



Bringing rigor and consistency to renewable energy resource management – Why is this important to channel investments?

Problem statement

... but is there a problem?



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“ Bringing rigor and consistency to renewable energy resource management – Why is this important to channel investments?”

- It is obviously important, as for any energy resource development and management ... **do I need to explain why?**
- Bringing rigor and consistency ... **are rigor and consistency missing in renewable energy resource management?**
- Channeling investments ... **are investments missing or inappropriately used in renewable energies? If so, how to improve?**

Energy mix, landscape of renewable energy finance, investment practices, benefits of resource classification ... and recommendations

“Making this Planet Great Again”

... changing the Energy mix is urgent and mandatory



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IRENA – Global Landscape of Renewable Energy Finance 2018 says:

- Meeting international climate goals demands that **the share of renewables in primary energy supplies rises from 15% (2015) to 65% (2050)** coupled with greater energy efficiency
- **USD 25 trillion investment in renewable energies is required** from now to 2050, that is tripling the current investment levels

To Meet Paris Agreement Goals

... renewables development must increase by six-fold compared to plan



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IRENA Director General Adnan Amin says:

"An opportunity exists to **ramp up investment** in low-carbon technologies, and shift the global development paradigm from one of scarcity, inequality and competition to one of shared prosperity -- in our lifetimes,"

"That is an opportunity we must rally behind by adopting strong policies, **mobilizing capital** and driving innovation across the energy system."

The plan would require an **increase in cumulative renewable investments** by 30% to 2050, but would create more than 11 million additional power sector jobs. This would result in a 1% increase in global economic growth.

(Source: Global Energy Transformation: A Roadmap to 2050“)

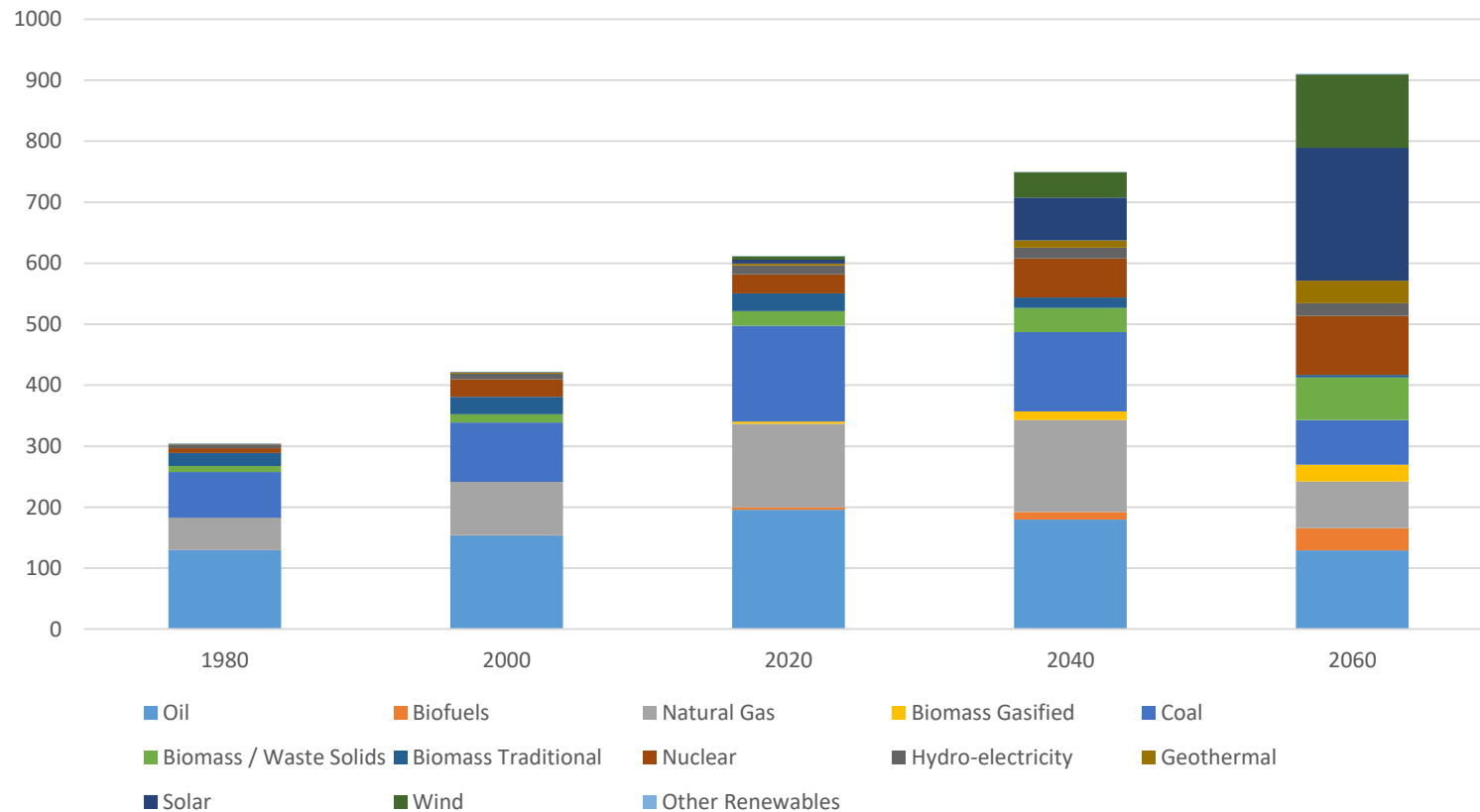
A Global Energy Transformation

... with significant investments in renewables



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Total Primary Energy - By Source (Exajoule/Year)



(Source: Shell 2018 "Sky" Scenario)

The Renewables Finance Landscape is complex

... but some key points emerge



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IRENA Report 2018 - Landscape of Renewable Energy Finance 2015-2016.oxps

- Main investors are **private**
- **Project developers** are largest private investors
- Financing is through debt and equities
- Recipient of financing are mostly private
- Finance is flowing to 1) East Asia/Pacific, 2) OECD and 3) West Europe
- Funds are largely aimed at Solar PV and Wind technologies

(Source: IRENA Global Landscape of Renewable Energy Finance 2018)

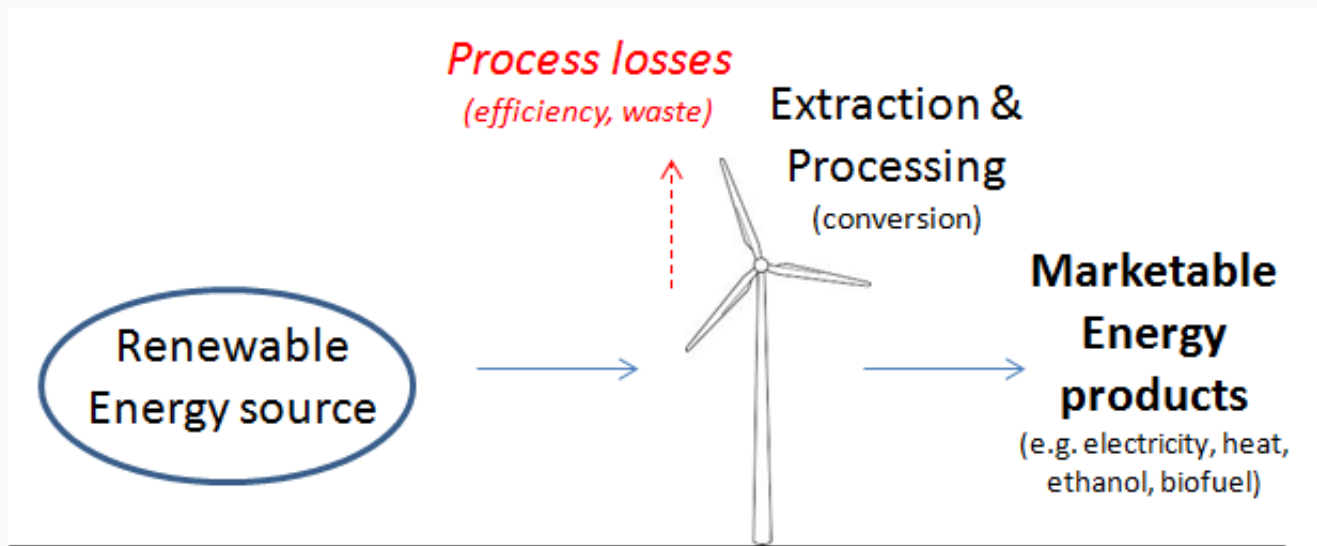
Renewable Energy Projects

... will take a large part of the investments



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- Projects link energy sources and energy products
- They form the basis for economic evaluation and decisions



... is the focus of their evaluation and selection process



Very simplistically:

1. **Define different projects** / options to develop the resource and prepare forecasts over project life-cycle (production, costs, etc.)
2. **Run economics** on each project / option and rank on selected parameters (NPV, IRR, etc.)
3. **Identify / assess technical and non-technical risks** and define and cost mitigation measures
4. **Select “best” project**, describe in investment proposal and take Final Investment Decision (FID)

What is often missing?

... of particular importance for energy projects



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- Factoring-in the energy resource **uncertainties** in an appropriate way
- Reflecting the different levels of **technical maturity** of the project phases and their associated recoverable resources (feasibility)
- Describing and accounting for differences in **socio-political, environmental, etc., maturity** levels (viability)
- **Comparing in a consistent, rigorous and objective way** with other energy projects, taking all relevant (not commercial only) factors into consideration

Resource Classification

... allows addressing these missing points



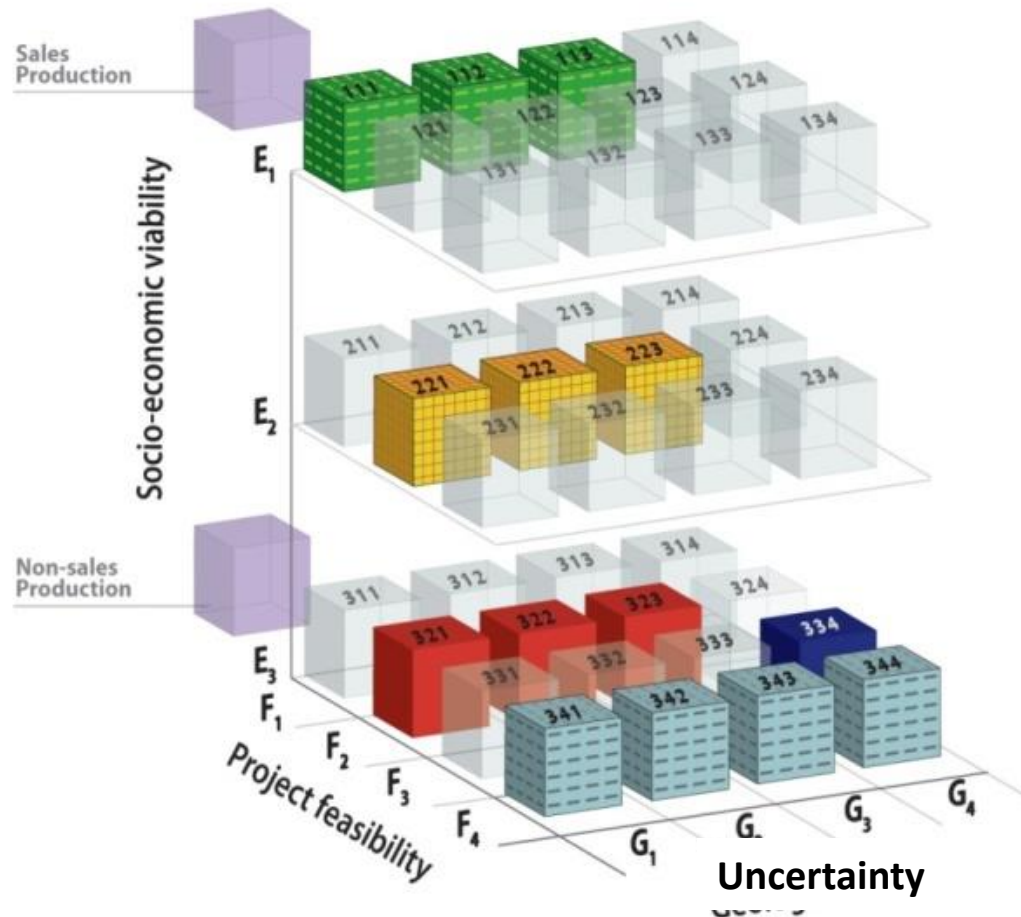
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- **Resource classifications** have been used for decades in the oil & gas industry, not only for accounting / reporting purposes (e.g., SEC reporting), but to help decision-makers make optimal investments
- **Investment proposals** include estimates of classified resources to be developed by the different phases of the project, describing both their uncertainty and maturity levels
- **Similarly, a rigorous and consistent approach** using the same resource classification principles will benefit renewable energies, fostering investments in optimally selected projects

... a global Classification for **both** fossil and renewable energies



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Conclusions



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- To “**Make our Planet Great Again**”, a global transformation of the energy mix towards renewable energies is urgently required
- The level of investments in renewable energies must rapidly and significantly increase, supported by **compelling business cases**
- **Economics only** may not allow optimal selections of renewable energy projects as not clearly reflecting their uncertainty, feasibility and viability
- **UNFC provides a global classification system**, rigorous and consistent, complementing economics for optimal channeling of investments in renewable projects



Thank you!

Frank Denelle
 Chair, Renewable Energy Classification Workgroup

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