

IEE ECOLISH

**Energy Exploitation and Performance Contracting for
Low Income and Social Housing**

**8th JRC Workshop on Energy Efficiency in Buildings
2 -3 September 2010, Moscow**

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The problems we face in social housing in EU

- Energy use in residential buildings in EU is 9500 PJ = 23% of total use
- Measures on existing residential buildings will make major contribution in energy and CO₂ reduction
- But large number of barriers:
 - Technologies are available (but more based on new buildings)
 - Financial, social, and organisational constraints

And, more over:

- Social housing and (extreme) low incomes
 - Often high energy consumption (due to poor thermal and building physical quality, building services)
 - In combination with poor IAQ and Thermal Comfort
 - Increasing energy prices (>> inflation rates), leading to fuel poverty
- Very problematic for privately owned houses or spread ownership
 - **how to organise**
 - **who is interested/responsible for this group of occupants?**
- Allocation and risk of revenues of investments
 - Investors do often not have repays of investments
 - Repays: reliability in practice, how to allocate both risks as benefits?

Objectives of the IEE ECOLISH project

Objective: Investigate and demonstrate the feasibility and the potential of instruments like Energy Exploitation and Performance Contracting

Target group: Occupants with (extreme) low income, but house owners

Means: organising dedicated ESCO's , involving occupants and other concerned parties in the process

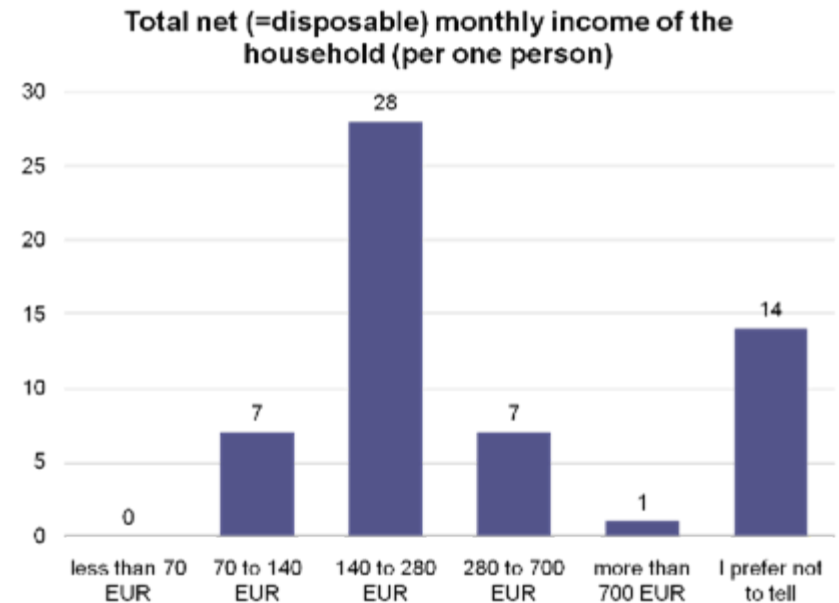
Typical in ECOLISH is that all of the pilots are 'hopeless cases' (no housing companies, no other organisations that own the problem, no financial means, no occupants organisation),

.....so starting from 0...



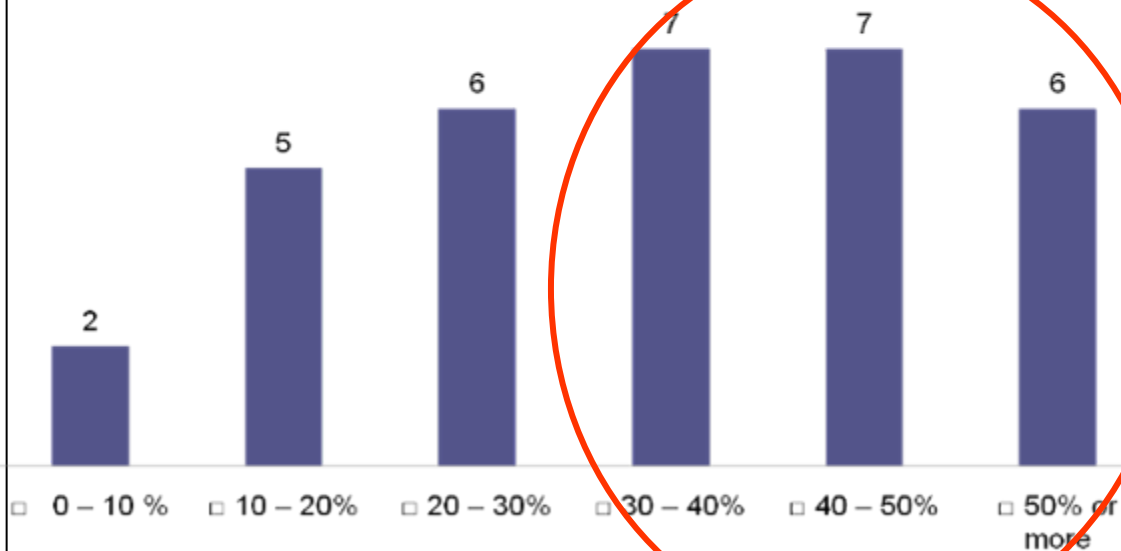
Typical social problems: example Ogre, Latvia

- Problems connected to social and political change and transition in Latvia
- Lack of income and lack of free time
- Individual problems economic and social, lack of self-esteem and self-reliance
- Lack of interest in municipal politics and public issues
- Specific heating consumption of the buildings exceeds **2- 4 times EC standards**;
- Lack of extension and knowledge in home economics and house management;
- Buildings at the end of their technical and economical life span (but privately owned)
- **FUEL POVERTY!**

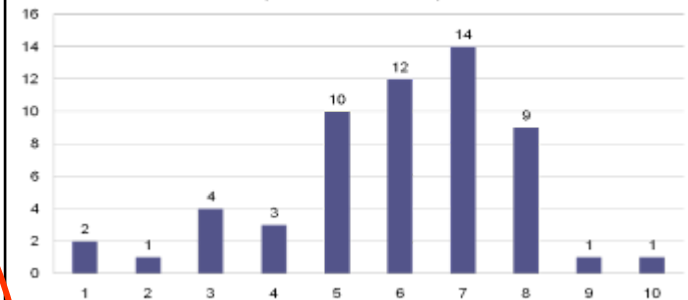


Problem of fuel poverty: example Ogre

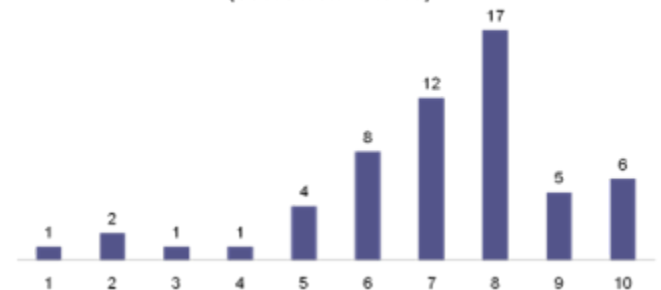
How much percent of your net income do you spend on energy costs (heating and electricity)?



Evaluation of the house (score from 1 to 10)



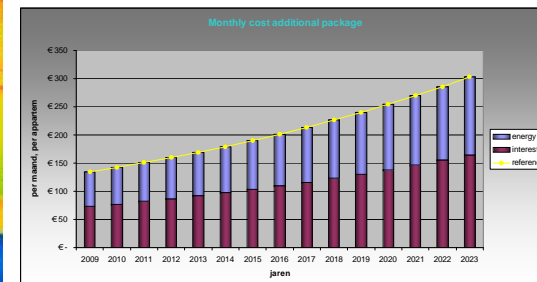
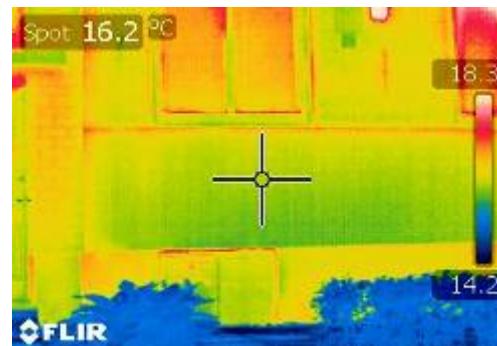
Evaluation of the living environment (score from 1 to 10)



But still also satisfied on the house and living environment

Methods and approach

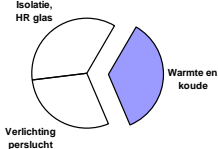

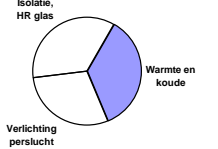

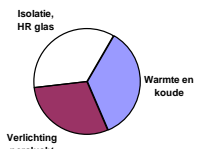
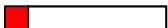
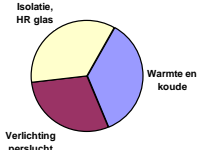
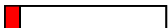
- Organising occupants (occupants organisations, associations of owners, building co-operatives)
- Intensive communication and meetings with occupants
- Technical and social analyses of the buildings
- Proposing measures to improve energy efficiency, thermal comfort and IAQ
- Financing schemes and involving ESCOs
- Legal support for occupants in contracts with ESCOs
- Evaluation of benefits
- Monitoring the total process



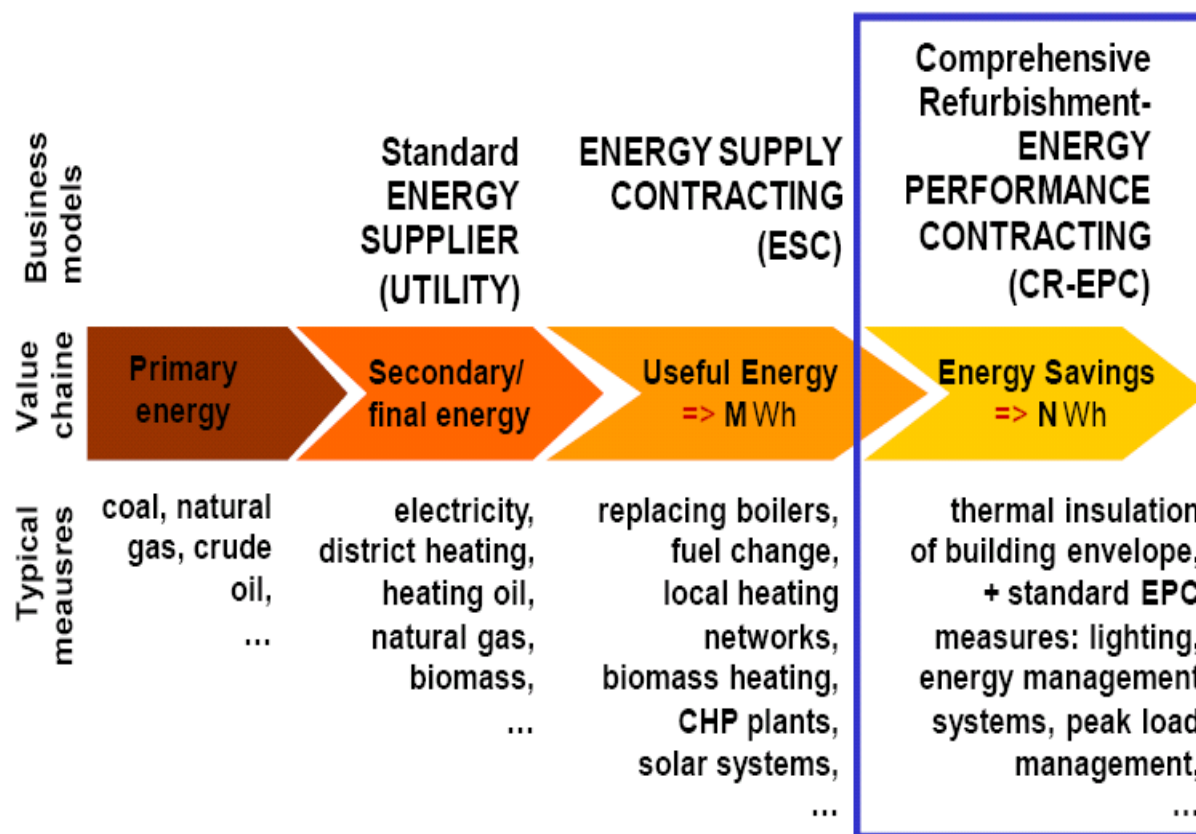
Role of ESCOs in ECOLISH

- ESCOs are an important instrument for delivering improved energy efficiency and contributing to create a market for energy savings, but are not ‘a magical’ solution.
- Over the last years developments in the way how ESCOs operate, from traditional supply contracting to integrated EPC with saving guarantees
- In ECOLISH ESCOs also address now individual households (sometimes organised in Associations of Owners)
- Behavior of residents requires other kinds of guaranty.
- Quality assurance and monitoring of the occupants behavior.
- Low income in relation to financing the measures
- Collective and individual measures
- Establishing an association of owners
- Measures building envelope

Development of ESCO services

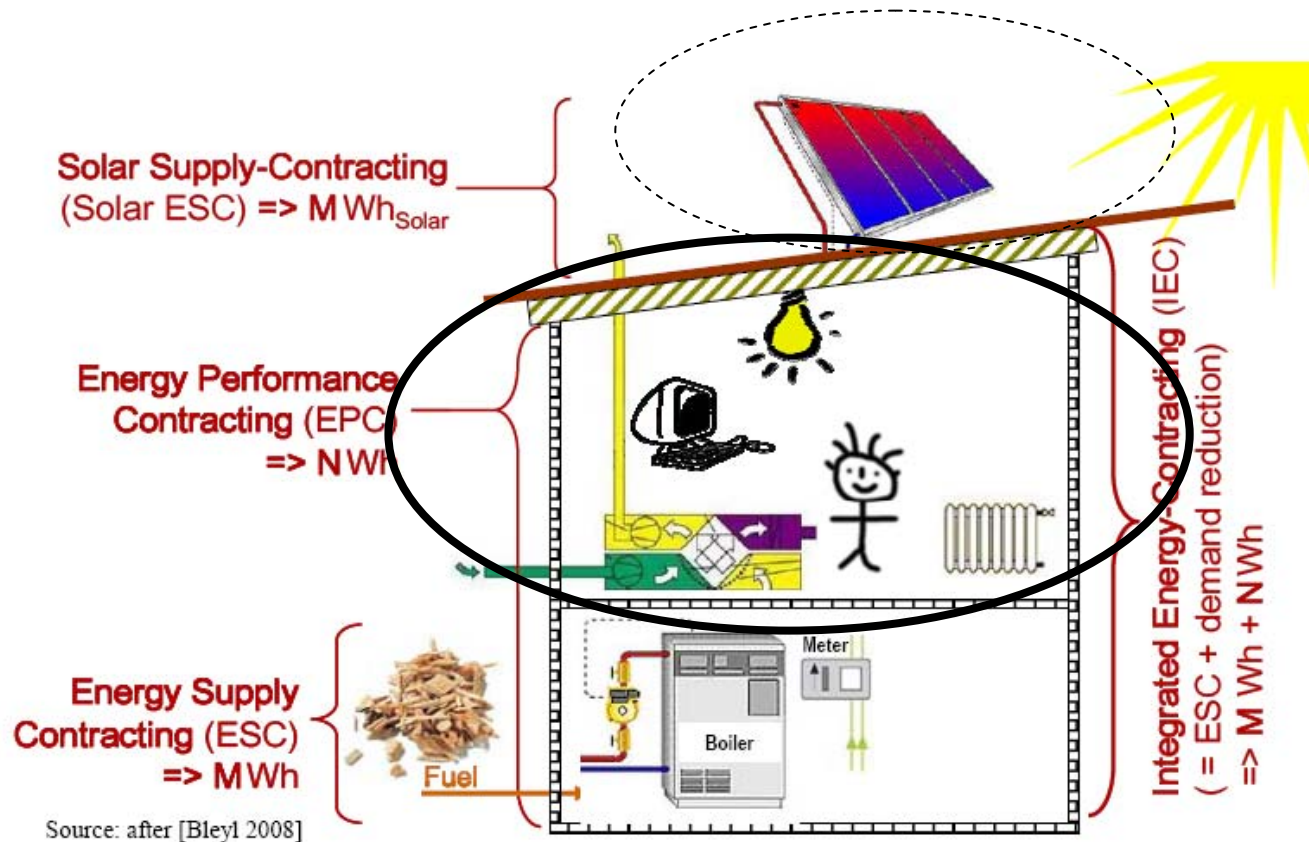
<u>Concepts</u>		penetration rate	business scale	
			Energy volume	Applications
1. Supply Contracting			+	+
2. EPC basic			+++	+
3. EPC plus			+++	++
4. Integrated EPC			++	+++

Energy Service models, energy added value chain and typical efficiency measures



Energy Service models, energy added value chain and typical efficiency measures

Scope of measures of different Energy-Contracting models

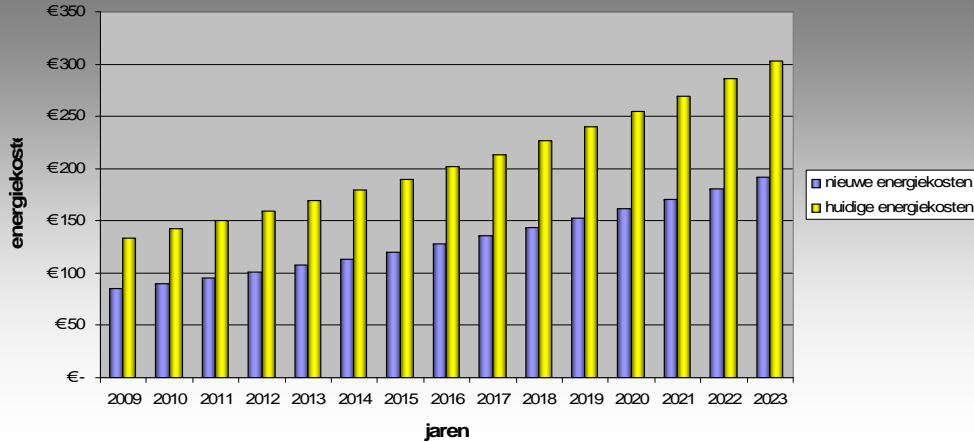


Models for funding and financing

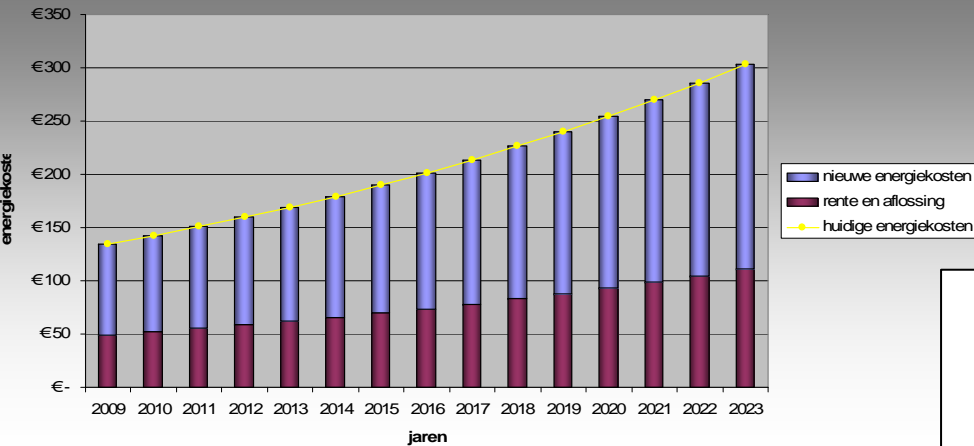
- Financial Lease
 - Not suitable for investment in the building envelope
 - Interest 11%
 - No deduction of tax
- Mortgage
 - Total funding from Association of Owners
 - Interest 5%
 - (Extra) value of the house as deposit
 - Reducible from tax
- Revolving fund
 - Cooperation with municipal government
 - Interest 2%

Results pilot Heerlen

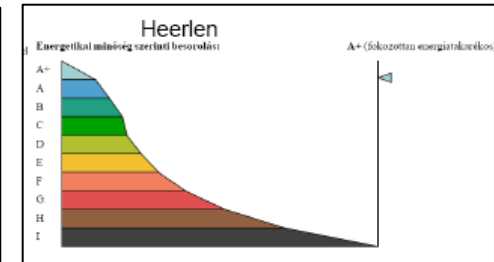
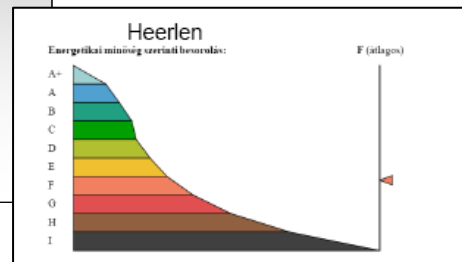
Energiekosten per maand per woning



Maandlasten per woning



Occupants of one block (six houses) organised in an association of owners
Contract ESCO with AoO



Legal aspects

	ESCO is owner	Financial lease
Financing term	Fixed period according to customer demand, minimum 6 months to 60 months or longer Usually below useful life time	Flexible according to customers demand Usually below useful life time of the investment
What can be financed?	Complete energy service investments incl. soft costs	Complete energy service hardware
Cancellation of the contract	Generally no cancellation during contract term possible	Depends on contract type, usually fixed terms Short rate penalties apply for premature cancellation
Legal and economic property aspects	ESCO realizes the investments at his own name and risk and remains the owner during contract time	Debtor is legal and economic owner (bank may put retention of title or lien)
Transfer of ownership at the end of term	E(P)C should not include transfer of ownership	Debtor remains owner EPC contract may include transfer of ownership
Responsibility for operation and maintenance	O&M will usually be included in the energy service contract and done by the ESCO It will be financed by the contracting rate	Debtor is responsible for O&M at his own risk

Some general results

- Occupants organisations for all four pilot locations established
- For all locations technical and economical feasible basic measures are available
- Financing by ESCOs for individual house owners are possible on all pilot locations
- Comparison and harmonisation of results (different EPBD methods)
- Strong involvement of occupants, together with other parties (municipalities, ESCOs, regional development agencies)
- ECOLISH project shows that it is possible to achieve energy efficiency, on a sound technical and economical basis, for low incomes, privately owned houses
- Occupants Exchange Programme and site visit established of occupants of Heerlen to Ogré, bringing EU to the people



Conclusions

- Fuel poverty is becoming a serious problem for (social) housing due to current trends in energy cost development
- In social housing energy costs are high in combination with poor thermal comfort and indoor air quality
- Saving potential and benefits are high, can be allocated to investments
- Specific problem is individual and spread ownership: to be solved by organising occupants and forming legal entities; very important to achieve any results and commitment
- Important to provide a balanced set of energy saving measures, measures to improve IAQ and thermal comfort, in combination with ways how to finance this for these groups of housings that normally don't have possibilities for this. However, comfort standards and expectations differ from country to country
- Technical solutions are not so much the problem but rather the relation between the quality and expected lifetime of buildings, and the lack of vision of strategic housing and strategic maintenance and financing.
- Many buildings are at the end of their technical and economical lifetime
- Risk allocation in energy savings and exploitation is still a big problem

Recommendations

- In most project public bodies were involved in different phases of the social houses life cycle, nevertheless no one was responsible on organizing and supporting the occupants. However a multi-level bottom up approach could solve the problems faced; occupants welcome support, as soon as it is well-intentioned and recognized
- Role of municipalities can be important (for example for establishing revolving funds and organizing occupants), however, political lifespan (4 years) and different political interest can be a threat
- ESCOs could play a new and important role. Residential sector can be a new and interesting business area, also individual house owners. Several financing constructions are possible but constructions with mortgage and revolving funds are favorable
- *We started with pilots, considered as 'hopeless cases', but these cases appeared to be not so hopeless after all...*

See also: www.ecolish.com



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Promotion of energy efficiency in the existing low income and social housing faces a large number of barriers. At the same time this stock is characterised by high energy use, due to poor energy efficiency of heating installations and poor thermal insulation, poor thermal comfort and indoor air quality. Major barrier is the lack of financial means as well as with owners as housing corporations. Private organised Energy Exploitation and Energy Performance Contracting are potential solutions for this problem. In ECOLISH a European pilot for energy exploitation and performance contracting is organised, elaborated and evaluated on 4 locations:

- Heerlen - the Netherlands
- Ogre - Latvia
- Pieria - Greece
- Pécsvárad - Hungary

The pilots include tailor-made finance schemes, energy and building technical boundary conditions, juridical, financial and social aspects. General guidelines and conditions will be given how to come to Energy Exploitation companies with occupants and concerned parties as shareholder and energy performance contracting including a template for a contract.

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