,608 inhabitants (2011)
 - ❑ Tourists 1.3million – average 8 nights
- ▶ Urban Area: 20%
- ▶ Agricultural Area: 43%
- ▶ Climate:
 - ❑ Air temperature has increased
 - ❑ Precipitation has decreased.
 - ❑ Rainfall concentrated in smaller periods
 - ❑ Higher peak temps in summer
- ▶ Energy:
 - ❑ Electricity consumption almost doubled over last twenty years
 - ❑ Elect. Carbon Footprint decreasing
 - ❑ Still one of highest in Europe

- ▶ Land Area: 316km²
- ▶ Population Density: 1321 persons/km²
 - ❑ EU Average 113.6 person/km²

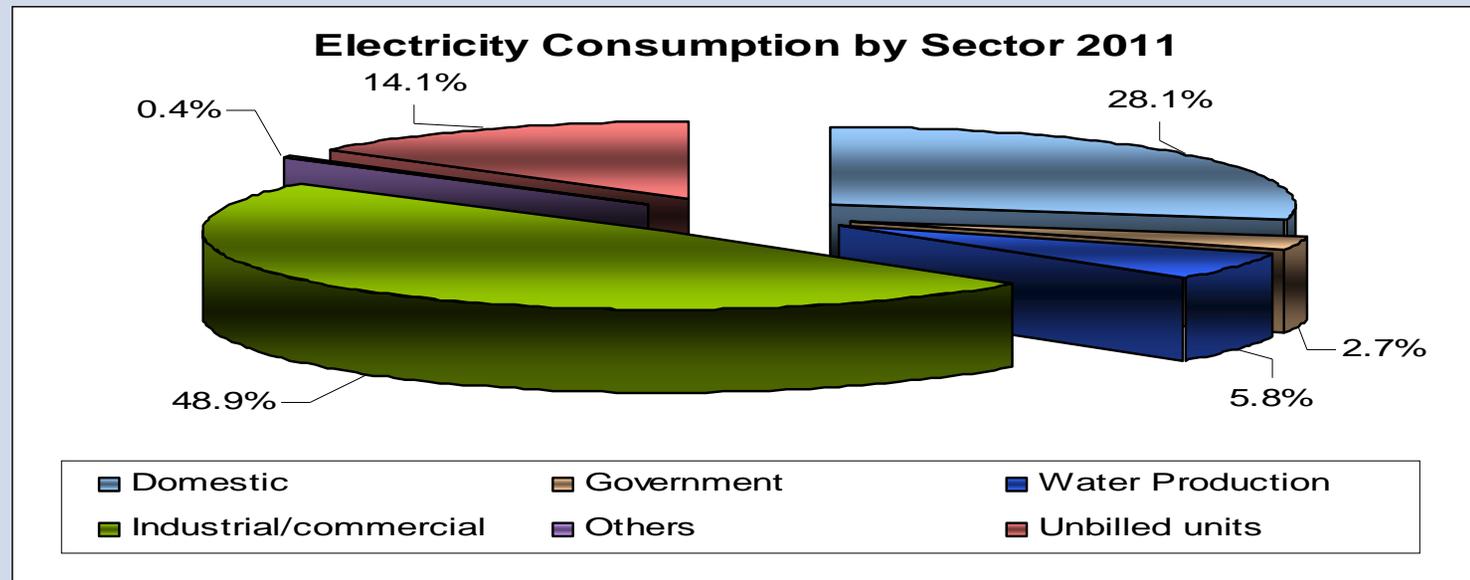


Energy Sector Status : Electricity (1)



▶ Electricity sector

- Generation, distribution & supply of electricity: Enemalta
- **Nominal** generation capacity: 571MW (Marsa - 267 MW, Delimara - 304 MW) Base load - 160MW Peak - 425MW (Summer time)
- Overall efficiency : 26% and 32%
- 2011 Fuel mix : HFO/Gasoil (84%/16%)

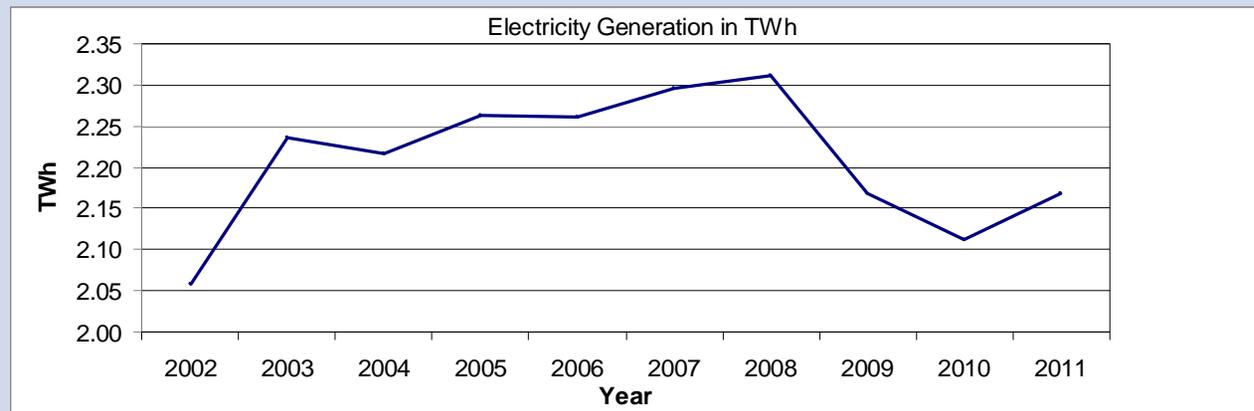


Energy Sector Status : Electricity (2)

► Constraints

- ❑ Lack of diversification of energy sources: high dependence on oil
- ❑ No interconnections: limits integration of intermittent RES
- ❑ Aging and inefficient generation plant (summer derating)
- ❑ 40% of the generation plant (MPS Steam) shutdown by 2014
- ❑ Demand profile with large difference between peak and low.

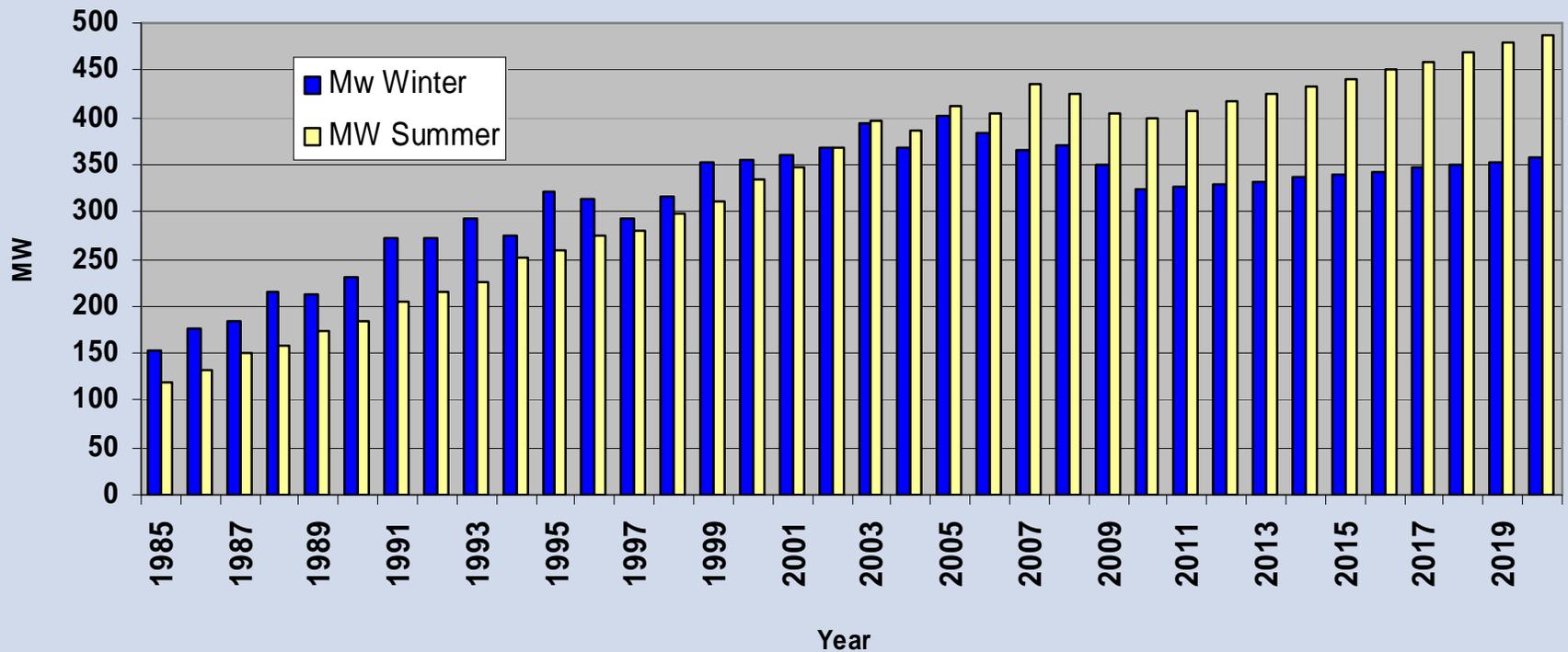
Annual Electricity Generation



Energy Sector Status : Electricity (3)



Winter / Summer Peak Load



Energy sector status : Petroleum (1)



▶ Petroleum internal market

- ❑ Malta depends 100% on petroleum imports for energy
- ❑ Fuel internal market liberalised as from 2007
- ❑ Commercialisation and competition in LPG market
- ❑ Introduction of biofuels substitution obligation in transport fuel in 2011
- ❑ On going commercialisation of the Petroleum Enemalta primary storage facilities
- ❑ Petrol stations upgrade and agreement with GRTU
- ❑ Code of practice for the petroleum downstream market
- ❑ Establishment of competent person
- ❑ Fuel quality control

▶ *Issues*

- ❑ *The need for upgrade of primary storage facilities – safety, capacity, adequate sites*
- ❑ *Limited competition in retail sector*

Policy areas of the Energy Policy for Malta



Reducing reliance on fossil fuels

Ensuring an efficient and effective Energy Market

Enabling the Energy Sector

ENERGY
POLICY

Reduction of Emissions

Energy Efficiency

Stability in Energy Supply

Policy Area 1: Energy efficiency



- ▶ Energy efficiency: in electricity generation and distribution and in end use, including in transport;
 - ❑ Investment in new generation capacity
 - ❑ Implementation demand side management
 - ❑ Coordinated initiatives within a regularly updated, holistic NEEAP:
 - ✓ schemes to promote penetration of SWH, P.V. installations, and purchases of white goods, water use efficiency
 - ✓ improvement in road networks, promote e-working and tele-working, smart traffic management, encourage car sharing and car pooling
 - ✓ green procurement
 - ✓ Education campaigns
 - ✓ Energy efficiency in government buildings
 - ✓ Covenant of Mayors; Sustainable Action Plans

Note: The NEEAP 2011 aims at 22% savings on primary energy.

Renewable Energy Data – 2010/2011



Description of Energy sector	GWh	
	2010	2011
RES-e		
PV	1.73	8.43
Micro-Wind	0.00	0.00
Waste to energy elect (CHP)	0.00	1.55
RES-h		
SWH	28.69	31.44
WSM biogas to RTO	1.80	3.08
Biomass imports	7.14	6.61
bio-diesel in industry	0.94	0.88
WSM heat from CHP	0.00	1.39
RES-t		
bio-diesel (from waste or 2nd Generation)	6.26	7.90

Policy Area 2: Reducing reliance on imported fuels (1)



▶ Renewable Energy

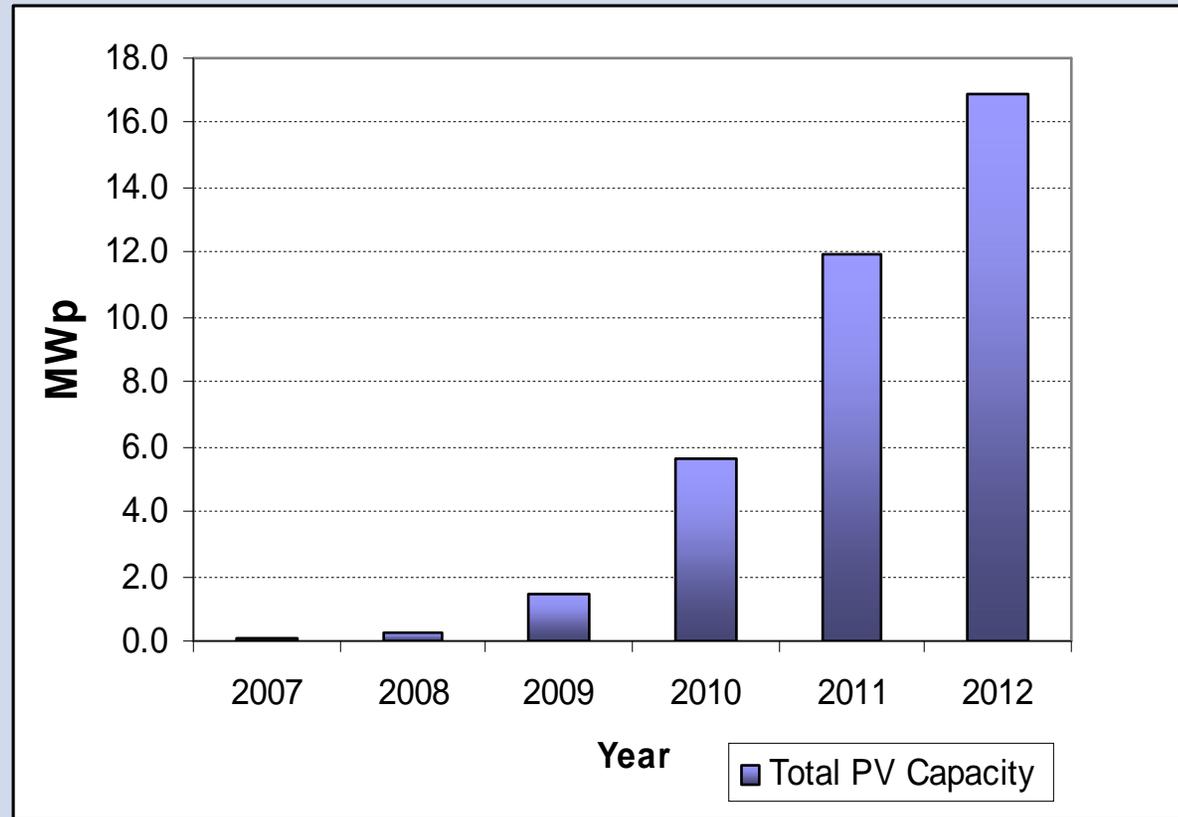
- ❑ RES share in total energy consumption **2011: 1.26%**
 - ❖ **Electricity (PV and CHP) : 0.18%**
 - ❖ **RES heat: 0.80%**
 - ❖ **RES transport: 0.28%**

- ❑ RES share in road transport 2011: 1.38%

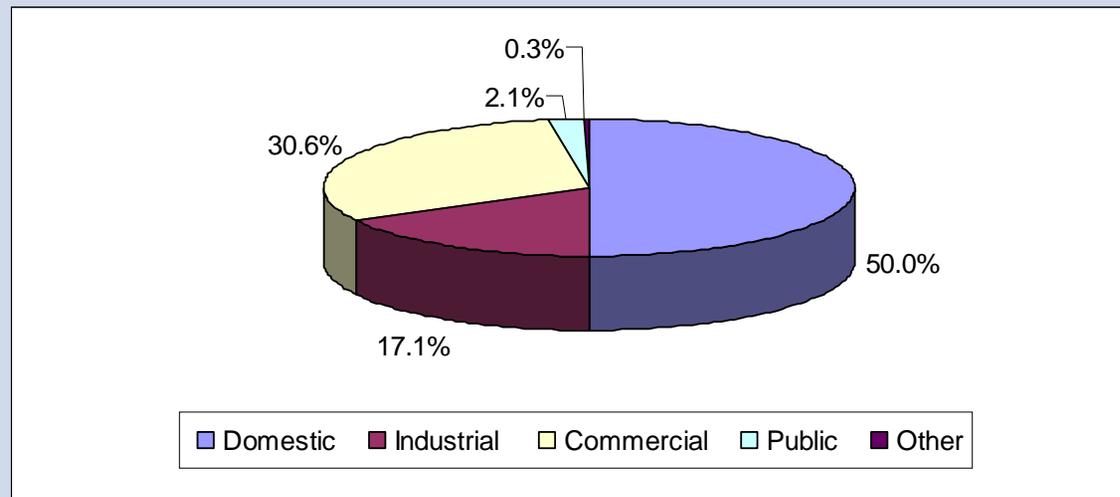
- ❑ Incentives: feed in tariff for PV
 - ❖ Electricity from Photovoltaic systems: (2011:8.43GWh &2020:42GWh)
 - FIT Regulations LN 422 of 2010
 - Grants (MRA and ME)
 - ❖ Solar thermal systems:(2011:31.44GWh)

Policy Area 2: Reducing reliance on imported fuels (2)

PV Installation uptake trend



Policy Area 2: Reducing reliance on imported fuels (3)



Up take of PV Installations

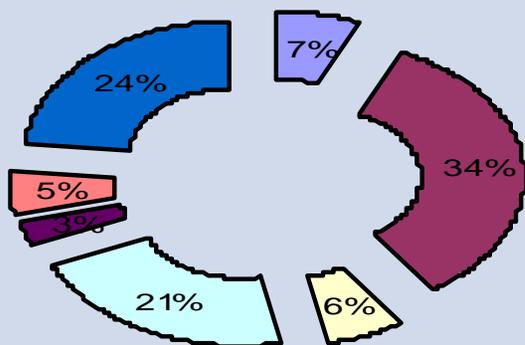
- ▶ The photovoltaic installations registered with the MRA until December 2012 amount to 18MWp
- ▶ This would generate approximately 26GWh/ year
- ▶ Upcoming projects:
 - PV on 67000 m² public roof tops with the capacity of 4.5 MWp generating about 7.5 GWh/year.
 - C 500kWp at il Qortin Dumpsite Gozo mitigating about 700tonnes of CO₂ annually

Policy Area 2: Reducing reliance on imported fuels (5)

- ▶ EU RES target 20% by 2020
 - Malta 10% share of RE in the gross consumption of Energy by 2020 (with a separate target of 10% RE in transport)

▶ RES Percentage share in gross energy contribution

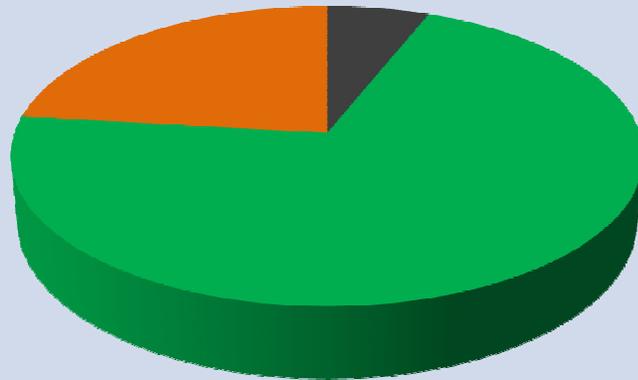
	2011	2015	2020
•PV	0.15	0.72	0.69
•Offshore Wind	0.00	0.00	3.48
•Onshore Wind	0.00	0.30	0.61
•Waste to Energy Electricity	0.03	2.18	2.45
•Waste to Energy Heat	0.08	0.45	0.32
•Solar Water Heaters	0.58	0.56	0.52
•Biofuels	0.16	1.03	2.40
Total			10.20



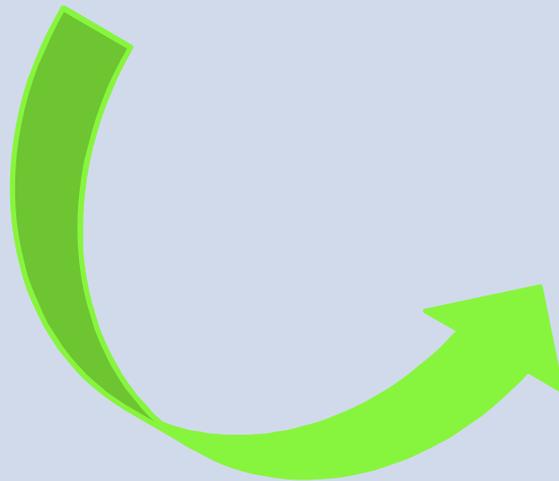
Projected technology share shift 2009 → 2020



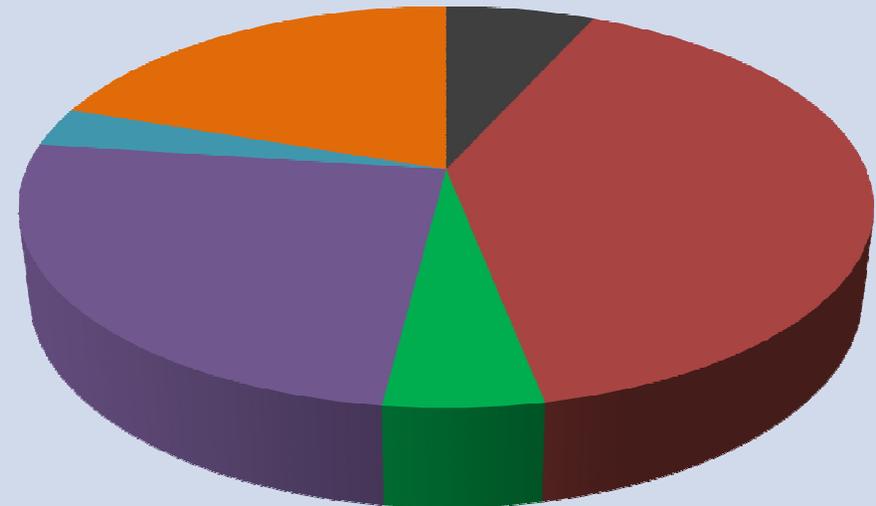
RES Technology Share 2009



- PV
- Wind
- Solar Thermal
- Biomass Electric
- Biomass Thermal
- Bio-fuels



RES Technology Share 2020



Policy Area 2: Reducing reliance on imported fuels (7)

□ Wind

❖ Onshore wind

- Micro wind (2010:8kW & 2020:127kWp)
- Large scale: (Bahrija, Hal-Far: 14.4MWp)

❖ Offshore wind

- (Sikka il-Bajda:2016-2020: 72-100MWp)
- NER 300 – floating 52MWp wind farm (proposal)



Policy Area 2: Reducing reliance on imported fuels (8)

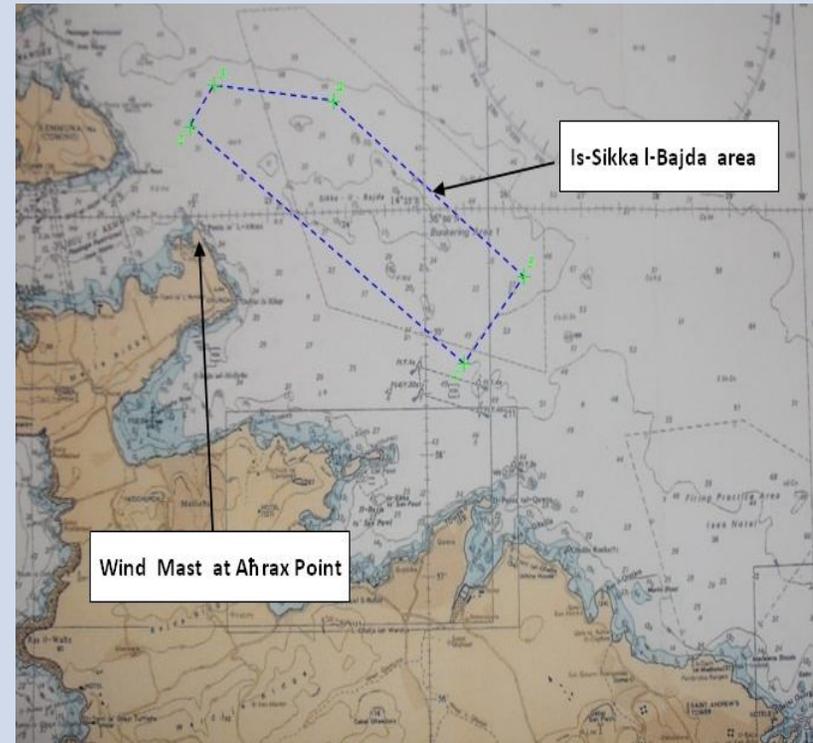


- ❑ Biomass and Waste
 - ❖ Recover energy from waste (Solid Waste Strategy)
 - Electricity or heat from Landfill Gas
 - Electricity & heat MBT's: St Antnin 1.55 MWp (2011),
 - Two other bigger MBT plants (one in Malta and other one in Gozo) - 2014
 - Energy from RDF-2016
 - ❖ Electricity from WSC's Sewage Treatment Plants
 - ❖ Biomass projects : Digester in Siggiewi farm capacity; other private farms - 2016
 - ❖ Promote manufacture of biofuels from indigenous sources – from spent edible oil, other organic material;
 - ❖ Explore marine algae cultivation to produce biomass for further processing into energy products.
- ❑ Geothermal (ground source heat pumps and sea water) - survey

Policy Area 2: Reducing reliance on imported fuels (9)

Renewable Energy – Challenges and Risks

- ▶ Risk assessments of large scale wind
- ▶ Environmental issues
 - Permitting of wind farm 90MW at Sikka I-Bajda.
- ▶ Financing of projects
 - Relatively high cost technology
- ▶ Spatial limitations
- ▶ Geophysical realities
- ▶ Economies of scale
- ▶ Public awareness and acceptance



Policy Area 2: Reducing reliance on imported fuels (10)

Renewable Energy – Challenges and Risks

- Evaluate alternative schemes and mechanisms, including but not limited to feed-in-tariffs,
- Consider providing a share in PV solar parks investment, in assigned public areas,
- No policy/legislation that protects individual solar rights
- Spatial policy on PV farms (areas of containment, ODZs)
- Plan B?- If wind projects fail → to PV (area limitations)
- Plan C?- Joint Project in MS (ex Helios Project in Greece)
- Plan D?-Third Countries (ex Tunisia)



Policy Area 3: Stability in Energy Supply



- ▶ Stability in energy supply: diversification, interconnection & alternative sources
 - Energy infrastructure:
 - ❖ Electricity Interconnection : HVAC 200MW cable with Sicily:in 2014
 - ❖ Natural gas infrastructure under consideration

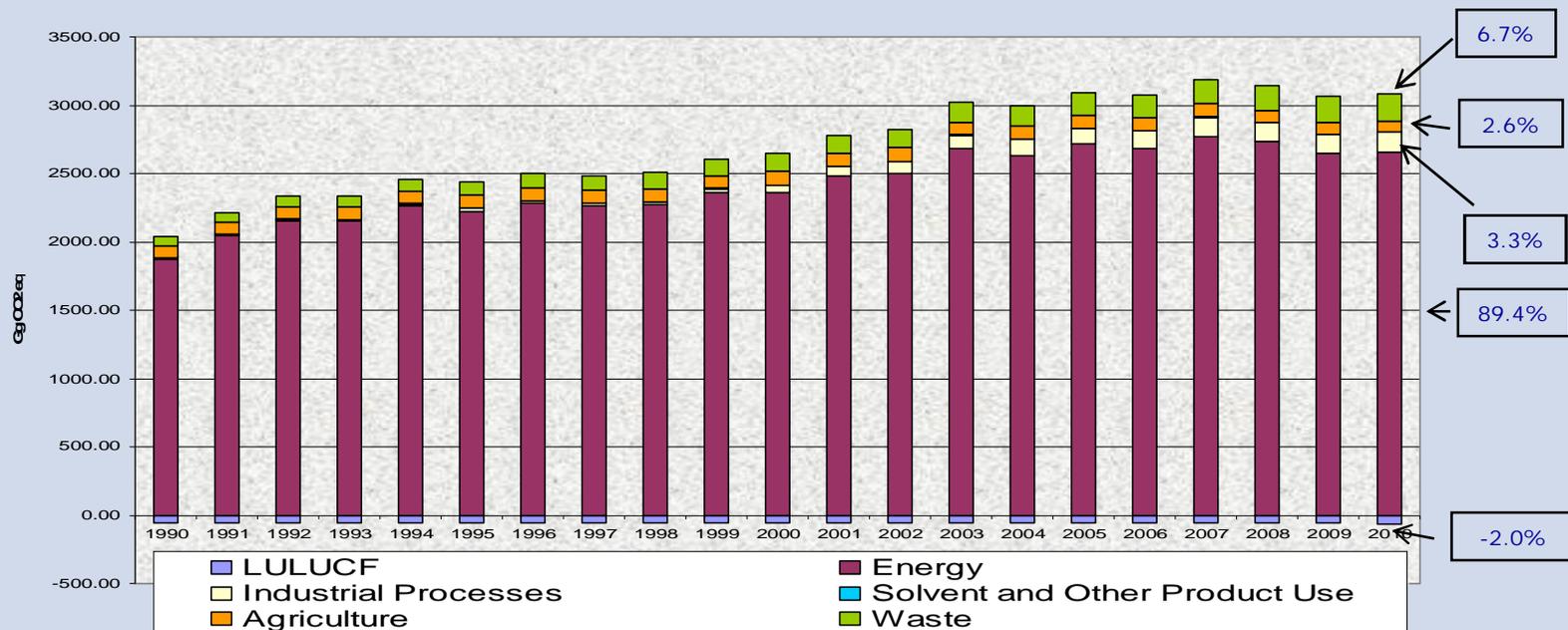
Policy Area 4: Reducing the sector's environmental impact (1)



► Sustainability of the national carbon footprint

□ Energy Sector : c 90% of CO₂ equivalent

- ❖ Power Stations : 71.3% of energy sectors emissions (ETS)
- ❖ Transport : 21.7 % of CO₂ of the energy sector (ESD)
- ❖ Other fuel consumption : c 7%(ESD)



Policy Area 4: Reducing the sector's environmental impact (2)



Main Measures to reduce GHG emissions:

- ▶ 'National Strategy for Policy and Abatement Measures Relating to the Reduction of Greenhouse Gas Emissions' (2009):
 - ❑ 96 recommendations
 - ❑ New plant at Delimara 2012
 - ❑ Interconnection with the European grid end 2014
 - ❑ Use of cleaner fuels at power stations, transport and secondary storages (Control of fuel quality-MRA)

Policy Area 4: Reducing the sector's environmental impact (3)



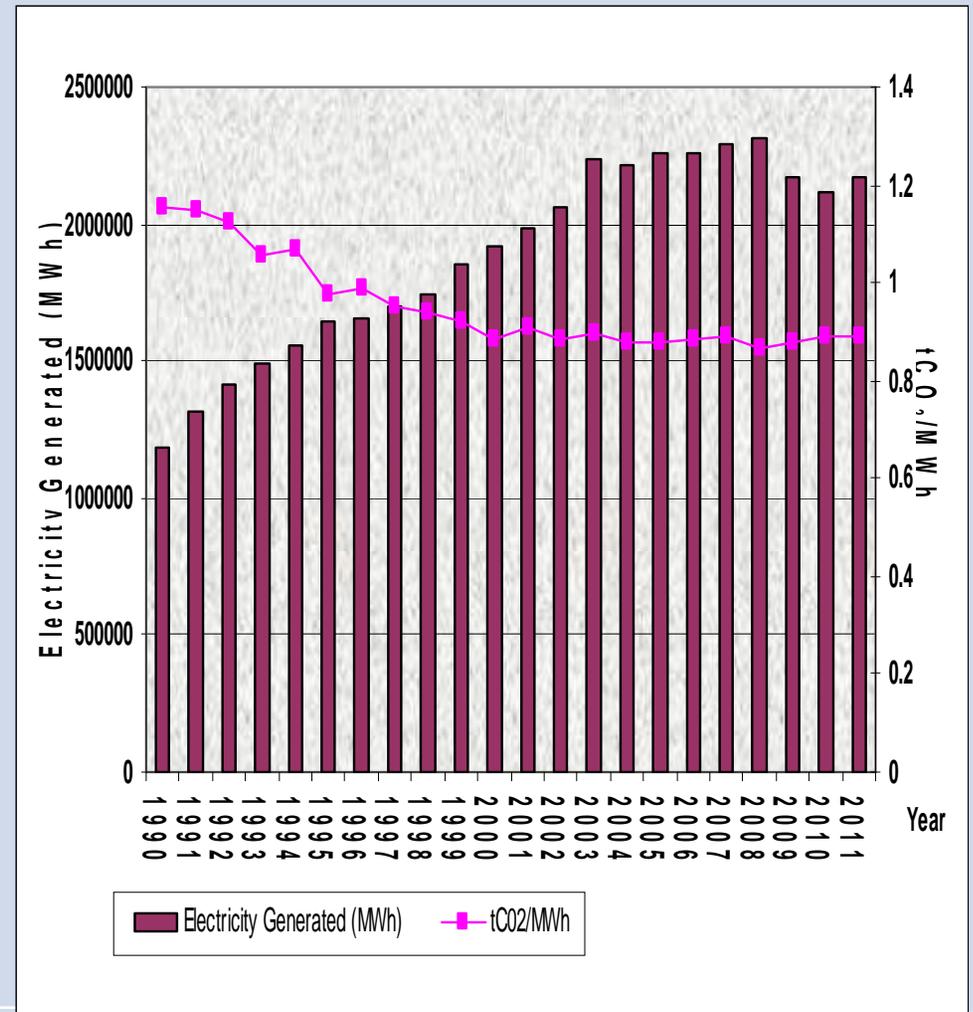
New Electricity Generation Plant at Delimara Power Station

- ▶ Combined Cycle design use of energy in the exhaust stream Plant consists of 8 Wartsila medium gensets.

- ▶ Most efficient generating plant in Malta High part load efficiency due to modular design

- ▶ Plant able to operate on Heavy Fuel Oil and Gasoil
 Nom. Electric. Power **149MW**
 Net Power Output **144MW**
 Net Electric Efficiency **46.7%**

- ▶ Plant CO₂ emissions at maximum continuous rating **0.576 kg/kWh**



Policy Area 5: Delivering energy efficiently and effectively

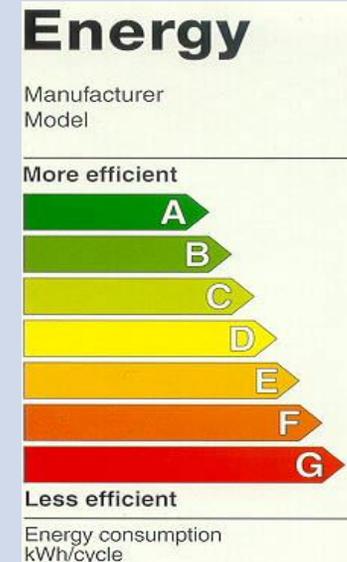


► Competition in energy market

- ❑ Promotion of competition within the constraints of our small energy market, complemented by robust regulation, protecting consumers
- ❑ Continue the opening fuel sector for competition and effective monitoring
- ❑ Establish satisfactory design and operating standards in fuel & gas market
 - ✓ Code of practices
 - ✓ Authorisations
- ❑ Continue the commercialisation of Enemalta's petroleum assets

Policy Area 6: Ensuring that the energy sector can deliver

- ❑ Promoting Green Economy (NEP)
- ❑ Fiscal policy (proposed energy taxation)
- ❑ Education & research (MCST, MIEMA, ISE)
- ❑ Investment promotion (Green loans)



Sustainability vs development and spatial complaints?



Are we living beyond our means?
Change of culture?

Landscape impact of urbanisation
vs. uptake of RES in dwellings

BRO, MEPA, ME policies!

➤ main challenges: **buildings and transport**

➤ Need for Planning Guidance to direct **offshore** RES development

➤ Local organisations, end consumers – Achieve targets in RE, EE and CC





Thank you!

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