



NER300

Guidance Session for Member States and Project Sponsors on 2nd Call for Proposals

Brussels, 10th April 2013

Objectives for the Meeting



1. Legal Basis and Responsibilities regarding Relevant Costs and Reference Plant
2. Applications Forms and Submission Forms
3. Guidance on Relevant Cost Calculation (example focused on Bioenergy)
4. CPUP, Additional Benefits and TRPF
5. Discount rates, and NPV calculation

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Overview



Legal basis – NER 300 Decision

❖ **Art. 3(3):**

“Relevant costs of RES demonstration projects shall be those extra investment costs which are borne by the project... compared to a conventional production with the same capacity in terms of effective production of energy ...”

❖ **Art. 5(3):**

- ❖ Member States to provide Relevant Costs, TRPF and the best estimate of the NPV of Additional Benefits when submitting the proposals for funding.
- ❖ MS shall also notify any financing for the project involving State aid pursuant to Article 108(3) of the Treaty

Roles and responsibilities



Member States (MS)

[§10.4, item 100 of the Call for Proposals (CfP)]

- ❖ Collecting proposals from Project Sponsors
- ❖ Defining the Reference Plant for RES projects and communicating this to Project Sponsors
 - ❖ Recommendation: Reference plant, and any associated assumptions, should be defined at an early stage in the process to enable determination of Relevant Costs in conjunction with the Project Sponsor
- ❖ Submitting the Proposals it considers eligible and wishes to support to the EIB by July 3rd.

Project Sponsors (PS)

[§10.3, item 95 & 96 of CfP]

- ❖ “Provide documentation according to and following the information requests of the Application Forms”
- ❖ Reference Plant and Relevant Costs to be determined in co-ordination with MS

MS and PS: Details of Reference Plant calculation in AF C, Annex C.2 & SF C

- ❖ Submission Form C, signed by MS, actually copies AF C Annex C.2

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- **Application Forms**
- **Submission Forms**

Application Form Structure 2nd CfP

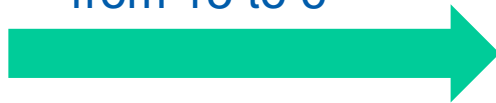


1st Call for Proposals

AF No	Application Item
1.	General Information on Project
2.	General Information on Project Sponsor
3.	Project Summary/Specification
4.	Operation Start Date and Implementation
5.	Relevant Environmental Assessment and Relevant National Permits
6.	Knowledge Sharing
7.	Confirmation of location
8.	CCS/RES Technical Eligibility
9.	Financial Standing of Project Sponsor
10.	Technical Scope
11.	Costs
12.	Financing
13.	Risk
14.	Operation
15.	Project Sponsor Declaration

2nd Call for Proposals

from 15 to 6



AF A: General Info of the project (i.e. AF 1, 2)
AF B: Technical (i.e. AF 1.4, 3, 4, 10, 14)
AF C: Financial & Costs (i.e. AF 9, 11, 12)
AF D: Authorisations & Permitting (AF 5, 7)
AF E Risk (AF 13)
AF F: Declarations (AF 6, 8, 15)

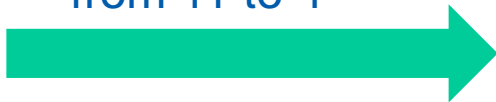
Submission Form Structure 2nd CfP



1st Call for Proposals

SF No	Submission Item
1	Declaration of Member State Support to Submitted Proposal
2	Trans-boundary Projects
3	Confirmation of Member State Department
4	Relevant Costs Attachment 1a, CCS demonstration projects (Data from Application Form 11, RES demonstration projects (Data from Application Form 11) Attachment 2a, Conventional Production Costs ('Reference Plant') Attachment 2b, Description of conventional production
5	Best estimate NPV Attachment 1, Detailed breakdown of the Net Present Value of additional benefits Attachment 2, Reconciliation of financial information for the calculation of the Net Present Value of additional benefits
6:	Project Outputs Attachment 1a (Data from Application Form 11), CCS demonstration project Attachment 1b (data from Application Form 11), RES demonstration project
7	Public Funding
8	Criteria for Selection of Projects for Submission to the EIB
9	Permitting
10	Specifications for Legally Binding Instrument
ECA1	Eligibility Criteria Assessment Form

from 11 to 4



2nd Call for Proposals

SF A Declarations: 1,2,3,10
SF B Eligibility: ECA, 8, 9
SF C Financials: 4,5,7 + Annex C
SF D Performance: 6

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Relevant Costs:

Challenge and options



The challenge:

- ❖ What is the comparable ‘conventional production’?
 - ❖ thermal, fossil-fuel power generation for electricity
 - ❖ wholesale refinery cost including margin for biofuels
 - ❖ Commercially mature renewable technology

Options for NER300:

- ❖ Fossil-fuel based technologies for all RES
- ❖ Commercially mature renewable technologies for all RES
- ❖ wholesale refinery cost including margin [i.e. price] for biofuels

Reference Plant – electricity generating

Methodology and assumptions

Methodology:

- Determine type of Reference Plant in relation to RES project; i.e. load characteristic
- Choose cost and other (technical) factors at a reasonable level
- Calculate full cost (EUR/MWh) of Reference Plant as a proxy for its revenues

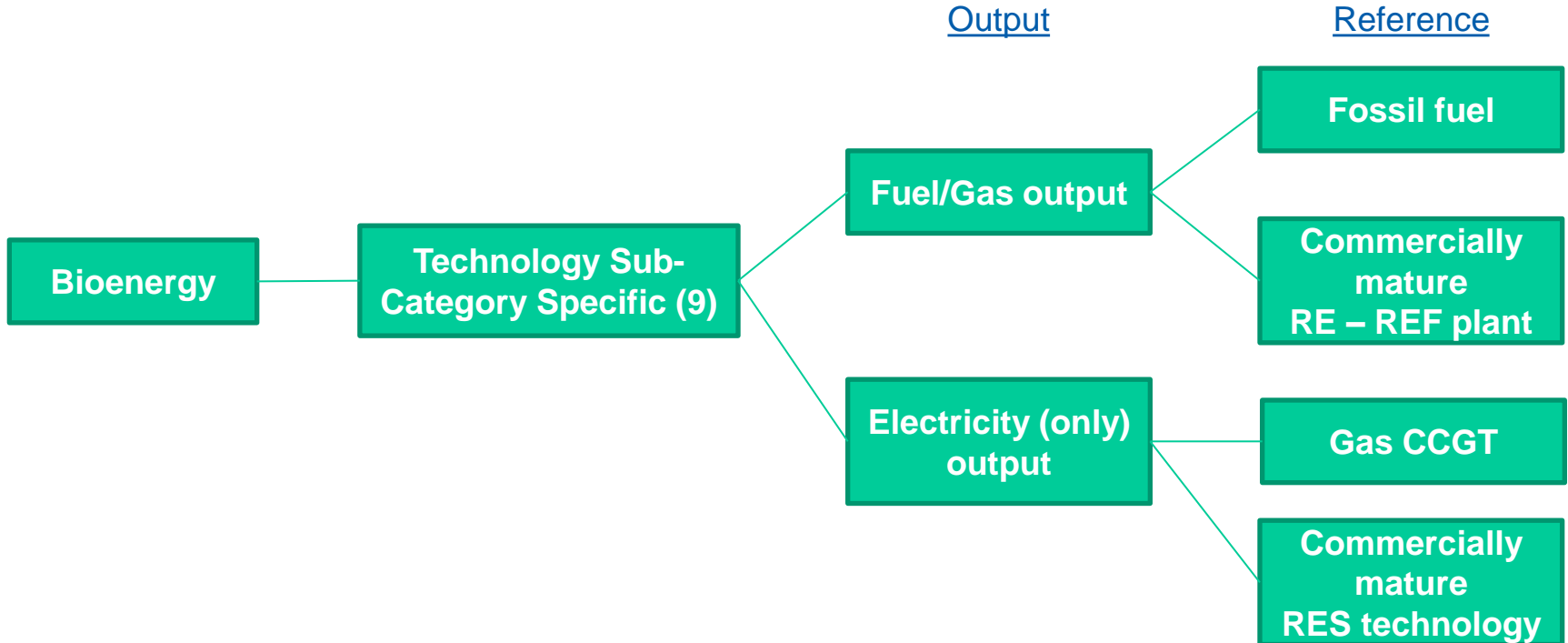
Basic assumptions needed for a Reference Plant:

- Capex (EUR/kW), Opex (% of Capex), fuel prices (e.g. aligned with fuel price forecast of international institutions, such as IEA), carbon price (e.g. at current ECX levels), load factor (% or hours/year)
- Determine on that basis Relevant Cost of RES project, adjustment of capacity and production of RefPlant to RES project through factoring in the ratio of load factor

Bioenergy Projects: Overview of Sub-Categories

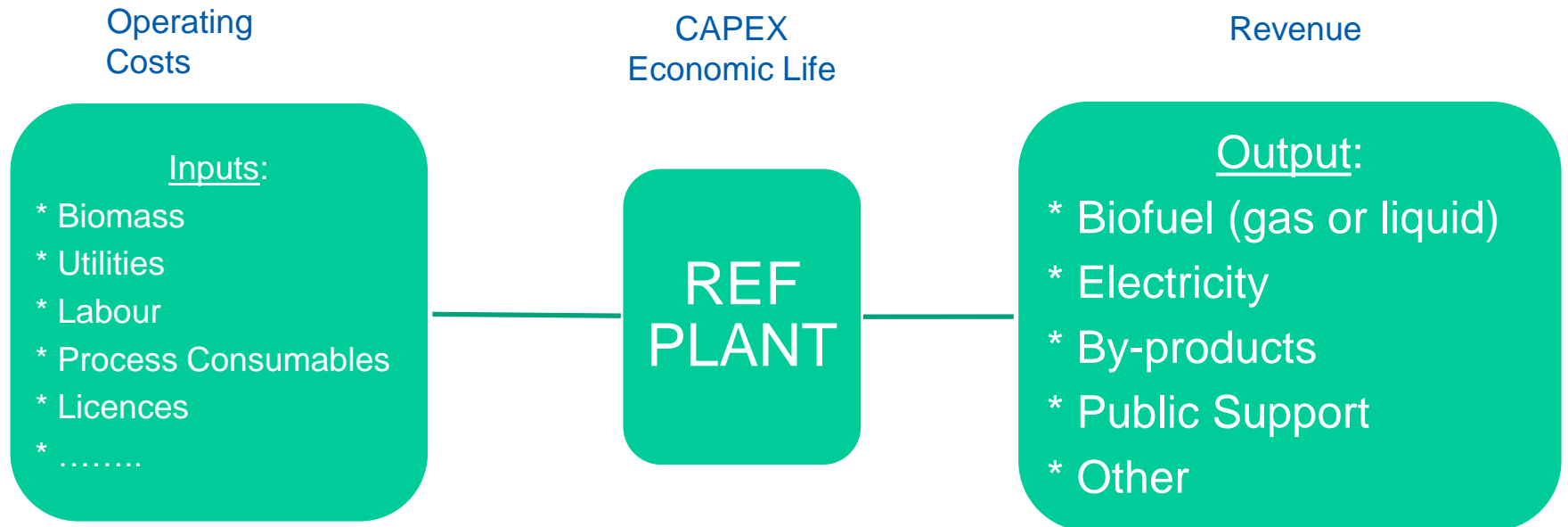


- ❖ 9 sub-categories with different outputs
- ❖ Products/Output: electricity, gaseous and liquids, solid energy carriers





Bioenergy Projects: Costs and Revenue Streams





Reference Plant option: 1st Generation Bioethanol Plant



Key assumptions (illustrative only)

- ❖ Ethanol via saccharification / fermentation of corn
- ❖ Production: 140 Ml/year
- ❖ Capital cost: EUR 97 M
- ❖ Feedstock cost (corn): EUR 200/tonne
- ❖ By-product DDGS (animal feedstock): 120% of feedstock cost
- ❖ Annual Operating cost (including feedstock): EUR 87 M
- ❖ Annual Operating Revenues (incl. By-products): EUR 106 M

Details of Ref. Plant to be provided in AF C, Annex C.2 and SF C



Reference Plant option:

1st Generation Bioethanol Plant - Scaling

- Reference Plant input parameters (CAPEX, OPEX, OP-Benefits need to be scaled to the size of the RES project in terms of the (eligible) renewable energy output capacity and the load factor:

$$\text{Scaling Factor} = \frac{\text{Capacity (5y)}_{RES} * LF_{RES}}{\text{Capacity (5y)}_{REF} * LF_{REF}}$$

RES Project (69 Ml p.a.; LF=0.8)

Investment Cost (€) - Project	120
NPV Operating Costs (€) - Project	126
NPV Operating Benefits (€) - Project	189
Performance (MWh, 5 year)	1604

Reference Plant (LF=0.9)

Investment Cost (€)	97
NPV Operating Costs (€)	378
NPV Operating Benefits (€)	457
Performance (GWh, 5 year)	3649

Reference Plant (scaled@0.44):

Investment Cost (€) – REF	43
NPV Operating Costs (€) - REF	167
NPV Operating Benefits (€) - REF	201
Performance (MWh, 5 year)	1604

Reference plant option

1st Generation Bio-ethanol Plant



RES Plant

Investment Cost (€) - Project	120
NPV Operating Costs (€) - Project	126
NPV Operating Benefits (€) - Project	189
Performance (MWh, 5 year)	1604

REF Plant (Scaled)

Investment Cost (€) – REF	43
NPV Operating Costs (€) - REF	167
NPV Operating Benefits (€) - REF	201
Performance (MWh, 5 year)	1604

$$RC = \Delta CAPEX - \Delta NPV \text{ Operating Benefits} + \Delta NPV \text{ Operating Costs}$$

$$RC = (CAPEX - NPV \text{ OP Benefits} + NPV \text{ OP Costs})_{RES} - (CAPEX - NPV \text{ OP Benefits} + NPV \text{ OP Costs})_{REF}$$

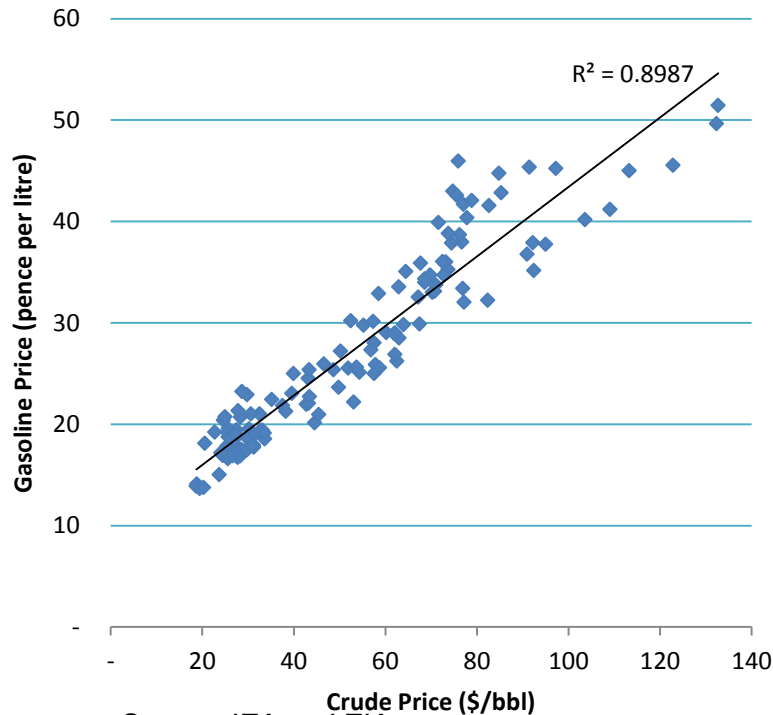
$$RC = EUR 57 \text{ M} - EUR 9 \text{ M}$$

$$RC = EUR 48 \text{ M}$$

Reference Plant option: Fossil Fuel Price Reference (FFPR)



Crude Price versus Gasoline Price 2000-2010



- ❖ The plot of crude price versus gasoline price over the last 10 years shows the close correlation between the two price sets ('R-squared' = 0.8987)
- ❖ At a crude price of 85\$/bbl, the gasoline price (excluding tax and duties) is ~ 44.6 Euro cents / litre
- ❖ A similar methodology can be conducted with diesel price

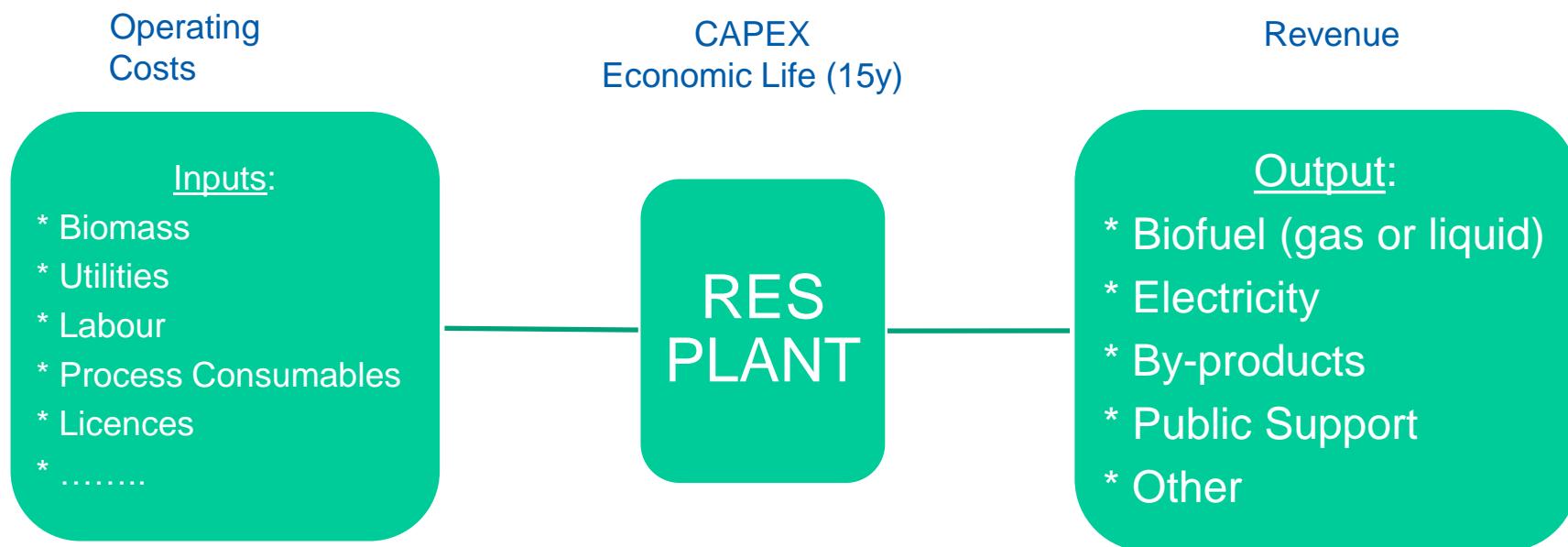
NB: 2010 average GBP:Euro exchange rate applied to return price in Euro cents/litre – www.oanda.com

Details of RefPlant to be provided in AF C, Annex C.2 and SF C

Reference Plant option: Fossil Fuel Price Reference (FFPR)



Bioenergy Projects: Costs and Revenue Streams



Reference Plant option: Fossil Fuel Price Reference (FFPR)



RES Project: Calculation of the Per Unit Cost of Energy (PUCRE)

Investment Cost (M€) - Project	120
NPV Operating Costs (M€) - Project - 15 years	301
NPV Benefits byproducts (M€) - 15 years	59
NPV Additional Benefits from support schemes* (M€) - 15 years	0
NPV Performance 15 years (MWh)	2642500

$$PUCRE = \frac{CAPEX + NPV\ OP\ Costs - NPV\ Benefits\ Byproducts - NPV\ Additional\ Benefits^*}{NPV\ Performance}$$

Explanation: PUCRE is the discounted per unit cost of energy over economic lifetime of the RES Plant which is estimated in all cases at 15 years (see Q/A No. 141- 1st call)

Reference Plant option: Fossil Fuel Price Reference (FFPR)



Calculation of the Relevant Cost (RC):

$$RC = \left(PUCRE \left(\frac{EUR}{MWh} \right) - FFRP \left(\frac{EUR}{MWh} \right) \right) * Performance\ 5\ years\ (MWh)$$

Definitions:

- ***PUCRE: Discounted per unit cost of energy over Economic lifetime of the RES Plant***
- ***FFRP : Fossil Fuel Reference Price in EUR/MWh***
- ***Performance over 5 years: Accumulated performance of the RES plants in its 1st five years of operation (NER300 period)***

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Calculation of CPUP and TRPF



TRPF

$$CPUP = \frac{[RC - OC] + NPV \text{ (Additional Benefits, 5 years)}}{\text{Performance (MWh, 5 years)}}$$

Definitions:

- ***NPV Additional Benefits: resulting from support schemes even if they do not constitute State Aid within the meaning of Article 107(1) of the Treaty, avoided costs and existing tax incentive measures (article 3.5 of the NER300 Commission Decision).***
- ***TRPF: Total Request for Public Funding, ie. sum of all contribution from (direct) public sources envisaged to be provided to a project, such as funding from NER300, national sources, State Aid in terms of investment aid, etc.***
 - ***TRPF = RC – Operator Contribution (OC)***
 - ***the NER300 contribution is fixed at 50% of RC (unless TRPF is less than 50% of RC, in which case NER300 (if applicable, combined with EEPR) covers the TRPF; (Recital 6 and Art. 2 3rd sub-para of the NER300 Commission Decision)***

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Discount Rate, Inflation and NPV Calculations

- Reference rate is published for the different Member States by the EC under: http://ec.europa.eu/competition/state_aid/legislation/reference_rates.html
- Discount rate to be applied to NER300 calculations: EC rate + 100 bpp
- Discount rate is to be applied to non inflated (i.e. constant) values in 2013 prices
- The NPV has to be determined in the year 0 of the RES project, i.e. the year before it starts operations:

Reference plant									
	Year -3	Year -2	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Investment Cost (€)	x	x	x	x					
Total Operating Costs (€)					x	x	x	x	x
Total Operating Benefits (€)					x	x	x	x	x



Thank You!!!