FUTURE RENEWABLES POLICY: THOUGHTSTARTER

1. The purpose of this paper is to provide a basis for an initial scoping discussion on policy interventions to succeed the Renewable Heat Incentive (RHI) and Northern Ireland Renewables Obligation (NIRO)

Context and assumptions

2. The following assumptions have been made:

Policy constraints

i. The Westminster Government will retain the overall target of 15% of energy consumed to be generated from renewable sources, covering heat, transport and electricity. NI will continue to be expected to provide a proportionate contribution to that target. (Brexit may challenge this assumption.)

ii. The Executive will retain (or even extrapolate) the renewable targets of 10% (heat) and 20% (electricity) by 2020. (Brexit and affordability may challenge this assumption).

iii. The Minister will decide not to enter the Great Britain Electricity Market Reform (EMR) arrangements, and entry to the small-scale feed in tariff (FIT) will continue to be ruled out.

iv. Policy direction in Ireland will not become clear for a further 12 months or more, but may prioritise renewable heat over renewable electricity.

v. Within the context of a Department for the Economy, evaluation of the benefits of any new policy will have to be broadly based, explicitly including economic as well as energy and environmental factors.

Affordability constraints

vi. The overall public expenditure climate will remain very difficult.

vii. The affordability challenge presented by RHI may be reduced by measures to cap total payments and/or tariff degression, and by future Barnett consequential budget increases. However, there is likely to be a very significant affordability issue for at least the lifetime of the current Assembly mandate.

viii. There will be a strong political imperative to minimise the costs to industry (especially large energy users) of any new intervention.

ix. The permitted level of grid investment will mean that grid connection rationing will remain a reality throughout the next price determination period.

x. It would be politically feasible to raise, through a levy or other charge, a budget for new policy interventions. For example, the NIRO supplier obligation level could be raised to 75% of the GB obligation level (it is currently approximately one third of the GB level), or an additional levy equivalent to the cost of EMR could be introduced. This could raise an annual budget of between £25m and £50m (net of ongoing NIRO costs). This is much lower than the current level of investment in NIRO (£93m), or RHI (£50m).

3. In relation to electricity, the 'bow wave' of projects in planning is likely to take the level of consumption from the current 25% to something approaching 30% without further intervention. In relation to heat, with RHI suspended, performance is likely to remain at around 6% in the event of no further intervention.

4. In these circumstances, policy options that might be considered include: 'do nothing'; 'do minimum'; or an all-Ireland solution. However, as an all-Ireland solution may be some years away, any intervention beyond 'do nothing' in the short term would have to NI-only. Given the small consumer base (and limitations on funding from general taxation), affordability is likely to be a major constraint, particularly in relation to heat, where any budget for annually managed expenditure is likely to be fully committed to RHI for the foreseeable future.

Effectiveness of previous policy interventions

5. Both RHI and NIRO were 'of their time' – relatively unsophisticated policy instruments based on universal subsidy of generation / consumption. They achieved their primary objective, which was to maximise progress towards achieving targets as quickly as possible, in circumstances where 'decarbonisation' was seen as having a higher relative priority within the 'trilemma' than is the case now, and when the affordability challenge was not as great.

6. However, both instruments (particularly NIRO) had unintended consequences, and sub-optimal characteristics that may render them unsuitable for the next phase of renewable policy:

<u>NIRO</u>

Economic inefficiency

- If evaluated purely in terms of decarbonisation, NIRO was effective, but inefficient. There was no prioritisation in terms of scale, with every megawatt

of development being given equal priority, whether generated from a more efficient large-scale project, or a much more heavily subsidised (arguably over-subsidised) and less efficient small scale project.

Capacity planning inefficiency

- Equally, every megawatt scores equally in terms of potential benefit (contribution to the consumption target) despite the fact that small or micro-scale projects are invisible to SONI and, therefore, of no value in capacity planning.

Grid saturation

- The unplanned expansion of wind generation has saturated the grid. This has resulted in: NIRO becoming self-limiting (many applicants will not achieve connection); system level inefficiency in the form of constraint and curtailment costs – NI has the capacity to generate more renewable electricity than it can use or export, so some is wasted (41GWh or 2.8% of available wind energy in 2014); market distortion - the predominance of wind may restrict grid access for other technologies; the emerging phenomenon of restricted access for load connections. As grid saturation was not anticipated, there was no clear policy for rationing on an economic basis. Instead, NIEN instituted a 'rationing by proxy queue' model, by requiring applicants for grid connections to first obtain planning permission. Thus the queue of planning applications performed the rationing function (to a degree) for NIEN.

Duration beyond technological and market failure horizons

- The very long time stream of payments (20 years) was deemed necessary in order to give a rate of return that would attract capital investment at reduced risk. However, advances in technology (especially solar PV and to a lesser extent, wind) mean that payments (at least for some of the most recent projects) will continue for long after market failure can safely be assumed to exist, and into a period when new and more innovative technologies may have emerged.

RHI

7. The more well-documented unintended consequences and sub-optimal outcomes of RHI tend to arise more from detailed aspects of the scheme design rather than the fundamental concept. Nevertheless, the economic inefficiency and 'over the horizon' features of NIRO are also reflected in RHI (particularly the non-domestic scheme).

What might a new policy look like?

8. I argue that, in relation to renewable electricity and non domestic renewable heat, new policy interventions would probably be very different. In relation to domestic heat, the argument for a continuation of an RHI style 'universal' intervention remains stronger.

Renewable electricity

9. If NIRO was 'of its time', then its time has surely passed. Universal subsidy as an incentive for rapid behavioural change, could be justified at 5% renewable consumption, but the rationale for such an approach is much weaker at 30% (particularly when economic benefit has been assessed as peaking at 25%, with this assessment predating the present extent of grid congestion). Added to that, if any new policy has a sharp affordability constraint, along with a requirement for greater economic efficiency etc., then an approach based on targeting / selection seems inevitable. A further dimension would be that any post-Brexit trade deal may require compliance with state aid rules and, therefore, require any new support mechanism to be competitive.

Assessment criteria

10. Assessment criteria for projects might include:

- economic benefit;
- evidence of market failure;
- innovation;
- contribution to decarbonisation target;
- generation efficiency;
- system efficiency (visibility to system planner, ability to participate in energy market); and
- grid capacity efficiency.

11. An example (exaggerated to make the point) of a very high scoring project might be:

- an anaerobic digestion plant, fuelled by poultry litter and brown bin waste, producing biogas (and fertilizer);
- the resulting biogas fuels a combined heat and power (CHP) plant for an energy intensive large employer;
- the CHP plant is co-located with an existing wind or solar photo-voltaic plant, maximising the utility of an existing grid connection;
- the plant is 'smart' connected and metered, has associated battery storage, and is of sufficient scale to allow SONI to measure and use its generating capacity in system planning, and for the plant to participate in ISEM and / or

DS3 as a generating unit, aggregated generating unit and / or demand side unit (at times of peak demand, the plant would meet all of the employer's needs, allowing the employer to bid 'negative demand' into ISEM).

12. If the above is a high-scoring example, then the converse would be:

- a single small scale wind turbine;
- 'dumb' and too small to be visible to SONI or to participate in the main market;
- requiring a new grid connection, which is the straw that breaks a camel's back – i.e. triggers the need for local reinforcement of the distribution grid or even (cumulatively with other similar proposals) triggers the need for transmission reinforcement.

13. It might be argued that, when assessed against the criteria at paragraph 10, small scale schemes would be of such little value as to be effectively ruled out unless there is some alternative policy imperative, such as subsiding rural incomes or supporting the installation industry. In fact, there is an argument for explicitly ruling out subsidies for such schemes, and requiring developers to pay the full economic cost of grid connection, including any reinforcement or displacement costs.

Funding approach and delivery mechanism

14. The approach of providing prolonged revenue subsidy in order to reduce risk and guarantee a rate of return may have certain attractions, and has certainly driven high rates of take up. However, it represents a gamble in terms of anticipating future market failure; a long term transfer of risk from private sector to public sector; and a budget / affordability handcuff.

15. There is an argument for a more conventional approach to addressing market failure, if that failure manifests in the form of restricted access to capital. Rather than revenue subsidies, intervention could be by debt financing, capital grant, or even equity. Such approaches are already in play in the poultry litter renewable heat sector, although it must be acknowledged that, to date, projects have also depended on revenue subsidy through NIRO.

16. Invest NI has expertise and experience of this type of funding programme, and could be a ready-made delivery mechanism.

Renewable Heat

17. A very similar argument can be made for the shape of a future intervention to promote non domestic renewable heat. In fact, there is likely to be a degree of

overlap with renewable energy, renewable heat, and energy efficiency in a non-domestic context.

18. Domestic renewable heat, however, has a very different policy context. Annual heat consumption dwarfs that of electricity – 1.9 TWh compared to 0.8 TWh, and NI has a degree of market dominance of high carbon oil (compared to natural gas or other technologies). For electricity, domestic consumption is some 38% of total consumption. By contrast, domestic consumption of heat is some 61% of total consumption.

19. This may limit the potential for a competitive approach to incentivising change in relation to domestic heat, and strengthen the case for a universal subsidy. (Whether such an approach may ever become affordable or politically acceptable again in the light of legacy RHI costs, is another matter).

20. However, there might be scope for a competitive domestic renewable heat policy, borrowing the approach from the Energywise energy efficiency programme that is currently under development. This would involve the competitive procurement of a 'one stop shop' capacity to: assess customer need; procure and install appropriate technology (maximising efficiency through aggregate purchasing power); and provide grant or loan financial assistance.

21. As with Energywise, this type of approach can include targeting of social need and / or inclusion of social benefit in the evaluation criteria.

Conclusion

22. There is scope for a new policy intervention with: a more explicit economic focus; greater efficiency and effectiveness than NIRO or RHI; and reduced unintended consequences / disbenefits. However, affordability constraints may mean that the scale of any new intervention would be modest, whilst the cost to consumers would be much higher, both in absolute terms and relative to NIRO. This may make any new policy politically unattractive.

FUTURE RENEWABLES POLICY: THOUGHTSTARTER

1. The purpose of this paper is to provide a basis for an initial scoping discussion on policy interventions to succeed the Renewable Heat Incentive (RHI) and Northern Ireland Renewables Obligation (NIRO)

Context and assumptions

2. The following assumptions have been made:

Policy constraints

i. The Westminster Government will retain the overall target of 15% of energy consumed to be generated from renewable sources, covering heat, transport and electricity. NI will continue to be expected to provide a proportionate contribution to that target. (Brexit may challenge this assumption.)

ii. The Executive will retain (or even extrapolate) the renewable targets of 10% (heat) and 20% (electricity) by 2020. (Brexit and affordability may challenge this assumption).

iii. The Minister will decide not to enter the Great Britain Electricity Market Reform (EMR) arrangements, and entry to the small-scale feed in tariff (FIT) will continue to be ruled out.

iv. Policy direction in Ireland will not become clear for a further 12 months or more, but may prioritise renewable heat over renewable electricity.

v. Within the context of a Department for the Economy, evaluation of the benefits of any new policy will have to be broadly based, explicitly including economic as well as energy and environmental factors.

Affordability constraints

vi. The overall public expenditure climate will remain very difficult.

vii. The affordability challenge presented by RHI may be reduced by measures to cap total payments and/or tariff degression, and by future Barnett consequential budget increases. However, there is likely to be a very significant affordability issue for at least the lifetime of the current Assembly mandate.

viii. There will be a strong political imperative to minimise the costs to industry (especially large energy users) of any new intervention.

ix. The permitted level of grid investment will mean that grid connection rationing will remain a reality throughout the next price determination period.

x. It would be politically feasible to raise, through a levy or other charge, a budget for new policy interventions. For example, the NIRO supplier obligation level could be raised to 75% of the GB obligation level (it is currently approximately one third of the GB level), or an additional levy equivalent to the cost of EMR could be introduced. This could raise an annual budget of between £25m and £50m (net of ongoing NIRO costs). This is much lower than the current level of investment in NIRO (£93m), or RHI (£50m).

3. In relation to electricity, the 'bow wave' of projects in planning is likely to take the level of consumption from the current 25% to something approaching 30% without further intervention. In relation to heat, with RHI suspended, performance is likely to remain at around 6% in the vent of no further intervention.

4. In these circumstances, policy options that might be considered include: 'do nothing'; 'do minimum'; or an all-Ireland solution. However, as an all-Ireland solution may be some years away, any intervention beyond 'do nothing' in the short term would have to NI-only. Given the small consumer base (and limitations on funding from general taxation), affordability is likely to be a major constraint, particularly in relation to heat, where any budget for annually managed expenditure is likely to be fully committed to RHI for the foreseeable future.

Effectiveness of previous policy interventions

5. Both RHI and NIRO were 'of their time' – relatively unsophisticated policy instruments based on universal subsidy of generation / consumption. They achieved their primary objective, which was to maximise progress towards achieving targets as quickly as possible, in circumstances where 'decarbonisation' was seen as having a higher relative priority within the 'trilemma' than is the case now, and when the affordability challenge was not as great.

6. However, both instruments (particularly NIRO) had unintended consequences, and sub-optimal characteristics that may render them unsuitable for the next phase of renewable policy:

<u>NIRO</u>

Economic inefficiency

- If evaluated purely in terms of decarbonisation, NIRO was effective, but inefficient. There was no prioritisation in terms of scale, with every megawatt

of development being given equal priority, whether generated from a more efficient large-scale project, or a much more heavily subsidised (arguably over-subsidised) and less efficient small scale project.

Capacity planning inefficiency

- Equally, every megawatt scores equally in terms of potential benefit (contribution to the consumption target) despite the fact that small or micro-scale projects are invisible to SONI and, therefore, of no value in capacity planning.

Grid saturation

- The unplanned expansion of wind generation has saturated the grid. This has resulted in: NIRO becoming self-limiting (many applicants will not achieve connection); system level inefficiency in the form of constraint and curtailment costs – NI has the capacity to generate more renewable electricity than it can use or export, so some is wasted (41GWh or 2.8% of available wind energy in 2014); market distortion - the predominance of wind may restrict grid access for other technologies; the emerging phenomenon of restricted access for load connections. As grid saturation was not anticipated, there was no clear policy for rationing on an economic basis. Instead, NIEN instituted a 'rationing by proxy queue' model, by requiring applicants for grid connections to first obtain planning permission. Thus the queue of planning applications performed the rationing function (to a degree) for NIEN.

Duration beyond technological and market failure horizons

- The very long time stream of payments (20 years) was deemed necessary in order to give a rate of return that would attract capital investment at reduced risk. However, advances in technology (especially solar PV and to a lesser extent, wind) mean that payments (at least for some of the most recent projects) will continue for long after market failure can safely be assumed to exist, and into a period when new and more innovative technologies may have emerged.

RHI

7. The more well-documented unintended consequences and sub-optimal outcomes of RHI tend to arise more from detailed aspects of the scheme design rather than the fundamental concept. Nevertheless, the economic inefficiency and 'over the horizon' features of NIRO are also reflected in RHI (particularly the non-domestic scheme).

What might a new policy look like?

8. I argue that, in relation to renewable electricity and non domestic renewable heat, new policy interventions would probably be very different. In relation to domestic heat, the argument for a continuation of an RHI style 'universal' intervention remains stronger.

Renewable electricity

9. If NIRO was 'of its time', then its time has surely passed. Universal subsidy as an incentive for rapid behavioural change, could be justified at 5% renewable consumption, but the rationale for such an approach is much weaker at 30% (particularly when economic benefit has been assessed as peaking at 25%, with this assessment predating the present extent of grid congestion). Added to that, if any new policy has a sharp affordability constraint, along with a requirement for greater economic efficiency etc., then an approach based on targeting / selection seems inevitable. A further dimension would be that any post-Brexit trade deal may require compliance with state aid rules and, therefore, require any new support mechanism to be competitive.

Assessment criteria

10. Assessment criteria for projects might include:

- economic benefit;
- evidence of market failure;
- innovation;
- contribution to decarbonisation target;
- generation efficiency;
- system efficiency (visibility to system planner, ability to participate in energy market); and
- grid capacity efficiency.

11. An example (exaggerated to make the point) of a very high scoring project might be:

- an anaerobic digestion plant, fuelled by poultry litter and brown bin waste, producing biogas (and fertilizer);
- the resulting biogas fuels a combined heat and power (CHP) plant for an energy intensive large employer;
- the CHP plant is co-located with an existing wind or solar photo-voltaic plant, maximising the utility of an existing grid connection;
- the plant is 'smart' connected and metered, has associated battery storage, and is of sufficient scale to allow SONI to measure and use its generating capacity in system planning, and for the plant to participate in ISEM and / or

DS3 as a generating unit, aggregated generating unit and / or demand side unit (at times of peak demand, the plant would meet all of the employer's needs, allowing the employer to bid 'negative demand' into ISEM).

12. If the above is a high-scoring example, then the converse would be:

- a single small scale wind turbine;
- 'dumb' and too small to be visible to SONI or to participate in the main market;
- requiring a new grid connection, which is the straw that breaks a camel's back – i.e. triggers the need for local reinforcement of the distribution grid or even (cumulatively with other similar proposals) triggers the need for transmission reinforcement.

13. It might be argued that, when assessed against the criteria at paragraph 10, small scale schemes would be of such little value as to be effectively ruled out unless there is some alternative policy imperative, such as subsiding rural incomes or supporting the installation industry. In fact, there is an argument for explicitly ruling out subsidies for such schemes, and requiring developers to pay the full economic cost of grid connection, including any reinforcement or displacement costs.

Funding approach and delivery mechanism

14. The approach of providing prolonged revenue subsidy in order to reduce risk and guarantee a rate of return may have certain attractions, and has certainly driven high rates of take up. However, it represents a gamble in terms of anticipating future market failure; a long term transfer of risk from private sector to public sector; and a budget / affordability handcuff.

15. There is an argument for a more conventional approach to addressing market failure, if that failure manifests in the form of restricted access to capital. Rather than revenue subsidies, intervention could be by debt financing, capital grant, or even equity. Such approaches are already in play in the poultry litter renewable heat sector, although it must be acknowledged that, to date, projects have also depended on revenue subsidy through NIRO.

16. Invest NI has expertise and experience of this type of funding programme, and could be a ready-made delivery mechanism.

Renewable Heat

17. A very similar argument can be made for the shape of a future intervention to promote non domestic renewable heat. In fact, there is likely to be a degree of

overlap with renewable energy, renewable heat, and energy efficiency in a non-domestic context.

18. Domestic renewable heat, however, has a very different policy context. Annual heat consumption dwarfs that of electricity – 1.9 TWh compared to 0.8 TWh, and NI has a degree of market dominance of high carbon oil (compared to natural gas or other technologies). For electricity, domestic consumption is some 38% of total consumption. By contrast, domestic consumption of heat is some 61% of total consumption.

19. This may limit the potential for a competitive approach to incentivising change in relation to domestic heat, and strengthen the case for a universal subsidy. (Whether such an approach may ever become affordable or politically acceptable again in the light of legacy RHI costs, is another matter).

20. However, there might be scope for a competitive domestic renewable heat policy, borrowing the approach from the Energywise energy efficiency programme that is currently under development. This would involve the competitive procurement of a 'one stop shop' capacity to: assess customer need; procure and install appropriate technology (maximising efficiency through aggregate purchasing power); and provide grant or loan financial assistance.

21. As with Energywise, this type of approach can include targeting of social need and / or inclusion of social benefit in the evaluation criteria.

Conclusion

22. There is scope for a new policy intervention with: a more explicit economic focus; greater efficiency and effectiveness than NIRO or RHI; and reduced unintended consequences / disbenefits. However, affordability constraints may mean that the scale of any new intervention would be modest, whilst the cost to consumers would be much higher, both in absolute terms and relative to NIRO. This may make any new policy politically unattractive.

FUTURE RENEWABLES POLICY: THOUGHTSTARTER

1. The purpose of this paper is to provide a basis for an initial scoping discussion on policy interventions to succeed the Renewable Heat Incentive (RHI) and Northern Ireland Renewables Obligation (NIRO)

Context and assumptions

2. The following assumptions have been made:

Policy constraints

i. The Westminster Government will retain the overall target of 15% of energy consumed to be generated from renewable sources, covering heat, transport and electricity. NI will continue to be expected to provide a proportionate contribution to that target.

ii. The Executive will retain (or even extrapolate) the renewable targets of 10% (heat) and 20% (electricity) by 2020.

iii. The Minister will decide not to enter the Great Britain Electricity Market Reform (EMR) arrangements, and entry to the small-scale feed in tariff (FIT) will continue to be ruled out.

iv. Policy direction in Ireland will not become clear for a further 12 months or more, but may prioritise renewable heat over renewable electricity.

v. Within the context of a Department for the Economy, evaluation of the benefits of any new policy will have to be broadly based, explicitly including economic as well as energy and environmental factors.

Affordability constraints

vi. The overall public expenditure climate will remain very difficult.

vii. The affordability challenge presented by RHI may be reduced by measures to cap total payments and/or tariff degression, and by future Barnett consequential budget increases. However, there is likely to be a very significant affordability issue for at least the lifetime of the current Assembly mandate.

viii. There will be a strong political imperative to minimise the costs to industry (especially large energy users) of any new intervention.

ix. The permitted level of grid investment will mean that grid connection rationing will remain a reality throughout the next price determination period.

x. It would be political feasible to raise, through a levy or other charge, a budget for new policy interventions equivalent to the amount that would be paid if NI entered EMR, or a hypothetical ongoing NIRO type supplier obligation (at current or even slightly higher obligation level). This could raise an annual budget of between £x and £y.

3. In relation to electricity, the 'bow wave' of projects in planning is likely to take the level of consumption from the current 25% to something approaching 30% without further intervention. In relation to heat, with RHI suspended, performance is likely to remain at around 6% in the vent of no further intervention.

4. In these circumstances, policy options that might be considered include: 'do nothing'; 'do minimum'; or an all-Ireland solution. However, as an all-Ireland solution may be some years away, any intervention beyond 'do nothing' in the short term would have to NI-only. Given the small consumer base (and limitations on funding from general taxation), affordability is likely to be a major constraint, particularly in relation to heat, where any budget for annually managed expenditure is likely to be fully committed to RHI for the foreseeable future.

Effectiveness of previous policy interventions

5. Both RHI and NIRO were 'of their time' – relatively unsophisticated policy instruments based on universal subsidy of generation / consumption. They achieved their primary objective, which was to maximise progress towards achieving targets as quickly as possible, in circumstances where 'decarbonisation' was seen as having a higher relative priority within the 'trilemma' than is the case now, and when the affordability challenge was not as great.

6. However, both instruments (particularly NIRO) had unintended consequences, and sub-optimal characteristics that may render them unsuitable for the next phase of renewable policy:

NIRO

Economic inefficiency

- If evaluated purely in terms of decarbonisation, NIRO was effective, but inefficient. There was no prioritisation in terms of scale, with every megawatt of development being given equal priority, whether generated from a more efficient large-scale project, or a much more heavily subsidised (arguably over-subsidised) and less efficient small scale project.

Capacity planning inefficiency

- Equally, every megawatt scores equally in terms of potential benefit (contribution to the consumption target) despite the fact that small or micro-scale projects are invisible to SONI and, therefore, of no value in capacity planning.

Grid saturation

- The unplanned expansion of wind generation has saturated the grid. This has resulted in: NIRO becoming self-limiting (many applicants will not achieve connection); system level inefficiency in the form of constraint and curtailment costs – NI has the capacity to generate more renewable electricity than it can use or export, so some is wasted (41GWh or 2.8% of available wind energy in 2014); market distortion - the predominance of wind may restrict grid access for other technologies; the emerging phenomenon of restricted access for load connections. As grid saturation was not anticipated, there was no clear policy for rationing on an economic basis. Instead, NIEN instituted a 'rationing by proxy queue' model, by requiring applicants for grid connections to first obtain planning permission. Thus the queue of planning applications performed the rationing function (to a degree) for NIEN.

Duration beyond technological and market failure horizons

- The very long time stream of payments (20 years) was deemed necessary in order to give a rate of return that would attract capital investment at reduced risk. However, advances in technology (especially solar PV and to a lesser extent, wind) mean that payments (at least for some of the most recent projects) will continue for long after market failure can be assumed to exist, and into a period when new and more innovative technologies may have emerged.

RHI

7. The more well-documented unintended consequences and sub-optimal outcomes of RHI tend to arise more from detailed aspects of the scheme design rather than the fundamental concept. Nevertheless, the economic inefficiency and 'over the horizon' features of NIRO are reflected in RHI (particularly the non-domestic scheme).

What might a new policy look like?

8. I argue that, in relation to renewable electricity and non domestic renewable heat, new policy interventions would probably be very different. In relation to domestic heat, the argument for a continuation of an RHI style 'universal' intervention remains stronger.

Renewable electricity

9. If NIRO was 'of its time', then its time has surely passed. Universal subsidy as an incentive for rapid behavioural change, could be justified at x% renewable consumption, but the rationale for such an approach is much weaker at 30% (particularly when economic benefit has been assessed as peaking at 25%, with this assessment predating the present extent of grid congestion). Added to that, if any new policy has a sharp affordability constraint, along with requirements for: greater economic efficiency; demonstrable evidence of market failure; maximised efficiency of grid usage; and incentivisation of innovation, then an approach based on targeting / selection seems inevitable. A further dimension would be that state aid rules (Brexit notwithstanding) would require any new mechanism to be competitive.

Assessment criteria

10. An example (exaggerated perhaps somewhat fancifully to make the point) of a very high scoring project might be:

- an anaerobic digestion plant, fuelled by poultry litter and brown bin waste, producing biogas (and fertilizer);
- the resulting biogas fuels a combined heat and power (CHP) plant for an energy intensive large employer;
- the CHP plant is co-located with an existing wind or solar photo-voltaic plant, maximising the utility of an existing grid connection;
- the plant is 'smart' connected and metered, has associated battery storage, and is of sufficient scale to allow SONI to measure and use its generating capacity in system planning, and for the plant to participate in ISEM and / or DS3 as a generating unit, aggregated generating unit and / or demand side unit (at times of peak demand, the plant would meet all of the employer's needs, allowing the employer to bid 'negative demand' into ISEM).

11. If the above is a high-scoring example, then the converse would be:

- a single small scale wind turbine;
- 'dumb' and too small to be visible to SONI or to participate in the main market;
- requiring a new grid connection, which is the straw that breaks a camel's back – i.e. triggers the need for local reinforcement of the distribution grid or even (cumulatively with other similar proposals) triggers the need for transmission reinforcement.

12. It might be argued that, when assessed against the criteria at paragraph x, such schemes would be of such little value as to be effectively ruled out unless there is some alternative policy imperative, such as subsiding rural incomes. In fact,

there is an argument for explicitly ruling out subsidies for such schemes, and requiring developers to pay the full economic cost of grid connection, including any reinforcement or displacement costs.

Funding approach and delivery mechanism

13. The approach of providing prolonged revenue subsidy in order to reduce risk and guarantee a rate of return may have certain attractions, and has certainly driven high rates of take up. However, it represents a gamble in terms of anticipating future market failure; a long term transfer of risk from private sector to public sector; and a budget / affordability handcuff.

14. There is an argument for a more conventional approach to addressing market failure, if that failure manifests in the form of restricted access to capital. Rather than revenue subsidies, intervention could be by debt financing, capital grant, or even equity. Such approaches are already in play in the poultry litter renewable heat sector, although it must be acknowledged that, to date, projects have also depended on revenue subsidy through NIRO.

15. Invest NI has expertise and experience of this type of funding programme, and could be a ready-made delivery mechanism.

Renewable Heat

16. A very similar argument can be made for the shape of a future intervention to promote non domestic renewable heat. In fact, there is likely to be a degree of overlap with renewable energy, renewable heat, and energy efficiency in a non-domestic context.

17. Domestic renewable heat, however, has a very different policy context. Annual heat consumption dwarfs that of electricity – 1.9 TWh compared to .8 TWh, and NI has a degree of market dominance of high carbon oil (compared to natural gas or other technologies). For electricity, domestic consumption is some 38% of total consumption. By contrast, domestic consumption of heat is some 61% of total consumption.

18. This may limit the potential for a competitive based policy approach to incentivising change in relation to domestic heat, and strengthen the case for a universal subsidy. (Whether such an approach may ever become affordable or politically acceptable again in the light of legacy RHI costs, is another matter).

19. However, there might be scope for a competitive domestic renewable heat policy, borrowing the approach from the Energywise energy efficiency programme that is currently under development. This would involve the competitive procurement of a ‘one stop shop’ capacity to: assess customer need; procure and install

appropriate technology (maximising efficiency through aggregate purchasing power); and provide grant or loan financial assistance.

20. As with Energywise, this type of approach can include targeting of social need and / or inclusion of social benefit in the evaluation criteria.

FUTURE RENEWABLES POLICY: THOUGHTSTARTER

1. The purpose of this paper is to provide a basis for an initial scoping discussion on policy interventions to succeed the Renewable Heat Incentive (RHI) and Northern Ireland Renewables Obligation (NIRO)

Context and assumptions

2. The following assumptions have been made:

Policy constraints

i. The Westminster Government will retain the overall target of 15% of energy consumed to be generated from renewable sources, covering heat, transport and electricity. NI will continue to be expected to provide a proportionate contribution to that target.

ii. The Executive will retain (or even extrapolate) the renewable targets of 10% (heat) and 20% (electricity) by 2020.

iii. The Minister will decide not to enter the Great Britain Electricity Market Reform (EMR) arrangements, and entry to the small-scale feed in tariff (FIT) will continue to be ruled out.

iv. Policy direction in Ireland will not become clear for a further 12 months or more, but may prioritise renewable heat over renewable electricity.

v. Within the context of a Department for the Economy, evaluation of the benefits of any new policy will have to be broadly based, explicitly including economic as well as energy and environmental factors.

Affordability constraints

vi. The overall public expenditure climate will remain very difficult.

vii. The affordability challenge presented by RHI may be reduced by measures to cap total payments and/or tariff degression, and by future Barnett consequential budget increases. However, there is likely to be a very significant affordability issue for at least the lifetime of the current Assembly mandate.

viii. There will be a strong political imperative to minimise the costs to industry (especially large energy users) of any new intervention.

ix. The permitted level of grid investment will mean that grid connection rationing will remain a reality throughout the next price determination period.

3. In relation to electricity, the 'bow wave' of projects in planning is likely to take the level of consumption from the current 25% to something approaching 30% without further intervention. In relation to heat, with RHI suspended, performance is likely to remain at around 6% in the vent of no further intervention.

4. In these circumstances, policy options that might be considered include: 'do nothing'; 'do minimum'; or an all-Ireland solution. However, as an all-Ireland solution would be some years away, any intervention beyond 'do nothing' in the short term would have to NI-only. Given the small consumer base (and limitations on funding from general taxation), affordability is likely to be a major constraint, particularly in relation to heat, where any budget for annually managed expenditure is likely to be fully committed to RHI for the foreseeable future.

Effectiveness of previous policy interventions

5. Both RHI and NIRO were 'of their time' – relatively unsophisticated policy instruments based on universal subsidy of generation / consumption. They achieved their primary objective, which was to maximise progress towards achieving targets as quickly as possible, in circumstances where 'decarbonisation' was seen as having a higher relative priority within the 'trilemma' than is the case now, and when the affordability challenge was not a great.

6. However, both instruments (particularly NIRO) had unintended consequences, and characteristics that may render them unsuitable for the next phase of renewable policy:

NIRO

- If evaluated purely in terms of decarbonisation, NIRO was effective, but inefficient. There was no prioritisation in terms of scale, with every megawatt of development being given equal priority, whether generated from a more efficient large-scale project, or a much more heavily subsidised (arguably over-subsidised) small scale project. Equally, every megawatt scores equally in terms of potential benefit (contribution to the consumption target) despite the fact that small or micro-scale projects are invisible to SONI and, therefore, of no value in capacity planning.

- The unplanned expansion of wind generation has saturated the grid. This has resulted in: NIRO becoming self-limiting (many applicants will not achieve connection); market distortion - the predominance of wind may restrict grid access for other technologies; diff

7.