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**BIOMASS MARKETS AND DRIVERS,
AND IMPACT OF RHI ON SUPPLY / DEMAND**

Wednesday, 4 February 2015

2015 IRBEA NATIONAL BIOENERGY CONFERENCE

CONTENT

1. Pöyry company overview
2. EU incentives and biomass markets
3. Biomass supply potential and demand in Ireland
4. Conclusions

PÖYRY IN BRIEF

Pöyry is an international consulting and engineering company. We provide services across the full project lifecycle, solving complex challenges faced by the world's toughest industries.



ENERGY

Hydropower & Renewable Energy
Thermal Power, Nuclear Energy
Transmission & Distribution



INDUSTRY

Forest Industry
Chemicals & Biorefining
Mining & Metals



INFRASTRUCTURE

Transportation
Water
Environment

A few facts...

Ranked

#3

in hydropower in the world
(Source ENR 2013)

Ranked

#1

in pulp & paper in the world
(Source ENR 2013)

More than

1,000km

of transportation tunnels in
last 10 years

70%

of Europe's major energy players
rely on our market projections

Delivered Projects for

80%

of the World's major pulp & paper
companies

100s

of water and waste water
treatment plants designed



10,000+

projects delivered p/a
across ~ 100 countries



6,000

experts across
70 nationalities



150

offices in 45 countries



55+

years

SERVICES ACROSS CLIENT'S FULL PROJECT LIFECYCLE



WHO WE ARE

You need a partner that you can trust to ensure the success of your project investments - however large or small. Through our competence teams, our specialists bring world-class consulting and engineering expertise, coupled with the very latest thinking – wherever you are in the world.



WHAT WE DO

Focused on our clients' needs, we continuously tailor our services to meet specific project goals. We deliver management consulting and engineering services, underpinned by strong project implementation capability and expertise.



HOW WE DO IT

We combine global and local market insight with a profound understanding of current and future technologies. Through our extensive office network, our clients benefit from fast access to a wide range of locally delivered services.



PERFORMANCE-DRIVEN PARTNER

For every project, Pöyry helps maximise the return on investment for clients and delivers on time, on scope and within budget. We integrate fields of competencies to ensure project excellence.



WORLD-CLASS EXPERTISE

Clients trust us as a partner, due to our deep local insight, world-class expertise and competence. We address client issues through the latest innovation, ideas and insight.



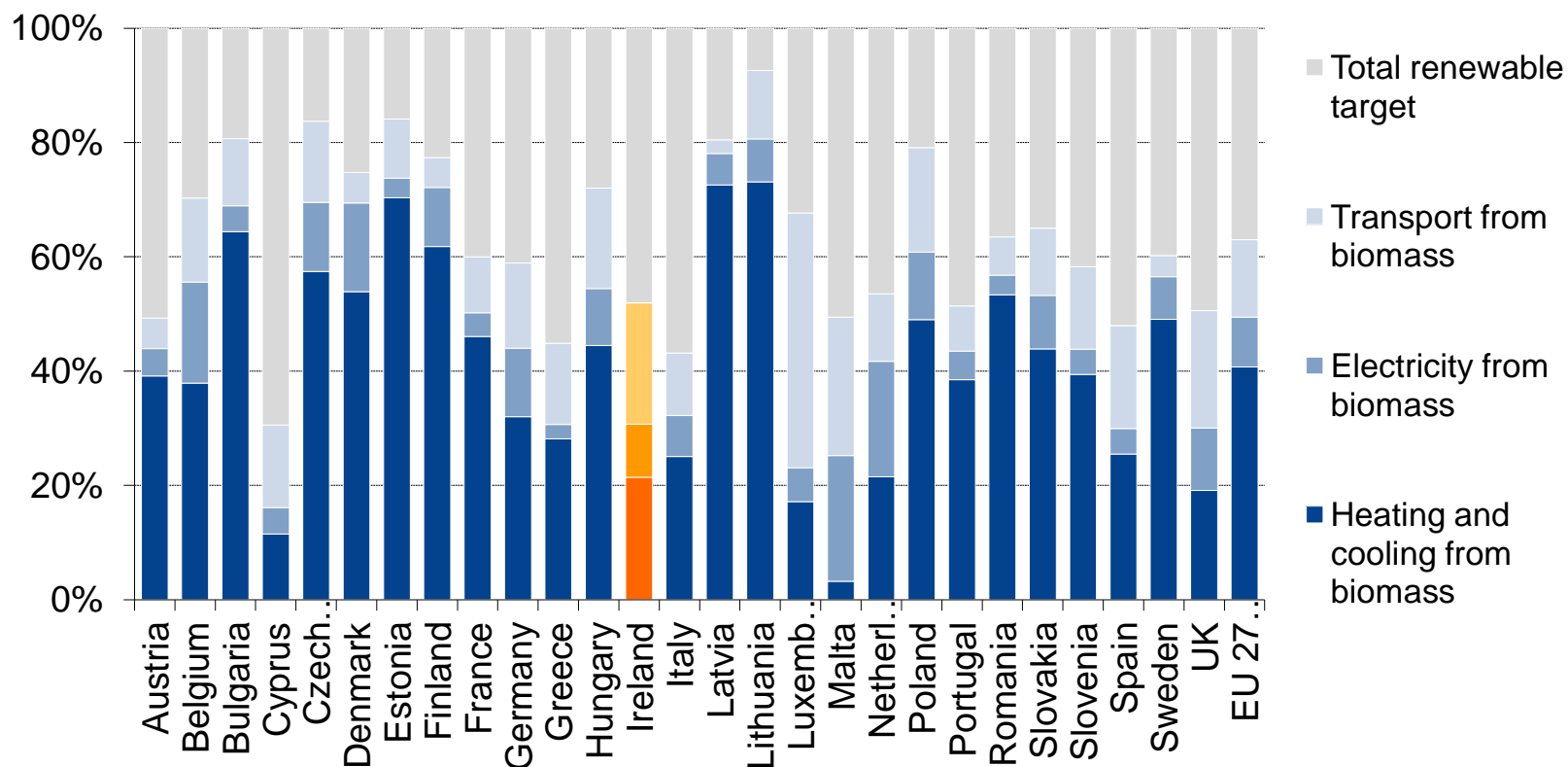
PRINCIPLES AND CULTURE – THE PÖYRY WAY

We are collaborative, professional, innovative and responsible – always aiming for the highest standards of integrity, ethics and safety.

THE ROLE OF BIOENERGY

Around 60% of the Renewable Energy target in 2020 will be met employing various forms of biomass.

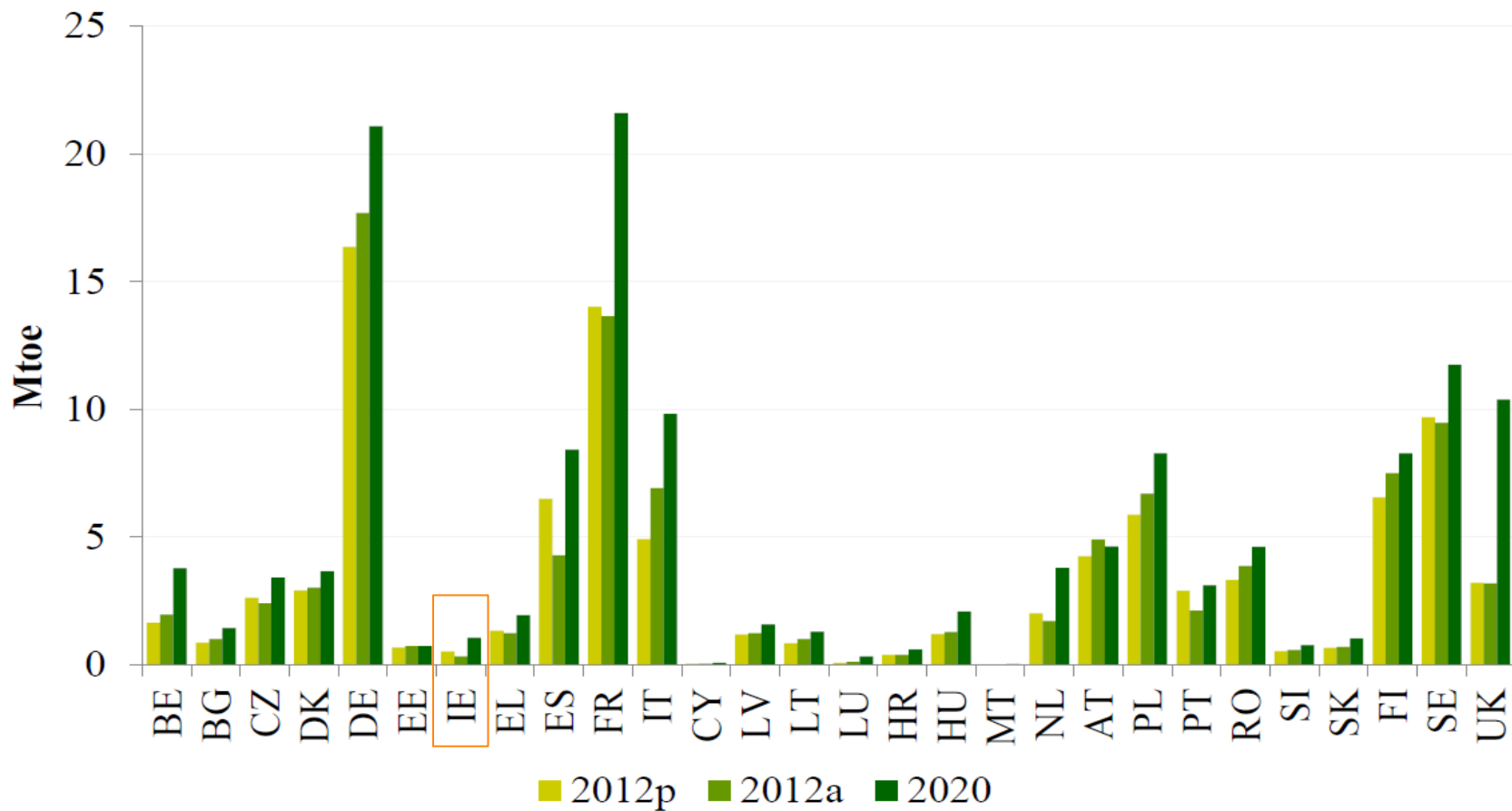
EU Bioenergy targets



Source: Pöyry

MOST COUNTRIES MAKING REASONABLE PROGRESS BUT SOME LAGGARDS

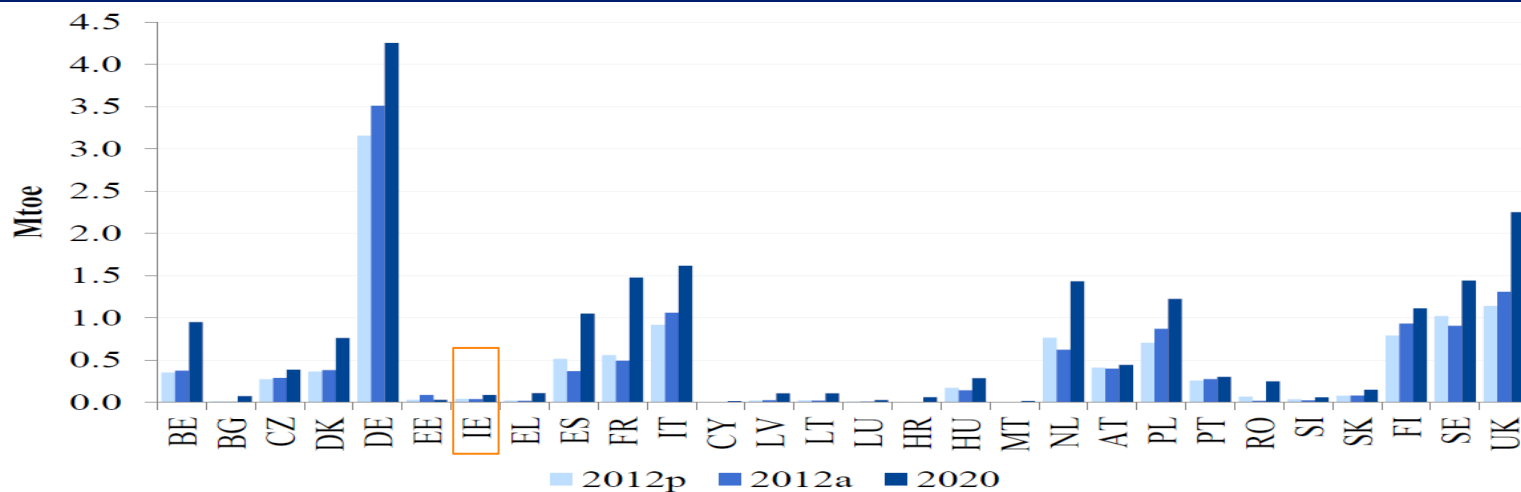
Countries Progress on NREAPs Bioenergy targets



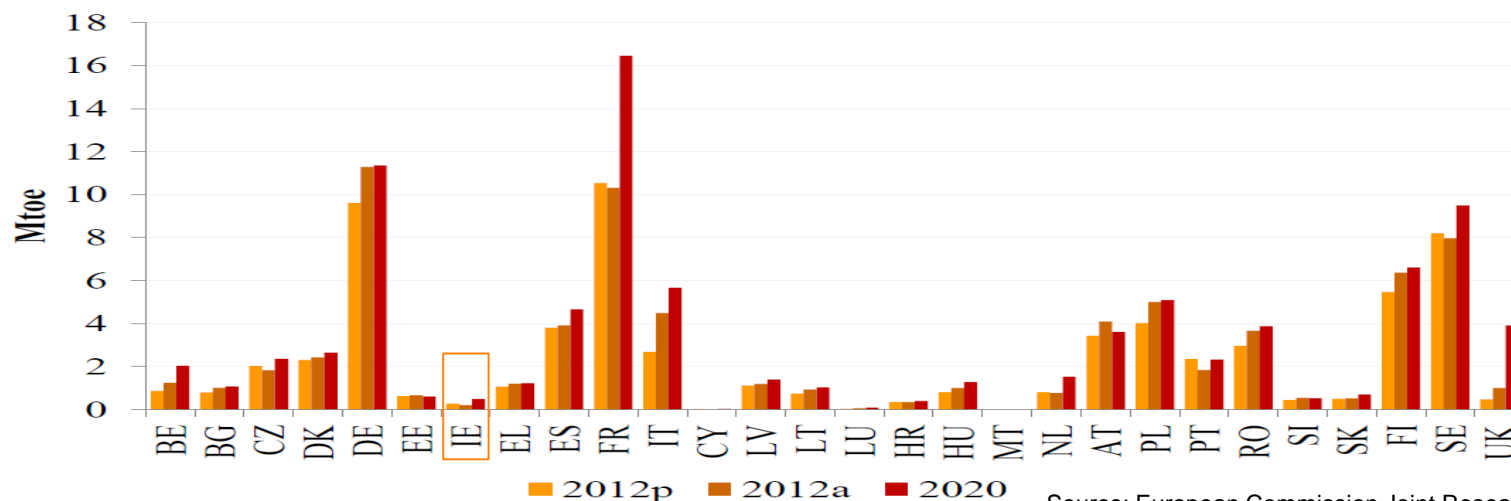
Source: European Commission Joint Research Centre (JRC)

HEAT GENERALLY ON TARGET BUT UK CLEARLY BEHIND

Countries Progress on electricity generated from biomass

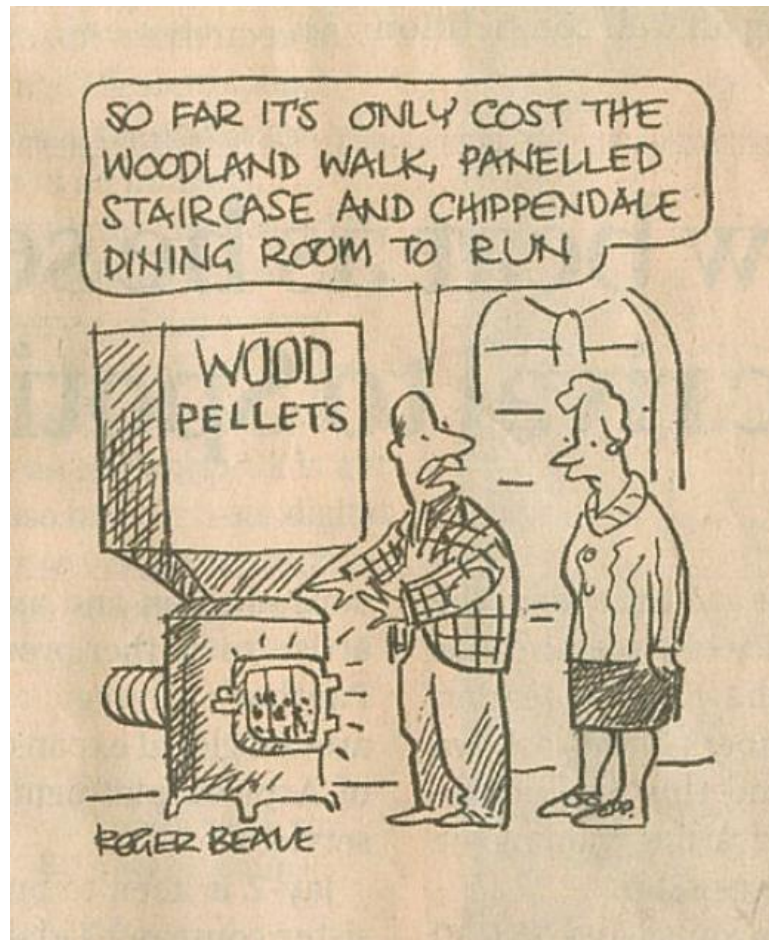


Countries Progress on heat&cooling generated from biomass



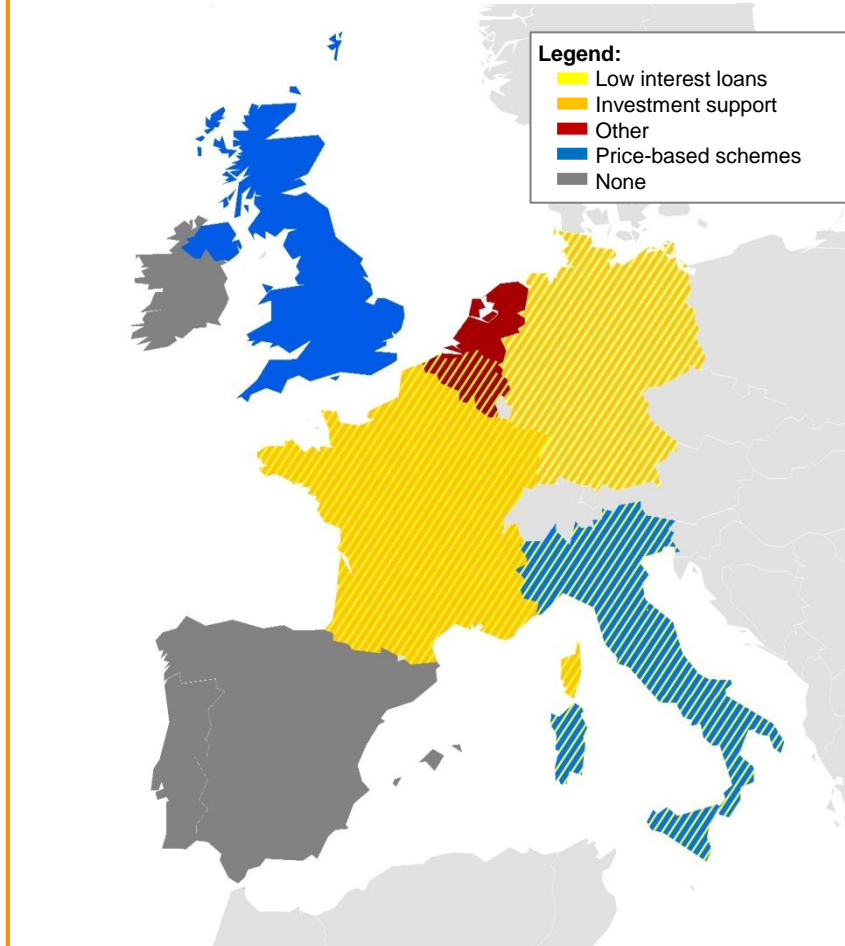
Source: European Commission Joint Research Centre (JRC)

IMPACT OF OIL PRICES? – FINANCIAL TIMES SATURDAY 31ST JAN 2015

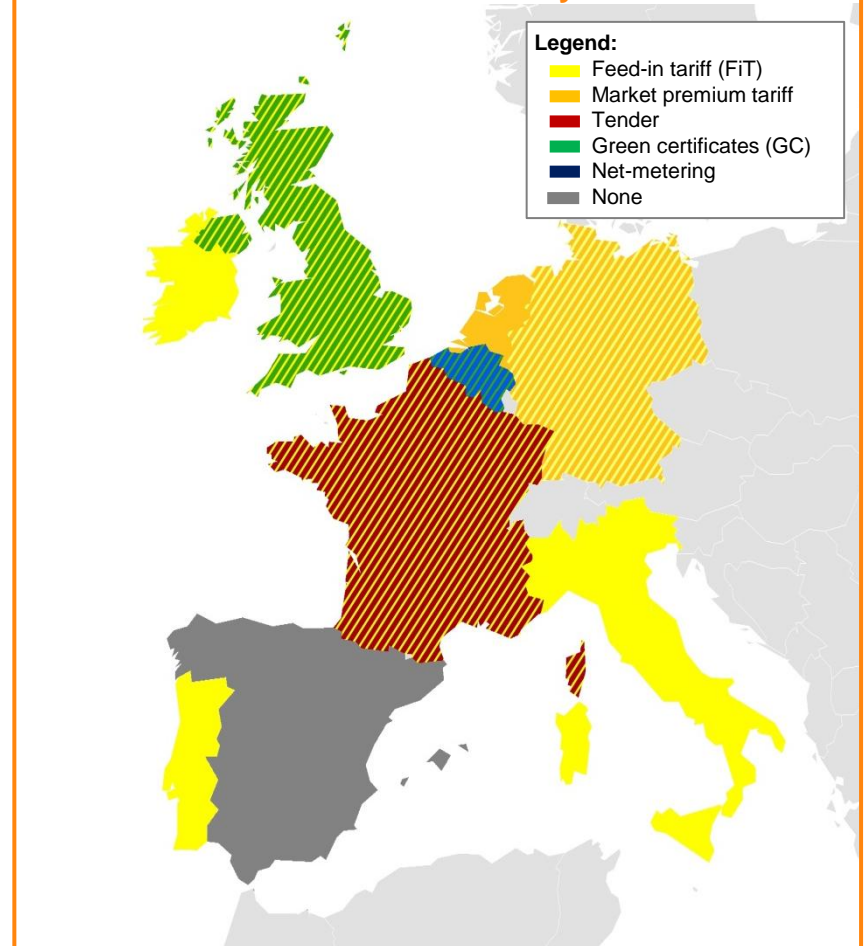


BIOENERGY INCENTIVES AND POLICIES

Incentives for renewable heat from biomass



Incentives for renewable electricity from biomass

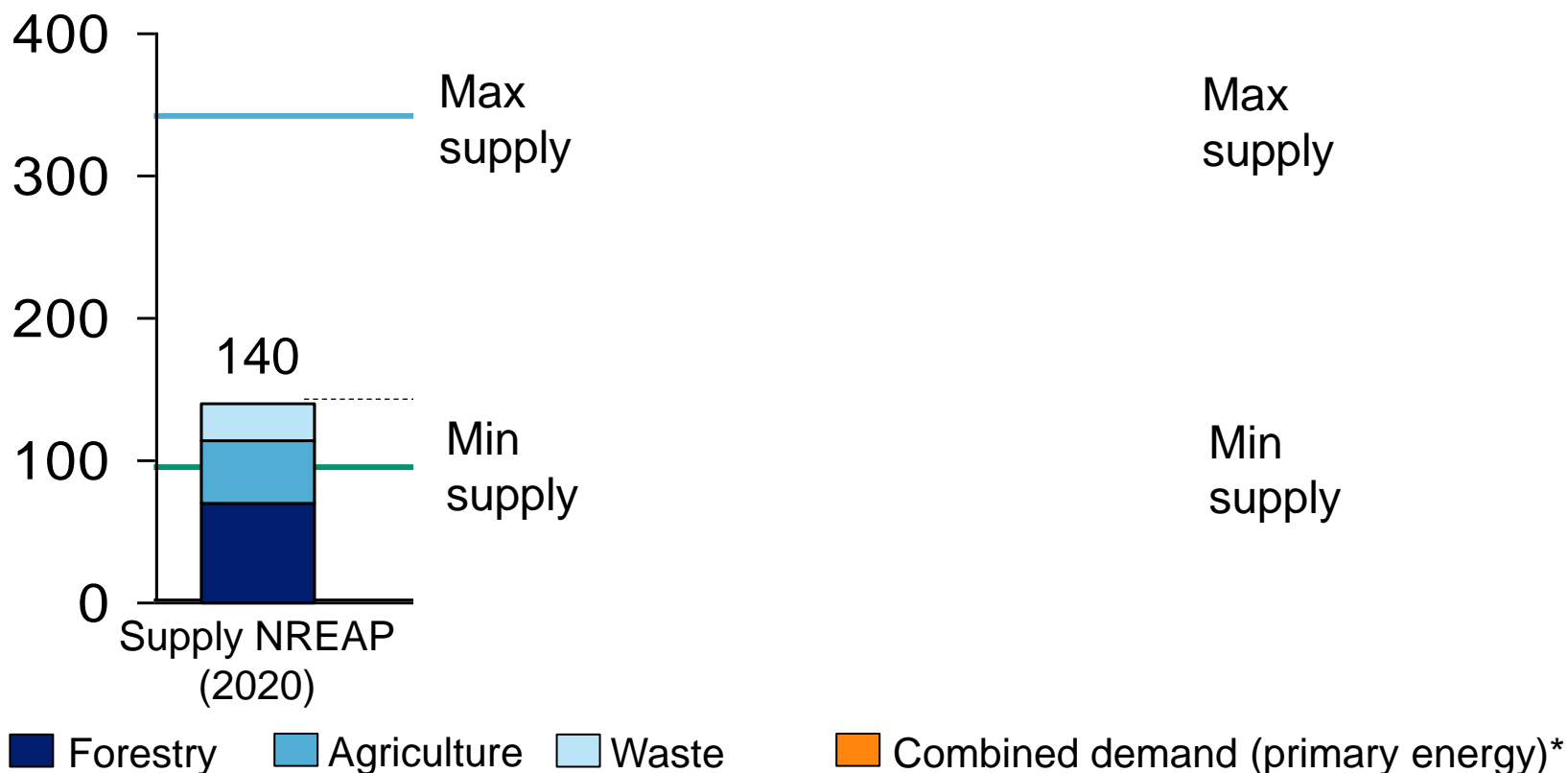


Source: Pöyry

EU BIOMASS SUPPLY AND DEMAND 2020 / 2030

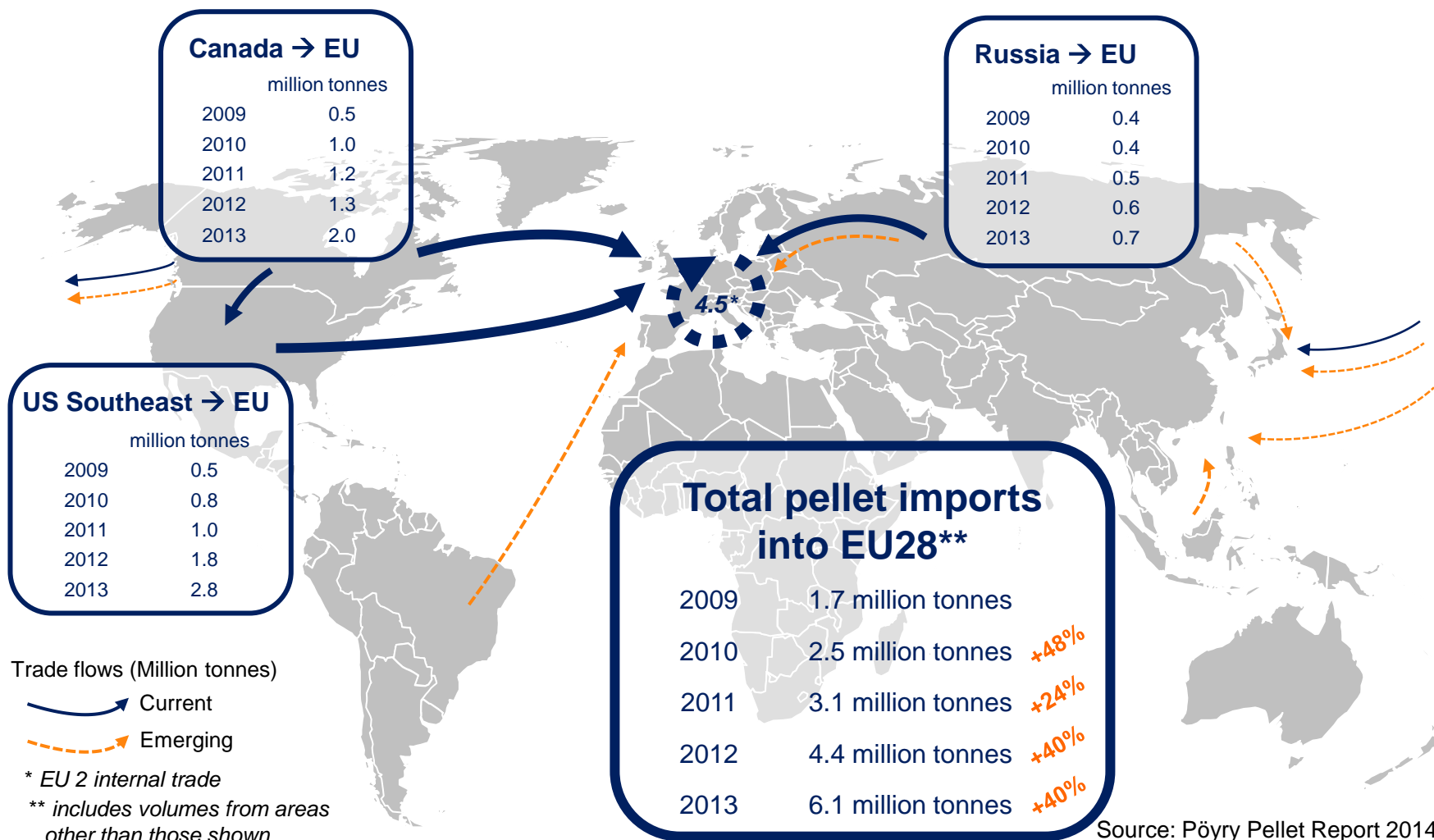
Views on the EU biomass supply potential going forward vary widely; how much of the potential can be supplied sustainably from domestic sources, at what price?

EU biomass supply & demand (Mtoe)

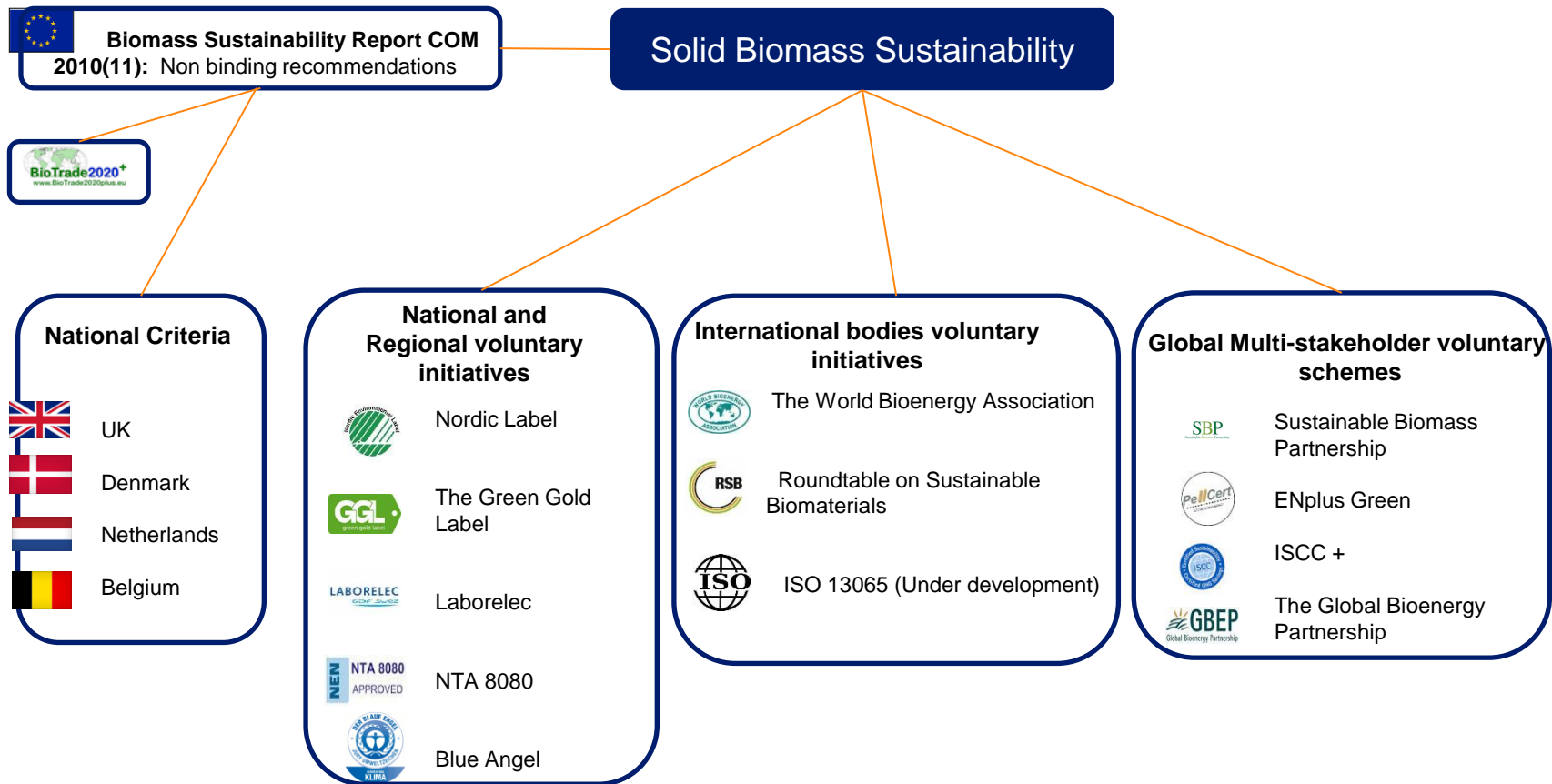


WOOD PELLET TRADE FLOWS INTO THE EU

International pellet markets have quickly developed to fill the supply gap.



BIOENERGY INCENTIVES AND POLICIES

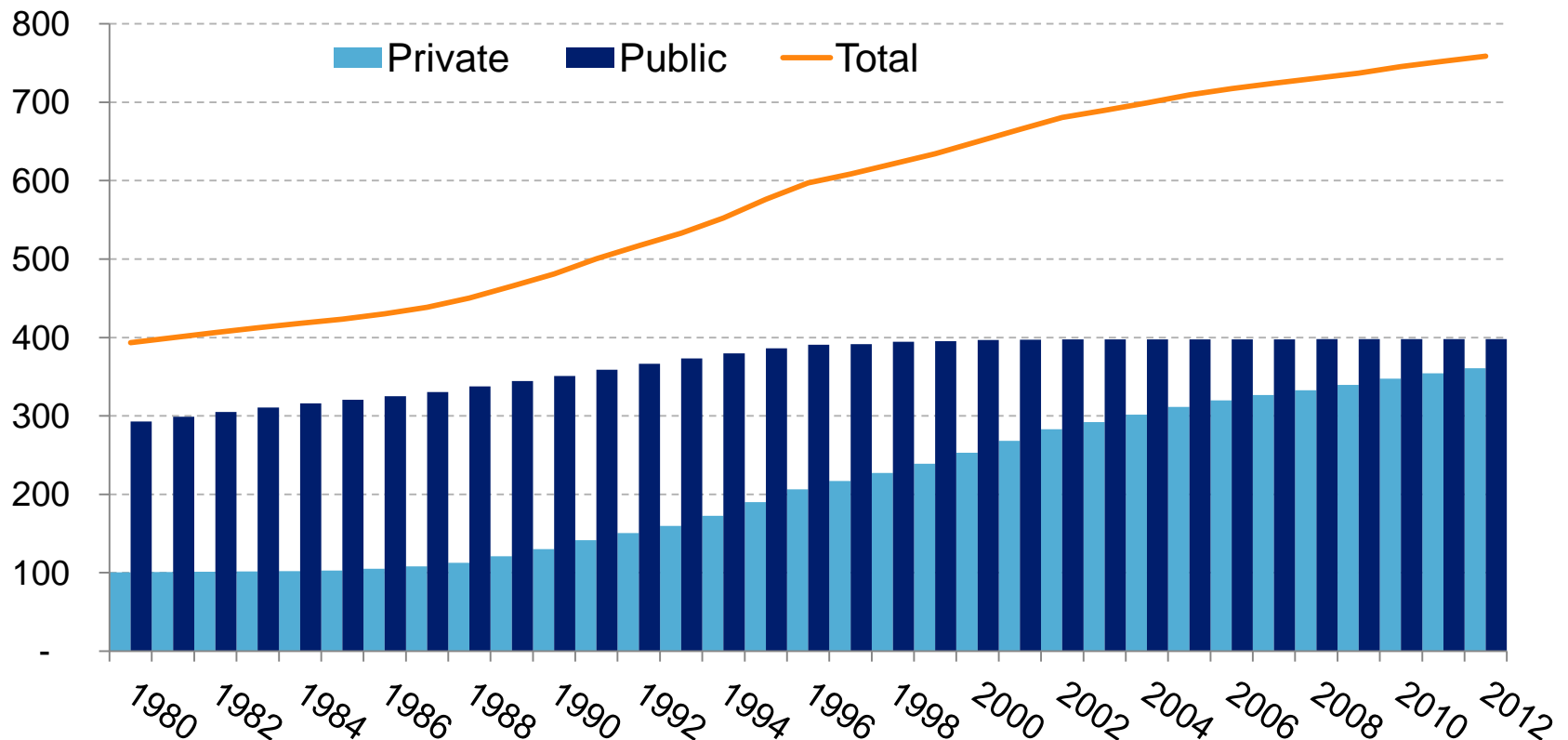


Source: Pöyry

FORESTS IN IRELAND

Traditionally the afforestation effort has been concentrated to public land, however, following new legislation with grants and support, private afforestation has greatly increased since the 1990's.

Historic woodland area in Ireland by ownership in 2011 ('000 ha)



Source: IFFPA 2012, Forest Service 2012

HARVEST BY LAND OWNERSHIP

Coillte provides a stable wood flow for the industry. However, the bulk of incremental supply will come from private forests

Harvest by land ownership in 2011 (Modt)

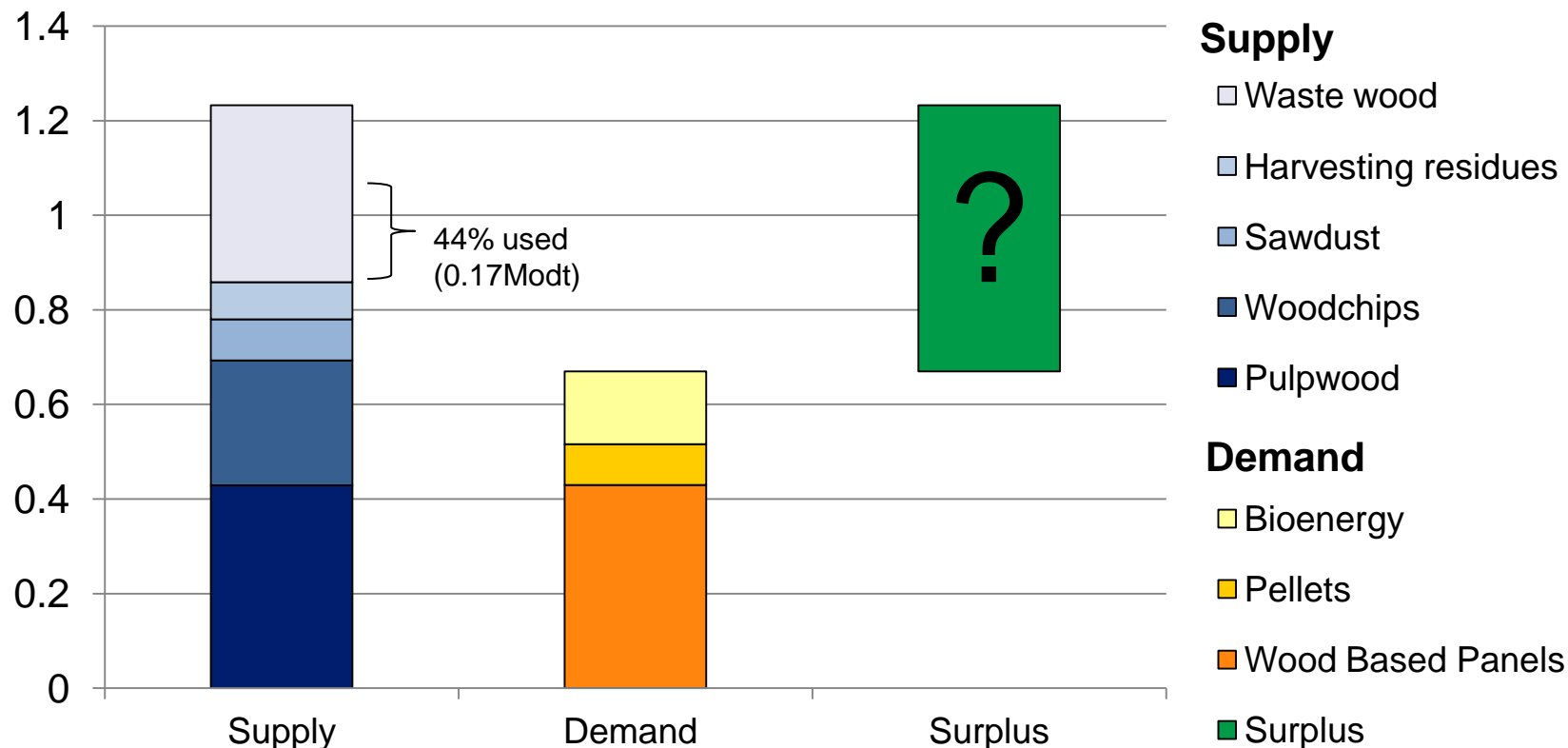


Source: IFFPA 2012, Forest Service 2012

WOODY BIOMASS SUPPLY & DEMAND

There appears to be a surplus of woody biomass in Ireland that could be utilized for bioenergy but much of this “surplus” comprises waste wood and harvesting residues where availability and economics are unproven

Biomass supply & demand 2012 (Modt)

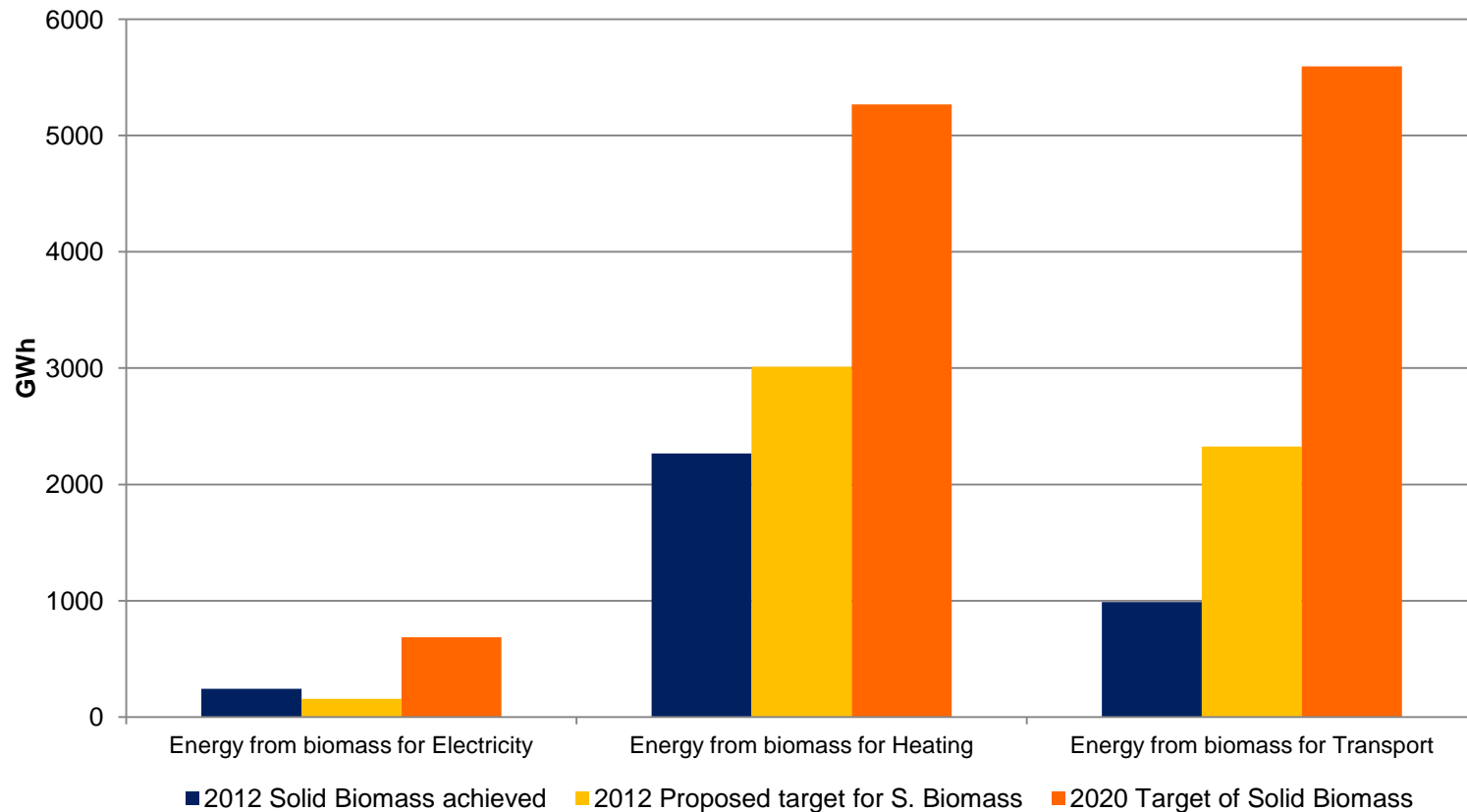


Source: Pöyry, COFORD

HOW FAR FROM THE TARGETS ARE WE?



Progress on Bioenergy from Solid Biomass in 2012

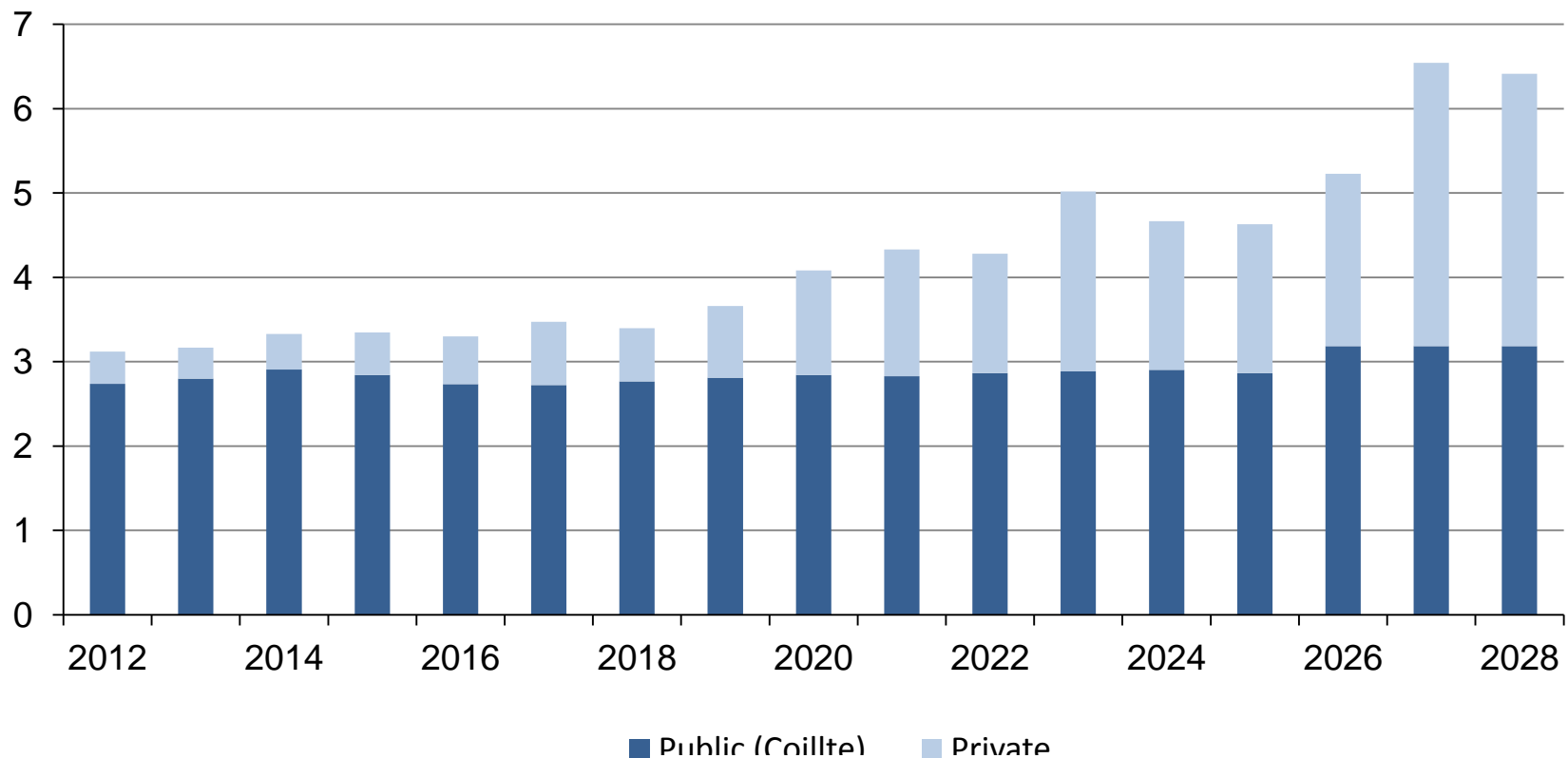


Source: Irish NRAEP Progress report

STRONG GROWTH IN WOOD AVAILABILITY IS FORECAST

Private forest represents almost half of the potential availability in 2030, but will it be realized?

Potential net realizable volume by ownership (Mm³sob)

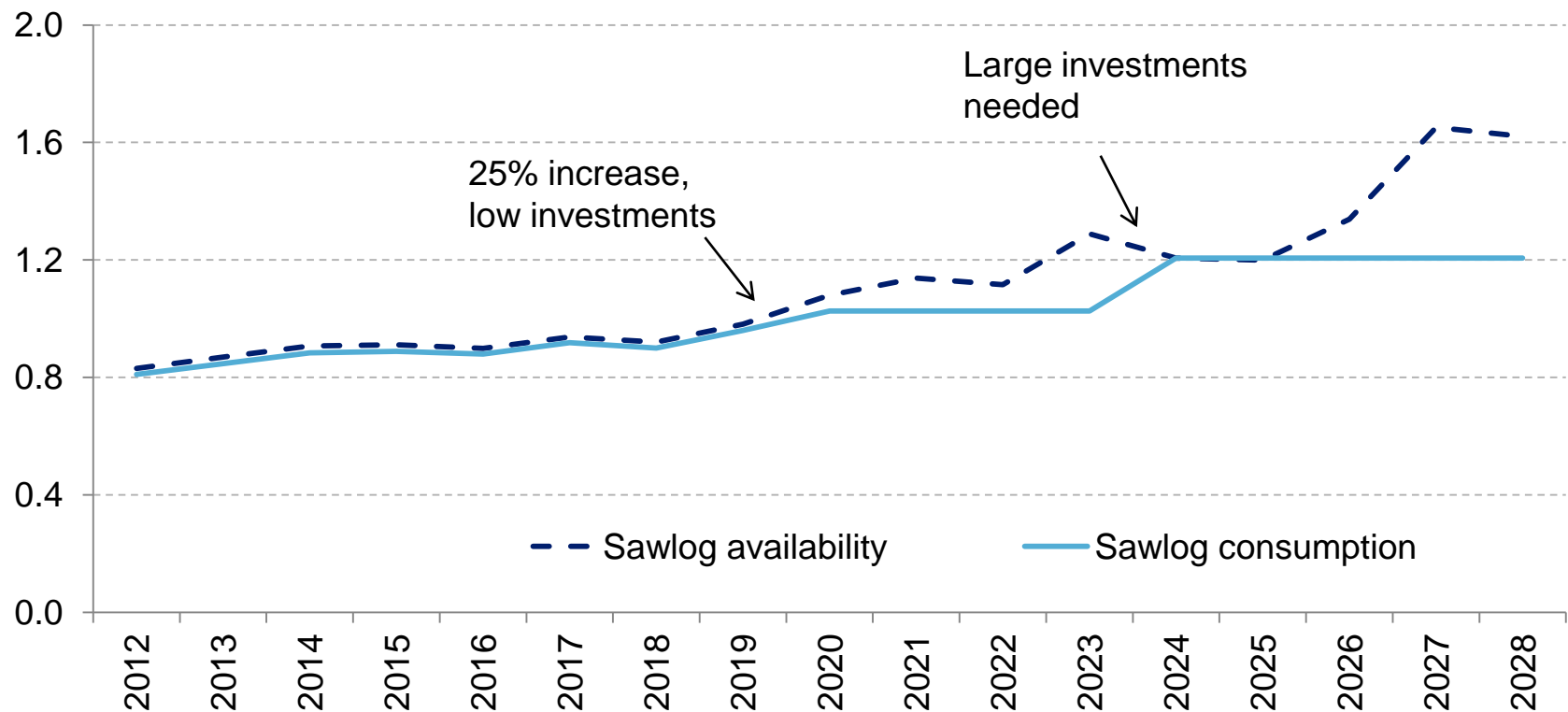


Source: COFORD, 2011

SAWMILL DEVELOPMENT WILL ALSO INFLUENCE AVAILABILITY

Sawmilling industry drives forest utilization and capacity development requires stable wood flows to attract larger investments. We have assumed sawmilling capacity lags sawlog availability growth.

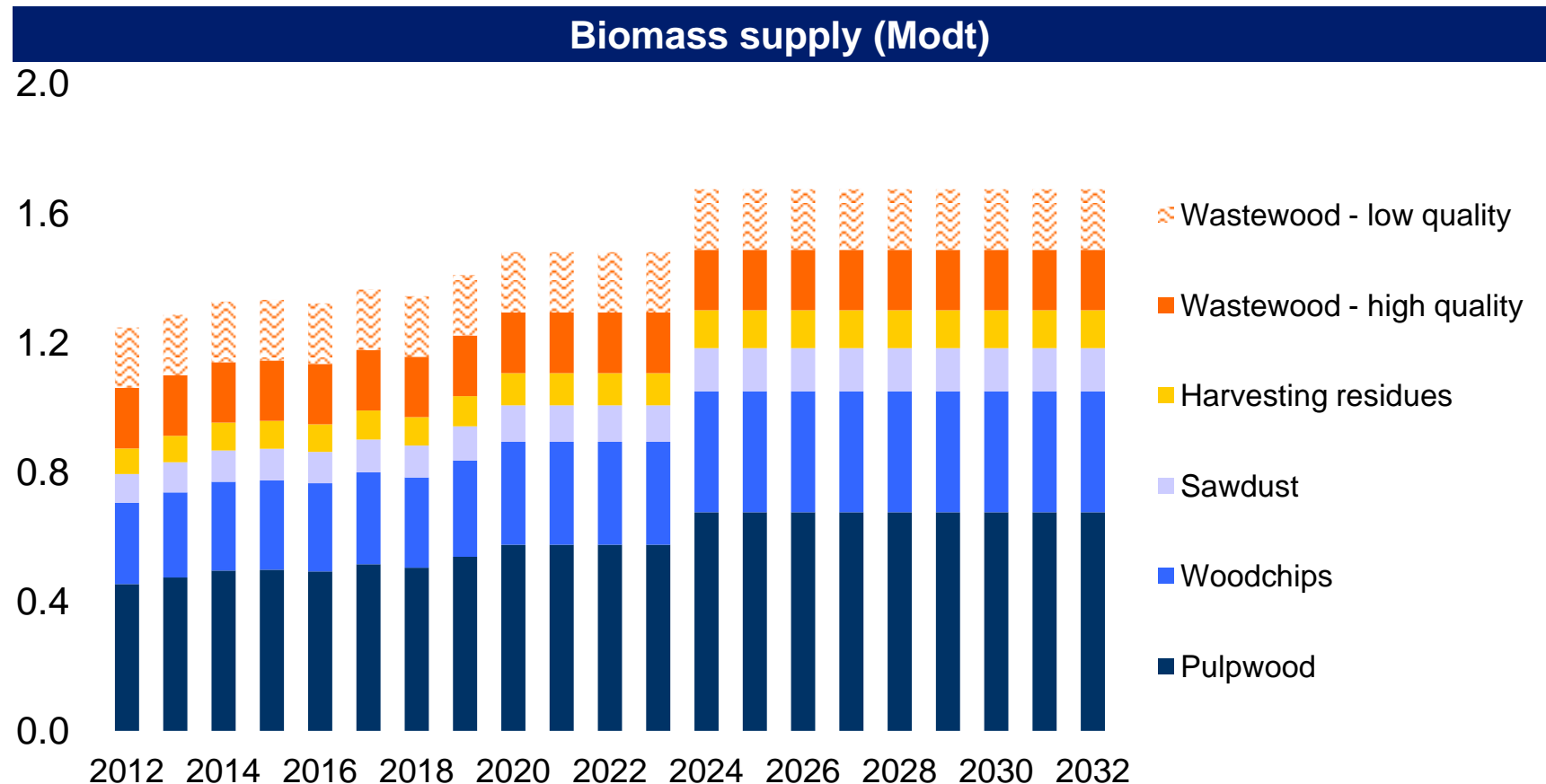
Potential harvest realization of sawlogs (Modt)



Source: Pöyry (Analysis on COFOR 2011)

FUTURE AVAILABILITY OF DOMESTIC BIOMASS

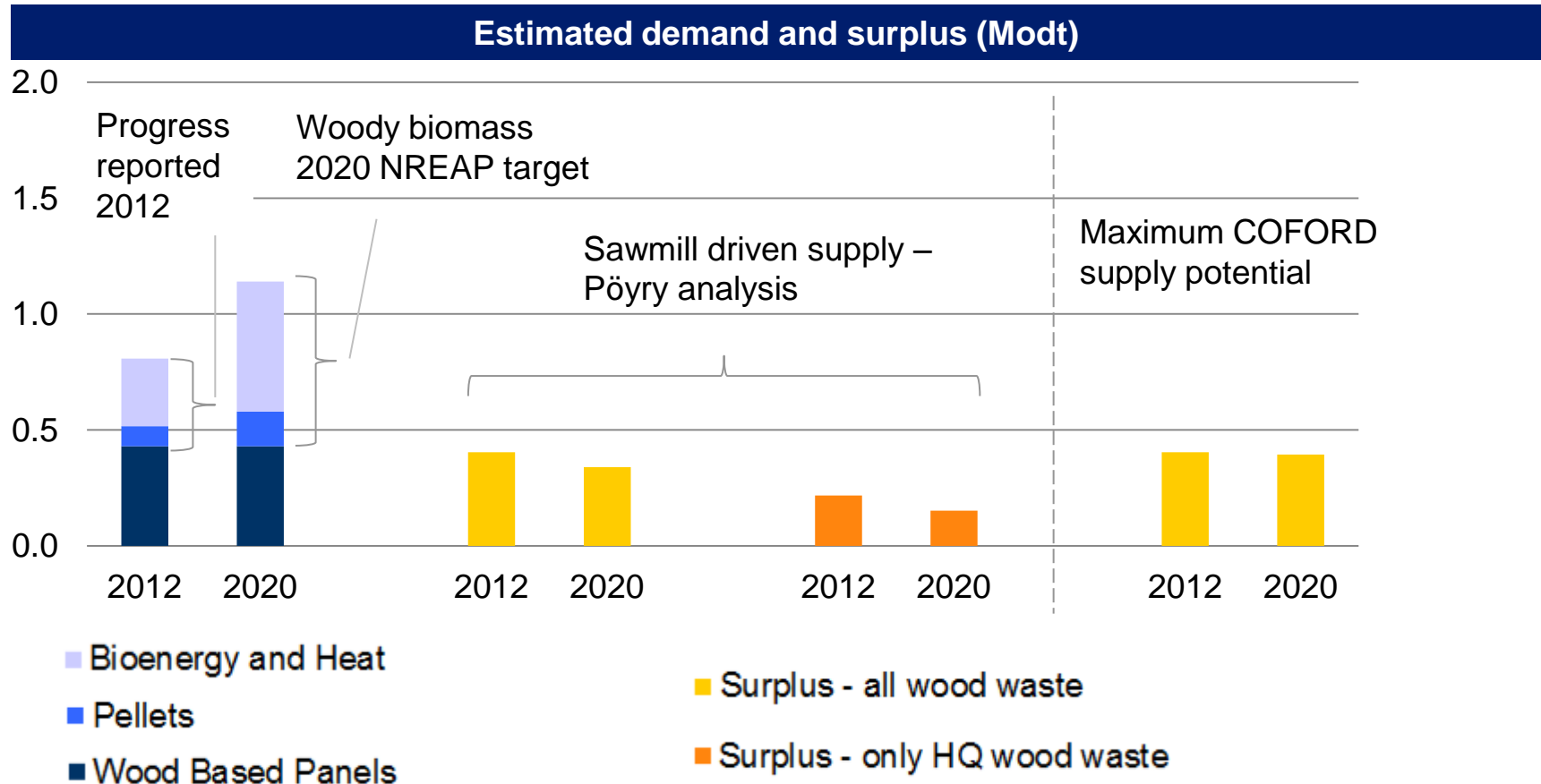
Supply will increase, mainly as a result of the expected growth in private harvesting



Source: Pöyry

...SO IS THERE ENOUGH WOOD?

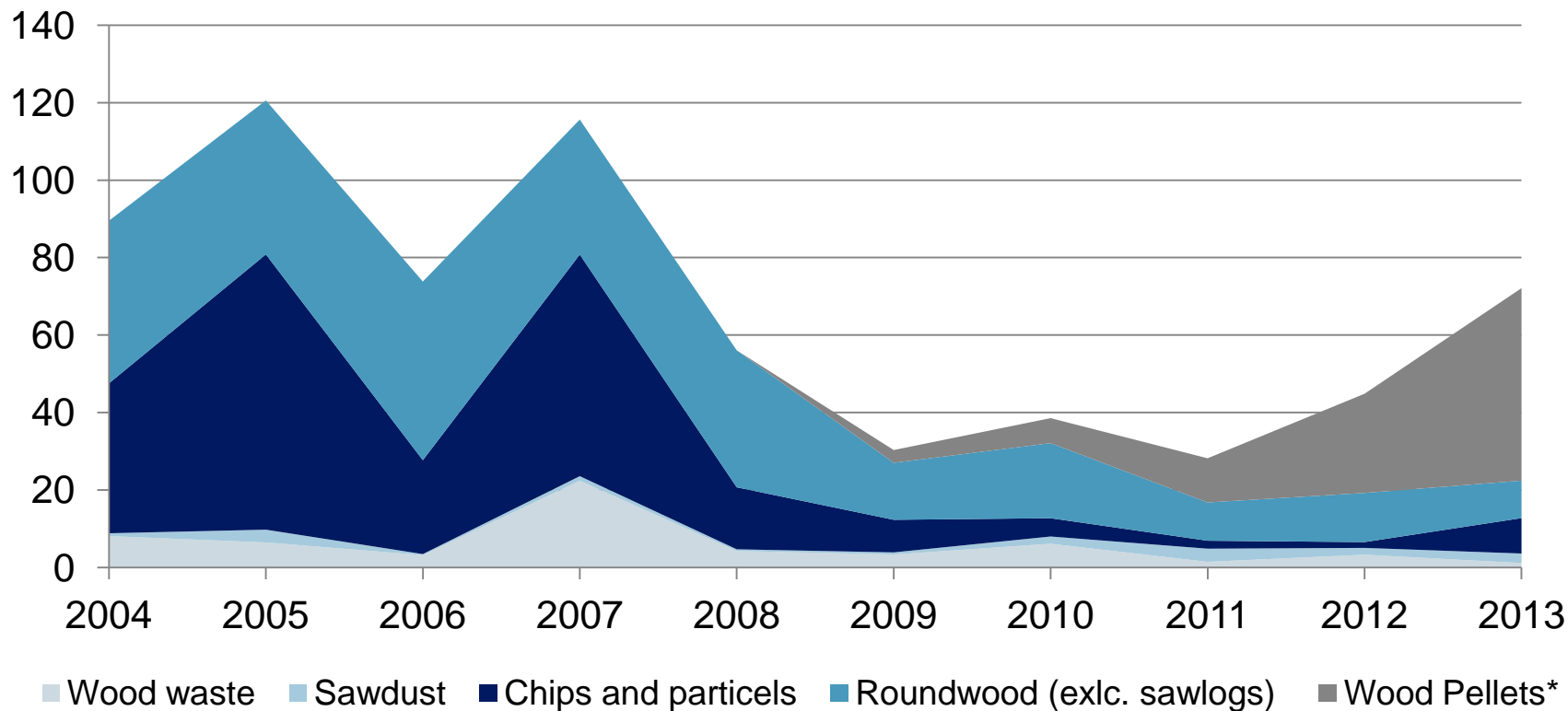
Domestic supply could theoretically meet the demand implied by the NREAP target but it is uncertain how much of this supply will materialize. Furthermore this takes no account of likely expansions in other wood using industries e.g. wood panels



WHAT ABOUT IMPORTS?

Current import volumes are small but could be an option to supplement the domestic biomass supply

Irish woody biomass imports (kodt)



Source: Eurostat

CONCLUSIONS

- Biomass heat is a key component in EU renewable targets
- There is theoretically enough domestic wood for Ireland to reach the NREAP bioenergy targets but significant uncertainty remains regarding what will ultimately be mobilised and what new industrial capacity will emerge in the rest of the Irish wood industries.
- The proposed RHI can make a major contribution to achieving these targets
- Any shortfall in domestic biomass supply can be supplemented by well developed international pellet markets.
- It is critical that the RHI is aligned not only with forecast wood supply but also the likely development of Ireland's other strategic wood industries



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expertise and proven track record – because results count.*

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